UNITED STATES DEPARTMENT OF LABOR

BULLETIN OF THE WOMEN'S BUREAU, NO. 83

FLUCTUATION OF EMPLOYMENT IN THE RADIO INDUSTRY

[PUBLIC—No. 259—66TH CONGRESS]

[H. R. 13229]

AN ACT To establish in the Department of Labor a bureau to be known as the Women's Bureau

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there shall be established in the Department of Labor a bureau to be known as the Women's Bureau.

SEC. 2. That the said bureau shall be in charge of a director, a woman, to be appointed by the President, by and with the advice and consent of the Senate, who shall receive an annual compensation of $5,000. It shall be the duty of said bureau to formulate standards and policies which shall promote the welfare of wage-earning women, improve their working conditions, increase their efficiency, and advance their opportunities for profitable employment. The said bureau shall have authority to investigate and report to the said department upon all matters pertaining to the welfare of women in industry. The director of said bureau may from time to time publish the results of these investigations in such a manner and to such extent as the Secretary of Labor may prescribe.

SEC. 3. That there shall be in said bureau an assistant director, to be appointed by the Secretary of Labor, who shall receive an annual compensation of $3,500 and shall perform such duties as shall be prescribed by the director and approved by the Secretary of Labor.

SEC. 4. That there is hereby authorized to be employed by said bureau a chief clerk and such special agents, assistants, clerks, and other employees at such rates of compensation and in such numbers as Congress may from time to time provide by appropriations.

SEC. 5. That the Secretary of Labor is hereby directed to furnish sufficient quarters, office furniture, and equipment for the work of this bureau.

SEC. 6. That this act shall take effect and be in force from and after its passage.

Approved, June 5, 1920.

UNITED STATES DEPARTMENT OF LABOR
W. N. DOAK, SECRETARY
WOMEN'S BUREAU
MARY ANDERSON, Director

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BY
CAROLINE MANNING

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LETTER OF TRANSMITTAL

UNITED STATES DEPARTMENT OF LABOR,
WOMEN'S BUREAU,
Washington, December 10, 1930.

SIR: I have the honor to submit herewith a report on the fluctuation of employment in the radio industry in 1929 and such earlier years as could be studied from the employment records of manufacturing firms. The purpose of the survey was to discover whether the condition of severe depression in the industry at the close of 1929, that came to the attention of bureau investigators in connection with another study, was local or typical of the radio industry in general, and whether the year was representative or abnormal.

Employment records were obtained from 26 firms making receiving sets, from 15 making tubes, and from 10 making parts or accessories. It is estimated that the figures cover plants that produced 80 to 90 per cent of the sets and at least 90 per cent of the tubes made in 1929. The data on parts and accessories are less inclusive but are fairly representative.

The cooperation of employers, who courteously made available to the bureau the whole of their material showing employment fluctuation and in a number of cases gave assistance in the compiling and copying of such records, is gratefully acknowledged.

The study was made and the report has been written by Caroline Manning, industrial supervisor of the Women's Bureau.

Respectfully submitted.

MARY ANDERSON, *Director.*

HON. W. N DOAK,
Secretary of Labor.

FLUCTUATION OF EMPLOYMENT IN THE RADIO INDUSTRY

INTRODUCTION

The attention of the Women's Bureau was first directed to the employment situation in the radio industry in the latter part of 1929 by statements of young women who were or had been employed in plants making radio receiving sets and tubes. Attracted by promising newspaper advertisements, these women had found various kinds of work in radio factories, where employment had been, on the whole, satisfactory while trade was good, that is, while there was plenty to do and they could work a full week; but later, when they were laid off and so lost their jobs, or at best had work only every now and then or for only a small part of the week, they realized how precarious is employment in the radio industry.

The purpose of this survey was to discover whether the condition complained of was merely a local situation affecting a few plants or was typical of the industry in general. Furthermore, as conditions in 1929 had been abnormal, it was decided to ask for employment records over a period of years so as to show the usual trend in the industry and by so doing to disclose to what extent 1929 had or had not been representative.

Scope.

In order to get a picture of employment in the radio industry as a whole, plants engaged in the manufacture of receiving sets, tubes, and parts and accessories were visited in Massachusetts, New York, New Jersey, Pennsylvania, Ohio, Kentucky, Indiana, Michigan, and Illinois. As radio manufacturing is concentrated largely around the cities of New York and Chicago,[1] much of the valuable information acquired was furnished by plants in these districts. Altogether, employment data were obtained from 26 firms making receiving sets, from 15 making tubes, and from 10 making parts or accessories. Authorities of the United States Department of Commerce and of the Radio Manufacturers Association agree that figures presented in this report cover firms that produced 80 to 90 per cent of the sets and at least 90 per cent of the tubes made in 1929.

The data on radio parts and accessories are far from being so inclusive, and they constitute barely a sample of employment conditions in the scores of plants, widely scattered through the States, making essential parts for the radio trade.

[1] A statement from the Radio Manufacturers Association is to the effect that 35 per cent of radio production centers within a 25-mile radius of New York and 32 per cent within a 30-mile radius of Chicago.

Source of data.

With the courteous permission of the employers, whatever records the individual firms already had in the way of labor audits were copied, but in several instances original compilations had to be made of employment records or weekly pay-roll books so as to obtain the primary data. Personnel managers, pay-roll clerks, and auditors were most helpful, occasionally doing the routine counting of names on the pay roll or otherwise preparing the information desired. Without such assistance the study could not have been made.

In the majority of plants it was possible to get figures for at least two years, and in some cases the records went back for five, six, and even eight years.

The greatest difficulty was caused by the lack of uniformity in the available records. There were daily sheets of employment, weekly, semimonthly, and monthly records, and some were based on average employment while others were for one definite date. Since most of the records were monthly averages, wherever practicable the monthly average was computed for other cases also, in order that the data might be as uniform as possible. There still exist a few cases of lack of uniformity in method of arriving at the basic figures used, but the fluctuations and trends are essentially the same whether based on a monthly average or on a given date and whether the latter is the first, the middle, or the last day of the month.

Plan of study.

In this study the three main branches of the radio-manufacturing industry, sets, tubes, and parts and accessories, are treated separately. With few exceptions, a table and chart for each firm showing the numbers of men and women employed from month to month appear in the appendix. The number of years covered varies from firm to firm, depending on the data that were available in the offices and occasionally upon the number of years the firm had been in operation.

Since the survey did not reach a representative group of factories engaged in the manufacture of radio parts and accessories, few tables and charts on this branch of the industry are included.

In the text pages of the report appear tables showing chiefly collective data for the establishments making receiving sets and for those making tubes, accompanied by composite graphs of employment. In the case of each product, the first figures given are for 1929. They cover 24 plants making sets and 15 making tubes. These are followed by collective data that trace employment from 1926 to 1929 for all firms with a 4-year record.

Charts and tables are included also for two receiving-set plants not comparable with others, the difference in the one being that the record furnished was based on hours worked instead of numbers employed, and in the other that the firm is endeavoring, by a combination of radio sets and another seasonal product, to avoid the acute fluctuations.

Relatives (index numbers) have not been computed. The graphs are of the simplest kind, the scale indicating the actual numbers of employees, men and women, in the plants from month to month. In several cases the extreme range of the figures has necessitated a difference in the scale. For this reason, comparisons of the charts, one plant with another, must be made with caution.

There is monotony in the regular rise and fall, occurring year after year, in the employment curve of each individual firm, emphasizing the extent to which labor is subject to seasonal lay-offs, a condition that has prevailed since the beginning of the industry and that shows no signs of improvement. Radio, like automobiles, is often referred to as being one of the newer industries that are absorbing labor laid off by the slack in other lines. But if such industries, in turn, are to make very irregular and intermittent demands for employees, the result will be a greatly enlarged supply of shifting labor, moving about as one industry after another offers them a few weeks' work.

FLUCTUATION IN EMPLOYMENT

Receiving sets, 1929.

Twenty-three firms engaged in the manufacture of radio sets furnished the data on employment in 1929 that form the basis of the following table and the accompanying chart. In addition, one firm supplied figures for total employment not divided by sex.

Since seven of the firms were not operating the entire 12 months of 1929, their employment data have not been combined with those of firms furnishing complete figures for the year. Some of these seven were only beginning the manufacture of radio sets; others were starting operations in new locations or were the result of mergers; but all were in full swing for the summer peak, so that from July on there is a striking similarity in the employment curves of firms operating the entire year and those operating only seven or eight months or less.

The lines tracing the employment of men and women parallel each other fairly closely throughout the year, but the outstanding characteristic of all curves is the sudden development through the summer and the even more abrupt decline in the late autumn and winter months. There is nothing in the chart that indicates an average or standard for the year.

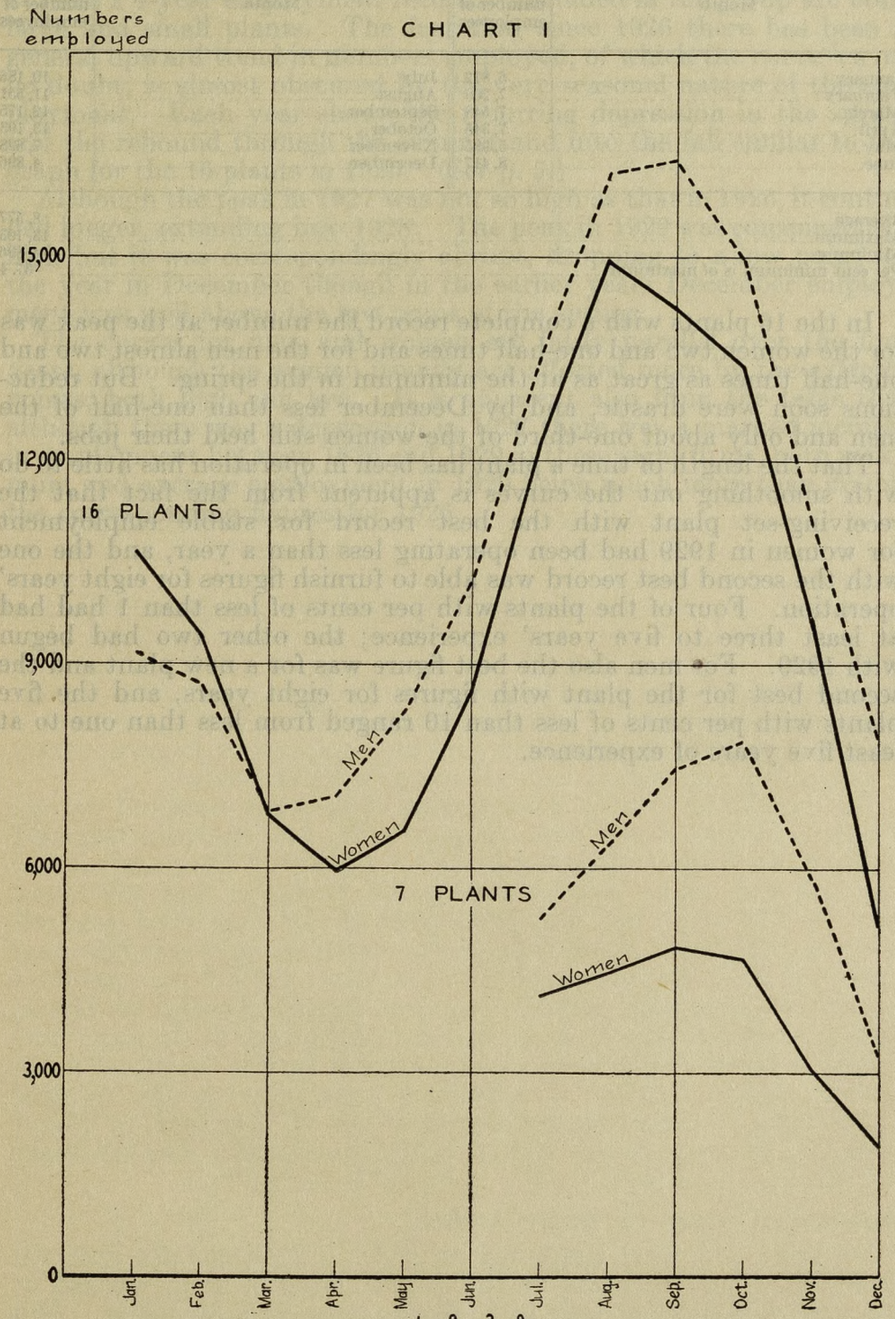
In all cases the peak months were August, September, and October. In September as many as 55,000 persons were working in the 24 factories, and the number was practically as great in October, but by December about 32,000 were no longer employed. In the plants whose figures are reported by sex the per cent of decline was 57.5 for total employees, 53.1 for men, and 63.5 for women.

TABLE 1.—*Fluctuation in employment, 23 plants making receiving sets, 1929*

Month	16 plants making sets in 1929			7 plants making sets during part of 1929		
	Total number of employees	Number of—		Total number of employees	Number of—	
		Men	Women		Men	Women
January	19,853	9,182	10,671			
February	18,104	8,703	9,401			
March	13,688	6,848	6,840			
April	13,045	7,086	5,959	[1] 3,366	[1] 2,484	[1] 882
May	14,900	8,328	6,572	[2] 5,815	[2] 3,780	[2] 2,035
June	18,765	10,190	8,575	[3] 6,637	[3] 4,157	[3] 2,480
July	25,906	13,587	12,319	9,347	5,240	4,107
August	31,163	16,228	14,935	10,759	6,309	4,450
September	30,696	16,439	14,257	12,276	7,434	4,842
October	28,377	14,978	13,399	12,558	7,889	4,669
November	20,566	11,058	9,508	8,888	5,857	3,031
December	13,086	7,917	5,169	5,184	3,278	1,906
Average	20,679	10,879	9,800	[3] 9,835	[3] 6,001	[3] 3,834
Maximum	31,163	16,439	14,935	[3] 12,558	[3] 7,889	[3] 4,842
Minimum	13,045	6,848	5,169	[3] 5,184	[3] 3,278	[3] 1,906
Per cent minimum is of maximum	41.9	41.7	34.6	[3] 41.3	[3] 41.6	[3] 39.4

[1] 3 plants only. [2] 6 plants. [3] July to December only.

CHART I



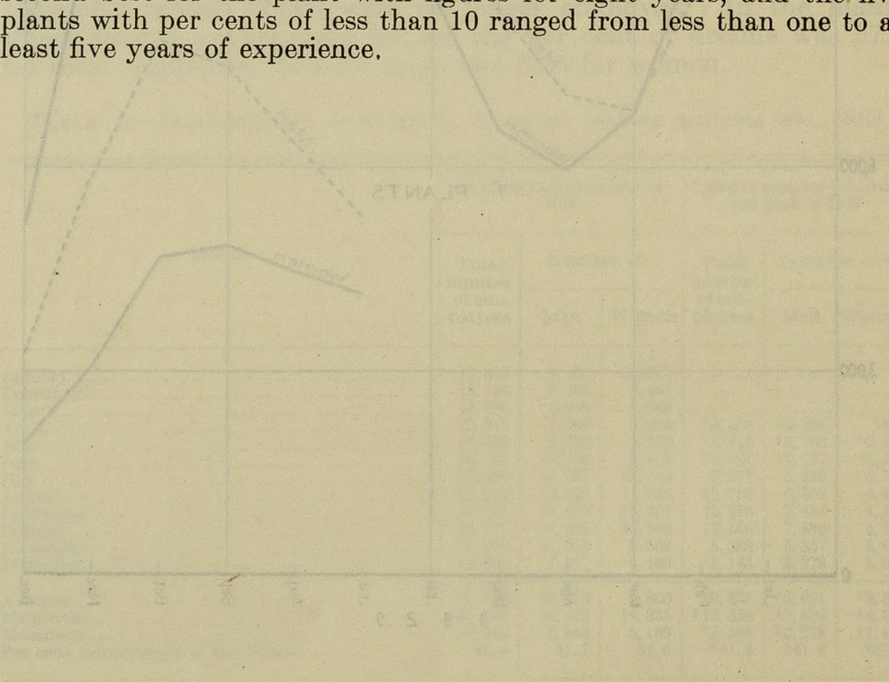
Fluctuation in a plant making sets but not reporting employment by sex, 1929

Month	Total number of employees	Month	Total number of employees
January	6,812	July	10,186
February	7,209	August	11,551
March	7,548	September	12,175
April	7,345	October	13,103
May	5,985	November	7,698
June	8,417	December	4,896

Average	8,577
Maximum	13,103
Minimum	4,896
Per cent minimum is of maximum	37.4

In the 16 plants with a complete record the number at the peak was for the women two and one-half times and for the men almost two and one-half times as great as at the minimum in the spring. But reductions soon were drastic, and by December less than one-half of the men and only about one-third of the women still held their jobs.

That the length of time a plant has been in operation has little to do with smoothing out the curves is apparent from the fact that the receiving-set plant with the best record for stable employment for women in 1929 had been operating less than a year, and the one with the second best record was able to furnish figures for eight years' operation. Four of the plants with per cents of less than 1 had had at least three to five years' experience; the other two had begun with 1929. For men also the best figure was for a new plant and the second best for the plant with figures for eight years, and the five plants with per cents of less than 10 ranged from less than one to at least five years of experience.



Receiving sets, 1926 to 1929.

There are next presented a table and composite graph covering the years 1926 to 1929 for eight firms making receiving sets and having at least a 4-year employment record. Included in the group are both large and small plants. The fact that since 1926 there has been a general upward trend in numbers employed, of which the curve leaves no doubt, is almost obscured by the very seasonal nature of the employment. Each year shows the recurring depression in the spring and the rebound through the summer and into the fall similar to the graph for the 16 plants in 1929. (See p. 5.)

Although the peak in 1927 was not so high as that in 1926, it continued longer, extending into 1928. The peak in 1929 was conspicuously high but it was correspondingly abrupt, dropping to a low point for the year in December though in the earlier years December employment was well above the low point of the spring.

The curves for men and women are fairly parallel over the four years, although the women usually are affected more by the extreme points, both high and low. It is apparent also from the table that although there was a depression in 1927 there was a marked increase in employment between 1926 and 1929 in these eight firms, both maximum and average employment in 1929 being much more than double the corresponding figures for 1926.

TABLE 2.—*Fluctuation in employment, eight selected plants making receiving sets, 1926 to 1929*

Month	1926 [1]			1927			1928			1929		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
January	5,907	2,874	3,033	4,187	2,527	1,660	7,353	3,670	3,683	10,700	5,358	5,342
February	5,243	2,597	2,646	3,507	2,210	1,297	6,264	3,365	2,899	10,279	5,366	4,913
March	4,418	2,180	2,238	3,033	2,001	1,032	5,517	3,072	2,445	8,326	4,529	3,797
April	3,880	1,920	1,960	2,848	1,979	869	4,544	2,602	1,942	8,750	5,058	3,692
May	3,667	1,864	1,803	2,967	2,049	918	5,003	2,757	2,246	10,803	6,236	4,567
June	4,136	2,170	1,966	3,997	2,534	1,463	6,526	3,391	3,135	13,641	7,396	6,245
July	5,012	2,577	2,435	4,912	2,904	2,008	8,946	4,527	4,419	18,609	9,546	9,063
August	6,735	3,282	3,453	6,051	3,337	2,714	11,346	5,549	5,797	19,930	10,332	9,598
September	8,327	3,980	4,347	7,200	3,591	3,609	13,612	6,490	7,122	17,361	9,136	8,225
October	8,850	4,282	4,568	6,995	3,403	3,592	14,703	6,922	7,781	14,533	8,061	6,472
November	8,458	4,415	4,043	7,549	3,477	4,072	14,511	6,847	7,664	8,849	5,295	3,554
December	5,222	2,853	2,369	7,244	3,375	3,869	11,571	5,646	5,925	6,982	4,252	2,730
Average	5,821	2,916	2,905	5,041	2,782	2,259	9,158	4,570	4,588	12,397	6,714	5,683
Maximum	8,850	4,415	4,568	7,549	3,591	4,072	14,703	6,922	7,781	19,930	10,332	9,598
Minimum	3,667	1,864	1,803	2,848	1,979	869	4,544	2,602	1,942	6,982	4,252	2,730
Per cent minimum is of maximum	41.4	42.2	39.5	37.7	55.1	21.3	30.9	37.6	25.0	35.0	41.2	28.4

[1] Includes 1 small plant not reporting figures for the first 3 months of the year.

In 1926 the minimum was about two-fifths of the highest point in employment of that year, but it was much less than this in the succeeding years.

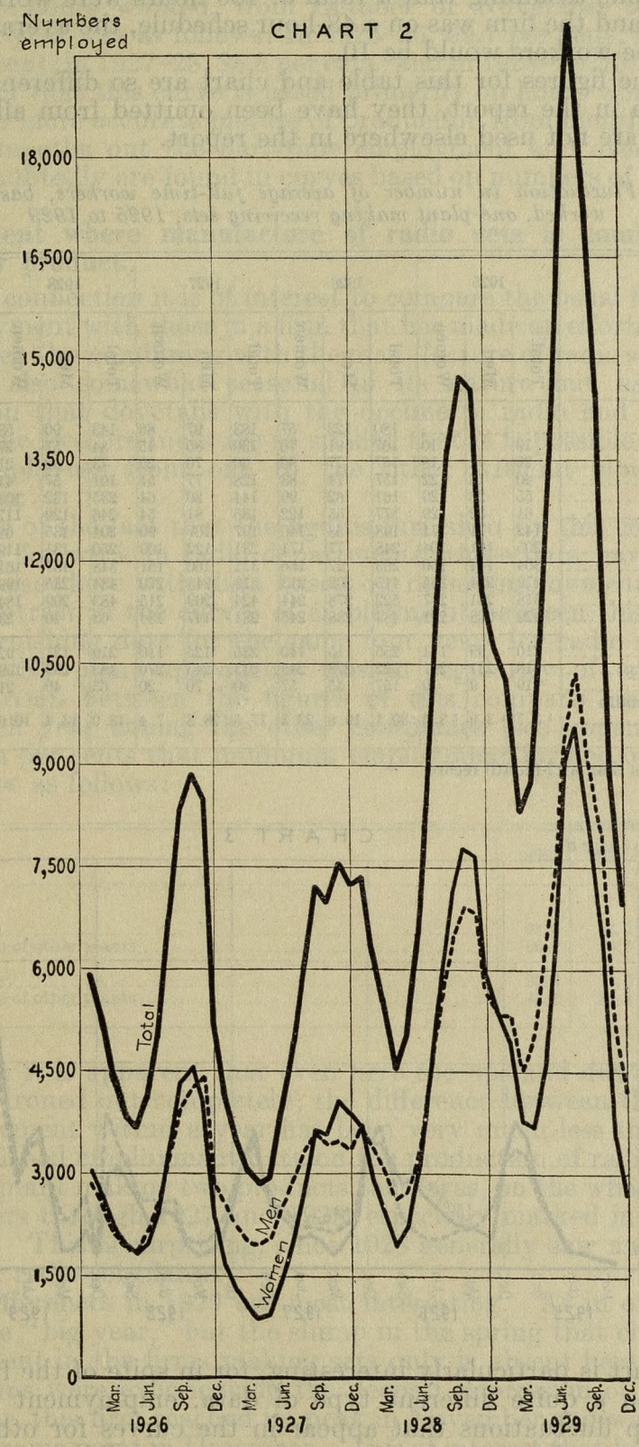
Between the late autumn of 1926 and the spring of 1927 more than two-thirds of the employees (67.8 per cent) lost their jobs. For this period in 1927–28 the decline was 39.8 per cent, and from October, 1928, to March, 1929, it was 43.4 per cent. The debacle in the closing months of 1929 is strikingly illustrated by this table, which shows that of the 20,000 persons employed in August, 13,000, or practically two-thirds, were off the rolls by December.

The period for which employment data were collected by the Women's Bureau closed with the year 1929, but statistics furnished by the Radio Manufacturers Association show that December of that year was not unlike December of earlier years in that the lowest point in the curve had not been reached and the trend was still downward in 1930. Production in the manufacture of sets decreased 8 per cent from December, 1929, to January, 1930, 9 per cent from January to February, and 11 per cent from February to March. Further evidence that business had not come back in the early part of 1930 is given in the trend of employment figures published in the Monthly Labor Review.[2] In January radio employment declined 3.5 per cent, in February the decrease was 4.9 per cent, in March it was 20.8 per cent, and in April it was 13.8 per cent. The rise began with the month of May.

Employment based on hours worked.

The table and chart presented on page 10 illustrate one firm, the figures for which are based on the total number of hours worked by men and women from week to week, the only data available. This record of hours worked has been converted to average number of full-time workers by dividing, in each case, the number of hours

[2] U. S. Department of Labor. Bureau of Labor Statistics. Monthly Labor Review, April to July, 1930.



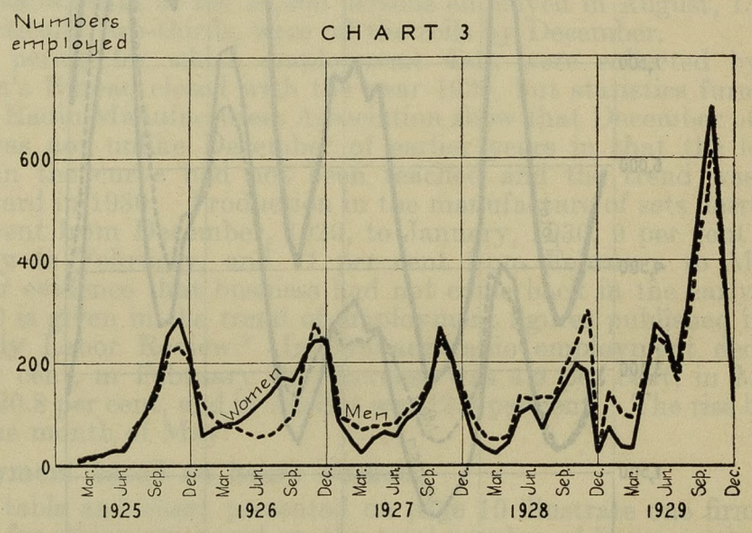
worked per week by the firm's standard schedule of working hours. For example, assuming that a total of 480 hours were worked during one week and the firm was on a 48-hour schedule, the average number of full-time workers would be 10.

Since the figures for this table and chart are so different from the other data in the report, they have been omitted from all combinations and are not used elsewhere in the report.

TABLE 3.—*Fluctuation in number of average full-time workers, based on hours worked, one plant making receiving sets, 1925 to 1929*

Month	1925			1926			1927			1928			1929		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
January				180	123	57	183	97	86	143	90	53	213	141	72
February	19	9	10	167	91	76	130	85	45	84	57	27	140	101	39
March	29	11	18	157	77	80	90	70	20	73	52	21	127	91	36
April	40	18	22	157	74	83	128	77	51	101	57	44	325	166	159
May	55	26	29	161	62	99	144	80	64	235	132	103	526	252	274
June	61	32	29	177	55	122	135	81	54	246	129	117	484	235	249
July	142	71	71	198	58	140	197	107	90	204	135	69	346	169	177
August	205	101	104	248	77	171	231	122	109	250	131	119	592	290	302
September	304	144	160	263	97	166	311	160	151	348	187	161	980	461	519
October	479	224	255	415	202	213	513	243	270	434	235	199	1,311	613	698
November	518	231	287	522	278	244	424	209	215	483	299	184	753	366	387
December	429	208	221	483	238	245	281	147	134	63	40	23	290	165	125
Average	210	99	111	255	115	140	235	125	110	219	127	92	506	254	252
Maximum	518	231	287	522	278	245	513	243	270	483	299	199	1,311	613	698
Minimum	19	9	10	157	55	57	90	70	20	63	40	21	127	91	36
Per cent minimum is of maximum	[1] 3.7	[1] 3.9	[1] 3.5	30.1	19.8	23.3	17.5	28.8	7.4	13.0	13.4	10.6	9.7	14.8	5.2

[1] Based on less than a 12-month record.



This chart is particularly interesting, for in spite of the fact that it is based on a quite different type of data, employment shows the same sharp fluctuations that appear in the curves for other plants. The autumn peak repeats itself year after year, until in 1929 it mounts more than twice as high as in earlier years.

According to this table the decline in full-time employment, as derived from hours worked, from October or November to March of the next year was as follows: In 1925–26, 69.7 per cent; in 1926–27, 82.8 per cent; in 1927–28, 85.8 per cent; and in 1928–29, 73.7 per cent.

The fact that this curve is based primarily on hours worked makes it an even more accurate picture of production from month to month, since it smooths out the part-time employment and overtime work that undoubtedly are found in curves based on numbers of employees.

Employment where manufacture of radio sets is combined with another product.

In this connection it is of interest to compare the usual fluctuations of employment with those in a firm that has made an effort to stabilize employment by combining with the manufacture of radio sets another product, also somewhat seasonal in its nature but having peak production that dovetails with the decline in radio and vice versa. Jobs on the two products are so similar that it is possible to transfer many employees from one to the other without slowing down production.

Because of the fact that the figures furnished by this company are not solely for work in radio departments, these data have not been included elsewhere with data based on radio employment alone.

The contrast in the curves of employment between this plant and others furnishing data for the same four years for radio sets only is striking. No plant approaches this in regularity of employment. A comparison between the figures of this company and the best figure each year among the other companies (see appendix tables) shows the per cents that minimum employment formed of the maximum to be as follows:

	1926	1927	1928	1929
Men:				
This plant	93.0	83.2	70.7	70.4
Best figure of other plants	66.2	56.5	46.4	58.3
Women:				
This plant	80.8	76.0	63.1	68.6
Best figure of other plants	43.1	39.8	39.0	42.8

Though it is apparent that even here the ups and downs have not yet been ironed out completely, the difference between the extremes of employment within a year has been very much less than in firms that furnished employment data on the production of radio sets only.

In the plant making two products there was, on the whole, a decline in numbers through 1927 and 1928, especially marked in the case of the men. This is surprising, since 1928 generally saw an increase in the other radio-set plants.

The differences in 1929 are most interesting. As in other plants, it was the "big year," but the slump in the spring that characterized employment in the firms making sets only is absent here; and while many firms were experiencing the deepest depression of the year in December, this firm reached its peak in November and was at practically the same point in December. It is of interest that for 10 months in 1929 about 60 per cent of the production in this plant was radios.

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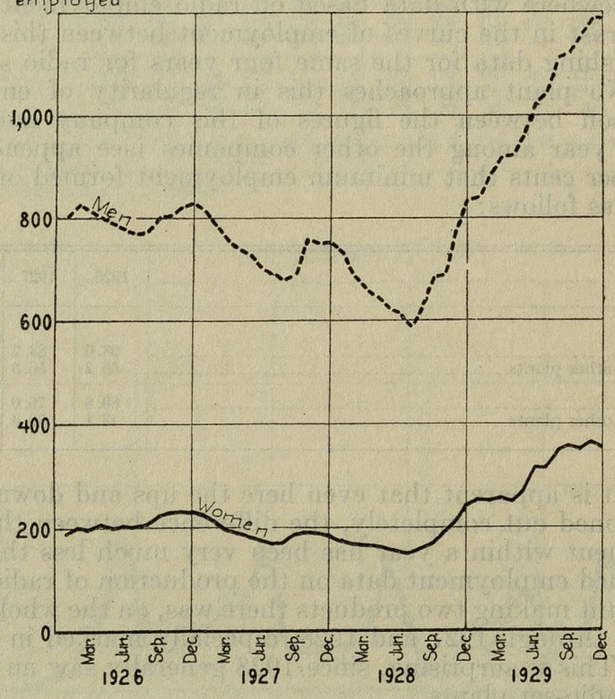
TABLE 4.—*Fluctuation in employment, one plant combining the making of receiving sets with another seasonal product, 1926 to 1929*

Month	1926			1927			1928			1929		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
January	993	804	189	1,042	817	225	907	733	174	1,094	840	254
February	1,029	828	201	996	784	212	853	685	168	1,137	885	252
March	1,014	815	199	952	757	195	829	664	165	1,179	924	255
April	1,012	801	211	927	740	187	810	648	162	1,178	927	251
May	987	787	200	909	729	180	787	627	160	1,238	965	273
June	983	779	204	879	702	177	770	614	156	1,347	1,029	318
July	974	772	202	862	691	171	742	590	152	1,364	1,048	316
August	984	776	208	851	680	171	795	635	160	1,468	1,115	353
September	1,028	801	227	878	691	187	857	685	172	1,482	1,122	360
October	1,042	808	234	951	759	192	886	695	191	1,514	1,158	356
November	1,055	821	234	945	754	191	993	778	215	1,560	1,194	366
December	1,062	830	232	938	754	184	1,076	835	241	1,549	1,193	356
Average	1,014	802	212	928	738	189	859	682	176	1,343	1,033	309
Maximum	1,062	830	234	1,042	817	225	1,076	835	241	1,560	1,194	366
Minimum	974	772	189	851	680	171	742	590	152	1,094	840	251
Per cent minimum is of maximum	91.7	93.0	80.8	81.7	83.2	76.0	69.0	70.7	63.1	70.1	70.4	68.6

CHART 4



To what extent the manufacture of two products made it possible for this one plant to come through the crash of 1929 it is impossible to say without more detailed information than was furnished, but certainly it is true that employment was outstandingly more secure here than in other radio firms at this time. Nor is it possible to foresee whether or not employment on two seasonal products can continue as comparatively stable as in the past, but with the picture of 1929 in mind it seems no more than reasonable to expect it.

Appendix tables and charts for receiving sets.

In the appendix are tables and charts based upon employment data for 23 firms making radio sets. Not one of these, from the first, based on an unusual record of one plant covering eight years without a break, to the last, based on records of several plants covering only a year or less, fails to show the extremely seasonal character of the industry. One of the very short records shows a startling development from 500 women to 2,900 women in four months.

The charts show the amazing increases as well as the decreases, but they emphasize especially the short duration of the peak and the instability of employment from month to month.

Some of the firms with longer records show the small beginnings and irregularities of early periods of experimentation before they fell into the regular seasonal swing of later years. But the value of the charts lies in their striking similarity rather than their small variations—a similarity that bears evidence of the universal seasonal character of the industry, in small firms, in large firms, in firms both East and West.

Radio tubes, 1929.

Figures on employment for the year 1929 supplied by 15 plants making tubes furnish the basis of the table and composite graph next presented. The most striking features are the contrast in the two lines tracing the employment of men and of women and the sharp peak occurring only in the latter.

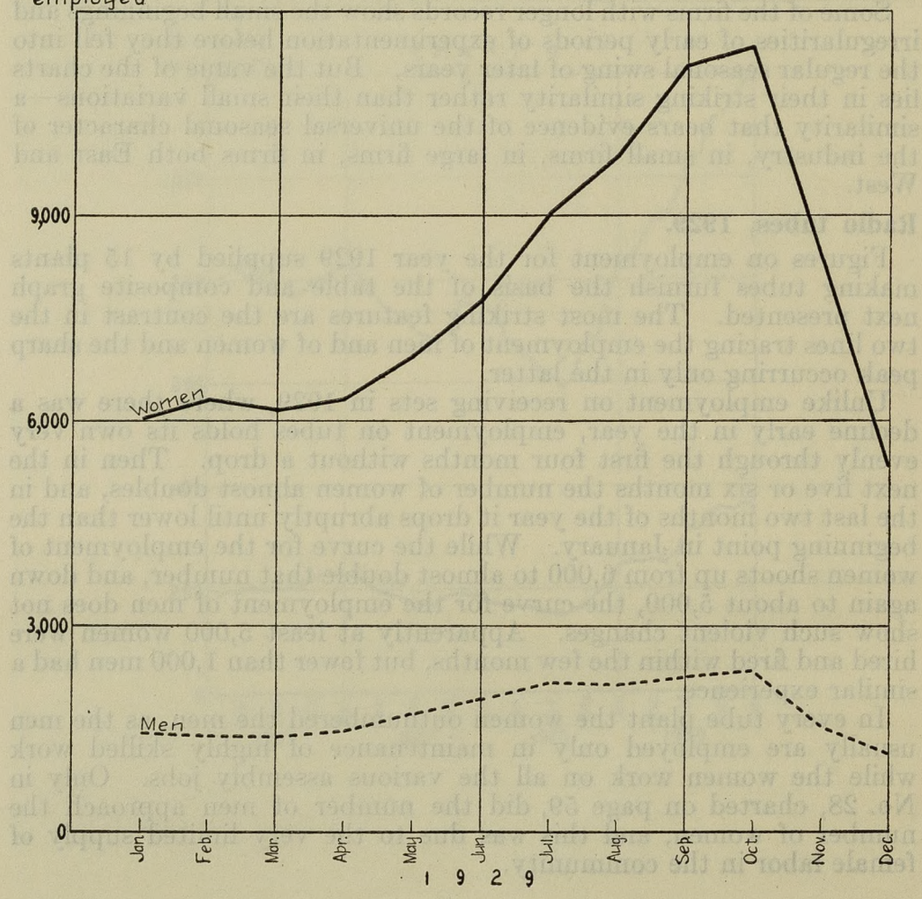
Unlike employment on receiving sets in 1929, where there was a decline early in the year, employment on tubes holds its own very evenly through the first four months without a drop. Then in the next five or six months the number of women almost doubles, and in the last two months of the year it drops abruptly until lower than the beginning point in January. While the curve for the employment of women shoots up from 6,000 to almost double that number, and down again to about 5,000, the curve for the employment of men does not show such violent changes. Apparently at least 5,000 women were hired and fired within the few months, but fewer than 1,000 men had a similar experience.

In every tube plant the women outnumbered the men, as the men usually are employed only in maintenance of highly skilled work while the women work on all the various assembly jobs. Only in No. 28, charted on page 59, did the number of men approach the number of women, and this was due to the very limited supply of female labor in the community.

TABLE 5.—*Fluctuation in employment, 15 plants making tubes, 1929*

Month	Total number of employees	Number of—	
		Men	Women
January	7,468	1,447	6,021
February	7,739	1,411	6,328
March	7,571	1,402	6,169
April	7,788	1,476	6,312
May	8,684	1,718	6,966
June	9,671	1,907	7,764
July	11,262	2,194	9,068
August	12,078	2,188	9,890
September	13,446	2,281	11,165
October	13,825	2,330	11,495
November	9,921	1,562	8,359
December	6,479	1,139	5,340
Average	9,661	1,755	7,906
Maximum	13,825	2,330	11,495
Minimum	6,479	1,139	5,340
Per cent minimum is of maximum	46.9	48.9	46.5

CHART 5



Radio tubes, 1926 to 1929.

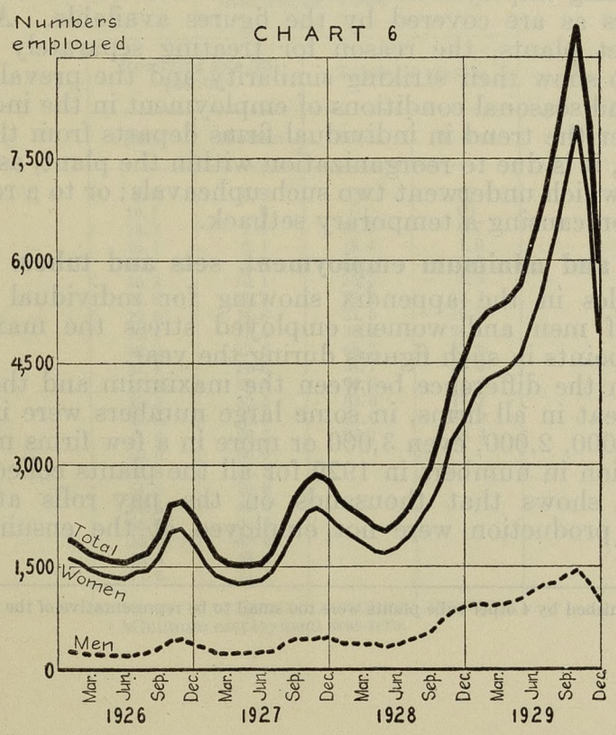
Not only does the line of employment in tubes in 1929 differ from that of receiving sets, but it is radically different from the line for tubes in earlier years, as is apparent from the table and chart next presented.

TABLE 6.—*Fluctuation in employment, 10 selected plants making tubes, 1926 to 1929*

Month	1926 [1]			1927			1928			1929		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
January	1,906	278	1,628	1,937	354	1,583	2,476	389	2,087	5,049	954	4,095
February	1,830	262	1,568	1,640	244	1,396	2,325	367	1,958	5,234	937	4,297
March	1,697	239	1,458	1,536	235	1,301	2,218	355	1,863	5,302	938	4,364
April	1,609	224	1,385	1,509	239	1,270	2,091	355	1,736	5,433	981	4,452
May	1,589	217	1,372	1,518	239	1,279	2,041	340	1,701	5,690	1,029	4,661
June	1,581	217	1,364	1,571	272	1,299	2,174	378	1,796	6,321	1,152	5,169
July	1,672	236	1,436	1,736	292	1,443	2,357	416	1,941	6,960	1,210	5,750
August	1,739	258	1,481	2,112	379	1,733	2,646	468	2,178	7,655	1,289	6,366
September	1,973	320	1,653	2,541	463	2,078	2,962	538	2,424	8,538	1,392	7,146
October	2,428	410	2,018	2,766	463	2,303	3,522	730	2,792	9,409	1,470	7,939
November	2,477	447	2,030	2,860	481	2,379	4,217	838	3,379	8,184	1,246	6,938
December	2,242	381	1,861	2,758	483	2,275	4,585	902	3,683	5,968	1,007	4,961
Average	1,895	291	1,604	2,040	345	1,695	2,801	506	2,295	6,645	1,134	5,511
Maximum	2,477	447	2,030	2,860	483	2,379	4,585	902	3,683	9,409	1,470	7,939
Minimum	1,581	217	1,364	1,509	235	1,270	2,041	340	1,701	5,049	937	4,095
Per cent minimum is of maximum	63.8	48.5	67.2	52.8	48.7	53.4	44.5	37.7	46.2	53.7	63.7	51.6

[1] Includes 1 small plant not reporting figures for the first 3 months of the year.

CHART 6



Two-thirds of the tube firms visited—that is, 10 of the 15—furnished the data that form the basis of the composite graph covering the 4-year period 1926 to 1929. In each year men constituted a strikingly smaller part of the labor force than did women.

Until the autumn of 1928 the curves show a fairly similar trend year after year. Employment conditions changed little from 1926 to 1927, but from a maximum of about 2,500 men and women employed in 1926 the number increased to almost 4,600 in 1928 and to 9,400 in 1929 in the same 10 plants. In two years the numbers employed at minimum production had no striking change; the increase in 1929, however, was so great that the minimum in that year was higher than the maximum of 1928.

It is apparent that the composite curve of employment for the 10 representative plants making tubes is smoother than that for the eight plants making receiving sets in the same four years. Not only is this clear from the graphs but the contrast is evident in a comparison of the tables. In the receiving sets the minimum employment is from 30 to 41 per cent of the maximum in each of the four years, while in tubes the range is 44 to 63 per cent. Translated into human experience this means that ordinarily more than half of the men and women employed during peak periods in tube factories were retained during the depression, but that only from one-third to two-fifths of those in radio-set factories were so fortunate.

Appendix tables and charts for tubes.

On pages 54 to 61 are tables and charts showing employment from month to month for each of 11 establishments [3] making radio tubes and furnishing employment data. Each traces the trend through as many years as are covered by the figures available. As with the receiving-set plants, the reason for treating separately these tube plants is to show their striking similarity and the prevalence of the irregular and seasonal conditions of employment in the industry.

Whenever the trend in individual firms departs from the predominant curve, it is due to reorganization within the plant, as in the case of No. 31, which underwent two such upheavals; or to a removal to a new location causing a temporary setback.

Maximum and minimum employment, sets and tubes.

The tables in the appendix showing for individual plants the numbers of men and women employed stress the maximum and minimum points in such figures during the year.

Although the difference between the maximum and the minimum was not great in all firms, in some large numbers were involved, as many as 1,000, 2,000, even 3,000 or more in a few firms making sets. The variation in numbers in 1929 for all the plants collectively, sets and tubes, shows that thousands on the pay rolls at the dates of highest production were not employed at the ensuing dates of lowest ebb.

[3] Numbers furnished by 4 other tube plants were too small to be representative of the industry.

Sex	Difference between maximum employment and ensuing minimum in plants making—	
	Radio receiving sets (23 plants)	Radio tubes (15 plants)
Total [1]	34,203	8,434
Men	17,126	1,494
Women	17,607	7,129

[1] Details and total do not agree, because of high and low points falling on different dates for the 2 sexes.

In 1929 more than 42,000 men and women employed during the peaks in 38 receiving-set and tube factories were off the pay-roll lists at the ensuing dates of minimum employment.

The difference was proportionately greater in the radio-set than in the radio-tube factories, and the total number of women affected was much larger than the number of men. The latter was due in large part to the predominance of women in the tube division of the industry.

To illustrate the decline in numbers that follows peak employment, there is given here for each plant the per cent that the autumn or winter minimum in 1929 formed of the peak employment in the same year.

Per cent that autumn or winter minimum formed of peak employment, receiving sets and tubes, 1929

Receiving sets (23 plants)		Tubes (15 plants)	
Men	Women	Men	Women
8.8	0.8	(1)	(1)
10.7	.8	(1)	(1)
13.2	1.8	15.7	0.7
16.1	6.1	18.4	1.9
17.7	9.8	25.2	2.0
20.3	10.1	25.5	5.3
24.8	11.1	29.2	12.7
29.6	14.8	31.5	19.5
31.4	17.5	38.9	24.1
32.9	22.6	46.3	32.6
37.4	24.3	54.7	39.5
37.9	29.1	74.7	74.6
38.5	30.5	83.9	77.2
39.8	30.9	91.0	81.2
41.6	36.2	98.1	88.3
46.0	36.6		
49.8	37.3		
54.3	39.9		
58.3	42.8		
58.4	52.5		
58.6	58.0		
68.3	58.4		
71.3	71.1		

[1] Minimum employment was zero.

In more summary form the figures are as follows:

Per cent autumn or winter minimum was of maximum	Receiving sets (23 plants)		Tubes (15 plants)	
	Men	Women	Men	Women
Under 5		3	[1] 2	[1] 5
5 and under 10	1	2		1
10 and under 20	4	4	2	2
20 and under 50	12	10	6	3
50 and under 80	6	4	2	2
80 and over			3	2

[1] In 2 plants the minimum was zero.

One of the most disturbing situations revealed by this list is that in 1929 in about two-fifths of the factories making receiving sets the number of women employed at the time of lowest ebb late in the year was less than 20 per cent (varying from 0.8 to 17.5 per cent) of the highest point; or, another way of stating the same fact, in about two-fifths of these plants over 80 per cent of the women who were employed during the peak season were not employed during the lowest ebb ensuing; and, furthermore, in a quarter of the plants 90 per cent or more of the women employed at the maximum were not retained at the ensuing minimum. In only four cases was the minimum number more than half of the maximum.

Although somewhat better than for the women, the per cent variation for the men in the receiving-set plants also was great in 1929. Fewer firms were in the very low rank and more were in the highest rank, yet in 10 of the 23 plants the minimum employment of men was less than one-third of the maximum; or, stated differently, in 10 of the 23 plants more than two-thirds of the peak number of men were not employed at the ensuing minimum.

In the manufacture of radio tubes in 1929 the situation was better for the women than in the manufacture of sets. A larger proportion of the firms fell in the range above 25 per cent. Yet in about one-half of the establishments from 80 to 100 per cent of the women employed at the maximum were not employed at the ensuing minimum; or, conversely, in about half the plants less than 20 per cent of the maximum were employed at the lowest point to which employment fell after the peak.

For comparison with other studies of employment fluctuation, the appendix tables give the maximum and minimum numbers employed during the year without regard to upward or downward trend; that is, whether the minimum preceded or followed the maximum. The following are the lists of such per cents, arranged in ascending scale for the firms reporting for 1929. There is no correspondence in the rank of firms between the lists for men and those for women.

Per cent that minimum employment, at whatever date, formed of maximum employment, receiving sets and tubes, 1929

Receiving sets (23 plants)		Tubes (15 plants)	
Men	Women	Men	Women
5.1	[1]	[1]	[1]
6.7	0.4	[1]	[1]
6.9	.5	15.7	0.7
[2] 6.9	.8	18.4	1.9
8.8	.8	25.2	2.0
10.7	.8	25.5	5.3
11.0	1.8	27.9	12.3
11.3	[2] 2.6	29.2	19.5
13.2	6.1	31.5	24.1
14.4	6.5	37.1	32.6
[2] 14.6	8.3	38.9	33.6
[2] 16.1	11.1	46.3	39.5
17.7	[2] 11.7	50.4	44.5
20.3	14.1	51.3	50.3
22.9	[2] 14.6	54.1	55.9
23.5	14.8		
[2] 24.5	[2] 14.8		
29.6	[2] 18.0		
[2] 34.9	22.6		
40.2	24.3		
[2] 43.5	[2] 30.9		
58.3	42.8		
[2] 70.2	[2] 70.4		

[1] Minimum employment was zero.
[2] Based on less than a 12-month record.

Comparisons between the two years 1928 and 1929 may be made from the statement following.

Per cent minimum was of maximum	Receiving sets				Tubes			
	Men		Women		Men		Women	
	1929 (23 plants)	1928 (14 plants)	1929 (23 plants)	1928 (14 plants)	1929 (15 plants)	1928 (11 plants)	1929 (15 plants)	1928 (11 plants
Under 5			[1] 8	2	[2] 2		[2] 5	1
5 and under 10	[3] 5	3	3	5			1	
10 and under 20	[4] 8	1	[5] 7	[3] 3	2	3	2	4
20 and under 50	[6] 8	[3] 10	[3] 4	4	8	3	5	3
50 and over	[3] 2		[3] 1		3	5	2	3

[1] In 1 plant the minimum was zero, and 1 plant had less than a 12-month record.
[2] In 2 plants the minimum was zero.
[3] Includes 1 plant with less than a 12-month record.
[4] Includes 2 plants with less than a 12-month record.
[5] Includes 4 plants with less than a 12-month record.
[6] Includes 3 plants with less than a 12-month record.

Even in 1928, a less abnormal year than 1929, the employment situation in radio sets was not much better. To be sure, fewer firms fall in the lowest group—that with the minimum less than 5 per cent of the maximum—but not one falls in the highest group of 50 per cent and over. In tubes, both for men and for women, the number of firms in the highest group was greater in 1928 than in 1929.

Census figures for other industries.

The 1929 figures form a striking contrast to conditions in other lines of employment and stamp the radio industry as one of the most fluctuating of all branches of manufacturing. The Federal Census of Manufactures of 1923 gives the employment month by month for each of 331 manufacturing industries.[4] The average number of employees, of both sexes, ranged from 62 in flax and hemp to about 496,000 in lumber and timber products.

In only 15 of the 331 industries did the minimum employment form less than 50 per cent of the maximum employment. For three-fourths of the industries (75.5 per cent) the minimum was at least 80 per cent of the maximum, a figure achieved by no plant making receiving sets in the present radio study.

Comparison of actual numbers.

The condition in the radio industry is made clearer by a consideration of actual numbers, taking the 1929 figures of plant 2, one of the best known, as an example. Starting out in January with 4,500 employees, 39 per cent women, by March a reduction of 850 had been disproportionately women, and they then constituted but 36 per cent instead of 39. After that, employment changes affected the two sexes in approximately equal numbers. From March to August the 5,500 employees taken on were 2,700 men and 2,800 women, some 500 or 600 more women than their due proportion, making them 45 per cent of the total at the peak in August. From August to November the 7,100 released were divided equally between the sexes, and by December women again were 36 per cent of the employees, as they had been in March.

Another large and well-known firm had between 2,600 and 2,700 employees on radio receivers in January, women constituting 52 per cent. By March about 200 women were off the rolls in spite of a small increase in the number of men, and women became 48 per cent of the total. Additions to the rolls in April to July involved considerably more women than men and restored them to their January position. At the peak they still were 52 per cent of the total, but the 2,000 dropped in the next five months were three-fifths women and the year closed with their position at a considerable disadvantage as compared to men's, women being only 43 per cent of the December total.

Average employment, sets and tubes.

Although the tables in the appendix show in each case the year's average of employment, this figure conveys no idea of a usual or an actual condition in this industry in which such extremes of employment occur. Regarding the average, for the sake of argument, as representative of an ideal condition of what might have been regular employment throughout the year, it is of interest to note in the following summary in how many months in 1929 employment fell below such average.

[4] U. S. Bureau of the Census. Biennial Census of Manufactures, 1923, pp. 1136–1149.

Number of months in which employment fell below the average for the year	Number of plants in which employment in 1929 was below the year's average in the number of months specified			
	Receiving sets (16 plants [1])		Radio tubes (15 plants)	
	Men	Women	Men	Women
1 month			1	
2 months			1	
4 months	1			
5 months			1	3
6 months	4	5	7	5
7 months	8	3	2	4
8 months	3	8	3	2
9 months				1

[1] Excludes 7 plants making sets during only part of 1929.

From this it is evident that in more than two-thirds of the 16 firms making sets employment fell below the average, both for men and for women, during more than half the year, as much as seven or eight months. In the 15 firms making tubes the situation was somewhat better, though employment was below the average for more than half the year in one-third of the cases for the men and in almost one-half of the cases for the women.

Parts and accessories.

The manufacture of radio parts and accessories is not concentrated in a dozen or so outstanding firms as is the case in the manufacture of receiving sets and tubes. On the contrary, scores of factories East and West are producing parts for the radio trade; furthermore, in a great majority of them a large part of their production is for use in other distinct industries, frequently the manufacture of automobiles. A number of establishments making radio parts were visited, but because of the miscellaneous products and the impossibility of making a distinction between the labor on radio parts and that on other products the labor audits of very few of these factories could be used in this study. The data, therefore, are far from being inclusive and indicate for only a few sample establishments and in only a very general way the employment trends in this branch of the radio industry.

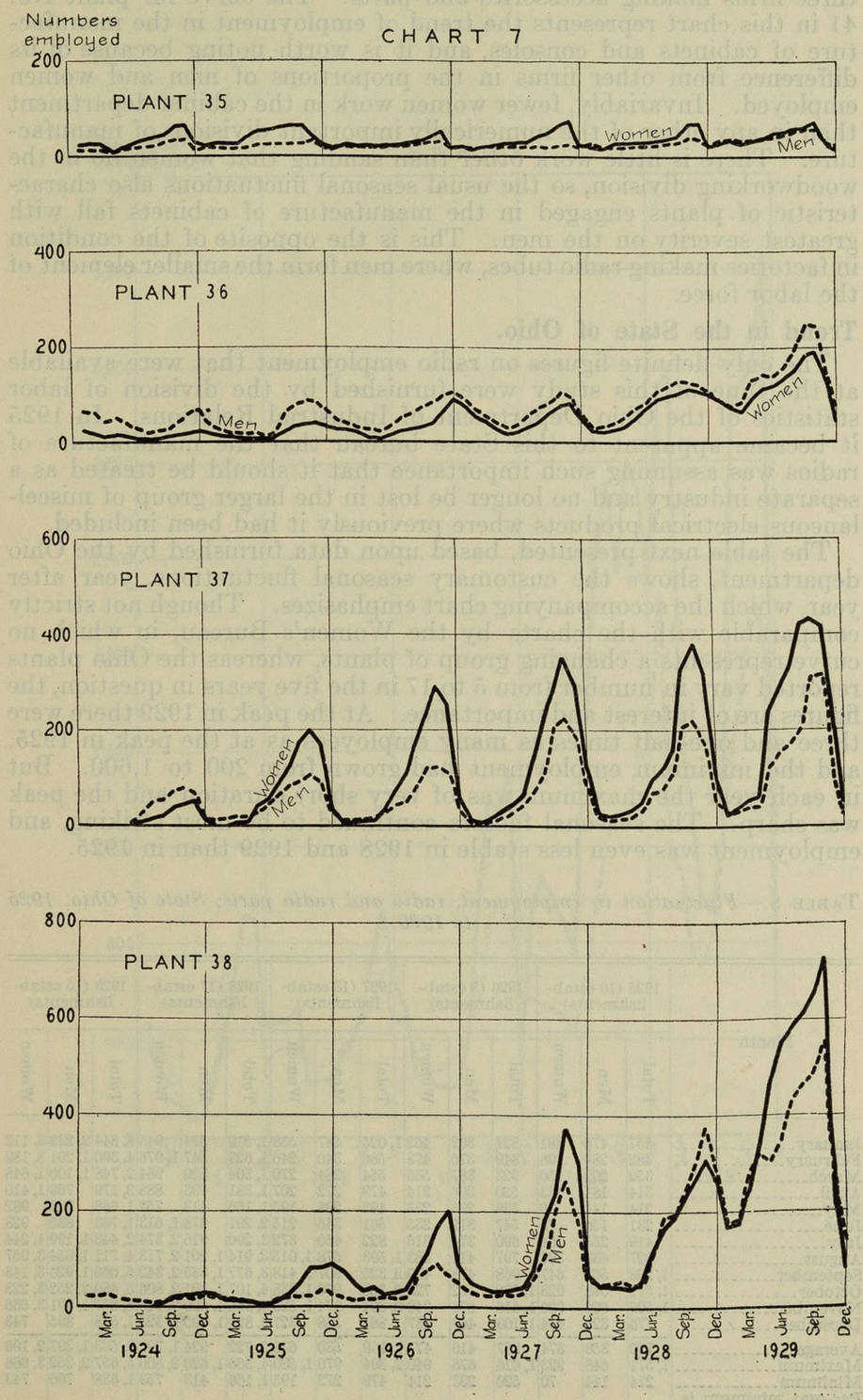
Included here is a graph picturing employment curves in four plants engaged almost exclusively in the manufacture of small radio parts, such as coils, condensers, rheostats, and resistance units. These include both large and small firms, located in the East and in the Middle West, yet in each of them the employment curve for the past six years reflects the recurring fluctuations characteristic of other branches of the industry. The peak in the manufacture of parts coincides with the peak in the manufacture of sets, and the minimum employment falls in the same season for parts as for receiving sets and tubes.

TABLE 7.—*Fluctuation in employment, four separate plants making parts and accessories, 1924 to 1929* [1]

PLANT 35.

Month	1924			1925			1926			1927			1928			1929		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
January	36	14	22	39	19	20	37	20	17	42	21	21	49	29	20	62	36	26
February	37	14	23	38	17	21	42	20	22	39	20	19	41	22	19	70	36	34
March	37	14	23	37	16	21	37	17	20	44	22	22	48	22	26	62	34	28
April	18	9	9	37	16	21	38	17	21	46	20	26	48	22	26	65	34	31
May	30	14	16	60	18	42	35	17	18	47	21	26	50	23	27	70	36	34
June	43	17	26	74	22	52	46	20	26	48	21	27	50	23	27	86	36	50
July	52	19	33	78	22	56	45	20	25	50	21	29	54	24	30	92	42	50
August	58	19	39	85	24	61	50	22	28	63	22	41	65	27	38	112	52	60
September	75	29	46	87	24	63	60	26	34	70	20	50	70	28	42	118	58	60
October	96	31	65	87	24	63	74	29	45	93	24	69	112	40	72	129	58	71
November	96	31	65	67	28	39	87	31	56	107	28	79	110	38	72	52	28	24
December	41	14	27	36	14	22	40	20	20	42	20	22	42	22	20	36	22	14
Average	52	19	33	60	20	40	50	22	28	58	22	36	62	27	35	79	39	40
Maximum	96	31	65	87	28	63	87	31	56	107	28	79	112	40	72	129	58	71
Minimum	18	9	9	36	14	20	35	17	17	39	20	19	41	22	19	36	22	14
P. c.min. is of max	18. 8	29. 0	13. 8	41. 4	50. 0	31. 7	40. 2	54. 8	30. 4	36. 4	71. 4	24. 1	36. 6	55. 0	26. 4	27. 9	37. 9	19. 7
PLANT 36.																		
January	90	66	24	54	38	16	64	43	21	163	87	76	58	31	27	170	85	85
February	82	63	19	35	24	11	59	39	20	119	68	51	58	34	24	149	79	70
March	58	46	12	28	19	9	44	27	17	101	58	43	71	43	28	154	88	66
April	69	54	15	23	17	6	33	24	9	70	40	30	90	56	34	225	137	88
May	57	45	12	22	16	6	31	23	8	48	30	18	125	74	51	250	143	107
June	34	27	7	22	15	7	44	32	12	61	39	22	159	85	74	258	140	118
July	26	20	6	26	19	7	74	53	21	92	59	33	204	110	94	290	157	133
August	31	24	7	79	61	18	89	61	28	124	77	47	217	120	97	342	192	150
September	39	29	10	110	80	30	113	79	34	149	83	66	232	131	101	430	243	187
October	61	47	14	116	84	32	126	86	40	186	105	81	243	127	116	432	242	190
November	82	63	19	117	83	34	170	101	69	182	97	85	231	121	110	270	143	127
December	91	70	21	99	71	28	196	104	92	112	61	51	213	108	105	124	78	46
Average	61	47	14	62	45	17	89	57	32	117	67	50	159	87	72	258	144	114
Maximum	91	70	24	117	84	34	196	104	92	186	105	85	243	131	116	432	243	190
Minimum	26	20	6	22	15	6	31	23	8	48	30	18	58	31	24	124	78	46
P. c.min. is of max	28. 6	28. 6	25. 0	18. 8	17. 9	17. 6	15. 8	22. 1	8. 7	25. 8	28. 6	21. 2	23. 9	23. 7	20. 7	28. 7	32. 1	24. 2
PLANT 37.																		
January	----	----	----	10	10	0	15	10	5	11	5	6	50	20	30	53	28	25
February	----	----	----	12	12	0	15	10	5	10	5	5	31	11	20	70	32	38
March	----	----	----	23	14	9	19	12	7	22	8	14	40	15	25	99	40	59
April	----	----	----	24	14	10	24	15	9	49	16	33	49	16	33	100	40	60
May	4	3	1	70	29	41	57	26	31	72	26	46	80	30	50	359	123	236
June	35	29	6	103	45	58	119	43	76	110	43	67	168	70	98	440	155	285
July	65	50	15	155	67	88	160	50	110	215	72	143	205	80	125	503	173	330
August	75	55	20	207	81	126	251	84	167	335	112	223	275	113	162	620	200	420
September	116	76	40	265	90	175	354	124	230	490	205	285	540	210	330	750	313	437
October	126	80	46	303	103	200	415	125	290	578	228	350	600	220	380	730	315	415
November	119	68	51	255	85	170	368	110	258	483	188	295	495	175	320	300	100	200
December	26	14	12	65	30	35	89	33	56	214	89	125	151	56	95	78	25	53
Average	71	47	24	124	48	76	157	53	104	216	83	133	224	85	139	342	129	213
Maximum	126	80	51	303	103	200	415	125	290	578	228	350	600	220	380	750	315	437
Minimum	4	3	1	10	10	0	15	10	5	10	5	5	31	11	20	53	25	25
P. c. min. is of max	[2]3. 2	[2]3. 8	[2]2. 0	3. 3	9. 7	(3)	3. 6	8. 0	1. 7	1. 7	2. 2	1. 4	5. 2	5. 0	5. 3	7. 1	7. 9	5. 7
PLANT 38.																		
January	22	22	0	49	21	28	96	19	77	87	34	53	95	48	47	346	177	169
February	22	22	0	34	19	15	68	16	52	68	26	42	96	52	44	355	180	175
March	26	26	0	31	18	13	49	17	32	60	24	36	99	57	42	521	278	243
April	20	20	0	25	14	11	60	17	43	62	26	36	89	49	40	660	320	340
May	14	14	0	16	9	7	40	19	21	61	24	37	94	44	50	774	304	470
June	13	13	0	16	9	7	46	17	29	65	26	39	219	106	113	896	346	550
July	10	10	0	36	19	17	57	20	37	141	63	78	359	191	168	1, 018	429	589
August	14	11	3	46	21	25	137	62	75	294	109	185	381	193	188	1, 080	463	617
September	41	19	22	74	22	52	196	80	116	441	200	241	462	233	229	1, 140	481	659
October	45	20	25	107	23	84	259	90	169	637	267	370	565	298	267	1, 282	552	730
November	44	19	25	122	38	84	267	65	202	498	185	313	687	378	309	455	238	217
December	55	24	31	116	28	88	138	51	87	124	61	63	554	289	265	222	142	80
Average	27	18	9	56	20	36	118	39	79	212	87	125	306	160	146	734	328	406
Maximum	55	26	31	122	38	88	267	90	202	637	267	370	687	378	309	1, 282	552	730
Minimum	10	10	0	16	9	7	40	16	21	60	24	36	89	44	40	222	142	80
P. c. min. is of max	18. 2	38. 5	(3)	13. 1	23. 7	8. 0	15. 0	17. 8	10. 4	9. 4	9. 0	9. 7	13. 0	11. 6	12. 9	17. 3	25. 7	11. 0

[1] For detailed figures of plants 1 to 34 and 39 to 41 see appendix.
[2] Based on less than a 12-month record.
[3] Minimum employment was zero.



In the appendix is a chart of employment over a 2-year period in three firms making accessories and parts. The curve for plant No. 41 in this chart represents the trend of employment in the manufacture of cabinets and consoles, and it is worth noting because of its difference from other firms in the proportions of men and women employed. Invariably, fewer women work in the cabinet department than in any other of the numerically important divisions of manufacture. There is little work other than sanding that women do in the woodworking division, so the usual seasonal fluctuations also characteristic of plants engaged in the manufacture of cabinets fall with greatest severity on the men. This is the opposite of the condition in factories making radio tubes, where men form the smaller element of the labor force.

Trend in the State of Ohio.

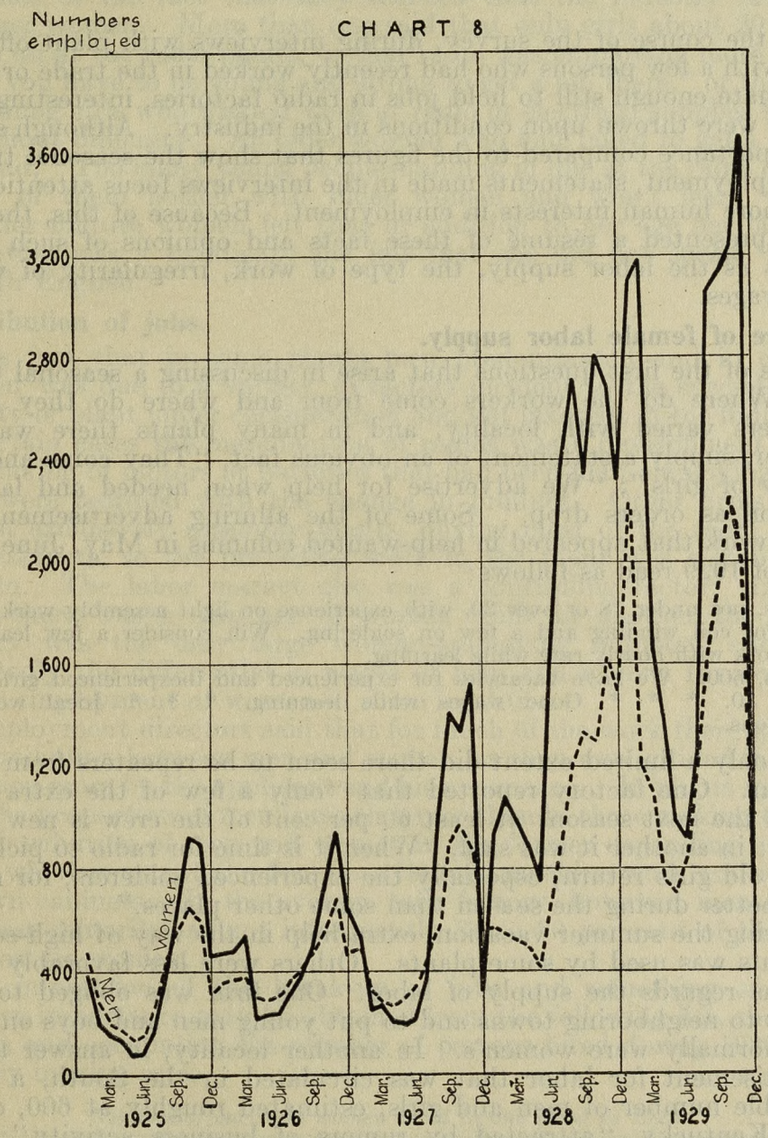
The only definite figures on radio employment that were available at the time of this study were furnished by the division of labor statistics of the Ohio Department of Industrial Relations. In 1925 it became apparent to this State bureau that the manufacture of radios was assuming such importance that it should be treated as a separate industry and no longer be lost in the larger group of miscellaneous electrical products where previously it had been included.

The table next presented, based upon data furnished by the Ohio department, shows the customary seasonal fluctuations, year after year, which the accompanying chart emphasizes. Though not strictly comparable with the charts by the Women's Bureau, in which no curve represents a changing group of plants, whereas the Ohio plants reported vary in number from 5 to 17 in the five years in question, the figures are of interest and importance. At the peak in 1929 there were three and one-half times as many employees as at the peak in 1925, and the minimum employment had grown from 200 to 1,600. But in each year the maximum was of very short duration and the peak was sharp. The seasonal factors continued to be most striking, and employment was even less stable in 1928 and 1929 than in 1925.

TABLE 8.—*Fluctuation in employment, radio and radio parts, State of Ohio, 1925 to 1929*

Month	1925 (10 establishments)			1926 (5 establishments)			1927 (13 establishments)			1928 (17 establishments)			1929 (15 establishments)		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
January	857	476	381	824	362	462	1,025	487	538	1,519	574	945	5,344	2,232	3,112
February	482	284	198	849	376	473	586	340	246	1,623	547	1,076	4,390	1,201	3,189
March	352	202	150	923	387	536	554	284	270	1,504	520	984	2,748	1,100	1,648
April	314	181	133	520	306	214	479	272	207	1,381	493	888	2,179	769	1,410
May	214	144	70	526	293	233	493	298	195	1,166	413	753	1,688	706	982
June	231	156	75	547	312	235	561	346	215	2,291	678	1,613	1,763	835	928
July	419	255	164	690	374	316	822	450	372	3,290	916	2,374	2,443	1,199	1,244
August	827	433	394	797	414	383	1,593	578	1,015	3,914	1,201	2,713	4,711	1,654	3,057
September	1,208	561	647	968	478	490	2,325	907	1,418	3,677	1,335	2,342	5,069	1,926	3,143
October	1,571	648	923	1,280	552	728	2,308	970	1,338	4,107	1,301	2,806	5,480	2,252	3,228
November	1,506	606	900	1,616	676	940	2,394	874	1,520	4,366	1,620	2,746	5,657	1,991	3,666
December	776	322	454	1,103	466	637	885	558	327	3,820	1,495	2,325	1,638	895	743
Average	730	356	374	887	416	471	1,169	530	638	2,722	924	1,797	3,593	1,397	2,196
Maximum	1,571	648	923	1,616	676	940	2,394	970	1,520	4,366	1,620	2,806	5,657	2,252	3,666
Minimum	214	144	70	520	293	214	479	272	195	1,166	413	753	1,638	706	743
Per cent minimum is of maximum	13.6	22.2	7.6	32.2	43.3	22.8	20.0	28.0	12.8	26.7	25.5	26.8	29.0	31.3	20.3

CHART 8



CONDITIONS CHARACTERISTIC OF EMPLOYMENT IN RADIO FACTORIES

In the course of the survey, during interviews with plant officials and with a few persons who had recently worked in the trade or were fortunate enough still to hold jobs in radio factories, interesting side lights were thrown upon conditions in the industry. Although slight in importance compared to the figures that show the seasonal trends of employment, statements made in the interviews focus attention on the more human interests in employment. Because of this, there is here presented a résumé of these facts and opinions of such vital topics as the labor supply, the type of work, irregularity of work, and wages.

Source of female labor supply.

One of the first questions that arise in discussing a seasonal trade is, "Where do the workers come from and where do they go?" Answers varied with locality, and in many plants there was no answer, simply a statement of an obvious fact, "They come and go; plenty of girls"; "We advertise for help when needed and lay off as soon as orders drop." Some of the alluring advertisements of radio work that appeared in help-wanted columns in May, June, and July of 1929 read as follows:

> Girls, not under 18 or over 30, with experience on light assembly work; also some for coil winding and a few on soldering. Will consider a few learners; piecework with hourly rate while learning.
>
> Girls, 500. We have vacancies for experienced and inexperienced girls, age 18 to 30. * * * Good wages while learning. * * * Ideal working conditions.

To only a limited extent did there seem to be repeaters from year to year. One factory reported that "only a few of the extra help return the next season; at least 60 per cent of the crew is new each year"; in another it was said, "When it is time for radio to pick up, many old girls return, especially the experienced solderers, for radio pays better during the season than some other places."

During the summer vacation, extra help in the way of high-school students was used by some plants. Others were less favorably situated as regards the supply of labor. One firm was obliged to run busses to neighboring towns and to put young men and boys on jobs that normally were women's. In another locality, in answer to an advertisement for labor that was circulated in the South, a considerable number of men and girls, estimated roughly at 600, came from Kentucky, "attracted by rumors of business activity"; and when the shutdown came many were stranded 500 miles from home, without funds or relatives, a burden for the community to care for.

Girls from 18 to 25 predominated among women in the radio factories. One employment manager gave the average age of the women in his plant as 21, referring to the jobs as "work that young girls with agile fingers do well." The personnel director in a factory

that had moved into a complete new unit in 1929 and built up an average force of 336 employees within 10 months, only to give up the radio game completely by 1930, still speaks with regret of the "splendid force of girls" she lost when the plant closed. "All were young and attractive and many high-school graduates were among them."

Conversations with wage-earning women in radio communities bore evidence of the fact that they realized that the industry favored younger women. More than one said that only girls about 20 were taken on at the radio plants, or that radio was employing more help, but "you have to be young and strong to get a job there," or that all the young girls who wanted work at radio or electrical supplies found it without difficulty. An older woman who had failed to get a radio job said, "Too many young people standing in line at the radio office. None of them bother with older women and won't learn you." Another mature women felt that in addition to her age her lack of education was a handicap; she felt that she did not speak "good enough English."

Distribution of jobs.

The fact that in some plants men predominated and in others women was due to a variety of factors incident to the special community or plant under consideration and not inherent in the industry. In certain cases the manufacture of radios was a development from the making of motors or batteries that had been man-employing, and men were retained with the change in product. Other firms were almost exclusively assembly plants, buying most of the radio parts and cabinets, so the prevailing work in the plant was suitable for women. The labor market also was a controlling factor. In one town there was a shortage of women while in another the radio factory was the only large woman-employing industry; and undoubtedly the differential in wages of men and women favored the larger employment of women in some localities.

Employment directors said that for much of the work there was no discrimination between men and women, as they were guided in their selection more by the applicant and his experience. In plants making sets the proportion of men is much larger than in those making tubes, the distribution of men and women in the former depending largely upon whether or not the firm does its own machine work and makes its own cabinets. In the average tube factory, however, men are in the vast minority, as not infrequently 85 to 90 per cent of the employees are women.

An impression of the break-up of jobs and something of their relative importance may be obtained from the following list, showing by sex and occupation the number of persons hired during 1929 in a factory making sets.

Number of men and women hired in one plant in 1929

	Women	Men		Women	Men
Assembly:			Wiring	40	2
Set	2,321	63	Repair and salvage	106	222
Receiver	1,927	50	Machine operators and shop	59	41
Speaker	1,531	86	Painting, plating, galvanizing		278
Condenser	314	196	Packing and shipping		258
Transmitter	76	3	Stock and tool room	4	208
Console and cabinet	7	355	Maintenance	3	95
Inspection, receiver and other	771	288	Experimental, planning time study; clerks	16	46
Testing	161	122			

These figures do not represent the number on the force at any one time, but they are roughly indicative of departmental distribution and of the nature of the work on which men and women are employed. They serve to illustrate the turnover rate, since the hirings during the 12 months totaled 9,649 in a plant whose average employment was 3,154 and whose peak was 5,013.

In this plant, that buys many parts and accessories and where the men compose only about one-fourth of the force, it is not surprising to find that the majority of persons taken on are women. The most interesting point in this list is the extent to which women are hired for all types of assembly and, conversely, how few men are assemblers. Besides assembling and inspection, the work of the women is not important.

Training and skill required.

Opinion varied but little among employers as to the amount of training necessary to learn any of the assembly and inspection jobs done by the women. These were described as simple repetitive operations. One superintendent said, "All their work is classed as unskilled, and they can attain speed on any job in from 3 to 10 days." Others gave two weeks as the extreme of the period necessary to acquire skill and speed. In one or two cases vestibule schools were maintained when hiring was at the peak, these providing a short training period for beginners.

Specialization of jobs on conveyor-assembly offered no opportunity for progression in occupations and there was no chance of advancement except as increased speed on piecework swelled the pay envelope. Yet, as a rule, the girls commented favorably on the work. Only occasionally was there a reference indicating dissatisfaction, as the remark of a solderer who said, "My first radio factory was fine, but the fumes were so bad in the last place I coughed all the time"; and the comment of another worker, "Soldering hundreds and over a thousand little wires a day made me crazy."

Hours of work.

The standard workday in the plants was 8½ or 9 hours; occasionally it was as short as 8 or as long as 10. The standard week was about 48 hours, rarely more than 50. In 1929, to keep production up with orders, several firms resorted to night shifts, while others tried a combination of day and evening work, in some cases operating the entire plant on two shifts, from 6 to 3 and from 3 to 10, or adding a part-time shift from 5 to 10. Extra shifts and overtime were of brief duration and were quickly succeeded by undertime—a shortened workday and a shortened week. In fact, definite scheduled hours such as a 9-hour day or a 48-hour week mean little in this industry. A much truer picture of the situation is shown by statements that give the variations in the actual time worked from season to season.

"For two months we operated a 10-hour day and a 55-hour week, then we cut down to 9 hours and 45 hours, and for two months now we have been on a 4-day week." Another firm reduced its hours from 9 and 50 to 8 and 44, and its 5½-day week to one of 5 days and then one of 4 days. From repeated explanations such as these it was apparent that even for the employees retained at the end of the busy season there was decided restriction of the working time.

Wages of women.

To the general inquiry as to wages the company officials made various replies. They referred to rates, to average earnings, and to maximum earnings, and the data were far from being so uniform in type as to lend themselves to tabulation. The most common beginning rates for women seemed to be 25 to 30 cents an hour, varying from plant to plant. Average weekly earnings ranged from $15 to $20, and the maximum earnings quoted usually were from $20 to $30, with a few instances of higher wages earned occasionally, for a week or so. In referring to the variations from season to season, one man thought his employees could make the production bonus in not more than three or four months of the year. The rest of the year the girls would be on straight time work, earning only from $15 to $16 for a full week and not that much during the long stretches of part time inevitable in the business.

Of course, wages varied from plant to plant and from one city or State to another. One large employer in another line of business complained because he could not afford to pay as high wages as did the radio firms who were his competitors in the labor market. On the other hand, an employment manager attributed some of the labor turnover in his radio plant to low wages. "Tremendous turnover," he said. "Pay poor, so we can't expect efficient or loyal employees."

Not infrequently, illuminating comments were made by the women themselves in regard to wages. For example: "For six weeks I rushed from 7.30 in the morning to 6 at night. One of those weeks I made $26, piecework, but that didn't last. All you can earn most of the time is $14.10." Another comment was this: "Once I made $28.95. Soon we began getting through work by 2.30 or 3.30 in the afternoon, then we worked only four days a week, then we were laid off." An experienced worker made this statement: "A few weeks it was wonderful. I made $29.50 one week. Then it came down steadily and rapidly to $10. Hardly pays now." Other remarks were as follows: "Could make $18 a week, with bonus; $21 in busy season. But my last pay was $10.80, for three days." "For a few weeks I made $24, but it didn't last long that way; down to $14." "For a few weeks I made $28 in one plant, then $18 in another plant." "When production was at the peak, earned $30 a week, but many weeks I worked only two and three days, at $3 a day."

Ohio State reports on wages.

In Ohio all employers are required to furnish to the division of labor statistics of the department of industrial relations figures that show the earnings of employees for the week of greatest employment during the year, as well as the numbers employed from month to month during the year. The following summary of wages, based on these Ohio reports, illustrates what has been an average condition of wages in the radio industry in Ohio for the past five years, and there is no reason to suppose that conditions in Ohio differ greatly from those elsewhere.

Employment and wages in week of greatest employment, Ohio, 1925 to 1929

Year	Number of firms reporting	Number of employees		Median of the wages	
		Men	Women	Men	Women
1925	10	747	943	$21.25	$13.40
1926	5	684	963	23.05	14.60
1927	13	936	1,551	23.40	14.80
1928	17	1,668	2,806	27.90	14.65
1929	15	2,508	3,723	24.20	13.95

In no year was the median of the women's wages—the point at which half the women earned more and half earned less—as much as $15. The figure varied from $13.40 to $14.80 during the five years, and in 1929, the year of greatest employment, it was lower than at any time since 1925.

As usual, wages were much higher for the men than for the women and show a more decided increase from year to year.

The conclusion from this tabulation is that the high wages talked about in various plants are not typical of the group of women radio workers taken as a whole, at least in Ohio. However, there is this to be said, that this "week of greatest employment" may be a period weighted with much inexperienced help working for the lowest rates of pay.

Labor turnover.

Most of the firms interviewed had no definite record of the numbers hired from week to week or month to month nor of the numbers who left the plant. One employment manager said they preferred not to figure turnover rates, as they knew they were very bad and due largely to involuntary lay-offs that were unavoidable because of the nature of the business.

However, seven firms making radio sets had fairly complete employment data for 1929 and three of them had similar records for 1928. Their methods of computing turnover varied somewhat; and in one firm the audit of hirings was exclusive of rehires or repeaters, while in another hirings covered both new employees and rehires. Furthermore, there were lapses in some of the reports—weeks with no record for separations and accessions. In spite of the various methods of treatment and omissions, the figures give at least an impression of the shifting in employment. The summary following indicates what had been the variations in the force of employees in these plants and roughly the number of accessions and separations, or the number of persons who had come and gone, through the year.

	1929 (7 plants reporting)	1928 (3 plants reporting)
Average force	18,353	6,923
Maximum force	30,078	11,619
Minimum force	7,594	2,890
Per cent minimum is of maximum	25.2	24.9
Number of accessions	48,909	18,302
Number of separations	50,760	15,106

During the year 1929 about 49,000 people were hired or rehired and almost 51,000 were laid off, discharged, or quit in the seven plants reporting. There were 1,850 more separations than accessions. The coming and going of about 50,000 people in order to maintain a force of not much above 18,000 at the average and of 30,000 at the peak is appalling. To be sure, an average means so little in this industry that it can hardly be used as a basis of comparison. It indicates no more than that somewhere between the lowest and highest points was an average of the 12 figures no more constant than the minimum or maximum of employment.

The record of three firms reporting similar data for 1928 shows more entrances than exits. In this case, to maintain what would have been an average force of less than 7,000, with a peak of 11,600, more than 18,000 men and women were hired or rehired and more than 15,000 were laid off or quit.

The following count in a factory whose average force for 1929 was about a thousand employees is more or less typical of the turnover in all radio plants:

	Accessions	Separations
Total for 1929	2,555	4,137
First quarter	299	1,245
Second quarter	958	644
Third quarter	732	494
Fourth quarter	566	1,754

In this factory record, exits greatly outnumbered entrances. Exits were conspicuously high in the first and last quarters of the year, while entrances banked most heavily in the second and third quarters.

Whether the factory was small, with a few hundred employees, or large, with a few thousand, there was the same continuous hiring and firing, getting a job and losing a job.

In many plants the lay-off in 1929 began before the stock-market crash of October 29. One plant, that had speeded up tremendously and was reported to have been making 6,000 sets a day in July, reduced its force from about 10,000 to less than 4,000 employees between August and October, laying off several hundred every week. The lay-off was quite generally considered to be due to the "usual conditions in the industry." Comments of employment managers were to the effect that "thousands were laid off until only a picked few remain," and "we laid off 1,200 in the last two weeks." One personnel manager, in describing the work of his office, said: "In September separations were somewhat less than the entrances, but in October they were four times greater, and then the big lay-off came without warning at 9 o'clock one morning, when we laid off 443 at once, almost as many as had been laid off during the preceding four weeks."

Comments made by some of the girls themselves who were employed or had been employed in radio factories illustrate what the workers think of the irregularity of employment in this industry. During the summer the employees were talking about overtime. "Nine and a half hours a day now," "worked till 7," "an hour of overtime last night," were common phrases. In the fall the story changed to

one of undertime and lay-offs—"slack," "three days a week now," and "laid off."

A number of comments follow:

"I never dreamed a factory could be so nice and the work so pleasant and the people so kind, too, but what is the use if you are laid off for two or three months once or twice a year?"

"They hire one day and lay off the next, and then hire again in a few days to keep from paying them. I worked one day at radio and then I was laid off."

"In radio they hire lots of people to get the work done; then the first thing you know they begin to lay off."

"Work comes by spurts, with overtime a couple of weeks, and then a lay-off."

"In radio, work is too irregular to make it a decent job; all they do is hire and fire."

A girl who had been persuaded by her chum to quit a steady job for the more alluring pay in radio concluded her story with the expressive comment: "In two weeks they laid me off."

Conclusion.

The broadcasting of the election returns in 1920 marked the beginning of the phenomenal development of the radio industry. Always seasonal, yet increasing from year to year, during 1929 it shot up beyond all control, with no regard to the absorbing power of the market. It was a year of selfish expansion, each firm for itself regardless of the capacity production also taking place in every other firm in the industry. After a "decade of mighty progress" it was the "biggest year ever." Illustrative of the mushroom development is the record of one of the smaller firms, which began operations in June, 1929, with fewer than 50 employees and increased the number until in five months it had about 500, over two-thirds being girls. Then in November, when business came to a standstill, within two weeks practically the entire force was laid off.

The December issue of Radio Retailing reviewed the experience of the year, showing how serious a blunder had been the blind overproduction of 1929, for in that year 4,500,000 radio sets were manufactured, 2,000,000 more than in 1928. This trade journal called attention to the increase in factory capacity in 1929: "Some plants were doubled, others were trebled, and certain factory expansions were even made on a basis of 300 to 400 per cent increase. * * * As the result, we now have factory capacity to produce 15,000,000 radio sets a year * * *. Thus existing plant capacity is more than three times the possible annual sales at this time." [5]

During these years of experimentation the manufacturer has been at the mercy of style changes and new inventions that overnight might convert a warehouse supply of stored radios into stock out of date and worthless in the eyes of the buying public, that will be satisfied with nothing but the latest model. Hesitating to venture too soon and putting off production until assured that the model was fixed and the busy sales season was almost upon him, the average manufacturer then had to operate his plant furiously for a short time if he was to keep his place in the trade.

[5] Radio Retailing. The Business Magazine of the Radio Industry. McGraw-Hill, New York, December, 1929, pp. 27 and 30–31.

If the employer has anxieties, they must be even more acute for the employee, who has none of the excitement of planning and playing the business game. To the worker such seasonal production means a full pay envelope for only a few weeks, possibly months, and then earnings that fade or disappear entirely.

Fluctuations in consumer demand undoubtedly are partly responsible for the seasonal unemployment that year after year has accompanied the sudden fall from "the peak of prosperity to the trough of depression" in this trade. But a manufacturer has said, in testimony before a congressional committee, "I was convinced a good many years ago of the element of unfairness and social wrong that modern industry had gotten into of freely hiring people and with equal freedom firing them." [6] The manufacture of radios is a striking illustration of the situation thus described.

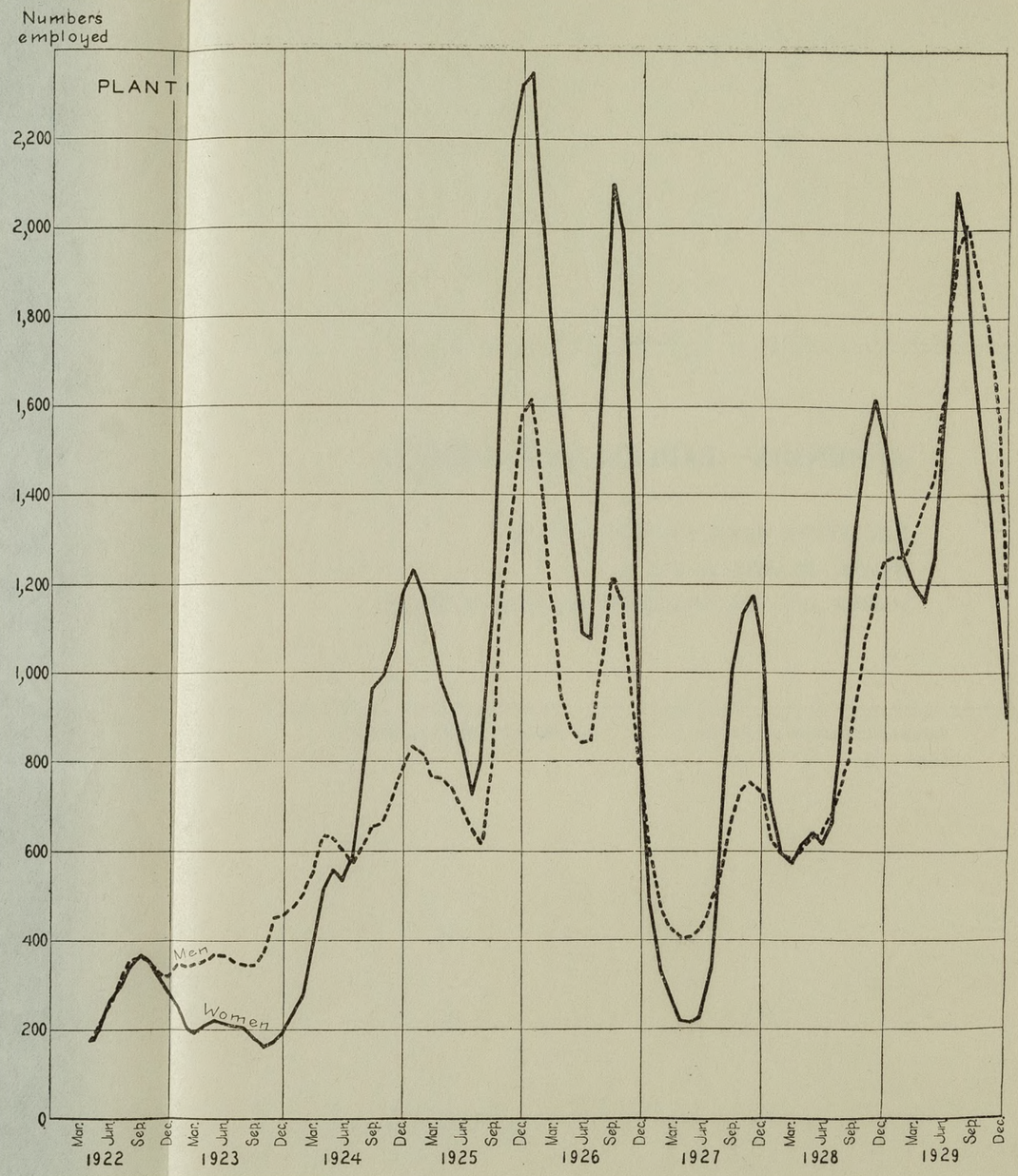
[6] Unemployment in the United States. Hearings before the Committee on Education and Labor, United States Senate, Seventieth Congress, second session, pursuant to S. Res. 219, 1929, p. 205.

APPENDIX—TABLES AND CHARTS

RECEIVING SETS, PLANTS 1 TO 23.[1]
TUBES, PLANTS 24 TO 34.
PARTS AND ACCESSORIES, PLANTS 39 TO 41.[2]

[1] For special plants see pp. 8 to 13.

[2] For plants 35 to 38 see pp. 22 and 23.



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APPENDIX—TABLES AND CHARTS

FLUCTUATION IN EMPLOYMENT, **RADIO RECEIVING SETS**

PLANT 1, 1922 to 1929.

Month	1922			1923			1924			1925		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
January				598	347	251	709	474	235	2,063	832	1,231
February				544	342	202	778	502	276	1,993	819	1,174
March				542	346	196	938	558	380	1,841	763	1,078
April	336	176	160	565	355	210	1,150	633	517	1,740	763	977
May	422	215	207	596	371	225	1,190	630	560	1,656	741	915
June	523	258	265	579	363	216	1,136	600	536	1,530	696	834
July	613	316	297	565	356	209	1,159	575	584	1,372	645	727
August	696	354	342	549	345	204	1,422	617	805	1,414	619	795
September	731	364	367	522	343	179	1,617	654	963	1,888	773	1,115
October	712	356	356	534	371	163	1,666	670	996	3,025	1,180	1,845
November	637	324	313	629	455	174	1,784	724	1,060	3,593	1,395	2,198
December	605	321	284	652	459	193	1,962	785	1,177	3,896	1,579	2,317
Average	618	314	304	573	372	201	1,296	620	676	2,158	896	1,262
Maximum	731	364	367	652	459	251	1,962	785	1,177	3,896	1,579	2,317
Minimum	336	176	160	522	342	163	709	474	235	1,372	619	727
Per cent minimum is of maximum	[1] 46.0	[1] 48.4	[1] 43.6	80.1	74.5	64.9	36.1	60.4	20.0	35.2	39.2	31.4

Month	1926			1927			1928			1929		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
January	3,949	1,607	2,342	1,076	591	485	1,346	629	717	2,653	1,266	1,387
February	3,425	1,407	2,018	804	474	330	1,196	598	598	2,521	1,261	1,260
March	2,924	1,159	1,765	694	423	271	1,153	581	572	2,507	1,313	1,194
April	2,492	958	1,534	625	406	219	1,222	603	619	2,549	1,389	1,160
May	2,181	876	1,305	621	407	214	1,272	629	643	2,700	1,444	1,256
June	1,931	842	1,089	648	426	222	1,255	637	618	3,278	1,667	1,611
July	1,924	848	1,076	824	492	332	1,354	688	666	4,033	1,951	2,082
August	2,684	1,018	1,666	1,167	559	608	1,740	774	966	4,005	2,011	1,994
September	3,305	1,207	2,098	1,662	662	1,000	2,247	929	1,318	3,582	1,917	1,665
October	3,161	1,167	1,994	1,869	737	1,132	2,611	1,080	1,531	3,226	1,799	1,427
November	2,402	964	1,438	1,923	754	1,169	2,799	1,181	1,618	2,796	1,587	1,209
December	1,709	797	912	1,798	737	1,061	2,777	1,251	1,526	2,063	1,172	891
Average	2,684	1,075	1,609	1,153	558	595	1,756	802	954	3,005	1,571	1,434
Maximum	3,949	1,607	2,342	1,923	754	1,169	2,799	1,251	1,618	4,033	2,011	2,082
Minimum	1,709	797	912	621	406	214	1,153	581	572	2,063	1,172	891
Per cent minimum is of maximum	43.3	49.6	38.9	32.3	53.8	18.3	41.2	46.4	35.4	51.2	58.3	42.8

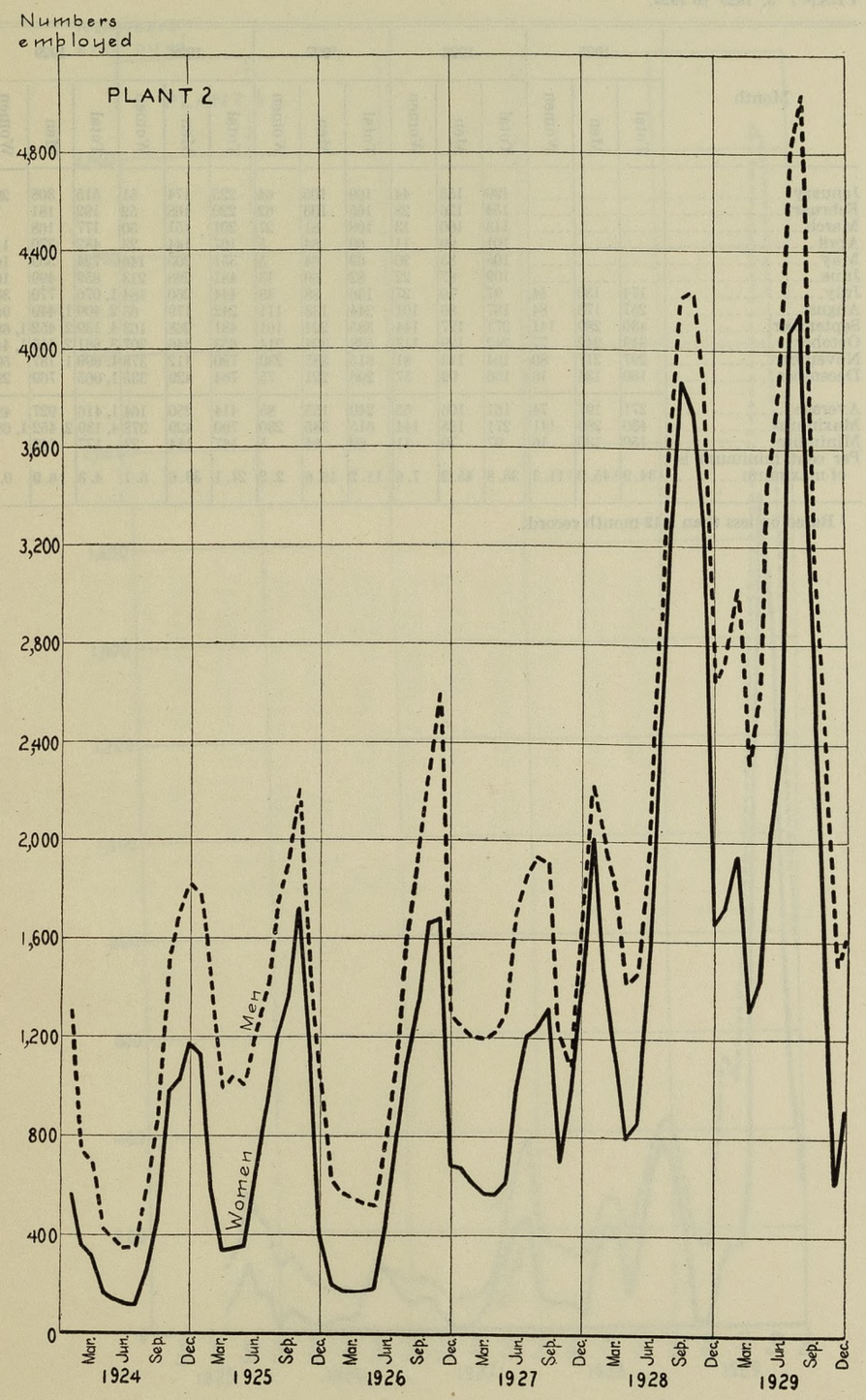
[1] Based on less than a 12-month record.

FLUCTUATION IN EMPLOYMENT, **RADIO RECEIVING SETS**

PLANT 2, 1924 to 1929.

Month	1924			1925			1926		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
January	1,868	1,301	567	2,903	1,776	1,127	845	643	202
February	1,112	758	354	1,954	1,372	582	754	576	178
March	1,006	693	313	1,328	993	335	730	554	176
April	603	437	166	1,387	1,042	345	709	535	174
May	532	386	146	1,354	1,002	352	703	526	177
June	475	350	125	1,876	1,232	644	1,244	795	449
July	471	351	120	2,288	1,381	907	1,949	1,129	820
August	846	581	265	2,944	1,746	1,198	2,719	1,606	1,113
September	1,326	863	463	3,252	1,896	1,356	3,323	1,964	1,359
October	2,492	1,520	972	3,929	2,201	1,728	3,940	2,270	1,670
November	2,744	1,720	1,024	2,563	1,448	1,115	4,276	2,590	1,686
December	3,002	1,824	1,178	1,420	1,024	396	1,991	1,308	683
Average	1,373	899	474	2,267	1,426	841	1,932	1,208	724
Maximum	3,002	1,824	1,178	3,929	2,201	1,728	4,276	2,590	1,686
Minimum	471	350	120	1,328	993	335	703	526	174
Per cent minimum is of maximum	15.7	19.2	10.2	33.8	45.1	19.4	16.4	20.3	10.3

Month	1927			1928			1929		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
January	1,918	1,243	675	4,236	2,231	2,005	4,491	2,745	1,746
February	1,809	1,202	607	3,443	1,981	1,462	4,994	3,037	1,957
March	1,768	1,198	570	2,935	1,786	1,149	3,637	2,319	1,318
April	1,787	1,220	567	2,221	1,425	796	4,048	2,603	1,445
May	1,912	1,296	616	2,325	1,470	855	5,538	3,491	2,047
June	2,703	1,704	999	3,454	1,934	1,520	6,215	3,839	2,376
July	3,075	1,862	1,213	5,349	2,876	2,473	8,884	4,809	4,075
August	3,185	1,937	1,248	6,999	3,707	3,292	9,198	5,046	4,152
September	3,236	1,911	1,325	8,078	4,206	3,872	5,707	3,219	2,488
October	1,934	1,234	700	7,972	4,239	3,733	3,614	2,281	1,333
November	2,093	1,094	999	7,103	3,860	3,243	2,109	1,496	613
December	2,956	1,533	1,423	4,319	2,654	1,665	2,524	1,614	910
Average	2,365	1,453	912	4,889	2,714	2,175	5,096	3,043	2,053
Maximum	3,236	1,937	1,423	8,078	4,239	3,872	9,198	5,046	4,152
Minimum	1,768	1,094	567	2,221	1,425	796	2,109	1,496	613
Per cent minimum is of maximum	54.6	56.5	39.8	27.5	33.6	20.6	22.9	29.6	14.8

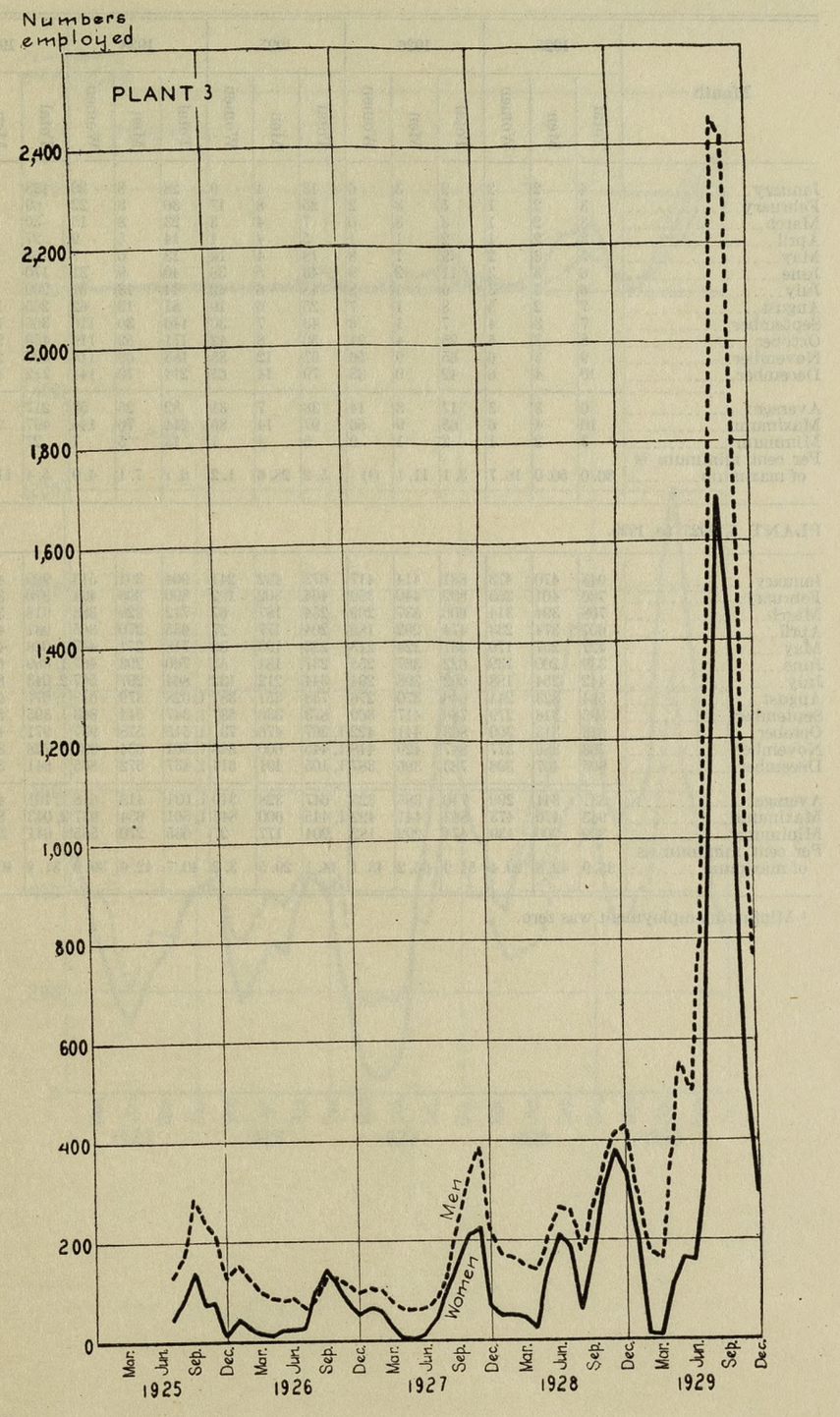


FLUCTUATION IN EMPLOYMENT, **RADIO RECEIVING SETS**

PLANT 3, 1925 to 1929.

Month	1925			1926			1927			1928			1929		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
January				199	155	44	169	105	64	225	174	51	515	308	207
February				154	126	28	165	103	62	220	168	52	192	181	11
March				113	100	13	108	81	27	201	151	50	177	168	9
April				101	90	11	69	64	5	167	144	23	482	370	112
May				105	85	20	69	64	5	351	205	146	724	559	165
June				109	87	22	82	69	13	481	268	213	659	499	160
July	174	130	44	97	70	27	136	88	48	444	260	184	1,076	770	306
August	257	173	84	187	86	101	244	133	111	242	179	63	2,409	1,449	960
September	430	289	141	271	127	144	385	224	161	431	268	163	4,139	2,452	1,687
October	319	242	77	242	129	113	538	324	214	653	346	307	3,861	2,413	1,448
November	297	217	80	194	113	81	615	385	230	790	412	378	1,690	1,187	503
December	150	134	16	156	99	57	296	221	75	764	429	335	1,065	769	296
Average	271	197	74	161	106	55	240	155	85	414	250	164	1,416	927	489
Maximum	430	289	141	271	155	144	615	385	230	790	429	378	4,139	2,452	1,687
Minimum	150	130	16	97	70	11	69	64	5	167	144	23	177	168	9
Per cent minimum is of maximum	[1] 34.9	[1] 45.0	[1] 11.3	35.8	45.2	7.6	11.2	16.6	2.2	21.1	33.6	6.1	4.3	6.9	0.5

[1] Based on less than a 12-month record.



FLUCTUATION IN EMPLOYMENT, **RADIO RECEIVING SETS**

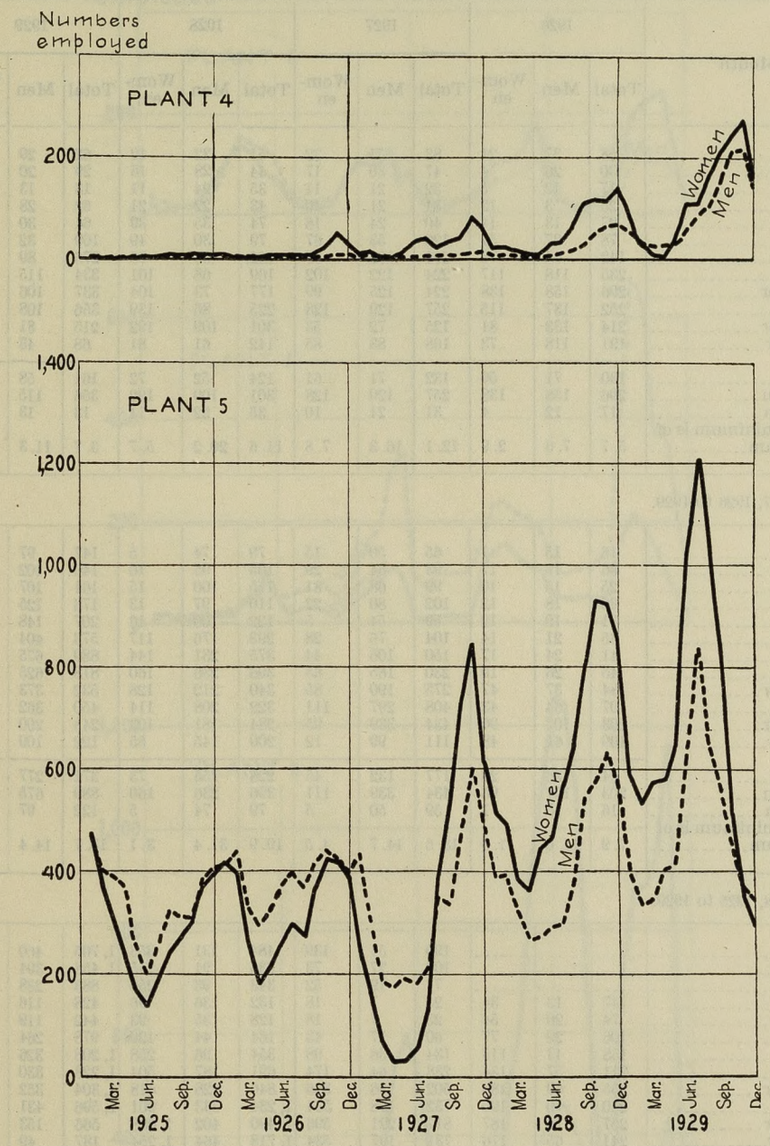
PLANT 4, 1925 to 1929.

Month	1925			1926			1927			1928			1929		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
January	4	2	2	9	3	6	13	4	9	28	8	20	138	52	86
February	3	2	1	5	3	2	25	8	17	30	8	22	69	35	34
March	3	2	1	3	3	0	7	4	3	23	8	15	30	24	6
April	3	2	1	2	1	1	5	4	1	14	5	9	27	26	1
May	5	3	2	9	1	8	18	4	14	13	6	7	62	29	33
June	6	3	3	11	2	9	43	5	38	40	9	31	170	58	112
July	6	3	3	9	1	8	48	6	42	44	13	31	200	91	109
August	7	2	5	8	1	7	25	6	19	81	19	62	266	104	162
September	7	3	4	7	1	6	43	7	36	146	30	116	365	151	214
October	8	3	5	25	4	21	50	8	42	171	52	119	459	212	247
November	9	3	6	65	9	56	97	12	85	183	68	115	497	218	279
December	10	4	6	42	9	33	79	14	65	214	70	144	312	149	163
Average	6	3	3	17	3	14	38	7	31	82	25	57	217	96	121
Maximum	10	4	6	65	9	56	97	14	85	214	70	144	497	218	279
Minimum	3	2	1	2	1	0	5	4	1	13	5	7	27	24	1
Per cent minimum is of maximum	30.0	50.0	16.7	3.1	11.1	(1)	5.2	28.6	1.2	6.1	7.1	4.9	5.4	11.0	0.4

PLANT 5, 1925 to 1929.

January	943	470	473	831	414	417	673	432	241	904	391	513	989	401	588
February	766	401	365	839	440	399	464	302	162	890	396	494	870	336	534
March	708	394	314	606	337	269	254	187	67	712	329	383	918	347	571
April	607	374	233	474	292	182	204	177	27	635	270	365	981	401	580
May	427	257	170	537	324	213	223	193	30	718	271	447	1,066	416	650
June	339	200	139	622	367	255	237	184	53	760	293	467	1,659	633	1,026
July	442	254	188	692	398	294	344	212	132	864	297	567	2,043	835	1,208
August	564	323	241	646	370	276	738	351	387	1,028	379	649	1,677	652	1,025
September	595	316	279	786	417	369	873	336	537	1,347	544	803	1,395	566	829
October	613	313	300	863	441	422	1,207	476	731	1,515	578	937	971	455	516
November	763	386	377	847	429	418	1,445	600	845	1,561	634	927	728	373	355
December	805	407	398	783	396	387	1,105	491	614	1,437	572	865	641	347	294
Average	631	341	290	710	385	325	647	328	319	1,031	413	618	1,161	480	681
Maximum	943	470	473	863	441	422	1,445	600	845	1,561	634	937	2,043	835	1,208
Minimum	339	200	139	474	292	182	204	177	27	635	270	365	641	336	294
Per cent minimum is of maximum	35.9	42.6	29.4	54.9	66.2	43.1	14.1	29.5	3.2	40.7	42.6	39.0	31.4	40.2	24.3

[1] Minimum employment was zero.



FLUCTUATION IN EMPLOYMENT, **RADIO RECEIVING SETS**

PLANT 6, 1926 to 1929.

Month	1926			1927			1928			1929		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
January	58	37	21	83	51	32	51	32	19	62	29	33
February	30	26	4	47	30	17	44	28	16	29	20	9
March	17	12	5	32	21	11	35	24	11	13	13	0
April	25	13	12	31	21	10	43	22	21	62	28	34
May	27	13	14	40	24	16	74	35	39	64	30	34
June	78	27	51	120	53	67	79	30	49	109	32	77
July	142	64	78	201	102	99	162	66	96	276	89	187
August	235	118	117	224	122	102	169	68	101	334	115	219
September	296	158	138	224	125	99	177	73	104	337	106	231
October	252	137	115	257	129	128	225	86	139	356	108	248
November	214	133	81	125	72	53	301	109	192	215	81	134
December	191	118	73	168	83	85	142	61	81	68	43	25
Average	130	71	59	132	71	61	124	52	72	161	58	103
Maximum	296	158	138	257	129	128	301	109	192	356	115	248
Minimum	17	12	4	31	21	10	35	22	11	13	13	0
Per cent minimum is of maximum	5.7	7.6	2.9	12.1	16.3	7.8	11.6	20.2	5.7	3.7	11.3	(1)

PLANT 7, 1926 to 1929.

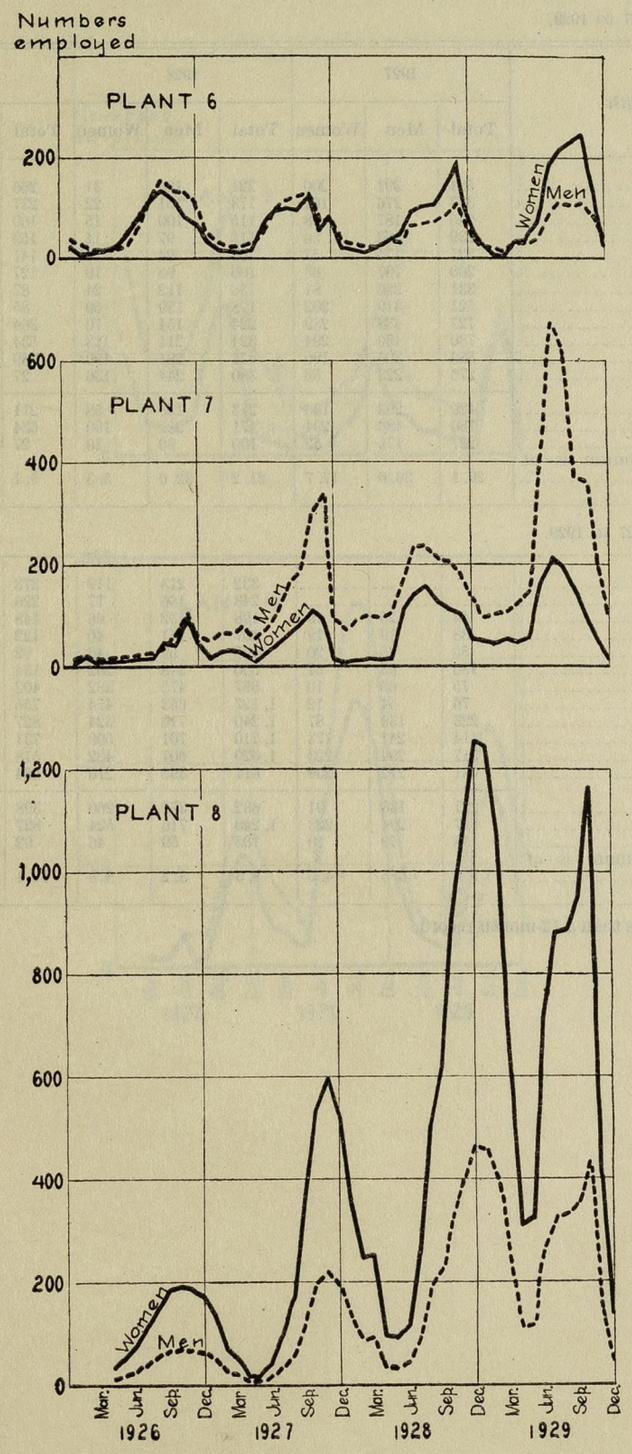
January	16	15	1	65	50	15	79	74	5	147	97	50
February	36	19	17	93	64	29	105	95	10	146	102	44
March	25	15	10	99	68	31	115	100	15	161	107	54
April	30	18	12	102	80	22	110	97	13	173	125	48
May	31	19	12	59	54	5	122	106	16	207	148	59
June	35	21	14	104	76	28	293	176	117	573	404	169
July	41	24	17	150	106	44	375	231	144	889	675	214
August	45	26	19	230	165	65	396	236	160	818	625	193
September	84	37	47	275	190	85	340	212	128	532	373	159
October	107	64	43	408	297	111	322	208	114	450	362	88
November	203	107	96	434	339	95	284	181	103	248	200	48
December	109	61	48	111	99	12	200	145	55	122	109	13
Average	64	36	28	177	132	45	228	155	73	372	277	95
Maximum	203	107	96	434	339	111	396	236	160	889	675	214
Minimum	16	15	1	59	50	5	79	74	5	122	97	13
Per cent minimum is of maximum	7.9	14.0	1.0	13.6	14.7	4.5	19.9	31.4	3.1	13.7	14.4	6.1

PLANT 8, 1926 to 1929.

January	------	------	------	190	51	139	484	131	353	1,705	460	1,245
February	------	------	------	100	27	73	336	91	245	1,458	394	1,064
March	------	------	------	71	19	52	343	93	250	883	238	645
April	47	13	34	25	7	18	132	36	96	428	116	312
May	74	20	54	25	7	18	128	35	93	442	119	323
June	106	29	77	60	17	43	164	44	120	978	264	714
July	158	43	115	134	36	98	354	96	258	1,208	326	882
August	211	57	154	238	64	174	691	187	504	1,223	330	893
September	255	69	186	502	136	366	846	228	618	1,304	352	952
October	260	70	190	732	198	534	1,234	333	901	1,596	431	1,165
November	257	70	187	817	221	596	1,490	402	1,088	566	153	413
December	241	65	176	731	197	534	1,718	464	1,254	187	49	138
Average	176	48	128	302	82	220	660	178	482	998	269	729
Maximum	260	70	190	817	221	596	1,718	464	1,254	1,705	460	1,245
Minimum	47	13	34	25	7	18	128	35	93	187	49	138
Per cent minimum is of maximum	[2] 18.1	[2] 18.6	[2] 17.9	3.1	3.2	3.0	7.5	7.5	7.4	11.0	10.7	11.1

[1] Minimum employment was zero.

[2] Based on less than a 12-month record.



FLUCTUATION IN EMPLOYMENT, **RADIO RECEIVING SETS**

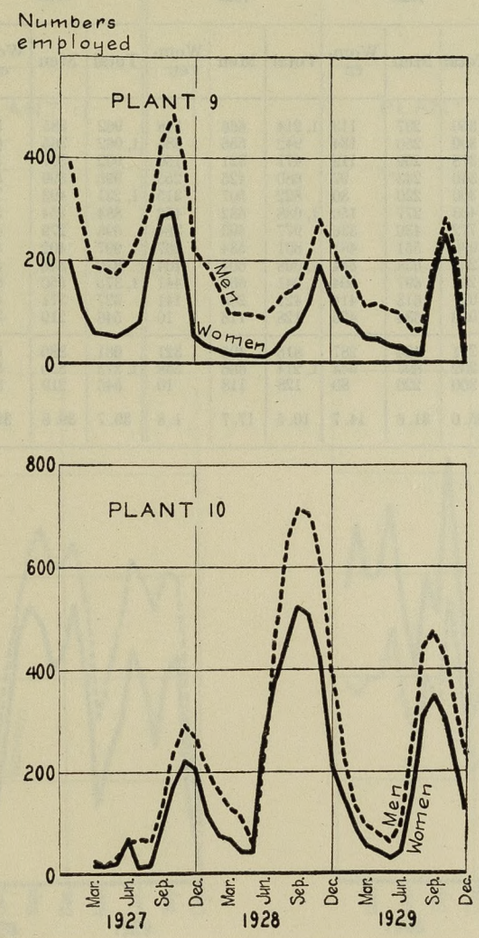
PLANT 9, 1927 to 1929.

Month	1927			1928			1929		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
January	591	391	200	221	190	31	266	185	81
February	377	276	101	173	151	22	237	161	76
March	245	187	58	115	100	15	160	115	45
April	239	183	56	111	97	14	159	117	42
May	227	175	52	105	94	11	141	105	36
June	260	197	63	100	90	10	127	97	30
July	331	250	81	136	112	24	87	68	19
August	521	319	202	198	139	59	85	67	18
September	727	438	289	224	154	70	364	194	170
October	780	486	294	324	211	113	534	283	251
November	586	396	190	471	281	190	389	203	186
December	276	223	53	380	244	136	27	25	2
Average	429	293	136	213	155	58	211	133	78
Maximum	780	486	294	471	281	190	534	283	251
Minimum	227	175	52	100	90	10	27	25	2
Per cent minimum is of maximum	29.1	36.0	17.7	21.2	32.0	5.3	5.1	8.8	0.8

PLANT 10, 1927 to 1929.

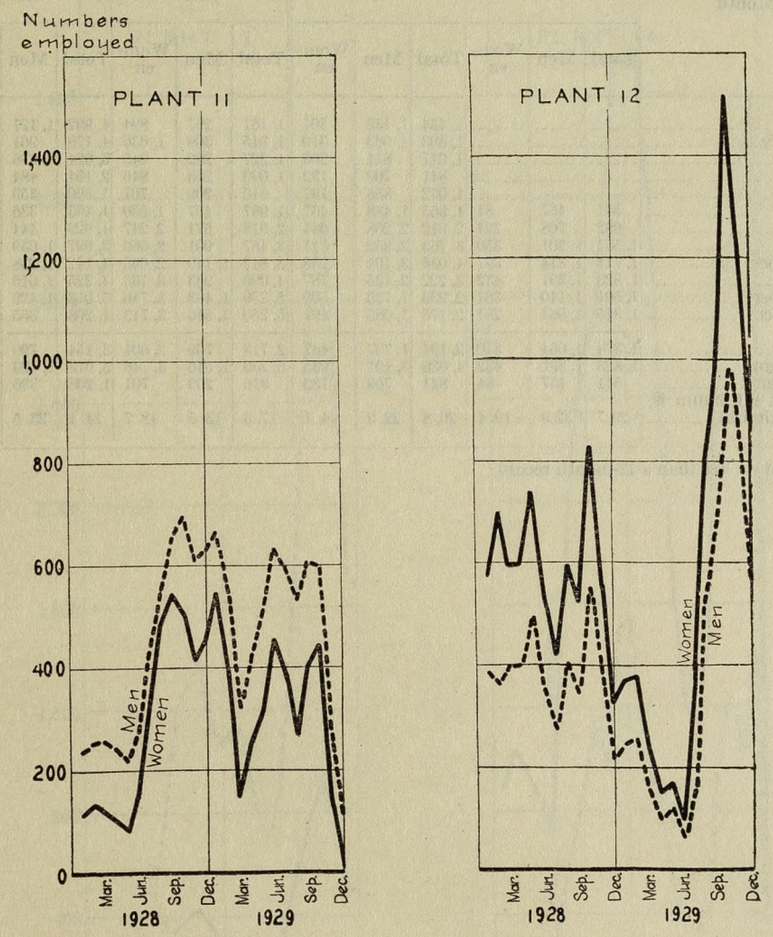
January				332	213	119	373	233	140
February				243	166	77	226	137	89
March	44	25	19	198	132	66	148	95	53
April	38	19	19	157	111	46	122	81	41
May	55	35	20	105	59	46	92	63	29
June	130	63	67	500	248	252	134	91	43
July	75	65	10	857	475	382	402	247	155
August	76	64	12	1,127	653	474	755	444	311
September	223	136	87	1,240	716	524	827	476	351
October	414	241	173	1,210	701	509	731	427	304
November	517	294	223	1,029	607	422	518	316	202
December	481	272	209	611	395	216	364	237	127
Average	221	130	91	632	372	260	398	241	157
Maximum	517	294	223	1,240	716	524	827	476	351
Minimum	38	19	10	105	59	46	92	63	29
Per cent minimum is of maximum	[1] 7.4	[1] 6.5	[1] 4.5	8.5	8.2	8.8	11.1	13.2	8.3

[1] Based on less than a 12-month record.



FLUCTUATION IN EMPLOYMENT, **RADIO RECEIVING SETS**

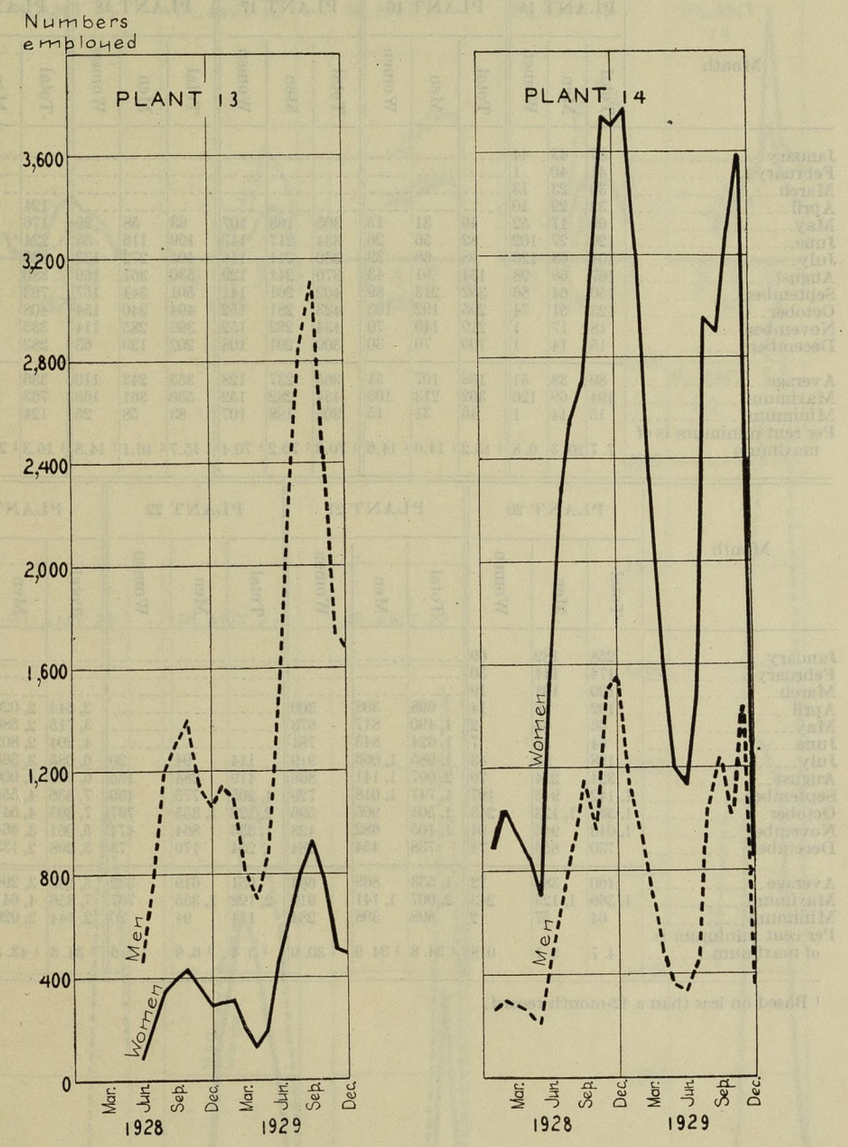
Month	PLANT 11, 1928 and 1929						PLANT 12, 1928 and 1929					
	1928			1929			1928			1929		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
January	350	237	113	1,214	666	548	962	385	577	619	248	371
February	390	256	134	942	556	386	1,062	365	697	633	255	378
March	378	259	119	471	321	150	992	397	595	392	157	235
April	340	243	97	680	425	255	996	399	597	255	102	153
May	300	220	80	822	507	315	1,231	493	738	295	122	173
June	433	277	156	1,088	632	456	884	354	530	164	66	98
July	772	436	336	977	593	384	696	279	417	668	268	400
August	1,032	551	481	801	534	267	997	402	595	1,341	537	804
September	1,202	658	544	1,008	604	404	870	348	522	1,666	681	985
October	1,201	697	504	1,041	600	441	1,375	550	825	2,500	982	1,518
November	1,027	613	414	421	280	141	927	371	556	2,079	842	1,237
December	1,089	634	455	128	118	10	546	219	327	1,456	575	881
Average	711	424	287	816	495	321	961	380	581	1,006	403	603
Maximum	1,202	697	544	1,214	666	548	1,375	550	825	2,500	982	1,518
Minimum	300	220	80	128	118	10	546	219	327	164	66	98
Per cent minimum is of maximum	25.0	31.6	14.7	10.5	17.7	1.8	39.7	39.8	39.6	6.6	6.7	6.5



FLUCTUATION IN EMPLOYMENT, **RADIO RECEIVING SETS**

Month	PLANT 13, 1928 and 1929						PLANT 14, 1928 and 1929					
	1928			1929			1928			1929		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
January				1,434	1,133	301	1,161	267	894	4,902	1,127	3,775
February				1,393	1,083	310	1,345	309	1,036	4,179	961	3,218
March				1,011	811	200	1,227	282	945	3,024	696	2,328
April				841	709	132	1,099	253	846	2,104	484	1,620
May				1,052	855	197	910	209	701	1,560	359	1,201
June	541	457	84	1,955	1,488	467	1,987	457	1,530	1,463	336	1,127
July	992	768	224	2,912	2,268	644	2,918	671	2,247	1,929	444	1,485
August	1,551	1,201	350	3,763	2,952	811	3,467	901	2,566	3,997	1,039	2,958
September	1,711	1,314	397	4,036	3,101	935	3,842	1,149	2,693	4,142	1,238	2,904
October	1,823	1,391	432	3,222	2,435	787	4,096	963	3,133	4,325	1,016	3,309
November	1,501	1,140	361	2,239	1,730	509	5,239	1,493	3,746	5,013	1,429	3,584
December	1,345	1,064	281	2,176	1,685	491	5,259	1,546	3,713	1,208	355	853
Average	1,374	1,064	310	2,194	1,707	487	2,713	709	2,004	3,154	790	2,364
Maximum	1,823	1,391	432	4,036	3,101	935	5,259	1,546	3,746	5,013	1,429	3,775
Minimum	541	457	84	841	709	132	910	209	701	1,208	336	853
Per cent minimum is of maximum	[1] 29.7	[1] 32.9	[1] 19.4	20.8	22.9	14.1	17.3	13.5	18.7	24.1	23.5	22.6

[1] Based on less than a 12-month record.



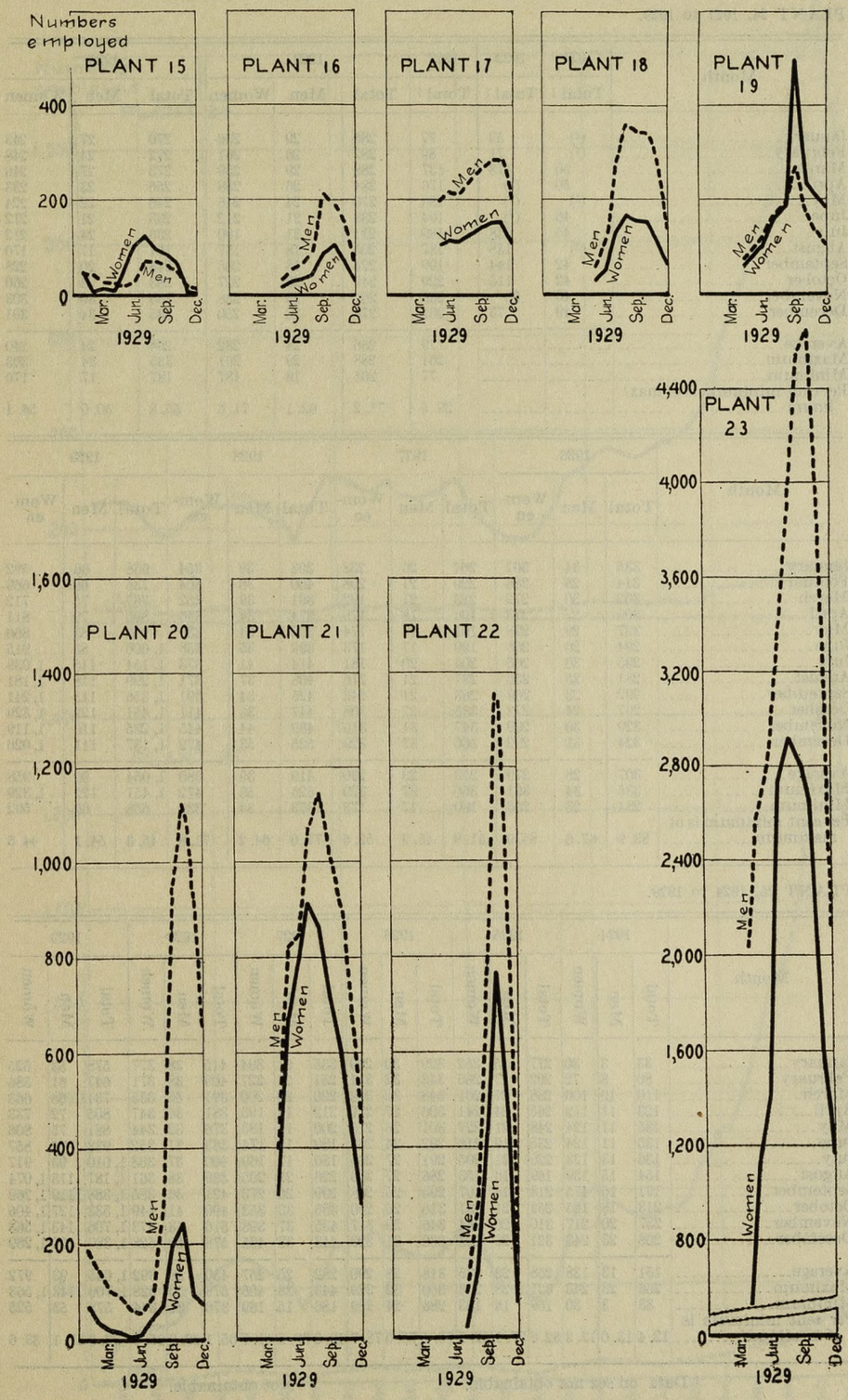
FLUCTUATION IN EMPLOYMENT, **RADIO RECEIVING SETS**

PLANTS WITH 1929 FIGURES ONLY.

Month	PLANT 15			PLANT 16			PLANT 17			PLANT 18			PLANT 19		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
January	87	43	44	----	----	----	----	----	----	----	----	----	----	----	----
February	41	40	1	----	----	----	----	----	----	----	----	----	----	----	----
March	36	23	13	----	----	----	----	----	----	----	----	----	----	----	----
April	32	22	10	----	----	----	----	----	----	----	----	----	124	66	58
May	69	17	52	46	31	15	305	198	107	83	58	25	176	96	80
June	129	27	102	82	56	26	334	217	117	169	116	53	224	123	101
July	194	68	126	98	66	32	330	214	116	405	272	133	330	168	162
August	167	69	98	134	91	43	370	241	129	530	361	169	380	191	189
September	150	64	86	302	213	89	402	261	141	501	344	157	763	269	494
October	125	51	74	295	192	103	433	281	152	494	340	154	408	175	233
November	18	17	1	219	149	70	434	282	152	399	285	114	335	131	204
December	15	14	1	100	70	30	309	201	108	202	139	63	283	102	181
Average	89	38	51	158	107	51	365	237	128	353	243	110	336	147	189
Maximum	194	69	126	302	213	103	434	282	152	530	361	169	763	269	494
Minimum	15	14	1	46	31	15	305	198	107	83	58	25	124	66	58
Per cent minimum is of maximum	7.7	20.3	0.8	[1] 15.2	[1] 14.6	[1] 14.6	[1] 70.3	[1] 70.2	[1] 70.4	[1] 15.7	[1] 16.1	[1] 14.8	[1] 16.3	[1] 24.5	[1] 11.7

Month	PLANT 20			PLANT 21			PLANT 22			PLANT 23		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
January	258	189	69	----	----	----	----	----	----	----	----	----
February	174	144	30	----	----	----	----	----	----	----	----	----
March	120	101	19	----	----	----	----	----	----	----	----	----
April	102	88	14	698	398	300	----	----	----	2,544	2,020	524
May	66	64	2	1,490	817	673	----	----	----	3,715	2,580	1,135
June	64	57	7	1,624	843	781	----	----	----	4,204	2,802	1,402
July	128	85	43	1,985	1,066	919	114	94	20	6,085	3,360	2,725
August	324	254	70	2,007	1,141	866	419	284	135	6,919	4,000	2,919
September	1,142	945	197	1,747	1,018	729	1,205	775	430	7,356	4,554	2,802
October	1,366	1,123	243	1,501	905	596	2,122	1,355	767	7,305	4,641	2,664
November	1,040	946	94	1,105	682	423	1,335	864	471	5,061	3,464	1,597
December	730	656	74	738	454	284	254	179	75	3,298	2,133	1,165
Average	460	388	72	1,533	869	664	951	619	332	5,183	3,294	1,889
Maximum	1,366	1,123	243	2,007	1,141	919	2,122	1,355	767	7,356	4,641	2,919
Minimum	64	57	2	698	398	284	114	94	20	2,544	2,020	524
Per cent minimum is of maximum	4.7	5.1	0.8	[1] 34.8	[1] 34.9	[1] 30.9	[1] 5.4	[1] 6.9	[1] 2.6	[1] 34.6	[1] 43.5	[1] 18.0

[1] Based on less than a 12-month record.



FLUCTUATION IN EMPLOYMENT, **RADIO TUBES**

PLANT 24, 1921 to 1929.

Month	1921	1922	1923	1924			1925		
	Total [1]	Total [1]	Total [1]	Total	Men	Women	Total	Men	Women
January	[2]	53	77	285	29	256	270	27	243
February	[2]	71	80	287	26	261	272	24	248
March	50	113	137	288	29	259	273	27	246
April	50	[2]	176	284	26	258	256	23	233
May	[2]	[2]	188	270	24	246	246	22	224
June	46	[2]	194	233	21	212	233	21	212
July	45	238	189	211	21	190	236	24	212
August	[2]	138	187	205	18	187	187	17	170
September	42	144	199	224	18	206	248	20	228
October	42	115	229	247	20	227	283	23	260
November	40	[2]	238	261	23	238	333	30	303
December	49	73	261	278	28	250	335	34	301
Average			179	256	24	232	264	24	240
Maximum			261	288	29	261	335	34	303
Minimum			77	205	18	187	187	17	170
Per cent minimum is of maximum			29.5	71.2	62.1	71.6	55.8	50.0	56.1

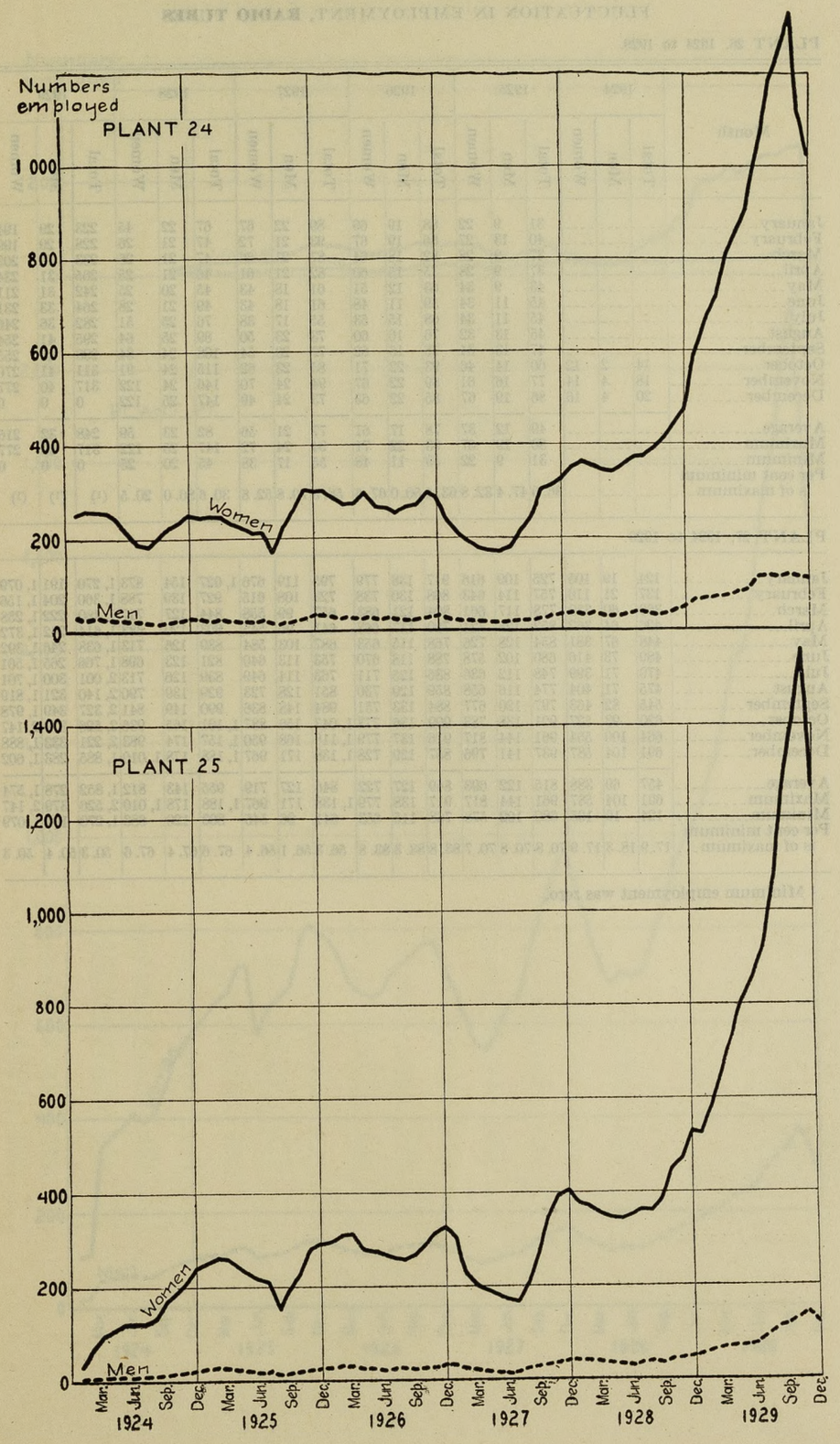
Month	1926			1927			1928			1929		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
January	335	34	301	264	26	238	393	39	354	658	66	592
February	314	28	286	229	21	208	400	36	364	735	66	669
March	302	30	272	213	21	192	391	39	352	787	75	712
April	300	27	273	196	18	178	374	34	340	890	79	811
May	327	29	298	191	17	174	373	34	339	943	83	860
June	294	26	268	190	17	173	393	35	358	1,000	85	915
July	295	30	265	201	20	181	414	41	373	1,154	115	1,039
August	281	25	256	237	21	216	408	37	371	1,299	118	1,181
September	292	23	269	263	21	242	425	34	391	1,356	115	1,241
October	297	24	273	335	27	308	447	36	411	1,451	122	1,329
November	329	30	299	347	31	316	489	44	445	1,235	116	1,119
December	324	32	292	366	37	329	525	53	472	1,137	111	1,026
Average	307	28	279	253	23	230	419	39	380	1,054	96	958
Maximum	335	34	301	366	37	329	525	53	472	1,451	122	1,329
Minimum	281	23	256	190	17	173	373	34	339	658	66	592
Per cent minimum is of maximum	83.9	67.6	85.0	51.9	45.9	52.6	71.0	64.2	71.8	45.3	54.1	44.5

PLANT 25, 1924 to 1929.

Month	1924			1925			1926			1927			1928			1929		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
January	33	3	30	277	25	252	329	30	299	335	31	304	415	38	377	578	53	525
February	80	8	72	292	27	265	343	32	311	251	24	227	409	38	371	647	61	586
March	110	10	100	288	27	261	348	32	316	220	20	200	391	36	355	731	68	663
April	123	11	112	265	24	241	306	27	279	212	19	193	381	34	347	805	72	733
May	135	11	124	248	21	227	301	26	275	200	17	183	376	32	344	881	75	806
June	135	11	124	235	19	216	292	24	268	189	15	174	383	31	352	933	76	857
July	136	13	123	226	21	205	291	27	264	186	17	169	400	37	363	1,010	93	917
August	154	15	139	169	16	153	286	27	259	226	21	205	399	38	361	1,187	113	1,074
September	191	16	175	215	18	197	293	25	268	299	26	273	421	36	385	1,388	119	1,269
October	213	18	195	252	21	231	316	26	290	385	32	353	490	41	449	1,533	127	1,406
November	237	20	217	310	26	284	346	29	317	435	37	398	516	43	473	1,706	143	1,563
December	266	23	243	321	28	293	360	31	329	443	38	405	578	50	528	1,389	120	1,269
Average	151	13	138	258	23	235	318	28	290	282	25	257	430	38	392	1,065	93	972
Maximum	266	23	243	321	28	293	360	32	329	443	38	405	578	50	528	1,706	143	1,563
Minimum	33	3	30	169	16	153	286	24	259	186	15	169	376	31	344	578	53	525
Per cent minimum is of maximum	12.4	13.0	12.3	52.6	57.1	52.2	79.4	75.0	78.7	42.0	39.5	41.7	65.1	62.0	65.2	33.9	37.1	33.6

[1] Data on sex not obtainable.

[2] Not obtainable.



FLUCTUATION IN EMPLOYMENT, **RADIO TUBES**

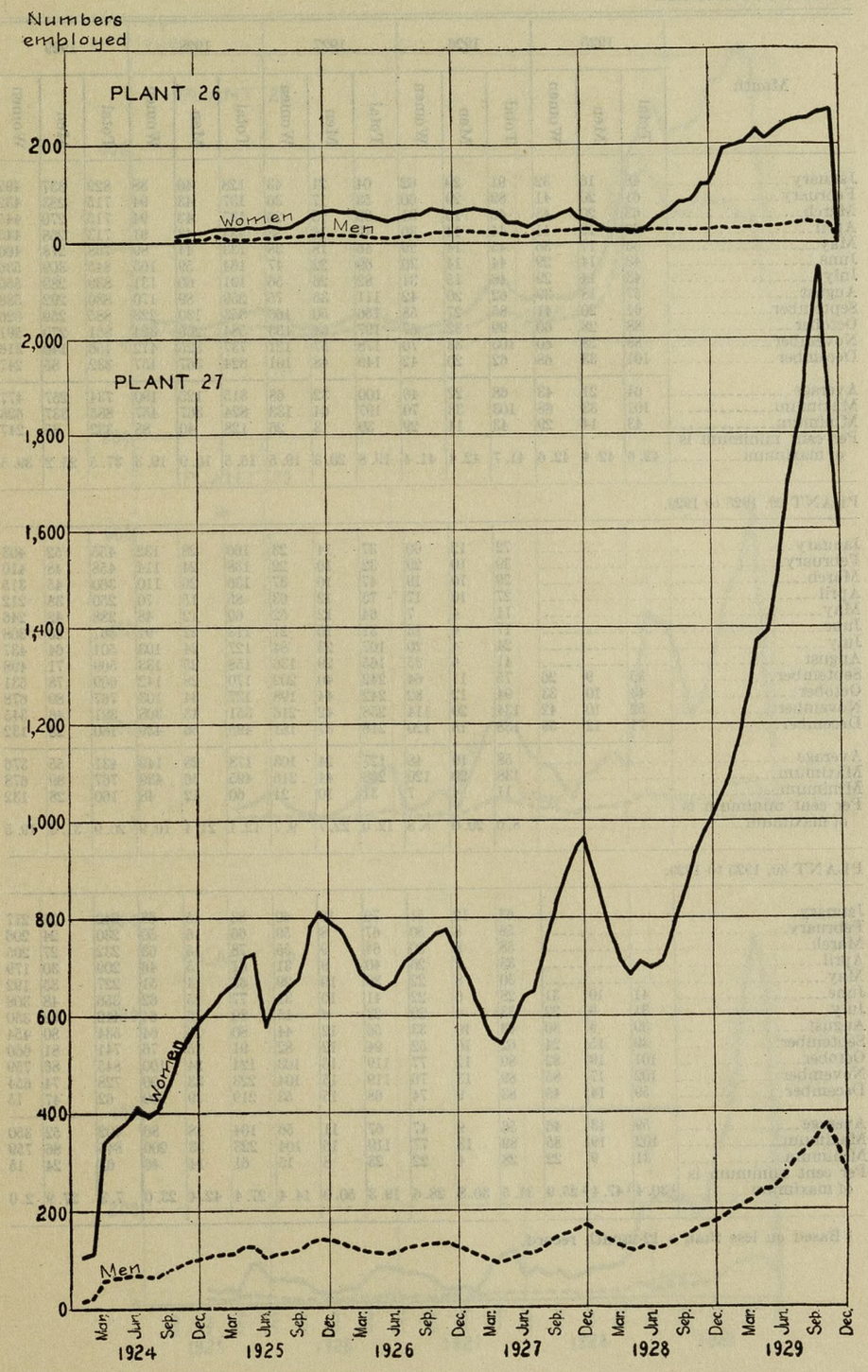
PLANT 26, 1924 to 1929.

Month	1924			1925			1926			1927			1928			1929		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
January				31	9	22	88	19	69	89	22	67	67	22	45	223	29	194
February				40	13	27	86	19	67	93	21	72	47	21	26	228	29	199
March				37	9	28	82	18	64	87	21	66	47	21	26	233	30	203
April				37	9	28	75	15	60	82	21	61	46	21	25	265	31	234
May				43	9	34	63	12	51	61	18	43	45	20	25	242	31	211
June				45	11	34	59	11	48	61	18	43	49	21	28	264	33	231
July				45	11	34	68	15	53	55	17	38	76	25	51	282	36	246
August				45	13	32	76	16	60	73	23	50	89	25	64	295	41	254
September				47	13	34	78	16	62	77	23	54	108	24	84	298	43	255
October	14	2	12	60	14	46	93	22	71	85	23	62	115	24	91	311	41	270
November	18	4	14	77	16	61	89	22	67	94	24	70	146	24	122	317	40	277
December	20	4	16	86	19	67	85	22	63	73	24	49	147	25	122	0	0	0
Average				49	12	37	78	17	61	77	21	56	82	23	59	248	32	216
Maximum				86	19	67	93	22	71	94	24	72	147	25	122	317	43	277
Minimum				31	9	22	59	11	48	55	17	38	45	20	25	0	0	0
Per cent minimum is of maximum				36.0	47.4	32.8	63.4	50.0	67.6	58.5	70.8	52.8	30.6	80.0	20.5	(1)	(1)	(1)

PLANT 27, 1924 to 1929.

January	124	19	105	725	109	616	917	138	779	795	119	676	1,027	154	873	1,270	191	1,079
February	137	21	116	757	114	643	868	130	738	723	108	615	927	139	788	1,360	204	1,156
March	399	60	339	778	117	661	804	121	683	657	99	558	844	127	717	1,480	222	1,258
April	426	64	362	852	128	724	780	117	663	641	96	545	803	120	683	1,614	242	1,372
May	448	67	381	854	128	726	768	115	653	687	103	584	839	126	713	1,638	246	1,392
June	489	73	416	680	102	578	788	118	670	753	113	640	821	123	698	1,766	265	1,501
July	470	71	399	748	112	636	836	125	711	763	114	649	839	126	713	2,001	300	1,701
August	475	71	404	774	116	658	859	129	730	851	128	723	929	139	790	2,140	321	1,819
September	545	82	463	797	120	677	884	133	751	984	148	836	990	149	841	2,327	349	1,978
October	620	93	527	921	138	783	909	136	773	1,043	156	887	1,101	165	936	2,526	379	2,147
November	664	100	564	961	144	817	916	137	779	1,118	168	950	1,157	174	983	2,221	333	1,888
December	691	104	587	937	141	796	857	129	728	1,138	171	967	1,188	178	1,010	1,885	283	1,602
Average	457	69	388	815	122	693	849	127	722	846	127	719	955	143	812	1,852	278	1,574
Maximum	691	104	587	961	144	817	917	138	779	1,138	171	967	1,188	178	1,010	2,526	379	2,147
Minimum	124	19	105	680	102	578	768	115	653	641	96	545	803	120	683	1,270	191	1,079
Per cent minimum is of maximum	17.9	18.3	17.9	70.8	70.8	70.7	83.8	83.3	83.8	56.3	56.1	56.4	67.6	67.4	67.6	50.3	50.4	50.3

[1] Minimum employment was zero.



FLUCTUATION IN EMPLOYMENT, RADIO TUBES

PLANT 28, 1925 to 1929.

Month	1925			1926			1927			1928			1929		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
January	48	16	32	91	29	62	64	21	43	128	40	88	829	337	492
February	61	20	41	89	29	60	53	17	36	137	43	94	715	283	432
March	63	20	43	46	15	31	39	13	26	137	43	94	715	270	445
April	60	19	41	44	14	30	49	16	33	134	43	91	713	268	445
May	53	17	36	43	14	29	56	18	38	133	44	89	738	278	460
June	43	14	29	44	14	30	69	22	47	164	59	105	845	309	536
July	43	14	29	46	15	31	82	26	56	191	60	131	839	289	550
August	57	18	39	62	20	42	111	36	75	259	89	170	880	292	588
September	61	20	41	85	27	58	156	50	106	353	130	223	885	259	626
October	88	28	60	99	32	67	197	64	133	584	260	324	861	270	591
November	88	28	60	103	33	70	178	57	121	737	325	412	456	140	316
December	101	33	68	62	20	42	149	48	101	824	367	457	332	85	247
Average	64	21	43	68	22	46	100	32	68	315	125	190	734	257	477
Maximum	101	33	68	103	33	70	197	64	133	824	367	457	885	337	626
Minimum	43	14	29	43	14	29	39	13	26	128	40	88	332	85	247
Per cent minimum is of maximum	42.6	42.4	42.6	41.7	42.4	41.4	19.8	20.3	19.5	15.5	10.9	19.3	37.5	25.2	39.5

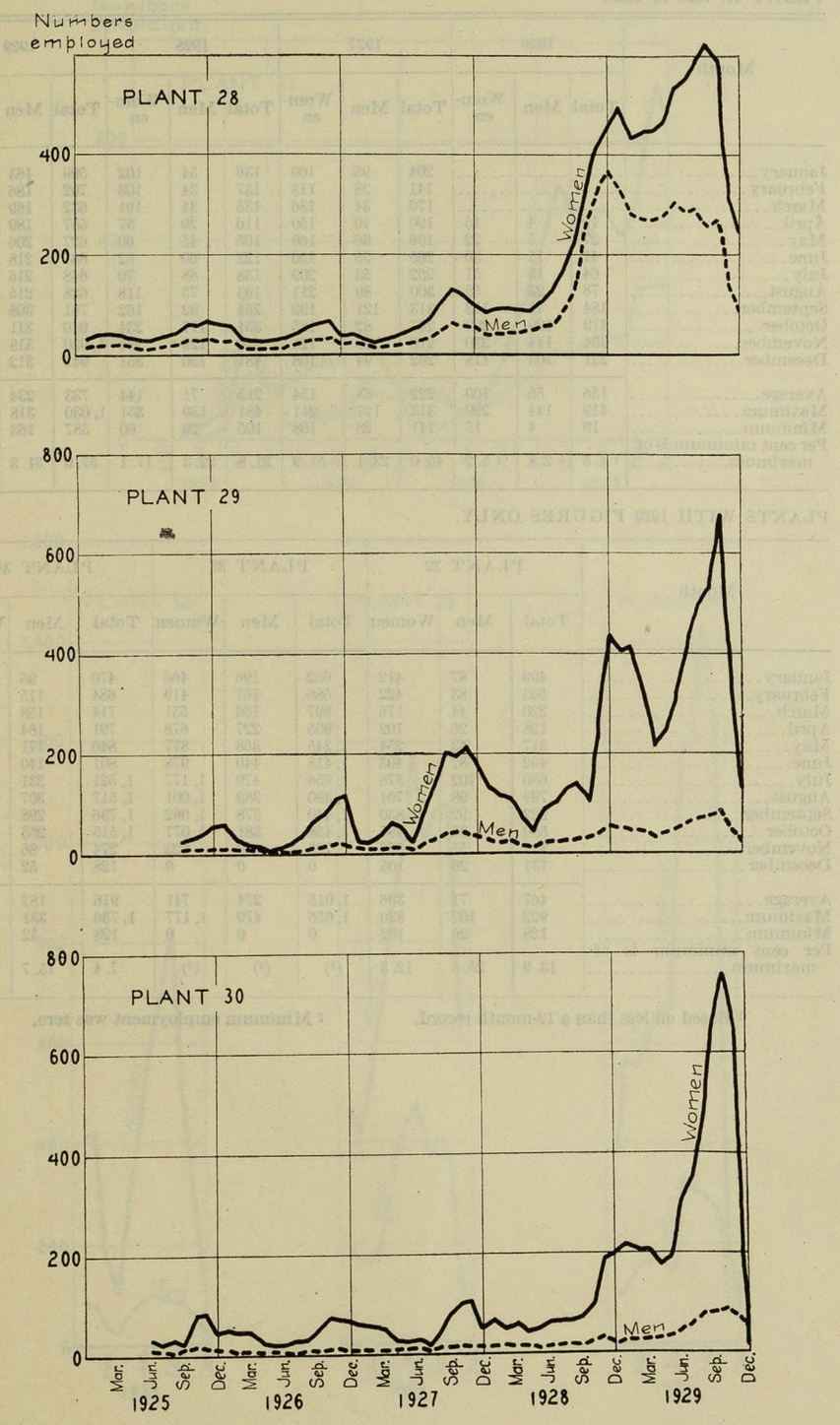
PLANT 29, 1925 to 1929.

January				72	12	60	37	14	23	160	28	132	455	52	403
February				39	10	29	32	10	22	138	24	114	458	48	410
March				29	10	19	47	10	37	136	26	110	360	45	315
April				27	10	17	75	12	63	85	15	70	250	38	212
May				11	4	7	64	12	52	60	12	48	288	42	246
June				17	4	13	31	10	21	113	22	91	361	53	308
July				24	4	20	107	23	84	127	24	103	501	64	437
August				41	6	35	165	29	136	158	25	133	569	71	498
September	35	9	26	75	11	64	242	40	202	170	28	142	609	78	531
October	43	10	33	94	12	82	242	44	198	137	34	103	767	89	678
November	52	10	42	134	20	114	258	42	216	351	43	308	391	46	345
December	71	12	59	138	18	120	218	37	181	495	56	439	160	28	132
Average				58	10	48	127	24	103	178	28	149	431	55	376
Maximum				138	20	120	258	44	216	495	56	439	767	89	678
Minimum				11	4	7	31	10	21	60	12	48	160	28	132
Per cent minimum is of maximum				8.0	20.0	5.8	12.0	22.7	9.7	12.1	21.4	10.9	20.9	31.5	19.5

PLANT 30, 1925 to 1929.

January				63	12	51	70	10	60	83	15	68	242	25	217
February				58	8	50	67	8	59	66	16	50	230	24	206
March				58	8	50	64	9	55	78	15	63	232	27	205
April				33	7	26	40	9	31	61	15	46	209	30	179
May				30	8	22	39	10	29	65	14	51	227	35	192
June	41	10	31	28	6	22	41	10	31	77	15	62	356	48	308
July	31	9	22	33	4	29	23	8	15	80	16	64	412	62	350
August	39	9	30	43	10	33	56	12	44	80	16	64	534	80	454
September	39	15	24	62	10	52	94	12	82	91	15	76	741	81	660
October	101	19	82	89	12	77	119	16	103	124	24	100	845	86	759
November	102	17	85	89	13	76	119	15	104	223	33	190	728	74	654
December	59	14	45	83	9	74	68	15	53	219	19	200	62	47	15
Average	59	13	46	56	9	47	67	11	56	104	18	86	402	52	350
Maximum	102	19	85	89	13	77	119	16	104	223	33	200	845	86	759
Minimum	31	9	22	28	4	22	23	8	15	61	14	46	62	24	15
Per cent minimum is of maximum	[1]30.4	[1]47.4	[1]25.9	31.5	30.8	28.6	19.3	50.0	14.4	27.4	42.4	23.0	7.3	27.9	2.0

[1] Based on less than a 12-month record.



FLUCTUATION IN EMPLOYMENT, RADIO TUBES

PLANT 31, 1926 to 1929.

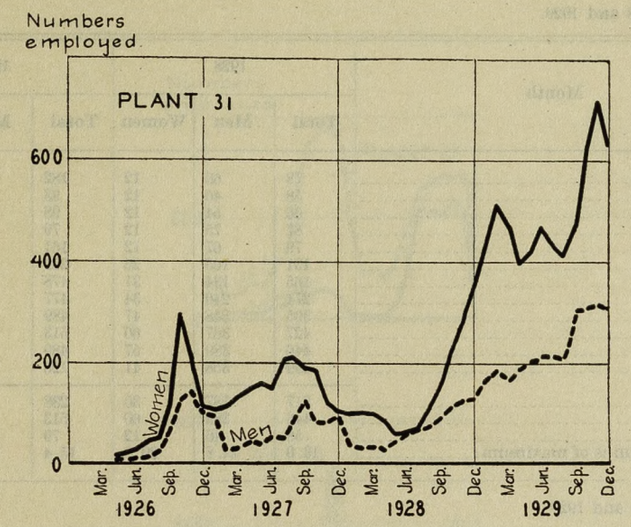
Month	1926			1927			1928			1929		
	Total	Men	Women	Total	Men	Women	Total	Men	Women	Total	Men	Women
January	------	------	------	204	95	109	136	34	102	599	163	436
February	------	------	------	141	28	113	137	34	103	702	186	516
March	------	------	------	170	34	136	135	34	101	632	169	463
April	19	4	15	190	40	150	116	29	87	587	189	398
May	27	5	22	196	36	160	105	45	60	627	206	421
June	41	11	30	205	55	150	122	60	62	687	218	469
July	64	13	51	262	53	209	138	68	70	648	216	432
August	78	23	55	300	89	211	193	75	118	628	215	413
September	184	71	113	313	121	192	254	92	162	781	308	473
October	419	129	290	267	82	185	351	117	234	940	311	629
November	354	144	210	210	85	125	410	129	281	1,030	318	712
December	221	103	118	202	94	108	481	130	351	941	312	629
Average	156	56	100	222	68	154	215	71	144	733	234	499
Maximum	419	144	290	313	121	211	481	130	351	1,030	318	712
Minimum	19	4	15	141	28	108	105	29	60	587	163	398
Per cent minimum is of maximum	[1] 4.5	[1] 2.8	[1] 5.2	45.0	23.1	51.2	21.8	22.3	17.1	57.0	51.3	55.9

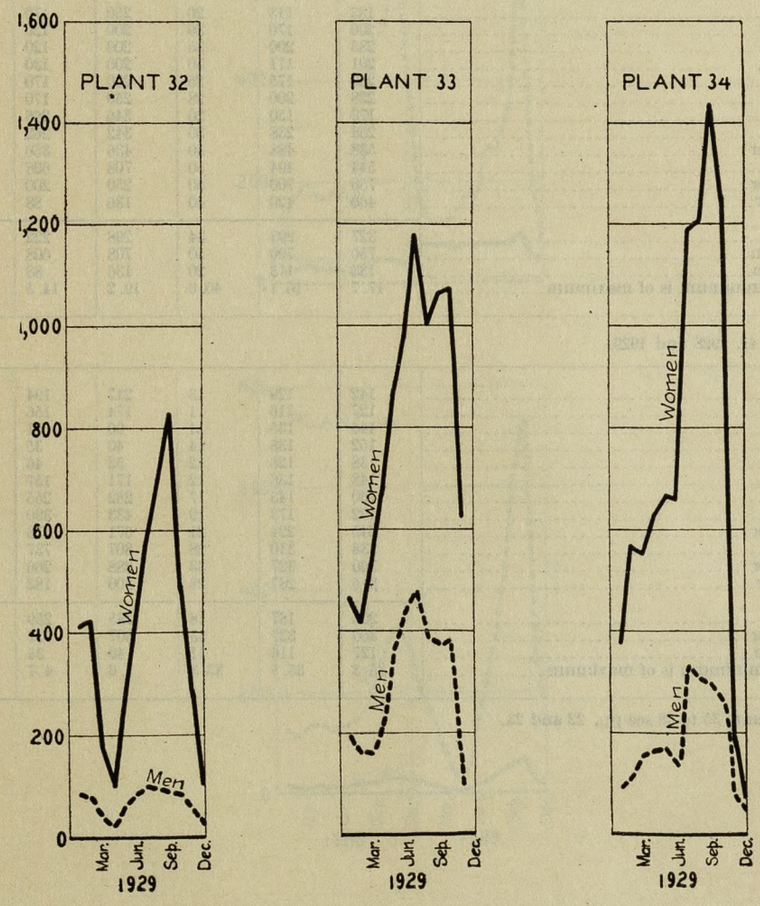
PLANTS WITH 1929 FIGURES ONLY.

Month	PLANT 32			PLANT 33			PLANT 34		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
January	499	87	412	662	196	466	470	95	375
February	505	83	422	586	167	419	684	115	569
March	220	44	176	697	166	531	714	158	556
April	128	26	102	905	227	678	791	164	627
May	317	63	254	1,245	368	877	840	171	669
June	492	87	405	1,418	440	978	801	140	661
July	680	102	578	1,656	479	1,177	1,521	331	1,190
August	799	98	701	1,390	389	1,001	1,517	307	1,210
September	922	92	830	1,440	378	1,062	1,736	298	1,438
October	580	85	495	1,458	381	1,077	1,515	263	1,252
November	331	55	276	723	100	623	274	86	188
December	131	26	105	0	0	0	128	52	76
Average	467	71	396	1,015	274	741	916	182	734
Maximum	922	102	830	1,656	479	1,177	1,736	331	1,438
Minimum	128	26	102	0	0	0	128	52	76
Per cent minimum is of maximum	13.9	25.5	12.3	[2]	[2]	[2]	7.4	15.7	5.3

[1] Based on less than a 12-month record.

[2] Minimum employment was zero.





FLUCTUATION IN EMPLOYMENT, **RADIO PARTS AND ACCESSORIES** [1]

PLANT 39, 1928 and 1929.

Month	1928			1929		
	Total	Men	Women	Total	Men	Women
January	78	66	12	182	176	6
February	58	46	12	93	88	5
March	66	54	12	98	95	3
April	87	75	12	79	77	2
May	79	67	12	161	122	39
June	131	105	26	262	173	89
July	165	134	31	478	258	220
August	274	240	34	477	266	211
September	395	348	47	489	283	206
October	427	367	60	513	278	235
November	446	389	57	489	283	206
December	399	358	41	126	104	22
Average	217	187	30	288	184	104
Maximum	446	389	60	513	283	235
Minimum	58	46	12	79	77	2
Per cent minimum is of maximum	13.0	11.8	20.0	15.4	27.2	0,9

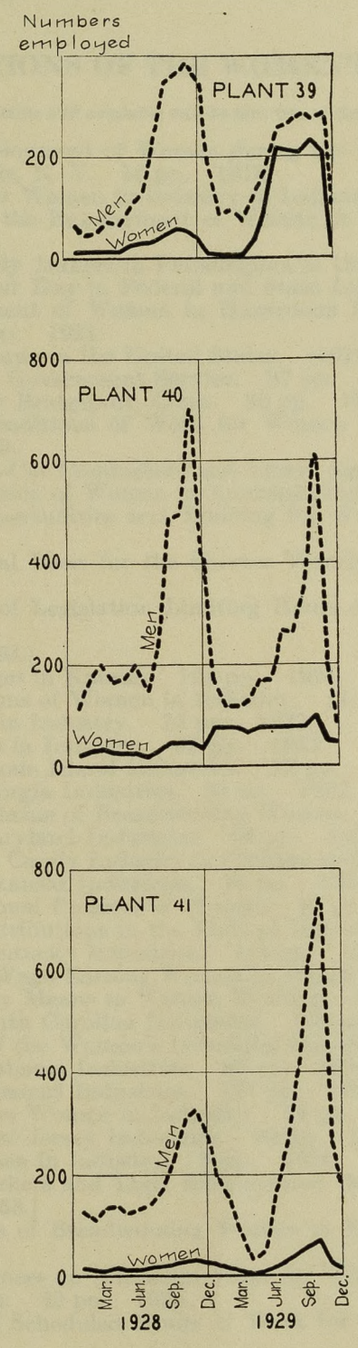
PLANT 40, 1928 and 1929.

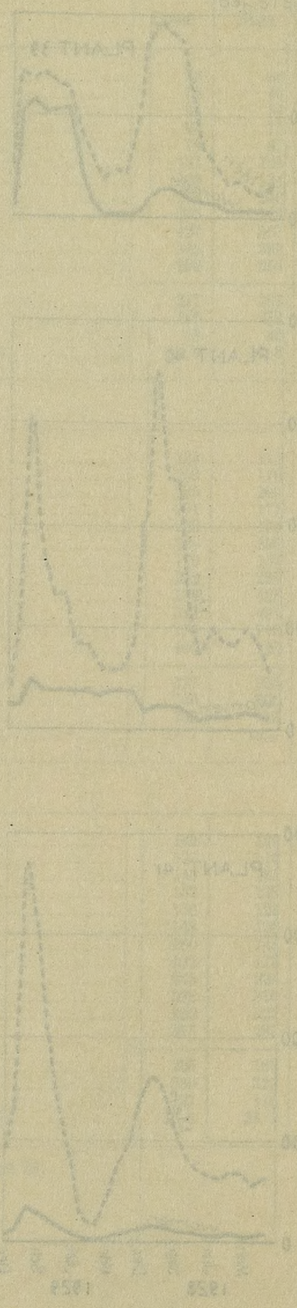
January	133	113	20	250	170	80
February	200	170	30	200	120	80
March	235	200	35	200	120	80
April	201	171	30	200	130	70
May	200	175	25	250	170	80
June	228	200	28	250	170	80
July	170	150	20	346	266	80
August	268	238	30	342	262	80
September	538	488	50	436	356	80
October	544	494	50	708	608	100
November	750	700	50	250	200	50
December	460	420	40	136	88	48
Average	327	293	34	298	222	76
Maximum	750	700	50	708	608	100
Minimum	133	113	20	136	88	48
Per cent minimum is of maximum	17.7	16.1	40.0	19.2	14.5	48.0

PLANT 41, 1928 and 1929.

January	142	129	13	217	194	23
February	127	116	11	174	156	18
March	146	135	11	90	81	9
April	152	138	14	40	35	5
May	138	126	12	53	46	7
June	148	136	12	171	157	14
July	160	143	17	282	255	27
August	192	173	19	433	390	43
September	245	224	21	671	613	58
October	338	310	28	807	737	70
November	360	327	33	288	266	22
December	315	287	28	200	183	17
Average	205	187	18	285	259	26
Maximum	360	327	33	807	737	70
Minimum	127	116	11	40	35	5
Per cent minimum is of maximum	35.3	35.5	33.3	5.0	4.7	7.1

[1] For plants 35 to 38 see pp. 22 and 23.





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[Any of these bulletins still available will be sent free of charge upon request]

*No. 1. Proposed Employment of Women during the War in the Industries of Niagara Falls, N. Y. 16 pp. 1918.
No. 2. Labor Laws for Women in Industry in Indiana. 29 pp. 1919.
No. 3. Standards for the Employment of Women in Industry. 8 pp. Third ed., 1921.
No. 4. Wages of Candy Makers in Philadelphia in 1919. 46 pp. 1919.
*No. 5. The Eight-Hour Day in Federal and State Legislation. 19 pp. 1919.
No. 6. The Employment of Women in Hazardous Industries in the United States. 8 pp. 1921.
No. 7. Night-Work Laws in the United States. (1919.) 4 pp. 1920.
*No. 8. Women in the Government Service. 37 pp. 1920.
*No. 9. Home Work in Bridgeport, Conn. 35 pp. 1920.
*No. 10. Hours and Conditions of Work for Women in Industry in Virginia. 32 pp. 1920.
No. 11. Women Street-Car Conductors and Ticket Agents. 90 pp. 1921.
*No. 12. The New Position of Women in American Industry. 158 pp. 1920.
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*No. 14. A Physiological Basis for the Shorter Working Day for Women. 20 pp. 1921.
No. 15. Some Effects of Legislation Limiting Hours of Work for Women. 26 pp. 1921.
No. 16. (See Bulletin 63.)
No. 17. Women's Wages in Kansas. 104 pp. 1921.
No. 18. Health Problems of Women in Industry. 11 pp. 1921.
No. 19. Iowa Women in Industry. 73 pp. 1922.
*No. 20. Negro Women in Industry. 65 pp. 1922.
No. 21. Women in Rhode Island Industries. 73 pp. 1922.
*No. 22. Women in Georgia Industries. 89 pp. 1922.
No. 23. The Family Status of Breadwinning Women. 43 pp. 1922.
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No. 64. The Employment of Women at Night. 86 pp. 1929.
*No. 65. The Effects of Labor Legislation on the Employment Opportunities of Women. 498 pp. 1928.
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Annual Reports of the Director, 1919*, 1920*, 1921*, 1922, 1923, 1924*, 1925, 1926, 1927*, 1928*, 1929, 1930.

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* Supply exhausted.

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