UNIVERSAL
LIBRARY

OU_156846

UNIVERSAL
LIBRARY

OSMANIA UNIVERSITY LIBRARY

Call No. 331.8 / F 82 H Accession No. 12689

Author Frankel, L K & Fleisher, A.

Title Human factor in industry

This book should be returned on or before the date last marked below.

THE HUMAN FACTOR IN INDUSTRY



THE MACMILLAN COMPANY
NEW YORK · BOSTON · CHICAGO · DALLAS
ATLANTA · SAN FRANCISCO

MACMILLAN & CO., LIMITED
LONDON · BOMBAY · CALCUTTA
MELBOURNE

THE MACMILLAN CO. OF CANADA, LTD.
TORONTO

THE HUMAN FACTOR IN INDUSTRY

BY

LEE K. FRANKEL, PH.D.

THIRD VICE-PRESIDENT

AND

ALEXANDER FLEISHER, PH.D.

ASSISTANT SECRETARY

METROPOLITAN LIFE INSURANCE COMPANY

WITH THE COÖPERATION

OF

LAURA S. SEYMOUR

New York

THE MACMILLAN COMPANY

1924

All rights reserved

COPYRIGHT, 1920,
BY THE MACMILLAN COMPANY.

Set up and electrotyped. Published June, 1920

Norwood Press
J. S. Cushing Co. — Berwick & Smith Co.
Norwood, Mass., U.S.A.

TO

HALEY FISKE, Esq.

PRESIDENT

METROPOLITAN LIFE INSURANCE COMPANY

WHO GAVE US THE OPPORTUNITY TO USE THE COMPANY'S FACILITIES FOR THE PREPARATION OF MATERIAL AND WITHOUT WHOSE SYMPATHETIC INTEREST, THIS BOOK WOULD NOT HAVE BEEN POSSIBLE

PREFACE

THE constantly increasing interest on the part of employers of labor in their employes has led the authors to prepare this volume, which deals primarily with personnel and service work in industry. It has, of course, been impossible in the consideration of these two important subjects to omit reference to other questions which are involved, such as wages, hours of labor, working conditions, etc.

How great has been the interest in the human factor in industry, is evidenced by the ever increasing literature on the subject. The War and the industrial problems arising from it added greatly to the literature published by governmental agencies and private individuals.

In the books, pamphlets, monographs thus far issued, there has been no general discussion of the problems involved. Most of the studies made have been along special lines and have dealt only with certain phases of the problem. The average employer, interested essentially in production and the relation of service measures in industry to increased production, has had no single volume or group of volumes to which he might turn for the information he required. To help supply this need has been the thought of the authors.

It is our hope that the employer who has developed service activities will find something of use to him. The employer who is considering their introduction in his plant may find the material here made available of value to him in formulating his plans. The general reader who is somewhat at sea regarding these newer industrial movements may possibly find an answer to his question. The volume,

we hope, may be used as a text book in service and personnel management technique.

In the past the treatment given to this phase of industrial work has been by industry rather than by subject. The former has the advantage of giving a complete picture of the particular industry. Arrangement by subject has the advantage of enabling the reader to learn the cumulative experience of many employers and to acquaint himself with the philosophy which underlies such experience. With this in mind, we have endeavored to give, under proper subject headings, an analysis of what has been accomplished in industry, and an interpretation of the purposes and motives which have brought personnel and service work into being.

In the last analysis, the value of personnel and service work will be measured by the employer in terms of increased production and by the employe by the opportunities which are accorded to him for personal development both financial and spiritual. Both groups will measure such service by the yard-stick "Does it pay?" "Is it worth while?" Will production increase in quantity and in quality? Will the worker have opportunity for better living and for better self-expression?

We have not attempted to incorporate a complete bibliography, but instead have limited ourselves to a citation of the sources of information in regard to any given fact. These studies in themselves form a reasonably good selected bibliography of the subject.

We are exceedingly grateful to Miss Laura S. Seymour for her enthusiasm and interest. But for her efforts, and especially her ability to organize material, we doubt whether we would have found the time to prepare this work. We want to take this opportunity to thank Miss Emily H. Huntington for her assistance in the preparation of the chapters on "Insurance" and "Community Activities," Miss Con-

stance A. Kiehel for her help on the chapters on "Recreation," and Miss Marguerite A. Goeks, Reference Librarian, for her effective work in collecting, assorting, and preparing material. We trust that we have given credit to the authors whose investigations and writings we have used and to the corporations and individuals who responded so willingly and at much length to our inquiries for specific information.

TABLE OF CONTENTS

		PAGE
PREFACE		vii
CHAPTER		
I.	INTRODUCTION	1
II.	HIRING AND HOLDING	20
III.	HIRING AND HOLDING, CONTINUED	47
IV.	EDUCATION	77
V.	WORKING HOURS	111
VI.	WORKING CONDITIONS	135
VII.	MEDICAL CARE	163
VIII.	METHOD OF REMUNERATION	200
IX.	REFRESHMENT AND RECREATION	226
X.	THE EMPLOYER AND THE COMMUNITY	260
XI.	INSURANCE, SAVINGS, AND LOANS	293
XII.	ORGANIZATION OF THE DEPARTMENT OF LABOR ADMINISTRATION	326
LIST OF REFERENCES		337

THE HUMAN FACTOR IN INDUSTRY

CHAPTER I

INTRODUCTION

The Function of Labor Administration

" For the strength of the pack is the wolf, and the strength of the wolf is the pack." — Kipling.

Human Factor Ignored in Quantity Production. — Modern industrial history is the history of the war against waste; the war for economy of effort in methods of production and complete utilization of raw materials. In the striving for these results the proprietor of the small workshop with his few workers gave way to the corporation housing its industrial armies in large factories. With the concentration of workers and capital under one management, the inanimate machinery of manufacturing was perfected and cared for; the human machinery, on the other hand, until recently was practically ignored. Differentiation of processes made the workers' tasks more simple and mechanical and lessened the need for skill. The worker lost individuality and became essentially an adjunct to the machine, easily procurable, easily replaceable, and apparently requiring little consideration or thought.

The Workers' Only Part in Production a " Fair Day's Work." — The growth in the size of the business unit of necessity destroyed the personal relation between employer

and employe. This separation contributed to the easy and common belief of the manufacturer that he could overlook the effect of work and working conditions on his employes. The employer was interested in obtaining a working force but not in maintaining it. But the maintenance of the mental and physical vitality of the workers, which makes possible vigorous and willing effort, is an essential in modern machinized industry. It is in forgetting this that employer, employe and community suffer from the diminished productivity of a devitalized indifferent working force, one that has been taught that its only part in industry is to give a " fair day's work."

Past Efforts to Improve Working Conditions. — It would be unfair to state that since the inception of modern industry, employers have made no attempts to ameliorate the lot of the worker and to combat the unfavorable conditions inherent in machine production. Improvements of two kinds have gradually taken place — those forced upon the employer and those voluntarily granted by him. The first comprises those brought about by legislation — such as limitation of hours of labor, sanitation of factories, and industrial accident compensation, and those brought about by collective bargaining — such as reduced hours, improved working conditions and higher wages. The voluntary efforts of employers to improve working conditions have been variously known as *industrial betterment*, *welfare work* and *service for employes*. As these terms indicate, employers have made voluntary improvements in the past largely in an altruistic spirit and not as a measure of economy.

New Attitude toward Labor Administration. — To-day the progressive employer realizes that, apart from other reasons, economy alone demands further adjustments between work and workers, and considers service to employes an integral part of production. To this end, departments of labor administration have been organized in many plants in recog-

nition of the needs of the human factor in industry. They aim to increase output by providing the worker with every physical and mental stimulus to greater efficiency. Labor administration is concerned with *those activities carried on by employers and employes jointly or separately which benefit both, have as their unit the industrial plant and are not enforced by law or by organized labor.** Carrying out the instructions of a legislature or conforming to the demands of a union are the negative approach to the problems involved. These instructions and demands merely enforce accepted standards. To secure the best interests of the employer and employes the progressive manager must be in advance of prevailing conditions of employment. He must improve and devise new methods for the economical application of human labor to production.

Standards for Evaluating Labor Administration

Experimental Period Past. — Labor administration has passed through its first stage, that of experimentation. The second period, one of interpretation and evaluation, has been reached. The future depends upon the result of this scrutiny. If labor administration can be shown to be of value, and can be correlated to efficient management, it will enter into the third period, that of extension and expansion.

Three Points to be Considered. — Community, employer, and employe agree that the fundamental purpose of industry is to produce the greatest possible quantity and the best quality of useful commodities with the least possible cost and effort. Each one measures industrial achievement

* In *Industrial Management*, October, 1917, "Labor Maintenance Service" is defined to include "those factory and community activities conducted by employers, employes, or by both jointly, for the direct benefit of the employes and for the indirect improvement of production." As indicated above, this definition does not seem sufficiently restricted.

with a different rule. The community wants the lowest legitimate retail commodity price; the employer, higher dividends on the capital investment; and the employe, a larger share of profits in the form of wages. In justifying the expense of labor administration it must be proved not only that it leads to increased production but that the benefits derived are distributed among all three groups. The policy holders in a mutual insurance company will favor the installation of rest and recreation rooms for employes of the company and medical equipment for their care, if these do not reduce dividends. They judge from the standpoint of the consumer in considering the price of a commodity, and their adverse or favorable judgment may affect the sale of policies. In any coöperative enterprise and other lines of business to a less obvious degree, the consumer's point of view is important with respect to appropriations for labor administration. On the other hand, a corporation must prove to its stockholders in terms of dividends that this service is sound business. Further, an employer may arouse the distrust of his employes if he installs any form of such service without first convincing them of its immediate value to them. There are, therefore, two distinct phases to the evaluation of labor administration — first, does it mean improved quantity or quality of output, and secondly, how do the consumer, the management, and the worker share in the benefits of this improved output?

Effect on Productivity.—It is difficult to estimate the value of labor administration in concrete terms. When possible, results in dollars and cents and in increased output have been given in the chapters which follow. More often the value of this service can be measured only indirectly by factors such as stability of labor force, absenteeism, sickness, or accidents. Moreover, much of this work is of recent origin. The effects will be cumulative and noticeable only several years after its introduction.

Attitude of the Community. — Labor administration has been too limited in extent to warrant the statement that it has had any appreciable effect upon the community, except in isolated instances. The advanced attitude of the community toward these activities, however, is reflected in a decision of the Court of Appeals of New York, in 1909, giving the Metropolitan Life Insurance Company the legal right to purchase necessary real estate on which to erect a sanatorium:

> A corporation may not only pay its employe the actual wage agreed upon but may extend to him the same humane and rational treatment which individuals practice in like circumstances. It must do this in order to get competent and effective service. Old-age pensions, medical attendance in illness, etc., are not to be defended upon the ground of gratuity or charity, but they enter into the relation of the employer and employe, become, as it were, a part of the inducement for the employe to enter the employment and serve faithfully for the wage agreed upon, and become a part of the terms of employment. . . .
>
> The reasonable care of its employes, according to the enlightened sentiment of the age and the community, is a duty resting upon it, and the proper discharge of the duty is merely transacting the business of the corporation.

Value to the Employes. — Because labor in the past had small voice in the division of profits, its attitude toward the development of industry has been negative. Labor's cry has been for more leisure hours away from the factory and for more money to spend; without these, increased production seems unimportant. It is inevitable that labor should retard any effort to develop human machinery which is made without its consent and its own tangible reward in view. The individual employe cannot abstract himself from his labor power, he cannot look at it as a commodity, and when an employment manager or a scientific manager assumes the authority of an expert in devising means by which the employe may double or quadruple his labor power,

the latter naturally looks for the personal benefit to be derived therefrom. The employe will agree that it is good to increase the efficiency of the working force and production by any means which brings him a share in the benefits of this increase. If labor administration is translated to mean to him merely a deduction from wages for a group sickness insurance scheme, or a periodic medical examination, or the interruption of his piecework by enforced rest periods, he will be doubtful of its value. If there is the slightest suspicion among employes that their efficiency is being increased at the expense of their happiness and that so-called " labor administration " is a substitute for reasonable hours, decent wages, and independence, it is doomed to failure. If the value of this service is not apparent to the employe in higher money wages, he must at least be convinced that his own greater efficiency, due to such things as proper health supervision, opportunity for recreation, and lessened worry for the future, has increased his " real wages " and his capacity for enjoying life.

New Names for Old

Historical Origin of Labor Administration. — Preparatory to a survey of modern methods of labor administration it is interesting to trace their origin in history, prior to the adoption of the term " welfare work." The recent growth of welfare activities has been so rapid and universal that we are prone to consider them a new development in industry. On the contrary, we find that even in medieval industry employers provided for the well-being of their employes in ways which seem strikingly modern.

Provisions for the Welfare of Journeymen and Apprentices in Medieval Industry. — In the medieval guilds arrangements were made for the adjustment of grievances. In Coventry in 1520 the Masters of the Cappers were obliged

" to go once a year to all the shops of their craft and call the apprentices before them, and if the apprentice complained three times against his master for 'insufficient finding,' they had power to take him away and put him with another master." [1] Nor was the sick employe cast off by the trade. In 1355 an ordinance reads that " if any serving man (journeyman) of the said trade, who has behaved himself well and loyally towards his master whom he has served shall fall sick or be unable to help and maintain himself, he shall be found by the good folks of the said trade, until he shall have recovered and be able to help and maintain himself." [2] At times the master was called upon not only to teach the apprentice his trade but also to afford him further educational advantages. In 1462 in the case of a boy apprenticed to a haberdasher at fourteen years of age for a term of twelve years, the master undertook to provide him with two years schooling.[3] Hours of work were fixed by the guild. In 1482 the leather sellers, for instance, set forth that work should be done only between six in the morning and six at night, while on Saturdays, vigils and festival days, work was to cease at three o'clock.[4] All guild members were entitled to draw from a mutual benefit fund in the case of real need. This guild chest was filled with the fees charged for the enrollment of apprentices and for obtaining the freedom of the guild, and from the periodic dues collected from masters and journeymen. Even when the journeymen lost the guild franchise and probably paid smaller dues and fees than the master, apparently the guild chest still provided them and the apprentices with relief.[5] From this chest the wardens distributed money for burial, for the relief of poverty, sickness, old age and unemployment, and for the support of distressed widows and orphans of the guild.[6] Loans were made to tide members over a period of trade depression and to aid apprentices who were trying to establish themselves in business or find employ-

ment.[7] The Carpenters of London, 1333, stipulated also that sick members should receive friendly visits from the wardens, besides being given fourteen pence a week.[8]

Transition from Small Workshop to Factory. — Though the status of the medieval master and workman was different, their work place was the same, their common interests were apparent, and provision for their mutual welfare was the natural result. While the so-called industrial revolution has everywhere carried in its wake a nominal democracy, the loss of contact between employer and employe has contributed to that disparity of interest between them which limits the effectiveness of modern industrial organization. But even in the beginning of machine industry and factory life, individual employers realized the value of improving the conditions of their employes and the methods adopted differed little from modern "welfare work."

Robert Owen, Father of Labor Administration. — The real father of labor administration was Robert Owen. In 1800, he took over the management, or "government" as he called it, of New Lanark, a cotton mill, built in 1784, and employed some 1800 or 2000 persons including about 500 children, a "collection of the most ignorant and destitute from all parts of Scotland, possessing the usual characteristics of poverty and ignorance." [9] By 1812 he wrote that the same population "had now become conspicuously honest, industrious, sober and orderly, and that an idle individual, one in liquor, or a thief, is scarcely to be seen from the beginning to the end of the year."

Robert Owen's policy was paternalistic and inquisitorial. No phase of his employe's mode of life escaped his inspection and regulation. One of his first acts was to enlarge, repair and rebuild the houses in the village. A rule was made by which every tenant was required to clean house once a week and whitewash his home once a year at his own

expense. He amplified the village water supply, cleansed the streets and then policed them. Other "welfare" features introduced by this pioneer were voluntary company stores at which better goods could be bought than in the other stores of the village and at a reduction of some 25 per cent in price. The profits from this store supported the "Institution for the Formation of Character," a school for children, opened in 1816. The school building was used as a recreation hall for adults in the evening. A small amount of land was reserved for cultivation by the mill operatives. An asylum was built for the sick and aged. A savings bank for employes received deposits of £3000 in 1818. In the factory no child under 10 was employed. In 1816 he reduced working hours from the prevailing 14 hours a day to 12 hours with $1\frac{1}{4}$ hours off for meals, leaving a total work day of $10\frac{3}{4}$ hours.

Other Pioneers. — Robert Owen was not alone in his pioneer work. One of the most ambitious of these early efforts is told about in Homer's Report of 1845. An English company, employing 854 hands, supported not only a daily school for factory children and the children of their employes, but employed a surgeon at the factory daily between 12 and 1 o'clock, who also made home visits and distributed hospital tickets. There were a library; a brass band with an instructor (paid by the pupils); a voluntary savings bank, receiving sums of from 6*d.* to 5*s.* every Saturday, and paying 5 per cent interest "on undisturbed accumulation of six months"; a sick relief fund, consisting of the fines exacted from employes; festival meetings and an annual picnic; and a fire brigade with monthly practices.[10]

Economy of this Service Recognized. — From the very start this work was found to pay. Robert Owen's unprecedented form of industrial government resulted in a profit of about £10,000 a year from 1800 to 1830, after paying £7000 in unearned wages when the factory was shut down

in 1807, and meeting the expense of benevolences. This was an average of $7\frac{1}{2}$ per cent return on the £130,000 capital investment.[11] Some of this profit would seem to have been illegitimate, since Owen paid a lower average weekly wage than was common in similar establishments.

The third of Owen's essays on "A New View of Society," published in 1816, appeals "to manufacturers and other employers of labor, in their own interests no less than those of the nation at large" to follow his example. He points out the economy of caring for the plant machinery and wrote that:

> If due care as to the state of your inanimate machines can produce such beneficial results, what may not be expected if you devote equal attention to your vital machines, who are much more wonderfully constructed? . . . From experience which cannot deceive me, I venture to assure you that your time and money so applied, if directed by a true knowledge of the subject, would return not five, ten or fifteen per cent for your capital so expended, but often fifty and in many cases one hundred per cent.[9]

So one of the earliest experimenters in "welfare work" discovered that it paid.

Labor Administration on the Continent. — English employers' efforts to improve the condition of their employes probably did not antedate similar ones on the Continent. In France the Blanzy mining company began building houses for their employes and charging small rents, in 1834.[12] Messrs. Schneider and Company, proprietors of the Creusot Steel Works, established a provident fund in 1837, and between 1837 and 1899 advanced building loans to over two thousand workmen.[13] In 1838 the Maison Leclaire, famed for its early profit sharing system, contributed one fourth of its profits to an employes' mutual aid society.[14] It is interesting to note here too that Edmé-Jean Leclaire attributed his fortune of 1,200,000 francs to the economy of profit sharing.

On the Continent the various relief funds of the guilds and mutual benefit societies were the earliest to be transformed into systematic insurance of employes supported in part by employers. In 1839 the Liège Mutual Insurance Fund was formed by 25 mining companies to provide for accident insurance partly at the employes' expense. The system extended rapidly through other Belgian mining districts.[15] The Essen Steel Works in Germany started a sick and burial fund in 1853, and soon incorporated with it a pension fund. A fund for the relief of sickness at home was endowed in 1879, a hospital for employes in 1872, and a life insurance company in 1877. The welfare institutions of the Krupp firm developed so rapidly that their description in 1898 nearly filled a three hundred octavo page book, and in scope they have preceded any similar undertaking.[15]

Early Labor Administration in America. — In the United States the Lowell Textile factories began their paternal care of the factory girls in the early thirties, with boarding houses, company churches, company stores and corporation schools which children under fourteen years of age had to attend for three months every year.[16] Minute rules of conduct were enforced in and out of working hours. In some cases sick funds were made up from weekly deductions of a few cents from each operative's wage. Some firms paid a physician to come once a month to the factory counting-room to vaccinate employes free of charge.[17] Improvement circles and the operatives' magazine, the *Lowell Offering*, first proposed in 1837, originated with the girls themselves,[18] though the other welfare features were severely paternalistic.

But the glowing colors in which Lucy Larcom, Harriet Robinson and other "litterateurs" of the Lowell factory painted their "alma mater" when writing for the *Offering* were probably exaggerated. To secure operatives "a long, low black wagon" cruised New England, whose

driver was paid "a dollar a head" for each recruit "and more in proportion to the distance," so that girls were brought from too far away to enable any easy return home — thus alleged the *Cabotville Chronicle* in 1846. It further claimed that conditions of work and wages were misrepresented to make it appear that Lowell factory girls "could dress in silks and spend half their time reading." [19] It is probable, however, that a resident of Walden, New York, was not drawing entirely on his partisan imagination when he wrote to *Niles Register*, a protectionist paper, in 1827, that "it has become quite fashionable in this part of the country to seek the comfort and well being of the people employed in manufacturing establishments." [20] He concluded his letter: "Sir, a well regulated manufacturing establishment in this country is a real boarding school for young women between the ages of twelve and twenty, taken as they are from the poor and less productive class, and from solitary kitchen service; and since the introduction of the power loom they compose a large proportion of the persons employed."

The welfare work at Lowell seems not to have been so much the result of far-sighted economy or of democratic sympathies on the part of the employers, but rather of the necessity for attracting workers. Lowell employers seem to have shown no great anxiety to retain their workers after securing them, and their "welfare work" was in no way comparable to that existent in England or on the continent.

The New Interest in Labor Administration

Labor Administration a Profession. — It seems probable that the earliest pioneers in welfare work were actuated largely by philanthropic motives. To-day fast accumulating data are proving the importance of the scientific study of the human element in industry, and labor administration

is becoming a recognized branch of production. One of the first signs that the human machine was beginning to receive the systematic attention heretofore given only to the business or mechanics of production was the introduction of the Efficiency Engineer, who was called upon to supplement the management with a knowledge of the technique of production in its relation to the workers. It was hoped that he would coördinate the man power and machine power of the manufacturing plant, between which a wasteful maladjustment had been discovered. Following the Efficiency Engineer has come the Employment Manager, who gives his time to the hiring and discharging of employes and methods of paying or promoting them. Both have come into existence since the beginning of the century.

College Courses in Labor Administration. — Handling the working force of a plant, caring for the human machinery, is fast becoming a profession. The Amos Tuck School of Administration and Finance at Dartmouth, the University of Rochester, the School of Business Administration of Harvard, the Wharton School of Finance of the University of Pennsylvania, the College of Engineering of Cornell University and Columbia University all offer courses in employment management. The Buffalo Chamber of Commerce proposes a College of Industrial Engineering to study industrial hygiene, apprenticeship, psychology, sociology, and administration. During the war several series of short courses for employment managers were given by the United States Department of Labor. "Industrial Counselors" now offer professional advice on problems of personnel management.

Manufacturers' Magazines and Associations. — The recent development of magazines dealing with the problems of plant personnel witness the rising interest in this subject. *Factory*, *Industrial Management*, *System*, *100%*, *American Industry*, and the *Dodge Idea*, among others have been,

with one exception,* established since 1900. They form a medium for the exchange of ideas not only on technical and mechanical subjects, but on all the problems of managing a working force. There are also the new organizations, such as the Employment Managers' Association, the National Safety Council, the National Association of Corporation Schools, and the National Society for the Promotion of Industrial Education. The Bureau of Working Conditions of the United States Department of Labor, created during the last year of the war, indicates the growing emphasis laid on the condition of the working force.†

Reasons for the New Interest. — One naturally asks why the value of human labor has been more appreciated in the past decade than in former years of machine industry. No one reason can be given; but undoubtedly the need for more rigid economy in the size of the industrial unit and speeding up of production have long engrossed the attention of industrial managers, but experience has shown that these alone will not successfully meet national and international competition.

The Efficiency Movement. — The term "industrial efficiency" was first applied to the human factor by Dr. Arthur Shadwell, whose study of industrial methods in England, Germany, and America appeared in part in the *London Times* in 1903.

Frederick Winslow Taylor's book on *The Principles of Scientific Management*, published in 1911, crystallized the American efficiency movement and defined it to mean not only stop-watch methods of regulating bodily movements, but to include the careful selection of men, their scientific

* The progenitor of *Industrial Management, Engineering Magazine*, was first published in 1891.

† The first Employment Managers' Association was founded in 1912, the National Association for Corporation Schools in 1913, the National Safety Council in 1912, the National Society for the Promotion of Industrial Education in 1907.

education and development and an intimate friendly co-operation between the management and the men. The efficiency movement, as it developed, emphasized the necessity for an ample supply of air, light and rest periods, economy of motion, a cash incentive to effort in the shape of a bonus, and for the adaptation of physique to work. But it failed to provide the more indefinite and basic elements which comprise the highest type of efficiency in a working force, namely, interest and stability. It ignored also the need felt by employes for democratic labor organization.

Discovery of the Extent of Labor Turnover. — The study of the worker in industry has drawn attention to the large prevalent labor turnover, and the cost of this instability in a working force. Definitions of labor turnover * and methods of computing it are numerous and varied. The United States Department of Labor defines it as the "number of separations from service during a given period."[21] Whatever the precise definition, labor turnover is the reverse side of the problem of unemployment, and from the standpoint of industry rather than worker it is a measure of unstabilized production and of the maladjustment between the requirements of industry and worker. It is one of the first symptoms, as well as contributory causes of the loss of human values in industry, to attract widespread attention.

In 1912 a study of twelve metal manufacturing companies in the United States, with from less than 300 to more than 10,000 employes, of all grades of skill, revealed the following facts: with a total increase in the working force during the year of 6697 employes, these companies hired

* It is interesting to note the possible origin of the term "Labor Turnover." In the medieval guild, the number of apprentices or journeymen any one master might employ was strictly limited by statute, but sometimes a master in need of extra help secretly bought over the apprentices of a less busy craftsman. This process was called "turning over" an apprentice.[22]

42,571, or six and one third times as many as were needed to meet the increase. Of these 72.8 per cent had never before been engaged by any one of the companies. These industries thus lost during the year 35,874 employes, while at the end of the year they were employing only a total of 43,971.[23] These were the first data procured to show the degree and extent of labor turnover which was found to be peculiar to no one part of the United States and to exist likewise in Austria, England, France, and Germany.

Cost of Labor Turnover. — This constant flow from one factory to another does not benefit the greater number that change. It undermines the morals of the working force and lessens general productivity. The cost is borne by employe, employer, and community, and cannot be accurately reduced to dollars and cents.

Causes of Labor Turnover. — Although as old as industry itself, labor turnover has probably increased rapidly in the past few decades. This is not due to a shortage in labor but rather to the increasing subdivision of labor processes, which has made work more monotonous and transition from one occupation to another more easy. Traveling from place to place has become a simple matter of hours instead of days, or days instead of months. Newspapers and other advertising channels carry the news of positions or opportunities for advancement in industries in different localities. The less skilled worker, discontented with his monotonous task, anxious for more wages, more leisure time, or change at all costs, assumes almost a nomadic existence.

Employers promote this migratory condition by competing instead of coöperating in their efforts to secure workers. They go far afield in advertising and scouting for labor and then seldom make it worth while for the worker to remain in their employ by carefully selecting, placing, and training him to fit the job and rewarding his resulting efficiency.

Then, too, unsatisfactory working conditions and the employer's habit of laying off workers in accordance with market fluctuations combine to increase restlessness among the working force.

To increase efficiency in production — to check this constant flux of incoming and outgoing employes, to attract, stabilize, and enlist the coöperation of their working force, employers are compelled to recognize and to treat the individual working unit as a human being and not as a cog in a machine. So the discovery of the cost of labor turnover is one of the prime causes of employers' renewed interest in their employes.

Effect of Organized Labor and Legislation. — But other forces besides motives of economy have contributed to the move to humanize industry. Where the contact between master and workman has ceased to exist, the working class has drawn together, conscious of its needs and demanding a more equitable distribution of the profits of industry. Many of the voluntary improvements made by employers in working conditions are in tacit recognition of the power of organized labor, and an attempt to allay discontent and to forestall agitation and union activity. But more important than any forced shortening of hours or increased pay is the revolutionary attitude toward the labor factor in industry which the unions have brought about. Public opinion, crystallized into legislation, has forced employers to improve working conditions. This is evident, for instance, in the effect which the Railroad Liability Act (1911) had on the reduction of railroad employes' accidents. This act made such accidents extremely costly to the railroad companies and whereas in 1910, 2.17 railroad employes out of every thousand men employed were killed while on duty, in 1916 this number was only 1.17, a decrease of 47 per cent.[24]

Influence of the New Type of Man in Industry. — One other factor which has accelerated the voluntary changing

of the conditions of work by employers is the advent of a new type of industrial manager within the past quarter of a century. Twenty-five years ago the professions monopolized the college graduate. To-day a college training is a prerequisite for any executive position in many large companies. Large scale industry now absorbs the best energies of brain as well as of hand so that industrial sciences and professions compete with others in the type of man they are attracting. This means a broadened and more scientific point of view brought to bear on all the problems of industrial organization.

Scope of Problems of Labor Administration. — The need for economy, the demands of organized labor, the enactment of labor legislation, and the education of employers have within recent years combined to give a new significance to the problems of labor administration which have to do with, — obtaining and holding the employes, — technical training, education, and promotion, — methods of remuneration, and of providing savings and loan facilities with insurance against accident, sickness, old age, and death, — the length of the working hours, — the work environment, — medical supervision, — opportunities for recreation and self-development on the factory premises, — and housing and living conditions.

Now an International Experiment. — To-day American manufacturers have surpassed other employers in their efforts to attract and hold their employes. In 1918 the South Manchuria Railway Company, employing 37,000 Japanese and Chinese, sent the head of its welfare department to the United States to study American employers' welfare service.[25] But labor administration is peculiar to no country; it is an international experiment. The Commercial Press of Shanghai, China, provides for the recreation, education, pensioning, housing, and medical care of its 14,000 employes.[26] The Manchuria Railway Company's

Welfare Department requires twelve officers to carry out its work. Profit sharing in various forms exists in France, Great Britain, Germany, the United States, Switzerland, Austria, Hungary, Belgium, Holland, Italy, Scandinavia, Russia, Spain, and Portugal.[27] Welfare institutions on a gigantic scale were developed by the Krupp Works in Germany. But England, with its Bournville, York, and Port Sunlight, and the United States with the manifold activities of many corporations, are close competitors.

As industry grows and manufacturing processes are improved, systematic labor administration will become more general in so far as it is found to be productive. No matter what the future may hold, whether it may bring great, perhaps fundamental changes in the control of capital and the management of industry, these experiments in method will prove to be of value. Irrespective of ownership or the division of product among the factors of production, the problems of making more and better goods will go on. As long as it does, the question of making each worker and each hour of work as effective as possible will exist. To summarize the results of the various methods of labor administration to date, to suggest lines of future development, may prove helpful to those on whom rest or will rest the management of production.

CHAPTER II

HIRING AND HOLDING

Current Disregard of Employment Methods. — Before the war, when a textile manufacturer in Massachusetts was perhaps buying his wool in Leicestershire, his dyes in Germany and his machinery in Pennsylvania, he was probably waiting to " buy " the first chance applicant at the factory door to fill the vacancy in his working force. Moreover, he had small regard for placing the applicant where both the worker and the industry would profit most from his labor; nor did he make real effort to retain his services, once secured, beyond offering him the regular, impersonal wage payment of the purchasing price of his class of labor. Such is the average employer's careless attitude toward his " human machinery."

Prevalence of Industrial Misfit. — Current labor turnover figures, both before and during the war, have revealed in part the absurdity of the assumption that any particular industry, without conscious effort, attracts and holds in its employ those workers best fitted for it. The physical, mental, and temperamental fitness of each employe for the work which he is to do contributes to the development of a contented, effective working force, with a tendency toward stability. Such a condition of mutual satisfaction is obviously not prevalent in industry to-day, and it is one of the basic difficulties, that of obtaining and retaining the worker best fitted for the work to be done, which constitutes the employment problem.

Sources of Labor Supply. — There are four phases in employment, namely: securing, selecting, inducting, and retaining efficient workers. Choice predicates quantity from which to choose and few employers can rely solely on the "peddlers" of labor who come to their doors to provide them with the necessary quantity and quality of applicants for employment. A systematic effort to secure applicants is usually essential. But there are sources of supply within as well as without the plant. A position may be filled by transferring or promoting a present employe as well as by hiring a new one, and with greater assurance of success, in that such a selection is based on a knowledge of the worker's capacity. Opening avenues for promotion and transfer creates an invaluable source of labor supply.

Job Analysis Selection. — After an adequate choice has been made possible and after analyses have been made of the individual equipment which makes for success in the work to be done, it remains equally important to develop reliable methods for discovering the applicant whose probability of success is highest. Various methods have been suggested and a few have proven their value. Interviews, examinations, — mental and physical, — investigations of references, studies of personality and previous experience, all play a part in the process of selection.

Induction. — When the applicant has been chosen the next step is to secure his active coöperation and to fit him into the business organization of which he is to be a part. His duties must be explained, his superior's interest in him developed, and he must be trained to become an integral part of the industry. This necessitates "following up" the new employe to see that he fits his job and that the job fits him. If he has been placed in the wrong niche and his discontinuance is contemplated, at his own or his superior's suggestion, it may still be possible to find another place in the organization which will better fit both his and the

industry's needs. Conference and explanation may remove difficulties and grievances, and as a result a successful workman be developed from an apparent failure.

Development. — Retaining efficient workers involves the necessity of promoting an employe as fast as his ability warrants. The recognition of ability helps to produce a satisfied plant personnel and an indispensable *esprit de corps.* Establishing a careful policy of promotion makes of the employe's personal ambition "a centripetal instead of a centrifugal force" in the industry.

The Employment Machinery

Foreman as Employment Manager. — From the versatile master of the small workshop — buyer, workman, and seller — has descended the modern foreman of the large scale industry. But with the growing intricacy of supervising machine production the foreman has been gradually relieved of most functions of general management and his attention confined to the actual process of production. Although the organization of industry has been divided and subdivided and specialists have assumed many of the varied functions of the early master workman, still the complex and special function of finding and placing workers rests on the foreman's shoulders.

Complex Duties. — Consider the duties of the foreman in some shops as outlined by Mr. Fisher: They set speeds and depths of cut, decide on the best angles and shapes of tools, the best cooling agents, the kind of steel to use, set piece rates, route the work in the department, keep data on idle equipment time, act as stock chasers, adjust differences as to wages, break in new men, and discipline and discharge insubordinate and incompetent men.[1] Unquestionably the foreman must be relieved of the duty of hiring and firing men if the human factor in industry is to receive due attention.

Lack of Judgment. — Moreover, though technically skilled, the usual foreman has risen from the ranks and is not apt to have the power of judging men as well as machinery. Besides being too busy, he is too close to the work to get a proper perspective of its requirements. The selection of workers in his hands is apt to become a matter of personal, prejudiced likes and dislikes.

Job Selling. — Not only is this true but, where the foreman hires, the danger of "job selling" is always present, and if carried on it is certain to produce a mediocre, discontented working force. This is especially difficult to avoid where non-English-speaking groups are dealt with, if the employment function is not centralized. In Ohio in 1916, the Industrial Commission found "job selling" carried on in at least six large industrial plants in the State, employing approximately 40,000 men. The price of a job varied from $5 to $30, and the money was sometimes pocketed by the foreman alone, sometimes divided between the foreman and one or two sub-foremen.[2] This practice is frequently accompanied by bribing for promotion and occasionally by dummy names on the pay roll, whose pay envelopes reach the foreman's pocket.

Absence of Coöperation. — But even with foremen of the best intentions, the selection of employes is inevitably a hit and miss process. Then, too, there is an unavoidable lack of coöperation between department heads in the matter of transferring men when they have been wrongly placed or must be laid off. A large steel corporation is reported to have advertised recently for seven hundred common laborers and to have laid off one thousand in another department on the same day. Employment is essentially a plant and not a departmental problem.

Centralized Employment Department. — The brief statement of the problems involved in securing and holding an

efficient working force reveals the futility of leaving its execution to the detached foreman. They include:

(1) Mobilizing the sources of labor supply within and without the plant;

(2) Analyzing and classifying the requirements of the jobs of the entire plant;

(3) Selecting and placing applicants for work according to their physical, mental, and temperamental fitness for the specific job;

(4) Inducting and "following up" the new employe until adjustment is complete;

(5) Retaining and developing the old employe.

The appreciation of the value of such a broad program indicates perhaps most clearly the need of a centralized employment bureau with officers of special ability and professional training.

Its Recent Growth. — But the centralized employment bureau, which relieves the foreman of responsibility and makes methods of hiring and firing uniform throughout the plant, is rare. In 1915 a canvass of twelve business houses lying along twenty squares of a street in the Philadelphia textile district, showed that eight left hiring and firing absolutely to the foremen, three gave a superintendent slight supervisory powers, if the foreman was inefficient, while in one, the head of the firm did the hiring.[3] Even in the larger industries which have now decided that employment requires the special direction of an employment department, its development is of recent growth. An investigation covering thirty-seven large New England firms showed that few have had such a department for more than five or six years; one department was sixteen years old, two were nine years old, and as yet twelve had none.[4] Though of recent origin, this specialization of the function of employment is extending rapidly and more and more progressive firms are adopting it.

Objections to It. — It may be argued that a small industry cannot afford an employment department and that even in the larger industry, while it may be needed in times of labor scarcity, it is not warranted in a time of business depression or in slack seasons. As Mr. Feiss says, however: "While a very small organization may not be able to afford even one person whose sole function is the business of employment, this activity should nevertheless be recognized as a separate and most important function, and in such cases administered by the manager or assistant manager himself." [5] It should be borne in mind, too, in answer to the second objection, that in a time of slack work all unavoidable laying-off should be done with the needs — present and future — of the entire plant in mind, rather than of the separate department. The employment bureau should pool the labor reserve of the plant and thus greatly reduce the costly turnover. A period of slack work, moreover, admits of extended transfer and training of employes in different processes, thereby laying the foundation for a more efficient and intelligently coöperative working force.

Economy of Centralized Bureau in Reducing Turnover. — The economy of installing employment departments is already apparent. The Dennison Manufacturing Company found that during the first two years of their employment department, a reduced turnover * had netted them a saving of $25,000, charging $50 to the cost of replacing each experienced hand.[6] The Curtis Publishing Company estimated that, in one year after the introduction of a centralized employment bureau, there had been a saving of $90 per person "landed on the books," because the applicant accepted was almost sure to "make good." [7] In 1914, the Ford Motor Company introduced the centralized employment bureau. The policy of the bureau is to transfer a man as many as six or eight times until a place is found

* For definition of labor turnover, see page 15.

where he can do the work and earn his $5 a day. This policy reduced the discharges from 8390 in 1913 to 27 in 1915.[8]

The Hayes Manufacturing Company of Detroit cut their turnover in two in the first year of the operation of an employment bureau, and in the next four months the turnover was more than cut in two again. More significant even is the fact that this reduction was accompanied by a 30 per cent increase in output per man.[9] The Solvay Company of Detroit in 1916 had an employment bureau in one of its two plants, the Semet-Solvay (Coke) Company, but not in the Solvay Process Company which adjoined it. The latter company was having labor difficulties, and to remedy them, the employment manager of the Semet-Solvay Company took over the hiring and firing in both plants, beginning May, 1916. In May the combined average turnover was 10 per cent; in June the turnover dropped to 8.3 per cent; in July it was 8 per cent; in August, 4.1 per cent; in September, 3.3 per cent; in October, 3 per cent; in November, 2.6 per cent; in December, 2.4 per cent; and during these same months the average labor turnover in Detroit " was jumping up by leaps and bounds." [9] Such results give complete evidence of the value of centralized employment management.

In Relieving Foremen or Officers of the Firm. — The employment department brings with it an additional economy in relieving the foreman of the responsibility of hiring and firing and allowing him to devote his efforts to securing the maximum output. An even greater saving is effected by introducing a centralized employment department where the interviewing of applicants has taken the time of members or officers of a firm or organization. The comptroller of one institution where an employment department was established said that he was thereby saved one day a week, which, since he received a salary of $10,000 a year, was equivalent to a $1600 saving in the time of one man alone.[10]

Centralized Bureau Not as Yet General. — These estimates are suggestive, but a measurement in dollars and cents of the value of an employment department is as yet scarcely practicable. No two firms estimate their turnover costs alike, and employment records and statistics are not standardized. The work is in an experimental stage. The oldest Employment Managers' Association was founded in Boston in 1912, and marks the beginning of employment management as a recognized profession. Since then, like associations have been formed in ten of the largest cities in the country and enroll nearly 1000 firms.[11] These associations have as yet done little more than make suggestions for future development, few members having any past achievements to relate.

Introduction of Employment Bureau. — In spite of the generally accepted theoretical value of an employment department and its indicated practical value, certain difficulties may arise in its introduction. The foreman, or other person in charge, refuses to believe that he is not the best judge of the man for his own work and resents the loss of prestige which goes with the power of hiring and firing. But the coöperation and interest of the foremen are essential to success. Without their coöperation it is impossible to draw up job specifications and make adequate provision for transferring men who have not "made good" in one department to another, and for promoting men, instead of bringing men from outside for the higher positions.

To gain the foremen's support it has been found best in some plants to *ask* their opinion about the introduction of an employment department rather than to *tell* them about it after it has been installed. The Fore River Shipbuilding Corporation solved the problem by appointing a committee of foremen, mechanics, and office men who planned the bureau, after studying the plans proposed and

adopted by other firms.[12] One large firm held a conference of six hundred foremen to consult with an expert on the various problems of employment and management of the plant personnel.[13] Such conferences might well precede the inauguration of an employment bureau. Whatever difficulties arise can be easily overcome with tact, and the result will certainly warrant the effort and the immediate cost.

Securing Applicants

In the absence of a thoroughly organized market, the employment manager must make a survey of the sources of supply and evaluate the possible methods of obtaining applicants. At present, vacancies may be filled from among those

(1) applying for work at the plant or by mail;

(2) recommended by present employers or by a third person;

(3) reached by advertising in newspapers, circulars, etc., or by scouting;

(4) graduating or leaving schools;

(5) registered by employment agencies;

(6) recommended for promotion and transfer within the plant.

Personal Applications. — (1) Investigation indicates that most firms rely principally on the newspaper column and the "peddler" of labor for securing their employes. In 1911, the New York Commission on Employment found that out of seven hundred and fifty employers, four hundred and fifty-eight, or over 60 per cent, "could always get all the help they wanted and practically all of them hired their forces from people who made personal application at their plants"; two hundred, or 27 per cent, advertised for help; fifty used employment agencies, and ten depended on trade

unions.[14] In an investigation made by the National Association of Corporation Schools, nineteen out of forty-one corporations rarely had to look beyond their doors for applicants for work.[15]

The old "want shingle," with the "peddling" of labor, has long been under fire from the standpoint of the "jobless man." It is also an evil from the standpoint of the "manless job." The man who is out of work and offering his services indiscriminately is apt to be doing so because he is not the most efficient applicant obtainable. The wasteful system of "peddling" his labor helps to keep him so. The individual firm can best help to correct this evil by protecting itself from having to take the man who happens to be at the gate when a vacancy occurs.

Application Blanks. — The need for additional workers should be forestalled as far as possible by the use of application blanks, filed and classified for future reference Not only should all applicants coming to the plant fill out application blanks to go on file, but such blanks should be filled out by those reached through other channels as well. Those who send letters of application should be asked to come to the plant to fill out the regular blank, or when this is impossible, blanks can be sent to them. The development of such a file will make it possible to

(*a*) keep a selected list of good material for future reference;

(*b*) attract a superior class of men who are not out of work but are looking for better opportunities and can wait for an opening;

(*c*) postpone the engagement in order to dispel the first impression made by the applicant;

(*d*) eliminate floaters.

The Life of an Application Blank. — The length of time for which an application blank should be kept varies with the condition of the labor market. In a period of depres-

sion and unemployment its term of usefulness will be longer than in a period of industrial activity when competition for labor is keen and the workers move about restlessly in response to the enticements held out by employers. It will vary also with the class of labor involved, the unskilled manual laborer being a bird of passage, gone in a few days or weeks, while at the other extreme is the highly skilled, or technically equipped, or executive person, who is more stable and may be available for several years after the first application is made. Above all, this variable quantity is affected by the character of the firm, which, if it offers unusually attractive wages, hours, and opportunities, may draw from its filed application blanks correspondingly longer than other firms. In the case of the Ford Motor Company, where at one time the crowd clamoring for work got so large that they "had to turn the hose on them to keep the crowd from breaking in one side of the building," and where they now receive between 2000 and 3000 applications by mail every day, the application blank becomes an absolute necessity.[16] It is a means of separating the wheat from the chaff and provides an almost permanently useful file. The life of the application blank of both small and large employers will be determined by these same factors. A helpful device is the division of the blanks into a "live" and a "dead" file, the "live" being kept up to date by weeding out all applications made too far in the past to be dependable. The "dead" file offers a last resort if the "live" file fails.[17]

Recommendations: From Employes. — (2) In questioning some thirty firms as to the value of the different methods of getting applicants for work, Mr. Kelly found a general agreement about those recommended by employes. Twelve firms thought them the most important source of all and five classed them as very important. The Cheney Company encourages its employes to bring in friends by

offering a cash bonus to the employe if his friend proves satisfactory.[18] Joseph and Feiss Company, in Cleveland, and the Dennison Manufacturing Company use this source extensively. It works well in a foreign labor group and especially if an effort is being made to secure a new racial group. It is at all times a stabilizing force in the personnel of the plant and if careful selective methods are used in the first place the employe's friends and relatives are apt to be of a correspondingly good type.

The Curtis Publishing Company, on the contrary, will employ no one who has a relative in the company in any capacity,[19] probably to avoid the danger of favoritism and of antagonizing employes whose relatives cannot be accepted. But if the employe is asked to fill out a blank stating why his friend or relative is desirable and giving information about his work and employment, the employe's feeling of responsibility for the friend's or relative's success greatly reduces the danger of his suggesting unsuitable material. Such blanks are sometimes distributed periodically among employes. Moreover, it should be fully understood that the qualifications of each applicant are subject to the impartial scrutiny of the employment manager.

From a Third Person. — Employing persons recommended by a third person other than an employe or a regular agency is coming into disfavor. The judgment on which such a recommendation is based is seldom disinterested and usually made without adequate knowledge of the firm's needs. An employer will rarely wish to rely on such outside judgment of his needs. Moreover, partiality toward this class of applicant, because the recommendation is endorsed by an officer or firm member, will often lead to dissatisfaction among employes. An exception to the general rule is in cases where a number of employment managers in the same city agree to exchange the names of desirable applicants whose services they cannot immediately use.

In all cases, however, the recommendation should be subject to the review of the employment manager, and his decision as to the suitability of the applicant should be final.

Advertising. — (3) The newspaper "want ad," although subject to much criticism, holds its place as one of the most common methods of securing applicants. For obtaining young or semi-skilled workers, it is perhaps unequaled. Its greatest weakness is that it is undiscriminating and consequently entails considerable expense in the weeding out of "undesirable" applicants. The total amount expended in the "want ad" columns is very large. In New York State it is estimated that 2000 newspapers carry yearly some 800,000 columns of "help wanted" advertisements at a cost to employers and employes of $20,000,000, or $5 per person employed in the State.[20] Another serious difficulty is that when advertising, competing employers are tempted to offer illusory attractions, which result in a futile interchange of employes without ensuing benefit to employers or workers.

Except in special instances, it is best that an advertisement give in detail the different positions to be filled, with their respective duties, hours, etc. The more exact the statement, the fewer will be the applicants who appear and the more nearly will those applying meet the requirements of the positions to be filled. Special and genuine inducements, such as welfare activities, are listed by some companies to advantage.

"Blind" or "Open." — There is much disagreement as to the relative merits of the "blind" and "open" advertisement. Those in favor of the former claim that it automatically eliminates much hopeless material. A Curtis Publishing Company employment manager thinks the "only redeeming feature" of the "open" advertisement is the rapidity with which the temporary worker may be secured.[21] But the "blind" advertisement defeats its

own ends because it does not attract the best type of worker, the one who is employed. He wants to know to whom he is applying for work, in order that he may judge, in some measure at least, the truthfulness of the advertisement and the possibility of improving his condition. If it is used as a means of detecting an employe's disloyalty or dissatisfaction before notice is given, it may secure the information desired, but will in all probability create further dissatisfaction among the employes who learn it. The "blind" advertisement may be necessary when a person holding a responsible position is to be replaced. On the whole, however, it would seem that all the advantages of the "blind" advertisement and none of its disadvantages can be secured by stating in an "open ad" that only applications in writing will be considered.

Misleading Advertisements. — Exaggerated or misleading advertising is poor policy. If a large number of applicants are called for and respond and only a small number are really needed, it is probable that those who do not secure positions will feel that they have not been fairly considered and will not apply on another occasion. A munition plant in New York State with a maximum capacity for about two hundred and fifty workers, advertised for a long period in 1917 for one thousand women with $7 a week guaranteed. It was not explained in the advertisement that the $7 was paid for only two weeks, after which the worker was put on a piecework basis which brought in only $5 a week. The loss to the company in wasted advertising and excessive turnover might well have been saved by living up to the guarantee at least. Another New York State firm advertised in the same year in near-by cities that the transportation of new employes was paid in advance without stating that the firm proceeded to deduct that expense from the worker's wages and refunded it only if he remained longer than three months. In some states ad-

vertising of this kind is illegal; in all it is unwise. It prejudices the employe and makes it difficult for honest employers to secure proper results from legitimate advertising. Although few cases of fraudulent advertising are reported by the victims, in one year the Commissioner of Licenses in New York investigated two hundred and ten complaints.[20] Open, honest, detailed advertising, though costly, is a successful way to secure workers. Dishonest advertising secures the worker only to lose him again.

"**Positions Wanted.**" — The extent to which the "positions wanted" columns can be utilized will depend in large measure on the grade of employe sought and the condition of the labor market. Only the higher grades of workers advertise and few of these will have to resort to advertisements in a time of industrial activity. Newspapers and magazines that have special "blue lists" of investigated advertisements become practically employment agencies and are certainly to be consulted. In order to secure special workers newspaper columns are of great assistance. Even experts may be obtained through the "positions wanted" columns of some newspapers.

Scouting. — A successful scouting and advertising scheme was recently adopted by the Fore River Shipbuilding Company. A folder was distributed in many industrial centers, giving working hours, wages, overtime pay, bonuses, a complete list of the trades opened, and attached was a time table of trains to the yards.[22] Largely by means of this folder, the force was quickly doubled from 5000 to 10,000. One remarkable instance of scouting occurred in the fall of 1917, when a munitions corporation in Pennsylvania sent scouts with large handbills with a picture of gold spilling out of a bag on one side of the sheet to the factory districts in Philadelphia at closing hour. These handbills were distributed and a special train was provided and filled every evening with the workers rushing for gold. In five days

3500 men were thus "kidnapped." Not infrequently employment agents scout cities where unemployment has been caused by disasters.

In a New York manufacturing town, one firm has a social worker who canvasses the employes' homes to list all children, their respective ages, school grades, and desirability as future employes. Through this list, kept up to date, the children are followed until they leave school and are then offered employment in the plant. Some employers resort to a house to house, block by block, canvass in certain neighborhoods. But most scouting is effective only as an extreme emergency method, since it prohibits the careful selection necessary to build up a stable force.

Schools. — (4) Employers are beginning to reach back to the ultimate sources of supply and to explore the general schools, trade schools, and colleges for apprentices in clerical, technical, and executive work. The Dennison Manufacturing Company each summer provides places for a number of high-school girls, whether there is need for them or not. Strawbridge and Clothier Company, of Philadelphia, do the same. The Curtis Company Employment Department keeps in touch with principals of all schools in Philadelphia, informing them of their requirements. Other large firms send representatives each year to colleges and educational institutions to describe the occupational opportunities in their plant. The General Electric Company of Schenectady covers in this way some seventy-three American and eight foreign colleges.[23]

Firms desiring young, trainable workers should strive to secure graduating students or others leaving school. During the first years after the completion of education, irrespective of the age at which this takes place, the boy or girl is apt to drift from one job to another in the vague search of an untrained person for congenial work. To overcome this and to allow for more specific preparatory

training, school authorities and state legislatures have evolved a number of part-time systems by which children who have reached a given age may divide their time between school and work. Failure to appreciate the value of training a potential employe before he leaves school, coupled with the difficulty of arranging for part-time work, has prevented employers from availing themselves as fully as may be of this source of supply. This is evident from the experience of the Curtis Publishing Company. The Pennsylvania Child Labor Law requires minors under sixteen to attend school eight hours a week. In consequence, a Curtis employment manager writes: "Should a request be received for two sixteen-year-old boys, eight of the most desirable applicants would not be too many to send for, as the chances are that 50 per cent will be satisfactorily employed. If the request, on the other hand, came for two boys under sixteen, on account of the present lack of demand due to the law, three boys would be enough to summon." [21]

Employment Agencies. — (5) Employment agencies are of three kinds:

(*a*) Private agencies conducted for profit;

(*b*) Special agencies, conducted usually at cost;

(*c*) Public agencies, supported and managed by the government.

Private. — The most costly to employer and employe alike is the first group — the private employment agency. In New York City, nearly one thousand private employment agencies collect $2,000,000 in fees yearly, and yet over 85 per cent of the employers never use them.[17] The expense to the applicant for work at the private agency of being sent on false trails and of the frequent misrepresentation of conditions, as well as of the extortionate fees, is well known. The private agency's lack of discrimination and interest in recommending employes makes it also costly to employers. A recent study of labor conditions in a large plant

showed that it had been seriously exploited by the private employment agencies in a number of Eastern cities. Workmen had been shipped to the company's plant regardless of fitness for the work; the company was charged for railroad fare, board for retaining the worker, and fees, while the worker often did not arrive at all, and if he did, often could not be used. The consequent loss to the company was estimated at $1000 a month.[24] The private employment agency is seldom of real value and frequently earns its name of " employment shark."

Special. — There are many groups of special agencies conducted by employers, employes, and by interested citizens. The employers' trade employment offices are seldom of great value, as in most instances they are distrusted by the workmen. This distrust is sometimes merited, as in the case of the so-called " Welfare Bureau " of the Lake Carriers' Association, recently investigated by the United States Department of Labor, which aims primarily at strike-breaking and blacklisting.[25] Such agencies are in a position to furnish selected employes, but employes seldom selected on the basis of efficiency or ability. In addition to the trade agency are the efforts of Chambers of Commerce to organize employment agencies among their members. These may prove of value, provided they do not earn the same distrust as other employers' agencies. On the other hand, many trade unions conduct labor exchanges, but unless the trade is completely unionized, an employer will ordinarily hesitate to resort to the union agency. In either case there are a fear and hostility which make agencies of this sort almost valueless. Still another agency conducted at cost is the philanthropic agency, which at present is of little assistance except in the search for very special or unskilled labor.

Public. — The third group is the public employment exchange, managed for the mutual benefit of employe and

employer and supported by taxation. Its development in this country has been exceedingly slow. England and Germany each have about five times as many public employment agencies in operation as the United States. The first public employment bureau in the United States was opened in the State of Ohio in 1890. There are now seventy or eighty such bureaus throughout this country, but until recently these have acted as clearing houses for unskilled manual labor only. They are inadequate in number, without proper supervision, organization, and information. The managers are underpaid, and are often political place holders. Uniform records are not used, and the bureaus do not coöperate. Only twenty of all these bureaus report "fitness" as a basis of placement.[26] Within the last few years there has been rapid progress, however, notably in Ohio, Wisconsin, Illinois, and Massachusetts. The Cleveland bureau has centralized all the agencies in the city, private, philanthropic, and public, and is beginning to place the college graduate and the specially trained man and woman, as well as the manual laborer.[27] It maintains a neutral attitude in all labor disturbances, investigates both employer and employe, and aims at vocational guidance and fitness in placing.

Federal. — Through gaining the confidence of employe and employer such bureaus will eventually do much to solve the problems both of unemployment and of labor shortage. The greatest hope of the future lies perhaps in the new branch of the Department of Labor, the United States Federal Employment Service, which aims ultimately to place each worker in the country in that job in which he will add most to the total volume of production with the least cost to himself, to the industry and to society. It seeks to bring the entire labor supply in contact with all demands for labor supply. It will help to eliminate the "peddling" of labor, which drains the vitality of the labor

reserve, the costly " want ads " and that parasitic middleman, the private employment agency.

Summary of Outside Sources. — In considering the sources of labor supply outside the plant, the employment manager of a firm will probably decide to urge the present employes to bring their friends to the employment office. Incidentally, the extent to which such a scheme is adopted by the employes will indicate whether or not conditions in the plant are satisfactory. Advertising and scouting will be necessary from time to time, but the need for such an expenditure as they entail can be reduced to a minimum by a careful filing system, listing applicants who have sought employment at one time or another, or have been reached through previous advertising and scouting expeditions, or through inquiries made at the schools. In the matter of the public employment bureaus, the employment manager cannot do better than to persist in presenting his needs to the nearest bureaus until it arises to the opportunity offered and secures the material desired.

Inside Sources. — (6) The more constructive work of the employment department will, however, have to do with the mobilizing of the labor supply within the plant. All those who are temporarily employed, all " failures," all physically misplaced, and all whose highest powers are not called upon in the position occupied, form a potential turnover quantity. If the employment department aids in the process of adjustment by transferring the temporarily employed and the failures, and by promoting those who are capable of more difficult work, it utilizes this potential turnover as a source of supply. But this source cannot be fully effective until after the various jobs of the plant have been classified and analyzed as to their different requirements in technique, native ability, and physique. Lines of promotion must also be indicated and a system for gauging the fitness and capacity of the individual developed. Present

employes should also be encouraged to express their desires and ambitions.

The Job Specification

Plant Chart. — The selection of workers according to their fitness for work is as dependent on an intimate knowledge of the positions to be filled as on an adequate supply of applicants, or perfected methods of determining their fitness. It is not merely general ability which the employment department must look for, but suitability for the specific position. Preparatory to discovering this, the individual qualities and equipment called for in the position must be defined. A job specification or analysis should be prepared for every position, so that it need not be necessary to analyze specific requirements during the emergency created by an open machine or desk. A valuable preliminary is a complete organization chart giving every position in the plant in its relation to every other position. Then the position within the jurisdiction of the employment manager should be classified, an appropriate title found, the duties involved briefly defined, and the schedule of pay given. The Commonwealth Edison Company has a classified list of about four hundred different positions; for example:

Addressograph Operator

To include all positions, the duties of which involve the operation of an addressograph, and the performance of clerical work involved.

Rate A — (pay)	(6 mos.)	Rate D — (pay)	(1 year)
Rate B — "	(6 mos.)	Rate E — "	(1 year)
Rate C — "	(1 year)	Rate F — "	Maximum

Advertising Correspondent, Electric Shop

To include the position the duties of which involve the preparation, under the direction of the Manager, Electric Shop, and General Publicity Agent, of catalogues, follow-up letters, and other advertising matter for the purpose of increasing the sales and mail-order business of the Electric Shop.

Minimum — (pay)	Maximum — (pay)

Analyzing the Job. — With this guide to what is required of each position, the employment manager proceeds to learn under what conditions it is done, and what is essential in physique, mentality, temperament, education, and training, for doing it well. The drawing up of these job specifications should be supervised by the employment manager, but not done by him alone. Often specifications are written jointly by the employment manager and the foreman. Meyer Bloomfield, in analyzing the jobs of Bamberger and Company's department store in Newark, gave every employe a list of questions to answer about his duties and problems.[4] The purpose of the study, to insure fair dealing and just compensation, was explained in advance, and hundreds of answers were received. The executives were then asked to describe every job in their respective departments. Finally an outside investigator made his analysis. From these three descriptions, from three points of view, Mr. Bloomfield wrote the composite job specification.

Specification Blank. — In a small organization it is frequently possible for the person charged with employing to know the detail of each type of position. But even here a careful analysis of the requirements of each position will be useful. In a large industry such knowledge is manifestly impossible and the job specification becomes not only a convenience but a necessity. The accompanying specification blank is used by the General Railway Signal Company. This blank is filled in wherever a vacancy occurs and the writing of it takes slightly over five minutes.[28] This is a combined requisition blank and job specification for unskilled workers. Similar ones can readily be prepared for other positions. Usually it will be found advisable to have the foreman fill in only a simple requisition blank, naming the job or jobs to be filled, and to have the employment manager refer, in selecting the applicant, to the speci-

GENERAL RAILWAY SIGNAL COMPANY

STANDARD JOB SPECIFICATIONS

Copy for .....

Department .....Class .....Job Name.....
Description of Job.....
.....
.....

NATURE OF WORK AND WORKING CONDITIONS

Floor.....Quick.....Dirty.....
Heavy.....Standing....Bench.....Slow.....Greasy....
Medium....Sitting.....Bench Mach.....Rough ...Wet .....
Light.....Walking. ..Floor Mach. ....Close.. ..Clean.....
Continuously repeated operation....or Variety of jobs.....
Make of Machine .....
Length of time required to learn job .....

RATE—D.W. or P.W...Starting Rate...Avge. Earnings on P.W...
How soon put on piecework .. ..

REQUIREMENTS — Schooling desired ... .
Necessary to read and write English . .Read Blueprints.....
Tools required ... .
Preferred Age . ..Height .Weight ..Nationality.....
Previous Training or Experience desired.....
.....

REMARKS.....
.....
.....
Dept. Foreman .....Empl. Dept. .....
Supt. .....Date.....

Form 890

fications that have been previously prepared. The United States Shipping Board Emergency Fleet Corporation has listed and analyzed one hundred and thirty-seven different shipyard occupations. An example of these is the following one of the hammersmith's occupation:[29]

Other names by which occupation is known:
Heavy Forger.

Occupations most nearly allied:
Blacksmith, Drop Forger.

Trade requirements:
The Hammersmith supervises the operation of all kinds of work done with power drop hammers and forge presses; heats and hammers into shape from drawings, templates or samples, all heavy shapes or forgings, such as crankshafts, axles, frames, connecting rods and any sort of large forgings. He works on heavy ingots, but occasionally may be required to work on lighter ingots; he should be able to do bending, drawing, upsetting, welding, and forming, using coal, coke, gas, or oil fires, and be familiar with the various steels. He should be able to direct work of heaters, backhanders, strikers, and helpers.

Education:
Common school.

Physical requirements:
Should have good eyesight, strength and endurance; ability to stand heat.

Mental requirements:
Higher than average intelligence.

Experience:
The Hammersmith should be an expert blacksmith and thoroughly experienced in general power hammer work; must be familiar with the operation of all classes of furnaces, and should have had similar experience in a repair shop or industrial plant.

Entrance requirements for training school:
Must be a practical blacksmith; common school or trade school education; be familiar with mechanical drawings and blueprints; strength and endurance; ability to stand intense heat.

Rate established:

Definition need not be confined to the lower grades of work but may be usefully applied to responsible positions. An important and technical position in the Welfare Division

of the Metropolitan Life Insurance Company, for instance, is briefly described as follows:

SUPERVISOR — NURSING SERVICE

Qualification Registered Nurse Executive Experience with Visiting Nurse Association or other large group of Nurses
Marked Executive Ability Good Correspondent
Experience in public speaking, writing and statistical work desired.

Descriptive Paragraph. — Mr. Burke, of the Detroit Steel Products Company, prefers the descriptive paragraph for both skilled and unskilled worker and adds to a description of duties and specific requirements, a "personality" paragraph.[30] A storekeeper foreman, for instance, "must be able to direct and get the work out of a gang of common, ordinary laborers. To some extent he must have the gruff personality to command the respect, get the enthusiasm and confidence of men of this class and type. He should be patient and even-tempered enough to be constantly 'bothered' for material and readjustments," etc. For a press hand "an over-responsive, over-keyed, nervous organization would be dangerous on account of accidents, and would also make the work disagreeable. . . . It is very essential that the intelligence be not over-active or imaginative," etc. These characterizations add considerably to the value of the specification, but undoubtedly all other requirements as to physique, training, and education should be given where possible in a form similar to that of the General Railway Signal Company, and not scattered through several paragraphs.

There is a difference of opinion as to the extent to which the prejudices of the foreman should appear on the specification and the effort made to choose applicants accordingly. Mr. Burke suggests that the specification, which is submitted to the foreman for approval, should expressly state that poli-

tics, religion, nationality, etc., need not be considered in choosing applicants.[30]

Advantages of Job Specification. — An additional advantage accruing from the preparation of careful specifications is that a just standardization of wages and salaries is made possible. The use of the plant chart and job analyses also oils the wheels of the human machinery by clearly defining the interrelation of all its parts. It opens avenues for promotions and transfer, and, above all, enables the employment manager to know what to look for in the new employe. That these advantages are real is proved by the rapidity with which such job specifications are being adopted. The Republican Metal Ware Company, the German-American Button Company, the General Railway Signal Company, and the Curtis Publishing Company are a few of the firms now using them. Mr. Winslow in the Richmond *Survey* (1911) made out such specifications for various trades, including the printing and tobacco trades. They are being made out by nearly every member of the Employment Managers' Association of Detroit.[1]

Future of the Job Specification. — A questionnaire sent out by the Pennsylvania Department of Labor and Industry, in January, 1918, marks the beginning of a new epoch in the short history of the specification. So far the emphasis has been on what the employe should be. In preparing for the return of disabled soldiers this questionnaire seeks to find out from Pennsylvania employers what that employe need *not* be. It asks what diseased or crippled men are now employed and in what capacity; also, how many men could be employed in each plant who had lost one hand, both hands, one leg, both legs, one eye, both eyes, etc.

This questionnaire contains a valuable hint for employers. Dr. Farnum, of Avery Company, says, "Some of us have statistics covering several years showing that under this

system (that of placing those with physical defects), the worse the physical defect, the less the accident incidence. . . . Moreover, these same statistics show that labor turnover varies inversely with the physical defects of the laborer." [31]

A further interesting change which may appear in job specifications in the near future is the extension of the desirable age limit of the new employe. In 1917 the Employers' Association of Chicago placed about 9500 men over 45 years of age with such success that at the end of that year 916 employers in and near the city were regularly hiring these older men.[32] They have been placed by this association in every conceivable kind of skilled and unskilled, clerical and semi-executive work, and the testimony of their achievement is overwhelmingly in their favor. No longer will they be relegated to the night watchman's post. One firm rates their efficiency as 10 per cent greater than that of younger men in the same work. Hart, Schaffner and Marx Company began experimenting thus with older men in the fall of 1916 and affirm the following advantages to accrue from their employment:

(1) They have a steadying influence on the factory morale [because many of them have had the employers' point of view];

(2) They decrease the labor turnover [because the older man " tends " to stick];

(3) They give greater application to and have greater interest in their work [because, having fewer distractions than younger men, although their potential energy is less it is all used in their work.][31]

Making most of the labor supply at hand by having the job specifications include what the worker need not be, may prove cheaper in the long run than the elaborate advertising and scouting schemes to which some employers have resorted to secure their employes.

CHAPTER III

HIRING AND HOLDING, *Continued*

Selecting the Worker

The actual process of selecting a man for a position implies a double problem: first, determining as accurately as possible the man who will fit the position, and second, making the position sufficiently attractive to the man to make him wish to secure it and to hold it after it has been secured. In one respect, the employment manager acts as a buyer of service and the prospective applicant is the seller; in another, the positions are reversed and the applicant is the buyer of a given position and the employment manager the seller. While the technique of the employer as buyer has been carefully developed, his position as seller is generally ignored, to the detriment of industry. A workman is valuable in proportion to the degree of spontaneity of effort which he puts into his work. This spontaneity may be fostered by just treatment as regards wages and working conditions, or it may be killed by the indifference of the employer who regards his employe as a mere cog in the machine, to be treated with only such consideration as is absolutely necessary in order to obtain his services.

There are four considerations which determine the desirability of the job to the applicant and his continued willingness to work well:

(1) Remuneration;
(2) Opportunity for promotion;
(3) Working conditions;
(4) Social advantages.

Elements Determining Selection. — If the applicant is to make a satisfactory and satisfied employe these points must be carefully considered, the advantages and disadvantages frankly and honestly discussed, and the importance to the firm and the dignity of the specific work made clear. The high-grade employment manager appreciates the importance of his position as seller, and gives to the applicant an impression of the attitude of his concern which does not soon wear off.

On the other hand, careful discrimination is necessary in selecting the worker. The main factors to be considered are:

(1) Training: education and experience;
(2) Native mental ability;
(3) Physical condition;
(4) Personality.

Changes in Methods of Selection. — Increasingly is the effort being made by progressive employers to secure a scientific estimate of the individual worker's capacities through the application of medicine and psychology. The changes which employment departments have made in the methods of selecting employes is indicated by the following table prepared by Mr. Kelly, comparing the means used to determine the applicant's fitness by twelve firms without separate employment departments and eighteen firms with such departments.[4]

Whereas at one time the "trial on work" was the only test of an applicant's fitness, this table marks its decreasing popularity wherever separate employment departments have been organized. Of the eighteen firms with such departments only three depend largely on "trying out," while nine of the other twelve firms still cling to this old-fashioned method of selection. The employment departments substitute for this trial work and the spoiled work and wasted time that accompany it, the application

	Without Separate Employment Departments (12 firms — 8,225 employes)		With Separate Employment Departments (18 firms — 47,625 employes)	
	Number	Percentage of Firms Investigated	Number	Percentage of Firms Investigated
Application blanks . .	3	25.0	14	77.7
Personal interview with other than foreman .	7	58.3	17	94.5
References followed up in majority of cases .	1	8.3	12	66.6
Physical tests	0	0.0	3	16.6
Trial on work largely depended upon . . .	9	75.0	3	16.6
Mental tests	0	0.0	7	38.8

blank, interviews with employment officials, physical and occasionally mental tests, and the careful following-up of references.

Preliminary Interview. — The first step in the selection of employes is the preliminary interview in which the employment manager discovers whether the applicant satisfies certain minimum requirements. Some insurance companies, for instance, have decided that salesmen are more successful if married and within certain age limits. Applicants who are not married and not of a suitable age can be immediately rejected. When the firm has many more applicants for work than it can use, this interview will serve to discourage a large number and will encourage only those who promise best to fill the requirements of the particular job. At this interview, too, the wage or salary scales, the required preliminary training, the hours, and the physical and mental examinations required should be briefly explained to the applicant. If the preliminary application is made by mail and an interview not readily obtainable, the application blank should be inclosed in a

letter outlining the points that would have been explained in the interview.

The Application Blank. — What the application blank should ask is a mooted question. There is general agreement among experts that there can be no standard application blank for all industries or all departments in the same industry. There will be a radical difference in the blanks used for a mill-hand or a stenographer, a teamster or a salesman. At the present time the application blank reflects the absence of the job specification and a careful analysis of the work requirements. There is remarkably little differentiation. In a wide variety of industries, eleven out of twenty-five concerns recently investigated cover the following subjects in their application blanks:

(1) Full name and address;
(2) Age;
(3) Date of application;
(4) Married or single;
(5) Names and addresses of former employers;
(6) Length of time in each position;
(7) Nature and extent of education;
(8) Nationality;
(9) Position applied for;
(10) Reasons for leaving former positions;
(11) Number of persons dependent on applicant;
(12) Wages in each of former positions;
(13) Height and weight;
(14) References other than former employers;
(15) Employed by this company before;
(16) Number of children.

None of the questions asked relates to the specific requirements of the plant jobs. Standardized application blanks cannot supply the need of different industries. Careful consideration must be given to each position, if the application form is to have real value.

A Common Omission. — The interval elapsing between leaving school and going to work is noted by the Bournville Works in England.[33] A girl, for instance, who leaves school at sixteen years of age, marries and does not return to work for several years, may in the interval have so lost the habits of discipline, obedience, and concentration that she cannot even be trained for any but the least skilled work. This suggests the need of information rarely asked for on the application blank, namely: the total time during which the applicant has been unemployed during the preceding years.

Useless Questions. — The purpose of the application blank is to secure facts and not opinions. Occasionally an applicant is asked whether he is honest or dishonest, energetic or lazy, courteous or discourteous. The ability to analyze self is as rare as honesty, and such questions are valueless. The religion of the applicant and whether or not he is a church member is rarely important, except in a position in which success may depend in part upon social connections, as in the case of salesmen. Provided the applicant speaks English, nationality is of small importance. In general, health questions are unavailing because the applicant will be on guard against discrimination on a health basis. In blanks filled out without a preliminary interview a question about physical defects may be necessary, however.

Value of the Application Blank. — One great advantage of the application blank is its permanency. It can be filed for future use so that the facts established at one time are available at a later date. This applies particularly to those persons for whom no immediate position is available. To make it as effective as possible, careful consideration must be given to methods of filing. These at present vary widely in different concerns. Joseph and Feiss Company file by Sex, Age, and Apparent Suitability.[5] The Curtis Publish-

ing Company have a detailed file for every class of labor employed, from the compositor and the pressman to the fly boy and the truck driver, with one class for *undesirables*.[34] Where only skilled labor can be employed, such a detailed system of filing is practical, but for positions which do not require previous training or skill, such a classification needlessly restricts the labor supply available for each position. With Joseph and Feiss Company, for instance, previous experience is not emphasized because 90 per cent of their employes are trained in from two to ten jobs after being employed.[5] Where the industry has many processes peculiar to itself, as in the case of the Dennison Manufacturing Company, which engages only 10 per cent skilled workers, the great need is for untrained but trainable workers. Usually, however, each blank can be filed with some group of similar jobs in accordance with the applicant's (*a*) previous experience or training, or (*b*) apparent suitability and expressed preference. The application should be preserved with later records of service to be referred to when transferring, discharging, or promoting an employe or reëmploying a former employe.

Time Needed for Selection. — But the application blank, together with the waiting period for examination that it implies, has in it the strength — and possibly the weakness — that more time is required in hiring than under the former hit and miss methods. The entire selective scheme collapses if the employes do not give advance notice when leaving and the foreman when discharging or needing an increased force. Time is needed for any adequate selective process. Requisition blanks should be provided each department. If the foreman realizes that his departmental turnover, for which he is responsible, is dependent on this careful selection, he will do his part in filing his requisition blanks early. The employe is the more difficult one to convince of the advantage of giving notice. The four ways in

which the short notice habit of the employes may be checked, however, are by

(1) Giving the selected applicant time and expressly asking him to notify his present employer, which impresses him with the fact that he will be expected to do the same thing again;

(2) Deferring final payment until the desired period of notice is over;

(3) Making him understand that future recommendations depend on his manner of leaving;

(4) The employer's reciprocating in giving advance notices of discharge and laying-off.

Second Interview. — When the applicants have been summoned in response to the foreman's requisition, there ensues the first prolonged interview. During this interview the applicant must be given full and frank information about the work, its advantages, and drawbacks. The difficulties of the work are emphasized by some employment managers, and the maximum earnings understated. The permanency or temporary nature of the position should be revealed in full, since giving this information forestalls dissatisfaction and insures a more stable working force.

Judgment of Personality. — From the selective point of view the purpose of the interview is to judge personality and whether or not the applicant will fit in with the "Spirit of the Hive." Joseph and Feiss Company particularly emphasize the importance of the applicant's fitness for the organization. Dr. Katherine Blackford would have the employment manager unobtrusively fill out an analysis blank noting the external characteristics, the color of the eyes, shape and size of the head and hands, etc.; from this is later built the entire inner man. But the data of achievement of physiognomists are meager and the results obtained do not, as yet, warrant a general adoption of their schemes.

A more promising method of determining personality is

that of Dean Schneider, of the University of Cincinnati, who suggests that the employment manager in conversation note whether the applicant is mental or manual, directive or dependent, original or imitative, social or self-centered, an indoor man or an outdoor man, a man of large or small scope, settled or roving in disposition, accurate or inaccurate, rapid or slow to coördinate facts, dynamic or static.[35] These characteristics are significant in the matter of vocational guidance, but it will be a rarely skillful manager who can so define the applicant in the brief period of an interview.

Present Interviews. — When the employment manager of the Curtis Publishing Company claims to judge the applicant by the set of chin, shape of mouth, courteous vigor of hand grip, address, bearing, steadiness of eye, neatness, etc., one cannot but wonder that all positions should require just these qualifications to insure success.[34] The most accomplished prevaricator will have a steady eye, for instance. But the qualities looked for by Dean Schneider are not superficial and indicate the tendency among those interested in employment methods and vocational guidance to give the interview a much needed definiteness of object. Professor Scott tells of an experiment made by the American Tobacco Company.[36] Six managers of sales divisions in different parts of the country came together to select eighteen salesmen from thirty-six applicants. Each manager interviewed and selected his men independently and by his own method. In the case of twenty-eight applicants there was not even agreement as to whether they belonged in the upper or lower half of the group of thirty-six. One was rated as number one and thirty-two, another as three and thirty. The experiment indicates that ordinary methods of interviewing are thoroughly unreliable.

A Concrete Scale for Rating Applicants. — The concrete scale used to-day to rate the ability of the officers of our

army was devised by Professor Scott and suggests a system which might be adapted to the interviewing of industrial applicants. By this rating system a Major keeps before him the names of five tried officers rated in one group according to their *physical qualities*, in another by their *intelligence*, in another by their *leadership*, etc. The officer in line for promotion is then given the rating of the superior officer whom he most resembles on each point and his total percentage rating compared with the total ratings of those five officers. This method has proved its practicability in the army and in the same definite way an employment interviewer could judge the personality and apparent suitability of an applicant by comparing him with five employes who have " made good " in the job under consideration.

The questionnaires used by the Personnel Department of the United States army to ascertain the past experience and proficiency of every man drafted into the army who had been previously engaged in a trade, are suggestive of a method by which the interviewer might be utilized in finding out the applicant's technical ability. These questionnaires are a form of oral examination on tools and methods of work and a man's answers are, therefore, a more satisfactory basis for judging his capacity than any brief statement as to his past occupation.

Psychological Tests. — Appreciating the weakness of the interview in determining individual capacity and the importance of placing the worker in the position for which he is best fitted, psychologists have studied the problem of placement. Attempts have been made to develop tests which will make it possible to fit the worker in that niche in which he belongs and in which he will be happiest and most effective. There is much skepticism as to the results of such efforts; the experts in the field being among those most frequently advocating caution in the application of the principles of their science. Though still experimental,

psychological tests have indicated their value sufficiently to encourage further careful study.

Development. — The first vocational test designed by psychologists was Professor Seashore's of the University of Iowa. His pioneer effort was to eliminate the "unfit" from among those selecting a musical career, by means of tests for auditory acuity and tonal discrimination. Telephone companies now commonly test the acuteness of hearing of applicants. The Army and Navy add to such a test one for color blindness. In industrial fields the railroads and some industrial plants test every applicant for work for color blindness. But psychology is passing from the realm of these more obvious, physical characteristics to the testing of the so-called mental characteristics and aptitudes. Not only should a telephone operator have keen hearing and dexterity but good memory, attention, intelligence, and exactitude are all essential. Professor Muensterberg supplied the Bell Telephone Company with tests for these qualities. The Curtis Publishing Company apply Professor Muensterberg's tests to their clerks and stenographers as contributory evidence of efficiency and accuracy.

Correlation with Experience. — Cheney Brothers use a series of Professor Scott's examinations for their high grade clerical, systematizing, cost, executive, and sale forces. It is found there that "the correlation of tests with subsequent accomplishment is extremely high and that such tests offer a very valuable aid in selection."[18] Thirty of their efficiency experts were examined and the results correlated up to 87 per cent with the judgment of their supervisors.[37] Joseph and Feiss rely in part on psychological tests prepared by Professor Scott for the selection of their employes, including a test of the ability to follow instructions. Testing twenty-one of their employes, both operatives and executives, the results checked up accurately in nearly every case with their records and personal estimates of ability.[5]

Salesmen's Tests. — Of late the salesman has received much attention from the psychologist. A coöperative undertaking, the Bureau of Salesmanship Research, has been organized at the Carnegie Institute of Technology, by thirty corporations employing large numbers of salesmen. Under the direction of Professor Scott, scientific studies of salesmanship have been undertaken and tests are being developed.[36] These include examinations on (1) general native intelligence; (2) foresight and imagination; (3) ability to understand instructions; (4) ability to see what is wrong in a more or less complex situation, and to correct it; (5) general information.

Time Required. — Occasionally, objection is made to the length of time required for the psychological examination. The Metropolitan Life Insurance Company claims, however, that if the applicant for a clerical position cannot endure a three and a half hour examination he or she will probably not be able to do a day's work. The Curtis Publishing Company pays fifty cents to every applicant for each day devoted to the examinations, whether or not the applicant passes. This sum pays the expense involved of car fares and lunch.[7]

Value in Eliminating Applicants. — There is every indication that vocational and industrial psychology will tend to exterminate the old try-out methods of selecting employes. The Curtis Publishing Company, in 1913, after weeding out 80 per cent of their applicants by means of the interview and an examination of the application blank, gave the psychological examinations which eliminated 50 per cent of the remaining group. An instance is given when, out of twenty-five applicants for particularly exacting stenographic work, only one passed the tests.[7] Previously, some dozen girls would probably have been tried out, one after another during a period of several weeks, before the right girl could have been found. By means of the psy-

chological test, without the cost to the worker of losing a position, or to the company of losing the time, the right one out of the twenty-five was found within a few hours.

Function of Psychological Test. — In the selection of applicants for highly specialized work the function of the psychological test will be to eliminate. But in work requiring lower and consequently more usual grades of ability the psychologist will assist in placement rather than selection. Mr. Feiss emphasizes the fact that general intelligence tests are not used to eliminate but to place applicants at the Clothcraft Shops. As an example of what the use of the Binet tests might make avoidable, he tells the story of a young girl who was employed by the Clothcraft Shops and put on a simple operation where she became very efficient. She was advanced and was unable to make good though tried out on various operations. She finally quit, but returned in a few months and was tried out on machine work. She again failed, and when at last put back on a simpler operation requiring less dexterity and intelligence, she began to progress until now her earnings average with the best.[5]

Placement of Low Average Mentality. — Much of the work in industry can be done by the person of average or low mentality, although there will probably never be a return to the system by which a manufacturer in England, in 1815, agreed with a parish to take in his factory one idiot with every twenty sound children.[38] One industry can afford no employes of merely average intelligence, while it may be that another can utilize few mentally superior employes. If, as has been claimed, from five to fifteen per cent of the employes in any factory are subnormal, there is here a field for psychological placement in industry whose surface has scarcely been scratched.[39]

But the millennium is not yet in sight. Psychologists themselves will not prophesy. As Professor Whipple remarks: "The psychologist in my judgment would better

wear a veil of modesty and not seek to emulate the boastings of physiognomic charlatans who claim to have selected 12,000 persons for 12,000 jobs without one single mistake, by their system of concave and convex faces." [40] Furthermore, the problem of selection can never be entirely solved by even the most cleverly devised psychological examination. Such methods of prolonged observation as Dean Schneider can employ in the College of Engineering at the University of Cincinnati, where he experiments with the young worker while in training, alone provide for adequate vocational guidance. Until the schools commonly adopt vocational training for the older pupils and scientific vocational guidance as part of their curriculum there can be no real adjustment of man and job.

Physical Examinations. Purpose. — The physical entrance examination in industry has extended rapidly as a result of the passage of the workmen's compensation legislation. Its obvious purpose is to protect the industry from the danger of accidents among workers who are not physically fit, and yet the elimination of the unfit should be only a secondary aim of the medical examination. The main objects are properly to protect the prospective employe by placing him in a position in which such physical limitations as he may have will not be disadvantageous to himself, to his fellow workers, or to the industry. He must be protected from self-injury, his fellow workers from contagion or accidents resulting from his physical disability, and the industry from a decreased output and the expense of compensation. This protection demands not the rejection of the physically imperfect worker but his careful placement.

In highly hazardous occupations, and in industries in which there is but slight variety of occupation, a high rejection rate is perhaps reasonable and excusable. Under other conditions, it usually indicates a lack of appreciation of the problems involved. The United States Army, with

its rigid physical requirements, rejected, in the first draft, in 1917, between 30 and 40 per cent of the men called. Such a proportion of physical rejections would be suicidal to industry. A short-sighted policy and inadequate analysis of occupations seems to be indicated where a hat manufacturing company and a life insurance company rejected respectively as many as 25 and 35 per cent of their applicants for physical reasons alone. The Stetson Company, in the year ending October, 1915, rejected 78 of 311 applicants examined.[41] During the year ending November, 1917, in the Metropolitan Life Insurance Company, 770 out of 2201 applicants failed to pass the medical examination.[42]

Technical skill and mental ability do not necessarily coincide with perfect health. To secure the former no industry can afford to reject the many applicants whose physical condition is imperfect. Many firms realize this. Sears, Roebuck and Company, in 1916, out of 7000 applicants for work found 22 per cent with a definite, diseased condition. Of these only 3.1 per cent were refused employment and the other 18.9 per cent went to work in carefully selected positions.[43] The Rike-Kumler Company, a department store in Cleveland, in one year rejected only 5 per cent of their applicants for physical reasons alone. The reasons for these rejections were, in their order of frequency, venereal disease, tuberculosis, contagious skin trouble, eye diseases, and physical infirmities. 65 per cent were in good condition and the remaining 30 per cent were watched with weekly re-examinations, while cases of defective teeth, nose and throat trouble, defective vision, flat feet, varicose veins, and hernia were corrected, in part at least.[44] Cheney Brothers can provide similar records.[18] The Chicago and Northwestern Railroad found 12 per cent of men examined unfit for the form of employment sought.[45]

An Aid in Placement of the Unfit. — That the importance of proper placing is the main purpose of the medical exam-

ination is clearly pointed out by Dr. C. G. Farnum, of the Avery Company, who says, "We are continually asked what we do about men with one arm or one leg, with bad vision or defective hearing, with those that have hernia or Bright's disease, or high blood pressure or heart disease or any other of the thousand and one defects the American workmen possess. What do we do? Why, we put them to work, but we put them to work compatible with their condition and get busy on the improvement of that condition." [31] In this connection might be cited the case of one Philadelphia manufacturer of bolts, nuts, and rivets, who has found by changing a foot treadle to a hand motion that men twisted with spinal meningitis and otherwise crippled make better workmen than physically fit employes.[46] The Crocker-Wheeler Company, manufacturers of electrical supplies, has taught thirty blind people how to wind coils for armatures, a process in which the sense of touch is all-important. The Pennsylvania State Bureau of Employment recently studied the case of "a man paralyzed in both ankles and prevented by the physical examination test from securing work at his trade of machinist in the large industrial plants. He was successfully placed in a smaller shop on special work of an intricate character.[47]

Proper places can be found even for persons suffering from tuberculosis or in whom the disease has been recently arrested. The Cincinnati Bureau of the Handicapped is placing many of this class as well as finding suitable occupations for those who suffer from various other handicaps.[47] The continued financial success of the semi-philanthropic workroom under the direction of the Committee on the Jewish Tuberculous is another indication of the possibility and even advantage of using persons not in perfect health.[48] The Metropolitan Life Insurance Company has in its Home Office several hundred clerks who have at some time been treated for tuberculosis.

A change in attitude toward medical examinations is imminent. The medical examination at entrance will gradually assume its real function as a means of proper placing. It will result in benefit to both employer and applicant. The largely justifiable hostility of labor leaders that has accompanied its introduction will tend to disappear.

References. — Two kinds of references are ordinarily required, (1) character references and (2) references from former employers. The first are of comparatively little value because the witnesses are not disinterested. But employers ordinarily ignore the second group as well because of the difficulty in securing any but vague and indifferent replies to their requests for information. Further, it has been suggested that it will always be dangerous to rely on even the most complete reference, since a man who fails with one employer may succeed in a new environment.

General references, addressed to "whomever it may concern," are no longer credited. Progressive employers do not give them but are offering to furnish references upon the request of employers. If employers answered queries about former employes frankly and carefully, they would not only really help the employe, by preventing his being placed in work for which he is unfit, but in the end their frankness would be reciprocated. The Edison Company has forms for this purpose, on one of which the foreman of the former employe supplies information as to the character of the service rendered and on another the Employment Bureau makes entries regarding dates of employment, causes of leaving, and records. If a stamped, addressed envelope is inclosed, together with a form containing specific questions, more answers and more reliable information will be secured.

Value of Definite Questions. — The principal difficulty with the letters now sent to previous employers lies in the

vagueness of the questions asked. A short questionnaire has been adopted by Cheney Brothers asking the "former employer simply to check off in spaces provided, the nature of the applicant's service as to work, conduct, ability, and character." In ninety-five per cent of the cases investigated they receive sufficient information.[18] The reference letter form used by the War Department is brief and yet definite and is exceedingly suggestive. This allows space to place a check mark under Very Good, Good, Fair, Poor, Very Poor for certain distinct qualifications such as "Trustworthiness," "Ability to manage other workers," "Skill in a given occupation," etc. Unless such a plan of asking pointed and definite questions is adopted, former employers answer carelessly and usually favorably, if at all.

When the emphasis is placed on the proper placement of the individual, references from previous employers will become increasingly valuable, and their purpose of the past — to weed out labor agitators and floaters — will become of minor importance.

Inducting and Retaining the Employe

The period immediately following the selection of a new employe is a difficult one. It will determine in a large measure his future success. The main responsibility for making this period as easy as possible rests on the employment manager. The first impression of the new plant is the one that he has given; in the mind of the new employe he is all-important because in his hands lay the giving of the job. Every effort must be made to make the impression a favorable one. In the final interview the details of the organization should be made clear and the general spirit of the employer conveyed. But further effort is necessary successfully to induct the worker. Printed rules, instruc-

tions, and suggestions are of distinct help and are widely used.

Employes' Handbooks. — It is difficult to make printed instructions as interesting to, or as popular with, the employe as with the employment manager. They should be as brief and as concise as possible, and the fewer the instructions and the more complete the information brought within the covers of one or two booklets, the more sure are they to command attention.* The Dennison Manufacturing Company and Curtis Publishing Company have the employe's name printed on the cover of the rule book, which is given to him immediately on engagement,[34] so that he will the more readily carry it home and read it. The Commonwealth Edison Company require the employe to sign a receipt for the book stating that "the policies, methods, and rules of the company, as set forth therein have been carefully studied." This receipt must reach the employment department within five days after his entering the company's service.

Follow-up Work. — In order to impress the new employe with the real interest that the corporation has in his future, the employment manager frequently introduces him to the foreman or other immediate superior. It then becomes the latter's duty to make further introductions and to explain the work in detail. Every effort should be made to make the new worker "feel at home" and appreciate the importance of his work. In order to eliminate the "skylarking" and practical joking at the expense of a new employe, it has been suggested that a fellow worker be appointed as temporary guardian. To overcome any preliminary difficulties that may arise, "follow-up interviews" are held within a few weeks after the employe starts work,

* An excellent book is used by the Miller Lock Company. It combines information on hours of work, wage scales, and methods of payment, with safety-first advice and an explanation of the medical, educational, and social advantages offered by the company. (1917.)

by the employment officials of the Eastern Manufacturing Company, the German-American Button Company, and the Curtis Publishing Company, among others.

The follow-up function of the employment bureau resolves itself into the difficult one of vocational guidance. The *esprit de corps* of the entire plant depends on the employment manager's skill in directing the promotion of the employe as rapidly and no more rapidly than his ability warrants; in adjusting causes of difference between workers and foremen; in eliminating general causes of dissatisfaction; and in placing a "misfit" or failure where he will "make good." It is this function which is the most important, least developed and most interesting part of the work of a centralized employment bureau.

Tardiness and Absences Causes of Labor Loss. — Labor loss attends the failure to keep the number of workers on the pay roll up to the required standard for every work hour; the employment of a superfluous number of workers; poor attendance, and large labor turnover.* Every case of lateness or absenteeism means a drop in output, while "tardiness is incipient absence" and "absence is incipient labor turnover." [49]

Methods of Correcting Bad Attendance. — The first step in reducing absenteeism or tardiness is the attendance record. Knowledge that such records are being kept in itself discourages malingering or unnecessary absences. If a time clock is used, it may be placed at the entrance of a small plant. If the working force is large, however, to avoid congestion time clocks are often provided for each department. On clock cards or special forms kept in departmental files, the employment manager or foreman may record reasons for bad attendance. Daily or monthly records should show the

* For methods of computing labor loss caused by variations from the standard work force and poor attendance see Handbook on Employment Management, U. S. Shipping Board Emergency Fleet Corporation, Special Bulletin, *Labor Loss;* Phila., 1918.

number of employes late or absent, the number of hours lost by each and the reasons for absence, whether "laid off," "vacation," "accident," "sickness," "family reasons," "grievance," "unknown," all of which may be classified also as avoidable or unavoidable.

Making Lateness Difficult. — At the Midvale Steel Company ninety-five per cent of all lateness has been found to occur within the first half hour, and most of that in the first ten minutes. Some plants lock their gates at a certain time after opening hours and keep them locked until the end of the work period, so that only those who are prompt are allowed to work. This is the case at the General Electric Company at Lynn, the Fore River Shipbuilding Company, the Cleveland Metal Products Company, and the large textile mills at Lowell. At the Fore River Shipbuilding Company, however, a late employe who feels that he has an excuse may submit it to the chief timekeeper who in turn refers it to the foreman. With the foreman's permission the man is admitted. At the Strawbridge and Clothier's Store in Philadelphia those who are late must sign a slip at a central desk, a system which has reduced lateness from between 5 and 10 per cent to 2.5 per cent.[50]

Investigation of Absentees. — Home visiting for the investigation of absences by some one person specially delegated to that work is customary in many large plants. Absenteeism has been estimated to range from 2 per cent to 10 per cent of the plant enrollment. One person by careful planning can cover about twenty calls in four hours, if the calls are reasonably near each other. The investigation of all absences, therefore, in a force of about five hundred people will require the full time of one person, if on foot. The use of an automobile saves at least half time and would enable one investigator to cover the needed visiting for a force of one thousand. The United States Public Health Service advises against the extravagance of using the plant nurse or doctor

for visiting absentees other than those known to be ill. In some plants this is done, however, to make it appear that the visit is made from a desire to give help rather than investigate. A tactful investigator may avoid antagonizing the employe just as easily and may report to the doctor or nurse when medical attention is needed.[49] If it seems desirable to know the reason for absence immediately, a corps of visitors will be needed. By encouraging the employes to report necessary absences in advance and to send word by telephone or a fellow employe on the day of absence, or by investigating absences only after a lapse of a few days, the necessary visiting can be much reduced.

Individual Records and Bonuses. — "Docking" an employe's wages in excess of time lost is not only illegal but ineffective. Regular monthly bonuses paid every employe in addition to wages from which deductions are made for absenteeism have proved a valuable incentive to good time-keeping. An employe of the Metropolitan Life Insurance Company, receiving not more than $60 a week who has worked a full calendar year and lost no time through absence or tardiness, is allowed a bonus of a week's salary. Time lost for any cause is charged against the bonus and a *pro rata* deduction is made therefrom on the basis of 41½ hours per week. When the total time lost aggregates 21 hours, or the number of times tardy is 10 or over, no bonus is paid. The possible weakness in this system is that the period of bonus payment may be too long. Small monthly bonuses would possibly attract more attention.[51] In an eastern publishing house each department has its own time clock which each employe rings twice for five days in the week and once on Saturday. The percentage of tardiness to the total number of rings is estimated monthly for each department and departmental records prominently posted. This same percentage is recorded for each employe and referred to when individual promotions or raises in salary are under consideration.[50]

Turnover. — To get rid of an employe is far easier than to help him "make good," in the short run; and to let him go, less troublesome than to find out in advance any condition of dissatisfaction and to attempt to remedy it. But the formulation of turnover statistics for his plant will convince the easy-going and unsuspecting employer of a startling weakness in his organization. The National Employment Managers' Conference in 1918 agreed upon the following definition and method of computing labor turnover.

DEFINITION:

Formulating Turnover Statistics. — 1. *Labor Turnover* for any period consists of the number of separations from service during that period. Separations include all quits, discharges, or lay offs for any reason whatsoever.

2. *Percentage Labor Turnover* for any period is the ratio of the total number of separations during the period to the average number of employes on the force report during that period. The force report gives the number of men actually working each day as shown by attendance records.

COMPUTATION:

1. Find the total number of separations for the period considered.

2. Divide by the average of the number actually working each day throughout the period.

3. Multiply by the proper factor to reduce to a yearly basis.

Example. — Total number of separations during week, 300. Daily force reports (workers actually on the job), M., 1020; T., 1065; W., 1070; Th., 1035; F., 1040; S., 990. Average for week = 1037. Percentage labor turnover, $\frac{300}{1037} \times 52 = 1504$ per cent.

Comparatively few employers have realized that for every man on their pay roll they were probably hiring at least one

new man every year. This 100 per cent turnover was very general even before the war, and is a sufficient argument to cause any employer to study the reason for his plant turnover. Many turnover figures have been larger. The Federal Commission on Industrial Relations found in an investigation of the cloak and suit industry of New York in 1914, that in 16 occupations 4000 people were employed to maintain a maximum working force of 1952.[52] An automobile factory was reported in 1912 to have hired 21,000 men to maintain an operating force of 10,000.[52] In 1913 the Ford Motor Company hired 52,445 men to maintain a total of 14,000 employes.[8] Such figures might be cited *ad infinitum* with reference to department stores, mailing houses, lumber camps, or steel foundries, and all other industries, operating in the pre-war period of comparatively normal industrial conditions.* [52]

Efforts have been made to estimate the actual cost of labor turnover from the standpoint of industry. The cost should include, according to Mr. Fisher,[53] the expense of,

(1) hiring and
(2) training new employes,
(3) of wear and tear on equipment operated by new hands,
(4) of reduced production and
(5) the excess plant equipment needed to compensate it,
(6) of wasted materials, and
(7) increased accidents.

The cost of advertising for workers, however, and the less tangible expense of lost sales due to spoiled work or delayed schedules, the reduced vitality and efficiency in the workers due to the "peddling" of their labor, and the inevitable absence of *esprit de corps* and concerted effort where there is a shifting working force should also be included.

The lowest estimate made of the cost to industry of losing

* During the war, turnover figures exceeded all previous bounds.

and replacing one worker is $25.00.* More commonly $50.00 is the estimate, but some employers place it at $200.00,[54] and Mr. Fish of the Norton Company gives between $300.00 and $450.00 as the probable net cost of replacing one of their pieceworkers. Obviously the cost varies in every case and with every grade of labor involved, the only constant factor being the clerical work of entering a new employe on the pay roll and taking the old one off. Deere and Company claim, for instance, that it costs $1000 to break in a new foreman, barring accidents.[54] Calculating on a $25.00 per man basis, the Ford Company's turnover in 1913 cost a minimum of $1,261,200 and probably more than $2,000,000.[8] An interesting analysis of turnover costs was recently made by an efficiency engineer in a Pennsylvania munitions plant, where the loss in one year due to hiring 6106 men to maintain a quota of 1054 was estimated far to exceed $126,300, which covered only the cost of hiring, instruction, damage, and reduced production, on a basis of $25.00 per man hired. This omitted the cost of excess plant expense, one item of which was ascertained to be $32,400.[55] The gap between the possible efficiency of a stable force and the actual efficiency was claimed to be equivalent to an underproduction of some 20,000 pounds of powder daily, or 50 per cent of the amount actually produced. Such figures as these, although imperfect, are generally accepted by business men as an understatement of a great and unnecessary waste to which we are acquiescing in our present industrial organization. No attempt has as yet been made to measure the cost to the worker and to his family of this continual shifting.

Analyzing and Reducing Turnover. — A recent examination of 100,000 causes of leaving employment in several

* For methods of determining the cost of labor turnover see Mr. Fisher's article in the Bulletin of the United States Bureau of Local Statistics, No. 227, p. 60.

representative plants of the country revealed that 74.6 per cent quit of their own accord, 12.2 per cent were laid off, 13.2 per cent were discharged.[56] The large percentage of those quitting is probably abnormal and due to the unusual industrial conditions of war time. The study of reasons for leaving is of vital importance in reducing turnover. A rubber company employing 12,000 men found, in the analysis of their turnover of one year, that a large percentage of the men left because of the monotony of the work.[12] Such a condition might have been remedied by routing the worker, shortening hours, or providing frequent intervals of rest, and be less costly than allowing the turnover to continue. The Dennison Manufacturing Company in 1915 reduced the number of employes leaving because of dissatisfaction with either pay or work to 17½ per cent of the number of those leaving, dissatisfied, in 1913. This was due to the work of the employment department installed in 1914.[6]

According to E. C. Gould, a factory employing some 20,000 men found 20 per cent of those who left them in 1917 (66 per cent reported reasons for leaving) doing so because of "working conditions." The reasons classed as "personal," or "needed at home," may be attributed to causes over which the company had no control. But these were only 21 per cent of the total reasons given.[57]

The usual reasons for leaving employment may be grouped:

Voluntary, because of { work; pay; personal reasons;

Involuntary, because { laid off for { business or seasonal fluctuations; discipline

discharged on account of { unfitness for work; personal character

A committee of the Boston Managers' Association, of which Mr. E. H. Fish was chairman, has suggested a valuable form for analyzing causes of turnover.[58] This makes it possible to show the reasons for leaving under the headings of "Left of own accord," "Discharged," "Laid off" and "Transferred." These are again subdivided into 32 detailed headings.

From the use of such a form one could doubtless draw valuable conclusions. If the causes of leaving were grouped under the more general classifications of (1) "transfers within the Company," (2) "causes of leaving for which the Company was not to blame," and (3) "other causes," the result might be of even greater value. If it is of no particular importance to know that a change in staff is necessary because of a death from natural causes, or because a younger employe has returned to school; it is of prime importance to analyze discharge and carefully to consider the cases of persons who leave because of unsatisfactory working conditions.

Interviews with Those Leaving.—Such statistical analyses will throw light on the main problems of turnover that confront the individual plant. This composite picture of the maladjustments existent in the personnel of the plant will indicate remedies in some instances, in others it will direct further study. But each individual case of leaving must be carefully considered. The underlying cause should be sought out and removed whenever possible. No one leaving voluntarily should be allowed to draw his final pay without an interview with the employment manager. This will mean that every employe leaving the plant has discussed his difficulties, not only with his immediate superior, but with an impartial third person. There will be exceptions, of course, where there is no system of deferred payment and where the employe simply disappears after pay day.

Transfers. — By obtaining interviews with those leaving voluntarily the employment department may often effect adjustments by transfers and promotions. The larger the organization the more simple becomes the problem of transfer to more congenial or otherwise more satisfactory work. The Ford Motor Company transferred in one year 2847 men who had given notice of leaving.[12] What the employment department may accomplish is indicated by the work of the department of the Dennison Manufacturing Company, where there were

219 *Transfers Effected in* 1915.[6]

(1) For promotion — 40 per cent;
(2) By request — 4 per cent;
(3) Because of failure in first position — 18 per cent;
(4) Because of personal demands — 29 per cent;
(5) For miscellaneous reasons — 9 per cent.

The small plant can also accomplish much in this field. Slight adjustments in occupations will often suffice to eradicate difficulties, and although a large transfer rate indicates conscientious effort on the part of the employer to retain his employes, it may also be a sign of restlessness, instability, and inefficiency. Each transfer must be carefully considered so that it may benefit both employer and employe.

Promotions. — Promotions are another form of transfers. Facilitating promotions is one of the prime functions of any employment bureau. Recognition of ability saves the company not only the expense of importing talent but frequently the loss of a dissatisfied employe as well. One firm's employment office regularly reviews the wage rates and in all cases which have not been recently advanced, conference follows with the foreman.[12] Cheney Brothers uses the results of the entrance tests as a basis for promotion, choosing clerks, for instance, from the mill operatives who show ability in simple mathematics, general intelligence, speed, and accuracy.[18] The Western Electric Com-

pany considers the next man in line in every vacancy before going outside for a new employe, and it has been done so far with success.[23] In Germany 65 per cent of the men in technical and managerial positions come up from the ranks in the foremost industries.[12]

The effect which the establishment of the employment bureau has had on the provisions made for transfer and promotion is indicated in the following analysis of Mr. Kelley's.[4]

Of 12 Firms without Separate Employment Departments	Of 18 Firms with Separate Employment Departments	
1, or 8.3 per cent	7, or 38.8 per cent	had definite plans for promotion
2, or 16.6 per cent	13, or 72.2 per cent	informed employes of opportunities for advance
1, or 8.3 per cent	14, or 77.7 per cent	had written job specifications
5, or 41.6 per cent	14, or 77.7 per cent	provided for transfers and try-outs in other departments
5, or 41.6 per cent	7, or 38.8 per cent	gave the foreman full power of discharge
4, or 33.3 per cent	15, or 83.3 per cent	investigated cases of discharge
4, or 33.3 per cent	13, or 72.2 per cent	investigated majority of cases of "quitting"

Recommendations. — It is only in a matter of purely personal concern which withdraws the worker from the plant, such as a change of residence, for other than reasons of inadequate housing facilities in the region of the plant, or a woman employe's marriage, etc., that the employment bureau is completely helpless. But when an employe is leaving voluntarily, whether for better opportunities than can be offered in the plant, or for personal reasons, it is important that he go with the "fullest good will" of

the company. "Perhaps," says Mr. Williams, of the New York Edison Company, "the greatest encouragement to faithful service is the realization that it will be recognized outside as well as within the company." The employment bureau must be ready at all times to give frank, courteous responses to queries of references for former employes.

Location and Arrangement of Employment Office. — For the sake of convenience the employment office should be located on the ground floor. Adequate and comfortable quarters should be provided. Even a small department should have separate waiting and interviewing rooms. In large plants there is often a preliminary interview room as well as a final interview room. Any unavoidable waiting period before interviews should be made as pleasant as possible for the applicants by the provision of agreeable surroundings and comfortable seats. In laying out the department it should be borne in mind that here the applicant receives his first impression of the organization, and the first impression may be a lasting one.

Handling Applicants. — Two methods of handling applicants are used: a doorman gives consecutive numbers to the applicants in the order in which they arrive and by which they are then interviewed; or the applicants all fall into a single file leading to the interview room.[59]

The Record of Service. — Prerequisite to any systematic development of an efficient working force is the preparation of filed records of employes including all data relative to their history before and since entering the firm's employ, such as application blanks, references, medical and mental examination reports, efficiency records, accidents and suggestions records, transfer and promotion slips, etc. Usually there is space provided on the cover of the folder in which such data are filed to list, in addition to the employe's name and number, the department in which he works, the posi-

tion he is filling, his wage rate, the date of his engagement and of subsequent transfers or promotions, the date of his release and the reasons for his release. The Avery Company reproduces on the cover of the folder the application blank and utilizes the inside of the folder for the record of the entrance medical examination report of the employe, thus preventing the possible loss of the two most important records. To such a file the employment department will resort for information about any employe recommended for discharge, transfer, or promotion.

Employment Records. — The necessary files for an employment office will include: [60]

1. Application blanks of future employes.
2. Individual records of present employes.
   (*a*) Past history: application blank, references, medical rating, mental rating.
   (*b*) Transfers, promotions, changes of rate.
   (*c*) Periodic summary of individual's pay roll: earnings (piecework), bonuses, latenesses, absences.
3. Records of ex-employes: individual records, leaving slips, with reasons for leaving and other information obtained.
4. Numerical file: cross index for badge or identification — check numbers.
5. Daily blotter of men hired and transferred (for compiling monthly reports).
6. Daily blotter of men removed from pay roll.

CHAPTER IV

EDUCATION

Need for Industrial Education. — "Seven million workers in American manufacturing establishments produce about one third of their potential output and three out of every four workers contribute less than the average production of the four," was the startling statement of Charles T. Clayton, director of the United States Training Service in the Department of Labor at Washington.[1] It has been indisputably proved that this is in large measure due to the lack of training of industrial workers, a lack which has existed only since the breakdown of the old apprenticeship system, which provided general training in all branches of the trade as well as the necessary background of theoretical education.

The problem of modern education has been to find a substitute for this system. At present there is a growing realization that even the technical and trade colleges and schools have not fully met the situation because though technical knowledge is supplied, practical experience is lacking. Dean Schneider of the University of Cincinnati has tried to combine the theoretical training with the practical work in the College of Engineering at Cincinnati. The present movement for vocational training in public education coupled with the part-time school system is an attempt to give to the mass of workers some of the benefits of the apprenticeship system by fitting them for and placing them in the proper industrial niche.

Public Provision. — Before the war, Germany, alone of all nations, had a widespread system of public industrial

education. There children between the ages of 14 and 18 were compelled to attend trade continuation schools for eight or ten hours each week during work hours.[2] The results obtained gave impetus to the movement for vocational education in other industrial countries and moved both private and public agencies to a renewed attack on the problems involved. In England the new Education Bill requires children employed in non-essential occupations to attend vocational schools until they are 16 years of age. In other words, the law aims to give each individual a mental background and training in the arts and crafts before allowing him to take up a distinct vocation. After 16 years of age the child may become a wage earner, but until eighteen must attend continuation schools for three hundred and twenty hours a year.[3] In these, the studies are directly connected with the industrial occupation. In the United States the Federal Government subsidizes trade, part-time and continuation schools in the separate States. This has caused a great increase of public activities in this connection, whether independent or in conjunction with industry. But to fill existing gaps and to give specialized training, many industrial organizations have found it necessary and of value to develop training facilities in their own plants. General vocational and industrial education as well as general elementary education in industry is a field whose limits are continually decreasing.

Employers' Provision for Elementary Education Unnecessary. — Although it is impossible to state how far public agencies will assume the full responsibility for vocational and industrial education, the tendency is for it to be taken out of private hands. The Federal Revenue Law makes the employment of children under fourteen years of age impossible. In a number of the States the withdrawal of children from wage-earning occupations and their retention in school is enforced by legislation, thus eliminating

the need for provision of elementary education on the part of employers and placing the responsibility to an increasing extent on public officials. In those few States which are backward in educational development, employers may feel that it is to their advantage to maintain schools for future employes, as does the Pelzer Manufacturing Company in South Carolina, which supports a school for seven hundred children.[4] But in general, it is inadvisable and unnecessary for employers to organize elementary education classes unless to supplement the work of the public schools in the Americanization of foreigners.

Industry's Part in Industrial Education. — On the other hand, no matter how extensive may be the vocational work done by public agencies, industry will always play a large part in selecting and training efficient workers. It is not possible to rely solely on the market or on the public school for skilled workmen. In the first place, the supply is insufficient, and secondly, processes and conditions of production are peculiar to each plant. Again, in the final analysis, technical skill and even vocational selection can only be secured in the factory workshop. The school shop cannot reproduce in minute detail the machinery and conditions of commercial production. The pupil must be put to work in a real shop, on a real job, before his fitness for any given kind of work can be determined, and this try-out process may have to be continued for a considerable time and in a number of occupations before the pupil's industrial niche is found. This does not mean that the trade school, pre-vocational classes and psychological examination have no rôle to play in industrial placement. Their rôle is to discover native intelligence and tendencies, but the pupil's final efficiency depends so much on his individual temperament and on his reaction to his environment that it is impossible to rely on make-believe shopwork or on any short preliminary test for a just or complete estimate of ability

Moreover, as Dean Schneider points out, the young worker is in a process of development, and what he likes and does well at sixteen he may heartily dislike and do ill at the age of twenty.[5] Because of these considerations, employers, in their attempt to fit the job to the man and the man to the job, are beginning to try out new employes on various operations in the shop or in a special workroom in the factory or business house, before placing them permanently. Public vocational schools are asking employers to take their pupils for part-time employment, so that the pupil may experience his trade under actual conditions, while learning certain operations and acquiring the theoretical knowledge in the schoolroom.

Technical Training Only One Part of the Problem. — In addition to preparatory training it devolves upon each industry to keep its employes mentally alive. The problem of individual education to-day is twofold. It is necessary not only to find and train the skillful workman, but also to compensate the great number of machine operatives for the monotony of their work. If a man's body is "machinized" for the greater part of the day, his mind must be kept compensatingly alert, so that he may retain an energetic interest in output, be on the *qui vive* to avoid accidents, react swiftly to emergencies and adapt himself to the constant changes in methods of production. For this reason, training the employe for promotion, and recreational education are assuming almost the importance which has been attached in the past to the learning of a trade. Mental play and vitality are fostered in addition to manual or trade proficiency.

Vocational Training

Breakdown of Apprenticeship System. — The development of workers with the basic knowledge of an entire

industry has been the problem of our technical schools and universities. The percentage of college graduates in the population is still, however, negligible. To fill the need, trade schools under both public and private auspices have been developed, and more recently, trade training has been extended to the lower grade of public schools. Union labor has entered the field of training by the development of courses such as those given by the International Typographical Union. All of these attempts have been to replace what was probably the most valuable phase of the lost apprenticeship system — effective, trained, and interested workmen. The difficulty with all these new plans has been the emphasis on theoretical training and the lack of adequate compensating practical experience. This led Dean Schneider to introduce the coöperative course into the College of Engineering of the University of Cincinnati, which provided alternation periods of work in commercial shops with classwork in the college. The men are paired so that the same place is filled for two weeks by the one man and the next two weeks by his partner. Over one hundred manufacturers are coöperating with the University in all kinds of industries by employing these students and paying them regular wages for time spent in the shop.[6]

Part-time Schools. — Other engineering colleges have followed this experiment. A part-time system is being successfully applied in the High School in Fitchburg, Mass., Solvay, N. Y., York, Pa., and New York City. Paired pupils attend school or go to work alternate weeks or fortnights. "Coördinators" visit the factories or commercial houses to see that the work given the pupils properly fills out the school program and provides the needed experience.[7] In New York City in June, 1918, there were six hundred high-school pupils on part time.[8]

Benefits of Part time System. — The actual benefits from such training are intangible, though real both to manu-

facturer and pupil. The employer gains a coöperation with the school, and assistance in training a continuous supply of young workers who have wider experience and are better fitted for their work than the ordinary new employes. The employe, on the other hand, achieves actual experience in different types of work, coupled with careful training, and is thus enabled to make a real selection of his vocation. The common objection made before trying the system that the alternation of workers is difficult to arrange and seriously affects production has proved groundless by experience. The initial hostility of foremen soon disappears. In the third year of the part-time schools in New York City the Washington Irving High School received requests from manufacturers for at least two hundred girls, about twice as many as the school could supply.[8] The Metropolitan Life Insurance Company found the part-time system a means of finding efficient workers for future permanent employment. In 1915, the Statistical Bureau needed some extra clerical workers. Six girls to fill three positions for alternating weeks were furnished by the Julia Richman High School. Pains were taken to explain to the girls the meaning of the work they were doing while with the company in order that it might be of real educational value to them. The girls gave weekly reports of their work in their classes at the school. Three of the girls became the bureau's most efficient permanent workers.

Part-time School of National Cash Register Company. — The National Cash Register Company has adopted the part-time school more completely perhaps than any other large industry. Apprentices in all trades are trained on the part-time system, first in the high schools and then in the University of Cincinnati. Applications for apprenticeship are filed in the student's second year of high school. The following summer the boy is given employment, and if he gives promise is then indentured for four years and sent

back to the high school for two years part-time work. He is paid only for the time spent in the factory. A credit is given him in the school and in the factory for two years' apprenticeship. After graduation, if the boy should wish to become an engineer and his work warrants it, he may be admitted to the coöperative course at the University. He finances himself, but special rates are made for him. In 1914 the four-year course, excluding board, was estimated as costing $445. Two weeks are spent alternately at the factory and at the college, and the boy is paid regular journeyman's wages while at the factory. If he does not wish to go to the University he finishes his apprenticeship term at the factory and attends a continuation school two half days a week for two years. For this time spent in school he is paid in full.[9] An adaptation of the part-time school is the coöperative educational scheme in use in Chicago and Minneapolis, whereby bricklayers and those in the building trades are given instruction in the public schools in the theory and technique of their trades during the slack winter months of January and February.[10]

Technical Night Schools. — The need of industrial workers to enlarge their technical knowledge in order to put themselves in line for promotion has led to the wide development of the technical night school, in spite of the serious objection that unless working hours are unusually short, the work exceptionally light or the school work of a recreational character, the worker has not the physical stamina to secure an adequate return for the time spent. Public educational authorities, employers, and private agencies have organized such night schools. The Murray Hill Evening High School in New York City and the Trade School in Newton, Mass., are notable examples of complete courses conducted by public education.[11] To meet the criticism of employes that the public night-school courses have not met the demands of industry, the so-called short unit courses

were formulated, and although they have not as yet been widely introduced into the public evening classes, they represent a new development worth mentioning here. The plan for this system involves the formation into joint advisory boards of employers and workmen skilled in the trade. The courses themselves are organized to serve the specific needs of a particular group, in a limited number of lessons based on material found to be of practical value.[12]

Coöperation of Employer and Public Night School. — The coöperation of the Green Bay (Wisconsin) Board of Industrial Education with the Oneida Motor Truck Company is interesting. An evening school for teaching various trades is held in the plant. The company provides the equipment, heat, light, and power. Each applicant for admission to a course is first tried out in the department in which he prefers employment. If he promises success in this department he enters the evening school. The educational authorities employ the foremen of the company as teachers. On the completion of the course a certificate assures the pupil permanent employment in the factory. This same plan is being introduced in other cities of the state.[13] Coöperation of this kind between the employer and the Board of Education is undoubtedly helpful.

Employes' Night Schools. — The Casino Technical Night School in East Pittsburgh was one of the largest night schools supported by employers. It was originally founded by the Westinghouse Electric and Manufacturing Company, though the basis of support has been gradually changed with the increase in the number of pupils and the opening of its doors to employes of other companies. Now the pupil is charged a small fee and eight school districts assist with yearly appropriations apportioned to the number of pupils registered. From one hundred pupils in 1904 the number has increased to eleven hundred in 1917. The main course consists of the fundamental principles of engineering,

and covers a four-year period.[14] The Illinois Steel Company and the Gary Works of the United States Steel Corporation have also made a special point of evening classes in technical subjects pertaining to steel making. These courses are free to all employes.[15]

Y. M. C. A. Courses. — The Y. M. C. A. has the most extensive night school program of industrial education of any social organization. In many cities definite trade instruction for apprentices is given,[11] the aim being to cooperate with the industries of the community by giving courses which will cover the entire industrial field.

Training within the Industry

Need for Training for the Job. — The great value derived from preliminary systematic training for new workers before they assume a regular position in industry is fast being appreciated. President Edward Smith of the American Manufacturers Export Association has stated that in one factory of 8000 employes where such training had been introduced the labor turnover had been reduced 15 per cent. The results claimed after the introduction of scientific training of new employes by two hundred firms were a decrease in labor turnover and in spoiled work, a lower accident rate, a rising standard of efficiency of the wage earners, and in general better understanding between labor and capital. Moreover, it was stated that the training departments are self-supporting, as the expense of the training is offset by the value of the learner's work, in fact, in many cases that they yield a return instead of a loss.[1]

Apprenticeship Schools. — With the gradual elimination of the skilled worker from industry, the substitution of the machine apprenticeship as the method of learning a trade has largely disappeared. Personal instruction of a new hand by a foreman or by an old employe has become a

haphazard process. The uninitiated operative is commonly left to teach himself how to fill his new job. The consequent dearth of skilled all-around workers, especially in the machine trades, has led to the introduction of the corporation-owned and controlled apprenticeship school; but recently even in the less skilled occupations preparatory training for the job has been tried and found of great value. As a result we find specific provision for the training of workers in all kinds of occupations, ranging from the most simple to the most complex in the demands that they make on technical proficiency.

Early Schools. — As early as 1895 the Lake Shore and Michigan Railway had its apprenticeship school.[16] The general revival of the apprenticeship contract and apprenticeship method is more recent. Since 1909 the West Lynn works of the General Electric Company has taken boys from fifteen to nineteen years of age who have completed the grammar grades and are physically sound, and tried them out for two months in the shop. If adapted they are then indentured for three years if molders, or for four years if machinists, tool makers, or pattern makers, and taught the fundamentals of the trade in a special training room for from one and one half to two and one half years. Regular wages are paid and at the end of the apprenticeship term a cash bonus is awarded.[17] The Curtis Publishing Company has an apprentice school for compositors, directed by the manager of its composition division. The course takes five years and the wage paid the boys is increased every six months during apprenticeship.[18] The Packard Motor Car Company of Detroit, Mich., requires that a boy must pass a physical examination, have completed the eighth grade and be at least sixteen years old before he may enter their apprenticeship school. Further, his parents pay a cash deposit of $25.00 and sign his indenture papers in the presence of a notary to impress upon the boy's mind

the seriousness of the contract. A bonus of $100 plus the $25.00 is paid him on the completion of the two and a half years' course.[19]

Railroad Apprenticeship Schools. — The most general development has been by the railroads. Many, including the New York Central, the Pennsylvania, and the Southern Pacific, have introduced apprenticeship schools as necessary factors in maintaining the standards of railroad work. The Santa Fe Apprentice School of the Atchison, Topeka, and Santa Fe Railroad was established in 1907 to meet the increased demand for mechanics. The payment of a bonus of $75.00 upon the completion of the course and another $75.00 to graduates in the service six months later, is to encourage the apprentices to stay in the employ of the company. It was stated in 1916 that for two years, in spite of a greatly increased demand, the supply of mechanics from the apprenticeship course had met all the demands of the business.[20]

Coöperation of Public School with Apprenticeship Course. — The School of Chicago (Illinois) Lakeside Press makes agreements with the parents of grammar school graduates between fourteen and sixteen years of age by which the boy is bound for a two years' pre-apprenticeship course. During this period half the time is spent in the school and half in the shop. Then, should the boy prove satisfactory, his services are contracted for, for five additional years.[21] The Fore River Shipbuilding Company of Quincy, Mass., has developed its apprenticeship system in coöperation with the part-time school in Quincy. The boys are paired off and spend alternate weeks in school and in the shop. To meet the needs of the boys who cannot afford to attend this part-time arrangement the company itself has organized a school for apprentices for two days a week, where students are paid during instruction. After a six-months term of probation, if the student in either course is satisfactory, a four-year

apprenticeship agreement is signed. The rate of pay increases each year, from nine cents an hour at the beginning to sixteen and seven eighths cents during the fourth year with a bonus of $100 awarded at graduation.[22] The fact that so many companies have introduced and maintained apprenticeship courses is proof in itself that they have been a success.

Vestibule Schools. — The war has, moreover, taught us the value of training in other than highly skilled occupations. In 1917 the Recording and Computing Company of Dayton, Ohio, introduced a " vestibule " school, a separate training department, equipped with the various kinds of machinery in use in the plant. In this department women war workers inducted into the plant were given from three to ten days' instruction in methods of work before being put on the floor. The women teachers selected from the shop were not given more than thirty pupils each. The new operative was taught only one job, but the training was thorough. The new girl was paid twenty cents an hour during instruction. In time the old employes were also given this instruction. As a result one set of thirty-one employes changed its rate of production from eight pieces per hour in January, 1916, to fifty-five pieces per hour in 1918. In the assembly department 2000 girls produced 38,000 complete fuses per day in one shift, although expert engineers had estimated 15,000 fuses in two shifts as a possible output.[23]

In a woodwork and paneling factory the course for training is from two to six days and the rate of pay during this time is twenty-five cents an hour for both men and women. The standard of production of this department is even higher than that of the regular shop.[24] The Packard Motor Car Company kept individual records of each " learner's " progress, not only in the training department but in the shop as well, and a special effort was made, especially in the case of women, to try them out on different types of machines until the occupation best suited to the individual was found.

This company justified the expenditure, estimated at $52.21 for training each person for a month, on the grounds of increased efficiency of the workers and subsequent better and greater production.[25]

Qualifications of Instructors. — It has proved so difficult to secure the right director for these training schools that the qualifications for the job have been analyzed and classified as follows:[26]

	Per Cent
Trade experience	25
Technical ability	20
Technical knowledge	15
Ability to analyze and plan	15
Leadership	15
Personality	10
	100

The Emergency Fleet Corporation, to meet this difficulty during the war, gave a six weeks' course at the Instructor's Training Center in Newport News to skilled craftsmen selected from shipyards all over the country, to enable these men to go back to their shipyards equipped to instruct new and old workmen in the shipbuilding trades. The shipyards paid the men's wages during the course and all expenses. The Emergency Fleet Corporation followed up the training and paid a bonus to all workmen under instruction, provided they remained with the shipyards seventy-eight days.[27]

Other Vestibule Schools. — Many other war industries had the same experience. The Curtis Aeroplane Corporation of Buffalo, the Nordyke and Marmon Company of Indianapolis, the Lincoln Motor Company of Detroit and the Seneca Falls Manufacturing Company were among those who adopted these "vestibule" schools which the Section on Industrial Training of the Council of National Defense urged upon all employers in war industries.[28] These war lessons can be applied to peace activities, as well. Introduction of such training is possible in many plants.

General Training Classes. — Between the prolonged and elaborate apprenticeship courses and these "vestibule" schools, with their training of three to six days, lie the efforts of many commercial, publishing, and manufacturing houses to train their employes for a period of a few weeks or months, preparatory to regular employment. The Northwestern Knitting Mills of Minneapolis gives a three months' course to cutters before allowing them to do productive work.[10] Telephone companies commonly give field workers a four weeks' course of switchboard lessons, lectures on the theoretical side of their work, on safety procedure, on the administration of the business, etc., and divide the course into three grades with intervening field work.[21] Every new employe of the New York Edison Company enters a training class in which he not only learns the technique of his job but in which his personality is studied, and a close record of achievement kept.[29] The Dennison Manufacturing Company does likewise, and during this time makes a careful study of the new employe's vocational attitudes. He is not allowed to enter a regular department until he is able to earn a specified wage.[30] Such a procedure relieves the foreman of the responsibility of training, protects the employe from the unnecessary strain which accompanies the learning of a new job without adequate supervision, and assures the employer of a productive worker when the employe finally enters a department.

Salesmanship Schools. — In this connection special training schools for salesmen deserve mention. The Burrows Adding Machine Company has a school for salesmanship at its Boston office. A six weeks' course in the theory of salesmanship, comprising four hours' class work in the morning and three hours of home work for the afternoon, is followed by from four to six weeks of practical field work. Candidates completing this training successfully are eligible for positions as salesmen for the company. Applicants

are chosen from among those who answer a carefully worded advertisement describing the purpose of the course and the type of person desired. The answer sent by the company to these written applications explains the details of the training and the opportunities offered on completion of the course, with special emphasis upon the fact that the final selection will be made of those who show the proper qualifications for the work. It has been estimated that one fourth of the applicants are chosen to take the course, and of these one third become salesmen. The course is given free of charge, but the expenses of the students are not paid.[31] The National Cash Register Company and many other firms have developed schools for salesmen.

Instruction on the Floor. — The Joseph and Feiss Company follows a different method in instructing its garment workers. A corps of instructors teaches new operatives from two to ten jobs at the regular machines. An hourly retainer is given while the new hand is under instruction, to make up the regular wage. The plan of teaching a number of jobs provides an extra mental stimulus for the employe by introducing variety into the work and assuring a reserve force for necessary shifts as well.[32] The American Pulley Company chooses a new employe on the grounds of general fitness and adaptability and then places him under an instructor's supervision, as a "knockabout" worker, until his proper niche is found.[33] Smaller factories in which extensive training schools are not practicable might perhaps follow the plan which is practiced by the superintendent of a tissue-paper concern. The instruction of new workers is centralized in two old employes selected not only because of their general skill in the different kinds of work, but for their patience and thoroughness.[34]

Education of Blind and Crippled. — To what extent the individual employer can undertake the training of the physically handicapped is not clear. In most instances

some other agency must in all probability be relied on to do the training. Nevertheless, the results of the Crocker-Wheeler Company of Ampere, New Jersey, in training the blind to wind coils for armatures is suggestive. Since the fall of 1917, some three hundred and fifty blind people have been so trained. The period of training is from three to four weeks. When proficient, the blind workers are put in the regular shops with the sighted workers, and they earn as much in eight hours as the sighted workers do in seven, and their work is of a higher quality. The dilution of the regular force with these blind workers has been found to have a steadying effect on all the employes because of the earnestness and concentration with which they work, and the school is maintained only because it is an efficiency producer and financially profitable to the Company.[35] This example has been followed by a number of industrial concerns throughout the country, and also abroad, notably the Western Electric Company of New York, the Consolidated Safety Pin Company of Bloomfield, New Jersey, the Combination Rubber Company of Bloomfield, the New Toy Company of Newark, the Westinghouse Electric Company of Pittsburgh, the General Electric Company of London and Birmingham, and the Thomson-Houston Company in France. It is interesting to note in this connection that the Ford Motor Company found after a survey of their factory that they could place 4032 crippled men, 2637 one-legged men, 670 legless men, 715 one-armed men, and 10 totally blind ones.[36]

Need for Training in the Job. — The recognition and development of ability in a working force is essential to the success of an industry. It must rely almost exclusively, if not entirely, upon itself to fill positions of greater responsibility. "Stealing" from other concerns is in the long run bad business policy. It weakens the morale of a working force if the future does not hold promise of reward. Any

newcomer must overcome opposition and learn the methods and point of view of the new firm. Promotion from within has disadvantages — it may lead to slow decay because new ideas are not brought in, but for most positions with most concerns, it is the best policy. To make such a program possible, training is essential; but industry must also face the problem of making the worker as effective as possible in the job that he is holding. The old employe as well as the new is worthy of serious thought and consideration.

Special Training Classes. — In order to acquaint their employes with the special problems within the individual industry, many employers have formed special training classes open to those who care to join. Frequently these give the worker the opportunity to view the business as a whole and to realize his place in the structure of the organization.

Western Electric System of Special Training. — The Western Electric Company has a number of such training classes in various departments. In the engineering division, courses in the history and rules of the company and in the study of the practical uses of electricity are open to high-school and grammar-school graduates, while a special class in intensive training in the activities of the company is given for the graduates of either colleges or technical schools. The manufacturing division offers an accounting course of one year for clerical work, a production course of forty weeks in shop commercial work, and a three years' course of technical training in tool designing combined with practical work in mechanics to those who have completed either high school or grammar school. In the installation department a period of school work in electrical theory and telephone practice is given after the usual preliminary training, accompanied by six months' field work. Special training for the position of supervisor is given to the graduate who shows marked ability. The distributing organization

offers one year commercial course to all college grades. This combines six months' study of the distributing end of the business and six months in the shops installing telephones. At the end of this period the employe is placed at the work for which he is best qualified.[37] These courses cover every branch of the business and represent a complete and well worked out system of special training. Similar systems of practical and theoretical education have been adopted by the American Locomotive Company, the New York Edison Company, and others.

Stenographic Classes. — The instruction in stenography given by the Metropolitan Life Insurance Company is popular. One hundred and fifty employes were studying stenography in 1918 for two nights a week, either as beginners or in speed classes. The classes are open to any employe with a knowledge of the fundamentals. Promotions are made from these classes into the company stenographic division.

Special Training for Selected Salesmen. — An intensive and practical course of six and one half weeks in Methods of Production is offered by the American Steel and Wire Company to certain selected employes who are considered capable of progressing. This consists of mill inspections, lectures, quizzes, and discussions, and the time is divided among the three plants at Cleveland, Pittsburgh, and Worcester. Only twelve men are entered in each class. Reports are made weekly and records kept to which the company may refer at any time. The Company believes that the complete survey that is given of the business develops the men mentally and enlists their active interest in its success.[38]

Correspondence Classes. — A common way of training employes who are scattered over a wide geographical area is by means of the correspondence course. Some of these have been remarkably successful. The Metropoli-

tan Life Insurance Company in 1918 enrolled 3000 field agents in its correspondence course on life insurance. In the seven years since the course was started, 7500 individuals have been graduated. Agents are admitted to the course after six months of service. During the course of the twelve lessons, conferences are held with the district superintendents. The effect in increasing the efficiency of the force and reducing turnover is indicated by the success of the graduates.[21] Other employers encourage their employes to take outside correspondence classes, sometimes paying the fees if the courses are successfully completed.

Special Training for Foremen. — In order to promote coöperation between the employment department and the foremen in the Dennison Manufacturing Company, a three months' training period, during which the foremen work in the employment bureau as assistants to the employment manager, has been arranged. The foreman upon entering the course is given a list of suggested reading. He studies employment methods in other concerns and also has a chance to do regular interviewing in order to understand the practical side of the work. The education gives him the broad point of view of the whole organization and a better understanding of human beings.[39]

Training Executives. — In addition to plans such as these, some companies have introduced definite training for executive positions either in a major or a minor capacity. The Packard Advanced Training School of the Packard Motor Car Company prepares men, chosen because of unusual ability, for the minor executive positions in the plant. The first class graduated 176 men trained for the positions of job setters and foremen. The class met for an hour a day for ten days. The subjects studied included the handling of men, the premium system, time studies, the care of machinery, safety and sanitation methods, and routine and system work. Results were so satisfactory that classes

were added for the women instructors of the " vestibule " school and for the foremen already in the plant, to give them the opportunity for broader educational advantages.[40]

Training for Minor Executives. — The W. H. McElwain Company, shoe manufacturers of Manchester, N. H., has organized training classes for minor executive positions along similar lines. Carefully selected candidates take courses lasting one to three weeks, consisting of office and classroom work and field work in factory. During the first two or three months after the completion of the course the manager keeps track of the work of the graduate and holds conferences with him. The company claims that graduates are promoted twice as fast as those who have not taken the training.[41]

Flying Squadron of Goodyear Tire and Rubber Company. — The Goodyear Tire and Rubber Company instructs the " Flying Squadron," a group of chosen men, for two hours a week in English, shop arithmetic, mechanical drawing, economics, management, and rubber manufacture, so that men with a good technical and general education will be available for executive positions.[42]

Promotions. — The promotion systems in many instances are less formal methods of training men while they are working. The so-called " three positions plan " of promotion, which has been put into operation in several companies by Mr. and Mrs. Frank Gilbreth, places each man in the organization in three positions, first, the one last occupied by the man; second, the present position; and third, the position for which the man will next be eligible. In this way everyone has three functions to perform — (1) to teach the man under him, occupying the old position, how to fill it, (2) to do the work of his new position, and (3) to learn the work of the man in the position next above.[43] The division officers in one large concern familiarize themselves with the work in the general office while their sub-

ordinates do their work, and so on down the line. Thus new men are constantly being tried out and trained for the future.[24] Such "understudy" plans are used by many railroad organizations, by the Fore River Shipbuilding Corporation, the United Cigar Stores, the National Cash Register Company, and the Dennison Manufacturing Company.[30, 38]

Coördinated Education and Promotion. — The National City Bank of New York City has a carefully coördinated system of education and promotion. A young boy, for instance, may be examined and if satisfactory taken on as an office boy or page, and placed in the Page Class for one month. In this Page Class, which meets twice a week during business hours, he learns the geography, rules, and officers of the bank, etc. If he passes the examination given at the end of the month and if his personality seems fitted for the work, he is entered as a regular page at the end of three months' probation period and remains a page from one to two years. He is then eligible for the messengers' department of the filing department, but must first attend the Messengers' Filers' Class for one month and pass another examination before promotion. After six months he is considered for promotion to the check desk, for which work he must again be trained. While at the check desk he is allowed to apply for one of the special classes in stenography, bookkeeping, foreign exchange, credits, foreign trade, new business, industrial service, or bonds, loans, and investments, and if the Educational Committee approves of his choice he is then trained for this still higher work. This sequence of positions and classes covers a period of nine years and combines with technical information on the history and methods of banking, courses in English and arithmetic. When an employe is in the Fourth Year Class work and has been with the bank two years, he may select and attend approved courses in English and Political Economy in outside schools, and the City Bank Club, an organization of the clerical

force, will refund all fees for such courses upon satisfactory completion. A few of those who enter the bank from the high schools or colleges, having apparent ability, are enrolled in the Apprenticeship Course of the Bank for a period of from two to four years. The bank retains the privilege of terminating the apprenticeship whenever the employe's work is unsatisfactory. These apprentices are shifted from department to department and promoted more rapidly than the other workers. Several of the apprentices are selected each year to become members of the College Training Class, in which college graduates are trained for foreign service.[44]

Plant Charts. — A plant chart, giving every position in its relation to every other, facilitates promotions. When the new employe is engaged and interviewed his position on this chart is indicated, showing the possible line of advancement and the probable length of time it will take him to advance. If the employe wishes he may tell what line of promotion he would like to follow. At intervals thereafter the manager of promotion should interview the employe and check up his progress on the chart, and when unsatisfactory, make an effort to discover the reason. If an employe chooses to remain in any one position permanently, he should then teach his subordinate only enough of his work for that man to advance above him.

General Education

Need for General Education. — Besides the special training which employes are receiving to make them effective workers, familiar with the technical problems of the industry, and to train their executive ability, employers are seeking to develop greater efficiency by a certain amount of general education. Americanization classes and educational campaigns have been developed to promote safety and to raise the health level of the working force; cultural

classes have been formed to increase the general grade of intelligence; meetings of executives and workmen are held in order to induce coöperation by the discussion of knotty problems; and finally the plant organ is published in order to increase the *esprit de corps* of the organization and to serve as a further educational medium.

English Classes. — Between 1900 and 1914 over ten million male foreigners above fourteen years of age came to the United States. This group has entered American industry. School authorities have to date been unable to teach them English and have only in a small measure prepared them for citizenship. Realizing these facts, many employers have undertaken to teach English to foreign-born employes. A knowledge of English on the part of the employes is of obvious advantage to employers, as the following example will illustrate. The Ford Motor Company, in two years' time after non-English-speaking employes were compelled to attend English classes, attributed a 54 per cent reduction in accidents to the fact that the men could read the safety signs and understand orders and instruction.[45] Moreover, the inability to understand the language seriously affects the efficiency of the worker. The factory record of thirty-five foreign workers with Joseph and Feiss Company who could not speak English shows that only one of the thirty-five had reached the efficiency of the best in his line of work, eight were below average in efficiency, and twenty-six were the least efficient in their respective operations.[46]

Solvay Americanization Plan. — In planning English classes, employers should study the needs and the facilities of the community. The Solvay Company of Syracuse, half of whose employes are non-English-speaking, holds classes directly after working hours; attendance is compulsory, and one half the regular wage rate is paid. All unexcused absences are investigated. The teachers are provided by the public school authorities. In order to

specialize the instruction an attempt is made to acquaint pupils with the conditions in industry by trips through the plant, on which production problems are explained. The development of a special textbook for these classes based on the necessary vocational vocabulary is the ultimate aim.[47] Many corporations now require all new employes to attend and graduate from English classes. In the Joseph and Feiss Company, teachers and textbooks are furnished by the Board of Education of Cleveland. The Ford English School is manned by teachers from among the employes themselves who volunteer for this work. The course consists of seventy-two lessons, taught in thirty-six weeks, for two hours a day, twice a week. For the Fore River Shipbuilding Company, the North American League provides English teachers,[48] while the Pennsylvania Railroad employs its own instructors.

Compulsory Attendance at Classes with Pay, Best Plan. — The plan of paying the individual for attendance is probably the most satisfactory method. The class is usually held directly before or after work hours and the pay based on the regular wage. This method compels every non-English-speaking employe to attend the classes with pay, so that no one will escape instruction and remain an industrial hazard and a needlessly inefficient worker.[49]

Instruction in Other Subjects Often Combined with English Classes. — D. E. Sicher and Company, of New York, make the English classes interesting to the employes because the teaching of English is only incidental to stereopticon lectures, the teaching of dressmaking, drawing, and arithmetic.[21] The Pennsylvania Railroad teaches English by means of stereopticon lectures, with views of the proper and improper ways of doing work.[50] The Du Pont Powder Company also teaches English while displaying stereopticon views of safety work.

Health and Safety Education. — There is close relationship between English classes and safety and health work in

many industries. Many companies combine the two under one person; the safety engineer of the Solvay Company, for instance, is director of the Americanization schools. Extensive programs for health and safety education have been undertaken. Safety propaganda has taken the form of meetings in company time or during noon hour, lectures often accompanied by moving pictures, bulletins posted in conspicuous places and often illustrated by graphic drawings, material printed in the plant organ, safety contests and safety committees which work up new forms of arousing and maintaining interest in the importance of "safety first." Health education, usually directed by the medical department, takes much the same form as the safety work. Lectures on hygiene, meetings illustrated by charts and pictures, health pamphlets, and articles in the company paper are among the main features. The details of education in safety and health are given in the chapters on "Working Conditions" and "Medical Care."

Cultural Classes. Company Cultural Classes. — Classes in literature, current events, general information, personal hygiene, drawing, sewing, music, domestic science, and other subjects not related to the day's work may be considered cultural classes. In many instances these classes are under the auspices of a recreational club or association within the industry, as for instance the Wanamaker Women's League, which conducts domestic science classes open to all members of the league, or the National Cash Register Club, which includes in its curriculum courses on salesmanship, advertising, business-letter writing, shop mathematics, public speaking, mechanical drawing, free-hand drawing, bookkeeping, and printing.[51] Where these classes are not organized under an employes' club the company often supervises them. The John Wanamaker Commercial Institute offers instruction in academic and general commercial work, music, ethics, and physical training in evening sessions for

boys and girls, held twice a week.[52] The Metropolitan Life Insurance Company holds sewing and millinery classes daily at 4.45 P.M. just after closing time, for an hour. In 1918 forty employes were registered in the millinery classes and fifty in the sewing classes. Evening classes in the Bournville Works, England, provide instruction in art, needlework, cookery, and laundry-work, hygiene, physiology, home dressmaking, sick nursing, and care of infants, English literature, and arithmetic. In this concern, moreover, evening classes in general academic work as a means of broadening general education are compulsory for both girls and boys, the latter choosing between a general commercial and an industrial course.[53]

Cultural Classes Outside of Industry. — The many private social agencies, such as the Y. M. C. A. and the Y. W. C. A., for example, which offer evening classes of this type will eventually be in the same position as employers' activities. To an increasing extent, public authorities are displacing employers and private agencies in this field. It is rather the function of a board of education to furnish classes of this kind than of industry. Many of the public high schools and even elementary schools as well provide night courses. The regular night schools are beginning to offer full schedules, including domestic science, manual training, and other cultural classes. But employers can be of real service to their employes in this connection by putting them in touch with the facilities provided by outside agencies. The Western Electric Company does this through an Information Bureau established in the Hawthorne Club rooms. The employes are given information and advice in regard to the courses of study in the outside night schools.[37]

Educational Program and Garment Workers Union. — Again, labor union activities may displace the employer in the field of cultural education. The beginnings have been made by the International Garment Workers Union

in a number of cities. They have coöperated with boards of education and opened courses in literature, English, sociology, and social problems free to all the members of the union. Tri-weekly classes are held in the public school and qualified teachers are furnished by the educational authorities.[54]

Continuation Schools. — An interesting phase of cultural classes is the so-called continuation schools, which aim to give children between the ages of fourteen and sixteen years, who are regularly employed in industry, an opportunity to increase their general education. In five States — Wisconsin, New York, Massachusetts, Michigan, and Pennsylvania, these children attend continuation schools for a minimum time of four hours each week in the employers' time. In some cases the classes are held in rooms provided and equipped by the employer; in others, the children go to classes in the public school buildings; but in all cases the teachers are employed and assigned to their work by the Board of Education.

The industrial school for which Germany is famous is strictly a continuation school. It is used to continue the general education of the child who either is forced or wishes to go into industry as soon as legally permitted to do so and before the elementary education has been completed. It is, therefore, at best a compromise and a forecast of a higher age limit within which full time school attendance will be required. In Boston the attempt is made, however, to have these schools function as vocational schools trying the pupil out in various processes and coördinating the school work with his work in industry. In the last analysis the time for training allowed in the continuation school is too meager to make possible startling results, so that for those compelled to enter industry but capable of absorbing a higher vocational training, the part-time school will probably supersede the continuation school.

Libraries and Magazines. — Another method of providing employes with the opportunity of widening their intellectual horizon is the establishment of libraries in industrial plants. Occasionally it is the public library which establishes a branch in the factory, but frequently the company buys its own books. The library of the Metropolitan Life Insurance Company is a branch of the New York Public Library, but in addition has some 2000 volumes of its own on general subjects as well as an insurance reference library of over 20,000 volumes. The circulation among 6000 employes is at the rate of 200 volumes a day. The National Cash Register Company outlines suggested courses of reading; 25 per cent of the 1100 men employed and 42 per cent of the 200 women are members of the library.[55] The libraries in the reading rooms of the Santa Fe Railroad contain 18,500 volumes and have a daily circulation among 8500 employes.[56] Magazines and newspapers are frequently provided in the reading and rest rooms, and in clubhouses. The character of the employes determines the kinds of magazines desired. Companies that employ large numbers of foreign-born workers frequently have newspapers in foreign languages to meet the demands of this group. The American Rolling Mill at Middletown, Ohio, especially, makes a point of doing this in its reading room for foreign workmen.[57]

Personnel Meetings. — Besides educating the individual employe, the employer has come to realize the truth of the old saying that two heads are better than one and that valuable educational results come from meetings held between workmen or executives for the discussion of common problems. The Tuesday morning meetings of the executives in the different departments of the Burroughs Adding Machine Company resulted in the installment of an entirely new system in the advance mailing department of the concern.[58] The Goodyear Tire and Rubber Company has

successful tri-weekly meetings of foremen during the last hour of the day. These meetings are for the discussion of topics of special interest to foremen, to the safety and to the personnel departments. The head of the employment department attends all meetings. To add new interests speakers are occasionally introduced to talk on general subjects.

The Employes' Engineering Club of the Greenfield Tap and Die Corporation represents another method of educating the employes by group discussion. The full details of the organization of this club are given under the section on educational clubs in the chapter on "Recreation." The educational benefit alone derived from employes' meetings, in whatever form they are organized, would seem to justify their development.

Plant Organ. — There is an increasing number of plants and corporations that are publishing magazines and newspapers. The "house organ," concerned with sales methods need not be discussed here. The "plant organ," whose object is to "sell" the plant to the workers, is of interest in this connection.[59] Its aim is to convey to the mass of workers from president down to water carrier the spirit of the organization.[60] It is used to emphasize to the employes the importance of their individual effort, besides imbuing them with the spirit of coöperation. The plant organ also serves as an educational medium. It prints necessary information on technical subjects of special interest to the reader, and safety and health propaganda. An editorial statement in one of these papers expresses the purpose of the plant organ to be the promotion of coöperation between employer and employe, and the strengthening of the loyalty of the employes to the company and to each other.[61]

Typical Issue of Plant Organ. — An analysis of a good shop paper, the *Western Electric News*, published by the Western Electric Company, will perhaps indicate the usual contents and approach. The material of a typical number

may be divided in general into two groups — articles of general educational interest and news distinctly relating to plant activities. In the first group belong an article on the economic situation after the war by the president of the company; one on the newest safety devices introduced into the Hawthorne works, illustrated by cuts of machines in operation; and an account of a trip by the head of a department through South America, enlivened by snapshots of interesting places. The rest of the material throughout the paper, with the exception of general suggestions for self-improvement and jokes and cartoons, belongs in the second group. A detailed description of the annual field day, accompanied by photographs and cartoons of competitors, reports of club activities and other social affairs not only in the Hawthorne plant but in branch offices, form the major part of the news. The write-up of the Annual Products Show at the Hawthorne works is accompanied by pictures of the most important exhibits. This idea of frequent illustrations either by photographs or drawings is distinctly helpful in securing and maintaining the interest of the reader.

Personals are scattered all through the organ. There is a separate column for marriages, several pages devoted to the publication of awards for service; the photographs of the employes qualifying for the twenty or more years of service appear, combined with a short history of their work in the company.

The magazine is full of good and clean humor. A special page headed " Editor Egge's Own Page " is devoted to jokes and humorous stories, replete with local color. The cartoons are especially amusing, — the drawings of competitors in the events of the field day representing a high type of comic art. There is usually, though not in the case of the issue under discussion, a funny story in the style of Wallace Irwin or " Mr. Dooley," based on Western Electric problems and current plant news.

But the style and handling of material in this paper are especially suggestive. There is no preaching or moralizing. The problems are discussed in a straightforward, pointed, and humorous manner. " Have you a Hateful Habit in your Home? " is the heading for a page filled with a discussion of business habits. One of these which reads, " When your telephone rings, always answer ' Hello.' There are only about 13,000 other people at Hawthorne with the same name, so the person calling knows at once that he has the proper individual," gives the manner of handling helpful suggestions. The spirit in this plant organ is good. The paper is free from any paternal tone, and there is an absence of " playing up " or eulogizing the heads of the concern. One feels that the organ is edited directly for its readers with their coöperation and not at them.

Special Points Worth Mentioning. — Articles which enable the worker to understand the work of different departments and the coördination of his department with the unit as a whole have a definite place, — a series of articles in " The Home Office " of the Metropolitan Life Insurance Company may be mentioned in this connection. The first was on mail handling, describing in detail the mail delivery within the building, followed by others on different departments. Organization charts of departments are frequently used. Histories of the company and of various processes are helpful and of particular value on anniversaries or special occasions. Aids in education are published in the *Mirror*, plant organ of the Charles William stores. This reviews a series of business books selected as bearing directly on the problems of the concern, and also publishes articles on Americanization of interest to those learning to master the English language.[62]

Educational Material. — The plant organ is an ideal medium for the education of employes in matters of health and in safety. In the latter connection, the publication

of actual photographs and cartoons is especially valuable should there be a foreign or illiterate group.[60] The reprint of an article on venereal diseases by the War Department Commission on Training Camp Activities in one paper was excellent.[59] The General Chemical Bulletin of the General Chemical Company conducts a special Health and Hygiene Department which includes any topic on this subject, from the way of detecting tuberculosis to the hints for a properly balanced diet. Health is an important topic, and material which makes it vital has its place in a shop paper.

Advertising Columns. — The paper must be interesting, but it can also be helpful to employes. The Goodyear Tire and Rubber Company started a "getting acquainted" campaign.[63] Lost and Found and For Sale columns appear in a number of shop organs. The Republic Motor Truck Company has worked this out well. At the head of their "want ad" column is printed, "There will be no charge for these, but on account of limited space we will publish them two times only, unless notified to continue."[64]

Inspirational Material. — The "inspirational" material appearing in plant papers is of two kinds — (*a*) that which urges employes to forge ahead by stirring their ambitions, and (*b*) that which praises the "good old faithful employe." An example of the former is a cartoon of a man carving himself out of a block of marble, printed in one plant paper and immediately copied in many others. The latter is illustrated by the shop paper of the Greenfield Tap and Die Company, which prints in each issue a biography of one worker who has been in the employ of the concern for a long time. The column is headed, "These men are our old guard. They are the backbone of industry."[65]

Reporters in Plant Collect Plant News. — Real plant news, including items on special activities, the various services provided for the employes, and tactful personals are important ingredients of a plant paper if they can be made

interesting to a sufficiently large number of employes. The plan of making different workers reporters in the various departments of the concern is one of the ways of getting hold of real plant news. In the Western Clock Company a foreman of each department appoints a worker to gather news for three months. At the end of that time he is thanked officially by the editor.[66]

Form and Cost. — There is a great variety in the form and size of plant organs. Some papers are full blanket sheets, others are of a size to be put into a coat pocket. The convenient size is that of five by eight inches. Good printing is an invaluable asset. Calendered paper should be used. Make-up should be carefully considered. Different sizes of type can be used for special headings, thus adding to the attractiveness of the periodical. The cost of printing one plant paper about seven by ten inches in size, published monthly for about 1500 employes and containing a number of cuts and half tones, was given in March, 1919, as averaging about $1000 a year.[61] One company publishes a magazine with a circulation of 30,000 copies a month at a cost of about eight cents per copy. Another concern issues 30,000 copies monthly, and finds that the annual costs are divided as follows:

Printing	$16580.63
Distribution	4123.11
Salaries	6645.00
Cover color plates	1870.62
Sketches	963.45
Photographs	845.63
Cuts	1785.90
Rent and house service	883.25
Miscellaneous	1560.50
Total	$35258.09

This company also finds that accurate cost recording on its paper helps to keep down expenses and results in greatest efficiency.[64]

Frequency of Publication and Distribution. — Most plant organs are monthly publications, as editors seem to find it hard to get out weekly issues.[60] Moreover, it may be questionable whether with more frequent issues the effectiveness may not be decreased. Special editions on subjects of importance are of value to maintain interest. The B. F. Goodrich Company published a special fire prevention issue.[64] Distribution should receive careful consideration. In many instances the paper is given out in the various departments of the plant. Sometimes it is circulated at the gates. In other cases notices are posted stating that a new edition is ready and may be had on request. It is important that the distribution should be at the end of the day, so that the publication will be taken home and that time will not be lost in the reading and discussing of it during working hours.[61]

Editors' Qualifications. — It is impossible to lay down hard and fast rules for plant organs. Each concern has its own particular problems and type of news. The editor is always the important factor in a plant periodical. A good editor is one who understands the business, knows news values and the newspaper game, is a keen student of human nature, and has full authority in his own field. "Plant Organs are too often edited for the executives or at the employes. They give the impression of exploiting the workers for the benefit of the employers." [59] There must be cooperation between the editor and the readers, so that the magazine may meet all the needs of the workers. The plant organ should not publish material designed to stimulate the sales force. This is not its function and rightfully belongs in a separate paper. If the shop paper is to be read and read widely it must contain only news of interest to the readers. The ideal paper, too, is democratic in its approach and not paternalistic.

CHAPTER V

WORKING HOURS

Recent Change in Attitude toward Length of Working Day. — The employer of fifty years ago believed that industrial output varied in direct ratio to the length of the working day. Each hour that his factory was working meant increased output. Each hour that saw his factory or shop empty, or his employes idle, meant to him lost production without any compensating reduction in overhead charges. Manufacturers scoffed at Ira Stewart when he agitated the eight-hour working day during and after the Civil War. In the three years following 1915, however, one million and a half workers in over 4000 establishments have been put on the eight-hour day,[1] nearly three times the total number so employed in 1909.[2] Of this number 935,000 gained the eight-hour day during 1917 and the first six months of 1918, and the number is growing daily. Moreover, the half-holiday on Saturday is becoming general, the 44-hour week is the standard in the clothing industry, while some firms have advanced to a five-day week and an eight-hour day throughout the year, a schedule which is also common to department stores in a number of cities during the summer months. Chief witness to the change in attitude toward the desirable length of the working period, which has taken place in the last few years, is that part of the Treaty of Peace proposed by the Allies in 1919, in which the eight-hour day and forty-eight-hour week, with one complete day's rest, is accepted as the international standard for all industrially developed countries.

Reasons for Change in Attitude. — The recent impetus given the shorter hours movement in industry is due to accumulated force from three sources — organized labor, legislation, and a reversal in the attitude of employers toward the relation between hours and output. The threatened strike of the railroad brotherhoods in the United States in 1916, for instance, did much to popularize the eight-hour day, at least as the basis of compensation. Legislation lags somewhat behind organized labor in the regulation of hours. Nevertheless, forty-seven States in the Union have some sort of legislation limiting the hours of labor;[3] Federal employes work seven hours; the government war contracts stipulated the eight-hour day, and the National War Labor Board accepted the same working day as the basis of compensation in making its awards in disputes during the war. But we still find various lengths of working periods in use, differing with the industry and the locality. Some employes work 84 hours a week and others only 40, less than half as long. Realization by industry that a long working day does not mean maximum output, in fact that the reverse may be the case, has been in the past and will continue a potent factor in the reduction of hours. In the last analysis the development of the movement for the shorter working day will depend on the scientific data obtained regarding the relation between working hours, fatigue, and output.

Fatigue

Fatigue *vs.* Efficiency. — Fatigue means a "diminished capacity for work, which is the result of previous work."[4] When body or brain is at work certain vital elements are consumed from the cellular tissue and what remains is waste product. If this waste product accumulates too rapidly to be burned up by the oxygen carried in the blood or otherwise eliminated, the system becomes clogged and poisoned.

Rest is necessary to make the body again effective. If the strain has been too great or if the rest is insufficient, some of the poison remains in the body. The effects are then cumulative and the individual suffers permanent and progressive physical deterioration. Thus fatigue affects working efficiency at first, and later health itself.*

Causes of Fatigue. — Effort of any kind results in the development of the poisons of fatigue. Machine production, however, presents a series of special factors contributing to fatigue. Although the length and intensity of activity are always the predominating factors, fatigue may be hastened or retarded by the conditions surrounding the activity and by the nature of the work and the type of worker. "The problems of industrial fatigue are primarily and almost wholly problems of fatigue in the nervous system and of its direct and indirect effects." [5] It is for this reason that the physical effort demanded of the worker is often of less importance than the speed, monotony, or fixity of posture involved in the performance of his task. Prolonged hours, work done at unusual times, such as overtime, night, or Sunday work, frequently produce an amount of fatigue entirely disproportionate to the effort expended or the quantity of output produced. Conditions of work which include poor lighting or ventilation, noise or floor vibrations, overcrowding or unsanitary conditions, hasten fatigue and may cause it even where hours are short and work light and varied. These contributing factors must not be overlooked in analyzing the causes of fatigue in modern industry.

Causes Inherent in Machine Production. — Some of these factors which cause the poisonous fatigue toxins to accumulate more rapidly than they can be thrown off are inseparable from machine production. Speed and the

* The existence of fatigue poisons and toxins is the hypothesis upon which recent scientific investigations of fatigue are based, although their existence is not yet proved.

monotonous repetition of the same operation cannot be easily eliminated in the making of hinges, for instance, where a woman takes a half formed hinge and places it in the bending machine 50 times a minute or 30,000 times in a ten-hour day; or in cutting out the tops of tin cans, when the lever of a foot press is worked 40 times a minute; or in a garment factory where one girl has to watch 12 jumping needles of a power machine at one time.[6] The monotony of such operations is typical of countless machine processes. Even where the process is not complicated enough to involve strained attention, if the speed is regulated by the machine, or if the system of wages spurs to a dangerous speeding-up, extreme lassitude and loss of effort-power in the worker are usually the result. The fatiguing effect of such forms of work can be corrected in part by transferring the workers from one operation to another, eliminating waste motion, substituting electrical control for hand or foot pressure, carefully selecting the best adapted worker, changing piece wages to time wages, providing adjustable seats and foot rests and all sanitary conveniences, and installing the best lighting, heating and ventilating systems. With monotonous work it is the length of the working hours and the frequency of the rest period which count in the reduction of undue fatigue.

Measures of Fatigue

Various Fatigue Tests. — There are various ways of testing the relation between fatigue and productivity and between working hours and fatigue. Records of output, the amount of machine power used, spoiled work, accidents, lost time, sickness and laboratory tests have all been utilized.

Amount of Output. — The daily amount of output for comparatively long periods gives the clearest picture of the effect of any change in the length of the working period on the efficiency of the workers. In making comparisons, however,

variations in the supply of power or raw materials, labor turnover, the amount of time wasted involuntarily, and changes in work incentives and in methods of management must all be considered.

Accident Schedule. — The schedule of accidents also gives a surprisingly accurate measurement of the progress of fatigue. The Federation of Master Cotton Spinners' Associations reported that out of 1362 accidents occurring in that industry, only 75 were not caused by fatigue.[7] Similar conclusions have been reached by the various state commissions that have studied industrial accidents in this country. If the number of accidents due to causes other than the physical condition of the workers be assumed to be a constant, then the hourly, daily and seasonal variations in accidents may be attributed to the decrease in the workers' attentive powers, or in his sensitivity and speed of reaction. The greatest difficulty in using accidents as a measure of fatigue will be the changing speed of production. The greater the output the more frequently does the operator encounter danger in the manipulation of the machinery.

Spoiled Work. — Spoiled work, like accidents, results from weakened muscular control, inattention, bad judgment and memory, and is therefore usually traceable directly to fatigue. This method of measuring fatigue has unfortunately been ignored in the recent scientific studies of industrial fatigue.

Sickness and Lost-Time Records. — Sickness and lost-time records are next in value in measuring fatigue. The proportion of lost time due to sickness and extreme fatigue is frequently underestimated and that due to mere slackness overestimated. This is true even where doctors' absence excuses are accepted, because the worker is often "too tired" to go to work and not sick enough to see a doctor. The very "slackness" of which employers complain has probably served as a health safeguard, which has

prevented actual sickness and has been made necessary to the employe because of long hours. The British Association for the Advancement of Science, in their investigation of industrial fatigue, found sufficient evidence of a close relation between the curves of lost time and of sickness to justify their reliance on both in tracing the progress of fatigue.

Laboratory Tests. — Laboratory tests of industrial fatigue, showing the worker's relative acuity of hearing and vision at the beginning and end of the work period have been applied most successfully by Professor Kent, working for the British Home Office. These are still experimental, but as time goes on refined physiological and psychological tests will probably be called into general use to determine the desirable length of work and rest periods for various types of work. Their application involves certain difficulties, however. The tested worker will always be curious as to the results of the experiment, and therefore the laboratory experiment will not reproduce the normal state of mind during work or normal working conditions. For the present, the output, accident and lost-time rates give us reasonably accurate pictures of fatigue and its cost and its relation to the work period.

Economy of the Shorter Working Day

Early Recognition of this Economy. — Wherever careful records have been kept, shorter hours have demonstrated their value in increased efficiency. In 1816, Robert Owen testified to a Parliamentary Committee investigating the "State of the Children Employed in the Manufactories of the United Kingdom," that since reducing the hours from $11\frac{3}{4}$ to $10\frac{3}{4}$ a day, he had lost not more than one farthing in twenty pence in the first three months, and that he was confident that before the year was over this slight discrepancy would be overcome. The change had been

made without any alteration or speeding up of the machinery, and the increased output per operative per hour came solely —

from saving breakage, from the superior attention of the people to all their operations, from not losing a moment when the work commences or when it ceases, and from the individuals in the previous process paying much more attention to the preparatory stages of the manufacture.

And these improvements resulted in turn from —

the increased strength and activity and improved spirits of the individuals, in consequence of being employed a shorter time in the day.[8]

With the modern specialization of labor and the increased use of machinery, fatigue would seem to have comparatively small effect on output. The motions required of the worker are so mechanical and involve so little effort that in some work an operator performs his function adequately when apparently half asleep. But the following quotation from a report of the British Health of Munitions Workers Committee indicates the danger of such a conclusion:

Cursory observation of the youths boring top caps would suggest that by no possibility could they increase their hourly output, however short their hours of work, but the data adduced show that this view is erroneous, and that a more persistent and continuous application to their machines could effect an improvement of 29 per cent or more.[9]

Modern Evidence of this Economy. — Modern evidence of the superior productivity of the nine-hour over the ten-hour day and the eight-hour over the nine-hour day, is fast accumulating. All such evidence, however, varies with the industry, the process and the individual workers concerned.

Output. — The experiment in reducing hours in the Zeiss optical goods factory in Jena, Germany, is well known. In 1899 hours were reduced from nine to eight, while the output per hour increased 16 per cent, and the total output,

3 per cent, an equivalent of ten days' extra work during the year for each man.[10]

In December, 1916, Fayette R. Plumb, Inc., reduced their working week from 57½ to 52½ hours, and at the same time raised their wage rates. The weekly production in one of the worst departments increased 18.4 per cent and in the entire plant, 10.0 per cent.[11] A shoe company, having over 4000 employes, 95 per cent of whom were paid a standardized piecework wage, without making any changes in methods of production, in management, or in machinery, obtained the following results by reducing their hours from 55 a week to 52:[12]

	Productivity Unit per Day per Employe Based on Pairs Shipped
October and November, 1916 (Working 55 hours)	8.91
December, 1916, and January, 1917 (Working 52 hours)	9.00
February and March, 1917 (Working 52 hours)	9.02

The Cleveland Hardware Company in 1915, instead of adding overtime during the busy season, continued their usual nine-hour schedule and, to the surprise of men and foreman, that year was the largest productive one in their history. In the next busy season, instead of working overtime, hours were reduced to eight, and still production increased. In the winter of 1916–1917, work accumulated during the installation of new machinery and the men volunteered to clear it up by working temporarily in two shifts of six hours each. Each team turned out almost as much as they had before in eight hours. The men later asked to return to the eight-hour schedule, fearing that the slight decrease in productivity and in their piecework wages would not be overcome.[2] We cannot know whether the good effects of the six-hour day would have finally resulted in

equal or improved productivity, but the experiment certainly indicated that somewhat less than eight hours was the maximum productive working day for the kind of work involved.

Other interesting evidence of the advantages of shortened working hours comes from the Solvay Process Company of Syracuse. In 1892 they installed three eight-hour shifts in place of two previous shifts of eleven and thirteen hours. In 1909 the president of the company said that the initial increased cost per unit of production was more than overcome within a year's time.[13] Mention has been made of the successful experiment of Joseph and Feiss Company in establishing a 40-hour week. The Ford Motor Company and the Commonwealth Steel Company also afford examples of the economic value of the shortened working day.

The National Industrial Conference Board concluded a study of 413 metal manufacturing establishments which had reduced hours between 1917 and 1919 with the statement that[14] —

(1) A 50-hour week has proved efficient and practicable in a large number of metal manufacturing establishments.

(2) A 48-hour week has proved practicable in a considerable number of establishments.

The reports of the British Health of Munitions Workers Committee contain many detailed data on the relation between output and hours. Thus, 100 women turning fuse bodies, a delicate process performed standing and demanding close attention, give the following record.[5] With

	Actual Hours per Week	Hours of Broken Time	Relative Output per Week	Hours of Work Multiplied by Relative Output
6 weeks average	68.2	6.6	100	6820
8 weeks average	59.7	4.6	123	7343

a reduction of 8.5 hours a week, lost time was decreased 31 per cent, relative output increased 23 per cent, and the total output increased 8 per cent.

In considering these hours it should be borne in mind that they refer to early days of the war when England sought to secure maximum output of munitions by lengthening the work-day. The lowered output per worker in the second year of the war — the fact that long hours had failed to maintain production even where the workers were stimulated by patriotic zeal, led to the appointment of the committee. It was found, moreover, that hourly output was less even at the beginning of each working period, a fact accounted for by the anxiety of the employes to save themselves from the strain of the long work day. A group of twenty-seven men on the heavy work of sizing fuse bodies, in a reduction of hours from 61.5 to 55.4 a week, increased their hourly output 22 per cent and their total output 10 per cent.[5]

The committee recommended a reduction from the prevalent week of from seventy to eighty hours and more, to between fifty-six and seventy hours, varying with the type of work and the age and sex of the worker. But even these shorter hours were held to be too long for times of peace and could be applied only to the strongest workers during the emergency of war. The committee was avowedly taking a "short and not a long view." It was interested solely in maximum output of munitions during the war, and its research therefore does not indicate the hours conducive to maximum productivity over a period of years, but it indicates nevertheless the relation between hours and output.

Accidents. — Further testimony to the value of the shorter work day are the accident and health records. In one English munitions factory, in the autumn of 1914, when the hours were nine a day, an average of 100 first-aid

dressings per 1000 employed were made each month, while in the autumn of 1915, when hours had been raised to eleven a day, the average rose to 292.[5] The firm held the more thorough organization of first-aid treatment only partly responsible for this 192 per cent increase. Unfortunately, American accident statistics do not show the usual number of hours worked by the person injured. Records of individual plants do throw light on the subject, but are not available for publication.

Sickness. — Long hours are also conducive to sickness and absenteeism. When the Solvay Process Company of Syracuse introduced three shifts instead of two, the time lost per man per year gradually fell from $7\frac{1}{2}$ days to $5\frac{1}{2}$ days.[13] The immediate result of long hours, overtime, and night work among one group of British munitions workers was a rise in the percentage of sickness from 2.9 in July, 1914, and 2.4 in December, 1914, to 4.0 in the first quarter of 1915. During the same period the accident rate also increased. In one department employing nearly 1000 men, the sickness rate reached 8 per cent. The medical officer of the works attributed this increase in part to the introduction of new and inexperienced employes, but held the fifteen-hour day largely responsible. In another large factory the sickness rate had risen to 4 per cent and was still rising, while in a third it had reached 7 per cent.[5]

The relation between health and short hours is indicated by the record of the sick benefit fund of the Institute Solvay of Belgium. Mr. Fromont introduced the eight-hour day in place of the former twelve-hour day in 1899, because he himself had noticed the exhausted condition of his employes. From a deficit of 700 francs in 1889 the fund showed a steadily growing balance until in 1904, with practically the same number of members, there was a balance of some 3300 francs. There were noticeable drops in the fund balance for the years 1895, 1900,

and 1902 due to unusual and serious epidemics of influenza.[15]

A similar striking experience is recorded by the Engis Chemical Works near Liège. The management became alarmed because the company's sick benefit fund was being constantly depleted, and tried the experiment of introducing three eight-hour shifts for ten-hour shifts, believing that long hours were partly responsible for the high sickness rate. The output and the piecework earnings remained the same, the hourly output and earnings increasing about 33 per cent. Instead of a continuous deficit the sick benefit accumulated a growing surplus.[16]

Night Work

Night Work in Disfavor. — Although methods of illumination have improved markedly in the past few years, there is comparatively little night work done. Even the offer of bonuses and special privileges does not ordinarily bring forth an adequate number of applicants. Most industries report difficulty in filling their night-shifts. Not only is this true, but there is a growing universal opposition to night work, especially for women, as a menace to national health. At a conference called by the Swiss Federal Council in Berne, 1916, an international agreement to prohibit night work for women was signed by fourteen European countries, and eight of the States of this country have since passed corresponding legislation.[17] Some night work, notably in public utilities and in the handling of food, will probably always be necessary. Its use, however, should be strictly limited and the amount of night work reduced to a minimum.

Difficulties of Night Work. — The fundamental objection to night work is that sound restful sleep, which is essential to physical efficiency, cannot be secured during the day. The activity of other members of the family and street noises make this almost impossible. Night work interferes

with normal human relationships. It is of course conceivable that a complete inversion of day and night habits could be made. This was accomplished successfully by the Danish Arctic Expedition of 1906–1908, to the extent that even the ordinary temperature cycle of the body, high in the late afternoon, low in the early morning, accommodated itself to the change.[18] But the night worker is tempted to burn the candle at both ends, playing by day and working by night, snatching a little sleep intermittently through the day and remaining drowsily awake through the night. Some of the injurious effects are not apparent for a long period, but there is abundant evidence, nevertheless, that night work is uneconomical, industrially as well as socially.

Output. — Night work means not only physically inefficient workers, but artificial lighting makes the work difficult, supervision is usually unsatisfactory and the machinery suffers from incessant use and from the change of workers. The British Committee found a group of nine night-shift workmen in a munitions factory whose output was 14 per cent less, over a period of four weeks, than that of nine day-shift workmen engaged in the same process in the same factory; twelve women employed on continuous night work for twelve weeks, who during that time gave a mean output 11 per cent below that of a ten-week period of alternating night work; and many similar instances. There were also signs of a progressive deterioration in efficiency among night workers as compared with day workers. The Committee concluded that a continuous night-shift gave a definitely less output than a continuous day-shift. They failed to obtain evidence that the greater output of the continuous day-shift balanced this inferiority. Therefore where night work was necessary, the discontinuous system was found more productive than the continuous one.[18]

Accidents. — Accidents are of comparatively little value in measuring the effects of night work. Those chosen for

night work are usually of superior physique, and at night there is less crowding and less traffic in the factory, due to the shipping of materials and supplies. The accident frequency has, therefore, been found to be slightly less by night than by day.

Sickness. — Sickness statistics are more illuminating. The factory reports of Alsace-Lorraine cite the case of a cotton mill which introduced a permanent night-work shift in 1889 and found that in one year, for every 1000 women in the day-shift there were 510 cases of illness and 5280 days lost, while among the day and night-shift force the cases of illness were 625 and the days lost, 9130.[19] The Finnish Senate in 1909 ordered an investigation of women night workers and found that among 2659 engaged in work of various kinds, 35.2 per cent suffered from general nervous weakness. Only 41.4 per cent managed to sleep much more than five hours a day, while 34.1 per cent slept less than that.[20]

Three eight-hour shifts, in place of two shifts, increase output by benefiting the workers physically and by reducing the time during which machinery must stand idle while the workers have their meals.

Professor Kent's tests in 1916 substantiated these conclusions, and showed in addition that because of the time necessary for the adjustment of bodily temperatures and habits, a weekly shift from day to night work is too frequent. He discovered that while fatigue always developed more quickly by night than by day, the development during the night was less at the end than at the beginning of the week's work. He suggested that a monthly shift is more adapted to the need of the workers.[21]

Overtime

Overtime Expensive. — Of the state laws in this country regulating hours of work, only one third permit overtime for any reason, and these only to a limited extent in an emergency or for special reasons.[17] The objections to all overtime work made by the British Committee were that (1) the severe strain on the management, executive staff, foremen and workers adversely affected quantity and quality in output, and that (2) it entailed a large amount of lost time due largely to sickness and partly to slackness on the employe's part in normal working hours in order to prolong the necessary overtime with its extra pay. In one department of a British munitions factory, where 180 unusually keen and steady men were at work, averaging 39 years of age, continuous overtime raised the percentage ratio of lost time from 3.1 of the gross normal hours in June, 1915, to 8.4 in June, 1916. In another department where over 300 men were on heavy work the same ratio increased from 3.2 in June, 1915, to 6.1 in June, 1916.[18] And, vice versa, a reduction in overtime has been found to have a disproportionate effect on the reduction of lost time.

Restrictions on Use of Overtime. — The executive of a large American shoe company employing 4000 men has declared overtime to be advisable only (1) to offset breaks in continuous production, (2) where only a small number of employes are affected, and (3) for short periods.[12] In general all of the objections made to the regular long working day may be made to overtime with the additional fact to consider, that overtime means extra pay.

Sunday Work

Sunday Work as Expensive as Other Overtime. — The difficulties involved in Sunday work are the same as with other overtime work. Supervision is less efficient, higher

rates of pay increase the cost of running the plant, and work outside of the customary hours of work in the community leads to "soldiering" and loafing, because the worker is in a different frame of mind than at ordinary times. He feels in a holiday mood and is not inclined to take his work as seriously. Moreover, though attendance is apt to be good on Sundays, when there is extra compensation, it results in bad attendance records during the week.[18]

Importance of One Day's Rest a Week. — English experience led the British Committee to conclude that one day's rest in seven, preferably on Sunday, was more essential in maintaining the health and morale of the working force than any shortening of the regular work day.[18]

Output Lowered. — Working on Sunday at a rifle cartridge-making factory was shown to affect adversely the rate of output. The weekly output after a Sunday holiday was compared to that in the weeks before and after, when Sunday was worked in full. The results showed a higher rate per machine per hour in the week following a Sunday holiday.[16]

Sickness Increased. — Another striking example of the deleterious effect of Sunday work is given in the case of a factory where, in the spring, Sunday overtime was the rule, and at one time 22 per cent of the men were ill. In August, when Sunday work was greatly reduced, although week-day overtime continued heavy, only a trifle over 4 per cent were ill. The spring had not been an abnormally unhealthy one, so this great reduction could be attributed only in part to the season.[18]

The Working Period

Shorter Work Day *vs.* Rest Periods. — There are two opposing tendencies in the shorter hours movement. One is to divide the working day into several parts by inserting rest periods and lengthening the lunch hour, and the other is

to compress the working day into fewer hours by eliminating rest periods. In some States legislation is beginning to require a forty-five minute or one hour lunch period in certain occupations and for certain classes of workers. On the other hand, as in the case of the Ford Motor Company, substituting three eight-hour shifts for two shifts has meant in many factories that the employes are given time for only a pick-up sandwich lunch. Lord Leverhulme, owner of the Port Sunlight Soap Works, has recently pronounced himself in favor of a six-hour work day for all employes, worked in two, three, or four shifts, without interrruption for meals.[22] To decide which course to pursue it is necessary to trace the progress of fatigue in the workers during the day and to determine the effect which rest periods have in lessening fatigue.

Little Variation in Fatigue during the Year, Week, or Day. — The British Association for the Advancement of Science in 1915 carried out an extensive investigation of the relation between the period of work, fatigue, and accidents.[7] They found the universal experience to be that the progress of fatigue varied little between one week of the year and another, between one day of the week and another, or between morning and afternoon. But there was a great difference in the fatigued condition of the worker during the first hour and the third or fourth hour of morning work. This variation repeated itself in the afternoon working period.

Reasons for This Absence of Variation. — Vacations are still too negligible a factor in industry to show any effect on the wage earners' efficiency during the year. The evidence of weekly fatigue is confused by marked variations in different localities and countries, due to the different week-end habits of the workers in regard to both drinking and recreation. In American industries there is often a surprising drop in efficiency on Monday, which is variously

attributed to week-end dissipation, or to a loss of practice in manipulating the tools or machinery, and a non-adjustment to the rhythms of work. Moreover, efficiency rises on Saturdays, probably because of the stimulus of anticipating the coming holiday. Thus the Ohio Industrial Commission for 1914 found accidents involving disability for one day or more to occur in different industries as follows:

	Contracting (Building)	Metals	Coaches	Coal Mining	Pottery Glass	Industry Total
Monday	321	2,268	229	204	177	4,632
Tuesday	269	2,224	214	194	199	4,522
Wednesday	288	2,187	223	165	171	4,388
Thursday	283	2,215	218	184	172	4,436
Friday	279	2,197	224	165	192	4,377

Similar figures are given by German reports. In Belgium, on the contrary, Saturday is the most fatal day of the week, while in England accidents are fewest on Monday. There is surprisingly small evidence of accumulating daily fatigue and decreased efficiency in the afternoon period, which is shown by studies of daily output and fatigue. This is probably due to the fact that the operator becomes more skillful with the practice of work in the preceding hours, and is stimulated to renewed effort by the anticipation of relief from work.

Variation in Fatigue during the Work Period as Shown by Output. — The variation of fatigue during the working period is found to produce an efficiency curve rising to a maximum at ten o'clock in the morning and again at three in the afternoon. This common experience is illustrated by the following figures, showing the distribution during the work day of the total output of six typesetters working at piece rates, which was made by the Italian physiologist,

Pieraccini.[4] The number of lines set during each hour was as follows:

Hours:	8-9,	9-10,	10-11,	11-12,	12-2,	2-3,	3-4,	4-5
No. of Lines:	121	151	130	125	Lunch Period	142	124	96

Accidents. — Mr. Lescohier found the daily distribution of all industrial accidents in Minnesota in 1910 to show marked increases in accidents at certain hours of the morning and afternoon. These seem to have a definite relation to the fatigue of the workers and to the number of hours that they had been at work.[23] European and other American experience bears out these findings as to the occurrence of accidents.[24]

The British Association found that *output* during a five-hour working period was small in the first hour, greatest in the second hour and that it decreased steadily after the second hour. *Accidents* occurred least often in the first hour and more frequently each hour thereafter, until the last hour, when the number of accidents slightly decreased.[7]

Rest Periods as a Preventive of Fatigue. — The only means of preventing the drop in output and the increase in accidents which occur during the latter half of the work period is by forestalling fatigue with regular scientifically established rest periods. At present, rest periods are the exception rather than the rule in American industries, and are granted almost exclusively to women.

Growing Popularity of Rest Periods. — In a recent study of conditions in 431 American establishments in a wide variety of industries, 105 were providing rest periods in some departments. In occupations involving great nervous strain, such as that of the telephone operator, or in the monotonous work of the typist, and the elevator man, or in the hot work of a foundry man, pauses are more frequent than in ordinary factory work. Rest periods vary in length for different classes of workers. In a

food factory all the women rest fifteen minutes twice a day and bundlers half an hour. In eleven of the factories reported, rest was provided by shifting workers from one occupation to another at intervals during the day, but this can be done only where the processes are simple.[25]

Their Length and Frequency. — Experiment alone can determine the desirable frequency and length of the rest periods to be introduced in the working spell. Taylor found, for instance, that in handling pig-iron, weighing over 92 pounds a pig, a workman should be under load only 43 per cent of his working time to insure maximum efficiency.[26] Mr. Gilbreth in his " Fatigue Study " has given an interesting example of the results of proper rest periods. Some girls engaged in folding handkerchiefs were told to pause every sixth minute and at the end of each hour to walk and talk for six minutes. Their posture was varied also by sitting and standing. The result of introducing this system was that the output was three times the amount of the previous best week's work.[27]

Enforcing Rest Periods. — Rest periods, whether several five-minute periods, or one half-hour period, should be regularized and enforced and the rest length determined after making a plant survey and time study for each occupation. Pieceworkers may object to enforced rest periods, but if the management guarantees full pay while introducing them, their objections will be easily overcome when they find their output has not suffered. Indeed, the primary purpose of these pauses is to raise the efficiency of the worker through reduction of temporary fatigue and prevention of cumulative fatigue.

From these studies evidence points to the fact that fatigue accumulates rapidly during the third and fourth hour of work. Therefore, even if the work day were condensed to six hours, fatigue, as a cause of accidents, ill health, and underproduction, would not be eliminated. It is possible,

however, that the work day could be condensed without danger if the lunch hour were eliminated and brief rest periods retained. This six-hour work day of two, three, or four shifts might therefore accomplish what Lord Leverhulme hopes — increased strength and happiness for the workers, greater stability of labor, increased production and lessened overhead charges.

Vacation Periods

Vacations for the Rank and File. — Related to the problem of working hours is that of vacations. The time has been when a paid vacation in industry was rare, usually limited to the management but extended occasionally to the clerical force as well. Now we find the Bournville Works in England granting to most of its women employes 21 days' vacation with pay during the year, — 5 days at Christmas, 3 days at Easter, 1 day at Whitsuntide, and 12 days at Midsummer. To receive a full summer vacation a new girl time-worker must have been with the company nine months. The fewest holidays any employe can receive are three days at Midsummer and at Christmas. For pieceworkers, the works are closed for ten days in the summer and about five days at Christmas. The men employes are allowed a maximum vacation of 12 days plus a bonus day where the worker is entitled to it.[28]

Every employe of the Solvay Process Company who has been with the company one year has one week's vacation with pay. After two years' employment the Black Company, manufacturers of cloaks and suits in Cleveland, gives one week's vacation with pay. Sears, Roebuck and Company, after three years' service, gives two weeks' vacation, and before that one week. With Filene's of Boston, the vacation period is apportioned in accordance with the length of service, with a minimum of one day for each month's service, and a maximum of two weeks.[29] In the Metropoli-

tan Life Insurance Company, every employe in the service at the beginning of the calendar year receives two weeks' vacation with full pay, and, if entering the service after January first, but before March first, an employe receives one week. Additional vacations are granted for length of service as follows: [30]

After 5 years of service	1 day
After 10 years of service	3 days
After 15 years of service	1 week
After 20 years of service	2 weeks

An increasing number of factories shut down during the period of stock-taking, when this can be done during the summer months. This complete shutdown is sometimes less discouraging and expensive than arranging vacations for the employes at different times throughout a long period.

Annual Vacations Enforced by Unions and Law. — The Unions and state legislation are beginning to enforce annual vacations for the rank and file of employes. In 1915 the Milk Drivers' Union of Chicago signed an agreement with their employers which provided two weeks' annual vacation with pay. Some half dozen States provide by law annual vacations for certain classes of workers. Employes of the federal government and of many cities are granted annual vacations of not less than a week, with pay.[17]

There are no available data as to the value of the vacation period measured in improved output through the year. There is scarcely need of any. The companies which provide vacations with pay undoubtedly reap the benefit in the loyalty and better health and spirits of their working force.

Conclusion

Shorter Hours Desirable. — There is every evidence that total as well as hourly output is decreased by a long

work day, overtime, night work, or long periods of work with insufficient rest periods. We can no longer accept the verdict of an English manufacturer who wrote to the Leeds *Intelligencer*, in 1830, that the long twelve-and-a-half or thirteen-hour day worked by children in woolen and worsted mills was " rendered a comfort by the regular hours of rising from and retiring to bed." [31] Experience proves that long hours are neither a comfort to the worker, nor a benefit to the manufacturer or the stockholder. The British Health of Munitions Workers Committee, appointed in 1915, might well have broadened their conclusion as to the desirable length of the work day for women in munitions, to include all workers in all work : [32]

> Happily, there should be, in the matter of hours of labor for women, little conflict between the interests of the home and the interest of munitions, for the hours which conduce most to a satisfactory home life and to health conduce most to output.

Need for Experiment. — It is impossible to make any dogmatic assertions regarding the desirable length of the work day or the work period. It is clear that in the past, employer, employe, and community have alike suffered from a misconception of the relation between the length of the work day and total output. Experiment alone can determine the working period conducive to the greatest efficiency in production for each type of work and worker. In every industry and every occupation the length and time of the working day must be adjusted to the nature of the work, the working conditions and the sex and age of the workers involved. It must be remembered, too, that maximum efficiency in production cannot be achieved in a few days, or weeks, or even years. The real result of shorter hours which give employes leisure time for rest, recreation, education, and the building of homes and the improvement of them can be measured only after long periods by

such indefinite quantities as stability of labor, and health and happiness.

Coöperation of Employes Essential to Success of Shorter Hours. — All employers who try to increase production by shortening the working hours would do well to heed the warning of the British Committee:

> If the proper adaptation to particular kinds of labor of the relation of spells or shifts of work to rest intervals and to holidays is to be determined by appeal to experiment, it will, of course, be an essential condition for success that the workers should cooperate with the employing management. It is not surprising that where employers, following tradition rather than experiment, have disobeyed physiological law in the supposed interests of gain, the workers have themselves fallen very commonly into a tradition of working below their best during their spells of labor. It would be out of place here to touch on the economic and social problems which arise in this connection, but until such solutions are found for them as will bring a hearty coöperation between employers and employes, there will be no certain prospect of determining the true physiological methods for getting the best results in modern industrial occupations.

CHAPTER VI

WORKING CONDITIONS

Health, Happiness, and Efficiency of Employes Dependent on Working Conditions. — The physical environment of employes is a determining factor of health, happiness and efficiency. Good ventilation, lighting and sanitary conditions contribute directly to the employe's physical well-being and the ease with which he can work. Fire protection and accident prevention make his labor power more secure. Attractive surroundings afford relief from the strain of monotonous or fast work. To this end a button factory in Rochester, New York, provides phonograph music intermittently throughout its various departments. In the machine shops where noise prohibits music, potted plants are arranged in convenient places between the machines. Window boxes, vines, trees, and shrubs decorate the exterior of many factory buildings, which are designed as artistically as private suburban homes. Efforts to beautify the industrial environment of the employe are, it is true, of less importance than the endeavor to prevent accidents, occupational disease and fire, and to provide adequate ventilation, lighting, and sanitation. Nevertheless, since the employe spends at least one third of his day in the workshop, it is desirable that his surroundings should not only make for efficiency, but stimulate his æsthetic and creative faculties.

Accident Prevention

Growth of Accident Prevention Movement. — No phase of labor maintenance has grown so rapidly as the move-

ment to prevent industrial accidents. In 1906 the first exhibit of safety appliances in this country was held under the auspices of the New York Institute for Social Service. This led to the organization of the American Museum of Safety (1907). In 1912 a small group of engineers met in Milwaukee and launched the National Safety Council, which has taken the lead in the war against accidents. In four years' time it included 15,400 representatives from 3293 firms, covering 4,500,000 workmen.[1]

There are a number of reasons for this remarkable interest. Not until recently have United States statistics of accidents in industry and their sequelæ been available. These have formed the basis of active propaganda and legislative action. Notwithstanding this, it is estimated that 35,000 workmen are still killed annually — one every 12 minutes — and probably 400,000 receive injuries sufficiently serious to cause them to lose time from their work. In Pennsylvania alone in 1916 industrial accidents caused lost time equivalent to 3,025,371 working days and $7,535,059 in wages.[2]

This loss was formerly borne entirely by the injured workman, occasionally assisted by fellow-workers and the employer. Workmen's compensation laws enacted in most of the States have divided the loss by charging a percentage to the employer. These laws have not only transferred the cost of accidents from employe to employer, but by requiring systematic reporting of accidents have furnished necessary data as to their extent and seriousness. These in turn have led to safety campaigns.

Possibility of Preventing Accidents. — Experience has shown that at least 50 per cent of the industrial accidents are preventable. Twenty-two of the foremost industrial concerns of the United States report an average reduction of 54 per cent in yearly accidents after the introduction of organized safety work. The International Harvester Company, the Neenah Paper Company, the Illinois

Steel Company, and the Milwaukee Coke and Gas Company each reported a reduction of more than 80 per cent.[3] In eighteen months the Port Huron Engine and Thresher Company, in a plant employing between three and four hundred people, reduced accidents 56 per cent and cut down compensation costs from $2864 in 1913–1914 to $1263 in 1914–1915.[4]

Safety Devices. — To accomplish these results many ingenious safety devices have been developed to protect workmen. Glass hoods catch the fine steel splinters from the emery wheel; goggles cover the metal grinder's eyes; " congress shoes " with steel plated toes protect the molder from a scalding should he spill the hot metal he is carrying; " safety nets " catch the falling workmen, tools, or materials in construction work; automatically locking doors protect elevator shafts in office building and factory, etc.

Importance of Personal Equation in the Reduction of Accidents. — Mechanical appliances play an essential but comparatively small part in accident prevention. By far the larger number of accidents is dependent on the person or persons involved. This has been demonstrated repeatedly by studies of causes of accidents and of methods of preventing them. The experience of the Illinois Steel Company, one of the pioneer companies in safety work, has led them to evaluate the different methods of attacking the accident problem. Only 17½ per cent of the total reduction in accidents is attributed to the introduction of mechanical appliances, and another 8 per cent to improved lighting and cleanliness. Educating by means of lectures, or bulletins, or instruction while at work, was held accountable for 30 per cent of the reduction and the organization of Safety Committees for 20 per cent.[5] This experience is typical.

Necessity of Arousing Workers' Interest in " Safety First." — If only 25 per cent of all industrial accidents can be traced directly to unguarded or dangerous machinery

and equipment it is obviously necessary to stimulate the interest of the employes in "Safety First." Bonuses to foremen for best departmental records and to workmen for useful safety suggestions have been found to serve the purpose. The Fisk Rubber Company of Chicopee Falls, Mass., reduced accidents 50 per cent in one month by the introduction of safety contests.[6] Safety lectures, especially if accompanied by lantern slides, moving pictures and pictorial bulletins are quick to attract the workman's attention. The most valuable ones are those issued weekly by the National Safety Council. They are simple, direct, and usually illustrated with photographs or drawings. These are at present used by many concerns. If conspicuously posted and strikingly presented, accident statistics can often be used to advantage. A committee of logging operatives in Wisconsin made effective use of them by posting such rules as the following:[7]

RULE 1. *Carrying ax.* The only safe way to carry an ax is with the handle on the shoulder and the head back of the shoulder. Many men who have carried the ax with the head under the arm have stumbled and fallen and have been seriously injured. Two hundred and seventy-one men were injured while handling axes.

RULE 5. When a tree starts to fall, get out of danger at once. Look up and watch for falling limbs. Two hundred and eleven men were injured and fifteen men were killed by falling trees and limbs.

Employes' Safety Committees. — No method is so successful in arousing the workers' interest and watchfulness as the formation of rotating safety committees. During the first three years of the safety work of the Chicago Northwestern Railway Company, the men who had served on committees reported 6000 points of danger, and 97 per cent of their suggestions were found practical and adopted.[8]

Methods of organizing the safety work and securing cooperation between the management, the expert adviser,

and the men, will vary with the size of the plant. The California Industrial Accident Commission has suggested the following organization for plants: [5]

(1) With less than 50 employes.

The manager or superintendent in charge of all safety work should appoint one of his employes to make weekly inspections and to report to him all recommendations in written form. These recommendations with the accident reports should be filed for future reference.

(2) With 51 to 500 employes.

A safety committee of not less than 3 persons, including the manager, a superintendent, and some other high-grade employe should receive weekly reports from a competent safety inspector. The safety inspector should coöperate with a workmen's committee, which should be a rotating committee, one member being replaced by a new one every month.

(3) With 501 to 1000 employes and over.

In addition to the general committee a foremen's committee should be appointed consisting of about 5 foremen. Workmen's committees should exist in several departments. A full time safety inspector will probably be necessary even where the plant numbers less than 1000 employes and will be essential for the larger plants.

Safety Committee Meetings. — The plan proposed by the National Safety Council and successfully adopted by the Port Huron Engine and Thresher Company provides for a Shop Safety Committee composed of one man from each department in addition to the Central Safety Committee and safety inspector. It is important that the foremen have a voice in drawing up the safety rules which they are asked to enforce. Every member of the committee fills out a suggestion blank at each weekly meeting. The weekly meetings are held on company time at company expense for the discussion of the previous week's accident record, and the study of bulletins and safety literature. Every sixty days the company gives the committee a smoker and distributes prizes for the best safety suggestions.

It is relatively simple in the initial stages of a safety campaign to arouse the workers' interest. It is more difficult to retain this interest until the individual has formed the "safety habit." To do this, all conceivable means of popularizing "safety first" are needed.

Physical Examinations a Preventive Measure. — One of the most important accident preventives is the preliminary physical examination and periodic reëxamination of all employes. Fatigue, alcoholism, and disease make the background of a large number of accidents which usually have been attributed to the employer's negligence. Their detection and correction will bring about a substantial decrease in the accident rate.

Dollars and Cents Value of Safety and Medical Work. — The expense of installing an adequate medical department along with the centralized employment bureau, which would result in a decreased accident rate through aiding in the careful selection and placement of workers, has been found to be a paying investment. The Avery Company of Peoria, Illinois, found the total expense of maintaining an employment department, an extensive medical department, a safety inspector, of paying compensation, and of carrying insurance for excessive liability only, to be 28 per cent less than the cost of insurance for full accident compensation coverage if the medical and safety work had been left undone. In 1916 this safety work plus insurance cost $1.80 per $100 pay roll, as opposed to $2.48, which was the insurance rate per $100 pay roll for full coverage.[9]

The Riverside Portland Cement Company of California has found: [10]

> Since selecting our risks, viz., employing only men who are physically sound, . . . not only a great reduction in the manner of accidents but . . . also a greatly increased efficiency in our working forces.

Americanization Classes. — The problem of safety has many ramifications. No single remedy will accomplish the desired immunity from accidents. The elements which contribute to such immunity often seem remote and intangible. Required attendance on company time at Americanization classes, for instance, is prerequisite to the safety movement in an industry employing a considerable number of foreign-born workers. With the Ford Motor Company accidents decreased 54 per cent after classes in English were started.[11]

Eliminating Child Labor. — Children and young people help to swell the accident list. In eight munitions factories in England the accident rate among the boys (those under 18 years of age) exceeded that among the men over 41 by 50 per cent.[12] In the southern cotton mills where the younger workers are employed in relatively non-hazardous occupations, the accident rate for children is more than double that of the employes over 16 years of age.[13]

Decreasing Turnover. — The Westinghouse Electric and Manufacturing Company of Pittsburgh found that 76 per cent of their accidents prior to 1918 were caused by employes who had been with them less than one year.[14] This indicates the close relation between accidents and labor turnover, and the value in accident prevention of administration, which tends to stabilize the working force. It shows clearly the need of instructing the new worker and of teaching him the hazards of his occupation.

Every plant will have its individual accident problems dependent on the nature of the work, the conditions of work and the character of its workers. The means of meeting these problems adequately can be discovered only by carefully compiled accident statistics. The proportion of accidents which are due indirectly to poor physical condition, overwork, inadequate wages with the concomitant indifference and lowered vitality of the workers, or directly to ill-guarded

machinery or inability to understand English, may be revealed in these statistical analyses.

Prevention of Occupational Disease

Prevalence of Industrial Health Hazards. — Nowhere has there been sufficient appreciation of the extent and variety of occupational disease. Dr. Hayhurst, after an extensive study, states that "from one fourth to one third of the medical afflictions of trades persons are due in the whole or in great part, to industrial health hazards." * [15]

Processes Grouped according to Hazards. — In his study of Ohio industries Dr. Hayhurst classifies the hazardous industries as: [15]

(1) Those using poisons as a chief hazard.
(2) Dusty industries.
(3) Those in which fatigue and inactivity are the chief hazards.
(4) Those in which heat, cold, moisture, or dampness predominate.
(5) Those in which there is more than usual liability to contracting communicable diseases.
(6) Industries having miscellaneous hazards not included above.

Of these the largest class is probably the dusty industries. It has been estimated that approximately 5,600,000, or 17 per cent of American wage earners of both sexes, work under conditions more or less injurious to health because of atmospheric impurities caused by dust, fumes, or gases. Professor Winslow has listed some 54 trades in which fine particles of bone, hair, metal, and mineral or vegetable materials

* The study summarizes (1) United States Census Mortality Statistics of Occupations; (2) 65,000 dispensary records and many hundreds of cases personally seen during a two-year period at Rush Medical College (Central Free Dispensary); and (3) the medical portion of 27,887 cases in which the patient received treatment in Cook County Hospital during the year 1913.

form a dust which it is more or less dangerous to breathe.[16] This by no means covers all the industries, processes, and occupations which give rise to dust; almost every manufacturing process may expose workers to this hazard unless precautions are taken.

Preventive Measures. — A large amount of the unnecessary sicknesses and premature deaths may be prevented with comparatively little effort or cost on the part of the employer. Many occupational diseases may be prevented by:

(1) Securing the scientific ventilation of workrooms, especially by the installation of efficient local exhausts which remove dust at points of generation. In some industries, such as in smelting and refining, fountain-pen-point manufacturing, jewelry, etc., the dust created is valuable, and it has been found profitable to recover the valuable material from the collected dust by means of a patented electrical precipitation process.

(2) Securing cleanliness by providing ample washing or bathing facilities. Some plants provide separate lockers for street clothing and working clothing, so arranged that the worker must remove his working clothes, hang them up to dry or place them in the lockers, and must then pass through the shower room before he can get to his locker containing street clothing.

(3) Wearing of proper protective clothing, viz., respirators and goggles in dusty processes which cannot be taken care of by exhaust ventilation, as in sand-blasting and emery-wheel grinding; boots and gloves in wet and chemical processes; special shoes for foundry workers; helmets for welders; water-cooled furnace doors for hot-process workers; overalls, aprons, caps, etc.

(4) Shortening the working hours (and, therefore, the period of exposure), allowing rest or "spell" periods in fatiguing and exhausting work.

(5) Requiring physical examinations at entrance, to weed out those unfit for work and to place others where they are best suited physically; and periodically to ascertain whether workers are suffering from the effects of their occupations so that changes may be made and treatment or necessary advice given.

(6) Providing medical care, including first aid and necessary subsequent treatment.

(7) Giving health instruction and safety education.

(8) Proper layout of plant and good housekeeping so that workers in one process are not unnecessarily exposed to the hazards of another adjacent process.

(9) Sanitation of plant to prevent the spreading of communicable diseases. This includes adequate and proper toilet facilities, sanitary bubbling fountains, individual towels, spittoons, etc.

Noticeable Effect of Cleanliness. — Of these methods of prevention, personal cleanliness is of great importance. Assuming that the chief hazards of the lead industries — dust and fumes — are eliminated, lead poisoning will still occur unless these workers are taught the value of washing (especially before eating) their hands with soap and hot water, cleaning their finger nails, brushing their teeth, and rinsing their mouths, eating lunch outside of workrooms, and wearing working clothing. The Sherwin-Williams Paint Company of Cleveland requires its men in the dry-color department to take daily shower baths and provides clean underwear daily. Before making these provisions and rules, 20 per cent of the force were ill, and six weeks was the average term of service in the department. Now the personnel of this department is nearly permanent, and there is practically no illness from lead poisoning.[17] It is nothing unusual to see workers in the lead industries, especially painters, eating food and using tobacco on the surface of which has been smeared lead in some form or other, in that way poisoning themselves. Plumbism was eliminated in the Pullman car shop by ringing a bell ten minutes before the noon hour and requiring all employes to wash and scrub their hands with nail brushes which were kept chained to the wash stands. In one year this "wash-up" system reduced plumbism from 77 cases in 1911 to none in 1912.[18]

Sex and Age Predisposing Factors. — Future study may reveal more decisively the extent to which age and sex are predisposing factors in the various industrial diseases. In

certain European countries, boys and women are not allowed to work in the lead trades because of their greater susceptibility to lead poisoning, nor in certain trades involving exposure to poisons and other hazards.

Women in industries seem more susceptible to pulmonary tuberculosis in the early ages. A comparison of textile mill workers shows that in the age period 15 to 24, pulmonary tuberculosis accounted for 36.8 per cent of all causes of death among males and 50.2 per cent among females.[19] It is possible that this may also be true as regards other diseases. Women will probably always require protection in special health-hazardous industries.

Attention of Employers Drawn to Occupational Disease by Legislation. — The preventives and remedies for specific industrial diseases and occupational poisonings are too varied to permit of enumeration here. Their study is, however, as incumbent upon the employer, both in justice to the employe and in the interests of efficiency, as the study of accident prevention. This fact is already being forcibly drawn to the attention of some employers by legislation. In France, Germany, Austria, Great Britain, and Russia any one suffering from lung, kidney, or stomach trouble, addicted to alcoholism, or subnormal physically is prohibited from employment in the lead trades. Workers in those trades are examined periodically by physicians in most European countries. In France this is also true of compressed-air workers and in Holland of stonemasons. In Austria workers with open wounds, tubercular tendencies, or delicate respiratory organs are barred from the paper mills. In this country monthly examinations are required in the lead trades in only a few States, and in New Jersey and New York compressed-air workers must be examined on entrance and those addicted to alcohol excluded.[20] Phosphorous poisoning has been eliminated in the United States, as in foreign countries, by adequate legislation.

Compensation for illness directly traceable to industry is also a question of the immediate future. In two States, California and Massachusetts, an employer is held liable by law for compensation when a disease arising out of the occupation is contracted by one in his employ. But progressive employers do not need such a legislative reminder of the wasteful extravagance of ignoring conditions of work which expose their employes to extra disease hazards.

Sanitation

Sanitary working conditions are the employer's first bulwark against ill health and lost time in his working force. It is difficult to establish standards for sanitary equipment which are adaptable to the different kinds of industries and buildings. Scientific study in each plant by engineers can alone determine the number and variety of lavatories, toilets, dressing rooms, and baths which are needed. Some of the following studies may be helpful, however.

Sanitary Standards. — In 1916 a committee of the Detroit Executives' Club, consisting of two sanitary engineers, one doctor, two safety engineers, and four welfare men, all from large Detroit plants, studied the equipment of model factories, and with the assistance of suggestions from manufacturers of sanitary plumbing, recommended the following standards for the sanitary equipment of factories.[21]

In addition the Committee stated:

> The objection to paper towels, "that we do not get our hands dry enough to prevent chapping," can be done away with by a well ventilated, warm dressing room, where the hands dry while dressing.
>
> Where there are corners into which waste papers and refuse are thrown, this can be largely eliminated by painting these corners white and lighting them well. One does not throw waste into clean corners.
>
> Tile floors should be laid in all washrooms, etc., where possible, otherwise cement, well drained. Oily floors should be scraped

	Lavatories	Toilets	Drinking Fountains	Lockers
Type. .	Individual	All porcelain, no wood	Bubble type arranged so lips do not touch metal	Perforated metal slanting top to prevent accumulation of refuse
Located.	In central building near lockers	Substations near workers	Where convenient to workers	In central building
Number.	1 to 15 men	1 to 20 men	1 to 30 men	1 per man. If possible one compartment for work and one for shop clothes
Accessories .	Hot and cold water, liquid soap, paper towels	Automatic flush		Locked. Forced hot air ventilation to dry wet garments
Plumbing	Open type, plain			
Special features	Porcelain	Must have a forced air ventilation	In clean light places	It is advisable to arrangelockers so that men coming off work at the same time have every second or third locker to prevent crowding
Note . .	Average time per man at wash basin 2½ minutes	Compartments should not have doors, easier to keep clean		If lockers are near wash basins a larger number can use without waiting

and swept daily. Where cement floors are used, rubber pads for the men to stand on will help in increasing comfort and efficiency.

Where cuspidors are needed, they should be placed on paper mats twenty inches in diameter and changed daily. Paper-lined cuspidors are recommended.

In especially dusty trades or wherever poisonous materials are used, as in munitions factories and lead trades, a larger proportion of lavatories will be necessary. The British Health of Munitions Workers Committee recommended one basin for every five persons.[22]

Importance of Cleanliness. — In general the benefit of providing adequate washing facilities lies (1) in the beneficial effect which cleanliness has on the health of the workers, whether or not poisonous substances are used, (2) in the increased self-respect of the workers, (3) in making it possible for the workers to leave the place of employment decently clean and ready for social intercourse or amusement without having to go home first.

Necessity for Baths. — Provision for baths in factories is usually urged,

(1) Where the worker is exposed to great heat, excessive dust, or contact with poisonous materials.

(2) Where food products are handled (to protect the public).

(3) And where there are not adequate bathing facilities in the workers' homes (raise the standard of health and efficiency for the benefit of both worker and employer).

This last reason for providing baths is a questionable one. Were the employes' wages sufficient to pay higher rents, their homes might not lack bath tubs. It may be justifiable, however, in addition to good wages, to promote education in personal hygiene by offering bathing facilities at the company's expense both as to time and service, or by charging a nominal fee of a few cents per bath. Compulsion attached to the use of factory baths is permissible and advisable only where the worker must be protected from

occupational poisoning or the public from impurities in goods, due to a lack of cleanliness in their preparation.

Standard Bath. — The standard bath is a shower. This is more cleansing and more stimulating than the still bath, and easier to keep clean. The overhead shower bath is practical for men, but for women the spray should be projected at the level of the shoulders to prevent wetting the hair. Swimming pools when provided are considered as part of the recreational rather than the sanitary equipment and a shower bath is usually made a prerequisite to entering the pool.

Drinking Water. — Every effort should be made to provide a pure, cool and plentiful supply of drinking water conveniently located for the workers. Dr. Darlington prescribes seven glasses of water daily for the maintenance of a normally healthy condition, an amount far in excess of that now taken by the average person. Drinking sufficient water results in an improved digestion and better assimilation of food, an equable bodily temperature, a lessened thirst, which in turn reduces the desire for alcoholic beverages, and in lessened fatigue because it enables the more speedy removal of the poisonous wastes which are produced in the system with the expenditures of energy.[23]

Few investments will pay larger dividends than money spent in installing and running an adequate drinking-water system. The important points in such an undertaking are that:

(1) The quantity of water to be supplied must be determined. This depends upon the nature of the work, the season of the year and whether drinking cups or bubbling fountains are to be used. The steel mills allow 1 quart per hour to a person, including waste from the cups. The demand for water in this case is unusual. Ordinarily, if a fountain is used, from 2 to 3 quarts per workman every 8 hours is sufficient.

(2) The supply must be wholesome and its source should be carefully considered. If possible it should be drawn from an

approved city water supply. If the plant has its own system, frequent chemical and bacteriological analyses should be made. If not suitable for drinking purposes, the water must be purified by sterilization or filtration.

(3) The water should be kept at a temperature between 45 degrees and 50 degrees. It is customary to cool to a lower temperature and allow a rise of 4 degrees or 5 degrees in passing through the circuit, with an average temperature of 47 degrees in the system. The refrigerator equipment is usually a small refrigerating plant and a water cooler. The latter consists simply of a storage tank containing a pipe coil in which liquid ammonia is allowed to vaporize. Coolers employing ice are not generally used except in plants of comparatively small size. If the ice comes in contact with the water there is danger of contamination. In piping the water through the building a circulating pump is necessary except in very tall buildings, where the cooling tank is placed at a high elevation. By these methods, fresh, cold, and pure water is brought within the easy reach of every employe in the plant and adds greatly to his health and comfort, besides contributing to the efficiency of the factory.* [24]

In most factories the worker must go for the water himself to some central supply. The German-American Button Company of Rochester finds that "it is cheaper for a seven-dollar boy to take water to a twenty-dollar man than it is for the man to go for the water himself." Moreover, having to go after a drink means usually no drink at all, and the necessary seven glasses a day are seldom taken, so that the worker's efficiency is consequently not maintained.

The system adopted by this company is as follows: Six times a day water is served by carriers to every employe in large, individual, metal-plated cups which are carried on trucks with trays holding 48 cups. The cups are sterilized in boiling water after each service and inspected daily. Special apparatus is provided whereby 24 cups are filled at once without waste.

* For further scientific details in regard to the establishment of a drinking-water system see article by Charles L. Hubbard, "Factory Water Supply," in *Factory Magazine*, May, 1919.

Dressing Rooms and Lockers. — Proper provision should always be made for hanging clothing in a clean, dry place, where the danger of theft is reduced to a minimum. Even when the workers are not required to wear uniforms in the factory, the growing and highly desirable tendency among factory operatives to change their clothing for work makes dressing rooms necessary. As much privacy as possible should be afforded the individual while changing clothes, and the dressing rooms must be large enough to prevent crowding and to expedite the changes.

Individual lockers should be supplied, although the work may not require a change of clothing. All lockers should be ventilated either by perforations in top and bottom, or, ideally, by a mechanical exhaust system for each row of lockers, which forces the air through the perforations.[25] Lockers of the mesh-wire type are acceptable only to the lowest class of workers. Lockers and dressing rooms become comparatively less important in the more cleanly work, however, and a row of pegs, amply spaced, may serve the purpose. Still another variation in the method of taking care of employes' clothing has been introduced in one of our great American corporations. Overhead hangers are used, because in the lockers working clothes are not properly aired and dried. Thus an employe changing his wet clothes at the end of a shift always has dry ones to put on. Another device which combines the advantages of both consists of wire boxes or receptacles overhead, to which the clothes are hoisted by ropes and pulleys. The wire partitions keep one person's clothing from touching another, while being dried by the warm air current at the top of the room. Theft is guarded against by having each user lock his clothing into position.[26]

Uniforms. — Lockers are not only desirable but necessary in factories where street clothing must be changed to or covered by uniforms during the working period. Miners,

those employed in the building trades, painters, and men in other highly hazardous occupations usually wear overalls or blue dungarees, but uniforms for women are more rare. These uniforms, in the shape of aprons, overalls, and bloomer dresses with caps, are gaining in popularity for the following reasons:

(1) To prevent accidents in occupations where there is danger of catching clothing in machinery.
(2) To prevent occupational diseases where poisonous or acid substances are used in the process of manufacture.
(3) To preserve the clothing and self-respect of the worker on leaving the factory premises, where the conditions of work are necessarily dusty or dirty.
(4) To protect the consumer, where food products are being handled.
(5) To eliminate dress snobbery among the women workers.
(6) To induce *esprit de corps* among the workers in a plant.
(7) And to improve the general appearance of the working force.

In introducing a uniform it is well for the employer to consult the taste of the women and let them aid in its selection. The uniforms are sometimes provided by the employer *gratis*, but often, as in the case of the Bournville Works in England, either the material for the uniforms or the complete costume is paid for by deductions from the wages of the women. Each employe is supposed to have two uniforms on hand, to enable frequent washing. In order to make the wearing of these uniforms compulsory, it is advisable that the employer provide them, when they are needed.

Lighting

Effect of Lighting on Production. — Probably nothing affects the output of the worker more directly than does the light under which the work is carried on. Electrical engineers have shown that the rate of output can be increased 2 per

cent in steel mills and 10 per cent in textile mills and factories, by improving the system of illumination. The night output in one steel plant increased 10 per cent with the installation of an efficient lighting system. To make sure that lighting was wholly responsible for the increase, the new lamps were taken out, and under the old system output dropped back 10 per cent and returned to the higher rate only after the new lighting system was restored.[27]

Daylight when obtainable is the best form of lighting for almost all kinds of work. The essentials of daylight illumination as summarized by Dr. Schereschewsky are that:

(1) The amount of light admitted to the interior should be as large as possible.

(2) The light should reach the center of the room.

(3) The distribution of the light upon the working planes should be as uniform as possible.

(4) The light should fall upon working planes from a proper direction.

(5) The walls and trim of the room should be of such color and surface as to absorb but little of the incident light, white being the preferable color.

(6) Manufacturing and other equipment should be so disposed as to avoid casting extensive local shadows.[27]

Ratio of Floor Area to Window Area. — Roof lighting is preferable to lateral lighting, but is naturally possible only in one-story buildings or on the top stories of others. The minimum ratio of floor area to window area is generally specified as 4 or 5 to 1 for factories, and 7 or 10 to 1 for office buildings.[28] The desirable size of the window space varies with the kind of work to be done and the amount of direct light which reaches the windows. Too much daylight may be as bad as too little, if it is glaring and trying to the eyes of the workers. A factory in the manufacturing district of a city may need the maximum possible proportion of wall space devoted to windows, whereas a factory in an open field

will need to soften the light in the workroom by decreasing this proportion.

Distribution of Light by Means of Special Glass. — Where tall buildings shut out much of the direct light from the sky, the daylight strikes the windows at an oblique angle, and there is a consequent concentration of light in a narrow band near the windows and an absence of it in the center of the room. Roughened, ribbed, or prism glass in the window panes in such a case deflects the oblique light rays into the center of the room and equalizes the distribution of light. In order to obviate the glare of direct light, work tables may be arranged at right angles to windows.

Standards of Artificial Illumination. — The quality of artificial illumination must approach as nearly as possible to that of sunlight. The color of the tungsten-lamp light is very much like that of sunlight and is generally recommended. In large, high-roofed machine plants the flaming arc lamp is sometimes necessary, but in most cases where the light is suspended from a height less than 40 feet, the single or clustered tungsten lamp is highly efficient. The only exception to this is where there is excessive vibration from machinery which breaks the more delicate tungsten and requires the carbon filament lamp. The tungsten lamp has not only a longer life than the best carbon filament but is at least 100 per cent more efficient and gives a light of a better color value.

Positions of Light and Candle Power Recommended. — For safety and efficiency the Industrial Commission of Wisconsin requires artificial illumination in factories equivalent to one candle-power lamp, hung ten feet from the floor, for every four square feet of floor space. This makes individual lights unnecessary except for some kinds of fine work. The supply and quality of light may be adequate, but the good effect entirely neutralized, by failing to have the light fall on the work properly. The lights should be placed above

the heads of the workers, so that all parts of the room are illuminated and so that at no time do they shine in the eyes of the workers, even when standing in an upright position. Carefully shaded individual lights are usually used for work such as drafting or fine hand or machine work, but where general illumination is more desirable in fine machine work a standard of one half to one candle power per square floor foot hung ten feet from the floor is commonly used.

Reflectors. — Reflectors are indispensable with the tungsten lamp, which throws a large amount of its light horizontally. They can be so constructed that the light is deflected to an area somewhat between three and six feet from the floor, and add some 35 to 50 per cent to the efficiency of the lamp.

Comparatively speaking, however, there is little work done by artificial light and the great need in many factories is for adequate lighting during the daytime. The fundamental problems involved are the same.

Prevalence of Poor Light. — Poor lighting means inefficiency and lessened production. It affects output adversely by causing (1) unnecessary accidents, (2) eyestrain, headaches, and malaise in the workers, (3) a lower speed in working, and (4) increased difficulty in supervision. And yet the New York State Factory Commission in 1912 found 36.7 per cent of the laundries investigated, 49.2 per cent of the candy factories, 50 per cent of the ice-cream plants, and 64.8 per cent of the chemical establishments inadequately lighted.[18] In over 50 per cent of 45 workrooms of the garment trades in New York City in 1915, illumination was inadequate. It is not surprising, therefore, that three quarters of 2906 workers in the garment trades examined in one year had defective vision.[28]

Since poor lighting is so prevalent and proper illumination is an important factor in the efficiency of the worker and bears so directly upon the rate of output, it deserves careful consideration and detailed study.

Ventilation

Importance of Temperature, Humidity, and Dust Content of the Atmosphere. — Several interesting studies have been made in the past few years to determine the effect of atmospheric conditions, within and without the workshops, on the efficiency and health of the workers. It has been supposed that the evils of poor ventilation were due chiefly to the carbon dioxide content of expired air, to the volatile substances given off in perspiration, and to bacteria carried by the air. Now it is known that the chemical condition of the atmosphere has comparatively slight effect on working capacity and bodily condition, and that the air does not carry bacteria to any extent. Quantities of carbon dioxide given off in a manufacturing process or other gases and fumes may be, of course, extremely injurious to the worker, but such conditions are exceptional. It is temperature, humidity and dust content which usually make the air of a workroom good or bad in its effect on the worker.

Seasonal Variation in Output. — Professor Huntington traced the daily variation in output of workers in factories in Connecticut and Pittsburgh for three years (1911–1914). Piecework wages were found to vary from season to season, being lowest in January and highest in early June and November. Thus the minimum of efficiency came in the cold winter months and hot summer months, while maximum efficiency seemed to be obtained when the outdoor temperature ranged from 60 degrees to 65 degrees.[29]

Effect of Temperature on Output. — Exhaustive experiments have been carried on by the New York State Commission on Ventilation. Over one hundred men and women were kept at various kinds of physical or mental labor for a day or half day in specially constructed rooms in which the atmospheric conditions were carefully regulated. The effect of hot or cold, fresh or stale air on their efficiency and

bodily condition was accurately measured. The heavy physical labor of lifting dumb-bells or riding a stationary bicycle was performed 15 per cent more efficiently at 68 degrees than at 75 degrees, and 37 per cent more than at 86 degrees.* In typewriting, which combines mental and physical effort to an extent typical of most office work, 6.3 per cent more work was done at 68 degrees than at 75 degrees. In the purely mental work of arithmetic comparative efficiency was maintained at a temperature as high as 75 degrees, but in every other case 68 degrees produced maximum efficiency and was always the most comfortable to the workers. Stale or fresh air made little difference in the condition of the workers, except that their appetite slightly decreased as the proportion of carbon dioxide and organic substances in the air increased.[29]

Standards for Temperature and Humidity. — The desirable temperature will vary from 60 degrees to 65 degrees for work involving much physical exertion to between 68 degrees and 70 degrees for other work.[17] Thompson found that the most desirable relative humidity of the workroom is 55 to 65 per cent, with the air changed three times an hour.[30]

Ventilating System. — The ventilating and heating system required will differ with each work place. In the ordinary workroom, where the window space is sufficient, 1800 cubic feet of fresh-air space per hour per person can be secured in winter and summer by opening the windows top and bottom and inserting a draft deflector at the bottom. Another excellent method of window ventilation is to admit fresh air over window boards with ample radiation under the windows, while a gravity exhaust is provided for the removal of vitiated air. In addition to this window ventilation the British Committee recommend for one-story buildings narrow openings or louvers where the roof meets the wall.[30] Electric fans and " natural draft " ventilators are

* Fahrenheit scale used throughout.

commonly used. The latter consists simply in a "coil so shaped that the air currents blowing around and over it will generate a suction in the pipe leading from the workroom." [25] Window ventilation is only sufficient where some one person is appointed and authorized to regulate it, otherwise some sensitive person will manage to close nearby windows. In the Metropolitan Life Insurance Company, windows are daily thrown wide open in every department during rest periods, when the employes are moving about and less susceptible to drafts. The real question is not how much air enters or leaves the room or how much oxygen it contains, but what its temperature is. It is therefore necessary to install thermometers so that the person in charge may open the windows when the temperature exceeds 68 degrees. A specially devised system of hoods, exhausts, and flues is of course essential where smoke, dust, or heated fumes are given off in the process of manufacture.*

Heating System. — The natural and healthy method of heating any room is obtained by radiation from stoves, but in factories this is impossible, and a "plenum system," combining "indirect radiation and mechanical ventilation," may be provided by an apparatus through which fresh air is blown into the room rapidly by fans over the heating or cooling coil, with a chamber of water sprays to regulate humidity, and passes out of the room through special pipes.[17] In heating the work place any system of pumping in hot air which does not include apparatus for regulating humidity has been condemned because it produces a dry, monotonous and depressing atmosphere.

Prevalence of Bad Conditions. — Needless to say such conditions — 68 degrees temperature, with not more than 65 relative humidity — are rarely obtained in factory rooms.

* For dimensions and kind of exhaust system needed in dust removal see article by John Roach, *Hygienic and Sanitary Equipment*, Ind. Man, Oct., 1917.

Of 215 workrooms in New York State recently investigated, nearly one third had a temperature of 80 degrees or over and three fourths of 73 degrees or over.[29] In forty-two laundries visited in 1917 by officers of the New York City Health Department, the temperature of the wash rooms ranged from 83 degrees F. to 96 degrees. Twenty-six of thirty-six mangle departments gave a temperature of over 86 degrees.[31] Such extreme temperatures as these are not peculiar to laundries.

It is obvious that ventilation is an important factor in labor maintenance, but that no one set of rules can be recommended for the ventilation of all work places for all kinds of work. The general principles upon which workroom ventilation should be based are briefly summarized by the British Committee.[32] The atmosphere should be:

(*a*) Cool rather than hot.
(*b*) Dry rather than damp.
(*c*) Diverse in its temperature in different parts and at different times, rather than uniform and monotonous and (which is ultimately connected with this diversity)
(*d*) Moving rather than still.

Fire Protection

The Need for Fire Prevention. — The task of fire prevention which lies before the American people and manufacturers is evident when we compare the per capita annual loss by fire in France, Germany, Austria, or Italy, which was less than $.50 even eighteen years ago, with that in the United States, which was $3.02 during the five-year period preceding 1907.[18] The fire losses in New York City are 4½ times as great as in London. In 1917 the total loss from fire in the United States was $267,560,740.[33]

Building Construction the First Problem. — A model factory from the standpoint of fireproof construction is the Bournville Works in England, which covers some thirty-

three acres of land and consists of numerous workrooms, warehouses and offices. The stock room, in which large quantities of sugar, flour, cocoa, timber, paper, oil, petrol, etc., are stored, is in an isolated building made of brick, steel, and ferro-concrete. Each section of the building, each elevator shaft and stairway, is an isolated fireproof unit. The power gas plant and electric generating station are likewise isolated. In the factory buildings, floors are of ferro-concrete supported by ferro-concrete incased stanchions. No inflammable wood is used in the newer buildings and steel principals support the roof. Fireproof doors separate each department and close each window, while the connecting bridges and passages between departments are constructed of iron or ferro-concrete.

Such elaborate construction is not feasible in smaller factories, however, and instead of the reinforced concrete building, it may be necessary to use the standard mill construction building, consisting of massive timber which can be charred but not easily burnt. Such a building costs only 25 per cent more than the inflammable frame building and is therefore rapidly displacing the latter. In all factories, in addition to the provision of adequate exits and stairways, each floor should be an isolated fire unit, all interior openings to elevators, stairways or air shafts should be protected by fireproof doors or shutters, and the fire escapes should not pass openings through which flames can issue directly from any floor.[17]

Other Precautions. — Although the buildings may be of the most approved fireproof constructions, danger still remains if easily fired dust is allowed to accumulate or if inflammable waste material is left exposed to the air. Mechanical dust collectors are needed in the more dusty departments, and men should sweep out the rooms and passages daily.

During each holiday the beams, girders, and machinery in

factories should be cleaned. Iron boxes with air-tight lids should be provided for oily rags, and in each room receptacles for rubbish should be supplied. In many factories smoking is wisely prohibited except in special smoking-rooms, at meal-times, and only safety matches provided by the firm are used on the plant premises.

Fire Alarms. — In spite of every precaution fires will occur. It has been estimated that 80 per cent of the fires in the United States are due to carelessness,[33] and this estimate, which is certainly not unduly exaggerated, indicates the importance of enabling the speedy discovery and extinction of unavoidable fires. A watchman on constant duty should be checked in his rounds by recording clocks at various stations in the factory. In the more dangerous places, where inflammable materials are stored or where fires may easily originate, thermostatic fire alarms should be installed, in which an electric current starting the alarm is automatically produced whenever any part becomes overheated. In every factory some system of fire alarms is essential.

Fire Extinguishing Apparatus. — Fire pails should be adequate in number and kept full of water. Hose boxes must be freely distributed and sufficient water pressure assured. Sawdust or sand boxes should be placed where oils are stored, and chemical fire extinguishers established at frequent intervals. Pressure from insurance underwriters has resulted in the general installation in large factories of the automatic fire sprinkler, a system of overhead pipes from which streams of water are projected when the fusible metal which closes the openings is melted by a heat of about 160 degrees F.[18] Large plants, such as the Bournville Works, are sometimes equipped with their own fire-engines, hose carts, smoke helmets and trained fire brigades.

Fire Drills. — Confusion resulting in panics is the chief cause of fire accidents. For this reason fire drills should be

insisted upon, weekly or bi-weekly, on different days, without any previous notice. For plants operating the full twenty-four hours, fire drills for the night force should be included. The usual procedure in organizing such drills is that of appointing a captain for each floor and instructing the employes to follow their aisle leader to the nearest exit in quiet, unhurried order. The fire chief is usually the police chief or chief electrician who is in command when the alarm sounds.

In the Bournville Works a fire brigade of twenty-nine men is on call by special signals day and night. They are remunerated by bonuses for practice attendance, and a quarterly allowance toward house rent. The brigade gains experience in combating fires by being allowed to turn out for any call in the locality of the factory. Two members are appointed each week to inspect daily all rooms after work hours, disposing of neglected waste, closing fireproof doors and shutters, and removing obstructions which may prevent easy access to the fire appliances. Fire drills are held occasionally. Fire exits lead down to the ground and up to the roof, where roof walks make it possible to get from one end of the works to the other.

CHAPTER VII

MEDICAL CARE

Extent of Illness in Industry. — Efficiency and health are inseparable. Yet statistics indicate a markedly debilitated state of health in the working population. A recent study of 750,000 workers made by the United States Public Health Service showed the existence of a 6 per cent non-effective working force in American industry.[1] Minor ailments are chiefly responsible for this large percentage of non-effectives. Fresh colds are allowed to develop into bronchitis and scratches into infected sores, decayed teeth lead to intestinal poisoning, and small ills are generally ignored until their cumulative effects result in serious illness or disease. The net result is that in the United States some 284,750,000 days are lost yearly by 33,500,000 wage earners.[2] Each worker loses approximately $8\frac{1}{2}$ days a year at an annual loss to the country of some three quarters of a billion dollars. In terms of one large corporation in 1916 this meant that 10 per cent of their turnover was due to illness. In another corporation it was 13 per cent.[3]

Economy and Expediency Make Illness an Industrial Problem. — The prevention and cure of illness is essentially a community and not an industrial problem. The individual employer, however, can do much to eliminate disease and prevent accidents by providing sanitary, hygienic, and safe working conditions with reasonable hours and adequate wages. Beyond the factory or office building lie heredity, bad habits, impure food and water, unsanitary housing, and all the various causes of disease over which he has little direct control. In spite of this fact employers are rapidly

discovering that there is a dollar and cents return from providing medical care for employes, at the company's whole or partial expense. Even though we may hope some day for public provision and supervision of medical care for the entire community, there will always be a residue for which the industrial unit should be held responsible.

Pioneer Corporations in Industrial Medical Care. — Railroads were among the first to consider the care of their employes. As early as 1867 the Southern Pacific Railroad Company rented a residence in Sacramento, California, for a temporary hospital and in 1869 built the first hospital in this country for the care of railroad employes.[4] Large corporations were also pioneers in investing capital in medical care. The Crane Company in 1886 established one of the first separate medical departments in any industrial concern, and shortly afterwards built a sanatorium for disabled employes.[5] In the nineties the Swift Company installed a full-time physician in their plant,[6] and the National Cash Register Company began the physical examination of employes in 1901.[7] Many Chicago corporations undertook the medical care of their employes after the campaign of the Tuberculosis Institute in 1911, which sought first and foremost the adoption of an examination of all employes in order to detect tuberculous symptoms. Thirty firms joined in conferences held by the institute and the campaign finally resolved itself into one for the adoption of a general medical examination of employes in order to detect any disease or physical defect. The result was that, in three years' time forty-seven firms had joined the movement, representing 187,100 employes, and the entrance examination was adopted by firms covering 58,000 employes.[8]

Effect of Workmen's Compensation Laws. — Thus initiative on the part of individual firms has done much to establish preventive and curative medical care of employes as a function of industry. But isolated efforts of this sort would

have done little to popularize the movement had it not been for the passage of Workmen's Compensation Laws. In Ohio, for instance, prior to 1914, only four establishments outside of the railroads examined applicants for work. Within a year and a half after the Workmen's Compensation Law went into effect, forty-two establishments, employing 68,500 persons, had installed the physical examination either of applicants for work, or of all employes, or both.[9] Moreover, since the introduction of Workmen's Compensation Laws the occupational diseases of lead and phosphorous poisoning have attracted sufficient attention to bring about legislation in some of our States in regard to the medical care of workers in trades utilizing these materials.

Progress during the War. — During the recent war great impetus was given the movement to conserve the labor power of the country through the promotion of industrial medicine. In addition to the Division of Industrial Medicine and Hygiene of the United States Public Health Service, organized in 1912, similar bureaus have been organized since 1814 by the Department of Labor, the Ordnance Department, the Railroad Administration, the Shipping Board and the Council of National Defense. Six medical colleges have introduced courses in Industrial Hygiene, and four others are known to be contemplating such courses.[1] The American Association of Industrial Physicians and Surgeons, formed in 1915 with seventy-five charter members, in 1918 numbered three hundred and sixty.[10]

Evident Value of Medical Care. — The movement to prevent and cure illness in industry by providing facilities for treatment and diagnosis has now gained such momentum that there is scarcely need to argue its value. Graphic illustration of the effect of such health supervision in reducing lost time was found by the New York Department of Health,[11] which noted a marked reduction and by the Norton Company. With the Norton Company the use of the dispen-

sary is voluntary, but its value as a time saver is great. In one year it was found that of all the men who lost time from sickness or accident, those who applied to the hospital saved an average of 19.2 hours per man per month over those who did not do so.[12]

Some plants report the elimination of septic infections or blood poisoning from minor accidents by the introduction of emergency equipment. An Ohio manufacturer, by putting in an emergency hospital, reduced absenteeism due to infection from six cases a day to four cases a month. In one year's time the emergency hospital of a New York department store reduced absenteeism by more than 72 per cent.[13]

Obvious Benefit of Periodic Physical Examination. — The records of periodic physical examination show most clearly the immediate benefit of medical care. One corporation, as an experiment, gave a careful physical examination to one hundred of its principal employes in April, 1918, and followed this with reëxaminations in September, 1918, and February, 1919. Of the forty-nine employes reëxamined in September, 59 per cent, or twenty-nine employes, showed improvement in the following items:[14]

	No.	Per Cent
Blood pressure	7	14
Lungs	1	2
Pulse	1	2
Urinalysis	2	4
Teeth	12	24
Eyes	3	6
Ears	2	4
Weight	11	22
Constipation	2	4
Personal hygiene	2	4

In February, thirty-one of these employes were again checked up and improvement noted as follows:

	No.	Per Cent
Blood pressure	10	32
Teeth	5	16
Skin	1	3
Weight	2	6
Diet	1	3

The Metropolitan Life Insurance Company, in the first examination of their employes, found marked defects of heart, lung, or kidney in two hundred and fifty-five out of every one thousand men examined. Only 47 per cent of these cases of impairment persisted at the time of the second examination, one year later.[15] The New York City Department of Health found decided improvement after one year in 10 per cent of the cases of impairment and among the first twenty-four men reëxamined were the following interesting cases:[16]

Case I. Age 18; first examination, June, 1914; weight 136 pounds; not well; short of breath; pulse 112; heart enlarged. Second examination; September, 1915; weight 140 pounds; looks and feels well; no shortness of breath.

Case II. Age 22; first examination, June, 1914; weight 135 pounds; rapid abnormal heart sounds; some shortness of breath; pulse 104. Second examination, September, 1915; feels and looks better; weight 147 pounds; pulse 96.

Among the women were the following:

Case III. Tubercular lesion found on examination. Had leave of absence for 5 months. Now back at work. Gain in weight retained, and pulmonary condition satisfactory.

Case VI. On examination a valvular heart murmur was found, with dyspnœa after exercise. Was not aware of lesion until disclosed by examination. Has been very careful since then not to overstrain heart, and is now in excellent condition.

Case VII. On examination a patient was found anæmic, hæmoglobin 48 per cent, pain in cardiac region, systolic heart murmur; looked and felt sick. Was advised. On reëxamination, hæmoglobin had reached 80 per cent; there was no cardiac pain, no heart murmur, and there was great improvement in appearance.

Needed Development. — We await a development and coordination of public and industrial health agencies to make effective the program proposed by the Division of Industrial Hygiene and Medicine of the Working Conditions Service of the Department of Labor in 1919, which includes (1) provision for instruction in prevention of disease, (2) health supervision for all recreation and amusements in industrial plants, (3) study of adequate laws governing sanitation, food, milk, water supplies and housing, (4) installation and supervision of departments of health and sanitation in industrial centers, (5) educational service for the people of industrial centers.[17] To some extent, however, about 8,000,000 of the nation's workers have already been affected by employers' efforts to improve health conditions.[1] There still remain some 30,000,000 wage earners who have not been touched.

Medical Examinations

Medical Examinations the Keystone. — In some industries examinations are made only by request. In others they are required periodically by the week, month, or year, or on such occasions as entrance, promotion and reëmployment, or after any absence due to illness or accident, — as the nature of the occupation or the judgment of the employer or medical supervisor dictates. The keystone of preventive medical work in industry is the entrance and periodic examination of employes. The purpose of such examinations is often misunderstood by employer and employe. Compensation laws, it is claimed, have caused employers to use the physical examination as a means of eliminating "risks," and the result has been the exclusion of efficient applicants and an attitude of distrust between employe and employer. It does not necessarily follow that the physically less perfect employes are "risks." This is indicated not only by the experience of American manufacturers such as the Avery Company

but by reports of the British Health of Munitions Workers Committee. These show a comparatively low rate of accidents among the less healthy workers. Among 1542 men, accidents affected 7 per cent of those in A, the highest health group, with an average loss of twenty-six days a year, and in health groups B, C, and D, 4 per cent, with an average loss of twenty-four days.[18]

Placement, not Rejection, the Purpose of Entrance Examination. — The purpose of the entrance examinations should not be to reject or discharge the great number of applicants or employes who are physically imperfect, but to prevent their employment in particular kinds of work for which they are disqualified. Specific impairments will render the applicant unfit for specific work, although any one impairment, even a comparatively serious one, does not disqualify the applicant for all work. In some cases it is even possible that the company physician may so advise an applicant how to correct a diseased or defective condition that he may later take up work with the firm. Properly placed, the physically imperfect employe may be an asset to his employer because of his comparative stability and his disinclination to leave work in which he is making good.

There will always be an irreducible minimum of rejections of applicants for work because of their physical condition. But the use of the physical examination as a basis of discrimination against the physically incapacitated in either employment or promotion may be a boomerang to the employer. It arouses the antagonism and distrust of the employes. The purpose of the examination — to place and keep the employe in work for which he is physically qualified, not to shut him out from all occupations — must be reiterated again and again.

Kind of Examination. — The form of the entrance examination is usually that of the insurance company or of the army. In deciding the length and nature of the examination

the applicant's point of view must be considered. From twenty to thirty minutes suffice for the insurance type of examination. Too long and extensive an examination will keep away applicants, but for some occupations, such as those involving the handling of food products, or for work requiring constant standing or walking, examinations below the waist are necessary. In the examination of female employes a nurse should be in attendance unless the doctor is a woman.

Standard Examinations. — The standards for physical examinations for various positions, prepared by the Municipal Civil Service Commission of New York City in 1916, are valuable because they recognize their different requirements and specify the particular disqualifying defects. The types of positions for which examinations were prepared were (1) clerical and stenographic, (2) positions in the inspectional service requiring the moderate degree of physical ability needed in walking long distances or carrying light loads, (3) positions involving the high degree of physical effort needed in the performance of severe manual labor or such dangerous work as that of the blacksmith or boiler maker, and (4) positions in the police and fire service demanding the highest physical ability.[19]

Examination by Outside Doctor Unsatisfactory. — Medical certificates from outside doctors do not take the place of systematic examinations made by the industrial physician. One dishonest doctor in a community will negate their entire purpose, while insufficient information as to the needs of the industry will render the certificate of little value. To some extent these difficulties may be obviated if standardized medical certificate and examination forms for each occupation are used by all doctors in the neighborhood, and the reports submitted to the employer. But both time and money are saved where the firm is large enough to warrant a full-time examining physician or where a group of small firms can combine in employing a full-time medical staff.

Failure of Deferred Examination. — Occasionally a company tries to save expense by giving a superficial examination of the applicant for work and following this up with a more searching one after the employe has proved his suitability and liking for his work. This method does not seem advisable. The value of the examination is to prevent the introduction of tuberculosis and other infections and contagious diseases by the new employe and to place him from the start in work for which he is physically qualified, thus obviating the cost to employer and employe of transfer or discharge.

Value of Periodic Examination. — The value of periodic physical examinations is evident from an investigation made by Mr. Alexander. In nineteen metal-trade establishments with medical departments the ratio of medical cases to the total number of surgical and medical cases averaged 22.32 per cent. But in plants with a yearly examination this proportion of medical cases was reduced by 1½ per cent; in plants with a semi-annual examination, by 5 per cent; in those with a quarterly or every four months examination, by nearly 75 per cent.[20] The more frequent the examination, the less frequent the illness incidence, and for this reason, at least, the yearly reëxamination is imperative in any industry. It is rendered of far greater value when supplemented by observation and the examination of all employes returning from a sickness absence and a more frequent reexamination of those predisposed to disease, or below par generally, or exposed to occupational poisonings. This is done by one firm in Chicago employing 10,000 men and women, and suspicious cases are filed separately under "re-examinations." The doctor calls such employes as often as he thinks necessary. When a case requires a daily temperature and pulse chart it is made out by the nurse every morning and night for a short period, and if trouble is indicated a thorough diagnosis is made.[21]

Introduction of Periodic Examinations. — Many plants have successfully introduced a system of periodic examinations by beginning with the managerial staff and the heads of departments before examining the other employes. Showing no discrimination between executives and subordinates gains the employes' confidence. With a little foresight and tact any company should be able to equal the record of the International Harvester Company, where, out of a total of 20,000 examinations made in three years, only 20 employes objected to the examination, and these waived their objections when its purpose was explained.[22]

The Sears Roebuck Company chose a wise course when instituting the periodic physical examination of their employes in 1914. Of the 15,151 employes examined in one year, 27 per cent were found with a definitely diseased condition. None of these was discharged. Many were given vacations, or free hospital and sanatorium care. Some were referred to their family physicians and others cared for by the company doctors.[23]

Examinations Confidential. — It is well to stress the confidential nature of the examination. With the New York Department of Health all medical records are held confidential by the medical department and are never referred to in cases of promotion.[24] The American Telephone and Telegraph Company number all the records of the medical department, and the corresponding list of names is held only by the physician in charge.[25]

Publicity a Substitute for Compulsion. — The periodic examination need not be made compulsory if its purpose and value as a health maintenance measure are well advertised. The employes will probably respond to the doctor's summons more readily if the employer's mandate is not attached and will value the doctor's advice more. Unless the employes are themselves in control of the medical department and its policies, compulsion in connection with the reëxamination

may breed a suspicion of the employer's motives in thus watching the employes.

The Plant Medical Equipment

Kind of Medical Equipment Needed. — The kind of medical equipment needed in a plant will depend on the nature of the industry and the ratio of medical and surgical treatments called for. With a clerical force numbering about five thousand, the Metropolitan Life Insurance Company in 1917 had an average of one hundred and five daily visits to the dispensary, calling for twice as many medical as surgical treatments. In nineteen metal-trade establishments, on the contrary, the proportions of medical to surgical cases is one to four.[20]

Emergency Equipment. — First-aid work with emergency equipment is becoming standardized. Some States require the first-aid kit in factories, workshops and mercantile establishments. There are all degrees of elaboration in first-aid equipment, from the soiled roll of bandaging gauze which stands perennially intact in the corner of an office shelf to the emergency hospital and operating room with its attendant staff of surgeons and nurses.

First-Aid Kits. — The instructions printed on the cover of the first-aid cabinets used in the Vickers Limited factories, one of the largest munitions plants in England, describe a kit which proved adequate during three years' war experience. One such kit is provided for every 50 employes.[26]

1. *Forceps*, to remove and hold dressings (and to catch artery in grave emergency only by surgeon).	1. This *First-Aid Cabinet* is to be used only in very slight injuries, and only in parts of the factory very remote from the works surgery.	To apply above a profusely bleeding wound. The pad to be placed over the nearest arterial point.

2. *Scissors*, to open packets, etc.

3. *Metal Holder*, containing sterile eye brushes (covered with wool).

4. *Bottle of Eye Application* (cocaine, castor oil, 5 per cent perchloride, 1–3000).

5. *Bottle of Iodine Solution*, 2 per cent to paint wounds.

6. *Bottle of Collodion*, to apply over very slight wounds which neither bleed nor gape.

2. All *severe wounds*, i.e. bleeding, gaping, with loss of tissue, or deep, severe, and painful burns to go to the works surgery.

3. The *dressing packets* to be removed and held only by the forceps (1), cut open with scissors (2).
N. B. — Fingers must not be used to pick out packets.

4. *Wounds* must not be washed or touched with anything. Simply paint with iodine solution (5), or with collodion (6), then a large or small dressing.

5. *Burns and scalds*, apply a large or small burn dressing at once.

6. *Eye injuries.* No particle must be picked out of the eye with any sharp instrument. It is only allowable to brush the particle out with one of the sterile brushes (3) on which drop a few drops of eye solution; (4) if still painful or a particle remains, go to the works surgery.

7. *Re-dressings* allowed only of very slight injuries, where no pain, swelling, discharge or redness.

8. All cases dealt with here must be entered on the register attached.

Different kits will be needed in different industries, however. Dr. Mock, after a special study of industrial accidents, has recommended the following contents for a first-aid kit: (1) a bottle of tincture of iodine (5 per cent); (2) a bottle of applicators; (3) a bunch of sterilized dressings put up singly in paper envelopes; (4) a few large sterilized pads to be used in case of hemorrhage or large wounds; (5) bandages and a constrictor of stout muslin, which is safer in the hands of a layman than a rubber tourniquet; (6) a bottle of aromatic spirits of ammonia. A sign on the First-Aid Box warns the employes that it is for first-aid only, and that every injured employe should go to the doctor's office at once, no matter how slight the injury. Dr. Mock reports a reduction in infections in one industry from 28.6 of all accidents to 10 per cent, after the introduction of the use of tincture of iodine in the first-aid treatment.[23]

Model Emergency Equipment. — Miss Whitney, after making an investigation of medical equipment in factories for the United States Bureau of Labor Statistics in 1917, describes the following model emergency equipment:[27]

> For a company having a limited amount of space and wishing to install emergency equipment at a moderate cost, one room that was equipped at an approximate cost of $1000 was almost a model of its kind. The floor of rubber tiling cost $350. The plumbing, which was of the most modern type, having knee pressure faucets and all the fittings of the best porcelain, cost $250. The rest of the equipment, consisting of two medicine cabinets, an instrument cabinet, a porcelain operating slab, an electric instantaneous heater for use in case the other hot-water supply should fail, an electric warming-pan, a sanitary cot, and a sanitary screen by which the cot can be entirely shut off from the rest of the room, was furnished at the cost of about $400.

A description of an elaborate emergency equipment which has been practically standardized by one large company and which may be modified to meet the needs of individual plants, is as follows:

All interior woodwork is finished with sufficient number of coats of paint and enamel to give a finish which can easily be washed and kept clean. The operating, re-dressing, and bath rooms have a tile or vitralite wainscoting, and the floors are of marble chips set in cement. This is preferable to a tile flooring, as tile where subject to rough usage becomes gray and porous and thus more difficult to keep in a sanitary condition. Steel enamel chairs and tables are used in preference to wood, as they are more sanitary and wear better. The re-dressing room is used for the re-dressing of all cases and for minor injuries and medical cases. The equipment here consists of a washstand with knee or foot faucet attachments, a foot bath, medicine and instrument cabinets, bottle rack for antiseptic solutions, basin stands, instrument sterilizers, dressing carriage tables, chairs and nurse's desk, Justrite pail, and the necessary surgical instruments.

The operating room is equipped similarly to the re-dressing room, with the addition of high-pressure steam, hot and cold water, instrument and utensil sterilizer. The wards or recovery rooms are equipped with beds, tables, and chairs. Beds are furnished with electric warming blankets and heating pads. The X-ray and laboratory room is used for diagnosis of fractures and diseases.

A toilet is a necessary accompaniment of the emergency room.

Complete Medical Department. — But the emergency equipment fills only part of the needs of a working force. In small plants one room may suffice for all medical work, while large plants often have separate buildings for the medical departments, like that of Crane Company, where a one-story building includes rooms for consultation, treatment, dressings, sterilizing, examinations, operating, X-ray, laboratory, and a rest room.[28] The committee on Medical Supervision of the Detroit Employers' Association estimated that the medical department for a unit of 1400 to 2000 employes requires three rooms, — a reception room, an examining room and a surgery or dressing room.[29]

An analysis of the medical and surgical facilities for employes offered by the medical departments of one hundred

and seventy industrial establishments in the Eastern and Middle Western States in 1918 lists in order of the frequency of their occurrence, dressing rooms (the only room common to all of the establishments), waiting rooms, doctors' offices, physical examination rooms, wards, operating rooms, store rooms, X-ray rooms, laboratories, clerical offices, dental offices, sterilizing rooms, dark rooms, special examination and treatment rooms, attendants' rooms, recovery rooms, and toilets.*

Dental Clinics

Dental Clinics Popular. — A recent survey revealed dental clinics in sixty large industrial concerns in the United States.[30] The scope of their work varies considerably, in some plants including only examination and prophylaxis; in others examination, prophylaxis, and fillings, or all types of dentistry; and in a few instances dental care is extended to the children of employes. The work is done at either the employer's or employe's expense and in the employer's or employe's time.

Economy of Dental Clinic. — The value of the dental clinic is indicated by the experience of the B. F. Goodrich Company of Akron, Ohio, where only 1000 of 21,606 employes examined in 1915 did not need dental attention.[31] The Metropolitan Life Insurance Company in 1917 made 3101 examinations and cleansings in the company's time and free of cost, and in addition treated 4950 emergency cases.[32] These latter alone would have meant a loss of at least half a day's time in each case had the company dispensary not been available.

An interesting case of a clerk in a filing section of the Metropolitan Life Insurance Company is reported by the

* For description of these medical departments and a dispensary equipment approved by the United States Public Health Service see: Public Health Bulletin No. 99, 1919.

Dental Division. After being with the company for several years and never having a satisfactory attendance record the clerk was finally referred to the Medical Division because she showed fatigue early in the morning and suffered from sciatica and neuritis. She had lost thirty pounds in two years and was subject to frequent attacks of tonsilitis and headaches. A radiograph examination showed three infected teeth which were subsequently extracted. The rheumatism and neuritis attacks practically ceased and, at the date of reporting the case, for one year this clerk had had a perfect attendance record for the first time in her employment.

Undoubtedly there is a close relation between absenteeism and bad teeth, though comparative statistics are not available. The following table prepared by Dr. Hyatt shows the possible effect which abscessed or infected teeth and gums had on the health of the employes of the Metropolitan Life Insurance Company, as revealed in the medical and dental examinations.[32]

Disease or Condition	No Serious Condition Discovered	Radiograph Showing Infection	Cases Showing Blind Abscess
Neuralgia and Neuritis . .	3.8	4.2	8.3
Headache	1.9	2.9	3.2
Nervousness	1.7	3.7	4.5
Colds and Nasal Fossæ . .	19.8	23.1	23.6
Furuncles	2.4	3.8	4.5
Abscess and Skin Trouble .	2.6	4.0	4.5
Albuminuria	.9	1.1	3.3

Treatment Offered. — Advice as to the needed repairs and prophylaxis may be given at the time of the entrance examination. The preliminary examination is often the only dental care afforded on the factory premises, though some-

times accompanied by simple prophylactic treatment. The Avery Company distributes educational bulletins on the care of the teeth, and the Crane Company sometimes holds up an applicant for employment until the needed work is done. In the Joseph and Feiss Company the patient is given a chart which states the probable cost of the work needed. The dentist visits the factory one morning a week, bringing his own instruments, while the company furnishes the chair, foot engine, and other equipment. The majority of the employes go to the company's dentist for further work, though they are not urged to do so.[31] In the Metropolitan Life Insurance Company, X-rays are made at the time of the entrance examination if a serious condition is suspected.[32] The Armstrong Cork Company of Pittsburgh gives the employe examination, cleansing, and fillings at the company's expense, and in the company's time. The Kimberly Clark Company of Neenah, Wis., insures the proper care of the teeth of its employes by paying 25 per cent of all employes' dentists' bills which are in addition to the original inspection made by the company's dentist, at the company's expense.

Cost of Treatment. — The cost of dental service with the Armstrong Cork Company of Pittsburgh, Pa., where about 2400 patients a year receive on an average of one hour's attention, was $5000 in 1916.[33] The initial cost of the clinical equipment of the Metropolitan Life Insurance Company was $1087.41 in 1916. In 1918 running expenses were $2619.67 and salaries $18,915.66. Where the company's offer of a biennial examination and prophylactic treatment is accepted, it cost the company in 1916, $2.33 per patient per annum.[31]

Optical Clinics

Visual Defects Common. — The recent statistics of the United States drafted army show the importance of the clinic

which makes good optical care accessible to the employe without great expenditure of time and money. Twenty-two per cent of the causes for rejection were for visual defects.[34] Too often an individual is not aware of visual imperfections and as often a cheap optician will make the wrong diagnosis and supply incorrect lenses. Almost 75 per cent of 2906 persons in the garment trades in New York City in 1914 were found with defective vision. Only 11.7 per cent of these wore glasses and only one half of these glasses were correct.[35]

Value of Optical and Dental Clinics. — The story of a clerk in the employ of the Metropolitan Life Insurance Company gives interesting evidence of the value of an optical clinic working in conjunction with a dental clinic. Miss S—— complained of a blurring of vision in the left eye. A small patch of exudate was found in the retina, but the oculist could discover no cause. Complete rest and absence from work seemed the only remedy. The patient was referred to the dental division first. Four badly decayed and infected teeth were extracted, and immediately the original trouble with the eye disappeared.

Clinics in Operation. — The optical clinic is not frequent in industrial establishments as yet. That of Cheney Brothers, where some 5000 persons are employed, supplies 40 to 50 pairs of glasses in one month and secures glasses from good optical concerns by contract, at $2 to $4 a pair.[36] The Joseph and Feiss Company employs a nurse who makes a superficial eye test of applicants. An oculist employed for two mornings a week completes the examination of those with defective vision and prescribes glasses if necessary. These are secured by the company from a first-class optician at half price.[37]

Economic Value. — The optical clinic of the Metropolitan Life Insurance Company with one oculist in attendance is open for examinations every afternoon. An optician is

present for three afternoons a week to fit and adjust glasses. During 1918, 974 tests for glasses were made and glasses and repairs were secured at wholesale prices for 3468 persons.[38] The money collected for the wholesale supply company for glasses and repairs in 1918 was $6263.25. The cost to the firm was simply the salary of one part-time oculist, the half time of a clerk, and the original cost of a dark room for examining purposes. In these three instances the diagnosis is made at the cost of the employer, but the employe pays for the glasses.

Hospital and Sanatoria Care for Employes

Varied Provisions for Protracted Disability. — Large corporations occasionally provide hospital care for protracted disability, as is the case in several large mining industries and steel companies. This is done usually where the industry is in an isolated district or where other hospital care is inadequate. Railroad companies were among the first to erect their own hospitals. Workmen's Compensation Laws have also led to arrangements between companies and outside hospitals for the care of injured employes at the expense of employers. A growing appreciation of the seriousness of the problem of tuberculosis has developed "Free Bed Funds" for the care of tuberculous employes, supported by employers and employes together. In a few instances corporations support tuberculosis sanatoria for their employes.

Company Hospitals. — Among three hundred and seventy-five establishments investigated in 1916–1917, twenty-four maintained their own hospitals. One company with several plants maintains four hospitals for its 35,000 employes. A corps of forty-three physicians, three dentists, one oculist, and twenty nurses treat approximately 600 hospital and 300,000 dispensary cases every year. Expenses are

met by a $.75 monthly deduction from the wages of each employe, in return for which the employe may receive medical or surgical treatment, though he must pay separately for board at the hospital.[39] The elaborately equipped Minnequa Hospital of the Colorado Fuel and Iron Company treated 8244 cases from July 1, 1917, to July 1, 1918.[40]

Tuberculosis Sanatoria. — The Metropolitan Life Insurance Company Tuberculosis Sanatorium at Mt. McGregor, New York, opened in 1913, is by far the most ambitious undertaking of its kind. It is on 621 acres of ground, 1046 feet above sea level, in the foothills of the Adirondacks. In the midst of the buildings is a small lake. The plant includes a Power House, six Ward Buildings, Infirmary, Refectory, Administration Building, Ice House, Nurses' Home, Superintendent's House, Rest House, Chapel, Employes' Dormitory, Water Tower, Pump House, Recreation Building, and Stable. Open-air covered passages connect all the main buildings.[41] Two small cottages for married couples are about to be constructed. The total capacity of the Sanatorium is 322 patients, including beds in the Rest House for non-tuberculous employes suffering from anemia, nervous breakdown, and other chronic troubles. From the time of its erection until 1920, 1003 patients were discharged, including 223 non-tuberculous employes.[32] In the Recreation Buildings there are special rooms reserved for the teaching of handicraft work, to occupy the patients until fitted to reënter the firm's employ. Other patients do gardening on the hospital farm if they are strong enough. The hospital magazine, *The Optimist*, and office work furnish paid positions to other patients.

The Crane Company likewise has a sanatorium and farm for the recuperation and outdoor treatment of their employes at Buffalo Rock, near Ottawa.[5] In 1910, 32 large firms in Chicago built and equipped the Valmora Industrial Sanatorium in Watrous, New Mexico, for their tubercular

employes, with a capacity for only 30 patients. Five dollars is the membership fee for either firm or person and $20.00 extra is charged firms for each person in their employ over 1000.[42] The treatment costs $10.00 a week and is paid by either employe or employer. There are difficulties with this arrangement, however, in that the sanatorium is so far away that the expense of transportation is a large item, and its inaccessibility makes it harder to persuade an employe to accept provision for his care. The Sears Roebuck Company's method, of paying the expenses of tuberculous employes in nearby outside sanatoria, would seem more practical.

Tuberculosis in Industry

Tuberculosis in Different Occupations. — In any industrial health campaign one of the first objectives is the detection and arrest of tuberculosis, which is the cause of 20.5 per cent of all deaths at all ages in nineteen different occupations — according to the mortality experience of the Metropolitan Life Insurance Company. Forty per cent of those who die from tuberculosis are between the ages of 25 and 34 and their average age at death is 37.1 years. Among clerks, bookkeepers, and office assistants occur 35 per cent of all the deaths from tuberculosis and one half of these occur in the above age group. The proportionate mortality from this disease is high among textile workers, saleswomen, garment workers, compositors and printers, plumbers, gas and steam fitters, longshoremen and stevedores, teamsters and drivers. Tuberculosis is least common among coal miners and comparatively rarely affects farmers and farm laborers.[43]

This uneven distribution of tuberculosis among different occupations is apparent even within a single plant. In one shop of the International Harvester Company there was only one case among 700 men in two years, whereas

among 400 office employes the tuberculosis rate was high and in many departments far exceeded the entire plant average.[22] In any clerical force the tuberculosis rate is higher than in a shop force, not only because the physically vigorous are apt to avoid sedentary occupations but because the work itself is so confining.

The Periodic Examination an Important Preventive. — A high tuberculosis rate in any one occupation may be due to the home environment of the class of labor involved, or to inadequate sanitation and overheated, moist or dusty air in the work place, or to the nature of the occupation. Methods of checking the spread of the disease and restoring the diseased worker to an efficient state of health must vary accordingly, but no effort made by employers to assist tubercular employes is of permanent value unless it leads to the early detection of new cases. The most potent factor in preventing and curing tuberculosis in any occupation is the periodic physical examination. The value of catching the disease in its incipiency is obvious. In a group of patients of the Loomis Sanatorium, Loomis, New York, 37 per cent of seventy-eight incipient cases obtained and retained satisfactory health and working efficiency.[44] The early detection of tubercular conditions is made possible in industry only by the periodic physical examination. In the sanatorium maintained by the Metropolitan Life Insurance Company, 66+ per cent of the admissions were in the incipient stage in 1917, and there is a steady yearly increase in the proportion of incipient cases admitted. This fact is attributed to the annual physical examination.[32]

A Successful Tuberculosis Campaign. — Some efforts to check tuberculosis in industry have proved the possibility of success. In 1904 the management of a large boot and shoe factory in the small town of Oxford, Mass., discovered that one out of every six deaths among their employes was caused by tuberculosis. The company immediately under-

took the education, examination and treatment of their workers. In 1907 only four people in all Oxford died from tuberculosis, which indicates the success of the company's campaign.[45]

Failure of Tuberculosis Campaigns Caused by Employers. — Less successful efforts were made shortly afterwards by firms in Providence, Rhode Island, and in Worcester, Mass. Plants in Providence posted placards asking employes with suspicious lung symptoms to report for a medical examination by the company's physician.[45] This voluntary reporting system is obviously unsatisfactory unless curative assistance is widely advertised. In Worcester, by an agreement arranged by Dr. Overlock with the Department of Health, thirty-four manufacturers consented to pay the expenses of treatment for tubercular employes. The movement was given great publicity throughout New England, and in a few years it supposedly included 1200 mercantile and manufacturing establishments employing 2,000,000.[46]

A National Association was about to be formed, when an investigation disclosed the fact that only six of the thirty-four Worcester firms nominally taking part in the movement were willing to post notices asking employes to be examined. Seven of these firms did not even want it known that they were willing to pay the expenses of treatment, emphatically stating that they promised nothing, and would render aid only in individual cases. The lack of coöperation among the participating employers brought about the collapse of this valuable organized effort to combat tuberculosis in its very infancy.[47]

Free Bed Funds Play No Part in Prevention. — Employers and employes of Hartford, New Haven, and Meriden chose a different path and joined in contributing to Free Bed Funds for tuberculous workers. Although this form of coöperative effort has proved highly useful in the

curative phase of the work, no system of regular examination of all employes has been adopted, and consequently prevention plays little or no part in the various schemes. Much more pertinent and valuable has been the work of the Chicago Tuberculosis Institute, mentioned previously. This included the general physical examination for all employes and made the entrance examination common in Chicago industries.[8]

Reëmployment of Tuberculous. — Whether or not the industry assumes responsibility for the care of tuberculous workers, their reëmployment and after care are essentially an industrial problem. Dr. Vogeler of the Sprain Ridge Sanatorium for working people, in Yonkers, has pointed out the distinct advantage of having the employe return to his former occupation, provided the conditions of the working place are favorable. Light outdoor work is hard to get, while the pay is also light and risk of exposure dangerous. Sixty per cent of the Sprain Ridge discharged patients have returned to their old employments instead of entering new work, and the results have been most satisfactory because the employe can command a higher wage in the work to which he is accustomed, which means better food and better home surroundings, and because he is freed from the worry of learning a new trade. Moreover, work of some kind is recommended to every discharged patient as essential to the maintenance of good health.[48]

After Care. — With the employe back at work for which he is suited, there remains the necessity of careful watching to prevent the return of the disease. In the Metropolitan Life Insurance Company a Home Office clerk on his return from the sanatorium reports twice a week to the Dispensary to be weighed and twice a month for a thorough medical examination. Milk is served twice daily to anæmic or tuberculous employes, in the Rest Room. The result of this after care is that in a period when ninety-eight employes were

returned to active duty from Mt. McGregor, only six were sent back because of a relapse to their former tuberculous condition.[32]

Medical Staff

Comparative Costs of Regular and Part-Time Staff. — Of the 47 metal-working establishments with medical departments investigated by Mr. Alexander, 20 employed regular, full-time physicians and surgeons and 27 employed regular physicians for only part time or subject to call. The average cost of medical supervision in the latter groups with only one third as many employes, was 86.4 per cent higher than the average cost in all 47 establishments.[20] Evidently the cost is greatly decreased where the medical staff is in constant attendance, ready to meet every emergency. Every delay in medical or surgical treatment means an added expense from prolonged treatment and from ensuing absenteeism. For this reason it is imperative that a plant either maintain its own corps of physicians and nurses or join with neighboring plants in meeting the expense of such a corps.

Joint Medical Department Maintained by Small Plants. — This is done in Walpole, Mass., where four small plants join in hiring a nurse.[49] In 1915 the Commissioner of Public Health of Toledo proposed the organization of a "Bureau of Industrial Safety, Sanitation and Hygiene, to be Maintained on the Mutual Plan." This bureau was "designed to do for the small employer what the large manufacturer is able to do for himself," in the way of educational work, the exchange of information, the making of investigations or surveys and the offering of recommendations. The activities outlined do not indicate the extent of medical or surgical treatment contemplated. The plan is suggestive, however, of the possibility of coöperative medical supervision in small plants. An outline of the organization of this bureau is charted as follows: [50]

Commerce Club
Employers
Employes
Bureau of Industrial Safety, Sanitation and Hygiene
Director
Engineer
Prevention of Accidents
Mechanical Appliances, Education
Prevention of Fire
Inspection
Education
Equipment
Air
Water
Temperature
Humidity
Dust
Gas
Doctor
Prevention of Disease
Light
Sanitary Appliances and Facilities
Infection
Fatigue
Inactivity
Physical Examination
Treatment of Injuries
Education
Hygiene

The annual expense of maintaining this centralized service was estimated in 1915 to be $12,000. The Commerce Club and the employers utilizing the bureau were to share in the cost.

Size of Staff. — Mr. Trautschold has made the following estimate of the number of physicians and nurses in different-sized plants, based on the data collected by Mr. Alexander: [20]

Less than 3000 workers	1 physician	1 nurse	
3000 to 4000 "	1 "	2 nurses	
5000 to 6000 "	2 physicians	2 "	
7000 to 10,000 "	4 "	8 "	
More than 20,000 "	(for every 1000)	1 physician	2 "

Some companies employ a proportionately larger medical staff than this, the Metropolitan Life Insurance Company, for instance, having four regular physicians and four nurses for the sole care of the company's clerical personnel, which numbers between four and five thousand.

Allowing Physicians Time for Outside Practice. — Dr. Mock suggests that every plant physician should have some outside practice, study, and investigation, to heighten his prestige with the community and the employes and to broaden and stimulate him in his work.[45] Perhaps the Cleveland Foundry Company's plan of giving their full-time physician three months' leave each year for hospital practice is a more practical method of stimulating the physician and lending him prestige, than trying the more expensive half-time system.[51] The whole-time industrial doctor is able to give his complete attention to the problems of industrial medicine and to the organization of the medical department. In the study of present medical work in eastern industries, the survey made by the United States Public Health Service in 1918 showed that the departments employing full-time physicians covered a much larger field of service and did more for the employes.[52]

Plant Nurse. — Just as important as the plant physician is the plant nurse. In the examination of women employes a nurse's presence is necessary. In some plants she assists in the preliminary medical examination. Her duty lies chiefly in supervising the first-aid and hospital work, inspecting the sanitary conditions of the plant, noticing signs of fatigue among the employes, superintending the rest rooms, giving talks on health and hygiene, and visiting sick or convalescent employes.

Home Nursing. — The Home Nursing and Visiting Nurse Associations which exist in nearly every large city are very satisfactory agents for home visiting. In Detroit, the Visiting Nurse Association takes over the entire nursing responsibility at the salary of one nurse or gives nursing service at the rate of $.50 a visit. The Home Nursing Association charges $10.00 or $14.00 a week for nursing service (1917). The value of the service is stressed particularly as an economy in saving the strength of the man whose wife is ill. In a survey of 10,000 homes of moderate means the Home Nursing Association of Detroit found that out of 2000 maternity cases 675 were cases in which the family wage earner was employed by a manufacturing firm, and in 653 cases the husband acted as nurse at night, while in 158 cases he was absent from work from one to four days, in 31 cases for a week, and in four cases for two weeks.[29] The function of a visiting nurse as a time saver in such cases is clear.

Importance of Personality. — The success of medical work done in industry is largely dependent on the personality of the doctors and nurses. The employe must have confidence not only in their skill but in their sincerity and friendliness of purpose. It remains with the company doctor to show that he is trying to keep an employe on the job and not to act as a company detective seeking the discharge of the inefficient worker.

Medical Records

Value of Health Statistics and Records. — The records of the medical department, if properly developed, are a valuable source of information in regard to conditions in the plant and in the community and a guide post to needed improvements. More than one fourth of the population of this country belongs to the industrial group and therefore any statistics of health which the industry can secure are of value in public health work. The records recommended for a medical department by a committee of the National Safety Council include: [53]

1. Records of physical examination.
2. Weekly reports of morbidity.
3. Weekly reports of absenteeism.
4. Report of labor turnover.

Physical Examination Records. — The records of the physical examination should include the data relating to the industrial history and social history as well as to the physical condition of the employe. Sex, age, nativity, years in the United States, ability to speak English, marital condition, number of children, previous occupations, names of former industries and departments in which examinee was employed and the duration of employment in each, all form necessary data. This will usually be secured on the application blank, and in such cases can be duplicated in the medical records by clerks.*

Weekly Morbidity Reports. — The recommended weekly reports of morbidity would show the following data:

1. Industry.
2. Department of industry.
3. Occupation of the sick.
4. Nature of illnesses.
5. Total time lost.
6. Average number of sick employes in each department.

* For forms of medical and dental examination and records in use in different plants see: Public Health Bulletin No. 99 of the United States Public Health Service, 1919.

Absenteeism Records. — The percentage of absenteeism in industry indicates the percentage of sickness. During the war, in one munitions factory in England employing 950 men, charts were kept of the amount of sickness and absenteeism. In fifty weeks' time the absenteeism curve rose twenty-four different times. Twelve times it was accompanied by a rise in the sickness curve. Nine times the sickness curve rose immediately afterwards, showing that the previous week's absenteeism presaged illness or minor ailments which were too slight in the first week to cause the employe to go to the doctor or secure a medical excuse.[54] Absenteeism records are therefore of significance in estimating health conditions in the industry. These records should show the —

1. Net loss to industry, due to illness as a whole.
2. Net loss due to preventable illness.
   A — From industrial conditions.
   B — From community conditions.
3. Net loss to industry due to voluntary absences arising from other causes than illness.

Cost and Control of Medical Care

Small Per Capita Cost. — "A sum equivalent to the wages of the average worker for but half a minute each working hour of the year would be sufficient to cover the total average medical and surgical cost (the entire cost of health supervision) per year per employe in an establishment suffering from aggravated ill health and unusually frequent accidents, while the wages of the average worker for but ten seconds per working hour a year would more than cover the usual cost of proper health supervision." This is the striking cost estimate, including the salaries of physicians, nurses, any outside medical or surgical service, and supplies, which Mr. Trautschold deduced from data collected by Mr. Alexander.[20] The following table, com-

paring the data obtained from ninety-nine establishments with medical supervision, is interesting:

STATISTICS OF COSTS

INDUSTRY	NUMBER OF ESTABLISHMENTS	TOTAL AVERAGE NUMBER OF EMPLOYES SUPERVISED	TOTAL CASES OF ALL KINDS TREATED	AVERAGE NUMBER CASES PER EMPLOYE	TOTAL MEDICAL AND SURGICAL COST	TOTAL COST PER EMPLOYE
Metal Trades	47	294,646	1,988,991	6.75	$541,771	$1.84
Rolling Mills (Brass)	7	49,317	358,574	7.28	137,047	2.78
Light and Power	7	24,921	49,046	1.97	92,601	3.72
Chemicals	6	10,572	78,744	7.45	34,797	3.29*
Transportation	5	35,795	81,591	2 28	69,633	1.95
Food	5	13,650	69,565	5.10	39,875	2.92
Rubber	5	27,462	234,069	8.52	76,089	2.77
Textiles	4	8,939	67,380	7.53	24,177	2.70*
Paint	2	4,023	10,255	2 55	29,635	7.37
Leather	2	3,026	9,440	3.12	6,102	2.02
Publishing	2	3,358	6,742	1.03	3,473	1.03
Smelting and Refining	1	1,270	2,832	2.23	6,932	5.46
Coal Mining	1	2,454	2,842	1.16	4,637	1.89
Coal and Iron Mining	1	11,000	131,898	12 00	130,000	11 82*
Gold Mining	1	2,500	62,126	24 80	35,590	14.24*
Miscellaneous	3	2,611	11,019	4.22	6,126	2.35
	99	495,544	3,165,114	6.39	$1,238,485	$2.50

In these 99 plants, covering 495,544 employes, the average annual cost per case thus varied from $.27 to $2.89, giving an average cost per case treated of $.39 and an average cost per employe of $2.50. Omitting the four plants in which treatment was also extended to the families of employes, the average cost per employe was $2.21.

* Includes one establishment at which treatment is extended to the families of employes at their homes.

Cost of Medical Care Usually Met by Employer. — The cost of medical supervision is commonly met by the employer and sometimes by a mutual benefit society supported jointly by employers and employes. In 1916, out of a total of 300 mutual benefit societies investigated by the Department of Labor, twenty-six, which were managed and supported by employes alone, and forty, which were managed and supported partially or entirely by the company, employed regular full-time or part-time physicians. In summarizing the investigation Mr. Sydenstricker said: [55]

> Defining medical and hospital service in terms of broadest latitude, the statement may be ventured that in less than a fourth of the establishment funds so far considered are there benefits of this kind, and that the great majority of funds supplying such service are among those partly or wholly supported and controlled by the employers.

In two mutual benefit associations, however, the dues cover medical service for the families of employes. In one of these cases, home and hospital service, medicines and ambulance service are furnished.[39]

Coöperated Support. — In some plants the company and the employes coöperate in meeting the expenses of medical care, the company paying for the equipment and the employe for running expenses. In twelve companies recently investigated, employes pay monthly medical fees ranging from $.50 to $1.50 for married employes, and from $.25 to $1.50 for single employes. In a few cases these dues cover the cost of medical and surgical attention for employes and their families. The hospital care provided is usually exclusive of board except in free wards.[39] The dues are paid in the form of deductions from wages. Public opinion does not favor compulsory deductions from wages for the support of a medical department or hospital which is managed by the company and which the employe may or may not care to patronize. A voluntary yearly fee, such as that

subscribed by members of a democratically managed mutual benefit association, appears to be a method of obtaining co-operative support without arousing the employes' hostility and distrust.

Cost Met by Employes. — The plant personnel is such a shifting quantity that it is scarcely to be expected that the employes independently could maintain an adequate system of medical care. Less changeable groups of workers, such as the International Ladies' Garment Workers and the Workmen's Circle (Arbeiter Ring) have, however, successfully organized and supported hospital and clinical treatment for their members.[56]

"Arbeiter Ring" Sanatorium. — The Workmen's Circle is a Jewish organization with a membership of 48,000, drawn from 600 branches throughout the country. Its purpose is primarily to provide its members with money benefits for burials and sickness. In February, 1910, with only 7000 members, it bought an old farmhouse in Liberty, New York, for $6000 and opened a tuberculosis sanatorium supported by dollar dues from each menber. The rapidly growing membership has enabled transformation of this old farmhouse into an administration building, the erection of a finely equipped hospital with all modern improvements, a steam laundry, and four Lean-to's. The two physicians in charge, Dr. Julius Halpern of New York and Dr. Charles Rayewsky, are strong in the belief that the success of the institution is largely dependent on the patients' enjoyment of the independence and freedom which accompany a sense of ownership.

Joint Board of Sanitary Control. — The most complete example of unsubsidized, coöperative medical care of industrial workers is that of the Cloak, Suit, Skirt and Dress and Waist Industries of New York City. It was organized under the direction of Dr. George M. Price of the Joint Board of Sanitary Control, which was established in 1910,

and on which are representatives of the public, the workers' unions, and the manufacturers' associations in those industries. With the combined financial support of manufacturers and workers the Board supervises the fire protection, accident prevention, first-aid work, sanitation, and general health education in some 3500 shops, owned by 3000 manufacturers, employing about 80,000 workers. But all the individual and medical care is supported and controlled by the employes and unions alone.[57]

Scope of Work Done. — The scope of the medical work is wide. It includes the examination of all applicants for membership in any union or for employment in any shop (this has been true only since October 1, 1918, when the entire International Ladies' Garment Workers' Union with a membership of about 125,000 adopted a system of benefits for tuberculous members: previously only three local unions had sick-benefit funds requiring the entrance examination of new members), the examination of all those claiming sick benefits, the examination and reëxamination of all shop workers in need of medical advice, special heart and lung examination, a therapeutic clinic, an eye, ear, nose, and throat clinic, and a dental clinic.

Cost of Medical Clinic. — The medical clinic is largely supported by the $1.00 fee which is charged for each entrance examination of new union members. Monthly contributions from local unions in the past have given the other necessary financial support. The total cost of the work done in 1919 was $7006.87 for 12,493 patients and 14,334 treatments. The expense therefore averaged $.56 a patient and $.49 a treatment. Current individual records number approximately 28,000. Five physicians comprise the medical staff and are employed for periods of two hours each, from one to five periods a week, as needed, at the rate of $4.00 to $5.00 an hour to each physician. The medical staff is therefore elastic and can be made to corre-

spond with the seasonal fluctuations in the number seeking medical care.

Cost of Dental Clinic. — In the dental clinic, $3.00 is the approximate rate with extra charges of $ .75 for an X-ray film, $1.00 up for extraction with anæsthesia, and from $25.00 to $35.00 and up for rubber plates, gold lingual bars, or gold plates. One full-time dentist is employed at a salary of $600.00 a month, and several part-time dentists at a fee of $2.00 an hour for every hour engaged. The original equipment cost $3545. In 1919, 8379 patients received treatment and the clinic totaled an income of $12,542.68.

Cost of Eye, Ear, Nose, and Throat Clinic. — The eye, ear, nose, and throat clinic charges $1.00 per patient and employs two specialists by periods of from one to two hours, at the rate of $10.00 a period. So far, an average of five or ten patients are treated every period.

Doctors Paid on Time Basis. — Thus no physician has a financial interest in any of the clinics, all of them being paid on a time basis, and the dental, and eye, ear, nose, and throat clinics are entirely self-supporting. In only one, but important, respect are the clinics dependent on the Joint Board of Sanitary Control, and that is for the direction of Dr. Price, whose main work lies with the Division of Sanitation but who gives his supervision gratis to the medical department.

Health Education

Health Talks. — A series of health talks delivered to the employes of the National Lamp Works of the General Electric did more to advertise the medical department than anything else. A course of thirteen talks is delivered during the year to classes of not more than thirty employes, meeting twice a week. One or two employes are chosen from each department in order not to interrupt the work of the plant,

and 45 minutes of company time plus 15 minutes of the lunch hour are given to these health talks. Diagrams and health charts are freely used, and soon motion pictures are to be used for illustration purposes. The sealed question box is very popular, and the health talks themselves are even attended by the wives of some of the employes and by the managers themselves. By means of such conferences the reasons for the establishment of the medical department and for any compulsory health features, such as examinations, can be fully explained and friction due to misunderstanding avoided.

A list of the Lectures on Hygiene for one series reads in part as follows: [58]

1. Food — Varieties, tissue-building, heat, energy, fruit, overeating, auto-intoxication.

2. Air and Water — Why is water necessary? Amount per person per day; with meals; in beverages, tea, coffee, milk; water-borne diseases.

3. Exercise — More than making muscles hard; in relation to fatigue and accident; to occupation; during hours, effect of excessive exercise; home exercise; effect on heart, skin, digestive apparatus.

4. Hygiene of the Teeth, Mouth and Jaws — Diseases in the mouth, as cause of various constitutional diseases, rheumatism, tonsillitis, abscess of jaw.

5. Colds — Contagiousness; exposure; drafts and other modes of contracting; measures for avoiding, outdoor sleeping, night air; treatment; adenoids and tonsils.

6. Hygiene of the Home — Tuberculosis and other chronic diseases. Children; play; teeth; clothing; food, etc.

Further talks are given on Medical and Surgical Emergencies, Goiter, Alcohol and Tobacco, Venereal Diseases, and Industrial Hygiene.

Health Bulletins and Pamphlets. — Bulletins and pamphlets on health measures are frequently distributed by in-

dustrial concerns among their employes. The Eastman Kodak Company, the Colorado Fuel and Iron Company, the Brooklyn Rapid Transit Company, the Dennison Manufacturing Company and the Norton Company are among those who chose this as one method of health education, where necessary printing these pamphlets in different languages and illustrating them fully. The Remy Electric Company of Indiana is inaugurating an educational campaign, issuing a series of pamphlets for their employes on tuberculosis, gonorrhea, syphilis, rheumatism, appendicitis, pneumonia, constipation, infected tonsils, neglected teeth, eyestrain, blood-poisoning, personal uncleanliness, badly ventilated sleeping rooms, tobacco heart, all work and no play, and similar subjects.[59]

Educating the Foreigner. — The Colorado Fuel and Iron Company faces a difficult problem in health education on account of the forty-two languages spoken by their employes. Health bulletins printed in the different languages, general and personal hygiene instructions, health lectures, "movie" shows, and the visiting nurse all contribute to this company's efforts to secure the intelligent coöperation of the workers in preventing sickness.[40]

CHAPTER VIII

METHOD OF REMUNERATION

Importance of Wages. — To the average employe the money wages he receives are as important as the number of hours he works, the conditions under which he works, or even the kind of work he does, because wages determine the comfort of his leisure hours. Although wages may average only one third of the manufacturing expenses, they remain one of the important cost items for all employers. To the general public wages are of moment, because upon the employers' and employes' mutual satisfaction with them depends the continuity of production and industrial peace.

Wage Definition. — Wages are the compensation paid for service at a rate and at intervals agreed upon in advance between employer and employe. Labor has gradually succeeded in establishing the concept of the minimum wage as opposed to the maximum wage. The minimum wage principle is now recognized in law. Laws fixing minimum wages for women and minors in industry have been incorporated in state statutes. The War Labor Board in July, 1918, declared the "right of all workers to a living wage, insuring the subsistence of each worker and his family in health and reasonable comfort." This principle may gain general legal recognition in the near future.[1] Legislation in Europe and in the United States, fixing the intervals at which payment must be made, whether by the week, fortnight, or month, and also the medium of payment, whether in token, store-order, check, scrip, or cash, is similar in purport to minimum wage laws. The more frequent the

period of payment and the more easily exchangeable the medium of payment, the greater will be the value of the wage.

Scope of Wage Problem. — Even where wage legislation is most complete, there remain wide variations in the amount, medium, and time of payment in vogue for different lines of work in the same locality and for the same lines of work in different localities. It is not the purpose here to discuss the problem of the just division of profits between capital, management, and workmen, but rather to outline some of the more recent attempts to substitute for the arbitrary rule of custom the principles of efficiency and justice in grading wage rates according to occupation and skill.

Fixing the Basic Wage

Raising the Basic Wage Rate. — Since the market value of any specific job depended largely on three factors — custom, supply and demand — it followed that if the labor supply was large, the wage was low. This led inevitably to a condition in which wage payments were not based on costs of living, but on the ability to obtain labor at the employers' terms. Many believed that rather than face the dilemma of paying high wages and losing profits it was simpler to pay low wages and suffer labor loss from high turnover, since a supply of new material was constantly available. The modern tendency is to consider a high basic wage rate as a means of lowering production costs to the extent that it enables the workman to live properly, and that it increases the worker's health, efficiency and interest in his work. The old axiom "low wages for low costs" may eventually be reversed to read "high wages for low costs." The history of the Joseph and Feiss Company in the five years, 1910–1915, in which production was increased 42 per cent, costs decreased about 10 per cent, while hourly wages were raised 45 per cent and

weekly wages 37 per cent, is illuminating. It is such results as these which are attracting widespread attention to-day.[2]

Wages Based on the Cost of Living. — During the war a few companies tried scientifically to adjust wages to the rising cost of living. The Bankers Trust Company of New York, in 1917, appointed a committee of employes to investigate the rise in the cost of living. This committee concluded, with Bradstreet's price figures as a basis, that the cost of food and clothing was approximately 80 per cent higher in 1917 than in 1915. Sixty per cent of an employe's salary was assumed to be the portion allotted to food and clothing, and therefore each employe received an 80 per cent increase on 60 per cent of his annual salary. A similar plan was adopted for a short period by the Union and New Haven Trust Company, using the index number (for wholesale prices of foods) of the Times Annalist as a basis. It was assumed that half of the employe's budget was for food and that the other half remained invariable, so that with an advance of 1 per cent in the index number one half per cent should be added to salaries. This adjustment was made each month. The plan was abandoned because other banks in the vicinity failed to follow suit. In the Oneida Community each workman receives two envelopes, one containing regular wages and the other a percentage bonus calculated from Bradstreet's index. Each month for each 20 points' change in the index a 1 per cent advance or decline in wages is made, approximating about 60 per cent of the actual increase in living expenses. These examples have been followed by the Kelley-How Thomson Company of Duluth, Minn., the George Washington Company and the Printz-Biederman Company of Cleveland, the Index Visible, Inc., of New Haven, some flour mills in Seattle, and the American Association of Labor Legislation of New York.[3]

High Wages Alone Not the Solution. — Clearly, however, the payment of a higher basic wage rate does not in itself in-

crease efficiency in production. Managers of war industries in the past three years complained bitterly of the fact that they had to pay from $5.00 to $10.00 or more a day in order to secure workmen, while the very liberality of the wages led to a greatly increased rate of absenteeism, because many of the workers chose to remain idle one or two days a week on their surplus incomes. The payment of higher wages appreciably lowers production costs only when efficiency is made possible by enlisting the worker's interest in the work itself or in the success of the business.

Time and Piecework Wages

Failure of Time Wages to Secure Efficiency. — The three forces which impel men to work are love of the work itself, desire for future reward, and fear of the consequences of idleness. The first two are constructive reasons that should be fostered. The driving force in slave and feudal labor was usually fear, and this force has remained prominent even with the change to indentured labor and then to the wage system. In machine production, where the constant repetition of the same mechanical task makes the work distasteful and where only minimum wages are paid, fear of discharge and ensuing destitution still operate as an important effort-producing factor. A slow rate of production and time-killing are the frequent consequences.

"Soldiering" with Piecework Wages. — To provide stimulus of a more positive character, employers, from time to time, have changed their methods of wage payment, and instead of buying a man's time have bought his product, hoping to increase output by rewarding the worker for each additional unit of effort. The piecework system theoretically rewards according to output and automatically eliminates time-killing. Curiously enough it has at times actually resulted in a new kind of time-killing. In changing from time

wages to piecework pay the employer, in order to make it attractive to his men, must offer a rate of pay per piece which promises a reward greater than the time wage in the same working period. But when the change is made output may leap ahead and the employer, startled by the wages he pays some of his men, frequently yields to the temptation to cut rates in the hope of retaining the new-found speed of work and yet returning to the wage level of the community. But such cuts in rates mean to the employe more work for less pay and so, when he is taught that cut rates are the sequence of piecework, he learns the trick of working slowly while the piecework rates are being set and continues it afterwards to forestall a later cut. Public opinion in the plant does not tolerate the fast worker, and production is retarded. In England the "ca' canny" policy of the trade unions before the war strictly limited the output of every member, and makes efficient production impossible now under the piecework system.

The failure of piecework and time wages to secure the worker's full interest in output has led to newer systems of profit-sharing, premium rates and bonuses for fast work — all variants of the time and piecework methods of payment, and combining the two. None of them *per se* solves the problem of efficiency, but a brief review of the various methods which have been used is enlightening.

Premium or Bonus Method of Payment

"Soldiering" Prevented by Premium and Bonus Systems. — The premium and bonus systems of Halsey, Rowan, Taylor, Gantt, and Emerson are newer methods by which extra effort or superior skill is rewarded in industry. They are all devices to overcome the "soldiering" which may accompany the introduction of piecework. Under the premium or bonus method of payment the employer can promise permanent rates and still make it comparatively

difficult for the employe to double or triple his wages after the rates are set. By Halsey's premium system, for instance, the payment of an hourly rate is guaranteed, but a task is set, and if this is exceeded the worker receives a reward which is the equivalent of one third or one half of the regular day rate. Thus any excess profits are divided between employer and employe, and no matter how slow a pace the workers set when the task is assigned the employer gets the major portion of the subsequent increased output.

The Rowan System. — Even with the Halsey system, however, it is possible for a worker to increase his output ten-fold and thereby triple his wages, so Rowan has gone further and made it impossible for the worker to double his pay, however high his speed. By the Rowan system, after the task is set, an increase in output is rewarded by a premium added to the day rate which bears to the day rate the same proportion that the time saved bears to the time allotted, and since this proportion is always less than one, the premium can never equal the day rate.[4] The apparent unfairness of the scheme is excused on the basis that a man's pay is higher under the Rowan system than under the Halsey system until he triples his output.

Objections to Premium Systems. — The manifest objections to both systems are that the worker receives only a fraction of the value of the product, the quantity of which is increased by his exertions alone. The management, on the contrary, not only saves the larger portion of the extra wage payment, but in addition has increased the total output without a corresponding increase in overhead charges. The value of the systems lies in their introduction of the principle that a basic time rate should be assured and piecework rates be paid only for the extra product of superior efficiency. Moreover, their introduction is comparatively simple. Neither is, however, in wide use in the United States at the present time.

The Differential Rate in Scientific Management. — "Scientific management" has introduced no fundamentally different system of remuneration. The Taylor differential rate by which the worker receives a low rate, of perhaps 25 cents an hour, until he reaches 100 per cent efficiency, and then 35 cents, etc., is another and simpler premium system which involves punishment for inefficiency as well as reward for efficiency. The Gantt task and bonus system guarantees the worker a full day rate and a certain per cent premium for attaining the standard task, with full pay and bonus in proportion to any time saved over and above that task. Emerson felt that the reward element should reach those who cannot attain 100 per cent efficiency and his graded bonus begins with those who reach 66.6 per cent efficiency and after 100 per cent efficiency is attained, the bonus remains 20 per cent on the time worker, plus the hourly rate for all the time saved. This extra payment is more generous than under any of the other systems. As Emerson himself has said, "An employer can well afford a large bonus; he can well allow the total wages saved as bonus to the man, and benefit himself by the increased efficiency of the plant and the greatly reduced overhead." [5]

The True Value of Scientific Management. — The importance of scientific management does not lie in any new wage scale, but in the effort which it represents *to improve methods of work* — by standardizing tools and equipment; by routing and scheduling the work to prevent idle men or idle machines; by eliminating waste motion and instructing the worker in efficient methods; by selecting workers suited to the specific job; by the reorganization of the workshop, careful supervision and functional management; and lastly, by the method of time study which separates each process into its motion elements and finds the standard time in which each motion or group of motions should be completed in order to maintain the greatest efficiency.[6] It is the time

study which scientific managers consider their special contribution to the settlement of the wage problem. By it they claim to determine scientifically the exact amount of work which an average man can do in a given time with full consideration of his health and continuing effectiveness. With this knowledge the fixing of wage rates becomes a comparatively simple matter and not guess work. When the claim, however, is made that wages are "scientific," it is an overstatement. It really deals only with the differential wage. The more fundamental consideration — the basic wage for a given operation at a given time — is not affected by studies made. But the setting of tasks solely on the basis of previous averages has been demonstrated to be crude and the scientific management movement is to be credited with a valuable contribution by its fight against it.

In considering the value of scientific management and the results which have been obtained through its use, it should always be remembered that there is a difference between so-called machine tasks which are essentially physical and those which require efforts of memory, judgment, etc. A serious weakness of scientific management lies in the fact that it frequently makes a machine out of the workman. The fundamental principles of scientific management, such as motion study, apply essentially to tasks which approximate machine tasks and in which in all likelihood the human agent has been or will be replaced by a machine. The more progressive of the exponents of these methods are seriously trying to solve the problem that specialization tends to loss of interest and initiative and also trying to adapt them to other than mechanical tasks. The distinctly hopeful element is that the more scientific management analyzes, standardizes and reduces the motion necessary to any given task, the greater is the likelihood that invention will make this task one for a machine rather than

for the human being. To date, scientific management has accomplished comparatively little in operations in which machines or machine-like movements are not important factors and in which, as stated above, intelligence, judgment, education, training, and knowledge are required and in which not only quantity but quality production are dependent on acts of memory and initiative. Any scheme of wage payment, therefore, must take into consideration these differences in native ability if it is to be generally applicable.

Salaried and Office Workers

In work in which efficiency is not easily measured by output, remuneration takes the form of a salary, paid periodically by week, month, or quarter, and graded according to prevailing rates, to the quality of service rendered, and to the length of service. To stimulate the worker to make his best effort employers have recourse to either periodic or irregular increases in salary. The difficulty with the periodic increase from the productive standpoint is that it appears to the employe as part of the routine business and not a reward for individual efficiency. When a clerk receives a raise unexpectedly the encouragement is great. The most satisfactory method is to reward individually but systematically by following up the records of all clerks, and consulting the office manager within two or three months after each change of position or raise, upon the advisability of a further increase in salary. The various means of rewarding efficiency by bonuses and promotions which are in addition to regular wages and serve to stimulate the worker to fresh interest and exertion, are as applicable to salaried workers as to pieceworkers. It is probable that an increasing number of positions for which salary is now paid will become sufficiently standardized to allow payment by actual output.

Work Stimuli Other than Regular Wages

Money Reward a Substitute for Interest in Work. — Many employers assume that efficient work can be secured only by sufficient threats or reward. There is no doubt that reward is a more effective stimulus to good work than fear of punishment, but reward is also a less effective stimulus than interest. One scientific manager says: "We have been able to obtain splendid results without resorting to a system of immediate money rewards," and considers it wise to pay a liberal wage so that the workers "can forget this economic pressure and do good work because of the joy that comes from the consciousness of work well done." [6] But most processes in machine production preclude the worker's joy in his work, and we must develop other means of compensating him for the monotony of the actual operation in which he is engaged and of obtaining efficient production through increased interest.

Efficiency Affected by Attendance, Accidents, and Co-operation. — Effective production depends not only on the quality and quantity of product which an employe can turn out in a given time but on total output per employe during a long period. This continuous output is affected by regularity of attendance, carefulness in avoiding accidents, and coöperation between the management and employes.

Futility of Fines. — In the past, fines for spoiled work, bad time-keeping and misconduct have been customary in industry but usually ineffective. General experience has shown that they are not reformative and that when the fine is paid the worker is able to dismiss the error from his mind entirely. The Cadbury Works in England abolished fines in 1898 and substituted, even against the wishes of the employes, a system of individual records with suspension or dismissal as the ultimate result of a bad record. From 1899 to 1910, with an increase in the total force of 50 per

cent, in the women's departments the percentage of offenders recorded decreased from 11.37 per cent to 2.22 per cent, while bad conduct has been practically eliminated.[7] The experience of the Metropolitan Life Insurance Company corroborates the uselessness of fines in its tardiness records for the three years, 1914–1916, inclusive. In 1914, when a system of lateness fines was in operation, the average tardiness per clerk per month was .682, and in 1916, when these fines had been abolished and a banner competition substituted, the average tardiness was .472.[8]

Attendance Bonus. — The trend to-day is away from punishments and towards rewards in the shape of bonuses for good attendance, conduct, and quality of work. A combined attendance and good workmanship bonus is paid by the Fayette R. Plumb Company, where every workman with a perfect weekly time card receives a bonus of 5 per cent of his weekly pay. Time lost when sent home by the foreman or due to an accident occurring in the factory is excused. Another bonus of 5 per cent is paid for maintaining a good standard of workmanship, and this is withdrawn only in extreme cases. The combined bonus is credited from the day that the workman starts work, but is not paid until he has been with the company three months, when he receives the accumulated amount. If an employe loses time for three successive weeks without excuse he forfeits his rights to both bonuses — until he shows a perfect time-card for one week. If this delinquency should continue for long his dismissal is considered.[9] It has been found advisable in many instances to pay all forms of bonuses in separate envelopes in order that the distinction between salary and special bonus may not come to be considered as regular wages.

Accident Bonus. — Money rewards have been found valuable in keeping down accidents in the two plants of the Semet-Solvay Company of Alabama. The premium sys-

tem of wage payment induced the men to increase speed with a consequent increased accident rate. To offset the effect of this, a bonus of 10 per cent on the worker's wages was offered if he had no time-losing accident during the month. In six months' time the number of lost hours, which had run from one hundred to four hundred per month, was reduced to ninety per month in one plant, while in the other no accidents were reported at the dressing station in two months.[10]

Service Bonus. — The John B. Stetson Company finds that a bonus for yearly service is an important factor in stabilizing their force. In 1897 only 35 per cent of the hat sizers worked steadily. A bonus of 5 per cent was offered if a worker remained in the company's employ from Christmas to Christmas and as a result 50 per cent of the men worked for the entire year. This bonus was progressively raised from 5 per cent to 10, 15, and finally 20 per cent and the number of steady workers increased proportionately each time, rising from 50 per cent to 67, to 88, and, since 1903, when the bonus was 20 per cent, to 100 per cent. The bonus period ends on the 31st of October, but the bonus is not paid until Christmas and if the employe leaves before that time he forfeits it.[11]

Quality of Work Bonus or Point System. — The managers of the Spanish River Pulp and Paper Mills assert that a bonus paid on increased productivity is based on bad psychology in that it emphasizes the unattractiveness of the work itself and stimulates quantitative rather than qualitative production. Ten years' experience with a "quality progress record," by which each worker is rated publicly and at regular intervals by the quality of his work, has resulted in greatly lowering the cost of production for this company.[12]

A conspicuous example of the bonus-for-quality-of-work or Point System is that of the Willys-Overland Company,

where everything except output is considered in awarding bonuses to their file clerks. Points are given as follows:

For perfect appearance	. . . . .	10	points
" " attendance	. . . . .	10	"
" " punctuality	. . . . .	10	"
" " accuracy	. . . . .	50	"
" " promptness in filing	. . . . .	10	"
" " promptness in filling requisitions	. . . .	10	"

A bonus of $1.00 is paid monthly for every point which a record averages above 90. The effect of this bonus was to raise the efficiency of the filing clerks from 65 per cent in January, 1917, to 90 per cent in December, 1917.[13]

The Stimulus of Hope of Promotion. — One of the most stimulating efficiency factors is the worker's hope of promotion to more difficult and interesting work. It is this phase of the problem of wage payment which has been emphasized by the Westinghouse Electric and Manufacturing Company of Pittsburgh. In a plant employing 20,000 operatives, all the positions were classified and a list of over 400 distinct occupations was reduced to one of 170 standard occupations, with the rates paid in each and the number of men in each, tabulated for every department. The positions were then grouped in Classes A, B, C, D, and E; Class A representing the highest grade of production or tool work, etc.; Class B, the accurate or heavy work requiring less knowledge or skill, etc.; and so on down the line, with Class E representing the unskilled work, requiring little or no training. The rates of pay in each class are arranged to allow variations for length of service and efficiency. When an employe reaches the maximum for a given grade, promotion to an occupation of higher value is facilitated.[14]

Systematic promotions of this sort stimulate the workers to efficient service, and uniform rates of pay eliminate much discontent and friction. A money reward thus combined

with a realizable hope of promotion is a much greater stimulus to efficiency than the money reward alone. It is noteworthy in this respect that scientific management greatly increases the proportion of executives and foremen in the working force and thereby the chance for promotion.

Executives' Savings Bonus. — Various attempts have been made to award a bonus to foremen and heads of departments for increased efficiency within their own departments. In the executives' profit-sharing schemes the division in savings is ordinarily made indiscriminately to all the executives and not according to their individual contributions. An industrial engineer in the employ of the Hupp Motor Car Corporation outlines a better system of paying bonuses for increased efficiency to foremen in an automobile plant that is capable of ready adaptation to different industries. The bonus is paid monthly on a basis of savings in departmental expenses. The items which are included in the running expenses of the department and are, therefore, subject to the control of the foremen, are: wages and salaries to employes, labor turnover, overtime work, and departmental supplies. The bonus is paid on a ratio of these expenses to the total net sales for the month. By an analysis of previous expenses the 100 per cent efficiency mark can be estimated. The bonus begins at an efficiency of 80 per cent and equals 20 per cent of the foreman's monthly wage at 100 per cent efficiency.[15]

Suggestion Systems and Bonuses. — A common and popular form of bonus is that paid for suggestions from employes. Encouraging suggestions as to possible improvements in methods of work are one way of enlisting the worker's interest in his job, and a method appreciated by such plants as the National Cash Register Company, the Eastman Kodak Company and the Commonwealth Edison Company, among a great many others. One of the most complete systems is that of the Kodak Park Works,

where about 3000 men and 1500 women are employed.[16] Blanks and mail boxes are placed at convenient points about the plant. The employe fills out his blank and detaches and keeps a numbered stub on which he copies his suggestion for future reference. If a drawing is necessary to illustrate this idea he may have the assistance of one of the company's draftsmen. The slips are collected at intervals during the day and taken to the manager's office, where they are immediately stamped with the date of their receipt, so that there may be no difficulty in establishing the priority of similar suggestions. Their receipt is acknowledged by a special blank sent to the employe. Each suggestion is passed upon by the superintendent of the department concerned, and if accepted and indorsed by the manager the employe is so notified. At the end of each month a committee made up of the department superintendents awards prizes. In order sufficiently to advertise the system, a descriptive list of all the accepted suggestions is published in the plant bulletin. The awards used to be made every three months, but their more frequent payment has proved a greater stimulus.

The suggestions are divided into five groups, and a minimum award for each group assigned, as follows: (1) improvements in products, $5.00; (2) reductions in costs, $4.00; (3) improvements in manufacturing methods, $3.00; (4) reduction in accident and fire hazards, $2.00; (5) conveniences, $1.00. As much as $1000 has been awarded an employe for an especially good idea.

The foremen are not excluded from the competition. Some of the foremen compete in the regular way. Other non-participating foremen's prizes are also awarded to men who have from six to twenty-five employes under them, and those having more than twenty-five under them. Every four months two prizes, the first being $25.00 and the second $10.00, are awarded to the foremen having the greatest

number of adopted suggestions coming from the men under them, and the same prizes are awarded to the foremen from whose men have come those of the greatest value. This encourages coöperation between the foremen and the men under them and increases the value of the suggestions. The average number of adopted suggestions in this plant amounts to about 40 or 45 per cent of all those handed in. In 1916 this number was 2300.

Suggestion Blanks. — In the camera works of the Eastman Kodak Company the system is improved upon in some details. The chairman of the suggestions committee is head of five special committees made up of department heads, each of whom looks after one of the groups of suggestions enumerated above. The blank is provided with a stub on which the employe writes his name, which does not appear on the blank itself. The secretary of the general committee detaches the stub with the name of the employe before submitting the suggestion to the right committee, and in this way all danger of favoritism in adopting and awarding prizes is eliminated.

Good Conduct Bonus. — A unique form of bonus is the "profit-sharing" scheme of the Ford Motor Company, which is actually a bonus-for-good-conduct system. Under the original rates a minimum wage of 34 cents an hour was paid, and in addition a minimum of 28½ cents an hour is given as a share of "profits" to a man who is,

(1) married and living with and taking good care of his family, or

(2) single and over 22 years of age and of proven thrifty habits, or

(3) under 22 years of age and the sole support of some blood relative,

and to all women who are the sole support of some blood relative. In 1916, 90 per cent of the force were receiving the extra remuneration of 28½ cents an hour. But this

scheme is of doubtful social value. It necessitates a system of investigation. Whatever the results claimed in regard to conduct, it may be questioned whether it would not have been seriously resented by the employes had the remuneration not been far in excess of any contemporary wage outside.[17]

Profit-sharing

Early Profit-sharing. — One of the first proposed solutions of the wage problem was profit-sharing. As early as 1811 the Imprimerie Nationale of Paris distributed bonuses of varying percentages at intervals among its employes. In 1842 the Maison Leclaire adopted profit-sharing, and in its final form the system divided all profits over and above a 5 per cent interest on capital and the small salaries paid to the two managing partners, into four parts, one for the managing partners themselves, one for the Mutual Aid Society, and two for the employes as dividends on wages.[18] This plan is still successfully in operation in the same firm, which has now the name of Redouly et Cie. In the eighties the profit-sharing movement became very general in France, Germany, England, and the United States. In 1889 thirty-four establishments in this country had adopted some form of profit-sharing.[19] Its advocates claimed that by sharing profits the employes realized they were working for themselves and were therefore vitally interested in the industry's efficiency.

Its Defects. — The chief difficulty with the pioneer profit-sharing scheme lay, however, in the fact that the percentage of profits shared with the employes, even if stated in advance, could not usually be guaranteed, while its payment was too long deferred to serve as an active stimulus from day to day. Moreover, the employes gained or lost with the fluctuating efficiency of the managerial staff, over which they had no control. Ninety-four per cent of all business enter-

prises fail, and this fact renders profit-sharing of dubious value to the rank and file of employes, even if, as is usually the case, employes are not subject to loss-sharing, as well as profit-sharing.

Gain Sharing. — The "gain sharing" proposed by Mr. Henry R. Towne in 1889, at a meeting of the American Society of Mechanical Engineers, attempted to remedy these defects by separating the costs over which the employes had some control from the other costs of the plant. The savings in these costs within a given period were divided among them.[4] But beyond the brief period of a few months or years agreed upon, the employe had no assurance of the permanence of the scheme, and the same undesirable element of deferment in reward remained an obstacle to its success.

Possible Application of Profit-sharing. — For many years profit-sharing steadily lost popularity and was superseded by newer and more tangible methods of rewarding efficiency. Within the last few years, however, the movement has claimed new adherents, and in response to the revived interest in the subject five prominent business and professional men [20] — the Messrs. Burritt, Dennison, Gay, Heilman, and Kendall — have published jointly a valuable appraisal of "Profit-sharing."

In the first place, the authors disclaim profit-sharing as a panacea for labor troubles or a substitute for good management. Profit-sharing is only of value when it is acceptable and attractive to the employes, which means that it cannot be a substitute for a fair regular wage, nor should it interfere with the collective bargain and strike, or with the employe's ability to change employment without financial loss. Further, its effectiveness varies inversely with the size of the group to which it applies and directly with the rank of the workers, and is useful only when individual output cannot be measured. In large industries, where

work is specialized and easily standardized, other methods of rewarding superior efficiency are easy to apply and more fruitful in results. For that reason profit-sharing is at best only meant for a small proportion of all industrial workers. When individual efficiency is difficult to rate, as with a managing force, in gang work, or in certain industries, such as the gas industry, where the volume of gas produced alone registers the aggregate efficiency of all the various workers, profit-sharing can be a stimulating and effective way of obtaining the workers' coöperation. This is also true where close supervision of the worker is impossible, as with traveling salesmen and, in some cases, with delivery men. But the group to which it applies must be small enough for each member to realize the importance of his own efforts in augmenting profits.

Combined Profit-sharing and Savings Scheme. — A voluntary combined profit-sharing and savings scheme introduced by Sears Roebuck and Company in 1916 received indorsement by the Typographical Union men and the pressmen of the company in 1918,[21] and has attracted wide attention. This "Employes' Savings and Profit-sharing Pension Fund" is open to every employe after three years of service, and in the first eighteen months after its introduction enlisted 91 per cent of the eligible employes. During that time, on a basis of 5 per cent of their salaries, no one being allowed to deposit more than $150 per annum, the deposits equaled $439,500. In the same period the company contributed $1,318,712.97, its share being based on 5 per cent of its profits. The fund is invested in company stock and shares are placed to the credit of participating employes in proportion to the amounts deposited by each during the year. Membership in the Fund is voluntary, and at any time the employe may withdraw his total cash deposits with 5 per cent interest compounded semi-annually, while after ten years of service he may withdraw

all money and securities credited to his account, including the company's contributions. The same privilege is granted to women, after five years of service, who are leaving to be married.

Shares for Group Work. — An interesting variation of profit-sharing applied to small groups of operatives is in force in the Cadbury Works in England for groups or gang work where piecework rates cannot be applied. Shares in the total earnings of each group are allotted to the individual girls according to age and experience. Schedules are arranged giving the number of shares to which a girl is entitled for each age year from 13 to 21, and for each service year from 1 to 8, the increase from year to year in both cases being the same. Thus in the matter of pay one year's service is the equivalent of fourteen years of age, three years of service the equivalent of sixteen years of age, etc.[7] Thus a girl who is fifteen, with one year's service to her credit, will earn the same as a new girl, sixteen years of age. Neither age nor experience is a measure of efficiency, but such a share system is probably approximately just.

Time and Medium of Paying Off

Desirable Frequency of Payment. — The employer has usually small leeway in the matter of the frequency of wage payment. Two thirds of the States in this country have laws confining the pay period to the week, fortnight, or month and most of these bring it within the semi-monthly period. In the absence of law, custom has established the weekly pay-day for the rank and file of employes in the industrial world. The frequent payment is, of course, to the advantage of the employe in that it obviates the expense of credit, and although it means the additional cost to the employer of extra pay-roll clerks, it is usually the most satisfactory method. Beyond the stipulation as to periods of

payment, several States require that wages be paid within work hours in order to save the time of the employe. The far-seeing employer will prefer to devise some method of facilitating the distribution of wages within the work hours rather than tolerate the friction which accompanies the "after hours" payment.

Legal Tender the Desirable Medium. — According to the common law, unless expressly contracted otherwise, legal tender is the required medium and contracts to the contrary are becoming obsolete. The store order, however, still exists, particularly where the monthly payment is made. This has been severely and justly criticized because it restricts the wage earner's liberty and often places him at the mercy of the unscrupulous employer who can reduce wages by charging comparatively high prices for supplies bought on credit. Some States prohibit the company store entirely, some regulate the prices and quality of goods sold in such stores, and others legislate against the use of coercion in regard to trading with company stores. Abuses seem inevitable wherever the employer pays on such a credit basis. The situation in the "one industry town" is frequently difficult because facilities for retail buying must be provided and the corporation is sometimes the only agency. Here, however, a coöperative store and the cash or check medium of payment may solve the problem.

The Check *vs.* the Cash. — It is easy to dispose of the company store and credit or "truck" system of payment on the ground of justice, but less easy to determine the relative value of the check or cash payment. Employers prefer the check because it provides a simple receipt system without the difficulty of handling large funds. The employe objects to the check because it involves double labor in procuring his wages. Moreover, the wage earner rarely has a bank account and is apt to cash his check at a near-by store and suffer the discount that is fre-

quently charged rather than go further afield in search of a bank.

The Self-identifying Check. — New York City has found a new method of check payment for city employes which seems to have most of the advantages of cash payment and few of its drawbacks.[22] It consists in the use of the self-identifying checks, similar to the express company check used by travelers. The employe must sign his name in the left-hand corner of the check in a space provided, in the presence of the pay-roll clerk. On cashing it at a store or bank he again indorses the check. Two hundred banks in New York City agreed to recognize these checks at par value and consequently even the small stores accept these readily negotiable checks without discount.

The cash payment remains the more popular one with all employes and the need is to find the most rapid and safe way of distributing the cash. Usually the employe goes to the pay office, receives his pay envelope and signs a receipt. This takes considerable time. Many larger concerns instead distribute the pay envelopes to their employes at their work. The pay envelope of the Metropolitan Life Insurance Company is unique. The employe signs in a space provided on the envelope face and stamped with a date. One envelope is used for twelve weeks so that the identification of signatures is easy, the bother of innumerable pay slips is done away with, and the face of the envelope alone is preserved as a record of wages received.

Deferred Payment. — The problem of computing pay rolls and the importance to the employment department of obtaining interviews with those who are leaving make it frequently necessary that the pay week and the pay day should not coincide, but that the pay day be from three days to a week later than the pay week. An example of such a plan is: a workman who begins work on Tuesday may receive his pay a week from the following Thursday.

If he should quit without notice on the Friday after, he forfeits his pay from Monday to Thursday unless he returns to the pay office on some pay day. If a close record of absentees is kept in the pay office and the pay envelopes of absent employes are checked, it is readily possible to obtain an interview with the employe who has quit and ascertain the cause of his leaving.

With the Westinghouse Electric and Manufacturing Company an employe may receive his full pay on the day he quits if he gives three days' notice and this also provides the employment department with the opportunity for an interview.[23]

It may be feasible to pay the worker in full the day he quits, even without notice, provided he is sent to the employment department for an interview and must present a release slip from that department before his full pay is given him. This function of the pay-roll department — to act as a connecting link between the employment manager and the discharged or quitting employe — is absolutely essential to the success of any efforts made to stabilize the force. This may make it possible, too, to arrange for an advance or loan in instances where the employe is leaving solely in order to obtain immediate funds.

Coöperation of Employers and Employes

Organized Labor and Wages: Scientific Management and Profit-sharing. — It is the question of wages and the division of profit which has brought the labor movement into conscious existence and no employer can hope now to solve the problems of labor remuneration without careful consideration of the worker's point of view. Even in the period between 1881 and 1900, when the trade unions were struggling for recognition, 55 per cent of all strikes and lockouts were caused by a dispute over wages and over half

of these strikes were successful.[24] The National Industrial Conference Board classified strikes occurring from April to October, 1917, according to demands, and 76.5 per cent of them all were for a raise in wages, and 75.9 per cent of these were wholly or partially successful.[25]

It is not only the basic wage rate which concerns the workers. There has been opposition on the part of organized labor to the introduction of scientific management and to profit-sharing. Workers and labor leaders almost uniformly object to scientific management on the basis that it means a greater degree of specialization than at present, with greater strain on the worker, and gives the employer more complete power over the workers than before, because it deprives the worker of all general knowledge of the trade, a knowledge which in the past has been the capital of the skilled craftsman. The objection to most profit-sharing schemes made by labor is that it means the deferred and uncertain payment of wages due.

Workshop Committee the Possible Solution. — The so-called "workshop committee" movement, in its attempt to bring employer and employe together in amicable discussion of the terms of employment at regular intervals, appears to many manufacturers the solution of industrial unrest. Coöperation of this sort has permitted the successful introduction of both scientific management and profit-sharing in one industry.

Scientific Management Accepted by Shop Committee. — The Packard Piano Company found its 265 employes firmly opposed to the introduction of scientific management until a series of weekly and occasionally bi-weekly shop conferences was started in 1914. Immediately scientific management was accepted because the workers were given the choice of deciding for or against it after hearing a full discussion of its value. If the principle of collective agreement is accepted,

there would seem to be nothing to hinder the application of scientific methods in determining the standard rate of production and the particular point of efficiency which deserves additional reward. In any plan the basic wage on which the differential for an additional output is reckoned is the fundamental consideration and adjustable by discussion and compromise. But it will usually be found that the workers' interest is in the amount of wages and not in the method of its determination. When the danger of "soldiering" on the job during task-setting is removed, there may be, however, little need to resort to any elaborate premium system to reduce the workers' unit wages. Perhaps a guaranteed wage with all output paid for at the same rates will be the simplest method of remuneration for work which can be standardized.

Labor's Attitude to Profit-sharing. — Obviously, profit-sharing does not affect the fundamental economic organization, as its advocates have so often claimed. Companies adopt profit-sharing to increase production in the belief that the allotment of proportionate dividends to labor most successfully accomplishes this. Occasionally a company, such as the Maison Leclaire, places a limit on the dividends which may be declared on stock, but usually profit-sharing is purely an efficiency measure with definite limitations and those who favor it should not deceive themselves in thinking that it alone is a silencer of labor agitators. But labor in turn need not maintain its suspicious attitude towards it where the underlying principles in practice are those outlined by Mr. Dennison and his collaborators, namely: that profit-sharing must not limit the participators' freedom, that the system must be clearly understood in advance by all concerned, that the distribution should be reasonably frequent, and that it should not be accompanied by low wages and long hours.

Management-sharing the Solution. — One suggestion

made by Mr. Dennison and his colleagues is that profit-sharing should be accompanied by *management-sharing*. The cases of the Jacob Dold Packing Company of Buffalo and the Wayne Knitting Mills of Fort Wayne are cited. In these companies the executives and heads of departments who share in the profits, form advisory councils in business management and in the administration of the profit-sharing. Opening all problems of management to the discussion and decision of the entire working force in weekly shop conferences in the Packard Piano Company has led to the adoption of a profit-sharing scheme which divides the savings in production costs every two weeks equally between the company and the employes, the latter being paid in dividends on wages. At the end of the first month the cost of production was cut by 11 per cent, which meant a dividend of $5\frac{1}{2}$ per cent to the company and to the men both. Later, and with the consent of the working force, hours were reduced from ten to eight, for an experimental period of sixty days, and an increased efficiency in that period resulted in a saving of 16 per cent in costs, and a dividend on wages of 8 per cent was paid the employes. In this case the sharing of management and profits has resulted in a great economy in production as well as in time and effort.[26]

CHAPTER IX

REFRESHMENT AND RECREATION

REST rooms and cafeterias are integral parts of a modern business organization. They have come as industry has realized the need of eliminating fatigue and has appreciated the close relations between maximum production, good health of employes and attractive surroundings for workers. Just as safety devices, no matter how costly, are considered indispensable from the standpoint of production, so is equipment of this kind looked upon as a necessity cost.

Recreational activities carried on or fostered by an industry during leisure hours are essentially different. These, ranging from a baseball team or annual picnic to a fully expanded program centering around a company country club have been developed to increase morale and family feeling in industry. Although many experiments in this field have been reasonably successful, there is an increasing skepticism regarding their value to the corporation and their appreciation by the employes. Many employers feel that the leisure hours of the employes should be as far removed from the factory atmosphere as possible. George Rannev, Secretary of the International Harvester Association, has expressed this point of view. "It is at least questionable whether the employer has any right to follow the employe home from the factory and intrude on his domestic and social life, nor should there be any need in a city of size and decent government. If a plant is in a small town recreational features might be desirable." [1] The problem is, however, more than geographical. The spirit behind these undertakings and

their management is of equal importance. The social activities centering around the industry should be developed by the team work of the employes with the view of educating the workers themselves ultimately to carry on the activities.

Lunch Rooms and Cafeterias

Need for Lunch Rooms. — The "dinner pail" with its cold, unappetizing lunch, eaten at a machine, or a window sill, on the stairway, or on the curbstone, is passing into history. The size of our cities, the American custom of a comparatively short noon-hour break which makes it difficult, if not impossible, for the worker to return home for his midday meal, and the appreciation by employers of the connection between good food and efficiency are responsible for the development of lunch rooms and cafeterias. The fact that the British Committee found at least 25 per cent of the munitions workers undernourished [2] indicated a distinct need for having cheap, nourishing food available for all employes. A large Bristol firm found, after providing their employes with food at cost price, that a gradual reduction in sickness rate followed, until eventually it dropped to one half what it had been previously.[3]

Different Types of Lunch Rooms. — The arrangements made for providing hot lunches for operatives in the plant are many and varied — from the gas jet in a dark corner of the workshop over which an improvised iron ring holds the coffee pot while upturned boxes serve as tables and chairs, to the chintz decorated dining-room with small tables and service. The type and amount of accommodation to be provided depend on the distance of the factory from the homes of the workers, the kind of workers served, and the number and quality of neighboring restaurants. An eating-room separated from the workroom for the workers bringing their lunches, with table room, chairs, and warming plates,

may be considered a minimum and is necessary whether there is provision for serving food or not.

Cafeteria. — The most popular form of employes' restaurant is the self-service cafeteria. Variety of food is combined with cheapness by reducing the amount of service needed. The speed with which food can be served is another advantage. Confusion can be avoided by providing ample room and a sufficient number of trained employes at the counter.

Construction. — The lack of adequate restaurant facilities to deal with the larger number of workers employed in the war industries led to the extensive surveys on the subject undertaken by the British Health of Munitions Workers Committee and the United States Emergency Fleet Corporation. The latter report gives all the technical details of proper cafeteria construction and equipment, including a plan for a separate restaurant building where needed.

Plan. — The number of entrances to a cafeteria is determined by the number of people which it is to accommodate. The "one-way" plan has a single entrance and a single food counter, while the "two-way" cafeteria is designed with a double entrance, each side containing the same array of food. The former is all that is required in a small plant, while the latter is needed when large groups of workers are handled. Many firms provide separate rooms for their men and women employes, and some have special dining-rooms for the executives and office workers.

The main points in construction are that the kitchen should be centrally located and that the whole unit should have good lighting and ventilation. Railings and barriers are required in front of all counters to maintain order in the lines, and the counters themselves should be built of sufficient size to accommodate the food without crowding and be guarded to prevent it from being handled. Eight to ten square feet per person is the amount of space recommended by both the British Health of Munitions Workers Committee and

by the New Jersey Department of Labor. Hard maple tables covered with linoleum, white tile, or a composition glass have been found satisfactory. Chairs seem preferable to stools.[4]

Kitchen Equipment. — The more essential restaurant machinery includes one ten-foot range, one dishwashing machine, one potato-peeling machine, one bread-cutting machine, and one meat-cutting machine.[5] This equipment cares for 760 patrons a day in one plant. The initial expense of labor-saving devices is large, though their installation in the end is economical. The National Lamp Works of the General Electric Company gives a list of standard cafeteria utensils to accommodate 240 employes. The list of cafeteria equipment includes: [6]

1 ten-gallon spray coffee urn
1 twenty-gallon aluminum stock pot with cover
1 twenty-five-gallon aluminum stock pot with cover
1 twenty-gallon inside boiler fitted to twenty-five-gallon stock pot handles
1 fifteen-quart stock pot with cover
1 standard scale scoop
1 draining mat 4′×2′6″

The equipment necessary to feed 1000 men a day in one of the large American shipyards is given as follows: [4]

1 refrigerator	600 pie plates
1 nine-foot steam table	600 knives
2 coffee urns	600 forks
300 trays	600 teaspoons
600 soup bowls	600 soup spoons
600 dinner plates	1 modern steam dishwasher and drying apparatus
500 water glasses	

Cost. — The prices will naturally vary with the community. They will depend on the items of cost that are to be included, the variety of foods prepared and the number of persons served. Many firms bear the cost of rent, heat, and light as well as a certain amount of supervisory service. In

this case the price of the food covers approximately only its cost and preparation. In other cases the food prices are raised to include all the costs of maintaining the restaurant. A typical cafeteria menu for March, 1918, provided:

Vegetable soup	$.05
Tomato soup	.05
Smoked pork tenderloin	.15
Roast veal	.18
Ham and beans	.15
Mashed potatoes	.05
Pies, cakes	.05
Tea, coffee, milk	.05
French roast	.15

With a daily average of 760 patrons from among the 2400 hands, the total monthly running cost is between $1200 and $1300 and the monthly income $1400. The initial cost of quarters and equipment was about $4000. The staff, consisting of one chef, one assistant, one dishwasher, one porter, three counter girls and two extra girls, served 400 lunches in five minutes.[5]

The self-supporting cafeteria at Kops Brothers, managed by the Employers' Mutual Service Association, provided the following bill of fare in 1919:[7]

Coffee, tea or cocoa — a cup	$.03	Corned beef hash	$.08
Hot or cold milk — a glass	.04	Carrots and peas	.05
Wheat or rye bread — 1 slice	.01	Baked apples	.06
Rye bread — 4 slices	.03	Beef stew	.08
Sandwiches	.05	Potato salad	.04
Soups (all kinds) or clam chowder	.05	Baked beans and tomato sauce	.05
Meat balls with tomato sauce	.05	Salmon salad	.08
Fish cakes with tomato sauce	.08	Pies	.05
Frankfurters, — 2 for	.08	Puddings — rice, tapioca, chocolate, or cornstarch	.05
		Drake's citron and sponge cake	.03
		Apples, pears, oranges (in season)	.04

On the menu of the Continental Motor Company of Detroit, in 1917, the soup is 5¢, meat 7¢, vegetables 3¢, pastry and fruit 5¢, bread and rolls with butter 3¢. The average price of the meals bought is 15¢.[8] The average lunch check of the Filene Coöperative Association dining-room was 13¢.[9]

Free Lunches. — A number of banks, trust and life insurance companies having a large number of clerical employes provide luncheons free. The Metropolitan Life Insurance Company, for instance, believing that many of their clerks did not buy wholesome lunches, began in 1908 to serve a complete noonday meal to all Home Office employes, now numbering 6000. A typical menu follows:

Baked Ham with Burgundy Sauce
Boiled Potatoes Corn on Cob
Gingerbread or Chocolate Ice-cream
Bread and Butter
Tea Coffee Milk

Rice and milk or crackers and milk are served to those who prefer it.

In order to facilitate service, the meal is placed on the table just before the arrival of the clerks. When a choice is provided the order is placed on the previous day. Men and women are served in separate rooms. The luncheon is served in three shifts, forty-five minutes apart. The cost to the company exclusive of rent was slightly over 28¢ a day per clerk; the total cost in 1918 was $359,977.44. This outlay is justified as an efficiency measure.[10]

Additional Refreshments Furnished. — The Winchester Repeating Arms of New Haven, Conn., operates coffee booths in various parts of the plant. Coffee can be obtained at noon, at midnight, and at 4 A.M., costing 5¢. Milk at 3¢ a glass is also served at night, and bottled milk is sold at the gates during the day.[11] In the Bournville

Works in England in addition to drinking water, free milk, oatmeal water, and lemon water are supplied through the day in hot and dusty departments.[12]

Menu and Diet. — The dietary should be balanced and varied from day to day and suited to the type of work in which the employes are engaged. For men employed in physical labor there should be special emphasis on energy-producing foods. The British Health of Munitions Workers Committee states that the minimum canteen diet for men engaged in this sort of labor should contain 3000 calories made up of protein 100 grams, fat 100 grams, carbohydrates 400 grams.[13] An excellent booklet of tested recipes for soups and other foods has been published by the National Lamp Works of the General Electric Company and will be helpful on this subject.[14]

Expert dietetic direction or advice should be utilized whenever possible to insure nourishing food and the essential variety in menu, as well as to reduce costs. In the preparation of the menu due consideration must be given to the food requirements of racial and religious groups. The lunch room can be used as an educational experiment in food values. The New York City Health Department opened in 1915 an educational lunch room, of particular interest. The nutritive values of each article of food were given on the menu and proper combinations suggested. Each day the menus of two properly balanced luncheons were printed and that containing the best food values was frequently the less expensive. Development of the lunch room along this line would enable one to select the best meal for the least amount of money.[15]

A problem of the factory restaurant is its management. The Metropolitan Life Insurance Company retains all control of its free lunch.[10] The employes of the Jeffrey Manufacturing Company, Columbus, Ohio, support and manage their own restaurant.[8] The Filene Coöperative Associa-

tion has committee management for their dining-room in which 1200 people are served daily.[9] The Continental Motor Company of Detroit allows an outside caterer a small profit, but fixes the prices at which the dishes may be sold. The company furnishes space, heat, and light free.[8] It is probably advisable to have the responsibility for restaurants vested in a committee representing employer and employes, in order to insure effective management and an easy adjustment of complaints about food or prices. Such a committee will prove advantageous even in the case where the company pays the entire cost.

System of Payment. — Except in small groups where a flat rate is charged for meals it is usually advisable to have payment made to a separate cashier. This is especially true in cafeterias. It provides a comparatively easy check on finances and facilitates serving by eliminating the handling of cash at the serving counter. In cafeterias a ticket puncher usually stands at the end of the food counter and punches a ticket indicating the cost of the food, placing it on the tray. A cashier seated by the exit of the dining-room collects the money. In the Miller Lock Company of Philadelphia the employes may procure lunch tickets for twenty cents, forty cents, eighty cents, or one dollar from their foreman and select their lunch accordingly. The tickets are charged to the employes' accounts by the foreman and deducted from their pay with a statement of such deductions rendered on each pay slip.[16] A straight cost basis with payment for each meal is simpler and consequently preferable.

Important Points in Running Factory Restaurants. — In general, in planning industrial restaurants it is of primary importance (1) that the meals should not be considered a substitute for good wages but should be furnished either at cost price or supplied gratis by the company simply as an efficiency measure, (2) that the rooms provided should be attractively clean and light, (3) that the serving of the meals

be expeditiously managed by an adequate serving staff, (4) that the food be well prepared, varied from day to day and served hot, and (5) that the employes should be given some voice in the management of a restaurant which seeks to be self-supporting, so that there may be no question of profit making in connection with it.

Rest and Recreation Rooms

Need for Rest and Recreation Rooms. — The rest and recreation room has become a part of the necessary equipment in many plants. As Lord Leverhulme says, "Rest rooms are as essential as clothing." [17] The full benefit of rest periods, especially that of the noon hour, can be secured only by providing pleasant accommodations in which relaxation is possible. The immediate surroundings of the factory are frequently undesirable and it is occasionally necessary to protect the employe and the business by keeping the employe on the premises during working hours, as in the case of banks, where employes are allowed to leave the building only after the books are closed and the large sums of money handled during the day accounted for.[18] The employer approaches the study of rest and recreation rooms, therefore, in the same way that he does the question of adequate lighting, heating, and sanitation.

A recent report on this subject showed that over 50 per cent of the 431 concerns studied provided a room or rooms of this kind for the use of their employes. That employes avail themselves of them is indicated by the fact that 63 per cent of women employes and 21 per cent of the men made use of them.[18] The rest room of the Dennison Manufacturing Company is used by from 30–40 people a day, ordinarily, and in hot weather, from 120–130.[19]

Variation of Equipment. — The facilities of rest rooms range from a few chairs at one side of the lunch room to the luxuriously appointed rest rooms of the Curtis Publishing Company in Philadelphia, furnished in exquisite taste and containing such accessories as fresh cut flowers. The type best suited to the needs of a plant depends upon the size, character of work, and type of employes. The requirements for the rest room provided by the American Telephone Company for the use of its switchboard operators differ from those in the rest room provided for the men during layovers by the Atchison, Topeka and Santa Fe Railroad. Again, men's rest rooms need usually be less pretentious than women's. In such cases the reading and rest rooms are separated from the rooms where games and dancing are permitted. The question of separate lunch rooms for factory and office workers must be considered.

Department Store Rest Rooms. — Department stores employing large numbers of women have made a special point of providing rest rooms for their employes. B. Altman and Company furnishes spacious rest rooms for men and for women on the 11th floor in which " to read, or write letters during working hours." On the 13th floor is a great " silence room " equipped with chairs and couches, and beyond this is a sun parlor opening on to an open-air promenade. A part of this is reserved for a smoking room for the men.[20] Marshall Field and Company provides a recreation room adjoining the lunch room for men and women employes. Its equipment includes a pianola. There is a reading-room near by for men and women, with periodicals and magazines. The rest room of R. H. Macy of New York City is for its women employes only. Here one finds a piano, small library and magazines.[21]

Telephone Company Rest Rooms. — Rest rooms are part of the regular equipment of most of the telephone companies and are used during rest and lunch hours. The New

England Telephone and Telegraph Company,[21] the Chicago Telephone Company,[22] the Cincinnati and Suburban Telephone Company,[23] the American Telephone and Telegraph Company and many others provide these rest rooms as a measure for health preservation. In the case of the New England Company the employes have taken a pride in the rooms and have provided part of the furnishings themselves. The girls in the Salem Exchange sold soap to furnish their room with pictures and current periodicals. Roof-garden promenades have been provided in many cases.

Factory Rest Rooms for Women. — Factory rest rooms for both men and women are increasing in number. The recreation rooms at the Kodak Park Works of the Eastman Kodak Company are situated in the three-story building adjoining the factory. They include separate rooms for men and women.[24] The National Cash Register Company, Dayton, Ohio; the United Shoe Machinery Company, Beverly, Mass.; the Cleveland Twist and Drill Company; the Westinghouse Electric and Manufacturing Company of Pittsburgh, Pa., and the Shredded Wheat Biscuit Company at Niagara Falls furnish rest rooms for women only. The women employes of the Westinghouse Air Brake Company of Wilmerding, Pa., use the lounge rooms of the Y. W. C. A. club house.

Factory Rest Rooms for Men. — Men's rest rooms are not as numerous as women's, but a club room and smoking room for men during the noon hour is desirable. The American Woolen Company provides the men's rest room on one side of the restaurant and the women's on the other. The Sherwin-Williams Paint Manufacturing Company of Cleveland has a men's club room, with periodicals, for use during the noon hour.[21]

Railroad Rest Rooms. — The railroad and street railway companies have developed the rest room extensively, and consider that there is a very direct relation between it and the

efficiency of their employes. Frequent layovers, when formerly the only place to go to was the saloon, some dirty shed or bunk house, made the introduction of attractive reading and rest rooms of particular value. In the railroad business a clear brain is a priceless commodity, and the morale of the railroad men, in order to do the work required of them, must be above normal.[25] These rooms have been installed in the railroad terminals or as part of a club house which offers also sleeping accommodations, or a room for this purpose has been rented in a hall or house. Among the railroads that have installed rest rooms and railway clubs at stopovers are the Atchison, Topeka and Santa Fe, the Union Central and Southern Pacific, the Chicago, Burlington and Quincy, the Chicago and North Western, the Grand Trunk, the Central Railroad of Georgia, and the Pennsylvania Railroad.[26]

Results Claimed for Railroad Rest Rooms. — Some of the results of rest rooms, claimed by the companies, are: (1) eliminated gambling debts, (2) competed successfully with the saloon, in fact, have improved the tone of the communities where they were located, (3) have kept the high grade of workers by improving conditions of work, (4) have practically eliminated wrecks due to carelessness or violation of rules and (5) have helped set up standards of courtesy throughout the system. They have thus been a valuable business asset and a paying proposition.[26]

Street Railway Rest Rooms. — The street railway systems all over the country, as well, are installing similar rooms in their terminals and at the end of their lines. The Interborough Rapid Transit Company of New York City has reading, smoking and recreation rooms at all its terminals.[21] These companies have the same problems to meet as the railroads, though the layovers are not as long or the distances as great. Nevertheless, there is a distinct need for rest rooms that has been largely met by the companies.

Cost and Equipment of Rest Rooms. — The National Lamp Works of the General Electric Company has standardized the rest and recreation rooms in their various plants. Their book giving the equipment lists and costs for such rooms, based on the needs of a factory employing 300 persons, 225 women and 75 men, is exceptionally valuable. These costs are based on an estimated attendance of four fifths of the force, or 240 people. Provision is made for rest rooms for men and for women, and additional recreational space for the latter. Three hundred and twenty square feet is reserved for the men's room and for the women's 1220 square feet, and for the recreational area 1200 square feet, making a total of 2740 square feet. The men's rest-room equipment consists of:

2 settees
12 straight chairs
3 game tables (round)
1 magazine table
1 table lamp
6 cuspidors
6 rubber mats
1 set checkers
1 checkerboard
2 cribbage counters
4 packs cards
1 set chess

Women's rest room includes:

10 green reed rocking chairs
10 green reed ottomans
10 green reed straight chairs
10 green reed settees
14 green hair pillows for settees
2 green reed magazine stands
2 green reed fern stands
3 green grass rugs
2 green reed table lamps
1 roll-top desk
1 swivel desk chair
1 bookcase
1 telephone bracket
1 desk fixture
7 plants

The recreational area is fitted with:

2½ doz. bent wood chairs
1 piano
1 waste can

Cost. — The cost in 1918 of the men's rest room was estimated at $191.40, the women's $805.83, and the recreational

area $304.50, a total expenditure of $1301.73, with a per capita cost for employes of $4.00.[27] Standards for furnishing and installing rest rooms are being rapidly developed and complete equipments are now obtainable from a number of firms. One of these offers three standard sets of furnishings. The first type, for a business employing about 75 women, accommodates 10 persons at a time in a room 15×20 feet and costs $454.43. The second is estimated for a concern with about 185 women, supplying the needs of 25 at a time, with a floor space of 15×40 feet, at the cost of $707.21; the third for 750 women, allowing 150 women at a time, costs $3108.71. The three estimates for men's smoking rooms of the same sizes are $323.34, $581.41, and $1764.15 respectively. This firm expects to suit the individual need of each concern and the price. These estimates are based upon the supposition that there are two rest periods per person a day.

Supervision of Rest Room. — The supervision of the rest room varies with different companies. The medical division of the Dennison Manufacturing Company has charge of a rest room for the 2300 employes, which is supervised by the nurse. This comfortably furnished room is used by women employes at the noon period and for one half hour during the working hours. All must report to the nurse before using the room.[19] Sears Roebuck Company also connects its rest room with its medical division and places it next to the hospital. Ordinarily the lunch room and the rest room in the department store or factory are grouped together, and if any one is placed in charge of this division it is the welfare worker or a special matron. The rest and reading rooms of the Atchison, Topeka and Santa Fe Railroad system are placed in the charge of the superintendent of the reading rooms, who spends most of his time traveling up and down the line organizing the work. Each reading room is in charge of a librarian, and at the

club house he is usually assisted by his wife, who acts as matron.[26]

Noon-hour Diversion

Length of Lunch Period. — There is a wide variation in the length of the lunch hour in various plants. The Metropolitan Life Insurance Company, for example, limits the lunch period to thirty-five minutes, so that the seven-hour day may close at 4.30 in the afternoon. On the other hand, some employers prefer to extend the lunch hour beyond the time required for eating so that the employe may relax and be fully refreshed mentally and physically before returning to the afternoon stretch of work. Thirty minutes is usually all that is required for eating if the luncheon facilities are near at hand and adequate.

Noon Hour Activities Should Be Voluntary. — If a longer period is in force it becomes possible to plan recreation and educational programs for the noon hour. A large number of corporations have undertaken such activities. The programs offered vary from performances of local musical clubs to a lecture on the use of safety goggles. The lunch hour, whether short or long, is usually clearly defined as one belonging to the employe and in consequence any activities planned for that hour should be voluntary and not compulsory. There can be no logical objection to an occasional entertainment, and the attendance of employes at planned diversion will indicate its acceptability. To many, however, such programs, especially if they are educational, are not conducive to thorough relaxation, which is the object of the noon hour.

Dancing. — Dancing for women has been found to be popular, especially for those whose work does not involve much physical exertion. Most rest or recreation rooms for women contain a piano or victrola for dancing. In the

Gorham Manufacturing Company, space in the women's dining-room is cleared after lunch for dancing during the noon hour. Occasionally a special room is provided for dancing. Ordinarily the music is supplied by the employes themselves. In a few instances it is furnished by the company every day or on a specified number of days each week. The dancing is usually limited to women, and men are not permitted to participate. One New York City department store forbids this form of noon-hour diversion on the grounds that there is a temptation for the girls to overstay their lunch period and that they are afterwards too tired to do good work. This objection naturally applies only when the occupation requires standing or involves physical strain.[18]

Athletics and Gymnasiums. — Athletic fields or open spaces adjoining the factory are popular during the noon hour, especially in the summer months. The shop baseball team can use this time to practice and can play in the yard if no diamond is provided. Tennis and quoit courts are kept up during the summer months for this use by Brown and Bigelow of St. Paul, Minn.[28] Calisthenics, under the supervision of a competent gymnasium instructor, are instrumental in reducing fatigue. B. Altman and Company of New York City maintains a well-equipped gymnasium under the care of a competent teacher, who gives the men and women employes setting-up drills during the noon hour. This concern claims that their workers go to lunch thoroughly tired, and after this program, they return to their places mentally and physically refreshed. The instructor teaches the girls especially how to relieve their tired muscles and how to walk and stand so that they can rest themselves during work.[29]

Concerts and Entertainments. — Regular concerts are given by the musical clubs in some factories. At the Miller and Lock Company of Philadelphia, Pa., the employes join in

an occasional community singing led by the shop orchestra.[30] A band of 44 members in one company gave this kind of entertainment out on the lawn in warm weather.[18] In the Prudential Life Insurance Company noonday concerts are given during bad weather.[31] Recitals and readings are held at noon in the recreation room of Marshall Field and Company. The Women's Association of Parke Davis and Company gives entertainments twice a week during the noon hour. Some of the best talent of Detroit is represented. Concerts predominate, but readings and lectures are occasionally given.[32]

Club Meetings. — Factory clubs often hold their meetings at noon. The " High Standard Club " of Lowe Bros. Company of Dayton, affiliated with the Ohio Federation of Women's Clubs, meets after lunch once every two weeks. Its object is to " promote sociability and interest in literary and musical matters." The company gives the members an extra hour for the meetings.[21] The " Women's Century Club " of the National Cash Register Company meets at noon time. The members assemble at 12.30 twice a month for half an hour on their own time and half on the company's time.[33]

Educational Activities. — Noon-time educational lectures are not limited as to subject. Talks on health, plant problems, travel, and technical subjects are given occasionally in a large number of industries. The Noon Day Club for the girls in Strawbridge and Clothier of Philadelphia, Pa., holds brief educational and industrial classes. The teachers are recruited from the store force and about 30 minutes are devoted to class work, twice a week, in either English, foreign languages, or domestic science. As many as 300 girls have been members of the club.[34]

The physician of the National Lamp Works delivers a series of health talks to groups of from 20 to 30 people for an hour twice a week, 45 minutes on company time, and 15 out of the employe's lunch hour.[35]

Fifteen or twenty minutes of the noon hour are often used for safety meetings. Lectures on safety devices are sometimes illustrated with moving pictures. The Western Pennsylvania Division of the National Safety Council arranged for 30-minute picture shows on " safety " in different shops in the Pittsburgh district. The companies give up 15 minutes and the men 15 minutes of the lunch hour.[36]

Industrial Program of the Y. M. C. A. — The noon-hour program of the Industrial Department of the Young Men's Christian Association should be mentioned in this connection. It covers practically all the activities outlined, under the leadership of college students and recent graduates. Arrangements are made for religious and educational talks as well as for entertainments, community singing, and athletic sports. A "Shop Committee" of the men themselves is formed to conduct the meetings.

Lectures on sanitation, hygiene, first-aid, and sex education are given under the supervision of the physical director or a physician. Pamphlets and lists of reading matter connected with the subject are distributed after the talk. Accident prevention talks have a prominent place in the program. In one town it is claimed that the saving in accident insurance premiums effected by exhibits, lectures and demonstration was almost enough to cover the entire budget of the industrial branch of the local Y. M. C. A.

In the Middle West " Shop Chautauquas " have been popular. These consist of brief programs of music, reading, and displays of talent recruited from the ranks of the workers. Entertainments are held daily for a week in one shop and then repeated for the men of a different factory. In some communities, shop sings, organized under a qualified leader, meeting weekly at the noon hour, have had large attendance.[37] On a smaller scale, the Young Women's Christian Association is conducting factory meetings along similar lines.

Recreation during Non-working Hours

In many respects the industry is an advantageous unit for the organization of recreational activities. It means that play with a group of individuals and families of fairly similar earning capacities and to a certain extent of similar interests is possible. Such activities can be easily organized because the individuals see each other daily. Friendships arising from work are capitalized and continued. The encouragement of organized recreation is thus a part of the employer's program to develop a social interest in the plant.

Recreation Facilities

Club Rooms and Club Houses. — Club rooms and club houses are frequently provided by present-day employers for the use of employes during their leisure hours. Indeed, 137 out of 431 investigated are reported to have these facilities.[18] Although most of these 140 club houses and club rooms are of recent date, a club house accommodating 500 people, equipped with "concert hall," lodging rooms, reading rooms, parlors, toilets and bathrooms was erected in 1887 by Warner Brothers of Bridgeport.[33]

There is naturally a wide range in the facilities provided. The club house which limits its activities to that of the ordinary club, and whose membership for the most part includes the employes, will be discussed here. The community or settlement type will be considered in another chapter. One finds all gradations from a plainly furnished room to the elaborate country club equipped with every convenience and even luxury. The membership fees vary from less than $1.00 or even no dues at all, to $25.00 a year; the average being about $3.50. A few companies restrict the membership to the officials, superintendents, and foremen of the plant, but in the majority of cases — 85 per cent of those

on which information is available — the privilege of belonging to the club is open to all employes. Some club houses are open for most of the twenty-four hours, others receive members only at noon and for a short time in the evenings. The latter group includes essentially the club rooms and small club houses located near the factory. The country club houses are usually open all day, though some allow members only in the afternoon and evening.[18]

Different Types of Club Houses. — The club house at the Deering Works of the International Harvester Company of Chicago cost $27,000. Its equipment includes ladies' room, reception hall, smoking room, pool room, bowling alley, gymnasium outfit, and an assembly room seating 600 persons. A club house directly opposite the factory has been built by the Firestone Tire and Rubber Company of Akron, Ohio, employing 11,000 men. Dining-rooms occupy the first and second floors. On the third is an auditorium. In the basement are bowling alleys and a swimming pool with shower baths.[38] One company employing about 2400 men has three clubs, one for American employes, one for the foreigners, and one for the negroes. The first club began in a small way, but is now much larger than the others and occupies a well-equipped club house. The dues are 25 cents a month.[18]

In some of the mining communities the employers furnish club houses for their American employes but make no provision for the ordinary laborer, who is often a Mexican. The club dues are frequently $25 a year, a prohibitive amount for all but the better paid workers.[18] In contrast to this is the " Recreation Building " built by the Homestake Mining Company of Lead, South Dakota, in 1914, at the cost of $25,000. Its equipment includes a theater, library, gymnasium, bowling alleys, plunges, shower baths, and swimming pools. No charge is made for the use of the building except ten cents for the moving picture show or road

show given daily except Sundays. The six bowling alleys are used by 3000 people in a month, the swimming tank by 2000 and the theater by 20,000 a month.[39] Railroad and street railway companies' club houses are different from the type already described. They are essentially adjuncts to the rest rooms at important terminal points, and are usually simple and utilitarian.

Country Clubs. — In providing country clubs for employes, employers are actuated by the belief that healthy recreation increases efficiency and that the industry is a convenient center for such activities. These clubs, which offer indoor and outdoor amusements, are perhaps the most elaborate of all recreation enterprises. They are usually near enough to the city to be available after work hours or during week-ends. The United Shoe Machinery Company of Beverly, Mass., donated a country club house to their employes in 1910, costing over $28,000. It is located in the center of extensive athletic grounds, containing tennis courts, baseball diamond, golf course, cricket and track field, and large grounds for gun-club and trap-shooting. Architecturally, the club house is charming. The interior furnishings include bowling alleys, billiard and pool tables, large reading room, dining-room, dance hall, and a perfectly appointed theater. The luxury of this equipment is rather unusual. The membership fee is two dollars a year.[21] Another company's country club, which can be easily reached by train or trolley from the factory, has a membership of 1800, or half of the employes of the company. The dues are ten cents a week for men and five for women. It, too, is surrounded by extensive athletic fields.[18]

Success and Failures. — If the sustained interest of the employes in the club house is not shown by increasing membership and activities it cannot be classed as a successful enterprise. Although the club house which furnishes the only recreational diversion in an isolated industrial commu-

nity doubtless more strongly fills a direct need than any other type, nevertheless, buildings erected near large towns have flourished successfully. There have been, however, noteworthy failures in keeping an interested membership.

The club house of the United Shoe Machinery Company at Beverly, Mass., is a thriving organization. There is at present an increasing interest taken in the social activities centered about the club building located near the factory. On the other hand, it did not pay the Pocasset Worsted Company, near Providence, R. I., to spend $20,000 building a club house in 1907. At first membership was free, but later it was raised to $2.00 a year in order to make the employes feel they were not accepting charity. The membership dwindled nevertheless from 200 to 60 and the experiment was considered unsuccessful. One reason for this, the company considered, was the proximity of the industry to Providence.[21] It is difficult to analyze in detail the reasons for the success of one club and the failure of another, but it is obvious that a club house is a futile expense unless employes express a strong desire for it.

Auditoriums. — Entertainments frequently given for or by the employes of different plants have led to the installation of auditoriums either in the factory building itself or in the club house. In some instances rooms planned for use by the public, as in department stores, or one whose prime purpose was for staff or sales conferences, have been turned over on occasions to employes for entertainment purposes. On other occasions the equipment of the community Y. M. C. A. is utilized. The seating capacities vary from 300 to 5500.[18] Usually there is a stage, and in most cases seats are movable so that the room may be cleared and used for dancing. The assembly room in the Curtis Publishing building is an unusually beautiful one.

Gymnasiums. — The growing realization of the beneficial results derived from proper recreation has led to the installa-

tion of gymnasiums by a number of companies. Frequently the auditorium in the plant or club house has a gymnasium equipment. A majority of firms makes no charge for the use of these rooms. One company charges $5.00 a year, another $4.00, and one $1.00; but this seems to be contrary to the custom. In a large number of cases instructors paid by the company are provided. In a few instances separate gymnasium buildings have been built. One company employing many thousands of people equipped a complete gymnasium for the use of its office employes, including squash and handball courts and exercise room. Three instructors are in charge of classes held alternately on employes' and employers' time. In spite of a rather general development, on the whole gymnasiums are not widely used.

Swimming Pools. — Swimming pools when provided are usually connected with the club houses. Outside pools have been installed in a few cases, but the privilege of using them is not limited solely to employes, but extended to the community. These pools are well patronized. One concern with 748 employes claims that their pool was used by 1580 people in a month. The number of people using the pool for the entire season in a plant employing 2815 workers was 3713.[18] The tank of the Homestake Mining Company is patronized by 2000 people a month out of 2370 employes.[39]

Recreation Grounds for Athletic Fields. — A large number of concerns have baseball diamonds and tennis courts in a lot adjoining the factory, and a few employers have provided extensive recreational parks at a distance from the factory, for the use of their employes. The Gorham Manufacturing Company near Providence is in a park of 30 acres, part of which is used as an athletic field for employes. Sears Roebuck Company of Chicago, Ill., have baseball grounds, 12 tennis courts with dressing rooms, and a field for a track meet.[21] Strawbridge and Clothier Company have

an entire city block reserved for an employes' athletic field.[40] This includes a baseball field, running track and tennis courts. A Rochester button company has laid out an extensive area for different sports in the park which surrounds their factory.

Summer Camps and Homes. Camps. — Summer homes and camps are established by firms in order to make possible cheap, healthful vacations for their employes. They provide an opportunity to spend a vacation in the country under pleasant surroundings at a low cost. A number of camps are maintained by department stores. John Wanamaker of Philadelphia, Pa., has equipped "The Barracks" in Barnegat Bay, N. J., with a house for women employes and tents for the boys. There are five acres of grounds for semi-military drilling, and provisions for tennis, boating and sailing. Trained medical officers supervise hygiene and sanitary conditions. Attendance at this camp for two weeks during the summer is obligatory on the part of all boys, but optional for women. Curtis Publishing Company runs Camp Tekenink as a summer camp for its Curtis Junior Camp, composed of its younger employes, who may spend the week-end or a vacation there.[21]

Summer Homes. — The Mutual Aid Society of R. H. Macy and Company of New York has opened a vacation house with a matron in charge, on 17 acres of ground in Central Valley, New York. Board and transportation are free. Every member is entitled to a week's vacation there if he so desires and if he has been with the concern a year. The society gives a ball each year to help raise money for the house. The company supplies the deficit. "Hazelhurst," the vacation home of the Cincinnati and Suburban Telephone Company, has all the conveniences of an up-to-date hotel and is under the direction of a matron. There are 46 bedrooms, each opening on a sleeping porch. Every telephone girl is entitled to a week's vacation in summer

and one in winter, for which no charge is made.[23] The Chicago Bell Telephone Company has built a recreation home at Warrenville for operators who need country air, good food and surroundings on their summer vacation.[22]

Vacation Bureaus. — If these resorts are planned primarily for those employes who are physically below par, and who should be under the care of a physician during their vacation there would seem to be a place for them in industry. Otherwise more profit would be obtained from a vacation spent away from business associates and surroundings. For this reason, employers have sought to provide employes with an information service to assist them in making their vacation plans, in some cases coöperating with public agencies and groups of employers. The Cleveland Vacation Bureau helped the Service Department of the Clothcraft Shops to find farmhouses, camps and places in the country where the employes could spend their vacations.[41] The Coöperative Store Committee of the Filene Coöperative Association secures good places for employes to go for the summer holidays.[21] This newer plan supplanted a former summer vacation cottage because it allows greater freedom in selecting the kind of recreation desired and because it does not savor of paternalistic control.

Recreation Activities

Clubs. — Employers' athletic associations, musical, social, educational clubs, each using the plant for the recruiting ground of its membership and as the center of its activities, abound in American industries. One club often engages in a number of activities, and the athletic association frequently manages not only athletics but all social activities as well.

Musical Societies Bands. — Musical organizations in industry have a wide range. Many companies contribute

the instruments and the uniforms, employ leaders, and provide the place for the band to rehearse, because a band not only develops *esprit de corps* but is a valuable advertising feature. Some even pay the members for time they spend in practice, but usually rehearsals are held outside of business hours. The Metropolitan Life Insurance Company Band has over 100 pieces and is the largest in New York City. The John Wanamaker organization includes a girls' military band of about 40 pieces, and a boys' drum and bugle corps of about 30 members. The function of the band is not only to give pleasure to individual members, but to play at company entertainments, annual picnics, and outings, and to give concerts at noon or outside working hours. One company has free monthly concerts given by its band, attended by about 3500 people.[18]

Choral Societies and Glee Clubs. — The music is usually furnished and the instructor hired by the company for plant choral societies. Here again, members are frequently paid for the time spent in practice.[18] Department stores make a special feature of this sort of club and often hold annual concerts with quite pretentious programs. Strawbridge and Clothier lay great emphasis on musical organizations as part of their recreational program. Their chorus, in particular, is widely known. Its rehearsals are held for one and one half hours once a week during six or seven months of the year. The members of Marshall Field and Company Choral Society who attend 75 per cent of the rehearsals are given an extra vacation. H. Black and Company, and Joseph and Feiss Company of Cleveland have musical clubs. John Wanamaker, and William Filene's Sons Company, Boston, also have choral clubs. The former pays for the services of a trained musician. The choral club of the Filene Coöperative Association, however, engages their own instructor. All members are charged ten cents a week to meet this expense.[21] The Glee Club of the Metropolitan Life Insurance Com-

pany is supported by a dues-paying associate membership of non-singing employes.

Orchestras. — The size of an orchestra varies from 10 to 100 members, with an average of 25 to 35 members. One orchestra which began with twelve members a few months ago now numbers one hundred. Under a competent director it has held a series of community concerts each year.[18] The orchestra of employes of Gimbel Brothers, Philadelphia, gives regular hour-and-a-half weekly morning concerts. The Western Electric Company and the Metropolitan Life Insurance Company have a mandolin club as well. The 300 boys in the Cadet Battalion of the Wanamaker stores are taught singing.[21]

Educational Clubs. — The formation of groups of workers into clubs for educational purposes has been encouraged by a number of concerns, with varying success. The Progress Club of the Kohler Industries of New York City is a particularly successful one, with its membership limited, however, to executives, heads of different manufacturing departments and men in office organization. Monthly meetings to develop coöperation are held. The miniature engineering society organized by the Greenfield Tap and Die Corporation, modeled on the American Society of Mechanical Engineers, is suggestive. The aim of this club is to develop the employes into a "team of experts in the design, development and the manufacture of the product." All male employes are eligible for membership and the club now has 341 members.[42] The younger engineers of the Westinghouse Electric and Manufacturing Company have a club which now has 750 members. Fee for membership is $4.00 a year and $4.00 more for the use of its well-equipped gymnasium.[43] Excursions are made to the local mills and factories and a lecture course is given on electrical subjects.[21]

Some of the clubs offer a more general type of education.

The "Community Club" of R. H. Macy and Company conducts regular classes in domestic science, dancing, gymnasium and swimming, and also does dramatic work.[44] The membership fee of the John Wanamaker's Women's League, which is 50 cents a year, entitles a member to join any class from dressmaking to physical culture. The "High Standard Club" of the Lowe Brothers Company, paint manufacturers, is a member of the Ohio Federation of Women's Clubs. Its aim is to promote interest in literature and musical matters, and it meets twice a month at the noon hour. The annual dues are 60 cents. The program for the year includes lectures on "travel, hygiene, books, great men, literature, and music."[21] Among the many interesting English developments along these lines are those of Lever Brothers. The Port Sunlight Men's Club combines a social club with a scientific and literary society. The meetings of these societies are supplemented by study, lectures, experiments, and stereopticon views.[33]

Athletic Associations. — Athletic associations are both an effect and a cause of athletics as a recreational factor in industry. They are exceedingly common. The Athletic Association of Strawbridge and Clothier has charge of the company athletic field. The annual dues of $1.00 for men and $.50 for women allow members the use of the field and admit them to all Association baseball games.[40] The Athletic Association of the Metropolitan Life Insurance Company of New York City is also conducted by its employes. It was established 1894, and now has a membership of 1000.[45] Any employe of the United Shoe Machinery Company is eligible for membership in their Athletic Association on payment of $1.00 a year. A few people from Beverly, Mass., may also join. The officers of the club are selected by the members. The Macy Athletic Club first met at the 23d St. Y. M. C. A. So much interest in athletics was aroused at this meeting that the use of a recrea-

tion ground was planned and a permanent association organized.[46]

Social Clubs. — Occasionally when dances and entertainments are given for or by the workers of an industry they are held under the auspices of a specially organized social club. Usually, however, the athletic association is in charge. The operators in the Chicago Telephone Company have organized social clubs which give dances, picnics, and various entertainments throughout the year. Sixty-five per cent of the employes comprising the "Thomanco Club" of the Thomas Manufacturing Company of Dayton joined for social purposes. The dues are 25 cents a month, but when necessary the company aids the club financially.[21]

Social Gatherings. — A recent investigation of 239 industries showed that 236 contributed in some degree to entertainments for their employes. The social gatherings are of all varieties, and include dances, theatricals, or parties at Halloween or Christmas time. Dances predominate, as they are the simplest form of entertainment. Employes frequently take part and share the expenses.[18] In other cases the firm carries the major or entire cost. Brown, Bigelow and Company of St. Paul, Minn., gives its employes a dance every six weeks in the St. Paul Armory, charging a small amount for admission, and one evening every two weeks a dance presided over by a dancing teacher is held in the club rooms.[28] H. J. Heinz Company entertains its employes with vaudeville shows, Christmas entertainments and dances. The Shredded Wheat Biscuit Company gives an annual Christmas entertainment and runs a series of dances in their auditorium.[21]

Athletic Baseball. — Although a great variety of athletic sports have been introduced into the recreational activities of industrial workers, "the great American game" of baseball still holds preëminence in the number of firms who

have introduced it, and in its subsequent popularity. In many cases the company provides the ground. Some even go further, and either equip the team or make cash donations for this purpose. Larger concerns have formed teams in different departments and have interdepartmental contests. Some employes' teams belong to city leagues. When a company has more than one plant, employes have formed leagues among themselves. One concern had twenty-five of these teams in its league.[18]

A possible danger of laying too much emphasis upon winning the championship is that men will be employed essentially because they are athletes, and a disorganization of the spirit and discipline throughout the plant is likely to result.

Other Sports. — Other sports — tennis, basket ball, bowling, soccer, cricket, hockey, even football and golf — have been introduced by industry with varying degrees of success. These have, however, been patronized chiefly by office workers. If the facilities are provided by the company, this is not necessarily the case. Gun clubs are found in a few industries, usually in connection with the country club. The twelve tennis courts furnished by the Sears Roebuck Company argue for the popularity of the sport in that company. The National Cash Register Company of Dayton has bowling teams supported by the company.[21] A button company of Rochester, N. Y., claims that bowling is the most popular sport they have introduced. A league is formed, and there is great rivalry between the teams. The balls are furnished by a sporting goods manufacturer.[47] The Wagner Electric Manufacturing Company has six basket ball teams. Soccer also is popular in this company. Four teams belong to the Municipal League of St. Louis.[48]

Gymnasium Classes. — Those industries that provide gymnasiums or gymnasium equipment as a rule have formed classes under the supervision of a paid instructor. Gym-

nastic classes for women are conducted in the Home Office of the Metropolitan Life Insurance Company. Two classes, approximately 50 each, are held in the afternoons between 4.30 and 6.00 o'clock, and corrective Swedish exercises are taught.[45] Some companies without gymnasiums of their own pay part of the membership fees for the courses in the Y. M. C. A. and Y. W. C. A.[18]

Field Days and Outings. —Once a year it is customary in many concerns to have either a field day or general outing for the employes and their families. These Annual Field Days are usually big events and well attended. Their programs include athletic events, and frequently offer entertainments similar to those at a county fair. Eight plants, employing 40,100 workers, estimated the total attendance at eight field days as 35,000.[18] One of the most interesting is the "Sam Sam" day of the United Shoe Machinery Company. It comes once a year in August and presents a great variety of interests. Races of all kinds, games, exhibits of poultry, vegetables and flowers, side shows and music, all form a part of its program.[49]

The annual outings are one of the most popular forms of recreation. Their democratic management and the slight expense incurred by attendance are some of the reasons for their success. They can be made an important factor in improving morale. Some companies hold picnics, some charter pleasure boats and even whole amusement parks. Transportation is usually furnished free. Frequently the families of the employes are included and a few companies allow their workers to bring guests as well. The numbers, therefore, attending these outings are large. Attendance at one company picnic was 20,000; at another 12,000. In the latter case the company provided transportation and prizes for the games.[18] In order to save expenses several firms may group together and have their outing on the same day and at the same place. To distinguish the plants each

employe wears a souvenir button and a colored ribbon bearing the company's name.[50]

Management. — Recreation work in an industry may be managed by the employer, by the employer and employes coöperatively, or exclusively by the employes. In slightly more than one half the cases in a survey of the recreation in 461 industries, this work was done by the employer alone.[18] The railroad club houses are managed exclusively by the companies. The activities of John Wanamaker of Philadelphia are also conspicuous examples of employers who finance and manage their recreational activity.

There are a large number of employers, on the other hand, who finance these organizations but allow their workers to manage them, for the most part, themselves. All the recreational activities in the United Shoe Machinery Company are run by the officers and committees of the Athletic Association made up of employes who wish to join. One reason for the eminent success of these undertakings, in the company's belief, is the fact that the employes have had a free hand in the various organizations, although there has been a certain amount of coöperation between the company and the association. The club house of the New York Edison Company is controlled by the employes, and in the majority of club houses of the United Steel Corporation this is also true. The International Harvester Company follows this same scheme of management.

The recreational work of William Filene's Sons Company is fundamentally different from the other types, since the work is conducted and financed by the Filene Coöperative Association, of which every employe can be a member. Committees are appointed by the president to take charge of different divisions of the work. There are an athletic committee, an entertainment committee, etc. The firm has allotted space in the store for the comfort and recreation

of their employes, but apart from this all recreational activities are self-supporting.

Y. M. C. A. and Y. W. C. A. Control of Recreation. — Industrial club houses are in a varying degree under the control of the Y. M. and Y. W. C. A. Some companies simply contribute financially to the association in their vicinity, or pay half the membership of their workers who wish to join. Others build and equip the club house themselves and turn it over to the Christian Association to manage. Marshall Field and Company and Wells Fargo and Company pay one half the membership for all employes wishing to join. The Westinghouse Air Brake Company of Wilmerding, Pa., built and equipped a Y. M. C. A. and turned it over to the association to administer.[21]

Union Management of Recreation. — Union labor has frequently opposed employers' recreation work, holding that the aim and tendency of such work was to shackle labor with gratitude and diminish the freedom of the bargaining process. Where the union has entered the industry it has often taken the management of recreation into its own hands. The dances arranged by the union in S. Korach and Company in Cleveland were crowded, while those given under the auspices of the welfare department had been unsuccessful. Union summer camps for the Chicago Bell Telephone Company competed successfully with the company camps.[51] The activities of the International Ladies' Garment Workers Union along these lines are of interest. Their program is essentially an educational one, but has, however, recreational features. It is carried on in the public schools in a number of cities. Classes in gymnastics and moving pictures are included. Occasional musical numbers and other entertainments of an educational character are added. Theater passes have been secured for a number of union members, reducing the price from $1.00 to as low as 20 cents. The

members of this union take great pride and interest in these activities. To the freedom and independence which they feel is no doubt largely due the success of these undertakings.[52]

Tendency of Modern Industrial Recreation. — Undoubtedly there is much to be gained by the introduction of recreational features during the leisure time of the employe. The relationship within the unit of the industry will be strengthened, and a greater interest in the work is likely to develop, resulting from a happier outlook on life. The employer's part, however, is decreasing except in so far as concerns the furnishing of facilities and the occasional stimulus of suggestion. The growing tendency is that of allowing the workers to control and direct as far as possible these features, and the marked success which some industries have achieved in their recreational program has been largely due to this fact. Rather indeed than keeping them as purely industrial facilities the community is being used whenever possible.

CHAPTER X

THE EMPLOYER AND THE COMMUNITY

The Need for Industrial Housing. — The prime interest of the employer has naturally been in the working time of his employes — the time within the plant. Managers have considered the factors which affect a man while at work, but have paid little attention to the preservation of his fitness during non-working hours. It is these hours which are of greatest importance in determining the effectiveness of the worker. All the community facilities surrounding an individual affect not only his physical well-being and consequent productivity but his entire outlook. The house in which he lives, the store at which his wife buys supplies, the schools which his children attend, the facilities for recreation, all play a part in the attitude of the individual towards his life and his work.

The most important, however, is housing, because of the apparent though unproved relation between housing and health. Poor housing conditions are factors in impairing the health and morale of the worker, in lowering efficiency, in breeding discontent, in retarding production, and in increasing labor turnover. The relationship of housing and city development to health is indicated by a comparison of the infant mortality and ordinary death rates of congested Liverpool and the small town of Letchworth.[1]

	Infant Mortality per 1000 Births	Ordinary Death Rate per 1000
Liverpool	125.0	18.1
Letchworth	50.6	6.1

Increasing Production. — Where housing for workers is totally inadequate the employer must take an interest in a housing project, because of decreased production and inability to secure sufficient workers. An example of this situation is that of three Connecticut towns, Derby, Shelton, and Ansonia, where in 1917 there were no houses within the means of the average skilled mechanic. One company had to turn over to out-of-town machine shops work to the value of over $800,000 owing to the inability to get mechanics. They could not come because there was no place to lodge.[2] It has been claimed that improved housing conditions increased the efficiency of labor in one town 25 per cent within a few months.[3]

Reducing Labor Turnover. — That housing is an important factor in the problem of labor turnover is testified to by many employers and revealed by illuminating statistics. In 1916 one rubber company had a labor turnover of 187 per cent. The great majority were single men who entered the rubber industry because of the high wages offered, rented a hall room and stood it just as long as they could and then went elsewhere. The secretary of this company says, "They had no place to live, no decent place to stay, and we all know what home means well enough to know that that was the basic reason for the turnover." [4] Another example is that of a large eastern factory which in 1917 employed 30,000 men to maintain a pay roll of 10,000. The men would not stay because of unsatisfactory living conditions.[5] In the city of Bucyrus, Ohio, one concern brought one hundred and fifty men into the city. In a few days only thirty remained. The others had left because they could secure no homes.[2] Employers almost universally agreed that the housing shortage was an important factor in the high labor turnover.[6] Thus the so-called "floater" is in part a product of bad housing.

Securing the Best Type of Worker. — The efficient worker will go to and remain only in the towns offering decent housing conditions. When labor is plentiful and wages low a man is loath to throw up his job, he will tolerate bad housing for the sake of employment, but high wages alone are not sufficient to hold desirable employes. They demand suitable living conditions for themselves and for their families as well.

In February, 1918, the need for highly skilled mechanics in Bridgeport was indicated by the large number of advertisements in the daily newspapers from nearly every plant in the town, while there were only about fifteen advertisements daily of houses for rent.[7] Some employers stated that they could increase their production from 10 to 20 per cent if decent housing was provided and labor turnover was thus reduced.[6]

Preventing Labor Disturbances. — That there is also a direct relation between labor unrest and bad housing is illustrated by the significant fact that "in the last five years living conditions in the California Labor Camps have been revolutionized and during these years no serious labor disturbances have taken place in California." While neighboring States were experiencing labor disturbances brought about by bad living conditions it is significant that but one minor instance of labor trouble on account of such unsanitary conditions was reported in California.[8]

Another example of industrial unrest in which living conditions assume an important rôle is that of the I. W. W. strikes in the State of Washington. In September, 1918, Robert Bruere started on his investigation of the situations. He gives us an account of the demands of the lumber workers, which included an eight-hour day, a minimum of $60 a month with free board, and in addition, good wholesome food prepared in a cook house, with sufficient help to keep the same in a clean and sanitary condition, sanitary sleeping quarters,

single spring beds with good clean bedding to be furnished by the company free of charge, and an extra laundry room with shower baths convenient to the sleeping quarters. In the words of J. W. Girard, logging engineer of the National Forest Service, " It is the conditions under which they work that make the lumber jacks what they are." [9]

Urban Housing Conditions for Employes

Housing Problem for the Employer in a Large City or Suburb. — The problems of decent housing and its relation to securing and keeping an efficient labor force are as important to the employer in the large city or in outlying districts within commuting distance of the city as to the one in a new or distant community, but his methods of facing the situation must necessarily be different. The difficulties in the building market emphasize the problem. Heretofore the speculative builder could be counted upon to supply the demand for houses in all but the more remote communities in mine or oil fields, but increased costs of building coupled with the demand for better houses and housing legislation have shown that this source alone will not meet the need.

Importance of Length of Working Day. — There are certain fundamental demands for a workingman's dwelling; low rent, sanitation and proximity to or facility in reaching work. The employer may assist his workers to secure these necessities in various ways. A fundamental consideration in housing is the length of the working day. A short working day makes it possible for workers to live at greater distances from their work, in the suburbs or outlying districts of large cities, while long hours make it necessary to live near at hand.

Transportation Facilities. — Arrangements that will prevent the overcrowding of transportation facilities will

also make available a wider residence area and allow a greater selection of living quarters. A ride of an hour or more in a train in which a seat is obtainable is probably not as tiring as a ride requiring not half as long in a crowded street car. By closing at hours different from the ones usual in the community, congestion can be reduced. The possibility of doing this by the coöperation of numerous industries was indicated by the influenza experience in New York City. All industries maintained hours of opening and closing according to classification, retail, wholesale, etc., specified by the Board of Health. The result was decreased congestion of transportation facilities.[10] The Metropolitan Life Insurance Company in its Home Office in New York makes it possible for its employes to live in the suburbs by having its office hours from 9 until 4.30 for the majority of employes. During the war the United States Housing Corporation rearranged transportation schedules in order to bring less crowded districts within the reach of the worker. In one instance arrangements were made to have a train run from Perth Amboy to Asbury Park, so that the employes of the copper industries of Perth Amboy might be accommodated in the less congested town of Asbury Park. In the Chicago district five trains were put on and schedules arranged.[11] Employers in large but congested cities might find it possible to secure the coöperation of the transportation companies in placing better facilities at the disposal of the workers.

Homes Registration. — In order to help employes find suitable housing it is often possible for employers to cooperate with agencies which keep records of available accommodations, such as the Y. W. C. A. or the National Catholic War Council. Such a registry can also be readily kept by the Service Department of the industry itself. During the war this type of service was broadly developed by the United States Housing Corporation. A complete sur-

vey of houses and rooms was made and after investigation they were classified by the convenience of their location, price, cleanliness, and sanitation.[11] A careful inspection of dwellings to be recommended to women employes is particularly necessary. The National Catholic War Council recommends the following standards for boarding or rooming houses for girls: recreational facilities, at least a parlor where the girls can receive their friends; cleanliness in household equipment and management; if possible, laundry facilities; proper sanitation, including ventilation, heating, plumbing; proper moral safeguards; honest and fair financial treatment on the part of the landlady.[12]

Building and Loan Association. — The great majority of people want to own a home regardless of the difficulties. This desire should be encouraged, especially if the family is located in a town in which there is opportunity for employment in numerous industries. If the wage earner is able to live on the outskirts of a city, either because the factory is so located or by reason of good transportation facilities, he may be able to find relatively cheap land on which to build a home. In this case the employer can be of assistance to employes by putting them in touch with financial agencies, by suggesting the development of building and loan associations, or presenting their value. These associations make loans to members to enable them to acquire homes. The funds are collected from members and loaned to members. Shares are comparatively high priced, being usually about $200, but they are paid in monthly installments, usually about 140, over a period of twelve years. The member is entitled to a loan as soon as his payments have begun.[13] The security is the house upon which the loan is made.[14] The borrower is usually required to own his land to start with, and although he seems to be temporarily paying high rent he is eventually owner of the house.[15] These associations are well suited to the needs of

those of moderate means, but have not had wide development except in Pennsylvania and Massachusetts. In 1917 there were 7000 local building and loan associations with a membership of 3,500,000, and the total assets amounted to over $1,000,000,000.[15]

Housing Employes in the Satellite City

The industry on the edge of the great city is not of recent origin. South Omaha, for example, now a part of the city of Omaha, sprang up around the stock yards at a railway junction in 1883, and even now many of the workers in the packing plants live in Omaha. That the suburban movement is increasing in the search for cheap land, low taxes, and room for expansion and better lighted buildings, is shown by figures gathered by the Census Bureau from thirteen "industrial districts." During a ten-year period, 1899–1909, the number of workers in large cities increased 40.8 per cent, while in neighboring zones or "satellite cities" the increase was 97.7.[16]

Transportation. — The industry located in the satellite city has similar problems to the one within the city. For one reason or another the workers do not move to the suburb. They prefer the life of a metropolis because some members of the family work "downtown" or the young people wish to be near the amusement centers. The city provides community activities, but transportation is a serious problem.

Factory Specials. — Norwood and Oakley are examples of two suburbs of Cincinnati to which factory managers found it to their advantage to secure better transportation facilities for the operatives, most of whom lived in Cincinnati. Several managers united in prevailing upon the Baltimore and Ohio Railroad to run a factory special. This they were able to do at the outset only by guaranteeing to

make good any deficit between receipts and cost of production. Arrangements were also made with the street car company to have several empty cars waiting near each factory at closing time.

Varying Working Hours. — An employer of very large numbers of workers may assist in decreasing congestion in traveling back and forth to work by stopping work in different departments at different times. The United States Playing Card Factory at Norwood does this by allowing one half of its seven hundred girl employes to start and leave work a quarter of an hour earlier than the other half. Other plants allow their women employes to leave earlier than the men.[16]

Housing the Employe Where the Industry is the Dominant Factor in the Community

Movement of Factories Away from Cities. — The back-to-the-land movement has come to mean more than the return of the city dwellers to agricultural pursuits. It now also signifies the removal of industrial plants from large cities, which has taken place because of the lack of property for development, legislation prohibiting factories in certain city areas and sometimes because of the realization that life in a less crowded district makes a healthier, happier working force. These considerations and the nature of some industries have resulted in two types of industrial communities; those in or near a city where the industry is the main factor, and those located at a distance from educational, recreational and shopping facilities, and developing around a single industry.[5]

Available Capital for Housing Controlled by Industry. — The type of industrial housing entered upon because big industry could furnish the only available capital is exemplified by Akron, Ohio.[17] In 1910 the population of Akron

was 69,000 and in 1917 it was 160,000. The manufacturers, realizing the seriousness of the housing situation, were compelled to enter the real estate business. The Goodyear Tire and Rubber Company, the Firestone Tire and Rubber Company, and the Miller Tire and Rubber Company have all been compelled to develop housing to some extent. Various other communities have met the housing shortage in a similar way. At Marcus Hook, Pa., the American Viscose Company has developed an American Garden Suburb with 261 houses. In Philadelphia there have been two small but important developments. Youngstown also has similarly felt the housing shortage. One of the most important developments there is that of the Youngstown Sheet and Tube Company. Bridgeport is still another city in which the manufacturers of the city had to take a hand in the housing problem.[18] In such instances recreational and buying facilities do not enter. The community can usually be relied upon to supply them.

Living conditions and the leisure hours of employes are of serious concern to a remote industry. The great aggregations of workers brought together by the mushroom industries of war have indicated the problem and accelerated industrial housing. The movement, however, dates from the beginning of the factory system, and efforts to provide adequate facilities have been made since that time. The colonial manufacturer who established his mill where water power was available usually found undeveloped country and was forced to provide accommodation for his employes. One project connected with a cotton mill in Wilmington, Delaware, dates back to 1831, and in the coal regions there are houses dating from 1840.[19] This need is evident in the mining industry, where shacks or bunk houses are always provided. But even in these industries, which must from their nature be other than permanent, the advantage of decent housing is assuming increasing importance. The

Colorado Fuel and Iron Company, which operates a large number of mines in four[20] Western States, has acted on the hypothesis that a steel-works district and even a coal-mining camp may be a model community. Neat and comfortable dwellings have been substituted for the proverbial squalid and unsanitary miners' shacks. The result is that numerous camps of the company are more attractive and healthy than towns of equal size.[21] The various subsidiaries of the United States Steel Corporation have also founded isolated industrial towns. The United States Coal and Coke Company at Lynch, Kentucky, has begun the construction of comfortable, sanitary houses for its 2000 employes and their families. Other similar housing developments by this same company are those at Wilson Station, Pennsylvania, for the By-Product Coke Plant and at South Donora for the American Steel and Wire Company.[22]

Desirable Ownership Policy in Industrial Housing. — The difficulties that confront industry in undertaking a housing development are numerous. In securing an adequate although reasonable return on the investment great care must be taken that tenants receive proper protection. The line between a policy that unduly interferes with the lives of employes and one that adequately protects the property is hard to draw in any instance. It is for this reason that employers have hesitated to enter the field of housing for workers. They have ordinarily sought to stimulate others to undertake the responsibility. But at times when this mode of investment brings small returns, and in new communities where the speculative builders' desire for the greatest profit will injure the employes, the employer is forced to assume the responsibility.

Paternalistic Policy Inadvisable. — Perhaps the first great housing venture was that of the Pullman Company. Here the employes were given, outright, a model town. The

president of the Pullman Company built and in a great measure regulated the entire town. Employes were rarely consulted as to their wishes or their needs. The community was conducted for, not by them. The ultimate aim was a payment to the company of at least 4 per cent on the money invested, so that there could be no adaptation of rent to wages. Trouble resulted from a situation involving fixed rents and sliding wage scales, both controlled by the company. In 1894, when wages were reduced 22 per cent and schedules of working time reduced, while rents remained the same, the men struck. As a result of the strike the company disposed of its houses, and to-day the people of Pullman provide for their own needs.[16]

Laissez-Faire Policy. — The other extreme, the "do as little as possible" policy, is typified by the development of Gary. The company in this instance moved into a practically new community, bought enough land for its own use and that of its subsidiary companies, but very little more. It used a small tract for houses for its workmen, but the number was small as compared to the demands. Thus speculative land agents reaped the excess value, amounting to $30,000,000 in ten years after its founding, created by the large population attracted by the great manufacturing industries.[23] Had the steel company bought all the land in Gary, it might have conserved the value for itself and for the inhabitants of the town.

Emphasis on Civic Independence. — A middle course is possible. In one instance a model mining town of Pennsylvania was erected by the employing company, and about a year or two later was turned over to the community, after the inhabitants had voted for its incorporation.[19] An English example of this freedom within an industrial village is that of Cadbury Bros. Ltd., which moved its plant from Birmingham to Bournville. Everything except some educational work is self-governed, voluntary, and calls for some

payment on the part of the employed.[24] The Connecticut Mills Company of Danielson, Connecticut, states that there is no charity or paternalism about their housing scheme. The company builds houses and gets 10 per cent return on the investment.[25] The Kaul Lumber Company also lays emphasis upon the fact that the workman gets nothing for which he does not pay, thus eliminating the element of paternalism.[3] It is apparent from these examples that furnishing homes for workers involves not only the provision of comfortable, convenient, and clean living quarters, but the assurance of civic independence as well.

After the employer has determined upon the necessity of housing his employes, the problems of finance, of planning the town, the type of houses, the relative cost and advantages of different materials, the standards of sanitation to be followed, the demands of the employes, the relative value of renting or selling the houses, and the necessary restrictions must be considered.

Financing Industrial Housing. — Industrial housing may be financed in one of two ways, either as a general overhead expense or by a subsidiary company. A recent investigation indicates that most housing work is conducted as a general part of the employers' principal business.[19] The danger of this is that it is not the primary business, and so will be neglected and there will be no return for the investment. If the housing scheme does not yield a return on the investment, it becomes charity, and may easily develop into paternalism. Because of this danger we notice a tendency to create a subsidiary company whose business is housing. "Indian Mill," the industrial village of the Norton Company, Worcester, Mass., is conducted by a subsidiary company,[15] as are also a number of the United States Steel Corporation towns. An interesting example of this method coupled with the use of insurance capital is that of the Goodyear Heights Realty Company, a subsidiary of the Good-

year Tire and Rubber Company. The houses are completed, and after estimating the actual cost of the lot and building erected thereon 25 per cent is added. The selling price or real estate value of the house is therefore 125 per cent of the actual cost. On this amount two mortgages are placed. The first mortgage is taken by the Metropolitan Life Insurance Company for one half of the real estate value, and the Goodyear Heights Realty Company assumes the second mortgage. The interest is 6 per cent on both mortgages. When the development was first started the purchasers were asked to pay no money down, simply move into the house and begin making monthly payments. It was later decided that a small original payment would make the plan more of a business proposition. Two per cent is the amount to be paid down. At the end of five years, if the purchaser is still in the employ of the Goodyear Tire and Rubber Company and if he has not sold or transferred the title to his property, the company will return 25 per cent to him in the form of a credit on his account.[26] That is, the company sells the house at actual cost. The following table gives the semi-monthly payments to be made on

TABLE OF PAYMENTS REQUIRED ON PROPERTIES AT VALUES GIVEN

COST	REAL ESTATE VALUE	SEMI-MONTHLY PAYMENTS (15 YEARS)		
		FIRST 5 YEARS	NEXT 7 YEARS	LAST 3 YEARS
$1,984.00	$2,480.00	$11.27	$7.31	$3.86
2,288.00	2,860.00	13.01	8.45	4.44
2,682.00	3,352.50	15.25	9.86	5.19
2,699.00	3,375.75	15.34	9.88	5.22
2,801.00	3,501.25	15.92	10.24	5.43
2,808.00	3,510.00	15.97	10.26	5.43
2,845.00	3,556.25	16.16	10.47	5.53
2,896.00	3,620.00	16.54	10.67	5.22
2,998.00	3,747.50	17.06	11.03	5.75

property whose real estate values vary from $2480 to $3750. The 2 per cent original payment is not included.[27]

Importance of Town Planning. — Few employers have realized the importance and economy of scientific planning for a housing development. Of 213 company-housing schemes recently investigated only 15 per cent had given consideration to the technique of town planning.[19] We have not profited by the experience of England, whose garden cities are well known. The town planning features came as a result of the garden city movement. In 1899 the Garden City Association was formed and in 1903 Letchworth, the first garden suburb, was organized. Large employers have realized the advantages of well-planned garden suburbs and have built such suburbs, among which are Port Sunlight, the home of the Lever Bros. Ltd., manufacturers of soap, and Bournville, near Birmingham.[13] As a result of the initiative of private enterprise the House, Town Planning, etc. Act was passed in 1909 which gives municipalities power to regulate housing developments.[23]

A few employers in the United States have realized that in order to insure a healthy, convenient, and beautiful city it is necessary to plan carefully the relations between dwellings and factories, to district the cities properly and to insist upon adequate building regulations, means of transportation, and the wise distribution of parks and facilities for recreation.[15] A town planner was consulted before the Viscose Industrial Village was built. Here we find a combination of row and " twin " houses for single families, boarding houses for unmarried workers of each sex, and in addition a community store and recreation building. Another example is " Indian Hill." The best possible grades have been secured for main streets, and only slightly steeper ones for the non-traffic ones. The situation of the community center combines proper geographic location with beauty of outlook. Reservations have been made for park

areas, and a shore drive reserves the banks of the lake to the city for all time.[28] Other carefully planned industrial villages are [16] Fairfield, one of the United States Steel Corporation's steel towns; Kaulton, built by the Kaul Lumber Company; and the Overlook Colony, Claymont, Delaware, developed by the General Chemical Company.[13]

Most industrial housing projects have been developed without attention being given to proper location of dwellings. After the site of the factory has been determined, houses for the workers have been grouped about it without regard for adequate consideration of sanitation, convenience, exposure or water supply. Town planning experts should be consulted by the employer for methods of meeting the needs of both plant and population.

Type of House. — There is no standard type for company houses, but four-, five-, and six-room houses are most prevalent.[19] There is also a choice to be made between the detached house and the row or group dwelling. In this country there is a general dislike for the group house because it has been associated with long rows of stereotyped houses. But the choice does not lie between dreary monotonous group houses and well-designed detached houses. In either case the house may be well designed and attractive or badly constructed and ugly.

A recent development of the group house is that of Sawyer Park, near Williamsport, Pennsylvania. While it is not essentially an employers' scheme it is sufficiently small for the employer forced into the housing business to consider it a hotel for certain developments. There are three types of houses: two-family houses, semi-detached or double, four-family houses, and six-family houses. They are attractive in design, picturesque, and quaint.[29]

An example of a well-designed detached house development is Eclipse Park at Beloit, Wisconsin, for the employes of the Fairbanks Morse Company. Here one finds four-,

five-, six-, seven-, and eight-room houses. Although there are five types of houses there are about forty different designs or styles of houses. Monotony has been avoided and at the same time the architectural harmony has been kept. In the words of Lawrence Veiller, "This development gives promise of being one of the most artistic, and attractive thus far evolved in this country." [30]

The conditions which determine the most desirable kind of house are the character of the labor, climatic conditions, and building costs. While the Sawyer plan and that at Eclipse Park are among the best developments in this country, the houses are too expensive for all but the skilled worker. Other experiments in housing which provide shelter, sanitation, provisions for family life and æsthetic pleasure, at lower cost, have been made. At Danielson, Connecticut, are some very attractive and less expensive houses. They have light rooms and sanitary conveniences. Exteriors vary in both style and material, some are shingled, some are clapboarded, and some are stucco.

Housing Costs. — With good judgment it is always possible to build well-designed and attractive houses within the purchasing power or renting ability of the wage earner. This is the most important consideration in industrial housing. A wage earner who is apportioning his income properly will not spend more than a week's wages for a month's rent.

A recent study of earnings in factories of New York State, March, 1919, which may be considered as indicative of the general wage situation, gives the lowest average yearly earnings as about $700, the highest as about $1800 and the average as about $1200.[31] The man earning $1200 cannot afford to pay more than $300 annual rent, and if the house is to yield a 9 per cent return on the investment it must not cost more than about $2900, and for those earning less the cost must be correspondingly lower. The type of material which is best from the standpoint of economy, health,

permanency, and durability depends upon local supply and climatic conditions.

Frame Construction. — Frame construction is usually found in coal-mining communities. These cottages cost about $1000 and rent for about $2 per room per month.[32] They usually lack adequate plumbing and the exteriors are monotonous. Some efforts have been made to improve the standard frame dwelling, notably in Danielson, Conn., a development started in 1915 by mill officials, where the cost has been about $1900. In South Barre, Mass., the Barre Wool Combing Company has built some frame houses costing about $1950 per family in 1912.

Brick Construction. — Brick construction has a comparatively high initial but low maintenance cost. The Pennsylvania Coal and Coke Company built some brick cottages before 1917 costing between $1000 and $1600. These dwellings have two rooms on each floor, a small kitchen in a rear extension, and in some cases a bathroom has been added.

Hollow Tile Construction. — In 1913–1914 a number of hollow-tile houses were built for the employes of the Lehigh Coal and Navigation Company at a cost of construction of about $1100 for a bungalow with no cellar or heat, about $1950 for a five-room house with cellar bath, and heat, and about $2300 for a six-room house with the same conveniences.

Concrete Construction. — The Ludlow Manufacturing Company used concrete-block construction for its employes' houses, with cost in 1913 from $300 to $350 per room. Poured concrete was used for the 40 dwellings completed in 1912 for employes of the Delaware, Lackawanna, and Western Railroad at Nanticoke. The cost was about $1160 for each dwelling, which contained six rooms but no bathroom. Window boxes and shrubbery are used to relieve the architectural monotony.

Stucco Construction. — Stucco has been used for the construction of houses by the Goodyear Tire and Rubber

Company. This development was begun in 1912. A number of different styles of cottages have been built. The costs vary from $1800 to $2500.[13] The stucco houses at Eclipse Park built in 1917 cost between $2700 and $2800 while the houses in the Sawyer Park development of 1917–1918, many of which are stucco, sell for $2935–$3335.

Winthrop A. Hamlin sums up the relative possibilities of the various types of materials as follows:

> Frame construction seems likely to decrease because of the generally increasing cost of lumber. . . . But in many localities wood remains cheaper than other building materials. It will also tend to be used where social changes are occurring rapidly. . . . Brick is to be recommended wherever local conditions are such that it can be cheaply secured. Hollow tile is in somewhat the same class, though requiring further development before its possibilities can be fairly judged. . . . Concrete, especially "poured" concrete, is of value chiefly in large scale housing undertakings. . . . The progress of stucco depends especially on the certitude of good workmanship in its use.[32]

The Cost of Land. — Local conditions will always determine the type of house needed. A universal demand will exist for economical building. That this is coming to be appreciated is illustrated by the advertisement of a building company which states that its object is to "deal in economic housing as a standard commodity by the manufacture and erection of low-cost dwellings and tenements."[33] But as important as building costs is the cost of land. Cheap land permits low rents; high land means high rents. The employer in the new community has the opportunity of taking advantage of comparatively cheap land, but he often allows the land speculator to gain control. This was illustrated at Gary, as indicated above.

Richard S. Childs, Secretary of the Committee on Industrial Towns, New York City, has suggested the plan of meeting the problem of increasing land values by having

the employing company create a limited dividend land company which would rent, not sell, the land. The income from land rentals at the rate of 4 per cent on the advanced land values would be enough to amortize the investment and leave twice as much money for community purposes as the town would normally obtain from taxation. At least, that is the way it figures out in Gary and Lackawanna. The land company could afford to charge less than the traffic would bear, or preferably close to what private landowners would exact, and use the revenues for services which would reduce the cost of housing.[34]

Housing Standards. — The standards of sanitation for company housing schemes vary, but a survey of 53,176 company houses shows that 18,649 or 35 per cent have no modern inside sanitary conveniences.[19] Such an oversight is unfortunate. Many firms, however, have realized the importance of developing high standards, and during the war the government established certain standards for industrial housing projects. "Standards Recommended for Permanent Industrial Housing Developments," [11] were published in a valuable handbook by the Bureau of Industrial Housing and Transportation. In brief, the standards for a single-family, a two-family house, or a single-family house with rooms for not more than three boarders are as follows:

Arrangement. Row or group houses normally not to be more than two rooms deep.

Basements. No living quarters to be in basements.

Closets. Every bedroom must have a closet.

Furniture space. Location of beds not to interfere with windows or doors.

Lighting. Electricity preferred.

Materials. Dependent upon local supply.

Ventilation. Every room to have at least one window opening directly to the outer air.

Heating. Provisions to be made for heating houses.

Plumbing. Bathtub, lavatory, kitchen sink, washtubs, toilet.

Rooms. For higher-paid workers five-room type preferred. For lower-paid workers four-room type desirable.

Lodgers. If lodgers are to be taken, additional single rooms should be provided.

Fairfield Heights of the Fairfield Steel Company conforms to a high standard in regard to heating, lighting, plumbing, and space. The sizes of rooms and height of ceilings conform to government standards.[22]

Another set of interesting standards well worthy of consideration is that suggested by English women, the wives of workmen. The following is an outline of demands based on experience.[35]

1. A bath is necessary in a separate room, preferably on the second floor, except in mining districts, when the workman must have his bath immediately upon entering the house.
2. The house should contain three rooms on the ground floor, parlor, living room, and kitchen.
3. Hot water is an essential comfort.
4. Three bedrooms are the required minimum.

High Standards Always Possible. — That high standards may be maintained even in company barracks is illustrated by the barracks of the Hercules Powder Company, Dover, N. J., which are steam heated, electric lighted, and supplied with hot and cold showers.[36] Bunk houses also may be sanitary and agreeable, as is shown by the portable bunk houses for construction workers used by the Pennsylvania Railroad. These are of white pine, lighted by electricity, equipped with screens, stationary washstands and hot and cold water, and in camps which are sufficiently large and where drainage is possible, shower baths are provided.[37]

Housing standards, in addition to minimum health requirements, should consider the habits and standard of living of the people who will occupy the houses. One writer suggests that the size of the kitchen marks inversely the

social progress of the worker's family. When the income is very low the kitchen is perforce the family living room and should be proportionally ample; for the middle income group there should be a " best room " in which to receive callers; higher-income groups demand a dining room in addition.[32]

Standards Varied for Different Classes of Labor. — The difficulties connected with the development of cheap houses and the problems in connection with their upkeep have caused company housing to cater especially to higher-paid workers. Although many companies supply houses to all classes of employes, preference is naturally given to the higher-paid workman, who is most difficult to retain.[19] There are, of course, notable exceptions. The house development at Wilson Station, Pa., for the By-Product Coke Plant, provides for different classes of workers.[22] The American Rolling Mill Company at Middletown, Ohio, provides houses for foreigners.[38] At Morgan, Pa., provision is made for various types of workers.[22] In the Viscose Industrial Village one finds houses of varying size renting from $12 to $17 a month.

Single Worker. — It is also important to provide for the single men and women, and in doing so to remember that " Liberty is worth considerable inconvenience." One English firm had no applicants for a proposed hostel because of the many rules regulating personal conduct.[39] On the other hand, the Waltham Watch Company, Waltham, Mass., successfully maintains a large boarding house for its women employes. No restraint is placed upon the freedom and movements of the inmates. A boarding house for men is provided, but not maintained by the company, in which the company prescribes the rates. No one is required to live or board at either of these two houses. There is freedom in every respect. Their existence there lowered the prices for board and room in the entire community.[20]

Renting or Selling Homes for Workers. — Whether houses should be sold to workers is of importance. There is an old-fashioned idea that the laborer should own his own home; but that this is no longer popular is shown by a survey of 213 company-housing plans, out of which only 33 reported the practice of selling houses to their employes.[19] The employer may wish to encourage home owning in order to release capital for the expansion of the industry, to stabilize the working force, and to allow people to satisfy their desire for home ownership. This is impractical where the industry is a temporary one. In a one-industry community also, home owning may serve to create rather than allay dissatisfaction, since it makes the employe feel that he has lost the ability to leave his job at will or to oppose the employer in questions of working conditions and wages. A man does not want to own a house unless he can get rid of it if he loses his job, or if the job ceases to exist in the community, or if he suspects that home owning is a weapon in the hands of the employer in case of labor trouble. For these reasons we usually find that when houses are sold to workers the last is safeguarded. In Gary and Fairfield, provision is made for buying back the house if the employe so desires. No such provision is made in Granite City, but as no mortgage has ever been foreclosed and in several instances houses have been taken back and the purchase price returned, the result has been the same.[16] In towns such as Akron the problem is not serious. There is a more ready market in case of sale and other opportunities for employment in numerous industries.

General Housing Restrictions. — The problem of restrictions is an important one in an industrial as in any other residential development. One owner may have high standards and keep his property in good condition while his neighbor may be slovenly. The Goodyear Rubber Company has

introduced several restrictions which have been proved acceptable, as follows:[40]

1. Property, with the exception of specified areas, shall be used for private and residential purposes only. There shall be no trade or business inconsistent with the occupation for residential purposes. It is unlawful to use any of the property as a dumping ground.
2. No residence shall be built on any lot or lots costing less than the required minimum. This minimum is from $1800 to $2500, according to the location.
3. The location, material and designs are subject to the approval of the Goodyear Heights Realty Company's landscape gardener and architectural advisers.
4. No building shall be erected on any lot with its front wall nearer the street than 15 to 25 feet, depending upon the location.
5. No porch or minor part of a house shall project more than 5 feet nearer the street than the building line.
6. Only one residence shall be built on any lot.
7. No fence or solid obstruction shall be built nearer the front than 60 feet.
8. A barn or garage must be of the same material as the house.
9. Violation of any of the restrictions gives the Goodyear Heights Realty Company the right to enter the property and remove the objectionable features at the owner's expense.

Community Activities

Where the employer must assume responsibility for the housing of his employes it may also be his duty to assist in the provision of a certain community life. Individual freedom is precious and should be carefully guarded. But in isolated communities and towns where there are no agencies to provide for community needs the employer can hardly avoid his responsibility. The range of these activities is wide and may include coöperative stores, health work, gardens, better parks and playgrounds, clubs, and schools. In a large city educational and recreational activities are provided by the community and the coöperation of existing nursing agencies may be secured to take care of

the health work. When the industry is remote, or a large factor in the community, the employer may through the services he renders the people develop a sense of civic responsibility.

Reducing the Cost of Living by the Coöperative Store. — Every employer is directly concerned with the purchasing power of the employes' wages. "The value of wages depends not upon the amount of money in the pay envelope, but upon what the money will buy." This has been realized by many employers when it has become evident that in spite of wage increase employes were still having difficulties in making ends meet. The Dodge Manufacturing Company sought to solve the problem by organizing an employes' coöperative club to start a "commissary." A survey of the city showed that there was an unnecessary multiplication of small stores. In joining the club each member authorizes the paymaster to pay the club treasurer five dollars, and to pay a similar amount each time the member draws goods amounting to more than his balance in the club treasury. No deliveries are made and articles are sold in uniform amounts. Any profits go to the Employes' Benefit Association, but there is no intention to make the store do more than carry itself. The effect on the community of this store has been to bring down the prices of staples which are handled by both commissary and regular stores.[41]

Another attempt to reduce the cost of living for employes is that of the Coöperative Store of the Metropolitan Life Insurance Company of New York City. The employes run the store, but the rent and salary of two clerks are paid by the company. Goods are sold for cash only, and at a price which will cover the overhead costs, which are not paid by the company. The annual business done is about $120,000. This store handles clothing as well as foodstuffs.

Company Store in Small Community. — In isolated communities the company store had early origin. In England

the "truck" system is the term which denotes payment in kind or otherwise than in cash. Twenty States of the United States have passed laws which regulate this practice to some extent. "Cash means freedom." [42] It permits the wage earner to buy where and what he wants, but even with this safeguard a store may be a dangerous weapon in the hands of the employer in an isolated community. In the city, employes on strike may trade at another store, but this they are unable to do when the company's store is the only available source of supply. Very little information is available as to the present status of these stores. The employe is protected to some extent by legislation, but various reports tell us that such stores still exist in modified forms in mining and steel towns.

Thomas Darlington reports as follows after a visit to a Colorado Fuel and Iron Company's [21] operations:

> In every town, and especially in those located at a distance from centers are to be found excellent company stores where almost all the necessaries of life can be purchased at reasonable rates, of better quality and at lower prices than could be given by non-company stores.

In the isolated community we find the greatest need for true coöperation. Company stores in Russia have become a part of the Coöperative Movement and their example might be followed here. The employes of one industry living together in a small community ought to form a suitable group for coöperation. The members would be closely bound together by social as well as business intercourse. The mine workers of Illinois have organized very successful truly coöperative stores. Here the union as well as the common occupation have been the basis of success. The benefits arising from coöperative purchasing and distribution which would make it pay the employer to encourage such organizations are stated by Mr. J. P. Warbasse as follows:

> In some industrial communities it has been shown that by cooperative organization it is possible to increase the worker's wage the equivalent of one dollar a day. . . Coöperative purchasing and distribution mean better goods, freedom from adulterations, freedom from short weights and saving in the expense of advertising. It also means better contentment among the workers and more stability. . . . The incentive to move is diminished. The incentive to become established and create a permanent home is increased.[43]

Educational Value of So-called Coöperative Stores. — Although a majority of coöperative stores in the United States have failed because of lack of leadership, poor management, lack of legal safeguards and unfavorable environment,[44] there seems to be no reason why the employes of one company should not furnish a sufficiently homogeneous group for a successful coöperative store, providing the other difficulties are overcome. The employer should be able to furnish the much needed advice in regard to financial matters and general guidance. The great number of so-called coöperative stores in part financed by the employing company are not truly "coöperative," but they are steps in the right direction. Pending the development of cooperative buying on a large scale, as is done in Great Britain and in continental countries, much can be accomplished by attempts fostered by industrial establishments.

Gardens for Employes. — The problem of providing gardens has been considered by some companies to increase the contentment of the workers and to improve the appearance of the community. The ideal of a house and garden for every family is absurd, because what is play for some is drudgery for others. In about one third of 233 company-housing schemes gardening was encouraged by means of prizes.[19] This is done most often in isolated industrial towns, but one example of an industry in a large town which has laid emphasis upon gardening to beautify the city and at the same time to provide a desirable form

of recreation, is the National Cash Register Company at Dayton, Ohio. The Boys' Garden Company was incorporated in 1910, with forty boys from ten to fifteen years of age as stockholders, and a capital stock of forty dollars. The parents of these children need not be employes of the company. A two-year course in gardening is given under an expert gardener. The produce is sold to the officers' lunch room and prizes are awarded for the best garden and the best bookkeeping. This company also offers prizes for the best flower garden. A few isolated instances such as this may be found, but in general such work is better left to one of the various gardening associations.[45]

In remote communities, and especially where foreigners are employed, one finds much encouragement being given to gardening. Prizes are often offered for the best garden. The American Bridge Company offers twelve prizes, one $10.00 first prize, one second prize of $5.00, and ten prizes of $1.00 each. The foreigners know how to raise vegetables and flowers. They like it and it helps to reduce the cost of living. For many years the United States Steel Company corporation has offered special inducements to its foreign employes to utilize vacant ground for raising vegetables, and similar encouragement is often given to the development of home gardens. The quantity of vegetables raised is frequently beyond the needs of the community, and much is wasted. The Oliver Mining Company solved this problem by building several vegetable cellars in its mining towns in the Minnesota Range. Individual bins with individual lockers were found to be most satisfactory.[22]

Health Work. — The help of the employer in maintaining the standards of a small community is sometimes necessary. The Ludlow Manufacturing Company built an excellent little hospital and presented it to the town of Ludlow. The company meets all the expenses incident to the care of the people of the town, most of whom are employes

of the company. Another company which interests itself in health work is the United States Playing Card Company, which employs visiting nurses who spend part of their time visiting in the houses of sick employes and their families.[46] The Clark Thread Company of Newark, New Jersey, employs a visiting nurse who is mainly an instructor giving nursing care when necessary. She teaches cooking, infant care, the feeding of children, home nursing, gardening and marketing.[47] The Bush Terminal Company also realizes the advantage of extending health work to the community, so at Terminal City we find a hospital and dispensary built by the company.[48] The New Jersey Zinc Company at Palmerton, New Jersey, employs a settlement worker who speaks foreign languages and who helps to improve the housing conditions.[49]

An example of excellent community health work in Southern mill towns is given by Mrs. Laurie Jean Reid, Chief Nurse at Extra Cantonment Zone No. 14. Mrs. Reid found that one manufacturing company with five cotton mills in Georgia had done no public health work. As the result of her efforts, the company has established at each of its villages a milk station and a dispensary in charge of a nurse. There is also a day nursery in charge of a matron, and in one particularly isolated village the company has put up a hospital. In one village a laundry is being built and a sterilizer installed for the village and a bath house with plunge and shower.[50]

The Colorado Fuel and Iron Company has stationed experienced nurses in several of its camps. These women, in addition to their regular nursing service, go into the houses of the employes and teach hygiene.

The health work of the United States Steel Corporation and its subsidiaries includes a visiting nursing service. The services of the nurse are offered free by the company to the families of the employes, but are not forced upon them.

No nurse ever visits a house unless requested to do so by a member of the family.

The Tennessee Coal, Iron, and Railroad Company has added to its health work a dental clinic for the families of employes. A dental surgeon has been employed to care for the teeth of the children in the various schools maintained by the company. No dental work is done without a written permission from the parents, and it is interesting to note that during one year in not a single instance was permission refused.[22]

At some plants special courses in practical housekeeping are arranged by the company for the benefit of the wives and children of employes.[22] The visiting or district nurse is usually the teacher for these classes. Some companies provide houses or special rooms and equipment for the maintenance of this work. In other instances visiting housekeepers are employed who go into the house and teach cooking and housekeeping. This kind of service is particularly valuable where many foreigners are employed who do not know the proper way to prepare many kinds of cheap foods. It is the duty of the visiting housekeeper to assist in reducing the cost of living by giving instructions in appetizing ways of cooking the cheaper articles of diet. The Consolidated Coal Corporation of Virginia employs a dietetics teacher who goes into the houses of the employes.

Recreation. — Provision for recreation takes the form of parks, swimming pools, club houses, or playgrounds. At Terminal City we find provisions for bowling, billiards, basket ball, baseball, tennis, and outdoor recreation in the summer time.[48] The New Jersey Zinc Company at Palmerton provides a kindergarten at which those women who work and who have no one with whom to leave their children can bring the little ones for the day's stay. There is also a neighborhood house which acts as a club for the employes, but is used by others as well. It was patronized

during one year by more than 14,000 grown-ups and children.[49] The most important community work of Hershey, the noted Pennsylvania chocolate town, is Hershey Park, which is open to all. In this recreational area are included a swimming pool, dancing pavilion, and lawns set with appliances for athletic sports.[51] The Eastman Kodak Company also provides "Kodak Park" for the use of all citizens of Rochester. The fact that the employes do better work when they know an interest is being taken in their families led the Endicott Johnson Company to build a 2,000,000-gallon swimming pool which is reserved for the use of children during the daytime.[52] The Ludlow Manufacturing Company has built a club house in which there are a gymnasium, bowling alleys, swimming pools, and reading room, and near by is the athletic park for outdoor sports and children's recreational classes.[48]

Out-of-door recreation is emphasized in both cotton and mining towns. At Saxon Mills, Spartanburg, S. C., there are volley ball, tennis, basket ball, and swimming for every one. There is also a community building surrounded by a playground.[53]

The fact that "vigorous childhood leads to vigorous manhood" has led the various subsidiaries of the United States Steel Corporation to give much attention to playgrounds. The first playground in connection with the Steel Industry was established in 1910. In 1914 there were 101 playgrounds at the operations of the Steel Corporation. In most cases they are owned, operated, and maintained by one of the subsidiary companies. In a few cases they have been turned over to the local playground association, the company still contributing to the maintenance. These playgrounds are open to all children of the neighborhood. In the evenings the playgrounds are used for music, moving pictures, and other entertainments for the grown-ups. The cost of a playground is small (between $118 and $120

are the figures given by the Ellsworth and Cokeburg Collieries for 1913) and the results far-reaching. The standards of child life—physical, mental, and moral—are raised and the results are reflected in more healthful living conditions in the home.[54]

The recreational activities of the Colorado Fuel and Iron Company include moving picture shows, playgrounds, and other activities planned with the assistance of the Y. M. C. A. secretaries and committees on recreation and education created by the industrial representation plan.[21]

In contrast to the glowing tales of playgrounds for the children are the conditions in Homestead, one of the earliest steel towns. A recent article states: "Little children played on the sidewalk flush with the four-tracked railroad, to get their last tire before tumbling on to the family mattress." This same writer says of the works of the National Tube Company near Lorain, Ohio: "The street car picked its way through an alley not wide enough for a sidewalk, in addition . . . a playground for the children who darted in and out. The shacks and houses, the children's homes, lined the street so close that the steps were set on the brick paving. The backyards of cinders ran down to the railroad, or their outhouses met outhouses of other shacks which faced the railroad." Thus we have two instances of steel towns in which the employing company has not assumed the responsibility of maintaining a healthy community life, and on the other hand the town has failed because the inhabitants are not possessed of adequate resources.[55]

The club house also takes an important part in community recreation work when its use is not limited to the employes of the company. The club house of the Oliver Iron Mining Company is open at all times to members and their friends. The Boys' Club of the Lackawanna Social Center is an "open" club. Any boy in the village is welcome. The social center of this company also provides club facilities

where employes and non-employes can spend their leisure hours profitably. In 1907 a club house was built at Burham by two steel companies, with the assistance of individual subscriptions. This is really a community center and is managed by directors composed of people from the neighborhood. Another example of a community club house is that built by the Cleveland Cliffs Iron Company, at the mining town of Gwinn. The membership for non-employes is six dollars a year, while employes pay three dollars' annual dues. There is a small membership fee of ten cents per month for boys of the community, who have the privilege of the game and reading room and swimming pool at certain stated times.[56]

Education. — The employing company in a corporation-owned town may also have to assist in educational activities. One instance of this is that of Hershey, where the chocolate factories are located. The country schools of this district were united and placed on a graded basis. Mr. Hershey built and equipped a school costing $20,000 in 1914. The Hershey public library is also available to the community.[51]

Educational work is emphasized by the Colorado Fuel and Iron Company. There are no " company " schools, but the company coöperates with the school board to secure the best advantages. The property in the vicinity of its camps is usually owned by the company, so it bears most of the expense of maintaining the schools. An interesting experiment has been tried at the coal-mining camp at Sopris, Colorado. There the children are given credit for instructing their parents at home. Gradually the school system is being extended to include high school work.[21]

Conclusion

The fact that industrial efficiency depends so much upon the healthy, happy life of the employes outside of working

hours has led some employers to take an interest in the house the employe lives in, the recreational, educational, and health facilities which are available for him and his family. But there are certain important principles which every employer must face squarely. What the employe demands first is fair wages. Any substitute for this will fail. What the employer wants is efficient, permanent employes. If the living conditions in a community are such that the payment of fair wages alone will not secure decent living conditions for his employes, economy and justice make him responsible for improving these conditions. In the large city an employer can secure decent living conditions for his workers by making the best transportation facilities available, having an information service in regard to available accommodations and perhaps assisting in forming a co-operative store. His responsibility in the isolated community is greater, and so also are the dangers of his assuming that responsibility. Some pitfalls may be avoided if the method of selling houses is such that the worker will not lose credit for payments if he leaves the company; if leases are not automatically and immediately terminable in case the employe leaves the company or there is a strike; if the houses provided are hygienic and comfortable, and if there are no restrictions which impair freedom, such as prohibiting orderly meetings of union organizers. The employer may find it necessary to provide educational, recreational, and health facilities and also a store, but if wages are sufficient to provide the necessary funds, and interest in community is aroused, the employer may soon abandon his direct efforts, let the people decide what they want and give them an opportunity to manage the thing themselves. He may in this way become a strong force for the improvement of the general health and happiness of the community without facing the danger either of paternalism or of laissez-faire policy.

CHAPTER XI

INSURANCE, SAVINGS, AND LOANS

Contingencies Which Threaten Each Individual. — Sickness, accident, death, old age, and invalidity are contingencies in the life of the individual. But when they will affect any given individual is uncertain. A person is sure to die, but the age at which his death will occur cannot be predetermined. Almost everybody will be sick at some time or the other, but again the uncertainty of the time or the frequency and extent of illness make it difficult for an individual to provide out of savings for the lost wages and the cost of illness. The basis of all insurance is to spread over a group of persons a loss that may affect any one of them, and is certain to affect some of them within a given period.

Shifting Basis of Mutual Help. — In primitive society the problems of the individual were those of the group, and responsibility was assumed by the family or tribe for all contingencies. With the growing complexity of society, the basis of mutual help shifted from the blood tie to the guild, to the trade group, or economic class. Mutual Associations and Aid Societies were formed to provide for the hazards which confronted the workingman and to distribute his losses among the group.

Societies for Mutual Aid. — Societies for mutual aid are known by different names in various countries. Great Britain has Friendly Societies, Trade Union Benefit Societies, and Shop Clubs; France has her Sociétés de Secours Mutuels; Germany, Local Sick Funds, Establishment Funds, and Mutual Aid Funds; in the United States, the corre-

sponding organizations are the Fraternal Societies, Establishment Funds, and Trade Union Benefit Schemes.[1]

Insurance Companies. — These coöperative efforts have reached only a portion of the working class. In addition, mutual and stock insurance companies in Europe and the United States supply the wage earner with needed protection against financial embarrassment. To date, these have sought especially to meet the contingency of death and old age, but they are rapidly broadening their field to include sickness, accident, and invalidity. "The Prudential" of London is to-day one of the largest carriers of sickness insurance in England. "Industrial Insurance," as administered by the life insurance companies in the United States, differs from "Ordinary" life insurance only in that the premium is paid in small weekly installments and that the premiums remain constant while the amount of insurance varies with the age. The cost of this type of insurance is necessarily higher than "Ordinary" insurance because of the expense of premium collection and the higher mortality rate of the class of people taking out these policies. In spite of this, "Industrial Insurance" has been used extensively by the wage-working classes to provide protection for the whole family, and in particular for women and children who are excluded from membership in industrial mutual benefit schemes. "Group Insurance" is another method by which the insurance company reaches the industrial classes. It consists of a blanket policy issued to an employer, covering one or more of the risks to which the employes of his establishment are subject. The premiums for this form of insurance may be paid by the employer alone or by the employer and employes jointly. Because premiums are collected directly from the employer in bulk, the cost of Group Insurance is proportionately less.

Legislation. — The interest of society in the problem of mutual aid is evidenced by the passage of Social Insurance Laws by European governments, which make for the protec-

tion of wage earners. In the United States, legislation of this type has dealt so far only with accidents. Since 1909 Workmen's Compensation Laws have rapidly extended to thirty-eight States, the Territories of Alaska and Hawaii, the Island Possessions of Porto Rico and the Philippine Islands. A Federal Law provides for half a million employes.[2]

Standards by Which Insurance Carriers may be Judged. — It is important to discuss the part which the management of industrial plants should play, both now and in the future, in developing plans for the protection of their workmen against the hazards of industry. These questions are now being considered by employers because they appreciate that the employe freed from dread of the loss of earnings is a more efficient and contented worker, and because the industrial unit has been found convenient for the administration of plans of protection against such losses. Cooperation on the part of the employer in providing insurance need not savor of paternalism, whether he pays the premium on a Group Insurance policy, or helps the employes to maintain their own mutual benefit society. Conditions of work and mode of employment are frequently factors contributing to the breakdown of the human machine. When the breakdown comes it is only just that industry should take its share of the responsibility.[3]

The points to be borne in mind in the consideration of methods of protection or insurance are as follows: (1) there must be as wide a distribution of risks as possible; (2) administration should be by experts; (3) the benefits must be adequate; (4) the cost of administration should be low; (5) the freedom of the employe to choose employment where he pleases must not be hampered by his participation in any insurance scheme.

Sickness Insurance

Cost of Illness to Industry. — The frequency with which illness occurs, the loss of time and the financial embarrassment which it causes, and the devastation it produces on the nation and industry by lowering power of resistance and efficiency, have caused the development of methods of partial compensation for lost wages. Sickness surveys made by the Metropolitan Life Insurance Company, covering 600,000 individuals, show that an average of 2.02 per cent of the population studied were sick, while 1.88 per cent were unable to work, and that the average annual loss of time was 5.6 working days.[4] The Social Insurance Commissions of California and Connecticut estimated the time lost annually by each wage earner through illness as six days,[5] while the Ohio Commission puts the average at nine days.[6]

Present Extent of Sickness Insurance. — It is difficult to estimate with any exactness the extent of sickness insurance among the wage-working population. But from the study published in 1908 by the United States Department of Labor [7] and later investigations made by Sydenstricker for the United States Public Health Service,[8] it would seem that the number of wage earners protected is small and that the amount of protection is inadequate.

Trade-Union Funds. — Trade unions have made attempts through voluntary action to insure their members. The majority of these schemes give benefits in case of temporary disability. This usually includes disability resulting from sickness and accident. The Sydenstricker study indicates that about 85 per cent of the national and international unions had sick benefit schemes in some of their locals. Of the 530 local union benefit funds included in the Bureau of Labor Statistics study, 308, or 58 per cent, paid sick benefits. But labor unions do not in all probability cover more than 30 per cent of the industrial workers. The periods for

which benefits are paid vary, but about 70 per cent of the temporary disability funds pay for thirteen weeks or less. The amount of cash benefit is from one dollar to fifteen dollars per week, but the average amount paid per day for temporary disability, according to available information, is about eighty cents. Only thirty-three of these local funds investigated include any provision for permanent disability.

Fraternal Societies. — The fraternal societies have achieved limited success in the field of sickness insurance. In 1915 thirty of the 179 National Fraternal Societies offered sickness insurance. The sick benefits are usually $5.00 a week for a period varying from twelve weeks to nine months.

Employes' Benefit Associations. — An effort has been made by Mr. Sydenstricker to give a conservative estimate of the number of manufacturing and mining establishments having mutual benefit funds in the United States. He states that although the answers to his questionnaire indicate that 19 per cent have such funds, a more correct estimate is probably 10–12 per cent. The reason for this lower estimate is that probably the large majority of those not replying to the questionnaire had no such funds.

Of the 339 funds studied, two thirds paid benefits for thirteen weeks or less. This is a situation somewhat similar to that found by the Bureau of Labor Statistics. In its study of 429 funds, 55 per cent paid benefits for thirteen weeks or less. The predominant weekly rate for temporary disability was five or six dollars. Only about 12 per cent of the 461 funds studied by the Bureau of Labor Statistics pay permanent disability benefits.

Basis for Employes' Benefit Association. — Perhaps the most thorough study of Mutual Benefit Associations was that of 579 made by Mr. W. L. Chandler of the Dodge Manufacturing Company.[9] From this investigation certain conclusions were reached and tried out in the Dodge organ-

ization. The results of this survey answer several problems, as follows:

(1) A benefit association increases the efficiency of its members. It is a means of eliminating some of the economic waste due to illness.

(2) To be effective, an association must be sound and command the confidence of the employes. The rate should be safe so that assessments are not necessary. Actuarial guidance is necessary.

(3) It is better to make the system so attractive that all will want to join than to make it compulsory. The experience of the Dodge Association and others shows that a consistent and enthusiastic sales effort by the secretary will result in about a 70 per cent membership.

(4) The association should be managed for and by the employes with the counsel and coöperation of the management.

(5) The employer may allow the officers of the association to transact their business on company time, but the members should carry the balance of the cost. If the employer assumes part of the premium it may seem paternalistic. The Dodge Manufacturing Company allows the officers to transact their business on company time.

(6) The question of retention of membership in an association when an employe leaves or is laid off should be given careful consideration. Unless the member remains within the same locality supervision is difficult. The Dodge Association has solved this difficulty by terminating the membership of any employe when he leaves the employ of the company, except in case a member is temporarily laid off.

(7) There may be various classes of members, each member electing benefits which best suit his needs. The total benefit received by any one person should not exceed 90 per cent of his wage. The Dodge experience shows that an effort should be made to induce members to carry at least 50 or 60 per cent of their average wage.

Because of the varying conditions it would be an impossibility to set down hard and fast rules for the organization or reorganization of an Employes' Benefit Association, but Mr. Chandler's general principles, based on wide experience, cannot but be helpful to any one attempting to establish a new or increase the efficiency of an existing association.

Success of Joint Management. — It is only within recent years that employers have begun to realize that by lending their coöperation the employes' benefit association can be made a much more effective instrument for establishing that necessary confidence and good-will between employer and employe which result in decreased absenteeism and labor turnover.

The Bureau of Labor Statistics made a study of the relationship between management and membership and found that where the funds were managed by employes, 30 per cent of the employes were members; where managed by employers alone, 75 per cent of the employes were members; and where managed jointly, 66 per cent of the employes were members.[7] These figures point to apparently better results in associations managed by employers. In the long run the objects and aims of Mutual Association may be better conserved if the members have the opportunity and gain the experience of joint management or management with coöperation of the employer.

The International Harvester Company's Mutual Benefit Association is managed jointly by a board of trustees, one half chosen by member employes and one half named by the company. The company contributes $25,000 per year if 50 per cent of the employes are members, and $50,000 if 75 per cent are members. Since the founding of the association in 1908, the larger sum has been contributed every year and there has never been any deficit in the fund. Membership is voluntary.[10]

The membership in the association of the Cadillac Motor Company is voluntary. The company pays all expenses of administration. The association is in charge of the superintendent of the welfare department, with an advisory committee, one half of which is selected by the management and one half elected annually from among the employes. The judgment of this committee is final in all appeals.[11]

The Huyck and Sons Employes' Benefit Association was established in 1911 with about 98 per cent of the employes as members. It is operated by two committees, one representing the men and one the women. Each committee is made up of members representing the employes and the company. The company pays all the expenses of accident compensation and pensions, and the employes contribute 1 per cent of their wages toward the cost of sickness insurance.[12]

Employers' Judgment of Mutual Benefit Associations. — Many corporations have already passed favorable judgment upon the results of an Employes' Benefit Association. The Cadillac Motor Car Company, the International Harvester Company, F. C. Huyck and Sons, and numerous others give the results of the Employes' Benefit Association in rather definite language as follows: It has been successful in preventing malingering, it brings the employe back to work with a lighter load of debt, it breeds the spirit of man and company coöperation, encourages contentment by teaching self-reliance, and it is worth more to the company than it costs.

Group Insurance. — Insurance companies are developing "Group Insurance" to provide both life and sickness insurance to meet the problem of insolvency which faces the detached mutual benefit association. The employer usually pays the life insurance premium, but a contributory plan has proved successful for sickness insurance. In every establishment where this plan has been followed, over 80 per cent of the total number of employes have voluntarily enrolled. It is not necessary that every employe be enrolled, but if the plan is attractive the per cent joining will ordinarily be high enough to make insurance feasible.[13]

Group sickness insurance is of such recent origin that it is difficult to find any statement of opinion as to its results except in a very general way. Mr. Feiss of the Clothcraft Shops

in Cleveland, after an investigation of almost every known scheme of insurance, concluded that schemes conducted without the aid of experts were apt to fail in their purpose. The Clothcraft Shops placed all of their insurance, including accident and sickness, old age, and life insurance, in the hands of an insurance company, with a department within the plant organized for their supervision and administration.[14]

Standards of Evaluation for Various Methods of Sickness Insurance. — Each type of insurance should be evaluated according to the opportunity it offers for the distribution of risk, economical administration, supervision by experts, the degree to which it permits freedom to the insured, and the adequacy of the benefits provided.

Distribution of Risk. — The trade union may be able to manage simple forms of insurance which do not demand heavy reserves and large investment. Although there is not very wide distribution of risk in a small local union the members are exposed to similar hazards. The habits of members are known and malingering is more readily prevented. The local fraternal society, which is the usual carrier of sickness benefits in fraternal orders, also lacks wide distribution of risk. "The strength of the fraternal association lies in a certain sympathy, even sentimentality, which binds the members together in strong bonds, but which obscures the judgment of hard mathematical facts and is inconsistent with the necessary cold-blooded calculation and business direction which assures the wise management of funds."[15] The statement of many employers indicates that employes' mutual benefit schemes organized in the industry with the coöperation of the employer have the advantage of economy and the easy prevention of malingering, and should have no difficulty in providing temporary disability benefits in case of sickness and accidents. But here again the distribution of risk may not be sufficiently wide. An epidemic, before a reserve has been developed, is certain to result in

the bankruptcy of an employes' benefit association, even if the premium is ordinarily adequate. It is possible that these associations may serve as a nucleus for the provision of more extended benefits under the group plan, whereby the benefit association would be reinsured by a regular insurance company. The cost would be low, but rates would be determined and surplus invested by experts. Group insurance is the only type of insurance in which solvency is secured by wide distribution of risk and expert administration.

Benefits. — Neither the trade union, fraternal society, nor establishment fund provides for sufficient benefits. Because of the danger of malingering, the payment of full salary has not been found feasible. The Metropolitan Life Insurance Company, however, has found it possible to insure its employes, under a group plan, for a benefit equivalent to two thirds of the weekly wage for twenty-six weeks, with a reduced benefit continuing to age 65.[16]

Restriction of Liberty. — No form of insurance will meet with success and accomplish results which restricts the liberty of the employes or savors of paternalism. The Employes' Benefit Association organized properly, with the coöperation of the employer but controlled and supported by the employes, seems least likely to restrict liberty. The fear that the system of insurance may be used in labor disputes as a weapon against strikes is a real one that must be faced. If this difficulty is met, employers will ordinarily be glad to contribute to a voluntary system of sickness insurance which they believe to be actuarially sound. The benefit association, if protected by reinsurance, is safe as well as democratic.

Province of Sickness Insurance in United States. — In the United States sickness insurance has accompanied the more important and widespread campaign for the improvement of health conditions. The province of insurance is

not to prevent sickness, but so to distribute the loss consequent upon illness that a substitute is provided for wages during the period of disability. " It is thus simply the handmaid of a larger vision of society which sees the possibility of dealing with social ills, not by giving compensation for their effects, but by eradicating their causes." [17]

Life Insurance

Life Insurance Inadequate. — The death of the breadwinner invariably causes economic loss to the family, especially in the case of premature death. Deaths under the age of forty-five constitute nearly 50 per cent of all deaths in the professional classes, 60 per cent in personal service, 55 per cent in manufacturing and mechanical industries, and 68 per cent among laboring and servant classes.[1] The working class is largely unable to provide for other than present-day needs unless that provision is cheap, and if one adds to this the fact that the motive for taking out life insurance is an unselfish one, it becomes evident that the vast majority of the population have little or no protection against the distress which commonly follows the death of the wage earner. That some form of life insurance is needed is abundantly testified to by one large automobile company carrying group insurance. This company kept close record of the conditions in the homes of its employes. Out of the first fifty claims that were paid, it was reported that there had been only one case in which the claim money was not urgently needed to prevent immediate distress. Another large company studied the need for the claim money in over one hundred homes, with practically the same result.[18]

Present Provisions. — There have been various attempts made to offer the worker a method of protecting his dependents. Insurance companies offer ordinary life and industrial policies. Ordinary life insurance is usually issued

in sums of $1000, or multiples thereof, with premiums payable annually, semi-annually, or quarterly. In 1918 approximately 10 per cent of the population in the United States, or 10,000,000 persons, held ordinary life-insurance policies amounting to about $20,000,000,000.[19] But although this form of protection is popular among the middle classes the vast majority of wage earners are unable to save the required amount for the premium. In order to make life insurance available for a larger part of the population, industrial insurance has been developed which provides protection for every member of the family from age 1 upwards. The number of industrial policies issued by insurance companies is large, about 41,610,168 of these policies being in force in 1918.[19] Mutual associations, trade unions, and establishment benefit societies have also attempted to provide death or funeral benefits. The fraternal societies usually issue life insurance. The expenses of administration are comparatively low.

Employes' Benefit Associations. — The average insurance carried per certificate by Fraternal Societies is nearly $1000. The policy-holders are in part tradesmen and those engaged in mercantile rather than in industrial pursuits.[20] Ninety per cent of the establishment funds included in the United States Department of Labor study pay death benefits, the predominant amount being $50 and $100.[7]

Group Life Insurance. — Group insurance originated in the field of Life Insurance because of the need for more effective and more economical means of safeguarding the family of the wage worker. There is reason to believe that group insurance, with its financial soundness and management by experts, will be adopted as the standard method of providing the wage earner with protection. It is issued not only to cover death but may include also sick and accident benefits. Under the plan, employes of one employer may have their lives insured for amounts of not less than

$500, nor more than $3000. In the large majority of States a medical examination is not required where the group includes more than fifty individual lives. A blanket policy is issued to the employer, and certificates of insurance are furnished for each employe covered. Group insurance is generally written on the low cost One Year Renewable Term plan; the premium usually paid by the employer approximates about 1 per cent of the total amount of insurance provided. The amount of life insurance awarded each employe may be graduated on the basis of length of service, salary, or class of employment; thus representing both a reward for past services and an incentive for future services. Another method is to give each employe a uniform fixed amount of insurance.

This form of insurance was inaugurated in 1912 by a company which issued a $7,000,000 policy on the lives of the employes of the Montgomery Ward Corporation of Chicago. In 1920 all records were broken when over $50,000,000 insurance was issued on the lives of 70,000 employes of the General Electric Company.

Evaluation of Various Forms of Life Insurance. Trade Union and Establishment Funds. — Neither the efforts of the establishment funds nor of the trade unions can be dignified by the term life insurance. The more important criticisms of these efforts are that the benefits are so small that it is not life insurance at all and that most of the funds are not actuarially sound. The danger that these funds will fail is lessened if there is a continual entrance of new members, but experience has shown that this is difficult to obtain. The consequent cost to the persistent members becomes practically prohibitive. The more serious criticism is perhaps that the economic problem of death is not met. One of the exceptions to this is the International Harvester Company's benefit scheme, which provides a substantial death benefit of two years' average wages, but not more than $3000.

Fraternal Insurance. — Although there are no figures, the general opinion is that fraternal societies do not provide life insurance for those most needing it, the low paid and unskilled. This form of insurance is often actuarially unsound.

Group Life Insurance. Costs and Results of Group Life Insurance. — Group life insurance is the only system under which the wage worker's family is adequately protected through the industry by an organization in which the basic principles of insurance are followed. It has developed chiefly as an employers' proposition and is usually furnished on a gratuitous basis. The employe's motive for taking out life insurance is an *unselfish* one. Because of this fact and the expense involved, this form of protection does not lend itself so well to the development of a contributory plan. Where it is combined with a contributory sickness policy any possible tendency to paternalism is overcome and a real provision for the dependents of the wage earner is made. This is the form of insurance which the Metropolitan Life Insurance Company offers to its home-office employes. The life of every employe whose salary is less than $5000 a year, who accepts the offer of the group disability policy towards which the company pays a percentage of the premium varying according to the years of service of the employe, is insured for an amount equal to one year's salary up to $2500, the company paying the full premium. There is an arrangement by which an employe leaving the service of the company can secure insurance without medical examination. The offer to the field force is similar, but the maximum of the insurance is in this case $2000.[16]

Experience has demonstrated that an employer's return on this group life insurance investment will vary in proportion to the extent to which his employes are brought to understand group life insurance and appreciate its benefits. The best results cannot be secured if the group life transac-

tion is limited to the issuance of the policy and certificates, the collection of premiums, the payment of death claims, and satisfactory handling of the limited clerical work involved. To insure the employer a satisfactory return on his investment, it is necessary that the group life idea be " sold " to his employes. At least one company has created an organization which undertakes to reach not only the employes, but systematically and regularly to carry back into their homes and to their families, an appreciation of the employer's adoption of group life insurance.

The increasing popularity of this insurance is perhaps the best indication of the returns that employers are receiving from such an expenditure of one or two per cent of their pay roll.

The following comments by employers are of interest: " We think the benefits derived from the proposition warrant the expenditure and are very glad that we made the arrangement, both from a humanitarian standpoint and from the fact that it increased the satisfactory relations between the men and the company." [21] " It is the best thing I have ever had anything to do with in my business experience in dealing with employes. If it cost twice what it does I would not hesitate to keep it." [21]

Accident Compensation

Some Accidents Inevitable. — The experience of many years indicates that after all possible safety devices have been installed, a certain number of accidents are inevitable.[22]

Basic Principle for Industrial Accident Insurance. — Almost all countries agree that the entire cost of compensation for industrial accidents should fall upon the employer. The conception of " trade risk " underlies the development of this doctrine as opposed to the old theory based on " the fellow-servant rule," " the assumption of risk " and " con-

tributory negligence." The principle of "trade risk" is based on the fact that many accidents occur through the fault of no one, but simply as the result of certain industrial processes, and that because of this, industry and not the employe should bear the burden.[1]

Development of Compensation Principle in the United States. — The transferring of the financial responsibility from the employe to the employer is the compensation principle. To provide compensation is the duty of accident insurance. Since 1909 the Workmen's Compensation movement has followed the example set by Europe. At the present time Workmen's Compensation laws are in force in most of our States. The English system in which the employer is allowed to select the agency through which he will insure has been followed in this country in preference to the German system of compulsory insurance in mutual societies. In thirty-one States the employer is given option as to the method of insuring his risk, and in twenty-nine States self-insurance is permitted.[6]

Insurance Carrier. — As the financial responsibility of employers for industrial accidents has become practically a universal principle, the method of insurance is important to the workingman only in so far as solvency and certainty of payment are guaranteed. It is a problem primarily for the employer, who will select the carrier insuring economy and efficiency. There is such a lack of uniformity of opinion even within a given State that it seems impossible to estimate the value of the various schemes. Self-insurance has been recommended as a means to force interest in "Safety First." But this form of insurance is probably the least sound, financially, because of the long period over which payments must be made and because a very serious accident may make it difficult to meet obligations. The installation of safety devices probably accomplishes the same result as self-insurance, according to the experience

of the Portland Cement Company of California. The hazard in connection with the manufacture of cement presumably was such as to warrant the Board of Insurance Underwriters to agree upon a rate of 5.7 per cent of the pay roll as a premium for a policy covering the risks, in conformity to provisions of the Workmen's Compensation Act. This would have amounted to $2736.00 a month. As a result of the installation of safety appliances and intensive educational campaigns and the selection of risks through medical examinations of those seeking employment, $709.96 was paid in insurance premiums for ten months and twenty-five days.[23]

Standards for Insurance Carrier. — All forms of insurance must be judged upon the basis of *security, cost, and service.* Self-insurance is really non-insurance, since there is no set reserve fund. Mutual insurance carriers will probably survive in the field of accident insurance, but the effect of compensation thus far indicates a gradual drift in the direction of the strongest and most efficiently managed stock and mutual companies. To date, the monopolistic State funds, with few exceptions, have not succeeded in materially cutting the cost of insurance, but have in competition with private companies been very helpful. It is likely that the mutual association and the State fund will be allowed to compete. Whatever may be the ultimate development, it is reasonable to expect that industry will insist upon the greatest security and the best service at the minimum cost to itself.[24]

Old Age Insurance or Pensions

Extent of Old Age Dependency. — Old age is inevitable and not an emergency, but the fact remains that there is a dependent population 65 years of age and over, who either because of low wages, misfortune of one sort or another, or individual shortcomings, have been unable to provide for the latter years of their lives. Approximately 1,250,000 of

the people of the United States above 65 years of age are dependent upon public or private charity to the amount of about $250,000,000 annually. One person in 18 of our wage earners reaches the age of 65 in want. In the words of Lee Welling Squier, "Hundreds of thousands of working people are already across the border into helpless and hopeless superannuation, tens and hundreds of thousands more are now pressing the border line, and the great mass of American working people are looking down the vista of the years to possible dependence upon charity during their last few years on earth; with millions of money being spent annually for the relief of this condition and very little for its prevention. Certainly the old age dependency problem is worthy of the most serious consideration and determined action." [25]

Causes of Old Age Dependency. — Professor Devine and other authorities attribute the largest part of old age dependency to misfortune. A. G. Warner places this at 72 per cent while the Massachusetts Commission on Old Age Pensions, Annuities and Insurance reports that 60.1 per cent of the old age dependency is due to extra expenses on account of sickness and emergencies, 25.4 per cent is due to business failures and bad investments, 3.2 per cent due to fire, leaving only 11.3 per cent of pauperism caused by intemperance, extravagance and fraud.[25]

"The doctrine of thrift . . . is usually received by the workingman with scant courtesy. He admits its desirability and longs for the opportunity to accept it, but in his present condition it is beyond him." [25] The ordinary risks in living, the inequalities in heritage and opportunity among men, and the absence of an adequate minimum wage make it difficult to provide for old age. No matter how much is done to prevent premature superannuation by more adequate provision for the health of wage earners by vocational guidance and by securing special work for old men, the problem of superannuation will still remain. There will still be the

man who has been prematurely superannuated by excessive physical strain, sickness or accident, and there will always be the man who is unable to work because he is too old.

Methods of Providing Old Age Insurance. — The principle of insurance is applicable to the contingency of old age in the same way as to the various other contingencies to which it is applied. The difficulties of provision for old age and the uncertainty of attaining it make it impracticable for the individual to carry his own risk. Various methods of applying the insurance principle to the hazards of superannuation have been developed. One of four methods may be chosen.

(1) Voluntary annuity system.
(2) Pension paid by mutual association or industry.
(3) Compulsory contributory old age insurance system.
(4) Service pensions paid through taxation.

Voluntary Annuities. — Annuities are sold by insurance companies as a business proposition in the form of deferred annuities, ordinary twenty-year endowment policies, industrial twenty-year endowment policies, and various other schemes which cover the joint contingencies of death and old age. Notwithstanding the efforts of the insurance companies to popularize this method of providing for old age, very few of the working class are taking advantage of the opportunities offered. The reason for this is that the returns are too small and too remote to stimulate the individual to the necessary self-denial and self-sacrifice. The insurance companies have devised a plan of extending group insurance to cover old age, by making life policies payable in annuities beginning at age 60 or 65. If policies can be issued to groups of at least one hundred people the benefit for the same premium can be increased 30 per cent.

In Massachusetts the Savings Bank Insurance Act of 1907 is an attempt to furnish old age annuities to wage

workers at the lowest possible cost. Wisconsin is the only other State providing for the sale of insurance by the State. This law was passed in 1911. Neither in Massachusetts nor in Wisconsin have any considerable number of people availed themselves of the State insurance schemes.

The failure of the numerous attempts to combine old age pensions with life insurance proves that people do not voluntarily purchase annuities. England has had the same experience. After 40 years only a negligible number of persons annually purchase annuities under the post-office plan, but even though some better plan be worked out, there should always be a plan for the voluntary purchase of annuities for those who wish to make such provision.

Mutual Associations. — Just as mutual associations have made efforts to meet the other contingencies which come into a wage earner's life, so have they attempted to make some provision for old age. Up to 1912 among literally thousands of labor unions, — national, international, and local — only 13 had even attempted any provision for the relief of their aged members. This statement, based upon the twenty-third annual report of the Commissioner of Labor for 1908 on "Workmen's Insurance and Benefit Funds in the United States," shows how inadequately labor unions are coping with the problem of old age. Moreover, such provisions as are made are without regard to the requirements of actuarial science.[25]

Fraternal Insurance. — Of the 182 fraternal benefit societies of a general or national character in the United States there are 42 which promise old age benefits. The provision is usually in the form of annuities beginning at the age of 70, which is after old age has already set in. These societies are also often actuarially unsound, the premiums being inadequate even for death benefits. It may thus be concluded that fraternal societies have not done much to relieve old age dependency.

Employes' Benefit Association. — Plans for meeting the problem of superannuation from within industry nearly always provide for out-and-out service pensions, with no contribution from the employe. Among 461 Employes' Benefit Associations only 5 provided superannuation benefits. Of these 3 are pension funds maintained entirely by the establishment and 2 are managed and supported jointly.[7]

Service Pensions Preferred. — There are many reasons why employers as well as employes prefer straight service pensions for wage earners instead of pension funds with contributions by employes. The impermanence of the wage earner's employment and the strenuous objection of the workingman make any contributory scheme inadvisable. Any deductions from wages restrict the liberty of the employe. He must submit to the will of his employer or lose his contributions to the pension fund. Another objection of the wage earner is that the deduction reduces his wages and his standard of living, and he denounces the system as un-American. This feeling may be the result of an individualistic philosophy, but whatever the reason it prevails and must be recognized.

Extent of Employer's Service Pensions. — Of all the great industrial employments none wears men out more quickly nor subjects them to greater hazard than transportation. In this and a few other industries, such as navigation and mining, where hazard is great and strenuous work makes premature old age a common occurrence, we find a few pension schemes. A survey of transportation companies in the United States by Lee A. Squier, published in 1912, shows that only a few more than a score of such companies have adopted any plan of compensation for their old and worn-out employes. Mr. Squier extended his investigation to over a thousand of the important industrial corporations of this country, only about thirty of which reported any existing scheme of relief for the worn-out worker.[25] A

study made by the National Civic Federation under the direction of the Commission on Pensions of New York City and published in 1916, gives approximately the same result. A list of 55 industrial pension schemes, including those in the railroads, is given as a result of this investigation, in which an effort was made to include all pension plans then in existence. In 34 of the plans investigated, the employer assumes the entire burden, only 6 are on the contributory plan, and no data are given for 15 companies.[26]

Uniformity of Pension Plans. — There is a great uniformity of pension plans within industry. Practically all are based on earnings (another way of saying, value of the employe) and the percentages, with notable exceptions, closely approximate each other. There are some liberal percentages of salaries allowed but these are usually offset by prerequisites as to years of service.

The pension system established in 1913 by the American Telephone and Telegraph Company for its employes may be quoted as a typical example of free industrial pension plans.[27] The employes of the company are divided into three classes, each of which receives pensions equivalent to 1 per cent of the annual average pay for ten years, for each year of service.

CLASS A. May be retired either at their own request or at the discretion of the Committee. This class consists of employes whose term of employment has been 20 years or more and who have reached the age of 60 (females 55).

CLASS B. May be retired on pension only upon approval of President or Vice-President. This class consists of the employes whose term of employment has been 25 years or more and who have reached the age of 55 (female 50).

CLASS C. May be retired on pension only upon approval of President or Vice-President. This class consists of employes whose term of employment has been 30 years or more.

Note. The minimum pension will be $20 a month.

Disability Pensions:

Same as for old age, granted at any age after 15 years of service.

Requirements of an Employer's Service Pension. — If employers wish to secure the beneficial results of a pension plan and not do an injustice to their employes, certain standards will have to be met. If payment of pensions is granted, it should be assured by the creation of an adequate fund or by the employer's guaranty, or by both. In the event of the discontinuance of the service pension plan, provision should be made for the payment of pensions already granted, preferably by purchasing annuity policies in a reliable insurance company. Some employers contribute percentage on wages to the fund as services are rendered, but this implies that some compensation is being withheld, so is not popular. The most common method is for the employer to make contributions as the money is required.[28]

Separation of Invalidity Insurance from Old Age Pensions. — Thirty-three of the fifty-five pension systems studied by the National Civic Federation include disability pensions.[27] The majority may be granted at any age, but usually a prerequisite number of years' service is stipulated. This brings up the question as to whether an old age pension system should include a disability clause to provide for those who must retire early in life because of invalidity, or whether this should be included under the sickness insurance scheme. It is the opinion of M. M. Dawson that service pensions provided by the employer are welcome only when there is no other available provision, and that invalidity benefits should be provided by joint contribution under the sickness insurance scheme.[28] This enables a relatively high pension age, with retirement rigidly enforced unless the service of the employe is exceptionally valuable.

Inadequacy of Pension Scheme within Industry. — Even though it be decided that old age is an industrial problem and industry should be compelled to bear the burden of its worn-out human lives, the difficulties seem to outweigh

the advantages. Few industries have been willing or able to develop any satisfactory scheme. Corporation pension schemes provide for the better class of mechanics and other well-paid laborers. They do not reach the great mass of common day-laborers. Any pension scheme for employes with one corporation as the unit is dangerous. There are too many firms dissolved to make this safe. And the various investigations show that no adequate provision is made by trade unions or fraternal societies.

Compulsory Contributory Scheme. — Compulsory contributory insurance has been suggested as a way of meeting the problem of old age, but the difficulties appear insurmountable. The present generation of people would not be benefited. A complicated system of accounts with every employed person would be necessary, and with a constantly shifting population this would be impossible, and still all those who are not wage earners would remain unprovided for.

Service Pensions Paid through Taxation. — Squier, who has made an impartial and thorough study of the problem in all its phases, believes that the state must provide a system of service pensions for its old and worn-out citizens. According to him, voluntary provisions, as industrial conditions now obtaining clearly manifest, are impossible.[25]

Problem of Old Man in Industry. — Systems of state old age pensions exist in Great Britain, France, Australia, New Zealand, Denmark, and Iceland. It is possible that in the United States the States may ultimately make provision for the burden of old age. In the meantime the problem of the old man in industry remains. It is to the advantage of the employer to facilitate the retirement of the aged worker. He is a handicap to industry; his retention in active employment after he has passed his limit of efficiency means an economic waste to the employer, yet the dismissal of such a worker without any financial provision

for the rest of his life is an injustice.[29] The motives underlying the establishment of a pension scheme are twofold: humanitarian and economic. The employer with any human sympathy cannot dismiss an old yet faithful employe without any means of support. A pension scheme allows the elimination of those too old to work and promotes contentment and loyalty.

Insurance the Method of Eliminating "Passing the Hat." — That insurance is the method to be used to eliminate dread of destitution and "passing the hat" is no longer a disputed question. But should insurance against the economic uncertainties of a wage earner's life be made compulsory for all adults, for certain groups, or voluntary? And should this insurance be carried by the State, private insurance companies, or mutual societies, or by all three in competition? Which of the numerous combinations of these methods conforms to the ideals and philosophy of the United States? It should be based on existing American conditions and afford room for private initiative in working out the details.

In addition to the various insurance and pension schemes, industry has tried to encourage the employe to be thrifty by inaugurating savings plans and stock ownership schemes.

Savings and Loan Plans

Problem of Saving. — Thrift and saving have been suggested as a substitute for insurance, but in order to meet future expenditure must have time to do so, while he who insures himself is protected from the moment he takes out the policy. American people have been called thriftless; in so far as thrift implies conservation of resources and elimination of waste no one would deny the value of instilling thrift into the minds of the American people, but if it is given the meaning of individual saving it

implies surplus in the wage earner's budget. This is not always the case, and excessive thrift may do positive harm in lowering the standard of life. A study recently completed by the United States Bureau of Labor Statistics shows that during the interval 1907–1918 wages increased 48 per cent, while retail prices of food increased 105 per cent.[30] It is thus no wonder that the wage earner finds it difficult to save and the problem of emergencies becomes a serious one.

Present Provision for Savings and Loans. — Various efforts have been made to rescue the wage earner from his dilemma, to provide means for ordinary and emergency savings and loans for home building. The savings bank will accept his small savings, building and loan societies encourage home owning, and various forms of coöperative credit have arisen to provide him with loans in case of emergency and thus to do away with the loan-shark evil.

Building and Loan Associations. — The most important contribution of the United States to the coöperative credit movement is the building and loan association. In August, 1913, there were 6200 local building and loan associations, with a total membership of more than 2,500,000. These associations provide opportunity for home building and for long-time loans with real estate or mortgage securities, but they do not supply the need for the short-time remedial loan.[31] Other forms of coöperative credit have therefore been developed.

Company Associations. — By means of company savings and loan associations employers have encouraged ordinary savings and eliminated the loan-shark with the worry and loss of efficiency among employes consequent upon dealings with him.

Variations in Plans. — A study made by the National Association of Corporation Schools in 1917 gives a list of 61 companies which have some form of coöperative savings

plan. The plans vary widely in the following features: interest return on savings; limitation of sums to be loaned; interest charged for such loans; and the share allotted to the employes in the management of the associations.[32]

Managed by Employer. — The purpose of the New York Edison Company's Savings and Loan Association is two-fold — to encourage saving and home owning. The company assumes all expenses, paying 4–5 per cent interest on savings, and making loans for home owning purposes to 80 per cent of the property value, charging 6 per cent interest.

Managed by Employes. — The Savings and Loan Bureau of William Filene Sons' Company, Boston, Mass., is under the direction of the Coöperative Association of the employes. The officers in charge are elected by members of the Coöperative Association, but the company guarantees against losses and pays 5 per cent interest on savings. A legal note must be given for sums loaned of more than $10.00.

Employer's Contributions. — The Metropolitan Staff Savings Fund of the Metropolitan Life Insurance Company, New York City, is unique. The company contributes half as much as the employe saves. Any employe, after one year of service, whose earnings are not in excess of $3000 a year may be a depositor in the fund, but no employe may deposit in one year more than 5 per cent of his earnings. The company's deposits may be drawn out in the event of the depositor's death or permanent incapacity, or by vote of the trustees in the case of honorable retirement following twenty years' continuous service. The employe's deposit may be withdrawn at any time, the company's contributions standing to the credit of the remaining depositors.[16]

Coöperation with Outside Bank. — In some cases the employer serves simply as an intermediary agent between the employe and a bank. The Clothcraft Shops have a

penny bank as one of the activities of the Employment and Service Department. Interest is paid on all deposits over one dollar remaining in the bank three months or more. When deposits reach $100 the employe is advised to transfer his savings to a regular savings institution. Small loans are also made by this department, but an explanation of the reason for the loan is required.[14] The Dodge Manufacturing Company started a Thrift Club as an additional activity of the Dodge Relief Association. When the plan was started no interest was paid on the deposits, which were deducted from the weekly wages. After making this test the company began paying 4 per cent interest in cash every six months *through the coöperation of a bank.* The amount of weekly deposits doubled almost immediately.[33] In October, 1917, one third of the employes of the company were members of the Thrift Club. The company believes that it has in this way proved to the men that it was chiefly carelessness and not inadequate wages which formerly prevented them from saving.

Stock-selling Plans. — Another method by which corporations have endeavored to promote thrift and industrial peace is by the sale of stock of the company to its employes. Some of these plans are inseparably connected with a profit-sharing plan. The Sears Roebuck Company has devised a combination stock-purchasing and profit-sharing plan, in which the company contributes 5 per cent of the net earnings and the employe deposits 5 per cent of his salary, which fund is invested in stock of Sears Roebuck Company. A depositor who has completed ten years of service will be entitled to withdraw all the money credited to his account, including the company's contributions. If he has served less than ten years he can only withdraw his contributions plus interest at 5 per cent.[34] Some corporations, such as the United States Steel Corporation and the International Harvester Company, have stock-purchase plans for the rank

and file. In most of these plans the employes are offered the opportunity to purchase the stock upon especially advantageous terms, paying for it in installments. On May 28, 1919, the Eastman Kodak Company offered to its employes twenty thousand shares at par value of $100 per share, purchasable in installments. The market value at that time was something over $570. The employe is not allowed to sell his stock for five years, but if he leaves the company he receives par value, or the amount he has paid. The interests of the employes are safeguarded by equal representation upon committees formed to deal with all such matters impartially.[35]

Credit Unions. Objects. — A comparatively new development of the remedial loan movement in this country is that of the Credit Union. This form of coöperative credit is known in Germany as the Coöperative Credit Association, in Ireland as the Credit Society, in Italy and Canada as the People's Bank. Its objects are threefold: (1) To encourage thrift by providing a safe method for members to invest savings. (2) To provide a means whereby members can borrow at a reasonable rate of interest. (3) To train members in business methods and self-government.[36]

Organization. — The Credit Union is a coöperative organization which may be used as a depository for savings and will in turn extend credit to a man with his character and personal worth as security. The principles of credit unionism are: (1) Equality. All members share equally in privileges and ratably in profits. (2) Democracy. The one-man-one-vote principle is fundamental. Each member has but one vote irrespective of the number of shares he may hold.

Membership. — Any number of persons may combine to organize a Credit Union, in a city, town, or rural community. While the members of the group should assume the

responsibility it is important that the State regulate Credit Unions to make sure that they are safe. Massachusetts was the first State to pass such a law. This was in 1909, and since that time seven other States have followed suit. The basis of membership in a Credit Union must be some common bond or community of interest. It may be common occupation, employment by the same establishment, or membership in the same church, club, lodge, labor union, or other organization. In rural communities the church parish, school district, or local grange furnishes a satisfactory foundation for membership. Large numbers of men employed in one establishment or organization are usually divided into departmental or divisional groups. These groups may be taken as the basic units for the organization of Credit Unions. This is true of department stores, railroads, and most establishments in which large numbers are employed. These groups may be federated to good advantage, but the individual Credit Union should not be so large as to become unwieldy. The smallest workable unit is about twenty-five.

Security for Loans. — Ordinarily the security that a Credit Union demands for loans is a promissory note of the borrower with one or more indorsements, supplemented by a lien upon the borrower's shares and deposits in the Credit Union. The requirement of indorsements may be waived in some cases if the loan is for a small amount. Large loans may also be made to members upon security or mortgage of real or personal property, but unless the Credit Union has an abundance of funds, preference should be given to the smaller loans.

Rates of Interest. — The rate of interest on loans should approximate as nearly as possible the banking rate of interest. In New York the maximum rate which may be charged is 12 per cent per annum. The rate of interest paid on deposits may be variable and should be fixed at regular intervals. It should not, however, exceed by more than

1 per cent per annum the rate paid by the savings banks in the vicinity. Deposits should draw interest from the beginning of each calendar month, but interest should be paid quarterly.[31]

The *Credit Union Primer*, compiled by Arthur H. Ham and Leonard G. Robinson and published by the Remedial Loan Division of the Russell Sage Foundation, gives instruction, by-laws, forms, and records to serve as guides to groups desiring to form Credit Unions. This plan may serve as a guide, but may be modified to meet any set of circumstances.

Success of Credit Union with Industrial Group as Unit. — That the Credit Union with the industrial group as a unit has proved successful in encouraging small savings and ridding the employe of the harassing influence of the loan-shark is verified by statement of the Postal Telegraph Company and Mr. Springstead of the United States Appraisers' Office of New York. For years the employes of the Postal Telegraph Company have been paying tribute to the loan-shark. The Credit Union has enabled the operator to maintain his self-respect in the knowledge that he has a savings account in the Credit Union and the privilege of borrowing therefrom at a reasonable rate of interest for any legitimate purpose. Mr. Springstead makes the statement that there is no question of the value of the Credit Union to both employer and employe, in eliminating the loan-shark evil. This Credit Union was organized in 1916 for all Federal employes in New York City. The membership has now reached 1200 and has recently been restricted to employes of the Appraisers' Office, because a larger membership would become unwieldy.

Difficulty of Stock-selling Plans. — The difficulty with many stock-selling plans is that they may hamper the freedom of the employes. Any such plan should be subject to two important qualifications: (*a*) Becoming a stock-

holder should be absolutely voluntary; (*b*) adequate provision should be made for employes leaving the company to dispose of their stock without loss. But even though these regulations are followed there is no great advantage to the employer; the ownership of one share of stock in a $1,000,000 corporation can hardly have any marked effect upon efficiency, and to the employe the danger is great. It is commonly estimated that 95 per cent of all business enterprises fail. There are a few corporations in which the stock is comparatively safe, but in any event it is contrary to good business principles for any one to put all his eggs into one basket.

Combating the Loan-shark. — In order to meet emergencies the wage earner has often had to become the victim of the loan-shark charging from 100 to 150 per cent per annum for small loans. A service manager of a Michigan manufacturing plant has succeeded in freeing his men from loan-sharks by an interesting experiment. Soon after accepting his position he discovered that in the neighborhood of 400 of the employes of the company were in the clutches of the loan-shark. One man had not drawn his own salary for 13 years. To combat this evil a conference was held with the loan-sharks, at which they were told that the company would investigate each claim and decide the amount that should be paid, leaving the court as the loan-shark's only recourse. The loan-shark cannot brave the courts, because in most cases he has been breaking a law. This procedure proved so successful that at the end of three months there was not a salary assignment left in the office. This company realized the necessity of providing a substitute for the small loan. The wage earner often must borrow sums from $10 to $75; so a fund was provided with which to take care of these small loans.[37]

Credit Union. — There seems to be no good reason why an ordinary savings bank would not coöperate and accept

even the smallest deposits; but the workingman needs more than a safe depository for surplus earnings. In evaluating any of the several savings and loan systems the following points are important: the banking hours must conform to the employes' convenience; the agency must be conveniently located and the depositor must be encouraged to deposit small amounts of less than a dollar; credit should be extended to him with his character as security. The Credit Union seems to meet all these requirements, and providing the American people can prove their ability to engage in coöperative undertaking there seems to be no reason why the savings and credit function should not be combined in this satisfactory way.

The objection to the Credit Union in this country is that the people are too individualistic for any coöperative undertaking; but although experience is small it indicates that certain groups, such as the employes of one firm,[34] possess the requirements for such an organization. The employer may think it advisable to encourage his employes to form a Credit Union, which, owned and managed entirely by themselves, will cultivate self-respect and knowledge of business methods and will increase efficiency.

CHAPTER XII

ORGANIZATION OF THE DEPARTMENT OF LABOR ADMINISTRATION

Purpose of Labor Administration. — Wages — the return for the work done, and the possibility of increased return as time goes on — are the worker's prime interest. But in addition any facilities that will make the worker healthy, add to the joy of his work and give him an interest in it will add to the productivity of the individual and the completeness of his life. A workman who is ill is a burden to himself, to his family, and to the industry in which he is employed. The healthy workman is, in all probability, the reverse. The need for greater total and hourly output and the need for more leisure for recreation, will always make efficiency in production a common goal for employer and employe. Labor administration should make industry more effective by making the workers more efficient, and the output for each hour of effort better in quality and greater in quantity.

Current Misunderstanding. — Both employers and employes have largely failed to appreciate this mutual interest in service activities. The antagonism between the management and the rank and file in industry has been created by disputes over wages and the division of product, and as a result has unfortunately interfered with the introduction of those services for employes which aim to increase productivity and should only benefit the workers and in no wise injure them. The management has often been responsible for this antagonism by failing to make clear the distinction between the reward for labor which a workman receives in the

form of wages, and the services rendered him as an employe, which should not be intended as a reward for labor but for the sole purpose of increasing his effectiveness. Thus railroad executives during the period of stress before the passage of the Adamson law, sought to use the Pension Funds as a club to restrain the workers from striking. Such action by the management of one industry contributes to the spreading of an attitude of suspicion among all employes against all forms of so-called "service for employes." The steel workers included as a demand in the recent steel strike the elimination of the medical examination of employes in that industry, one of the most vitally necessary provisions for the protection of their own health and labor power. Both sides fail to realize that the introduction of medical care for employes, or of a rest room, or restaurant, like the introduction of any new machinery, is mutually desirable if it increases production, but that it must do so without unduly restricting individual liberty. It has nothing to do with wages. If offered as a substitute for wages or in any way used as a means of detecting "undesirable" employes its failure is easily foretold. Service activities in their limited field should yield large returns. They will not forestall trade unionism, they will not solve disputes over wages, and unless directed with vision, they will not develop an *esprit de corps*.

Preliminary Study. — The approach to the problems involved in the organization of that most delicate and intricate of machinery, the plant personnel, must be scientific. Sentimentality and beneficence avail little in service work. The preliminary study for the development of any phase of the work should include an analysis of (*a*) the need for it from the standpoint of production and the individual employe, (*b*) the best way to fill the need, (*c*) the demands and attitude of the workers in regard to it, and (*d*) unavoidable limitations as to the scope of service to be rendered. Attention must be paid to the existing facilities for such service

in the industry and community, the difference in the needs of a shop or clerical force, of a male, mixed, or female force, and of employes coming from different types of homes and surroundings. The way to fill the need can be determined only after an analysis of all available information as to the value of the various methods in use. The approval of the workers is necessary if the service is to be fully utilized. Consultation with them in order to determine the best ways to fill the needs, to sound out possible objections, and to define clearly the purpose and scope of service contemplated, will avoid future misunderstandings. For example, employes should know that a medical department designed solely for first-aid and emergency treatment cannot give attention to more serious illnesses, or those requiring the latter attention will by their criticism reduce the value of the entire undertaking. Again, the space available for equipment in the plant premises or environs will affect the form of service that is to be offered.

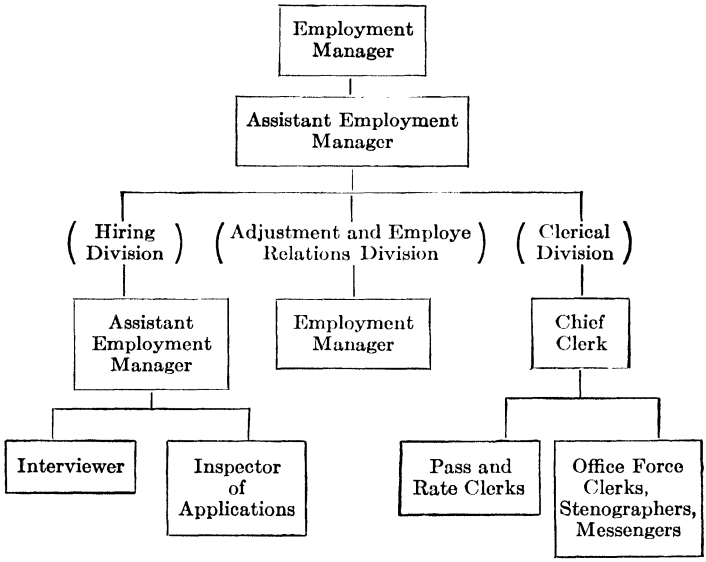
Need for Experts. — The organization and administration of the work of the service, employment, health, and other branches of labor administration belong in the hands of experts. This is true whether the management, the workers, or a combination of the two determine the broad policies to be followed. Labor administration is not child's play. It is rather the work of especially trained and unusually capable people. Specialists must decide upon the mental, temperamental and physical requirements of the different jobs of the industry, on the kinds of fire escapes needed, the heating, lighting, and ventilating systems adapted to the construction of the plant and the needs of the workers, and on all other service methods and equipment. They must further devise the statistical records to show the value of the various experiments made. If the size of the plant does not warrant the continuous employment of such experts, the employment manager or general supervisor of personnel,

like the family physician, must call specialists in consultation to diagnose existing difficulties and to suggest remedies.

Importance of Attitude. — The mere installation of service equipment, no matter how complete, will be ineffective without efficient continuous management by those who have not only technical knowledge and training, but also an appreciation of method and purpose. The spirit in which the work is undertaken and carried on, the earnestness of the desire in those who administer it to secure the fullest coöperation of the employes in solving these human problems of production, remain the chief factors in success. The qualifications for those in charge of the different branches of service vary greatly.

The Employment Manager. — The employment manager, for instance, is expected to be "a specialist in human relationship." "It is much better and requires less time and expense to teach an experienced, well trained employment manager the necessary details of shipbuilding to qualify him sufficiently to handle his work, than it does to take a man who knows all about ships and try to teach him the principles of modern employment management, and to develop within him the personal qualifications necessary to handle men," claims the Industrial Service Section of the Emergency Fleet Corporation.[1] Beyond the supposition that an employment manager is a "master of system" he must be courteous and even-tempered, sympathetic, just, intuitive, quick and sure in decision, firm and of the motor type, from which arises executive energy. He must be able to analyze the facts related to his work, and have the constructive imagination to solve the many problems which arise. Interviewing applicants for work is in itself a skilled occupation and demands in addition to these personal and mental qualities, a knowledge of sources of labor supply, educational institutions, psychology, and the technical processes of the business of the firm.[2]

The type of functions shown in the following chart indicates the problems to be handled whether the employment manager serves in all capacities, or only as the directing head.

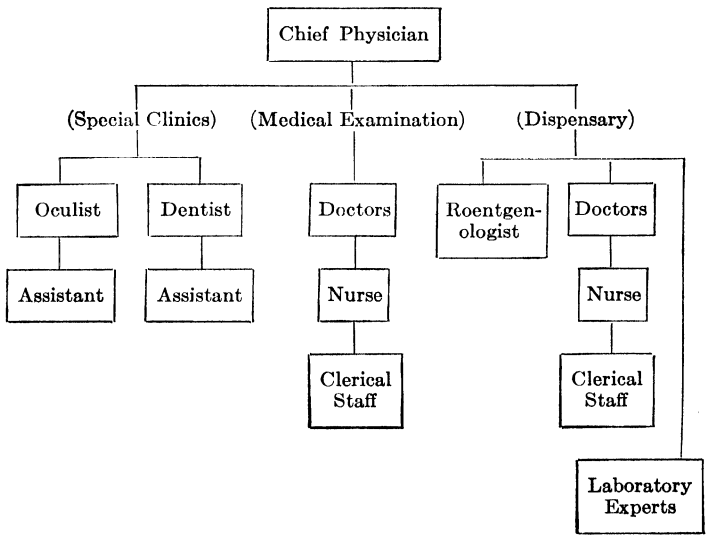


The Industrial Physician. — Industrial medicine is likewise a profession in itself, distinct from that of ordinary medical practice. As one hygienist has said:[3]

Employers should consider that two types of mind are needed for industrial medical service — one capable of expressing policies and able to organize the staff and direct the work, the other competent in details and qualified to do the routine work. . . . Physicians are apt to be of the latter type. . . . To be sure, some physicians are endowed with administrative capacity which refuses to be stifled (by the medical training in details). By surrounding themselves with skillful assistants and directing their efforts wisely they become successful and usually prominent in their profession. This is the kind of physician that is most able to direct industrial medical departments, and employers would do well to select this type when in

need of the services of chief physicians. To secure competent physicians for places where only one doctor is needed, with possibly one nurse or other aid, is exceedingly difficult, as the duties are such as to require the exercise of initiative as well as attention to the details of routine work, including the keeping of records and the making of reports, matters in which doctors are notoriously neglectful. . . . It is best to secure for these positions, if possible, doctors who have acted as assistants in established industrial medical departments, and while there, have shown talent for management. This also applies to the choice of chief physicians for those departments in which the executives are expected to do part of the routine work, the size of the establishments necessitating the employment of several doctors but not justifying the devotion of one man's whole time to administration.

In the large industry the medical department may require the services of a technically qualified personnel:



Similar specifications of function attend the administration of the departments of safety and sanitation, educa-

tion and of general service for employes, concerned with lunch rooms, recreation, plant publications and other activities. This is true, let us reiterate, whether the plant is small or large, and under democratic, coöperative, or autocratic management. If the plant is small, the technical, mental, and temperamental qualities of these various administrators must be combined as far as possible in one or two people, instead of being distributed among a number. If the plant policies are controlled by the entire personnel of the plant, or by a joint committee representing the management and employes, or by a financial directorship, the administration of these branches of service must still be relegated to specialists.

Department Organization. — In many industries some sort of labor administration for employes already exists. In some instances, elaborate equipment with a multiple personnel has been accumulated for the sole purpose of caring for the human machinery, but so gradually and unconsciously that the work has not been centralized or controlled.

Obviously the medical department cannot function to the best advantage unless the coöperation of the employment department facilitates the transfer of an employe from an occupation to which he is not physically suited to another more favorable one. The work of the employment manager, on the contrary, is held up unless the medical examiner is acquainted with the physical specifications for various jobs. Such correlation can only be secured where every branch of the administration of labor is under the supervision of a chief executive.

Control of Policy. — Even before the present movement to "democratize industry" and "to give the workers an increasing share of control," service activities were often managed jointly by employer and employes. Mutual Benefit Associations have been organized in consultation

with the management of a plant, consulting safety committees have grown up with the organized safety movement, and recreation with the plant as a center has long been under the control of employes in some plants. Cooperative effort has frequently proved to be more effective in developing service activities than management solely by employers or employes. The success of certain Mutual Benefit Associations has been attributed to the check on malingering furnished by the interested employes. Again, there are instances of the failure of recreational activities instituted by employers which, when converted to the management of employes, became signal successes. The coöperation of the management provides a needed element of continuity in the organization of services for employes. In a unionized industry, moreover, the spokesmen of the workers must be consulted in the early stages of planning service work. Wherever the control is lodged, every one must understand in advance where the final decision in the enforcement of policy rests. If an employer forbids a customary meeting on company property at which the employes' association will be addressed by some one or on some subject not approved by the management, much discussion and consequent hard feeling may arise unless the employer's censorship powers have been well defined to begin with.

Democracy in Industry Not a Technical Problem. — This is clearly brought out by Mr. Leiserson, impartial Chairman of the Labor Adjustment Board, Rochester, N. Y., who says:[4]

> Committees of employes may be used by the technical men who handle the personal relations in industry, but they are not the same kind of organizations of employes that are needed to deal with the economic or governmental relations. The first can be permitted to offer to the management only advice and suggestions. The second must have a veto power on the acts of the management, and will sooner or later demand an equal voice in determining wages and hours and controlling discipline. . . . Welfare committees

. . . deal with personal problems only, with personal management questions; yet either in ignorance or as a subterfuge, they are commonly offered to employes as industrial democracy. . . . This is playing with fire. . . . Any employer who is not ready for collective bargaining, who is not looking toward turning over to his employes 50 per cent of his control over terms and conditions of employment, had better beware of shop committees. If he desires merely to improve the personal relations between his management and his men, if he wants only to be brought into closer contact with his employes for the purpose of insuring a square deal to them *as he sees it*, . . . then all he needs is a good employment and service organization. . . . Shop committees are not at all necessary, and they are likely to confuse the managers with issues of democratic control of industry, while the employes may be misled into thinking they are going to have a real voice in the management and become resentful and rebellious when they find out the truth. If these advisory committees are used in personnel management work it is very important that most careful explanations be made to the employes so that they will not misunderstand.

So while Labor Administration and such committees as may be developed in connection with it are concerned with increasing production, the so-called "employer's union," workshop committee, or joint management boards are concerned chiefly with the division of product. The English Whitley reports, it is true, emphasized throughout the importance of increasing production in advocating the program of joint control of the management of workers and capital. As a result, service activities naturally formed an integral part of the work of the Joint District Councils and Works Committees recommended by them. This function was, however, of secondary importance to that of the adjustment of wages and grievances. Likewise, with the "Company Unions" developed in the United States by the Shipping Board, the War Labor Board and individual employers, their initial programs have mentioned the importance of production and turned over to employes the control of service work, but the real interest has been in creating

permanent arbitration boards to eliminate strikes. This object if achieved would naturally increase gross production, but not necessarily the effectiveness of the individual worker. These organs of "democracy" thus deal essentially with the negative aspect of production, that of doing away with friction, rather than with the positive aspect of producing more goods per hour per worker. The purport of these workshop committees in connection with caring for the human machinery of a plant, with which we are here concerned, is merely to indicate the general tendency to appreciate the mutual benefits of efficiency, and the fact that mutual consent alone permits efficiency. Experience with them has been too brief to warrant a detailed statement of results at this time. The tendency, however, cannot be ignored in the organization of any phase of labor administration.

Lessening Importance of Control. — The importance of the control of service activities will decrease as rapidly as scientific knowledge accumulates and a general mutual understanding between management and men prevails. The question of safety devices rarely if ever appears in union demands or individual contracts. "Safety" has become a science recognized by both employer and employe as a problem of production and is no longer a subject of disputes and arbitration. The same may soon be true of working hours; for instance, if scientific experiment proves that eight hours or six hours or some other period is the most productive one for the working day in a given occupation, the length of the working day will then be removed from the field of barter and discussion along with many other subjects which now concern the individual worker.

In the meantime, it is well to realize the value of coöperation which is illustrated by the following story. In England, at the beginning of the war, a long-established munitions factory built a new shop almost identical in equipment and

construction with the older shops. Within six months the newer and more inexperienced hands in this shop had so far outstripped the older workers in efficiency that they were producing 13,000 articles a week instead of the 5000 which had been expected, estimating on the rate of output in the older shops. The only explanation was that the patriotic zeal of these new workers was not hampered by "the long standing customary restrictions upon habits or rhythms of work" which, in spite of patriotic zeal, retarded the speed of the older workers. If willing effort and *esprit de corps* can thus triple the output of indifferent labor, the enlistment of the workers' interest in their work and in output becomes the supreme goal for employers.[5] Service work should help to achieve this end. Success awaits the extension of service activities in any industry, if employer and employe are bent only on securing through them increased effectiveness for each individual, and for the business as a whole. With such a concept the old paternalistic approach has no place. Service for the worker becomes solely and frankly a business proposition in which each employe from the president down is interested. The development of any single activity must be carefully considered, its introduction must be such as to promise maximum returns, and its development, administration, and control must bring increasing results.

LIST OF REFERENCES

THE INTRODUCTION

1. Salzmann, L. F.; *English Industries of the Middle Ages;* Boston, Houghton Mifflin Co , 1913, p. 231.
2. Jack, A. F.; *An Introduction to the History of Life Assurance;* London, King, 1912, Footnote, p. 119.
3. Salzmann, L. F.; p. 230.
4. Dunlop, O. J., and Denmann, R. D.; *English Apprenticeship and Child Labor;* N. Y., Macmillan Co., 1912, p. 56.
5. Jack, A. F.; p. 119.
6. Lipson, E ; *An Introduction to the Economic History of England;* London, Black, 1915, p. 306.
7. Smith, J T ; *English Guilds;* London, L. Trubner & Co , 1870, p. xxxvi.
8. Lipson, E ; p 305.
9. The following account of Robert Owen's activities at New Lanark is taken from Podmore, F.; *Robert Owen;* London, Hutchinson & Co., 1906, Vol. I, p. 80–183. Gilman, N. P.; *A Dividend to Labor;* Boston, Houghton Mifflin Co., Chap. III.
10. Proud, D. E ; *Welfare Work;* London, G. Bell & Sons, Ltd., 1916, p. 292–293.
11. Gilman, N. P.; p. 59.
12. *Ibid.;* p. 125.
13. *Ibid.;* p. 135.
14. *Profit Sharing by American Employers;* Nat. Civic Fed., p. 19.
15. Gilman, N. P.; p. 170.
16. Robinson, H.; *Loom and Spindle;* N. Y., 1898, p. 19. Abbott, E.; *Women in Industry;* N. Y., D. Appleton & Co., 1910, p. 116.
17. Sumner, H.; *History of Women in Industry in the United States;* Vol. IX, Commissioner of Labor's Report, Condition of Women and Child Wage Earners in the U. S., 1910, p. 99.
18. Robinson, H.; p. 99.
19. Sumner, H.; p. 80.
20. Niles Register, May 19, 1827.
21. *Standard Definition of Labor Turnover and Methods of Computing the Percentage of Labor Turnover;* Ind. Man., Sept., 1918.
22. Dunlop and Denman; p 58.
23. Alexander, M.; *Hiring and Firing, Its Economic Waste and How to Avoid It;* An. Am. Acad., May, 1916.
24. Proc. Nat. Safety Council, 1917, p. 69.
25. The Survey, Feb. 16, 1918, p. 544.
26. Henderson, C. R.; *Citizens in Industry;* N. Y., D. Appleton & Co., 1915, p. xvii.
27. Gilman, N. P.; App. II.

CHAPTERS II AND III

1. Fisher, Boyd; *Methods of Reducing Labor Turnover;* An. Am. Acad., May, 1916.
2. Bulletin, Ohio Industrial Commission, June 26, 1916.
3. Willits, Joseph H.; *The Labor Turnover and the Humanizing of Industry;* An. Am. Acad., Sept., 1915.
4. Kelly, Roy W.; *Hiring the Worker;* The Engineering Magazine Co., 1918.

5. Feiss, Richard; *Personal Relationship as a Basis of Scientific Management;* An. Am. Acad., May, 1915.

6. Reilly, P. J.; *The Work of the Employment Department of the Dennison Manufacturing Company;* An. Am. Acad., May, 1916.

7. Banning, K.; *More Work and Fewer Mistakes;* System, Oct., 1913.

8. Marquis, D. S.; *Reducing the Labor Turnover;* Pa. Dep't Labor and Ind. Bul., Feb., 1917.

9. Fisher, Boyd; *How to Reduce Labor Turnover;* U. S. Bur. Lab. Stat. Bul., No. 227, April, 1917.

10. Blackford, Katherine, and Newcomb, Arthur; *The Job, the Man, the Boss;* Doubleday, Page & Co., 1916, p. 43.

11. Willits, Joseph H.; *Development of Employment Managers' Associations;* Monthly R., Sept , 1917.

12. Nat. Ass'n Corp. Schools; Report of Committee on Vocational Guidance, June 1, 1916.

13. Ind. Man.; April, 1917, p. 124.

14. Leiserson, William; *Public Employment Offices in Theory and Practice;* Am. Labor Legis. R , May, 1914.

15. Nat. Ass'n Corp. Schools; Report, 1915.

16. Bundy, G.; *Work of the Employment Department of the Ford Motor Company;* U. S. Bur. Lab. Stat. Bul , No. 196, Jan., 1916.

17. Am. Labor Legis. R., June, 1917, Chap. IX.

18. Gardner, H. L.; *The Selection Problem of Cheney Brothers;* U. S. Bur. Lab-Stat. Bul , No 227, April, 1917.

19. *Rules for Employes;* Curtis Publishing Company.

20. Andrews, J. B.; *A National System of Labor Exchanges in its Relation to Industrial Efficiency;* An. Am. Acad , Sept., 1915.

21. Huey, K.; *Problems Arising and Methods Used in Interviewing and Selecting Employes;* An. Am. Acad , May, 1916.

22. Bloomfield, M.; *Employment Problems;* Ind. Man , Aug., 1917.

23. Keir, John S.; *The Establishment of Permanent Contracts with the Sources of Labor Supply;* An. Am. Acad., May, 1916.

24. Manuscript, confidential report shown to the writers.

25. Monthly R., Sept., 1917.

26. Andrews, J. B.; *A Practical Program for the Prevention of Unemployment in America;* Am. Ass'n Lab. Legis , 1915.

27. Muhlhauser, Hilda; *Public Employment Bureaus and their Relation to Managers of Employment in Industry;* An. Am. Acad , May, 1916.

28. Hubbell, N. D ; *Written Standard Job Specifications;* Ind , Man., Dec., 1917.

29. U. S. Ship. Bd. Em. Fleet Corp.; *Aids to Employment Managers and Interviewers on Shipyard Occupations;* special bulletin, Phil., 1918.

30. Burke, R. J.; *Written Specifications for Hiring;* An. Am. Acad., May, 1916.

31. Farnum, A. G.; *The Ideal Industry from the Standpoint of Health and Safety;* Proc. Nat. Safety Council, N. Y., 1917.

32. Gannon, V. J.; *Using the Man Past 45;* Factory, March, 1918.

33. Cadbury, E.; *Experiments in Industrial Organization;* London, Longmans, Green & Co., 1912, p. 4.

34. Clothier, Robert C.; *The Employment Work of the Curtis Publishing Company;* An. Am. Acad., May, 1916.

35. Schneider, H.; *Selecting Young Men for Particular Jobs;* Reprint, meeting High School Teachers' Ass'n, Feb. 15, 1913.

36. Scott, W. Dill; *Vocational Selection at the Carnegie Institute of Technology;* U. S. Bur. Lab. Stat. Bul., No. 227, also confidential manuscript.

37. Economic Psychological Association; leaflet.

38. Proud, Dorothea E.; *Welfare Work;* London, G. Bell & Sons, Ltd., 1916, p. 83.

39. Rossy, C. S.; *Mental Examinations for Employes;* Ind. Man., Dec., 1917.

40. Whipple, G. M.; *The Use of Mental Tests in Vocational Guidance;* An. Am. Acad., May, 1916.

41. Grehis, M. D.; *Employment Problems and How the John B. Stetson Company Meets Them;* An. Am. Acad., May, 1916.

42. Metropolitan Life Insurance Company; Report of Welfare Division, 1917.
43. Am. Ass'n Ind. Phys. and Surgeons, Rep't, 1916, p. 28.
44. Rike, Fred H.; *The Need for and the Value of Physical Examination of Employes as Illustrated in the Work of the Rike-Kumler Company;* An. Am. Acad., May, 1916.
45. Fisk, E. L.; *Periodic Physical Examinations of Employes;* Address to the National Association of Manufacturers, May 26, 1915.
46. McMurtrie, Douglas C; *Placement of the Crippled and Handicapped by the Pennsylvania State Bureau of Employment;* Am. J. Care of Cripples, Vol. IV, No 2. Mr. McMurtrie has compiled a complete bibliography of foreign and domestic literature referring to the employment of the war cripple, published in Bulletin No. 5 of the Federal Board for Vocational Education, Washington, Feb., 1918.
47. Mod Hosp., March, 1915.
48. Reports, Committee on the Care of the Jewish Tuberculous, N. Y., Nov., 1916.
49. Circulars 3 and 4; *Working Conditions Service;* U. S. Dep't of Labor, Feb. 17, 1919.
50. *Lateness;* Industrial Counselors, Inc, 2 E. 23rd St, N. Y., 1918.
51. *Rules Governing Home Office Clerical Employes;* Metropolitan Life Ins. Co., 1919.
52. Final Rep't; *Commission on Industrial Relations;* 1915, Vol. I, ed. 1, p. 166.
53. Fisher, Boyd; *Determining the Cost of the Turnover of Labor;* U. S. Bur. Lab. Stat. Bul, No 227, April, 1917.
54. Alexander, M.; *Hiring and Firing, Its Economic Waste and How to Avoid It;* An. Am. Acad., May, 1916.
55. Confidential report.
56. Hackett, J. D; *Standardization of the Causes of Leaving Job;* Ind. Man., March, 1918.
57. Gould, E. C.; *Reducing Labor Turnover;* 100%, April, 1918.
58. Fish, E H; *Figuring and Analyzing the Labor Turnover,* U. S. Bur. Lab. Stat. Bul, No. 227, April, 1917
59. U. S. Ship. Bd. Em. Fleet Corp.; *Handbook on Employment Management Series,* Bulletins Nos 1 and 2, Phil., 1918
60. Hubbell, N. D; *The Organization and Scope of the Employment Department;* U. S. Bur. Lab. Stat. Bul., No. 227, Oct., 1917.

CHAPTER IV

1. Clayton, C. T.; *Training that Promotes Production;* Ind. Man., April, 1919, p. 311–313.
2. Kerschensteiner, G.; *The Trade Continuation Schools of Munich;* Bul. Nat. Soc. of Voc. Ed., No. 14, July, 1911.
3. Barlow, M.; *The Education Act, 1918;* London, Nat. Soc. Depository, 1918.
4. Jones, E.; *The Administration of Industrial Enterprise;* London, Longmans, Green & Co, 1917.
5. Schneider, H.; *Selecting Men for Jobs;* Ind. Man., June, 1916.
6. Schneider, H.; *Partial Time Trade Schools;* An. Am. Acad., Jan., 1909, p. 52.
7. Schneider, H.; *Education for Industrial Workers;* School Efficiency Series, N. Y., World Book Co., 1915.
8. Interviews with coordinator of Washington Irving High School, April, 1918.
9. *Outline of the Plan for the Education of Apprentices,* National Cash Register Company, Oct. 4, 1914.
10. Prosser, C.; *The New Apprenticeship as a Factor in Reducing Labor Turnover;* Proc. Employment M'g'rs Conf. U. S. Bur. Lab. Stat. Bul., No. 196, May, 1916.
11. *Industrial Education;* Am. Fed. of Labor, Wash., D. C., 1910.
12. *Short-unit Courses for Wage Earners;* U. S. Bur. Lab. Stat. Bul., No. 159, April, 1915.
13. Glynn, F.; *War Emergency Education in a Wisconsin Motor Plant;* American Industries, Jan, 1918.
14. Smith, R. C.; *Training the Immigrant in Industry;* Proc. Employment M'g'rs Conf. U. S. Bur. Lab. Stat. Bul., No. 196, May, 1919.

15. Bul. U. S. Steel Corp., No. 7, Dec., 1918.
16. Cross, C. W.; *The Apprentice System of the New York Central Lines;* An. Am. Acad., Jan., 1909.
17. Alexander, M.; *The Apprentice System of the General Electric Company at West Lynn, Mass.;* An. Am. Acad., Jan., 1909.
18. Nat. Ass'n Corp. Schools, 1914, p. 362.
19. Weller, J. H.; *A Description of the Educational Work Carried on by the Packard Motor Car Co.;* Nat. Ass'n Corp. Schools, June, 1914, p. 342–358.
20. Nat. Ass'n Corp. Schools, 1916, p. 167–168.
21. Fuld, L. F.; *Service Instruction of American Corporations;* Bul. Bur. Educ., No. 34, 1916.
22. Nat. Ass'n Corp. Schools, 1914, p. 337, 338, 362.
23. Carpenter, C. W.; *How We Trained 5000 Women;* Ind. Man., May, 1918.
24. Factory, May, 1919, p. 1010–1016.
25. Stanbrough, D. G.; *Packard Training Schools for Employes;* Ind. Man., Nov., 1918, p. 378–382.
26. Johnson, J. F.; *Possibilities in Training Factory Help;* Ind. Man., Sept., 1919, p. 224.
27. MacNary, E. E.; *Industrial Training in Shipbuilding;* Bul. Nat. Soc. of Voc. Ed., No. 27, Feb., 1918.
28. Rep't Section on Industrial Training for the War Emergency, Council of Nat. Defense, May 15, 1918.
29. Williams, A.; *The Instruction of New Employes in Methods of Service;* An. Am. Acad , May, 1916.
30. Reilly, P. J.; *The Work of the Employment Department of the Dennison Manufacturing Company;* An. Am. Acad., May, 1916.
31. Rep't on Sales Methods of Burroughs Adding Machine Company of Detroit, n. d.
32. Gilson, M.; *Instruction in Garment-making in the Clothcraft Shops;* Bul. Nat. Soc. of Voc. Ed., No. 27, Feb., 1918.
33. Sawyer, Wm. A.; *Installing Employment Methods;* Ind. Man., Jan., 1919.
34. Factory, Feb., 1919, p. 274.
35. The New York Herald, European Edition, Paris, April 24, 1918. The Weekly Dispatch, May 19, 1918. The Finger Industry News, pub. by the Double Duty Finger Guild, Aug. 1, 1918. Mod. Hosp., Jan., 1918.
36. Reprinted from *The Ford Owner,* Jan., 1919.
37. *Opportunity.* — Pamphlet published by Western Electric Co., n. d.
38. Nat. Ass'n Corp. Schools, 1916, p. 403.
39. Proc. of First Annual Con. of Nat. Ass'n of Employment M'g'rs, 1919, p. 33–36.
40. Stanbrough, D. G.; *Training Factory Executives;* Ind. Man., March, 1919, p. 175–176.
41. Kelly, R. W.; *Training Minor Executives in a Shoe Factory;* Ind. Man., Oct., 1918, p. 316–319.
42. Nat. Ass'n Corp. Schools, 1915, p. 704.
43. Gilbreth, F. B. and L. M.; *The Three Position Plan of Promotion;* An. Am. Acad., May, 1916.
44. Educational Activities in the National City Bank of New York, 1917–1918.
45. Educational Work of the Ford Motor Company, Dec., 1916.
46. Feiss, R.; *Personal Relationship as a Basis for Scientific Management;* An. Am. Acad., May, 1916.
47. Paull, C. H.; *Development of Americanization Project;* Ind. Man., March, 1919, p. 213–217.
48. U. S Bur. Lab. Stat. Bul , No. 202, p. 28.
49. Factory, Sept., 1918, p. 447.
50. Proc. Nat. Safety Council, 1915, p. 525.
51. Welfare Work of the National Cash Register Company.
52. The John Wanamaker Commercial Institute, 1915.
53. Cadbury, E.; *Experiments in Industrial Organization;* London, Longmans, Green & Co., 1912.

54. Rep't of International Garment Workers' Union, Am. Fed. of Lab., 1919.
55. National Cash Register News, Oct., 1916.
56. Busser, S. E.; *Santa Fe Reading Rooms*, n. d.
57. Bul. Am. Iron and Steel Institute, June, 1916.
58. Nat. Ass'n Corp. Schools, June, 1914, p. 255.
59. Leiserson, Wm. M.; *Plant Organ;* Circular U. S. Bur. Lab. Stat., No. 5, April 28, 1919.
60. *Employes' Publication;* Proc. Nat. Safety Council, 1918, p. 408–430.
61. Kimball, H. W.; *Fostering Plant Spirit through Plant Paper;* Ind. Man., March, 1919, p. 245.
62. Heller, A. C.; *The Mirror;* Charles William Stores.
63. Factory, Feb., 1919, p. 266.
64. Factory, March, 1919, p. 482, 484, and 486.
65. Factory, April, 1919, p. 712.
66. Factory, Jan., 1919, p. 102.

CHAPTER V

1. U. S. Bur. Lab. Stat. Monthly Review, sqq., Sept., 1918, p. 188.
2. Fitch, J.; *Where Time is Money;* The Survey, Feb. 2, 1918.
3. U. S. Bur. Lab. Stat. Bul., Nos. 144, 166, 186, 213, 244; Am. Lab. Leg. Rev., Vol. VIII, No. 3, Sept., 1918.
4. Lee, F. S.; Chap. on *Fatigue and Occupation, Diseases of Occupation and Vocational Hygiene;* ed. by G. M. Kober and W. C. Hanson, Phil., Blakiston, 1916.
5. U. S. Bur. Lab. Stat. Bul., No. 221, April, 1917.
6. Frankfurter, F., and Goldmark, J.; *The Case for the Shorter Work Day;* Vol. I, Rep't Nat. Consumers' League, 1915, p. 204.
7. Florence, P. S.; *Question of Fatigue from the Economic Standpoint;* Rep't British Ass'n for Advancement of Science, Manchester, 1915.
8. Frankfurter, F., and Goldmark, J.; Vol. I, p. 564.
9. Health of Munition Workers, Rep't Memo. No. 18, 1917.
10. Goldmark, J.; *Fatigue and Efficiency;* Vol. I, Russell Sage Foundation, 1912, p. 159.
11. Williams, F. M.; *An Actual Account of What We have Done to Reduce Our Labor Turnover;* U. S. Bur. Lab. Stat. Bul., No. 227, Oct., 1917.
12. Fitch, J.; *Hours and Output;* The Survey, May 12, 1917.
13. Fisher, I.; *Report on National Vitality;* Committee of One Hundred on National Health, Gov't Printing Office, Bul. No. 30, 1909, p. 46.
14. *Hours of Work Related to Output and Health of Workers — Metal Manufacturing Industries;* Research Rep't No. 18, Nat. Ind. Conf. Bd., July, 1919, the fifth of a series of studies on hours and output in the cotton, boot and shoe, wool, and silk industries.
15. Frankfurter, F., and Goldmark, J.; Vol. I, p. 163.
16. Florence, P. S., *Use of Factory Statistics in the Investigation of Industrial Fatigue;* Col. Univ. Studies in Pol. Sci., N. Y., 1918.
17. Commons, J. R., and Andrews, J. B.; *Principles of Labor Legislation;* N. Y., Harper & Bros., 1916, Chap. V.
18. U. S. Bur. Lab. Stat. Bul., No. 230, July, 1917.
19. Brandeis, L. D., and Goldmark, J.; *The Case against Night Work for Women;* Nat. Consumers' League, Revised to March 1, 1918, p. 96.
20. *Ibid.;* p. 99.
21. Kent, A. F. S.; 2d Interim Report (on an investigation of industrial fatigue by physiological methods), British Home Office, London, Aug., 1916.
22. Leverhulme, Lord; *The Six Hour Day and Other Industrial Questions;* N. Y., Henry Holt & Co., 1919.
23. Lescohier, D. D.; *Industrial Accidents, Employers' Liability and Workmen's Compensation in Minnesota;* Am. Stat. Ass'n Q., June, 1911, p. 654.
24. Rubinow, T. M.; *Social Insurance;* N. Y., Henry Holt & Co., 1913.

25. Mo. R., Oct., 1917, p. 155.
26. Taylor, F. W.; *The Principles of Scientific Management;* N. Y., Harper & Bros., 1911, p. 57.
27. *Rest Periods for Industrial Workers;* Nat. Ind. Conf. Bd. Rep't, No. 13, Jan., 1919.
28. Cadbury, E.; *Experiments in Industrial Organization;* London, Longmans, Green & Co., 1912.
29. Fitch, J.; *Making the Job Worth While;* The Survey, April 27, 1918.
30. *Welfare Work of the Metropolitan Life Insurance Company;* Rep't, 1917.
31. Sanger, S.; *The Limitation of Hours from the International Point of View;* Nat. Conf. on the Prevention of Destitution, Westminster, 1912, P. S. King & Son, p. 456.
32. U. S. Bur. Lab. Stat. Bul., No. 223, April, 1917, p. 59.

CHAPTER VI

1. Proc. Nat. Safety Council, 6th annual Congress, part 1, p. 9.
2. Pa. Dep't Lab. and Ind. Bul , June, 1917.
3. Young, Arthur; *Practical Aspects of the Safety Movement;* Ind. Man., Oct., 1917.
4. Eggan, M. J.; *Safety Work that Reduces Cost of Accidents;* The Dodge Idea, July, 1916.
5. California Safety News, Feb , 1917.
6. *Contests for Accident Prevention;* Survey, April 19, 1919, p. 120–121.
7. U. S. Bur. Lab. Stat. Bul., No. 210, p. 103.
8. Pa. Dep't Lab. and Ind. Bul , Feb., 1917, p. 139.
9. 100%, Dec., 1916, p. 84.
10. U. S. Bur. Lab. Stat. Bul , No. 210, p. 137.
11. *A Brief Account of the Educational Work of the Ford Motor Company,* 1916.
12. U. S. Bur. Lab. Stat. Bul., No. 230, July, 1917, p. 146–147.
13. Rochester, A., and Taylor, F.; *What the Government Says about Cotton Mills;* pamphlet 243, Child Labor Committee.
14. Correspondence with the Company.
15. Hayhurst, E. R.; *A Survey of Industrial Health Hazards and Occupational Diseases;* Rep't Ohio State Board of Health, Feb., 1915, p. 51, 404.
16. Frankfurter and Goldmark; *The Case for the Shorter Work Day;* 1915, Vol. I, p. 257.
17. Jones, E. D.; *The Administration of Industrial Enterprises.*
18. Price, G. M.; *The Modern Factory;* p. 76, 232, 271, 1914.
19. U. S. Bur. Lab. Stat. Bul., No. 207, March, 1917.
20. Commons, J. R., and Andrews, J. B.; *Principles of Labor Legislation,* p. 321.
21. *Recommended Standard Practice on Medical Supervision in Detroit Plants;* An. Am. Acad., May, 1917.
22. Health of Munition Workers: Rep't, Memo. No. 14, 1916.
23. Darlington, Thomas; *Illness in Industry — Its Cost and Prevention,* 1914.
24. Hubbard, Charles L.; *Factory Water Supply;* Factory, May, 1919.
25. Roach, John; *Hygienic and Sanitary Equipment;* Ind. Man., Oct., 1917.
26. Parsons, Floyd W.; *Health and Industry;* Sat. Eve. Post, June 7, 1919.
27. *Shop Lighting;* Rep't Ind. Com. of Wis., 1914.
28. Schereschewsky, J. W.; *The Health of Garment Workers;* Pub. Health Bul., No. 71, N. Y., 1915, Treasury Dep't.
29. Winslow, C. E. A.; *Proof that it Pays to Ventilate;* Factory, Feb., 1917.
30. Great Britain. — *Health of Munition Workers Committee;* Memo. No. 9, p. 66.
31. Harris, Louis I., and Schwartz, Nelle; *The Cost of Clean Clothes in Terms of Health;* Dep't of Health, N. Y., and N. Y. Consumers' League, 1918, p. 23.
32. U. S. Bur. Lab. Stat. Bul., No. 221, April, 1917, p. 101
33. *Fire Prevention and Safety First Methods;* 100%, Oct. and Nov., 1918.

CHAPTER VII

1. Mock, H. E.; *Industrial Medicine and Surgery;* J. Ind. Hyg., May, 1919.
2. Thompson, W. G ; *Occupational Diseases;* D. Appleton & Co., 1914, p. 10.
3. *Report, Committee on Vocational Guidance;* Nat. Ass'n Corp. Schools, 1916, Dr. H. C. Metcalf, Ch'n.
4. Ainsworth, F. K.; *The Southern Pacific Company's Railroad Hospital;* Mod. Hosp., May, 1915; Reibenack, Max; *Railway Provident Institutions in English-Speaking Countries;* Pennsylvania R. R. Co., 1915.
5. 100%, Feb., 1916.
6. Bul. Chic. Tub. Inst., June 1, 1913.
7. Andrews, J. B.; *Physical Examination of Employes;* Amer. Public Health Ass'n Journal, Aug., 1916.
8. Sachs, T. B.; *The Campaign in Chicago for Medical Examination of Employes;* Transactions, 10th Annual Meeting, 1914, Nat. Ass'n for the Study and Prev. of Tub., p. 37.
9. *Physical Examination of Wage Earners in Ohio in 1914;* Bur. Ind. Commission of Ohio.
10. Rep't Amer. Ass'n Ind. Phys. and Surgeons, 1918.
11. *Service, Cost and Results of the Work of the Department of Health,* 1913–1917, Dep't of Health, N. Y.
12. *Health and Sanitation;* Norton & Co., Dep't of Health.
13. 100%, May, 1916.
14. Parsons, Floyd W.; *Health and Industry;* Sat. Eve. Post, June 7, 1919.
15. Confidential report, Medical Department, Met. Life Ins. Co , 1917.
16. Glasgow, Maude; *The Periodic Medical Examination as Applied to Employes of the Department of Health;* Mo. Bul. Dep't Health, N. Y., Jan., 1916.
17. Monthly R., Feb., 1919, p. 217.
18. U. S. Bur. Lab. Stat. Bul , No. 230, p. 150.
19. *Standards for Physical Examination;* Municipal Civil Service Commission of New York, 1916.
20. Trautschold, R.; *Cost of Industrial Health Insurance;* Ind. Man , Jan., 1918.
21. Mock, H. E.; *An Efficient System of Medical Examination of Employes;* Nat. Ass'n for the Study and Prev. of Tub , 10th Annual Meeting, 1914.
22. Britton, J. A.; *The Relation of Medical Examination of Employes to the Hygiene of the Working Place and the Efficiency of the Working Force;* Nat. Ass'n for the Study and Prev. of Tub., 10th Annual Meeting, 1914.
23. Mock, H. E.; *Industrial Medicine and Surgery, The New Specialty;* J. Amer. Med. Ass'n, Jan. 6, 1917.
24. Slade, C. B.; *Periodic Physical Examinations in their Relation to the Practitioner;* Med. Rev. of Rev., June, 1915.
25. New York Times, June 2, 1918.
26. Hutton, J. E.; *Welfare and Housing;* A Practical Record of War-Time Management.
27. Monthly R., Sept., 1917, p. 66.
28. 100%, Jan., 1916.
29. Mullen, T. H.; *Recommended Standard Practice on Medical Supervision in Detroit Plants;* An. Am. Acad., May, 1917.
30. Elliott, R. W.; *Value of the Dental Clinic from the Standpoint of the Industrial Surgeon;* Rep't Nat. Safety Council, 1918, p. 276.
31. Frankel, Lee K.; *Dental Work in the Industries;* Proc. Nat. Safety Council, 1916.
32. Welfare Work, Met. Life Ins. Co., 1917.
33. Dodge Idea, Jan., 1916.
34. Report, Provost Marshal General to the Secretary of War on the First Draft under the Selective Service, 1918.
35. Schereschewsky, J. W.; *The Health of Garment Workers;* Pub. Health Bul., No. 71, U. S. Pub. Health Serv., 1915.
36. Gardner, H. L.; *The Employment Department, Its Function and Scope;* U. S. Bur. Lab. Stat. Bul., No. 202, Sc., 1916.

37. Feiss, R.; *Personal Relationship as the Basis of Scientific Management;* An. Am. Acad., May, 1916.
38. Confidential Report, Medical Department, Met. Life Ins. Co., 1918.
39. *Welfare Work for Employes in Industrial Establishments in the United States;* U. S. Bur. Lab. Stat. Bul., No. 250, Feb., 1919.
40. Industrial Bulletin, Colorado Fuel and Iron Co., Sept. 25, 1918.
41. *Met. Life Ins. Co., Tuberculosis Sanatorium for Employes;* Mt. McGregor, Saratoga County, N. Y., Pamphlet Met. Life Ins. Co.
42. The Survey, Oct. 29, 1910.
43. Dublin, L. I.; *Causes of Death by Occupation;* U. S. Bur. Lab. Stat. Bul., No. 207, March, 1917.
44. King, H. M.; *Restoration of Working Efficiency after Sanatorium Treatment;* Report 10th Annual Meeting of Nat. Ass'n Study on Prev. of Tub., 1912.
45. Mock, H. E.; *Medical Work and Sanitation,* July, 1911.
46. *Industrial Health Hazards and Occupational Diseases in Ohio;* Ohio State Board of Health, p. 402, Feb., 1915.
47. Hanson, Wm. C.; *Attitude of Massachusetts Manufacturers toward the Health of their Employes;* Bul. of the Bur. of Lab , Mass , No. 96.
48. Vogeler, W. J.; *Employment of Patients Leaving Sanatoria;* Rep't 10th Annual Meeting, Nat. Ass'n for Study and Prev. of Tub , 1912.
49. Cooke, M. L.; *Scientific Management and Unemployment;* An. Am. Acad., Sept., 1915.
50. Selby, C. D.; *A Proposed Bureau of Industrial Safety, Sanitation and Hygiene to be Maintained on the Mutual Plan;* Am. J. of Pub. Health, Nov., 1916.
51. Fisher, Boyd; *Methods of Reducing the Labor Turnover;* An. Am. Acad., May, 1916.
52. Pub. Health Bul., No. 99, U. S. Pub. Health Serv., 1919, p. 30.
53. Proc. Nat. Safety Council, p 196 sqq., 1919.
54. U. S. Bur. Lab. Stat. Bul., No. 230, July, 1917, p. 51.
55. Proceedings of the Conference on Social Insurance, U. S. Bur. Lab. Stat. Bul., No. 212, p. 458, June, 1917.
56. Strunsky, Hyman; *A Workmen's Sanatorium for Workers;* The Survey, May 29, 1915, Vol. XXXIV, p. 196.
57. Joint Board of Sanitary Control, 6th and 7th Annual Reports, and other data secured from Dr. Price.
58. Elliott, R. W.; *How We Keep Our Men Well;* Factory, Feb., 1919.
59. Austin, M. A.; *Medical Inspection of Factory Employes;* J. Ind. Hygiene, June, 1919.

CHAPTER VIII

1. *Official Bulletin,* July 22, 1918.
2. Feiss, R. A.; *Personal Relationship as a Basis of Scientific Management;* An. Am. Acad., May, 1916.
3. Fisher, Prof. Irving; *Adjusting Wages to the Cost of Living;* Monthly R., Nov., 1918.
4. Drury, H. B.; *Scientific Management;* London, Longmans, Green & Co., 1918.
5. *A Comparative Study of Wage and Bonus Systems;* Emerson Company; Gantt, H L.; *Work Wages and Profits;* New York, The Engineering Magazine Co., 1916.
6. Marot, H.; *The Creative Impulse in Industry;* New York, Dutton & Co., 1918, p. 42.
7. Cadbury, E.; *Experiments in Industrial Organization;* London, Longmans, Green & Co., 1912.
8. *The Welfare Work of the Metropolitan Life Insurance Company for Its Employes,* 1917.
9. Williams, J. M.; *An Actual Account of What We have Done to Reduce Our Labor Turnover;* An. Am. Acad., May, 1917.
10. Proc. of the Nat. Safety Council, 1916, p. 97.
11. Gehris, M. D.; *Employment Problems and How the John B. Stetson Company Meets Them;* An. Am. Acad., May, 1916.

12. Shipman, L. H.; *Inciting the Worker's Interest;* 100%, Jan., 1919.
13. Miller, L. A.; *Increasing File Clerks' Efficiency by a Bonus;* 100%, July, Aug., 1918.
14. Sterns, W. D.; *Standardized Occupations and Rates;* Ind. Man., May, 1918.
15. Marston, C. A.; *A Bonus which Pays the Executive for Cutting Expenses;* 100%, April, 1918.
16. Hunger, E. A.; *Suggestions from Employes Help the Company Save Money;* An. Am. Acad., May, 1917.
17. Lee, J. R.; *The so-called Profit Sharing System of the Ford Plant;* An. Am. Acad., May, 1916.
18. *Profit Sharing by American Employers;* New York, Nat. Civic Federation, 1916.
19. Gilman, N. P.; *A Dividend to Labor;* Boston, Houghton Mifflin Co., 1899.
20. Burritt, A. W., and others; *Profit Sharing;* New York, Harper & Bros., 1918, p. 148 sqq.
21. New York Times, March 24, 1918.
22. Morgan, S. A.; *These Plans Saved $56,000 a Year;* System, Nov., 1917.
23. Ind Man., June, 1918, p. 500.
24. Adams, T. S., and Sumner, H. L.; *Labor Problems;* Macmillan Co., 1909, p. 184.
25. *Strikes in American Industry in War Times;* Nat. Ind. Conf. Bd., Research Report No. 3, March, 1918.
26. Bond, Albert S.; *Why We Are All Managers in Our Plant;* Factory, Feb., 1919.

CHAPTER IX

1. Ranney, G. A.; *International Harvester Company;* Chicago, Ill., Mod. Hosp., August, 1916, p. 148.
2. Health of Munition Workers Committee, Rep't, Memo. No. 3, 1915.
3. Proude, D.; *Welfare Work;* London, G. Bell & Sons, Ltd., 1916, p. 193.
4. Crum, F. S.; *Restaurant Facilities for Shipyard Workers;* U. S. Shipping Board Emergency Fleet Corp., Industrial Relations Division, Phil., 1918.
5. Rossy, C. S.; *The Factory Employes' Restaurant;* Ind. Man., March, 1918, p. 237.
6. *Equipment for Factory Service Department;* General Service Dep't National Lamp Works, General Electric Co., Cleveland, O., 1913.
7. Annual Report, Memo., Mutual Service Association, 1916–1917.
8. Jones, E. D.; *The Administration of Industrial Enterprise;* London, Longmans, Green & Co., 1917, p. 303.
9. *A Thumbnail Sketch of the Filene Coöperative Association,* 1913.
10. *Welfare Work of the Metropolitan Life Insurance Company;* Report, 1918.
11. *Employes' Handbook;* Winchester Repeating Arms Company, 1916.
12. Cadbury, E.; *Experiments in Industrial Organization;* London, Longmans, Green & Co., 1912, p. 93.
13. Health of Munition Workers Committee, Rep't, Memo. No. 11, 1916, p. 4.
14. *The Preparation of Food for Factory Employes;* General Service Dep't, National Lamp Works, General Electric Co., Cleveland, Ohio, 1915.
15. *City Restaurant as a Diet Guide;* New York Times Magazine, Sunday, July 18, 1915.
16. *Privileges of the Employes of the Miller & Lock Co.,* n. d.
17. Leverhulme, Lord; *The Six Hour Day and Other Industrial Questions;* Henry Holt & Co., 1919, p. 184.
18. *Welfare Work for Employes in Industrial Establishments in the United States;* U. S. Bur. Lab. Stat. Bul., No. 250, Feb., 1919.
19. Weber, J. J.; *Welfare Work Dennison Manufacturing Company;* Mod. Hosp., Dec., 1918, p. 488–489.
20. Walker, A. K.; *Looking beyond the Door of Welfare Service in the Department Store;* Mod. Hosp , Aug., 1916, p. 119–122.
21. *Employes' Welfare Work;* U. S. Bur. Lab. Stat. Bul., No. 123, May, 1913.

22. Duncan, J. P.; *Chicago Telephone Company, Chicago, Ill.;* Mod. Hosp. Aug., 1916, p. 134–135.
23. Comas, R. T.; *Welfare Work of Cincinnati and Suburban Telephone Co.;* Mod. Hosp., Jan., 1917, p. 75 and 76.
24. Lovejoy, F. W.; *Eastman Kodak Co., Rochester, N. Y.;* Mod. Hosp., Oct., 1916, p. 349.
25. Latta, S. W.; *Rest Rooms for Railroad Men;* Bul. Nat. Civ. Fed., No. V., N. Y., 1906.
26. Busser, S. E.; *The Santa Fe Reading Room System,* n. d.
27. *Equipment of Factory Service Department;* General Service Dep't National Lamp Works, General Electric Co., Cleveland, Ohio, 1913.
28. *Brown & Bigelow, St. Paul, Minn.;* Mod. Hosp., Aug., 1916, p. 159.
29. Emerson, A.; *Behind the Scenes in a Department Store;* Outlook, Feb. 24, 1915, p. 450–455.
30. Bintz, E. B.; *Factory as a Community Center;* Nat. Safety Council, 1918, p. 573.
31. Crankshaw, C. W ; *Prudential Life Insurance Company, Newark, N. J.;* Mod. Hosp , Aug., 1916, p. 144.
32. *Parke Davis & Co., Detroit, Mich.;* Mod. Hosp., Aug., 1916, p. 152.
33. Shuey, E. L.; *Factory People and Their Employers;* N. Y., Lentilhon & Co. 1900, p. 80 and 175.
34. Jackson, J.; *Noon Day Club for Girls;* Proc. Employment M'g'rs Conf., U. S. Bur. Lab. Stat. Bul., No. 227, 1917, p. 171.
35. Elliott, W.; *How We Keep Our Men Well;* Factory, Feb., 1919, p. 247.
36. Meeting of Officers of Local Councils, Nat Safety Council, 1918, p. 143.
37. Pamphlets published by Industrial Department, Y. M. C. A , N. Y.; *Ways and Means; Among Industrial Workers; American Workingmen; The College Man's Opportunity.*
38. Lee, R. E.; *Industrial Service in a Tire Factory;* Mod. Hosp., May, 1917, p. 353.
39. Clough, F. E.; *Welfare Work of Homestake Mining Company, Leadville, South Dakota;* Mod Hosp., Jan., 1917, p. 74.
40. Jackson, J.; *Strawbridge & Clothier Chorus;* Proc. of Employment M'g'rs, Conf., U. S. Bur. Lab. Stat. Bul., No. 227, 1917, p. 170–171.
41. Gilson, M. B.; *Service Work of Clothcraft Shops;* Proc. of Employment M'g'rs, Conf., U. S. Bur. Lab. Stat Bul , No. 227, 1917, p. 150.
42. *Welfare Work of Kohler Industries,* Feb., 1917.
43. Wells, F. O.; *An Employes' Engineering Club;* Ind. Man., June, 1919, p. 443.
44. Taplin, H. B.; *Employes at Macy's New York Conduct Welfare Work;* Mod. Hosp., Oct., 1916, p. 258.
45. *Welfare Work of the Metropolitan Life Insurance Company,* 1917.
46. Walsh, W. H.; *Welfare and Efficiency at the Same Time;* Mod. Hosp., Aug., 1916, p. 118.
47. Cary, H.; *Keeping Employes Happy;* Mod. Hosp., March, 1917, p. 232.
48. Lord, C. B.; *Athletics for the Working Force;* Ind. Man., Oct., 1917, p. 44.
49. From Boston Transcript, Oct. 22, 1913, Coolidge, L. A.; United Shoe Machinery Company.
50. Factory, July, 1918, p. 98.
51. Pierce, P. S.; *Employers' Welfare Work in Iowa;* Bul. State University of Iowa, No. 13, Dec. 15, 1915.
52. Interview with F. Kohn, Vice President International Garment Workers' Union, July 18, 1919.
53. Rep't of International Garment Workers' Union, Am. Fed. Lab., 1919.

CHAPTER X

1. Cadbury, G., Jr.; *Town Planning;* London, Longmans, Green & Co., 1915, p. 123.
2. Allen. L. H.; *The Problem of Industrial Housing;* Ind. Man., Dec., 1917, p. 396; 404.

3. *Homes for Workmen;* Southern Pine Association, New Orleans, 1919, p. 10.
4. Kennedy, D. R.; *Housing by Employers in the United States;* Proceedings, Sixth Nat. Conf. on Housing, Chicago, 1917, p. 249–253.
5. Groben, W. E.; *Modern Industrial Housing;* Pub. by Ballinger & Perrot, Architects and Engineers, Phil. and N. Y., 1918. Foreword and p. 9.
6. Fisher, Boyd; *Good Housing as a Reducer of Labor Turnover;* Proc. Nat. Housing Ass'n, 1918, p. 150.
7. *War Housing Problems in America;* Nat. Housing Ass'n, Feb , 1918, p. 108.
8. *Housing Betterment;* Quarterly Pub. of Nat. Housing Ass'n, June, 1919, p. 39.
9. Bruère, R. W.; *Following the Trail of the I. W. W.;* New York Evening Post, 1918.
10. Resolution Adopted at Meeting of New York Board of Health, Oct. 5, 1918.
11. *Rep't of the U. S Housing Corporation;* U. S. Bur. Indus. Housing and Transportation, Dec , 1918, p. 13–15.
12. Girls' Welfare, Nat. Catholic War Council Committee on Special War Activities, Aug , 1919.
13. Wood, E. E.; *The Housing of the Unskilled Wage Earner;* Macmillan, 1919, p. 117–120, 233–234.
14. Adams, T. S., Sumner, H. L.; *Labor Problems;* Macmillan, 1909, p. 392.
15. Nolen, J.; *Industrial Housing;* Cambridge, Mass., 1918, p. 15.
16. Taylor, G. R.; *Satellite Cities;* D. Appleton & Co., N. Y. and London, 1915, p. 6, 35, 99–100, 237
17 Lee, R. E ; *How Akron Grappled with its Housing Shortage;* Proceedings Sixth Nat. Conf. on Housing, Oct., 1917, p. 60–66.
18. *Housing Progress of the Year;* Rep't of Sec't'y of Nat. Housing Ass'n, Oct., 1917, p. 399, 409.
19. Magnusson, L. F.; *Housing by Employers in the United States;* Proceedings Sixth Nat. Conf. on Housing, Chicago, 1917, p. 106–129.
20. *Bul. Bur. Lab.,* 1904, Part II, p. 1198.
21. *Monthly Bul. Am. Iron and Steel Institute,* No. 8, Aug., 1916, p. 223.
22. *Bul. United States Steel Corporation,* No. 7, Dec , 1918.
23. Culpin, E. G.; *Garden City Principles;* Nat. Conf. Prevention of Destitution, 1912, P. S. King & Son, p. 292.
24. Russel, T.; *Welfare Projects of the Cadburys at Bournville;* Dodge Idea, Nov., 1916.
25. *Take your Choice, Home or Hovel;* The Connecticut Mills Co., Danielson, Conn., n. d.
26. Apel, F.; *Housing by Employers in the United States;* Proceedings Sixth Nat. Conf. on Housing, Chicago, 1917, p. 254–257.
27. Frankel, Lee K.; *How Insurance Companies Can Help Housing;* First Town Planning Conf., Boston, Nov , 1913.
28. May, C. C.; *Indian Hill, an Industrial Village for the Norton Co., Worcester, Mass.;* Nat. Housing Ass'n Pub., No. 40, July, 1917.
29. Veiller, L.; *Industrial Housing Developments in America;* Nat. Housing Ass'n Pub., No. 47, May, 1918.
30. Veiller, L.; *Industrial Housing Developments in America;* Nat. Housing Ass'n Pub , No 46, Mar., 1918.
31. Monthly Lab. R., July, 1919, p. 147–148.
32. Hamlin, W. A.; *Low Cost Cottage Construction in America;* Cambridge, Mass., 1917, p. 28.
33. Nolen, J.; *A Good Home for Every Wage Earner;* Address U. S. League of Local B'ld'g and Loan Ass'n, July, 1917.
34. Whitaker, C. H., Ackerman, F. L., Childs, R. S., Wood, E. E.; *The Housing Problem in War and Peace;* J'n'l Am. Institute of Architects, 1918.
35. Furniss, S.; Chap. on *The Workingwoman's House;* Women and the Labor Party, Ed. by Dr. M. Phillips, Huebsch, N. Y., 1918.
36. *Housing Workers in a Powder Plant;* Survey, Apr. 26, 1919.
37. Monthly R., Dec., 1917, p. 217.
38. Mo. Bul. Am. Iron and Steel Institute; No. 6, June, 1916.
39. Proud, E. D.; *Welfare Work;* London, G. Bell & Sons, Ltd., 1916.

40. *Goodyear Heights;* The Goodyear Tire and Rubber Company, Akron, Ohio, 1913.
41. Chandler, W. L.; *Financial Aids for Employes;* Ind. Man., Oct., 1917, p. 36–43.
42. Commons, J. R., Andrews, J. B.; *Principles of Labor Legislation;* Harper & Bros., 1916, p. 55.
43. Warbasse, J. P.; *Coöperative Buying among Employes,* n. d.
44. *A Survey of Typical Coöperative Stores in the United States;* U. S. Dep't of Agric. Bul., No. 394, p. 26–29.
45. *Employers' Welfare Work;* U. S. Bur. Lab. Stat. Bul., No. 123, May, 1913.
46. Mod. Hosp., Oct., 1916, p. 166.
47. Wright, F. S.; *The Visiting Nurse in Industrial Welfare Work;* The Pub. Health Nurse Quar., Jan., 1917, p. 73–79.
48. Mod. Hosp., Oct., 1916, p. 349.
49. Mod. Hosp., Aug., 1916, p. 162.
50. *Industrial Welfare Work in One of the Zones;* The Pub. Health Nurse Quar., Jan., 1917, p. 73–79.
51. Forty-First Rep't of Bur. of Indus. Stat., Pa., 1913–1914.
52. Factory, July, 1918, p. 98.
53. Mod. Hosp., Nov , 1916, p. 433.
54. Mo. Bul. Am. Iron and Steel Institute, No. 2, Feb., 1914.
55. Shaw, S. L.; *The Makings for Revolution;* New Republic, Aug. 13, 1919, p. 52–54.
56. Mo. Bul. Am. Iron and Steel Institute, No. 7, July, 1914.

CHAPTER XI

1. Rubinow, I. M.; *Social Insurance;* Henry Holt & Co., N. Y., 1913, p. 115, 225, 414, 419.
2. Clark, L. D.; *Workmen's Compensation Legislation of the United States and Foreign Countries, 1917 and 1918;* U. S. Bur. Lab. Stat. Bul., No. 243, 1918, p. 7–9.
3. Commons, J. R.; *Industrial Goodwill;* McGraw-Hill, 1919.
4. *Sickness Insurance or Sickness Prevention;* Research Study No. 6, May, 1918, Nat. Indus. Conf. Board.
5. *California Social Insurance Commission Rep't;* 1917, p. 15. *Commission on Public Welfare in State of Connecticut;* Rep't, 1919, p. 50.
6. *Ohio Health and Old Age Insurance Commission Rep't;* Columbus, Feb. 1919, p. 2.
7. *Workmen's Insurance and Benefit Funds in the United States;* Twenty-third Annual Rep't U. S. Commissioner of Labor, 1908, p. 18, 219, 419, 426.
8. Sydenstricker, E.; *Existing Agencies for Health Insurance in the United States;* U. S. Bur. Lab. Stat. Bul., No. 212, 1917, p. 430–475.
9. Chandler, W. L.; *Employes' Benefit Associations;* Ind. Man., Jan., Feb., Mar., Apr., June, July, 1918.
10. Ranney, G. A.; *Employes' Benefit Association of the International Harvester Co.;* U. S. Bur. Lab. Stat. Bul., No. 212, 1917, p. 482–490.
11. Eaton, J. M.; *Industrial Welfare Work a Factor in Modern Management;* Mod. Hosp., Aug., 1916, p. 106.
12. Huyck, F. C.; *Establishment Funds and Universal Health Insurance;* Am. Labor Leg. R., Mar., 1917, p. 85–90.
13. Rice, E. E.; *Group Insurance for the Industrial Worker;* Ind. Man., Mar., 1919, p. 234–236.
14. Feiss, R. A.; *Personal Relationship as a Basis of Scientific Management;* An. Am. Acad., May, 1916, p. 27–56.
15. Henderson, C. R.; *Industrial Insurance in the United States;* Univ. of Chicago Press, 1919, p. 119.
16. *Rules Governing Home Office Clerical Employes;* Metropolitan Life Insurance Co., 1918.
17. Frankel, Lee K.; *Some Fundamental Considerations in Health Insurance;* U. S. Bur. Lab. Stat. Bul., No. 212, 1917, p. 598–605.

18. Day, W. F.; *Group Insurance;* U. S. Bur. Lab. Stat. Bul., No. 212, 1917, p. 421–429.
19. Ins. Year Book, Spectator Co., 1919.
20. Consolidated Chart, 1919 Edition, Pub. Fraternal Monitor.
21. Correspondence of the Metropolitan Life Insurance Co., New York.
22. Frankel, Lee K., Dawson, M. L.; *Workingmen's Insurance in Europe;* Russell Sage Foundation, 1910, p. 9.
23. Tucker, G D ; *Physical Examination of Employes Engaged in the Manufacture of Portland Cement;* Am. J. Pub. Health, June, 1915, p. 570.
24. Harwood, E. R.; *Methods of Insuring Workmen's Compensation;* An. Am. Acad., Mar., 1917, p. 253.
25. Squier, L. W.; *Old Age Pensions;* Macmillan Co., 1912, p. 16, 25, 64, 67, 105, 259.
26. *The Problem of Pensions;* Bul. Nat. Civic Fed., Jan., 1916.
27. *Plan for Employes' Pensions, Disability Benefits, and Insurance;* American Tel. and Tel. Co., Jan., 1913.
28. Dawson, M. M ; *Service Pensions and Pension Funds;* U. S. Bureau Lab. Stat. Bul., No. 212, p. 730–741.
29. Brodsky, R. J.; *Social and Fraternal Insurance;* Fraternal Monitor, Jan. 1911, p. 20–21.
30. Monthly R ; Mar., 1919, p. 119.
31. Ham, A. H , Robinson, L G.; *A Credit Union Primer;* July, 1918, p. 13.
32. *Company Savings and Loan Plans;* Bul. Nat. Ass'n Corp. Schools, Nov., 1917.
33. Chandler, W. L.; *Financial Aids for Employes;* Ind. Man., Oct., 1917, p. 36–43.
34. Burritt, A. W., Dennison, H. S., Gay, E. F., Heilman, R. E., Kendall, H. P.; *Profit Sharing, Its Principles and Practice;* Harper & Bros., 1918.
35. Rochester Herald, Apr. 4, 1919, Eastman Kodak Co., *Letter to Employes;* May 28, 1919.
36. Ham, A. H.; *People's Banks;* Russell Sage Foundation, Aug., 1916.
37. *How I Freed Our Men from Loan Sharks;* by the Service Manager of a Michigan Manufacturing Plant, Factory, Mar., 1919, p. 459–461.

CHAPTER XII

1. *Organizing the Employment Department;* Handbook on Employment Management, U. S. Shipping Bd. Emergency Fleet Corp.
2. Person, H. S.; *University Schools of Business and the Training of Employment Executives;* An. Am. Acad., May, 1916.
3. Selby, C. D.; *Studies of the Medical and Surgical Care of Industrial Workers;* Bul. Pub. Health, U. S. Pub. Health Service, No. 99.
4. Leiserson, W. M.; *Employment Management, Employe Representation, and Industrial Democracy;* Address at Nat. Ass'n Employment M'g'rs, May, 1919, Printed by U. S. Working Conditions Service.
5. U. S. Bur. Lab. Stat. Bul., No. 221, p. 551.

KEY TO BIBLIOGRAPHY

Am. Ass'n Ind. Phys. and Surgeons. — American Association of Industrial Physicians and Surgeons.
Am. Ass'n Lab. Legis. — American Association for Labor Legislation.
Am. J. Care of Cripples. — American Journal for the Care of Cripples.
Am. J. Pub. Health. — American Journal of Public Health.
Am. Labor Legis. R. — American Labor Legislation Review.
Am. Stat. Ass'n Q. — American Statistical Association Quarterly.
An. Am. Acad. — Annals of the American Academy of Political and Social Science.
Bul. Chic. Tub. Inst. — Bulletin of the Chicago Tuberculosis Institute.
Bul. Ind. Commission of Ohio. — Bulletin of the Industrial Commission of Ohio.

Bul. Pa. Dept. of Lab. and Ind. — Bulletin of the Pennsylvania Department of Labor and Industry.

Col. Univ. Studies in Pol. Sci. — Columbia University Studies in Political Science.

Con. of Nat. Ass'n of Employment M'g'rs. — Convention of the National Association of Employment Managers.

Health of Munition Workers. — Health of Munition Workers Committee (British), Ministry of Munitions.

Ind. Man. — Industrial Management Magazine.

J. Am. Institute of Architects. — Journal of the American Institute of Architects.

J. Amer. Med. Ass'n. — Journal of the American Medical Association.

J. Ind. Hyg. — Journal of Industrial Hygiene.

Med. Rev. of Rev. — Medical Review of Reviews.

Mod. Hos. — Modern Hospital Magazine.

Mo. Bul. Am. Iron & Steel Institute. — Monthly Bulletin of the American Iron and Steel Institute.

Mo. Bul. Dep't Health — Monthly Bulletin of the Department of Health.

Monthly R. — Monthly Review of the United States Bureau of Labor Statistics.

Nat. Ass'n Corp. Schools. — National Association of Corporation Schools.

Nat. Ass'n Study and Prev. of Tub. — National Association for the Study and Prevention of Tuberculosis.

Nat. Civic Fed. — National Civic Federation.

Nat. Housing Ass'n. — National Housing Association.

Nat. Ind. Conf. Bd. — National Industrial Conference Board.

Nat. Soc. of Voc. Ed. — National Society of Vocational Education.

Pa. Dep't Labor and Ind. Bul. — Monthly Bulletin of the Pennsylvania Department of Labor and Industry.

Proc. Nat. Safety Council. — Proceedings of the National Safety Council.

Pub. Health Bul., U. S. Pub. Health Serv. — Public Health Bulletin of the United States Health Service.

Pub. Health Nurs. Quar. — Public Health Nursing Quarterly.

Rep't of Bur. of Indus. Stat. Pa. — Report of the Bureau of Industry and Statistics of Pennsylvania.

Rep't Ind. Com. of Wis. — Report of the Industrial Commission of Wisconsin.

U. S. Bur. Lab. Stat. Bul. — Bulletin of the United States Bureau of Labor Statistics.

U. S. Dep't of Agric. Bul. — Bulletin of the United States Department of Agriculture.

U. S. Ship. Bd. Em. Fleet Corp. — United States Shipping Board Emergency Fleet Corporation.

U. S. Steel Corp. — United States Steel Corporation.

NOTE

Since the writing of these chapters, the following important publications have appeared. These are of special interest.

Gearhart, Edna B.; *Work Shop Committees;* list of References on "Special Libraries," Oct., 1919, p. 203–208.

Link, Henry C.; *Employment Psychology.* N. Y. Macmillan Co.

Mock, Harry E.; *Industrial Medicine and Surgery.* Phila. Saunders.

Polakov, Walter N.; *Fatigue and Industrial Efficiency;* Industrial Management, Dec., 1919, pp. 448 ff.

Ramsey, Robert E.; *Effective House Organs.* N. Y. Appleton.

Spaeth, Reynold A.; *Prevention of Fatigue in Industry;* Industrial Management, series beginning in January, 1920.

Warren, Katherine; *Labor Turnover;* list of References on "Special Libraries," Oct., 1919, p. 189–203.

INDEX

Absences, labor loss from, 65; investigations of, 66–67.
Absenteeism records, deductions from, 192.
Accident insurance, 307–309.
Accidents, schedule of, a measure of fatigue, 115, 120–121; slight relation between night work and, 123–124; schedule of, for different days of week, 128; daily distribution of, 129; growth of movement for prevention of, 135–136; possibility of preventing, 136–137; physical examinations a preventive of, 140; wearing of uniforms a preventive measure, 152; efficiency affected by, 209; money rewards as preventive of, 210–211.
Advertising, as a method of securing applicants, 32–34.
Age, as a predisposing factor in industrial diseases, 144–145.
Age limit for employes, extension of, 46.
Akron, industrial housing at, 267–268.
Alexander, M., cited, 187, 189; data collected by, 192.
Altman & Company, rest rooms of, 235; gymnasium maintained by, 241.
American Association of Industrial Physicians and Surgeons, 165.
American Bridge Company, gardening prizes of, 286.
American Industry, magazine, 13.
Americanization plans for employes, 99–100; the safety movement and, 141.
American Locomotive Company, special training system of, 94.
American Museum of Safety, organization of, 136.
American Pulley Company, instruction of new employes by, 91.
American Rolling Mill, reading room for foreign workmen at, 104.
American Steel and Wire Company, special training given selected salesmen by, 94.
American Telephone and Telegraph Company, rest room of, 235; pension system of, 314.
American Tobacco Company, experiment by, in selecting salesmen, 54.
American Viscose Company, housing developed at Marcus Hook by, 268, 273, 280.
American Woolen Company, rest rooms of, 236.
Annuity system of old-age insurance, 311–312.
Applicants, methods of securing, for jobs, 28 ff.; sources of recommendations, 30–32; advertising for, 32–34; scouting system for securing, 34–35; use of psychological tests for, 55–58.
Application blanks, use of, 29–30; subjects covered on, 50–51; value of, in way of permanency, 51–52; more time required in hiring implied by, 52.
Appraisers' Office, New York, credit union in, 323.
Apprenticeship schools, introduction of, 85–87; railroad, 87; coöperation of public schools and, 87–88.
Apprenticeship system, welfare work connected with, 6–8; breakdown of old, 80–81; of National City Bank, New York, 97–98.
Arbeiter Ring Sanatorium, 195.
Armstrong Cork Company, dental work for employes of, 179.

Army, scale for rating ability of officers in, 54–55.
Arrangement of employment office, 75.
Artificial illumination, standards of, 154.
Atchison, Topeka and Santa Fe R. R., apprenticeship school of, 87; rest and recreation rooms of, 237, 239.
Athletic associations, employes', 253.
Athletic fields for employes, 248–249.
Athletics during noon hour, 241.
Attendance, correction of bad, 65–67; efficiency affected by, 209; futility of fines for bad, 209–210; bonuses for good, 210.
Auditoriums for use of employes, 247.
Australia, old-age pension system in, 316.
Avery Company, figures from, on cost of safety and medical work, 140; bulletins on oral hygiene distributed by, 179.

Bands, employes', 250–251.
Barre, Mass., Wool Combing Company, houses built by, 276.
Baseball for employes, 254–255.
Basic wage, fixing the, 201–203.
Baths, provision for, in factories, 148–149.
Belgium, insurance of mining companies' employes in, 11.
Benefit associations, employes', 297; coöperation of employers and employes in, 299–300; employers' judgment of, 300; insurance carried by members of, 304; old-age benefits paid by, 312.
Black Company, vacations for employes of, 131.
Blackford, Katherine, cited, 53.
Blanzy mining company, labor administration by, 10.
Blind, vocational training of the, 91–92.
"Blind" and "open" advertising for applicants, 32–33.
Bloomfield, Meyer, analysis of jobs at Bamberger store by, 41.
Bonuses to employees, to remedy tardiness and absenteeism, 67; to prevent accidents, 210–211; for yearly service, 211.
Bonus methods of wages, 204–206.
Books for employes, 104.
Boston Employment Managers' Association, 27; analysis of causes of labor turnover suggested by, 72.
Bournville Works, evening classes at, 102; vacations for employes of, 131; fire protection at, 159–160, 161; refreshments served at, 231–232.
Brick construction for houses, 276.
Bridgeport, Conn., housing problem at, 261, 268.
Brooklyn Rapid Transit Company, health bulletins issued by, 199.
Brown, Bigelow & Co., noon hour diversions at, 241; social gatherings of employes of, 254.
Bruere, Robert, investigations by, 262.
Building and loan associations, 265–266; an important contribution to coöperative credit movement, 318.
Bureau of Working Conditions of U. S. Department of Labor, 14.
Burham, club house at, 291.
Burke, Mr., of Detroit Steel Products Company, 44.
Burritt, A. S., 217.
Burroughs Adding Machine Company, salesmanship school of, 90–91; meetings of executives of, 104.
Bush Terminal Company, health work of, 287.
By-Product Coke Plant, house development plan of, 280.

Cadbury Works, profit-sharing scheme at, 219.
Cadillac Motor Company, mutual benefit association of, 299.
Cafeterias for employes, 228–229; equipment of, 229; cost of food, 229–231; menus and diet in, 232–233.
California labor camps, living conditions in, 262.
Camps for employes, 249.

Casino Technical Night School, East Pittsburgh, 84–85.
Chandler, W. L., study of mutual benefit associations by, 297–298.
Charles William Stores, plant organ of, 107.
Checks, payment of wages in, 220–221; self-identifying, 221.
Cheney Brothers, testing of employes by, 56; questionnaire used by, 63; entrance tests as a basis for promotion at, 73; care of employes' eyes at, 180.
Chicago Telephone Company, rest rooms of, 236; social clubs of, 254.
Chicago Tuberculosis Institute, work of, 182–183, 186.
Child labor, accident list increased by, 141.
Childs, R. S., suggestion by, concerning land costs, 277.
China, experiments in labor administration in, 18–19.
Choral societies, employes', 251.
Cincinnati, housing of factory workers in, 266–267.
Cincinnati, University of, College of Engineering at, 77.
Cincinnati & Suburban Telephone Company, rest rooms of, 236; vacation home for employes of, 249.
Cities, movement of factories away from, 267.
Clark Thread Company, health work of, 287.
Clayton, C. T., quoted, 77.
Cleanliness, prevention of disease by, 144; various benefits of, 148.
Cleveland Cliffs Iron Company, community club house of, 291.
Cleveland Foundry Company, plan followed by, with plant physician, 189.
Cleveland Hardware Company, results of shorter working day at, 118.
Clinics, dental, optical, and medical, 177–181, 196–197.
Club houses for employes, 244–245; different types of, 245–246; successes and failures of plans for, 246–247; open to the community, 290–291.
Club rooms for employes, 244–245.
Clubs, employes', 242, 250; educational, 252–253; social, 254.
Colleges, courses at, in labor administration, 13; securing of employes from, 35.
Colorado Fuel and Iron Company, health education conducted by, 199; housing development by, 269; company stores of, 284; health work of, 287; recreational activities of, 290; educational work of, 291.
Columbia University, courses in employment management at, 13.
Combination Rubber Company, blind employes of, 92.
Committee, the workshop, 223.
Commonwealth Edison Company, suggestion system used by, 213.
Community, attitude of the, toward labor administration, 5; the employer and the, 260–292.
Community health work, 286–288.
Company hospitals, 181–182.
Company houses, 274–275. *See* Housing conditions.
Company stores, 283–285.
Concerts and entertainments as noon hour diversions, 241–242.
Concrete construction for houses, 276.
Connecticut Mills Company, housing policy of, 271.
Consolidated Safety Pin Company, blind employes of, 92.
Continental Motor Company, cafeteria at, 231; management of restaurant at, 233.
Continual schools, 103.
Coöperative stores, 283; educational value of so-called, 285.
Cornell College of Engineering, 13.
Correspondence classes for training employes, 95–96.
Cost of living, basing of wages on, 202.
Country clubs for employes, 246.
Crane Company, medical department established by, 164, 176; tuberculosis sanatorium of, 182.

Credit unions, 321–323.
Creusot Steel Works, labor administration in, 10.
Crippled, vocational training of the, 91–92.
Crocker-Wheeler Company, employment of blind persons by, 61, 92.
Cultural classes for employes, 101–102.
Curtis Aeroplane Corporation, vestibule school of, 89.
Curtis Publishing Company, results to, of introduction of centralized employment bureau, 25; principles observed by, in engaging applicants for positions, 31; securing of employes from schools by, 35; job specification blank used by, 45; method used by, for filing application blanks, 52; judgment of applicant's personality by employment manager of, 54; use of psychological tests by, 57; rule books for employes of, 64; apprentice school for compositors maintained by, 86; rest rooms of, 235; summer camp for younger employes of, 249.

Dancing during noon hour, 240–241.
Darlington, Thomas, quoted on company stores, 284.
Dartmouth College, Amos Tuck School at, 13.
Dawson, M. M., cited, 315.
Deere and Company, cost of labor turnover at, 70.
Denmark, old-age pensions in, 316.
Dennison, H. S., 217.
Dennison Manufacturing Company, results to, of introduction of centralized employment bureau, 25; employes secured from schools by, 35; rule books for employes of, 64; reduction of labor turnover at, 71; transfers of employes at, 73; training class for new employes of, 90; special training for foremen of, 95; promotion plan used by, 97; health bulletins and pamphlets issued by, 199; rest room of, 234, 239.
Dental clinics, in industrial concerns, 177–179; of women garment workers in New York City, 197.
Department store rest rooms, 235.
Detroit, Visiting Nurse Association of, 190.
Detroit Executives' Clubs, study of sanitary standards by, 146.
Devine, E. T., cited on old-age dependency, 310.
Disability pensions, 315.
Disease, occupational, and its prevention, 142–146.
Dispensary. *See* Medical care.
Dodge Idea, magazine, 13.
Dodge Manufacturing Company, employes' coöperative club organized by, 283; employes' benefit association of, 297–298; Thrift Club of, 320.
Dold Packing Company, profit-sharing and management-sharing at, 225.
Dressing rooms for employes, 151.
Du Pont Powder Company, teaching of English to employes of, 100.

Eastman Kodak Company, health bulletins issued by, 199; suggestion system used by, 213, 215; Kodak Park provided by, 289; stock-purchase plan of, 321.
Eclipse Park, houses at, 274–275, 277.
Economy of shorter working day, 116–122.
Edison Company, forms used by, for references, 62.
Education, need for industrial, 77; public provision for industrial, 77–78; plans for giving a general, 98–110; on health subjects, 197–199; work in, for the community, 291.
Educational activities during noon hour, 242–243.
Educational clubs, 252–253.
Efficiency, impairment of, by fatigue, 113; relation between wages and, 203–204; affected by attendance, accidents, and coöperation, 209; hope of promotion as a factor in, 212.

Efficiency engineer, evolution of the, 13.
Efficiency movement, development of, 14–15.
Emergency equipment, in plants, 173; a model, 175–176.
Emergency Fleet Corporation, course for instructors given by, 89.
Employes, value of labor administration to, 5–6; methods of hiring and holding, 20 ff.; extension of age limits of, 46; elements determining selection of, 47–63; inducting and retaining, 63–76.
Employment agencies, private, 36–37; special, 37; public, 37–38; the United States Federal Employment Service, 38–39.
Employment department, arguments for introduction of, 22 ff.; arguments for a centralized, 24–28; methods of securing applicants by, 28–40; use of job specification, 40–46.
Employment management, college courses in, 13.
Employment manager, rise of the, 13; use of foreman as, 22–23; securing of applicants by, 28–40; qualifications of, 329–330.
Employment Managers' Association, 14; the first, 27.
Employment office, location and arrangement of, 75; records to be included in files of, 76.
Endicott Johnson Company, swimming pool built by, 289.
Engineering Magazine, 14 n.
Engineers' clubs, 252.
Engis Chemical Works, effect of shortening working hours at, 122.
England, public employment agencies in, 38; new Education Bill in, 78.
English, classes in, for employes, 99.
Essen Steel Works, welfare institutions at, 11, 19.
Europe, early experiments in welfare work in, 8–11.
Examinations, psychological, of applicants, 55–58; physical, 59–62; benefit of periodic physical, 166–167; purpose and value of medical, 168–173.
Executives, special training courses for, 95–96; bonuses to, for savings effected, 213.
Eyes, care of, of employes, 179–181.

Factory, manufacturers' magazine, 13.
Factory specials for employes, 266–267.
Fairfield, industrial village, 274.
Farnum, C. G., quoted, 45–46, 61.
Fatigue, meaning of, and effect on efficiency, 112–113; causes of, 113; causes of, inherent in machine production, 113–114; means of measuring, 114–116; lack of variation in, during year, week, or day, 127; variation in, during the work period, 128–129; rest periods as a preventive of, 129.
Feiss, R., quoted on employment management, 25.
Field & Company, recreation room of, 235.
Field days for employes, 256–257.
Filene Sons Company, vacations for employes of, 131; Coöperative Association dining room at, 231; committee management for Coöperative Association dining room at, 232–233; vacation bureau for employes of, 250; musical organizations at, 251; management of recreational work of, 257–258; Savings and Loan Bureau of, 319.
Files for employment office, records for inclusion in, 76.
Financing of industrial housing, 271–273.
Fines, futility of, as reformative method, 209–210.
Fire protection, need for and measures of, 159–162.
Firestone Tire and Rubber Company, club house of, 245; housing developed at Akron by, 268.
First-aid kits in factories, 173.
Fish, E. H., 72.
Fisher, Boyd, quoted on cost of labor turnover, 69–70.
Fisk Rubber Company, reduction of accidents by, 138.
Fitchburg High School, part-time system in, 81.

Follow-up work with new employes, 64–65.
Ford Motor Company, introduction of centralized employment bureau by, and results, 25–26; use of application blank by, 30; cost of labor turnover at, 70; transfers of employes at, 73; employment of blind and crippled by, 92; results of English classes at, 99; work day at, 127; bonus-for-good-conduct system at, 215–216.
Foreigners, plans for education of, by industrial plants, 98–101; newspapers supplied for, 104; health education for, 199.
Foremen, as employment managers, 22; complex duties of, 22; arguments against use of, as employment managers, 23; relief of, by employment department, 26; special training for, 95.
Fore River Shipbuilding Corporation, introduction of employment department by, 27–28; scouting and advertising scheme of, 34; apprenticeship system of, in coöperation with public schools, 87–88; promotion plan used by, 97.
France, early experiments in labor administration in, 10; societies in, for mutual aid, 293; old-age pensions in, 316.
Fraternal societies, sickness insurance by, 297; life insurance by, 306; old-age benefits paid by, 312.
Free lunches for employes, 231.

Gain sharing, plan for, 217.
Gantt task and bonus system of remuneration of employes, 206.
Gardens for employes, 285–286.
Garment workers, women, in New York City, coöperative medical care of, 195–197; recreational activities of, 258–259.
Gary, laissez-faire policy as to housing at, 270.
Gay, E. F., 217.
General Chemical Company, plant organ of, 108.
General Electrical Company, securing of employes from schools and colleges by, 35; group insurance of employes of, 305.
General Railway Signal Company, job specification blank used by, 41–42.
German-American Button Company, 45.
Germany, public employment agencies in, 38; system of industrial education in, 77–78; industrial schools of, examples of continuation schools, 103.
Gilbreth, Frank, "Fatigue Study" by, 130.
Gilbreth, Mr. and Mrs. Frank, three positions plan of promotion put in operation by, 96.
Gimbel Brothers, employes' orchestra of, 252.
Girard, J. W., quoted, 263.
Glee clubs, employes', 251.
Good-conduct bonuses, 215–216.
Goodrich Company, plant organ of, 110; value of dental clinic shown by, 177.
Goodyear Tire and Rubber Company, "Flying Squadron" of, 96; meetings of foremen of, 104–105; plant organ of, 108; housing developed at Akron by, 268; stucco used for houses by, 276–277; housing restrictions of, 281–282.
Gorham Manufacturing Company, noon hour diversions at, 241; athletic field of, 248.
Gould, E. C., cited on labor turnover, 71.
Great Britain, societies in, for mutual aid, 293; old-age pensions in, 316. *See* England.
Greenfield Tap and Die Corporation, Employes' Engineering Club of, 105.
Group insurance, 300–301; in field of life insurance, 304–305, 306–307.
Guilds, welfare work in medieval, 6–8.
Guild system, origin of term "labor turnover" in, 15 n.
Gun clubs, employes', 255.
Gwinn, community club house at, 291.

Gymnasiums for employes, 241, 247–248; classes in, 256–257.

Halpern, Dr. Julius, 195.
Halsey's premium wage system, 205.
Ham, A. H., co-author of Credit Union Primer, 323.
Hamlin, W. A., quoted on construction of houses, 277.
Handbooks for employes, 64.
Hart, Schaffner, and Marx Company, experiments of, with employment of older men, 46.
Harvard School of Business Administration, 13.
Hayes Manufacturing Company, results to, of centralized employment bureau, 26.
Hayhurst, E. R., on occupational disease, 142.
Health, relation between short hours and, 121.
Health education for employes, 100–101, 197–199.
Health work, community, 286–288.
Heilman, R. E., 217.
Heinz Company, entertainments for employes of, 254.
Hercules Powder Company, housing conditions at, 279.
Hershey, Pa., community work at, 289; educational activities at, 291.
High schools, part-time courses in, 81.
Hollow tile construction for houses, 276.
Home nursing in connection with industrial plants, 190.
Homes registration, 264–265.
Homestake Mining Company, recreation building of, 245; swimming pool of, 248.
Homestead, Pa., poor conditions in, 290.
Hospitals for employes, 181–182, 286–287.
Houses, type of company, 274–275.
Housing conditions, industrial, 260–263; urban, for employes, 263–266; where industry is dominant factor in the community, 267–282.
Housing costs, 275–276.
Hubbard, Charles L., article on "Factory Water Supply," cited, 150.
Huyck and Sons, employes' benefit association of, 300.
Hyatt, Dr., table by, 178.

Iceland, old-age pensions in, 316.
Illinois, coöperative stores organized by mine workers in, 284.
Illinois Steel Company, evening classes maintained by, 85; experience of, in reducing accidents, 137.
Illness, extent of, in industry, 163; an industrial problem, 163–164.
Indian Hill, industrial village, 271, 273.
Industrial accident insurance, 307–309.
Industrial betterment, 2.
Industrial counselors, 13.
Industrial education. *See* Education.
Industrial fatigue. *See* Fatigue.
Industrial Management, magazine, 13.
Insurance, for wage earners, 294–295; sickness, 294, 296–303; life, 303–307; old-age, 309–317.
Interborough Rapid Transit Company, recreation rooms of, 237.
International Equipment Harvester Company, club house of, 245.
International Harvester Company, reduction of accidents by, 136–137; medical examinations of employes by, 172; Mutual Benefit Association of, 299; death benefit plan of, 305; stock-purchase plan of, 320–321.
International Ladies' Garment Workers' Union, educational activities of, 102–103; recreational activities managed by, 258. *See* Garment workers.
International Typographical Union, courses given by, 81.
Interview, the preliminary, in selection of employe, 49; the second, 53; the follow-up, 64–65; with employes who are leaving, 72.
Invalidity insurance, 315.

Jeffrey Manufacturing Company, factory restaurant at, 232.
Job, fitting the employe to the, 21–22.
Job selling by foremen, 23.
Job specification, description of, 40–45; advantages of, 45; future of, 45–46.
Joint Board of Sanitary Control, the, 195–196.
Joseph and Feiss Company, method of filing application blanks by, 51; importance of applicant's personality emphasized by, 53; tests of employes by, 56; method of instructing new operatives used by, 91; results of introduction of 40-hour week at, 119; care of employes' eyes by, 180; wages and profits at, 201–202; sickness insurance system at, 300–301; penny bank system at, 319–320.

Kaul Lumber Company, housing policy of, 271.
Kaulton, industrial village, 274.
Kelly, R. W., on methods of selecting employes, 48–49; analysis of effect of transfer and promotion by, 74.
Kendall, H. P., 217.
Kent, Professor, laboratory tests of industrial fatigue by, 116, 124.
Kimberly Clark Company, dental work among employes of, 179.
Kitchen equipment of lunch rooms and cafeterias, 229.
Kodak Park Works, suggestion system at, 213–215.
Kohler Industries, Progress Club of, 252.
Kops Brothers, self-supporting cafeteria at, 230.
Korach and Company, dances arranged by union in, 258.
Krupp Works, welfare institutions of, 11, 19.

Labor administration, function of, 1 ff.; organization of departments of, 2–3; activities with which concerned, 3; standards for evaluating, 3–6; origins and history of, 6–12; becomes a profession, 12–13; college courses in, 13; reasons for new interest in, 14; scope of problems of, 18; an international experiment, 18–19; organization of department of, 326 ff.; purpose of, 326; need for experts in, 328–329; qualifications of employment manager, 329–330; the industrial physician and medical department, 330–332; department organization, 332.
Laboratory tests of industrial fatigue, 116.
Labor loss from tardiness and absence, 65.
Labor maintenance service, defined, 3 n.
Labor turnover, definitions of, 15; extent and cost of, 15–16; causes of, 16–17; economy of centralized employment bureau in reducing, 25–26; definition and method of computing, agreed on by National Employment Managers' Conference, 68; estimates of cost of, 69–70; analysis and reduction of, 70–71; transfers and promotions for reducing, 73–74; close relation between accidents and, 141–142; reducing, by adequate housing conditions, 261.
Labor unions. *See* Trade unions.
Labor unrest caused by bad housing conditions, 262–263.
Lackawanna Social Center, Boys' Club of, 290.
Lakeside Press, Chicago, apprenticeship school of, 87.
Land, cost of, in housing developments, 277–278.
Larcom, Lucy, 11.
Leiserson, W. M., quoted, 333–334.
Lever Brothers, educational clubs of, 253.
Leverhulme, Lord, six-hour work day favored by, 127; quoted on rest rooms, 234.
Libraries in industrial plants, 104.
Liège Mutual Insurance Fund, 11.
Life insurance among working class, 303–307. *See* Insurance.

Lighting of factories, 152–155.
Lincoln Motor Company, vestibule school of, 89.
Loan plans for employes, 317–325.
Loan sharks, credit union as a means of rescuing employes from, 321–324.
Lockers for employes, 151.
Lorain, Ohio, poor conditions at, 290.
Lost time as a test of fatigue, 115–116.
Lowe Brothers Company, High Standard Club of, 247, 253.
Lowell factories, early activities at, 11–12.
Lowell Offering, factory operatives' magazine, 11.
Ludlow Manufacturing Company, community health work of, 286–287; club house built by, 289.
Lunches, length of period for, 240.
Lunch rooms for employes, 227; different types of, 227–228; equipment of, 229; cost of food in, 229–231; menus and diet in, 232–233; system of payment for meals at, 233.

McElwain Company, training-classes for minor executives of, 96.
Machine production, fatigue poisons caused by, 113–114.
Macy and Company, rest room of, 235; summer home for employes of, 249–250; educational club of, 253; athletic club of, 253–254.
Magazines, for manufacturers, 13–14; for employes, 104.
Maison Leclaire, labor administration by, 10; profit-sharing at the, 224.
Management-sharing, profit-sharing and, 224–225.
Manchuria Railway Company, welfare service of, 18–19.
Manufacturers' associations, 14.
Massachusetts, state insurance scheme in, 311–312; state regulation of credit unions in, 322.
Medical care of workers, development of, 163–199.
Medical clinic, of women garment workers in New York City, 196–197; cost of, 197.
Medical department of industrial plant, 173–177, 330–332.
Medical equipment of plant, 173–177.
Medical examinations of employes, 168–173.
Medical records, 191–192.
Medical staffs, 187–190.
Medieval industry, welfare work in, 6–8.
Mentality, placement of low, 58.
Metropolitan Life Insurance Company, bonuses for good time-keeping at, 67; use made by, of part-time system, 82; instruction in stenography given by, 94; correspondence course for employes of, 94–95; sewing and millinery classes of, 102; library of, 104; plant organ of, 107; vacations for employes of, 132; ventilating methods at, 158; physical examinations of employes of, 167; medical treatment of employes of, 173; dental work among employes of, 177–178; optical clinic at, 180–181; tuberculosis sanatorium of, 182; size of medical staff of, 189; experience of, showing futility of fines, 210; pay-envelope system of, 221; free luncheons at, 231; band of, 251; glee club of, 251–252; athletic association of, 253; gymnasium classes at, 256; coöperative store of, 283; sickness surveys made by, 296; Metropolitan Staff Savings fund of, 319.
Midvale Steel Company, lateness statistics at, 66.
Miller Lock Company, handbook for employes used by, 64 n.; lunch-ticket system at, 233; community singing at, 241–242.
Miller Tire and Rubber Company, housing developed at Akron by, 268.
Minnequa Hospital of Colorado Fuel and Iron Company, 182.
Mock, Dr., recommendations of, concerning first-aid kit, 175; cited, 189.

Montgomery Ward Corporation, group insurance of employes of, 305.
Morbidity, weekly reports of, 191.
Muensterberg, Hugo, tests devised by, 56.
Munitions workers, effects of long working day on, 120–121, 123.
Murray Hill Evening High School, New York City, 83.
Musical organizations for employes, 250–252.
Mutual aid, shifting basis of, 293; societies for, 293–295. *See* Benefit associations.

National Association of Corporation Schools, 14.
National Cash Register Company, part-time school of, 82–83; salesmanship school of, 91; promotion plan used by, 97; cultural education at, 101; library of, 104; suggestion system used by, 213; Women's Century Club of, 242; bowling teams of, 255; Boys' Garden Company at, 286.
National Catholic War Council, recommendations by, 265.
National City Bank, New York City, coördinated system of education and promotion of, 97–98.
National Safety Council, 14, 136; safety lectures issued by, 138.
National Society for Promotion of Industrial Education, 14.
New England Telephone and Telegraph Company, rest rooms of, 236.
New Jersey Zinc Company, health work of, 287; provision for recreation by, 288.
Newspapers for employes, 104.
Newton, Mass., Trade School, 83.
New Toy Company, employment of blind workers by, 92.
New York City, private employment agencies in, 36; part-time pupils in high schools of, 81; enormous fire losses in, 159; coöperative medical care of women garment workers in, 195–197.
New York Edison Company, training classes for employes of, 90, 94; Savings and Loan Association of, 319.
New Zealand, old-age pensions in, 316.
Night schools, technical, 83–85.
Night work, generally held in disfavor, 122; objections to and ill effects of, 122–124.
Noon hour diversions at industrial establishments, 240–243.
Nordyke and Marmon Company, vestibule school of, 89.
Northwestern Knitting Mills, vocational training classes of, 90.
Norton Company, cost of labor turnover at, 70; use and value of dispensary at, 165–166; health bulletins and pamphlets issued by, 199; industrial housing policy of, 271, 273.
Nurse, the plant, 190.

Occupational disease, prevention of, 142–146.
Ohio, first American public employment bureau in, 38.
Old-age insurance, 309–317.
Oliver Mining Company, vegetable cellars built by, 286; club house of, 290.
Oneida Motor Truck Company, coöperation of Green Bay Board of Industrial Education and, 84.
Optical clinics in industrial establishments, 179–181.
Orchestras, employes', 252.
Organ. *See* Plant organ.
Outings for employes, 256–257.
Output, weight of, as a test of fatigue, 114–115; increase of, with shorter working day, 117–120; effects of night work on, 123; lowered by Sunday work, 126; seasonal variation in, 156; effect of temperature on, 156–157.
Overlook Colony, industrial village, 274.
Overtime, expense of, 125; reasons for restricting, 125.
Owen, Robert, father of labor administration, 8–9; results of experiments of, in welfare work, 10;

on economy of shorter working day, 116–117.
Oxford, Mass., campaign against tuberculosis at, 184–185.

Packard Motor Car Company, apprenticeship school of, 86–87; records of learners' progress kept by, 88–89; school of, for training executives, 95–96.
Packard Piano Company, scientific management accepted by shop committee of, 223–224; management-sharing at, 225.
Parke Davis & Co., Women's Association of, 242.
Part-time courses in schools, 36, 78; vocational training in, 81; benefits of, 81–82.
Paternalism in housing, avoidance of, 269–270.
Pelzer Manufacturing Company, schools for employes of, 79.
Pennsylvania, industrial accidents in, 136.
Pennsylvania Department of Labor and Industry, questionnaire by, 45.
Pennsylvania R. R., teaching of English to employes by, 100; portable bunk houses used by, 279.
Pensions, or old-age insurance, 309–317.
Personality of applicant, importance placed upon, 53–54.
Personal meetings, 104–105.
Physical examinations of workers, 59–62; an accident preventive, 140; benefit of periodic, 166–167; records of, 191.
Physician, office of, in industrial plant, 189, 330–332.
Picnics for employes, 256–257.
Piecework wages and time wages, 203–204.
Plant chart, the, 40; for use in promotions, 98.
Plant medical equipment, 173–177, 330–332.
Plant organ, the, 105; a typical issue of, 105–107; special points concerning, 107–108; form and cost of, 109; frequency of publication and distribution, 110; qualifications of editor of, 110.
Playgrounds for children of employes, 289–290.
Plumb Company, attendance bonus paid by, 210.
Point system or bonus-for-quality-of-work system, 211–212.
Port Huron Engine and Thresher Company, reduction of accidents by, 137; plan of, for Shop Safety Committee, 139.
Port Sunlight Men's Club, 253.
Postal Telegraph Company, success of credit union in, 323.
Premium systems of wages, 204–206.
Price, Dr. George M., 195, 197.
Prizes for gardens, 285, 286.
Productivity, effect of labor administration on, 4; effect of lighting on, 152–153; comparative effects of bonus systems on, 211–212; increasing, by adequate housing conditions, 261.
Profit sharing, growth of, 19; history of, 216; defects of, 216–217; gain-sharing an attempt to remedy defects of, 217; a possible application of, 217–218; combined savings scheme and, 218–219; labor's attitude toward, 224; to be accompanied by management-sharing, 224–225.
"Profit-Sharing," book on, by business authorities, 217.
Promotion, systems of, 96–97.
Promotions, reduction of labor turnover by, 73–74; hope for, as a stimulating efficiency factor, 212–213.
Prudential Life Insurance Company, noonday concerts at, 242.
Psychological tests for workers, 55–56; function of, 58.
Pullman Company, paternalistic housing venture of, 269–270.

Quality-of-work bonus system, 211–212.
Quality progress records, 211.

Railroad apprenticeship schools, 87.
Railroad club houses, 246.

Railroad Liability Act, effect of, 17.
Railroad rest rooms, 236–237.
Railroads, medical care given employes by, 164.
Ranney, George, quoted, 226.
Rayewsky, Dr. Charles, 195.
Recommendations for applicants for work, 30–32.
Recording and Computing Company of Dayton, vestibule school of, 88.
Records, of attendance, 65–66; for employment office, 75–76; lost-time, as a measure of fatigue, 115–116; medical, 191–192; absenteeism, 192.
Recreation, rest and, 226 ff., 288–291; rooms for, 234–240; during noon hour, 240–243; during non-working hours, 244; club rooms and club houses for, 244–247; auditoriums, 247; gymnasiums, 247–248; swimming pools, 248; grounds for athletic fields, 248–249; vacation bureaus, 250; management of activities, 257–259.
References of applicants, 62–63.
Reid, Laurie Jean, health work of, in Georgia, 287.
Remuneration of employes, method of, 200–225.
Remy Electric Company, health educational campaign of, 199.
Republican Metal Ware Company, job specification blank used by, 45.
Republic Motor Truck Company, plant organ of, 108.
Rest and recreation rooms, 234–240; cost and supervision of, 238–240.
Restaurants, factory, 227–234.
Rest periods in working day, 126 ff.; a preventive of fatigue, 129; growing popularity of, 129–130; regularising and enforcing, 130–131.
Rike-Kumler Company, use of physical examinations by, 60.
Riverside Portland Cement Company, results to, of employment of physically sound workers, 140; results to, of safety measures taken by, 309.
Roach, John, article by, cited, 158.
Robinson, Harriet, 11.
Robinson, L. G., co-author of Credit Union Primer, 323.
Rochester, N. Y., athletic field of button factory at, 249; bowling among employes of, 255.
Rochester, University of, courses in employment management at, 13.
Rowan premium wage system, 205.
Russia, company stores in, 284.

Safety committees, employes', 138–139; meetings of, 139–140.
Safety devices, 137.
Safety education for employes, 100–101.
Safety first movement, 135–136; arousing workers' interest in, 137–140; self-insurance as a means of forcing interest in, 308–309.
Safety talks during noon hour, 243.
Salaries of workers, 208. *See* Wages.
Salesmanship Research, Bureau of, 57.
Salesmen, tests for, 57; schools for, 90–91; system of special training for selected, 94.
Sanatoria care for employes, 181–183.
Sanitation, as a factor in working conditions, 146–152.
Savings scheme and profit-sharing, a combined, 218–219.
Savings plans for employes, 317–325.
Sawyer Park, development of group house at, 274; stucco houses at, 277.
Saxon Mills, provision for recreation at, 289.
Scale for rating applicants, 54–55.
Schneider, H., cited concerning personality of applicants, 54; value of methods of, in vocational guidance, 59; aim of work of, 77; cited, 80, 81.
Schools, securing employes from, 35–36; industrial and vocational, 77–110.
Scientific management, development of, 14–15; value of, in relation to remuneration of employes, 206–208; objection of workers and

labor leaders to, 223; accepted by shop committee, 223–224.
Scott, W. Dill, cited, 54; concrete scale for rating applicants devised by, 54–55; scientific studies of salesmanship by, 57.
Scouting for employes, 34–35.
Sears, Roebuck and Company, use of physical examinations by, 60, 172; vacations for employes of, 131; combined profit-sharing and savings scheme of, 218–219, 320; rest room of, 239; athletic fields of, 248; tennis courts furnished by, 255.
Seashore, Professor, tests devised by, 56.
Seneca Falls Manufacturing Company, vestibule school of, 89.
Service bonus for stabilizing industrial force, 211.
Service for employes, 2.
Service pensions, 313–314.
Sex, as a predisposing factor in industrial diseases, 144–145.
Shadwell, Arthur, study of industrial methods by, 14.
Sherwin-Williams Paint Company, cleanliness enforced among employes of, 144; men's club room at, 236.
Shop Chautauquas, 243.
Shop committees, 223.
Shredded Wheat Biscuit Company, entertainments for employes of, 254.
Sicher and Company, English classes at, 100.
Sick benefits, of trade unions, 296; of fraternal societies, 297.
Sickness, measuring fatigue by, 115–116; relation between long hours and, 121; relation between night work and, 124; increase of, due to Sunday work, 126.
Sickness insurance, 294, 296–303; distribution of risk in, 301–302; province of, in United States, 302–303.
Smith, Edward, cited, 85.
Social clubs of employes, 254.
Social insurance laws in Europe, 294–295.
Sopris, Colo., educational experiment at, 291.
Solvay Process Company, employment bureau of, 26; Americanization plan of, 99–100; results of shortened working hours at, 119; vacations for employes of, 131.
Spanish River Pulp and Paper Mills, experience of, with quality progress record, 211.
Special training classes for employes, 93–94.
Spoiled work, as a measure of fatigue, 115.
Springstead, Mr., on value of the credit union, 323.
Squier, L. A., quoted, 310; study of employers' service pensions by, 313, 316.
Standard physical examinations of New York Municipal Civil Service Commission, 170.
Standards, for evaluating labor administration, 3–6; for housing developments, 278–280.
Stenographers, special classes for, 94.
Stereopticons, use of, for instruction, 100.
Stetson Company, use of physical examinations by, 60; service bonus paid by, 211.
Stewart, Ira, early advocate of eight-hour day, 111.
Stock-selling plans of corporations, 320–321; difficulty of, 323–324.
Store orders, payment of wages in, 220.
Strawbridge and Clothier Company, employes secured from schools by, 35; Noon Day Club for girls at, 242; athletic field of, 248–249; musical organizations at, 251; Athletic Association of, 253.
Street railway club houses, 246.
Street railway rest rooms, 237.
Strikes caused by disputes over wages, 222–223.
Stucco construction for houses, 276–277.
Suggestion systems as a form of bonus, 213–215.
Summer camps for employes, 249.

Sunday work, arguments against, 125–126.
Swimming pools for employes, 248.
Sydenstricker, E., quoted, 194; studies of health insurance by, 296, 297.
System 100%, magazine, 13.

Talks on health for employes, 197–198.
Tardiness, labor loss from, 65; methods of correcting, 65–66.
Taylor, Frederick W., pioneer in efficiency movement, 14.
Taylor wage system, 206.
Technical night schools, 83–85.
Teeth, care of, of employes, 177–179.
Telephone company rest rooms, 235–236.
Telephone employes, training classes for, 90.
Telephone girls, summer homes provided for, 249–250.
Tennessee Coal, Iron and R. R. Co., health work of, 288.
Tests, for army officers, 54–55; psychological, for workers, 55–56; salesmen's, 57; function of psychological, 58; of fatigue, 114–116.
Thomas Manufacturing Company, social club of, 254.
Thomson-Houston Company, employment of blind workers by, 92.
Three positions plan of promotion, 96–97.
Towne, H. R., gain-sharing plan of, 217.
Town planning in development of industrial housing, 273–274.
Trade risk, a basic principle for industrial accident insurance, 307–308.
Trade unions, vocational courses given by, 81; educational activities of, 102–103; vacations enforced by, 132; management of recreational activities by, 258–259; insurance of their members by, against sickness, 296–297; distribution of risk in insurance by, 301; criticism of life insurance efforts of, 305.
Transfers of employes, 73.
Transportation facilities, housing and, 263–264, 266–267.
Trautschold, R., cited, 189, 192.
Tuberculosis, in different occupations, 183–184; methods of prevention, 184; campaign against, at Oxford, Mass., 184–185; failure of campaigns against, caused by employers, 185; free bed funds curative but not preventive, 185–186; reëmployment and after care of patients, 186.
Tuberculosis sanatoria, 182–183.
Turnover. *See* Labor turnover.

Unfit, placement of, by physical examinations, 60–62.
Uniforms for employes, 151–152.
Unit courses in technical night schools, 83–84.
United Cigar Stores, promotion plan used by, 97.
United Shoe Machinery Company, club house of, 246, 247; Athletic Association of, 253; Sam Sam day of, 256.
United States, early labor administration in, 11–12; societies in, for mutual aid, 293–294.
United States Federal Employment Service, 38–39.
United States Playing Card Company, health work of, 287.
United States Steel Corporation, evening classes maintained by, 85; encouragement of gardening by, 286; health work of, 287; stock-purchase plan of, 320–321.
Urban housing conditions for employes, 263–266.

Vacation bureaus for assistance of employes, 250.
Vacations for employes, 131–132.
Valmora Industrial Sanatorium, New Mexico, 182–183.
Veiller, Lawrence, quoted, 275.
Ventilation of workrooms, 156–159.
Vestibule schools, 88–89; conducted by war industries, 89.

Vickers Limited factories, first-aid kit used in, 173–174.
Viscose Industrial Village, 268, 273; house rents at, 280.
Vocational education, 77 ff.
Vocational schools, continuation schools as, 103.
Vocational tests, 55–58.
Vogeler, Dr., on reëmployment of tuberculous, 186.
Voluntary annuity system of old-age insurance, 311–312.

Wages, importance of, 200; definition of, 200–201; scope of problem of, 201; fixing of basic, 201–203; time and piecework, 203–204; premium or bonus methods, 204–208; of salaried and office workers, 208; work stimuli other than regular, 209–216; profit-sharing, 216–219; time and medium of paying, 219–222.
Wagner Electric Manufacturing Company, basket-ball teams of, 255.
Walpole, Mass., joint medical department at, 187.
Waltham Watch Company, boarding house maintained by, 280.
Wanamaker's, summer camp for employes of, 249; employes' band of, 251; singing taught in Cadet Battalion of, 252; management of recreational activities of, 257.
Wanamaker Commercial Institute, cultural education by, 101–102.
Wanamaker Women's League, domestic science classes of, 101.
Warbasse, J. P., quoted on coöperative purchasing and distribution, 284–285.
War industries, system of vestibule schools adopted by, 89.
Warner, A. G., on old-age dependency, 310.
Warner Brothers, club house erected by, 244.
Wastes in advertising for applicants, 32–34.
Water, drinking, for workers, 149–150.
Wayne Knitting Mills, profit-sharing and management-sharing at, 225.
Welfare work, 2; historical origin of, 6–12. *See under* Labor administration.
Western Electric Company, system of promotion at, 74; arrangement of employment department of, 75; employment of blind workers by, 92; system of special training employed by, 93–94.
Western Electric News, a typical plant organ, 105–107.
Westinghouse Electric Company, blind employes of, 92; statistics on accidents from, 141; promotion system at, and results, 212; wage-payment system at, 222.
Wharton School of Finance, University of Pennsylvania, 13.
Whipple, Guy M., quoted on psychological tests, 58–59.
Whitney, Miss, model emergency equipment described by, 175.
Willys-Overland Company, bonus-for-quality-of-work system used by, 211–212.
Winchester Repeating Arms Company, refreshments served at, 231.
Wisconsin, state insurance scheme in, 312.
Women, susceptibility of, to industrial diseases, 145.
Worcester, Mass., failure of tuberculosis campaign at, 185.
Working hours, 111 ff.; fatigue in relation to, 112–114; economy of shorter, 116–122; question of length of working period, 126–131; coöperation of employes essential to success of shorter, 134; relation between housing and, 263.
Workmen's Circle, tuberculosis sanatorium of, 195.
Workmen's Compensation Laws, 308 effect of, on medical care of employes, 164–165.
Workshop committee movement, 223.

X-ray rooms in medical departments of industrial establishments, 177.

Yonkers, N. Y., Sprain Ridge Sanatorium at, 186.
Y. M. C. A., night school program of, 85, 102; industrial program of, 243; industrial club houses under control of, 258.
Youngstown Sheet and Tube Company, housing development by, 268.
Y. W. C. A., evening classes of, 102; factory meetings during noon hour conducted by, 243; industrial club houses under control of, 258.

Zeiss optical goods factory, results of shorter working day at, 117–118.

Printed in the United States of America.