NATIONAL RESEARCH PROJECT

on

Reemployment Opportunities and Recent Changes
in Industrial Techniques

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Director

Studies of the Effects of Industrial Change on Labor Markets
TRADE-UNION POLICY AND TECHNOLOGICAL CHANGE

by

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WORK PROJECTS ADMINISTRATION, NATIONAL RESEARCH PROJECT

Report No. L-8

Philadelphia, Pennsylvania

April 1940
THE WPA NATIONAL RESEARCH PROJECT
ON REEMPLOYMENT OPPORTUNITIES AND RECENT CHANGES
IN INDUSTRIAL TECHNIQUES

Under the authority granted by the President in the Executive Order which created the Works Progress Administration, Administrator Harry L. Hopkins authorized the establishment of a research program for the purpose of collecting and analyzing data bearing on problems of employment, unemployment, and relief. Accordingly, the National Research Program was established in October 1935 under the supervision of Corrington Gill, Assistant Administrator of the WPA, who appointed the directors of the individual studies or projects.

The Project on Reemployment Opportunities and Recent Changes in Industrial Techniques was organized in December 1935 to inquire, with the cooperation of industry, labor, and governmental and private agencies, into the extent of recent changes in industrial techniques and to evaluate the effects of these changes on the volume of employment and unemployment. David Weintraub and Irving Kaplan, members of the research staff of the Division of Research, Statistics, and Finance were appointed, respectively, Director and Associate Director of the Project. The task set for them was to assemble and organize the existing data which bear on the problem and to augment these data by field surveys and analyses.

To this end, many governmental agencies which are the collectors and repositories of pertinent information were invited to cooperate. The cooperating agencies of the United States Government include the Department of Agriculture, the Bureau of Mines of the Department of the Interior, the Bureau of Labor Statistics of the Department of Labor, the Railroad Retirement Board, the Social Security Board, the Bureau of Internal Revenue of the Department of the Treasury, the Department of Commerce, the Federal Trade Commission, and the Tariff Commission.

The following private agencies joined with the National Research Project in conducting special studies: the Industrial Research Department of the University of Pennsylvania, the National Bureau of Economic Research, Inc., the Employment Stabilization Research Institute of the University of Minnesota, and the Agricultural Economics Departments in the Agricultural Experiment Stations of California, Illinois, Iowa, and New York.

Since September 1, 1939, the Project has been sponsored by the National Resources Planning Board, Executive Office of the President, Washington, D. C.
April 3, 1940

Colonel F. C. Harrington
Commissioner of Work Projects

Sir:

The immediate and direct effects of technological change on the security of workers' jobs frequently result in serious hardships for workers. Accordingly, most trade-unions have attempted to deal with this problem. The report transmitted herewith surveys the methods which trade-unions have at various times applied in their efforts to mitigate the dislocating effects of changes in industrial techniques.

The major questions to which the trade-unions have addressed themselves have been: How rapidly are the changes to be introduced? How many workers will be employed after the change has been instituted? Which of the workers are to retain their jobs? What is to happen to those who will no longer be needed at their old jobs? How will the change affect the physical conditions of work and how will it affect future incomes?

In their attempt to meet the problems raised by these questions, the trade-unions have, through collective-bargaining arrangements, evolved a variety of measures aimed at the regularization of the rate of mechanization, the limitation of the hours of work and of work loads, the retraining of workers, transfer to other jobs, the payment of dismissal wages where retraining or transfer did not prove feasible, the improvement of health and safety standards, and the safeguarding and improvement of previous earning levels. The report finds that the success of union measures has depended to a large extent on whether or not trade-unions have been able to relieve competitive economic pressures by establishing and maintaining
fairly uniform standards of working conditions over the entire area of the "competitive market."

This report, on *Trade-Union Policy and Technological Change*, brings together widely scattered material. It should prove helpful to industrial, labor, and governmental bodies alike.

Respectfully yours,

Corrington Gill
Assistant Commissioner
# CONTENTS

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>PREFACE</td>
<td>ix</td>
</tr>
<tr>
<td>I. INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>Technological change and trade-union problems</td>
<td>1</td>
</tr>
<tr>
<td>Tendencies in trade-union policy</td>
<td>5</td>
</tr>
<tr>
<td>Objective and scope of study</td>
<td>8</td>
</tr>
<tr>
<td>II. MINIMIZING DISPLACEMENT</td>
<td>10</td>
</tr>
<tr>
<td>Transfer to changing jobs</td>
<td>17</td>
</tr>
<tr>
<td>Retraining</td>
<td>25</td>
</tr>
<tr>
<td>Regulation of the rate of introduction</td>
<td>28</td>
</tr>
<tr>
<td>Limitation of new entrants</td>
<td>38</td>
</tr>
<tr>
<td>Limitation of work loads</td>
<td>41</td>
</tr>
<tr>
<td>III. MAINTENANCE OF EARNINGS</td>
<td>51</td>
</tr>
<tr>
<td>Standards of output</td>
<td>52</td>
</tr>
<tr>
<td>Earnings and new operations</td>
<td>59</td>
</tr>
<tr>
<td>Earnings and increasing productivity</td>
<td>68</td>
</tr>
<tr>
<td>IV. REDUCTION IN HOURS OF WORK</td>
<td>76</td>
</tr>
<tr>
<td>V. SECURITY OF JOB TENURE</td>
<td>86</td>
</tr>
<tr>
<td>Seniority and its modifications</td>
<td>87</td>
</tr>
<tr>
<td>Seniority and the older worker</td>
<td>92</td>
</tr>
<tr>
<td>Annual employment guarantees</td>
<td>96</td>
</tr>
<tr>
<td>Dismissal compensation</td>
<td>101</td>
</tr>
<tr>
<td>Extent of utilization and coverage</td>
<td>101</td>
</tr>
<tr>
<td>Selected cases</td>
<td>102</td>
</tr>
<tr>
<td>Results</td>
<td>108</td>
</tr>
<tr>
<td>VI. UNION INTEREST IN MANAGERIAL PROBLEMS</td>
<td>108</td>
</tr>
<tr>
<td>Scope of union interest in managerial problems</td>
<td>109</td>
</tr>
<tr>
<td>Limits of union interest in managerial problems</td>
<td>121</td>
</tr>
<tr>
<td>INDEX</td>
<td>127</td>
</tr>
</tbody>
</table>
PREFACE

One aspect of the economic effects of changing industrial techniques involves the measures which have from time to time been adopted to meet their detrimental effects on workers. Since such ameliorative measures have found practical application primarily in the unionized sectors of industry, this report is concerned mainly with trade-union policies.

The study is limited in scope to those trade-union measures which were designed to cope with the immediate and direct effects of technological changes on workers. These include those influences on skills, occupations, work loads, wage rates, tenure, and other conditions of employment which make themselves felt at the point where and at the time when the technological changes are introduced. However, the report does not lose sight of the indirect effects of technological changes - the effects which exert their influence through the mechanism of the market. Both direct and indirect effects of technological changes have had a profound influence on collective-bargaining agreements. This is illustrated in the report by the variety of measures adopted in such agreements to deal with the effects of technological changes throughout our economic, industrial, and occupational structure.

The material used in this study, drawn largely from secondary sources, is based on published statements of policies enunciated by trade-unions in their periodicals, constitutions, conventions, and collective-bargaining agreements. Also, an analysis has been made of a large number of case histories of specific grievances, arbitration proceedings, and collective bargaining involving specific technological changes. In a number of instances the examination of available material was supplemented by interviews with labor leaders and representatives of employers' organizations. The National Research Project is indebted to all those individuals and agencies who have given advice and assistance in the preparation of this report but is, of course, alone responsible for the use made of the material and the conclusions reached.

The report was prepared by Harry Ober. The manuscript was edited and prepared for publication under the direction of Edmund J. Stone.

David Weintraub

Philadelphia
March 29, 1940

ix
CHAPTER I

INTRODUCTION

Technological change in its varying manifestations affects the organization of production, the skills required for specific operations, and the volume of employment; it results in changes in the character of the labor force required in individual plants and industries through elimination and modification of existing occupations; it provides a cause and a basis for changes in wage and rate-setting policies and other conditions of work. To the workers affected by such changes, the maintenance of employment opportunities and standards of income have always been matters of vital concern. In industries where wage rates, apprenticeship, and employment policies have been subject to collective bargaining, the problems which have accompanied the introduction of technological changes have constituted a vital sphere for trade-union action.

In general trade-unions have tended to apply their traditional protective policies to situations created by changing technology in the early stages of introduction. Where these policies ceased to provide the full measure of employment and income security that the workers had achieved prior to the change, they had to be modified or abandoned and new ones had to be adopted in their place. Failure to adjust trade-union policy at times threatened the very existence of the trade-unions involved until some solution was found.

TECHNOLOGICAL CHANGE AND TRADE-UNION PROBLEMS

Regardless of whether technological changes have taken the form of complete substitution of machinery for manual labor, minor modifications of existing machinery and processes, or changes in shop-management policies and organization of industry and production, there has hardly been any change which has not produced, at one time or another, specific problems for the trade-unions and their members.

From the middle of the nineteenth century industry after industry which depended primarily on the labor of handicraftsmen with years of training

Note.—The author wishes to acknowledge his indebtedness to Olga Visod, who assisted in the collection of much of the material for this report and in its planning and preparation in the initial stages, and to Nathan Spero, who assisted in the collection of material for chapters IV and V and in the preparation of the final draft of the manuscript. Considerable use was made in chapters II and V of material assembled by A. B. Handler.

The paper by David Weintraub and Harry Ober entitled "Union Policies Relating to Technological Developments", delivered at the annual meeting of the American Economic Association in Philadelphia, Pa., Dec. 26, 1939, was based largely on materials collected for this study. Formulations from the paper have been adopted freely in the study.
or on other manual trades was mechanized either partially or wholly. A high degree of division of labor resulted in the splitting up of many handicraft skills into a number of semiskilled and unskilled operations. Specialization in a restricted number or even in one of a series of operations became the order of the day. Mechanization of manual operations, although a highly dramatic form of change, had in most instances been only the forerunner of a whole series of minor, day-to-day improvements in machinery and processes which, although less impressive in their immediate, individual effects on labor requirements, have operated to produce cumulative results which have often outweighed the more revolutionary changes. Mechanization was, furthermore, not confined to the production process proper; auxiliary operations, such as handling of materials in raw or finished form and interprocess transportation, have also become subject to mechanical innovations.

In the beginning of this century, various special systems of shop and plant management became popular. The attention of trained engineers was directed to systematic work analysis with the aid of time-and-motion study, and emphasis was placed on organization of production on the basis of the most economical technical level. The cumulative results of small, day-to-day changes in equipment in such industries as textiles, automobiles, steel, and machinery-manufacture were translated into multiple-machine operation and reductions in the number of workers assigned to specific operations. In the various branches of the transportation industry gradual improvements in safety devices and automatization of individual operations were utilized to reduce operating crews. Changes in office equipment and communication facilities, notably on the railroads, provided a technical basis for consolidations of various operating units. Standardization of operations, personnel-selection policies, and incentive-wage-payment methods became important tools in the hands of management in the drive toward improvements in efficiency of industrial operation and the attainment of higher output per dollar of labor cost.

What specific problems have these changes produced for trade-unions? In the first place, the primary concern of trade-unions is to maintain employment opportunities for their members. Where technological changes resulted in reduced labor requirements per unit of output without a compensating increase in the demand for the product, displacement of labor was the result. Besides, changes in skill requirements have at times been more prominent than the reduction in the number of jobs. From a trade-union standpoint the specific skills that the members of a union possess constitute an important source of bargaining power for the union.
as a whole. Deprived of the value of his skill, the skilled worker becomes subject to competition from the unskilled who can easily enter the trade; apprenticeship regulation, for example, an important form of union protection, has in many instances been abandoned as a result of technological change. Also, technological change has rarely been introduced throughout an entire industry at one time; old methods of production have in most instances continued to exist alongside of new techniques, and the workers trained under the old methods have continued to seek employment in the factories which retained the old technical facilities. Occupations have become overcrowded and have provided only intermittent employment. Frequently all sorts of concessions in the form of lower standards of income and working conditions have been made by labor in order to enable those employers to compete in the market who could not avail themselves of the new technology. In brief, technological changes frequently disturb the relationship between the demand and supply for labor and therefore affect the bargaining strength of trade-unions.

Modification and elimination of old skill and occupational requirements as a result of technological change in turn react on established wage levels and wage rates and make them obsolete. Problems of earnings, wage rates, and methods of rate setting have therefore constituted a major field of trade-union activity in relation to technological change. Such problems have frequently arisen in connection with basic changes in the production process, but more often in relation to minor, day-to-day changes in speed of machines, improvement in existing equipment, change in style of the product, and change in methods of performing specific operations. In general, technological changes have frequently provided a basis for the employment of unskilled or semiskilled in place of skilled workers, women in place of men, and younger in place of older workers; the opportunity to reduce labor costs through payment of lower wage rates acted as an incentive for such shifts.

Closely related to the problems of wages and rate setting is that of intensity of labor. Changes in the content of the job also affect the intensity with which workers are expected to perform their work. Any system of rate setting does not require only adjustment with respect to the wage rates per hour, per day, or per week; in the case of technological changes, the problem of how much work a worker is to perform in a given time arises over and over again. Under a piece-rate system the level of wages that a worker may attain depends, of course, on the number of units he is able to produce in a given time as well as the rate of pay for each unit. Where piece rates are not involved there is nevertheless some norm that a worker is expected to attain. Changes in techniques
have kept such problems continually on the order of business of trade-unions. In instances where the speed of the machine is in question or where reduction in crews and stretch-out are involved, similar problems with respect to determining the worker's ability to work under a specific work load without undue strain have arisen from time to time. Since the problem of what the work load should be involves a good deal of subjective judgment on the part of the workers as well as employers, it has often occasioned important labor-relations conflicts.

Furthermore, the impact of technological changes on the volume and character of labor requirements is usually at least partially and in some instances wholly indirect. That is, the effect is produced at a place far removed from the point of the change through its competitive influence on the market as a whole. For example, technological change in one plant may be accompanied by a production increase which permits retention of the entire work force but involves the shut-down of a competing plant. Changes which improve the efficiency of utilization of raw materials and fuels in a manufacturing industry may affect labor requirements only in other industries and in a different locality. Also, competition from substitute products affects labor requirements indirectly. Improvements in transportation and communication facilities, the discovery of new sources of raw materials, and the exhaustion of old sources have frequently resulted in the relocation of plants. Such relocations sometimes take the form of a growth of new, highly efficient plants in new communities and the creation of an excess capacity which, through competitive pressure in the market as a whole, produces unemployment and shut-downs in the old communities. Through their influence on the competitive market the indirect effects in turn become important factors in collective-bargaining negotiations even where no changes were actually introduced.

Finally, one of the most serious problems that technological changes have created for trade-unions in many instances is the extension of jurisdiction over the new or changed jobs. In instances where changes in techniques made it unnecessary for employers to employ union members at the new jobs and workers were recruited in the open market, collective-bargaining relations became strained; in some instances the unions were faced with extinction until they succeeded in establishing their jurisdiction over the changing jobs. In many instances the union members who were still able to find employment at their old trades were hostile to the new technology and the workers employed at it. This attitude facilitated the employment of nonunion labor, and the transfer of union members to the new jobs therefore became difficult or impossible. Besides, the
workers employed at the new jobs frequently feared that joining the union would place them in a position of disadvantage with respect to older members. Consequently they either resisted belated efforts at organization or formed new unions, at times dual in character.

Technological change has frequently given rise to still another form of jurisdictional struggle. Often more than one union has claimed the same work when new occupations have come into being or when the dividing lines between old skills have been obliterated. Such jurisdictional struggles have been waged between various unions in the building trades when changes in materials used and in building have occurred (as, for instance, from wood to metal). Similar struggles have been waged when the work of assembling shifted from the building site to the factory or when tools and machines formerly employed in one craft were introduced into another. Jurisdictional disputes of this nature have not, however, been confined to the building trades. Unions in other industries have faced similar problems.

Briefly, then, the immediate problems which arose when technological changes were introduced were the result not only of changes in the number of employment opportunities in a given industry as a whole but also of qualitative changes in the location of work and shifts of work from workers under the jurisdiction of one union to that of another union or to nonunion workers. Trade-unions have often been criticised for their various attempts to maintain employment opportunities for their members on the ground that they operate under the "lump of labor fallacy", which regards the volume of work as static. The critics, however, usually resort to "long range" economic theories to prove that the total volume of labor has increased or to "over-all" analysis without regard to inner composition of the labor required before and after a specific technological change has been introduced. Although it may be true that the volume of labor to be performed is a changing quantity, it is equally true that in individual instances employment opportunities have declined as a result of the introduction of technological changes. Changes in occupational requirements have resulted in the employment of a new labor force even where the total number of jobs has increased. The worker can hardly console himself with the fact that in the long run employment opportunities will be greater. His immediate concern is bound to be with his own trade in a more or less limited locality and period of time.

TENDENCIES IN TRADE-UNION POLICY

In what manner have trade-unions reacted to these problems? Is it possible to discern some general tendencies in trade-union policies in their
struggle against insecurity occasioned by technological change? In the face of ever recurring technological changes trade-unions have resorted to a wide variety of measures, ranging from prohibition of the operation of machinery to active cooperation with employers in the introduction of changes. Regardless of the specific measures adopted, the primary objectives behind all trade-union actions with respect to technological change have been the protection of employment opportunities and income and the improvement of working conditions with respect to health, safety, and leisure. Only with these objectives in view is it possible to explain the wide range and seemingly contradictory policies employed in specific instances. In situations where technological change was introduced in such a way that no alternative to displacement or other forms of insecurity was offered, either because of adverse economic conditions or lack of consideration on the part of employers for the needs of their employees, opposition to change was bound to develop. Such opposition, however, has not necessarily become an integral part of trade-union policy. In fact, the tendency in collective-bargaining relations over a long period of time has been to resort to an ever increasing variety of measures designed to provide some degree of employment and income security in the face of technological change precisely in order to prevent the development of opposition of union members to change in any form. This tendency has been particularly manifested in industries where the active cooperation of the workers involved is essential to successful operation.

The resentment of workers to insecurity occasioned by technological change has found concrete expression in a variety of forms in the course of the past century. In the early days of the introduction of machinery workers frequently resorted to direct action against machines or refusal to operate them. Prohibition to operate machines found expression in official trade-union policy of such unions as the Stonecutters, the Molders, the Cigarmakers, the Window Glass Workers, and others. With rare exceptions, however, these measures failed to provide the degree of security the workers sought to attain, and they were disastrous to the unions. These and similar experiences have generally convinced trade-unions that it is dangerous strategy to oppose the introduction of machinery; practically all unions have at one time or another officially proclaimed this principle as basic union policy with respect to all technological changes. This does not mean, however, that workers have learned to accept technological change without resentment, regardless of its consequences. It does mean that as far as trade-union policy is concerned efforts are being made to direct the resentment of workers against
insecurity into channels that would lead to some positive adjustment without resort to opposition to change in any form.

In line with these developments the principal modifications of trade-union policy, generally speaking, have been in the direction of control, regulation, and alleviation of the effects of technological change. Where changes in occupations, skills, and operations are involved, trade-unions have sought to control the jobs, no matter how much they may have been modified by technological change, through inclusion of the new jobs under union jurisdiction. It has now become a central feature of trade-union policy that without such control and recognized jurisdiction it is practically impossible to make an adjustment under collective bargaining. Along with control over the changing jobs there were developed policies for regulation of the rate of introduction of improvements so that displacement, if it cannot be prevented, may at least be reduced to a minimum. Closely related to regulation and control of the number of jobs and who should operate them are a group of policies which have been adopted in order to regulate job tenure. The aim of job-tenure regulation has been to establish some control over lay-off, dismissal, promotion, and reemployment. Where workers have been eliminated from an industry as a result of technological changes, trade-unions have sought and occasionally obtained dismissal compensation. Although these measures have rarely provided the full degree of security that trade-unions have sought, they have provided a basis for negotiations in a number of instances.

Regulation of changing conditions arising from the introduction of new techniques has also been applied to general wage policies, the setting of wage rates, and standards of output. In the first place, trade-unions have consistently argued that technological change should not and need not result in reduced wage levels, regardless of whether or not in individual instances the skill and effort required to perform a specific job might be modified by technological change. The advantages of increased productivity, it is usually argued, should at least in part be passed on to the workers involved in the form of higher wages or reductions in hours of work. In the second place, rate-setting policies have been evolved which aim at the protection of established wage levels during the process of change and experimentation. Thirdly, trade-unions have insisted that changes in work assignments which frequently affect earnings should not be made arbitrarily but should be subject to some degree of union control. These policies have found an ever wider expression in provisions of collective-bargaining agreements in recent years.
In individual instances where trade-unions have been able to secure acceptance of these policies by employers, agreements have also been entered into with the aim of improving various phases of productive efficiency. A basic condition for securing such cooperation on the part of trade-unions has been, in each instance, that the workers' jobs, earnings, and standards of working conditions would be safeguarded. These attempts at union-management cooperation represent another phase of a conscious effort made by trade-unions and employers to remove opposition to technological change from the sphere of collective-bargaining relations by providing an opportunity for the workers involved to share in such economies as might be obtained from improved productivity or greater plant efficiency.

The evolutions of trade-union policy with respect to technological changes outlined here have not been solely the work of trade-unions. Many employers, too, realize that insecurity breeds indifference and even barriers to efficient production. It is not surprising, therefore, to find instances where employers have voluntarily regulated the introduction of technological changes in order to reduce displacement and insecurity to a minimum.

**OBJECTIVE AND SCOPE OF STUDY**

For over a century trade-unions have been the first line of defense against all forms of insecurity that their members and workers in general have been exposed to as a result of the introduction of technological changes. Their experiences in dealing with these problems through collective bargaining have served to crystallize a series of policies and practices with respect to protection of workers' earnings, employment, and other conditions of work. The objective of this study is to organize and present, in a systematic way, whatever information is available which would throw light on the character of the protection that trade-unions have sought for their members in the face of technological change.

The nature of collective bargaining and the character of the problems that are subject to collective agreements set definite limits to the scope of this study. The measures that have been adopted with respect to technological change through collective bargaining have dealt with protection of employment opportunities, earnings, and conditions of work primarily at the point of production. That is, they provided some protection for those workers who had still retained some claim to a job in a plant or industry. However, some measures, although negotiated at the point of production, have had the effect of alleviating the hardships of those displaced during the period of readjustment. Even in the case
of such measures as dismissal compensation or unemployment benefits — that is, measures designed to make adjustment for the displaced workers easier — the protection is necessarily obtained before dismissals or layoffs take place. The adjustments that displaced workers are forced to make after they have been eliminated from an industry will not be dealt with in these pages. Neither will this study deal with legislation or general economic conditions which influence the character of adjustments that displaced workers have been forced to make.

Although the emphasis here is on measures and practices which have been evolved through collective bargaining, there are two important qualifications that must be made. In the first place, not all the protective measures advocated by trade-unions with respect to technological change have found concrete expression in collective agreements. Some of them are expressed in trade-union programs and in convention proceedings and are part and parcel of trade-union policy. They represent the aims and desires of workers for security and constitute a background for collective negotiations. Considerable reference will be made from time to time to such trade-union policy. In the second place, trade-union policy has had a profound influence on personnel policies of industrial establishments, and personnel policies in turn influenced collective-bargaining methods. As a result of this mutual interaction personnel policies frequently include protective measures similar to those adopted under collective bargaining. The experiences of such industrial establishments with respect to technological change will be drawn upon.

Each of the remaining chapters relates to a particular aspect of trade-union policy and is illustrated by a selection of examples of trade-union or management experience in coping with the problems that arise from technological change. The description of the measures and the protection they have sought to obtain are presented under the following topics: Minimizing displacement, maintenance of earnings, reduction in hours of work, security of job tenure, and union interest in managerial problems. A glance at these topics shows that they are largely similar to the kind of problems that trade-unions usually deal with under any conditions. This is so of necessity, since the insecurity that technological change occasions is only one phase of the general insecurity to which workers are exposed. In fact, the first reaction of trade-unions to the conditions created by changing technology has usually been to resort to whatever measures they find ready at hand and to apply them to the new situation. It is only in the course of the application of the traditional practices to new problems that they become modified and assume a new form.
CHAPTER II

MINIMIZING DISPLACEMENT

Recognized control over definite categories of work in an industry or occupation has been one of the major objectives of trade-unions under any conditions. As long as occupations remain relatively stable, provisions in collective agreements usually cover the various claims with regard to jurisdiction over specified trades and occupations. When technological changes create new operations and modify or eliminate old ones, however, the problem frequently arises as to which group of workers should be assigned to the changed jobs. Attempts to control employment opportunities under such changing conditions resulted, in a number of instances, in specific collective agreements which stipulated that a worker should not be eliminated from his job when technological change has modified it; that where jobs have been completely eliminated and new ones created the displaced workers should be transferred to the new jobs; and that where the number of jobs has been reduced by the change, other jobs at different operations should be provided. Such protective measures have not been confined to regulation of displacement alone. In some industries provisions against displacement also involved agreements over the rate of introduction of technological changes in order to accomplish the same ends. Although agreements which provide for such regulation and control of displacement have been concluded only in a limited number of instances, trade-unions have increasingly sought such adjustments in recent years.

Factors which have tended to aggravate displacement arising from technological changes have originated in trade-union policy based on limited organizational objectives as well as in employer hostility toward collective bargaining. In the first place, the narrow basis of trade-union organization, which was frequently limited to a group of skilled crafts or even a single craft in an industry, had at times made the union ineffectual when technological changes modified or eliminated these crafts, and the new occupations were excluded from union jurisdiction. In the second place, employers have frequently questioned the very basis of collective bargaining when they refused to recognize a union's jurisdiction over the changing jobs on the grounds that technological changes made it possible for them to employ labor hired in the open market. In such instances the problem, instead of consisting of negotiations regarding adjustments, consisted of the basic struggle for union recognition. Finally, various trade-unions operating in closely related crafts have
frequently engaged in jurisdictional disputes for the control of the same jobs when changes in techniques have obliterated the hitherto clear distinctions between individual crafts. All of these factors have operated in individual instances to make adjustment difficult.

When machinery was introduced into the manufacture of window glass, for example, the National Window Glass Workers Union prohibited its members from working in machine plants in spite of the fact that two of the four crafts under the union's jurisdiction, flattening and cutting, were not eliminated by the early machines. This policy was consistently carried out by the union from the beginning of the century until 1927, just a year before the union went out of existence. Throughout all these years hand manufacture continued to exist alongside of machine methods. However, when improved automatic machines found their way into the industry in increasing numbers during the 1920's, hand manufacturers found it more and more difficult to compete with machine-production manufacturers in spite of the concessions in wages and working conditions which they were able to secure from the union. The union finally realized that its existence was threatened, and in 1927 it changed its policy and permitted its members to work in machine plants; however, jurisdiction over these jobs had already been established by other unions. In spite of the fact that the campaign to organize machine workers into the union was to honor strictly the jurisdictional claims of the organizations already operating in the machine plants, it was met with hostility by the other unions and was unsuccessful. In 1928 the union was dissolved and its members were left to their own resources.¹

Similar policies were adopted by the Journeymen Stoncutters' Association when the planer was introduced in the 1890's. Although various local unions succeeded in securing agreements for the employment of union men at the planers, a prohibition to operate the machines became general in 1900. A possible explanation for this is the fact that the introduction of the planer was not accompanied by any increase in the demand for cut stone, and displacement resulted. In addition, much of the cutting which was formerly done in local stoneways was shifted to the quarries. At this time the General Union adopted the following policies: (1) Prohibition of the shipment of planer-cut stone into any city where the union had succeeded in abolishing the use of the planer and (2) requirement that local branches were to make every effort to prevent the introduction of the planer in the area of their jurisdiction. Despite local successes the policy of prohibition was finally abandoned in 1908 since

dual locals were organized in a number of cities by workers who opposed the policy of the union. Since that time every effort of the union has been directed toward establishing control over the machines. Displacement, particularly of union men, had already taken place, however, since nonunion men had been employed to work on them.

When molding machines began to make inroads into iron molding in the decade from 1890 to 1900 the molders refused to operate them on the ground that the work was monotonous and uncongenial to skilled molders. Manufacturers, too, instead of transferring skilled molders to operate the machines, preferred to employ unskilled labor. It was not until 1899 that officers of the union began to urge their members to accept jobs at the machines; actual organization of machine operators into separate locals or into existing unions was not begun until 1903, and even in 1907 there were few such workers actually enrolled as members.

In the stove-manufacturing branch of the molding industry an agreement was finally reached which enabled the union to extend its jurisdiction over the machine operators in 1908. In the machinery and jobbing branch of the industry, where machinery was introduced to a greater extent, the National Founders Association abrogated its agreement in 1904 and most of the employers operated on an open-shop basis. The trade-union members were reluctant to accept jobs at machines because employment opportunities were plentiful as a result of the increased use of machinery and machine parts in many industries.

For many years the Cigarmakers' International Union's struggles against displacement were aimed primarily at protection of "journeymen" who made a complete cigar. Although the International advocated extension of jurisdiction over women workers, teamworkers, and machine operators, the high degree of autonomy exercised by the local branches of the union until the late 1920's and the predominance of journeymen in the union time and again prevented the International from carrying out any uniform policy with respect to machinery or other changes.

When the mold was introduced in the 1860's the International prohibited its members from working with workers who used the mold. Such action, however, resulted in the employment of unskilled labor, and the policy

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was changed in 1875 to permit mold workers to join the union. Similar action was taken against bunch-breaking and rolling and the "teamwork" system, since the worker under this system performed only a part of the complete operation. When the suction table was introduced in the 1880's the union refused to extend the use of the union label to "machine made" cigars. In each case where prohibition of work at new methods or devices was resorted to, the union subsequently had to change its policy because of a fresh influx of unskilled workers; nonetheless, local unions whose members could still secure work under the old conditions of operation refused to admit semiskilled and unskilled workers. In 1915 the International was officially opened to "machine" workers, but the locals retained the power to exclude them if they so desired. Near the end of the second decade of this century the automatic machine making a complete cigar began rapidly to displace hand manufacture, and the union membership was continually dwindling. In 1927 the International was finally granted the power to overrule locals which refused to admit machine operators. Since that time the policy has been to organize all workers in machine and hand manufacture into one union. It should be noted, however, that probably no policy that the union might have adopted would have prevented displacement entirely. Manufacturers had tried over a long period of time to free themselves from union regulations by substituting unskilled for skilled labor and women for men; technological changes greatly facilitated this process and the policies of the union furthered the employment of nonunion labor.6

The actions of the above-cited unions with respect to acquisition of jurisdiction over the changing jobs were repeated with minor variations in other industries. To some extent, as long as there was some opportunity to find work in the factories which continued to operate with the old techniques, the workers themselves showed reluctance to accept jobs at machines or changed methods even in industries where technological changes provided ample opportunity for work at wage levels comparable to those received at former operations. When semiautomatic bottle-making machinery was introduced, for example, the Glass Bottle Blowers' Association found it difficult to convince its members to accept jobs at the machines.7 Similar attitudes on the part of the membership prevailed when the automatic machines were introduced. In 1915 the president of the union reported to the national convention that where the union had

7 Barnett, op. cit., p. 72.
secured consent to employ union men at the machines, not enough workers were willing to accept the jobs, and workers had to be secured by the union from outside the trade. The coopers, too, refused to accept jobs in machine plants for a long time, and as a result the industry gradually slipped away from union control. In 1905 the Coopers' International Union urged its members to accept jobs at machines and stated that its policy had been changed to make it possible to organize the workers in machine plants. Even in the case of the introduction of the linotype into printing, where comparatively favorable conditions existed for the transfer of workers to the machines, some compositors preferred to compete with machine production. Partnerships were formed by groups of workers who secured work from newspaper offices and operated under whatever terms they could get. This tendency on the part of a union membership to continue to practice the old skill and shun work at the changed methods has been particularly strong in the early stages of the introduction of a new technique, when only a portion of the industry has been affected, or when only part of the work has been transferred to the machines.

In practically all instances, however, the union leadership has been quick to sense the effects of technological change and advocated revision of policy long before the membership was ready to accept it. This may be due in large measure to the fact that the officers of the unions are concerned to a greater extent with the task of preserving the union as an institution. Failure to extend the jurisdiction of a union over the new processes of production would inevitably lead to the dissolution of the union when its members are no longer needed in the industry. In industries where negotiations for collective agreements are carried on by the national officers of the union, competition created by differences in technology frequently becomes a factor in the making of agreements long before its influence is felt by the local union membership.

Collective bargaining is not a one-sided activity, and it would be a mistake to place the entire responsibility for failure to extend jurisdiction over the changing jobs on trade-union policy alone. Employers, too, have frequently refused to recognize union jurisdiction over the changed jobs and have in some instances utilized the changing conditions as a basis for severing collective-bargaining relations. In the jobbing and machinery branch of the molding industry, for instance, the National

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8Minutes of the Proceedings of the Thirty-ninth Annual Convention of the Glass Bottle Blowers' Association of the United States and Canada (East St. Louis, Ill., Aug. 2-12, 1915), p. 82.
10Barnett, op. cit., p. 16.
Founders Association saw in the introduction of the machine a chance to free itself from union regulation. After its agreement with the International Molders' Union was abrogated in 1904, the Association systematically helped its member employers to introduce machinery under nonunion conditions. Since the proportion of skilled to semiskilled and unskilled workers was drastically reduced by the use of machinery in this branch of the industry, the Association maintained a central force of skilled men and made it available to any employer who wished to train a new nonunion working force. The workers to be trained were usually recruited from among the laborers formerly employed at unskilled tasks in the shops. Under the guidance of the central skilled labor force, machines were installed, new workers were trained, specialized jobs planned, and in a short time the plant was in operation with a new, trained force.\footnote{Margaret L. Stecker, "National Founders' Association," In John R. Commons, Trade Unionism and Labor Problems (3d ser.; New York: Glenn and Co., 1921), p. 414.} In the glass-bottle industry the Glass Bottle Blowers' Association had maintained collective-bargaining relations with many employers for a long period of time. But when the "flow and feed" automatic machines were introduced in 1917 the union found it more and more difficult to conclude agreements with most of the employers who used these machines. The employers maintained that skilled blowers would not make efficient machine operators and they preferred to operate with unskilled labor.\footnote{Minutes of the Proceedings of the Forty-seventh Annual Convention of the Glass Bottle Blowers' Association of the United States and Canada (Chicago, Ill., July 9-16, 1923), pp. 34-6.} Similar attitudes on the part of the employers were found in other industries.

Among the factors which make control over employment opportunities difficult, jurisdictional disputes between different unions over the same jobs have played an important role. When the semiautomatic machines were introduced into the glass-bottle industry the Flint Glass Workers and the Glass Bottle Blowers' Association both claimed the right to operate them. The Flint Glass Workers argued that since the machines were first used in the branch of glassware under their jurisdiction, their members should follow the machines. The Blowers, on the other hand, claimed the work on the ground that they were being displaced by the machines. The controversy lasted from 1898 to 1912. During this time both organizations attempted to place their men on the same jobs. Since the machines were used mainly in plants where narrow-mouth ware requiring skilled blowers was also manufactured, the Glass Bottle Blowers' Association was in a better position to get favorable terms at the machines. The Flint Glass Workers' Union made every effort to get blowers and used their own plants for training blowers in order to be able to supply them to
manufacturers who would employ its members. The Glass Bottle Blowers, on the other hand, had to train pressers for the machines while such workers were available in the rival union. Thus the jurisdictional conflict of the two unions resulted in the training of additional workers while machinery was displacing those already trained.\textsuperscript{13}

Similar claims were put forth by the International Brotherhood of Teamsters, Chauffeurs, Stablemen and Helpers and the Amalgamated Association of Street and Electric Railway Employes for the control of the jobs on bus operation. The Amalgamated claimed that since buses were displacing cars the work belonged under their jurisdiction. The teamsters, on the other hand, claimed that bus drivers were chauffeurs and therefore should join their union. In 1925 the American Federation of Labor tried to settle the dispute by granting the Amalgamated jurisdiction over all busses and coaches operated by or in connection with street or electric railways. The teamsters' union did not accept the proposal and the struggle continued as late as 1933.\textsuperscript{14}

Jurisdictional disputes over the same work have been frequent in the building trades when new materials or new machines were introduced or when work shifted from the building site to the factory. When wood was being supplanted by steel, for instance, the carpenters and the sheet-metal workers claimed the same work. The struggle lasted nearly a quarter of a century. The carpenters claimed the work on the grounds that their work was being displaced. The sheet-metal workers argued that they had jurisdiction over all sheet-metal work. Since the carpenters were the more numerous group they succeeded in gaining agreements with contractors for the control of the work. In 1921 the matter was brought before the National Board of Jurisdictional Awards and a decision favorable to the Sheet Metal Workers' Union was rendered. The carpenters, who by that time controlled nearly all the work, refused to abide by the decision and in 1926 most of the work was conceded to them.\textsuperscript{15} When building tile and glazed brick came on the market, the tile layers claimed the work. The bricklayers, on the other hand, argued that all exterior work belonged to them. This dispute lasted from 1908 to 1920, when an agreement was reached with the Tile and Mantel Contractors of America which "gave the bricklayers exclusive jurisdiction over the installation of exterior and interior tile and related work. The tile layers' union was gradually affiliated with the bricklayers' union."\textsuperscript{16}

\textsuperscript{13}Barnett, op. cit., pp. 72-9.
\textsuperscript{14}Emerson P. Schmidt, Industrial Relations in Urban Transportation (Minneapolis, Minn.: University of Minnesota Press, 1937), pp. 235-6.
\textsuperscript{16}Ibid., p. 159.
MINIMIZING DISPLACEMENT

One of the severest jurisdictional struggles was waged between the Amalgamated Woodworkers International Union and the United Brotherhood of Carpenters and Joiners over control of woodworking machinery in the mills. Before the introduction of machinery, "the outside carpenter did all the woodwork required for a building. The inside carpenter was a cabinetmaker engaged in making furniture." The use of woodworking machinery shifted much of the "outside" carpentering to the mills. The struggle over the control of the jobs in the mills was long-drawn-out and involved a number of other unions. In 1912 the two organizations amalgamated and the dispute ended.\(^\text{17}\)

Jurisdictional disputes of the nature described here have been too numerous to receive detailed treatment. It is sufficient to point out that such disputes make it difficult for any one union to reach an agreement with employers over the control of the jobs, and displacement is usually aggravated. In the course of dealing with these problems trade-unions have realized that it is important to extend their jurisdiction over the changed jobs in the early stages of introduction of technological change. Refusal to operate machines or to work at new processes, therefore, has come to be looked upon as undesirable. Employers, too, have recognized in many instances that any action on their part which would increase the insecurity occasioned by technological change would develop attitudes on the part of the workers which are not conducive to efficient operation. The realization of these facts has served as a background for the adoption of measures designed to reduce displacement to a minimum. In the balance of this chapter a number of these measures are discussed under the following topics: (1) Transfer to changing jobs, (2) retraining, (3) regulation of the rate of introduction, (4) limitation of new entrants, and (5) limitation of work loads.

TRANSFER TO CHANGING JOBS

Job insecurity occasioned by technological change may be reduced to a considerable extent when the workers whose jobs have been affected are transferred to new jobs. This policy is important no matter what the effect of the change on the volume of employment, and trade-unions eventually and invariably came to this point of view regardless of the measures they had adopted earlier. The establishment of jurisdiction over the changing jobs, however, is a necessary condition for successful transfer.

The character of protection sought by trade-unions which would assure successful transfer has varied in accordance with the degree to which

\(^{17}\text{Ibid., pp. 161-3.}\)
technological changes have affected the specific operations. Where the new technique fundamentally changed the job, as in the case of the introduction of semiautomatic machinery into the manufacture of glass bottles, transfer involved the assignment of blowers to operate the machines. Similar protection is frequently provided for in agreements where the work is only modified in lesser respects. In such instances agreements provide against transfer of tasks from workers who had performed the work before to new workers. In some cases trade-unions have secured provisions in agreements which stipulate that the displaced workers should be assigned to different operations in the plant where the number of jobs had been reduced or some operations had been completely eliminated. In all instances, however, the objective is similar in that an attempt is made to secure the worker a job.

Although the introduction of machinery in the glass-bottle industry created a jurisdictional problem between the unions in the industry, the transfer of a considerable number of workers to the semiautomatic machine was facilitated by the conciliatory attitude of the Glass Bottle Blowers' Association, as well as by its control over most of the skilled blowers who were still needed for the manufacture of narrow-mouth ware. From 1898 to 1905 semiautomatic machines, which required a good deal of the skill of the hand workers, were used in the manufacture of wide-mouth ware only. Because of the increase in demand for bottles, there was no decline in the total number of persons employed by the industry. This was no guarantee against displacement and changes in personnel, however. The Association adopted a policy of transferring jar blowers to forms of ware unaffected by the machine and transferring hand blowers to machines. The first part of the policy was successful because of the general increase in the demand for glassware. The second part of the union's program was much less successful. Training was necessary and employers were reluctant to concede that having been a hand blower was an asset to a worker when transferred to machine operation. Besides, many workers preferred to stick to their craft as long as there was some prospect of finding work. Despite these difficulties many such transfers were made.18

In 1904 the Owens automatic machine was introduced for the making of heavy, narrow-mouth glassware. This machine was completely automatic and could be operated with unskilled labor. In the first years following their introduction these machines were not very versatile and their effect on employment opportunities was not great. At the same time the

Semi-automatic machines were being adapted to the manufacture of all sorts of bottles, and the union was able to compete with the Owens machine. An increase in total production and the introduction of three shifts in some of the semi-automatic-machine plants made it possible to maintain employment opportunities.\footnote{Proceedings of the Thirty-first Annual Session of the Glass Bottle Blowers' Association of the United States and Canada (Toronto, Canada, July 8-17, 1907), pp. 28-30.}

In 1917 the "flow and feed" automatic machines began to displace the semi-automatic machines. By this time, too, the Owens machines were improved to the point where they could manufacture all sorts of bottles. The "flow and feed" machines did not require the skill of the former workers, and the union often was not in a position to acquire jurisdiction over these machines since many employers preferred to employ non-union, unskilled labor. On the other hand, because of the fact that the wage differential between semi-automatic operators and unskilled workers was much less in 1917 than in 1907, the union succeeded in making agreements with a number of manufacturers, and workers were transferred to the machines. It has been estimated that about one-third of the 2,000 machine operators employed in 1917 had secured employment on the "flow and feed" devices at reduced earnings.\footnote{C. Barnett, op. cit., pp. 112-3.} Particularly severe was the displacement occasioned by the Owens machines. But because of the policy of the union, which continually advised its members to accept jobs at the machines, some of the agreements concluded in 1925 between the Glass Bottle Blowers' Association and the American Bottle Company, covering a number of plants, contained the following clause:

When workmen are needed to operate the Owens bottle-making machines bottle blowers who were displaced by the automatic machine shall be given preference to vacant positions, providing they are qualified and competent to perform the work.\footnote{Trade Agreements, 1925 (U. S. Dept. Labor, Bur. Labor Statistics, Bull. No. 419, Sept. 1, 1926), p. 61.}

When the linotype machine was introduced in 1887 the International Typographical Union obtained agreements with employers for the employment of skilled journeymen at the machines. Transfer to the machines was facilitated in this case by the fact that the skills of the compositors were to some extent an asset to machine operation. Besides, the introduction of the linotype made it possible to produce printed matter at considerably reduced prices, with a consequent increase in demand for the product and in employment opportunities. Nevertheless, during the period of transition from hand to machine composition technological displacement caused considerable hardships.
As early as 1889 the International Typographical Union adopted a resolution at its convention which instructed the locals to see to it that practical printers are employed wherever the machine is introduced. The membership showed some reluctance to learn how to operate the machine, and a resolution was passed the following year which urged the members to acquire the knowledge requisite for machine operation. During these years the International also acquired control over the actions of its locals with respect to the introduction of the machine and was able to enforce a uniform policy. That there was some resistance on the part of the membership is further indicated by the fact that at least one strike is recorded against the linotype in spite of previous convention decisions against such action. In this instance the workers at Zanesville, Ohio, struck against the linotype, but the International president sent union men from other towns to take the places of the local members, and the strikers returned to work.

In the pottery industry the National Brotherhood of Operative Potters has insisted on systematic transfer of workers to the new jobs when technological changes were introduced; in general, the employers acceded to the principle that the journeyman should follow his work to the new processes. The employer's attitude, no doubt, reflected in part the nature of the changes, which failed to eliminate the workers' skill entirely. For instance, the substitution of casting for pressing resulted in the displacement of pressers by casters, but the skill of the presser was still an asset. Moreover, skilled pressers who were transferred to casting were able to earn more than they did formerly. When an attempt was made by a firm at Wheeling, West Virginia, to employ women instead of men the members of the Brotherhood threatened to quit, and the situation was finally adjusted by agreement. A uniform scale was adopted for a few lines of ware and casting and pressing were made interchangeable in journeyman-status and apprenticeship rules, thus removing any advantage that might accrue to an employer employing women. Although no rule was laid down against the employment of women, no serious effort was made to deny in practice the union claim that casting was a journeyman's job and that preference should be given to members of the craft from which the work was transferred. The displacement in this case had been so gradual that nearly all of the pressers were taken on as casters or found other ware-making jobs. When the saggermaking machine was introduced the manu-

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facturers agreed, in 1917, that "a competent journeyman sagemaker shall be given the preference to operate such machine." However, this preference applied to the skilled men only. There were usually three men employed on each machine. One of them, the man in charge, was to be chosen from the sagarmakers; the other two were to be helpers, and the employer was to have a free hand in choosing the latter. In spite of the fact that one journeyman and two helpers could turn out at least as many saggers as three journeymen working by hand, displacement of sagarmakers was never much of a problem since the machine was introduced at a time when there was a scarcity of sagarmakers. Moreover, the hand method continued to be used for many types of saggers. By the time the tunnel kiln was introduced at the end of the World War it was taken for granted that the work should be done by journeymen kilmen. Although these policies largely reflected the nature of the change involved, it is likely that the history and character of collective bargaining in the industry also influenced the nature of the adjustments made. The ware still had to be carried to the kilmen's benches and placed in the sagger by hand. The chief difference was that the filled saggers were no longer carried into the kiln and placed on tiers, as in the case of the upright kilns, but were placed on trucks at the entrance of the kiln. A guarantee obtained by the union that the average earnings of journeymen would be similar to those prevailing before the change assured the journeymen of their jobs and at the same time, since the work was less laborious, made the change welcome.²⁴

Railroad labor has frequently sought to protect itself against displacement due to technological change by the inclusion in agreements of specific clauses which provide for the transfer of employees in case of change or provide against arbitrary abolition of jobs when technological changes affect the manner in which work is performed. However, disputes often arise over the interpretation of these clauses, and in many instances the National Railroad Adjustment Board ruled in favor of labor in its contention that a change in the manner of performance of certain work does not eliminate a job from coverage by agreement if the duties of the work remain substantially the same.

In 1935, for instance, one of the carriers installed teletypes for the transmission of reports, abolished the position of the telegraphers rated at 81 cents an hour, and turned over the work to a printer-clerk at a rate of 66 cents an hour. The duties of the position remained practically

²⁴David A. McCabe, National Collective Bargaining in the Pottery Industry ( Balti-
unchanged except for the manner of transmitting reports. The Order of Railroad Telegraphers brought this case before the National Railroad Adjustment Board. The action of the carrier in abolishing the telegraphers' positions and the reclassification without negotiations were found to be in violation of the schedule rules. The Board was of the opinion that when the need for a service disappears, the position catering to the service may be abolished. But when the function of the job remains substantially the same, it cannot be transferred to another employee at a lower rate than the schedule rate, even though a different title is assigned to the job.26

Another case bearing on a similar problem involved the Brotherhood of Railway Clerks. In this case an electrically driven belt-conveyor system was installed by a carrier in the mail and baggage department of the station, and the new positions created were assigned to men not covered by collective agreement. The question at issue was whether a job might be removed from the scope of the agreement when the nature of the job was changed by the introduction of a new technique. The award sustained the position of the employees—that a change in the technique of performing a certain operation did not operate to remove this work from the scope of the working agreement under which it had been formerly performed.28

The railroad-shop crafts usually maintain clear distinctions between crafts and various grades of apprentices. When new tools or devices are employed, their rules usually describe in detail who is to perform the work in order to avoid the creation of new positions or the transfer of work from one craft to another. One case brought before the National Railroad Adjustment Board accused a carrier of violating the agreement by permitting an advanced machinist's helper to use an oxyacetylene cutting torch. The Board found that the action of the carrier was in violation of the rule concerning welders. This rule provides, in part, that where oxyacetylene or other welding processes are used, each craft shall perform the work which has been generally recognized as the work belonging to that craft prior to the introduction of such processes.27

These cases illustrate the general tendency on the part of railroad unions to safeguard their members against displacement by new workers when technological changes occur. The agreements of the engine-service employees with the carriers include clauses which in most instances are

27 National Railroad Adjustment Board, Awards 1 to 100, Third Division (Award No. 5, Doc. No. CL-2, 1938), I, 6-7.
28 National Railroad Adjustment Board, Awards of the Second Division (Award No. 3, Doc. No. 8, 1938), pp. 5-6.
even more specific. Thus the agreement of the engineers with the Central of Georgia Railway provided:

"Where electric or gasoline power is substituted for steam, such power will be manned by engineers in the order of their seniority, and they will be paid under the rule governing the class of service in which employed." 28

Similarly, the agreement between the engine-service brotherhoods and the Wabash Railway included the following clause:

"Whenever electric or other power is installed as a substitute for steam, the locomotive engineers shall have preference for positions as engineers or motormen, and locomotive firemen for the positions as firemen or helpers." 29

It should be noted, however, that in the case of the railroads transfers aim at securing the changed jobs to the workers who were formerly employed at them within a limited range of occupations. There is a good deal of opposition, however, to transfers of work from one group of employees to another. Such opposition is particularly severe when the new jobs are rated lower than the jobs they tend to displace. Such problems are not confined to the railroad industry but occur in almost all industries to a greater or lesser extent.

Typical clauses in agreements which provide for transfer of workers or for preference in employment of specific groups of workers when technological changes are introduced may also be found in other industries. Thus the agreement concluded in 1923 between the Amalgamated Clothing Workers of America, Local 228, and a firm in Portland, Oregon, provided:

When new or improved machines are placed in the factory, old operators will be given preference in operating same; if prices agreed upon by the union on new or improved machines do not enable the operator to make as much as on an old machine at the old price, prices on the new machine must be raised to cover such deficiency. 30

Similarly, agreements between the International Brotherhood of Paper Makers and a number of plants concluded in 1925 provided:

It is understood and agreed between the parties hereto that any and all labor-saving devices that can be installed to improve the efficiency of the operation of the plants are desired, and before such installation of labor-saving devices is made an agreement between the organization and the companies is to be arrived at and agreed upon as to just what saving is to be

28National Railroad Adjustment Board, Awards 401 to 594, First Division (Award No. 525, Doc. No. 1239, 1938), III, 447.
29National Railroad Adjustment Board, Awards 1,401 to 1,600, First Division (Award No. 1,497, Doc. No. 2562, 1937), III, 273.
accomplished. In cases where any of the members of the organization are eliminated by this installation, such employee will be given preference for any position that may be open on the scale of wages covering the occupation they will assume.\(^{31}\)

In the agreement between the Transport Workers Union and the Fifth Avenue Coach Company, concluded in 1937, there is a provision which prevents the company from reducing its two-man busses to one-man operation without consent of the union. Preference is also to be given conductors when vacancies of drivers are to be filled.\(^{32}\) There are other employers, however, who find it advantageous to adopt a policy of voluntary transfer. In recent years some industrial managers have even advocated the adoption of a policy of training workers in more than one occupation so that they may be ready to take other jobs when technological changes eliminate a specific operation or occupation. This policy has been advocated in order to avoid dismissing middle-aged and older workers when technological changes occur.\(^{33}\) Such a policy, however, also enlarges the labor reserve available for any occupation and thereby reduces the unions' control over the supply of workers for particular occupations. This is especially important in industries where labor is organized along craft lines.

The problem of displacement as a result of technological change cannot be solved solely by the transfer of workers to the new jobs, for the change may affect labor requirements so drastically that only a small portion of the staff is required under the new process. But changes in skill requirements frequently also result in the employment of new workers for the remaining jobs. In the steel industry, for example, the major installations of new equipment for reducing unit costs in recent years have been the continuous wide-strip mill, the cold-reducing tin-plate plant, and the wire mill. Most of the manual work performed under the old process has been eliminated in the continuous wide-strip mill. The rollers' work, a highly skilled occupation, and other occupations which required a long period of training have been drastically reduced or eliminated. The new process requires for the most part persons of different training to operate the automatic machines, and the work can be learned in a relatively short time.\(^{34}\) An official of the Steel Workers Organizing Committee reported that one executive of a steel firm stated that
this change requires the employment of entirely new personnel and that
transfer to the new jobs is inadvisable.

"A hand-mill worker is used to producing ten tons of steel in
eight hours, and he can't get used to seeing 1,000 tons pro-
duced in a strip mill in the same time. We have to break in
new men on the strip mills who have never seen a hand mill
operate." 35

Such charges were frequently made by employers in other industries
when technological changes were introduced, and the companies preferred
to employ new personnel rather than divert some of the benefits derived
from increased productivity for purposes of retraining and transferring
workers to the changing jobs.

From the above discussion it may be concluded that trade-unions gen-
erally tried to secure some sort of agreement which provided for the
transfer of workers in the industry or occupation to the new jobs when
technological changes had been introduced. In each instance, it may be
noted, such transfers also involved some definite policies as to wages
to be paid on the new jobs. Naturally, the adoption of a specific wage
policy may either accelerate or retard successful transfer. In this
discussion, however, the primary concern is with minimizing displace-
ment; the trade-union policies which aim at the protection of earnings
will be discussed in another chapter. Suffice it to say at this point
that any transfers which involve reduced earnings are accepted by trade-
unions with a good deal of reluctance and frequently constitute a major
cause for opposition to change.

RETRAINING

Retraining of workers whose occupations had become modified or obsolete
as a result of technological changes is assuming increasing importance in
programs designed to reduce displacement to a minimum. Minor modifica-
tions in specific operations have taken place continually in all occupa-
tions. In such instances retraining has been carried on in practically
all industrial establishments, either through expert demonstrations,
observations of one worker by another, or through organized training
supplementary to actual performance on the job. However, where techno-
logical changes had eliminated an operation entirely and a new one had
been substituted in its place (as, for example, linotyping for hand com-
position or motortrucks for horse-drawn vehicles) transfer of workers
to the new jobs required more fundamental retraining. Similar training
has been necessary where transfer to different operations was attempted.

35Harold J. Ruttenberg, "86,000 Victims of Progress," The New Republic, Vol. LXXXIV,
No. 1211 (Feb. 18, 1938), p. 38.
Such retraining in some instances has been undertaken by trade-unions, by employers, or by both in cooperative schools. There is a dearth of information on the extent and character of the retraining that has been going on, and it will be possible to indicate only a few examples of types of training that have been undertaken and of the importance of such training to the problem of transfer as an alternative to displacement.

In the printing industry technological changes have necessitated periodic readjustment of pressmen and their assistants to changing conditions. In the first place, automatic feeders have been displacing the hand-feeding process, and the complement of men to a machine has been reduced. This has affected the assistants primarily, but the pressmen, too, required retraining. Secondly, there has been a tendency to introduce small high-speed presses which feed their own sheets and work faster and more efficiently on many kinds of printing jobs than do the larger presses. Some retraining is necessary even in those instances where the assistants are used on the new machines.

In New York City a school has been organized for the training of pressmen. This school is operated as a cooperative enterprise and is maintained by the Board of Education of the City of New York, the International Printing Pressmen's and Assistants' Union, and the Printers' League. More than 50 journeymen have been graduated each year, a majority of these having risen from the ranks of the press-assistants' union. Since the press assistants have been affected most by the technological changes in the industry, the school performs an important function in retraining assistants into pressmen. In addition, the manufacturers of new presses furnish instruction to journeymen pressmen. In some instances manufacturers' schools have been established and free instruction has been given. Press assistants, however, are left largely to pick up their knowledge of the new processes on the job through coaching by the pressmen when new presses are installed. Some retraining has also been carried on by the union itself. Years ago the Printing Pressmen's Union established a printing plant for the retraining of pressmen at the Pressmen's Home in Tennessee. The union secured the most up-to-date presses in the country and gave notice to the membership that 6 months before any new patented device was to be put on the market the first sample of the device could be retrained by the union and any member of the organization could be retrained to operate the new press at the Pressmen's Home.

Another instance where a union undertook retraining of its members was reported at a symposium in 1931. Some years ago the Burns Brothers Coal Company decided to change from horse-drawn vehicles to motortrucks for coal delivery. This change came to the attention of the local teamsters' union which had contractual relations with the employer, and a truck was purchased by the union in order that it might instruct its members to become chauffeurs and mechanics. An expert chauffeur and mechanic was secured by the union and each member of the local was instructed, after working hours, to operate and repair trucks. Six months later, when the company began to initiate the change, the union was able to supply trained, licensed chauffeurs and none of its members were displaced.38

The last 25 years have seen the displacement of the Morse telegraph by the printer telegraph in the larger commercial telegraph offices. The printers supplant the skill of the Morse operator and require only the ability to operate a typewriter keyboard adapted for telegraphic purposes. The chief obstacle to the transfer of Morse operators has been competition from lower-paid female typists. The preference for women operators on the printers is reflected in the figures on the relative proportions of men and women as Morse operators and as printers in 1915 and 1931. In 1915, 87 percent of the operators at the Morse were men, and in 1931 the percentage was still 83. On the printer equipment, on the other hand, men constituted only 26 percent in 1915 and 23 percent in 1931. As a result of the continual displacement of Morse telegraphers by printer operators the percentage of men in the industry on both systems together declined from 75 percent in 1915 to 36 percent in 1931. In spite of the preference for women, one company is reported to have facilitated transfer by maintaining temporary training schools. It reported that Morse employees were given the opportunity either to utilize their training and become testing and regulating attendants or to learn the printer method of operation. According to the company, Morse operators do not make such good printer operators as younger people directly trained for service; nevertheless they were retained at the old rates of pay.39

On February 1, 1935, busses replaced trolleys on the Fourth and Madison Avenue line in New York City. Eighty trolley cars were discarded overnight, and busses took their place. In planning the change the company was loath to dismiss the streetcar operators because they knew the route and had long experience in traffic. In October 1934 the company organized

38 Ibid., pp. 47-8.
a driving school where the men could take free driving lessons on the company's time. All the workers took lessons, but a few were incapable of learning to drive a bus and were kept on the pay roll in some other capacity. The rest were assigned to busses on their old routes. By June 1935, 180 men had been successfully retrained and 400 others were enrolled so that they could be assigned to busses as further changes were made.40

In the manufacture of automobile bodies wood has been replaced by steel to such an extent that most of the woodworking crafts have become obsolete. In 1932, for instance, the average body manufactured at the Seaman Body Corporation consumed about 250 feet of lumber; in 1935 the average body required only 50 feet of lumber. This corporation adopted a policy that displaced employees should have first call on all new jobs. In the words of the president of the corporation, the reason for the adoption of this policy was that dismissal in time of depression "must unavoidably have a harmful and costly effect upon the morale of our remaining workers." Some 300 men affected by the change, therefore, were retrained and transferred to welding. Since the men in the plant were on gang piece rates, the new workers would have been unwelcome on the gangs if they had had to be retrained at the expense of the gangs. The company decided to pay the transferred men minimum hourly rates while they were learning. Thus they were welcome on the gangs since whatever production they contributed meant so much greater earnings to the experienced employees. When the transferred workers gained enough skill they were assigned formally to a gang and were paid like the rest. If a man was not adaptable, he was tried on other jobs until a suitable position was found. However, some were unable to learn a new trade and were dismissed. Of the 300 men, more than 200 were over 40 and the oldest was 69. Over 99 percent were successfully rehabilitated at an average cost of $50 per man and a total cost of $15,000.41

The problem of retraining involves considerable planning, expense, and facilities. In the instances cited above the retraining was undertaken either by a trade-union, the employer, or both. With the exception of the printing industry, such retraining has been primarily a plant practice.

REGULATION OF THE RATE OF INTRODUCTION

Regulation of the rate of introduction of new techniques in order to minimize displacement has been advocated by trade-unionists for a long

period of time. In 1903 John Mitchell, former president of the United Mine Workers of America, summed up as follows what he considered to be the position of labor regarding the question of regulation:

The unionists believe that machinery should be introduced with the least possible friction and the least possible hardships to individuals. When the employer is asked to increase wages or reduce hours, he frequently asks for an interval of a certain time in order to allow him to accommodate himself to the change, and the labor unions are now beginning to recognize the necessity of making great changes in industrial conditions by slow degrees. An equal duty should rest upon the employer to make alterations gradually, so as to extend the effect of the change over a series of years, and thus permit the workmen to accommodate themselves to the new conditions.42

Although the objective of regulation has undergone little change, its meaning has become more definite through actual application in recent years. Instances where regulation of the rate of introduction was attempted involved the gearing of the rate of introduction and therefore the rate of displacement to the normal rate of turn-over - separations from a plant, industry, or occupation because of resignations, deaths, and retirements. Although regulation of the rate of introduction more frequently involved a slowing down of the rate, there have been instances where trade-unions advocated the acceleration of the rate of introduction of specific changes.

Attempts have also been made to regulate the rate of introduction of technological changes through the elimination of the competitive advantage which the development of a new technique would give to individual concerns in a given market because of the lower unit production costs. Such regulation has involved the establishment of a differential wage for the workers on the new process. This would tend to equalize the cost of production on the new and old methods and thus eliminate the stimulus to rapid change. In recent years some trade-unionists have advocated government taxation of machinery as a means of providing a fund for the displaced and of retarding displacement by making it less profitable for concerns to introduce machinery. The tax advocated by the Cigarmakers' International Union is illustrative of such proposals. The argument in favor of the tax states that

the establishment of machine responsibility for technological unemployment as opposed to public assessment or general employer assessment, would retard the very process which creates the problem. In other words, it is a preventive measure as

well as a relief measure. By retarding displacement of labor by machines, it would allow more time for those adjustments which our social body is so slow in accomplishing.43

In recent years regulation of the rate of introduction of technological changes has been given considerable attention by management as well as by labor. Evidence of increasing interest in such regulation may be found in the statements of policy of management, in records of planned installations of new techniques, and in the reasoning underlying specific arbitration awards.

The agreements between the United Mine Workers of America and mine operators do not place any limit on the introduction of machinery. However, the application of a machine differential to mechanized operations in such a fashion as to limit the operator who introduces machinery to a return on his investment plus a "fair" profit is designed to remove, to a large extent, the full competitive advantage that mechanization might otherwise provide. It is claimed that the application of the differential had a retarding effect on mechanization because the regulatory influence that collective bargaining exercised on the major portion of the industry through the principle of "competitive equality" resulted in the elimination of advantages on the part of individual operators over their competitors.44

According to one official of the United Mine Workers, local unions have, in individual instances, been able to convince mine owners that introduction of machinery should be planned over a period of years and adjusted to the normal rate of turn-over in order to minimize displacement.45 In some instances the operators themselves adopted plans for gradual mechanization. For instance, mechanization of the mines at New Orient, Illinois, was planned over a period of about 7 years. According to one statement, the company in this case completed the change with its own manpower, with the possible exception of "specialist service." The workers involved were union members. It is claimed that to select men from the existent organization for the new jobs made available by increased mechanization will have an important bearing on the morale of the worker body, by showing that there is an opportunity for good men. This policy will serve as a real incentive for better work and it will stimulate effort toward the mastery of broader knowledge and the attainment of greater proficiency.46

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46Footnote 46 appears on following page.
MINIMIZING DISPLACEMENT

Frequently the nature of the change itself requires careful planning, gradual step-by-step installation, retraining of personnel, and gradual transfer. In such instances management itself cautions against hasty introduction. An industrial engineer of the United States Rubber Company described the problems that are involved in a change of technique and cautioned against hasty introduction. In this instance the change involved reorganization of the method of assembling a finished product. Before the change the usual procedure was for one man to receive all the parts that went into a rubber boot or other article, assemble them on a last, and prepare them for vulcanizing. The individual worker performing this complete job was considered a skilled craftsman. In 1927 the company decided to introduce a mechanical rubber-shoemaking conveyor. This change involved the breaking up of operations so that each worker performed only a part of the job. Besides, the workers who formerly worked as individuals had to be reorganized into teams requiring a high degree of cooperation among individuals. The entire personnel had to be retrained and readjusted. This change was accomplished over a period of 5 years and, according to the company official, "the consensus of opinion at Naugatuck is that the change was so gradual that the displacement probably would have been handled under normal conditions as ordinary labor turnover."  

In industries where competition is not keen or virtually nonexistent gradual introduction adjusted to the normal rate of turn-over can be accomplished with a greater degree of ease than in highly competitive industries. This is particularly feasible where a company operates a number of industrial units and the changes are introduced in one unit at a time; the normal rate of turn-over of the labor force of other plants makes it possible to transfer workers wherever vacancies occur. The Bell Operating Companies, for example, were able to plan the changes from manual to dial telephone operation over a period of years. A survey by the United States Bureau of Labor Statistics found that from 1921 to 1930 the number of telephones of the dial type operated by these companies increased from 2.7 percent to 31.9 percent. Although the number of telephone subscribers increased rapidly between 1921 and 1930, total employment increased by a much smaller proportion because of the large increase in

\[\text{A similar case of limiting the rate of introduction of the coal loader to normal turn-over has been reported from Wyoming (see Willard E. Hotchkiss, F. G. Tryon, and Others, Mechanization, Employment, and Output per Man in Bituminous-Coal Mining (WPA National Research Project in cooperation with U. S. Department of the Interior, Bureau of Mines, Report No. E-9, Aug. 1938), II, 850-85).}
in the average output per operator during these years. In spite of the fact that the total number of operators increased when measured by the over-all changes in employment of operators from 1921 to 1930, the immediate effect in each instance where the dial telephones were introduced was a reduction in the number of operators. The survey also found that complete conversion from the manual to the dial system on any single exchange involves an average displacement of about two-thirds of the total number of operators. That a drastic reduction in the number of operators was the immediate result of the change to the dial system was shown by an analysis of 20 individual exchanges before and after the change. The fact that the demand for telephones had increased and the installations were geared to a high rate of normal turn-over, amounting in some instances to as much as 40 percent, enabled the companies to retain most of the employees with "regular" status while dismissals were confined primarily to "temporary" employees who were hired during the preparatory period for the change which lasted, at times, over 2 years. Many employees were also transferred from one unit to another where vacancies occurred. In commenting on its policy of gradual and planned introduction, an official of a telephone company stated in 1931 that "we now feel warranted in promising employment to all our regular employees involved."48

In the clothing industry regulation of introduction of technological change assumed the form of a definite policy and became part of the collective-bargaining process. In the Chicago market the Amalgamated Clothing Workers of America, for instance, did not oppose change but has successfully maintained that technological change cannot be introduced at the expense of the workers' security of employment and income.49

In a case heard before the Trade Board in 1924 involving the Hart, Schaffner, and Marx Company, for example, the company applied for a piece rate when it wanted to change from hand to machine tacking of plain edges. This change would have occasioned the displacement of a number of workers. In line with previous decisions, the company proposed to transfer the workers affected by the change to other shops or other operations. The union claimed that this change could not be accomplished without reducing the earnings of these workers as well as endangering the earnings of workers in other shops, since there was already an excess of

workers in other sections. The Board held that it is "unable to find
ground for granting the application of the company. The machine method
with piece-work rate cannot be introduced without displacing workers,
and these workers cannot be reassigned except at the expense of them-
selves and their fellow-workers. The intention of the agreement to permit
changes and improvements, but not at the expense of the workers, is not
met in this instance, and the Trade Board must deny this application to
inaugurate the machine method." The decision of the Trade Board was
appealed by the company. In upholding the decision of the Trade Board,
the Board of Arbitration was of the opinion that the company cannot put
the entire burden of making a change from hand to machine work on the
workers, and recommended that "it is better to wait until some kind of
other work can be provided for the workers who are displaced." 60

One firm requested a decision from the Trade Board with reference to
the right to substitute canvas basting by machine for canvas basting
by hand. The decision affirmed the established principle that this could
be done only on condition that the workers were retrained without loss
of earnings to themselves and other workers. 61 In another instance the
Board of Arbitration upheld the request of the union that basting ma-
chines be introduced gradually because there was a good deal of unemploy-
ment which would be increased by sudden introduction. 62 In New York the
procedure agreed upon regarding the introduction of the steam-pressing
machine in clothing factories provided, among other things, that no ma-
chine shall be introduced in a shop employing less than six off-pressers,
no presser is to lose his job because of the introduction of new machin-
ery, the pressers are to have full-time work when the rest of the shop
is employed full time, and those too old to operate machines are to be
retained at hand work at the same rate of pay. 63

The policy of the union with respect to regulation of introduction of
new techniques has been summed up by an official of the union as follows:

. . . . It [ACWA] has conceded the right of industry to intro-
duce technological innovations, if production is thereby made
cheaper and the product is made more accessible to the cus-
tomer, provided the industry assumes the obligation to carry
the displaced worker on its pay roll and at work. . . . . The
considerable turnover in the clothing factories, due to the
high percentage of young women at work, has helped in carrying

60 William G. Haber, "Workers' Rights and the Introduction of Machinery in the
Men's Clothing Industry," The Journal of Political Economy, Vol. XXXIII, No. 4
61 Ibid., p. 400.
63 Ibid., pp. 404-5.
out this policy. And if manufacturers finally find themselves with a surplus of workers attached to their plants, "dismissal wage" is resorted to . . . . at all times something substantially better than plain discharge has been coming the way of the displaced worker.  

Regulation of the rate of introduction of technological changes in order to minimize displacement has been suggested in various arbitration awards as a means of preventing the development of resistance to change. This policy provided the background for the decisions in the clothing industry. Similar reasoning was involved in a case in the printing industry which came up for arbitration in June 1928. In this instance the discharge of utility men on seven presses operating two shifts, or 14 men, was involved. The Printers' League argued that the question was purely a technical one and should be determined on the basis of whether or not these men were needed and whether or not competitive plants used them on similar presses. The union took the position that these men were needed.

After a thorough investigation of the problem the arbitrator considered that the evidence with regard to the need of the men on the presses was inconclusive although he believed that five men were probably not needed. He ruled that the firm "is justified in removing the utility men from the presses but is not justified in discharging them from its employment." Other jobs should be found for the men. This award, the arbitrator thought, would aid in the development of a constructive policy for dealing with all such questions. The decision that other jobs be found for the men would require that the change be made gradually. The principle behind the decision was that "the employer shall be free to make improvements in methods of production, but that such changes shall not be made at the expense of the workers who have been faithfully performing their duties." The decision ended with this statement regarding the operation of this policy:

No employee would lose his livelihood on account of any improvement unless the firm itself were losing and in financial straits, but changes would be made gradually, as fast as other work could be found for him. This might involve some expense to the employer, but it would be a temporary expense which he may legitimately be asked to carry. This temporary expense of making the changes gradually would be small compared to what he incurs when the workers resist improvements for fear of loss of

livelihood. It does no worker or the union any good to retain men on jobs that are unnecessary, and if employees were protected against loss of employment by transfer to other work, as far as this is possible, then they must cooperate with the management in making improvements instead of obstructing changes designed to reduce cost.66

Thus far the specific instances cited involved retardation in the rate of introduction of change. Under certain conditions, however, trade-unions may ask for speeding up of the rate of introduction of new equipment even if such introduction has displacement potentialities. In the case of the Philadelphia hosiery workers, for example, competitive conditions brought about the migration of the industry from Philadelphia to other centers, notably the South. The union regarded the situation with such concern that it adopted a policy aimed at stimulating the rehabilitation of the equipment in the Philadelphia plants even though the introduction of larger and higher-speed machines might mean possible displacement of some workers. The problem was to retain as many jobs as possible in a unionized center of the industry, Philadelphia, and it was believed that modernization of plants and equipment would accomplish this purpose.67

Until July 1938 the American Federation of Hosiery Workers maintained a uniform national rate policy for all shops making a specific type of product on a specific type of equipment. The principle which guided the maintenance of a uniform-rate policy was based on the desire, according to the 1937–38 agreement between the union and the Full-Fashioned Hosiery Manufacturers, to "equalize conditions and cost of labor." The wage policy, therefore, was intended to establish such conditions as would not give any one manufacturer a competitive advantage based on differentials in labor cost. Under this arrangement it was felt that manufacturers were lax in acquiring improved equipment since they could not utilize such improvements to the fullest competitive advantage. In recent years installations of new equipment occurred almost exclusively outside of the Philadelphia area. The 1938 agreement, therefore, abandoned the policy of uniform rates. Instead, rates were to be adjusted on an individual shop basis, taking the particular technical and managerial conditions of each shop into consideration. It is expected that, with the introduction of faster and larger machines, workers will be able to approximate their former earnings and in some instances increase them even if piece rates are lower. Thus competitive conditions require in this instance the

66Ibid., p. 115.
speeding up of the introduction of new equipment even though such equipment may displace some additional workers.\textsuperscript{58}

Although the policy of the Amalgamated Clothing Workers of America has been cited as an example of insistence on gradual introduction by the union, there were also instances where this union, like the American Federation of Hosiery Workers, aided in the introduction of technological changes even though they involved some displacement. But here, again, competitive conditions were believed to require such adjustments in order to prevent nonunion employers from obtaining differential advantages through technological changes.\textsuperscript{59}

\textbf{LIMITATION OF NEW ENTRANTS}

Gradual introduction of technological change or adjustment of the rate of introduction to the rate of turnover implies limitation of new entrants into the plant or occupation with respect to which the adjustment is planned. In the arbitration awards in the clothing and printing industries, cited in the discussion of regulation of the rate of introduction of changes, reference has been made to the fact that the availability of jobs in other occupations has often entered into the deliberations of the arbitrators. Changes were approved on condition that the displaced workers would be transferred to other jobs. Employers were therefore required to plan the introduction of technological changes so that no displacement would occur. Such planning required that no new workers be hired until the displaced ones found jobs.

However, ideal conditions seldom exist. At times it is necessary to hire additional employees during the period of adjustment in order to meet production needs. Limitation of entrants in such instances has frequently been accomplished by hiring additional employees on a temporary basis. In the described case of the change from the manual to the dial telephone, for example, vacancies due to normal separations were filled by engaging persons on a temporary basis. These employees were the first to be dismissed when reductions in the working force took place.

The experiment at the Pequot Cotton Mills is another illustration of an attempt to reduce displacement by limiting entrants to occupations, during the installation of a labor-saving change, by hiring workers on

\textsuperscript{58}National Agreement and Uniform Price Scale By and Between Full Fashioned Hosiery Manufacturers of America, Inc., and American Federation of Hosiery Workers, 1937-1938 (Philadelphia, Pa.: The Joint Committee in the Full Fashioned Hosiery Industry); Articles of Agreement Entered Into by and Between Full Fashioned Hosiery Manufacturers of America, Inc., and American Federation of Hosiery Workers (mimeo., July 15, 1938).

a temporary basis; in this case the plan was limited to a single plant which was subject to competitive influences in the industry as a whole. In 1934 the Yale Institute of Human Relations published the results of a study of the installation of the "stretch-out" at the Pequot Mills of the Naumkeag Steam Cotton Company in Salem, Massachusetts. The company had operated on a closed union-shop basis since 1919. Under the stress of competition it determined, in 1928, to increase the work assignments of its employees by increasing the number of looms or spinning frames assigned to each worker. The workers refused to accept the "stretch-out" on the grounds that no corresponding labor-saving changes had been made in the machines and that the proposed changes would cause undue hardships. Because of continued pressure on the part of the management and upon the advice of an industrial engineer, the union, desiring to avoid a strike, made a counterproposal in the early part of January 1929. In general the proposal of the union included a criticism of the management's hastily contrived plan and an outline of a plan which would involve making the changes gradually, on the basis of fact and with opportunity for trade-union participation in the determination of the new standards of output. The entire plan was to be supervised by a "joint research" committee headed by a technician employed by the company. This plan was accepted by the union and the company in February 1929. Such procedure based on accepted "scientific management" methods in the cotton-textile industry, as opposed to the Naumkeag management plan of mere assignment of additional looms or spinning frames, had two objectives in view:

First, the scientific integration of all the functions of the mill to meet the needs of the looms and the weavers. This involved a laborious, systematic, and thoroughgoing study and punctilious adjustment of materials, methods, and operating conditions in all departments—not merely the weaving departments—at the individual mill; and an equally important exercise of skill and care in the maintenance of these conditions.

Second, these methods resulted in the "functionalization" of the work of weaving. The former work of the weaver was systematically subdivided into various specialized operations all relating to the operation of his looms. The less skilled or less routine of these tasks, such as filling the "batteries" with bobbins, cleaning the looms, or "doffing" the finished cloth, were then assigned to less skilled workers. This left the weaver free to confine himself chiefly to the more skilled tasks of patrolling his looms to inspect the warp yarns and newly woven cloth, and of "piecing up" broken "ends" of warp yarn.

60 Richmond C. Nyman, Union-Management Cooperation in the "Stretch Out" (New Haven, Conn.: Yale University Press, 1934).
61 Ibid., pp. 10-21.
62 Ibid., p. 22.
Where this plan is carried out, therefore, it involves not only reductions in labor requirements but also a decrease in employment opportunities for skilled workmen, particularly weavers, and an increase in the proportionate use of unskilled "hands." The assurances that the workers sought in the face of these changes involved protection against demotion to less skilled jobs as well as loss of employment. The union, on the advice of the technician, proposed that during the process of gradual development of the new standards of output new workers should be hired on a temporary basis and that discharges or lay-offs be confined mainly to them. The company accepted this plan and shortly after the adoption of the "joint research" plan "provisions were made to create a group of temporary workers who would bear the brunt of the discharges and lay-offs that might result from the 'stretch outs.'" No program was, however, worked out to take care of demotions.63

Installation of the "stretch-out" was only partially adjusted to the normal rate of turn-over and the results in the weaving and spinning departments after 2½ years of "joint research" meant loss of employment and demotions to some workers. In the weaving department, for example, the total number of jobs was reduced by 156, and the number of skilled weavers required was reduced by 123. In the spinning department the number of spinners required was reduced by 79, whereas 36 new frame-cleaning jobs were created; this resulted in a net reduction of 43 jobs. In spinning the change was so geared to the normal turn-over that only one worker was laid off. In the weaving department, on the other hand, 100 workers were actually laid off as a result of the "stretch-out." The plan to hire workers on a temporary basis during the period that the changes were being made confined dismissals and lay-offs to this group of workers mainly; "nearly all" of the regular employees' jobs were saved.64

Limitation of new entrants is frequently accomplished, in a more general way, by limiting the number of apprentices to journeymen in a particular locality or even on a national scale. Such limitations can be effective only in occupations which continue to retain a considerable degree of skill in spite of changes. In the cigar-manufacturing industry, for instance, the advance of technology caused a splitting up of skilled occupations into a number of operations each of which could be learned within a relatively short time.65 The 3 years of apprenticeship required to become a skilled hand cigar maker were no longer necessary, and

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63 Ibid., pp. 33-4.
64 Ibid., pp. 74-5.
65 Cigar Makers Official Journal, June 15, 1920, p. 3.
unskilled labor was employed with relative ease. Regulation of apprenticeship under such conditions became futile except where the old methods continued to prevail. In the shoe industry, too, the introduction of machinery and the subdivision of labor eliminated the need for apprenticeship, and the unions abandoned all attempts at regulation.66

When the linotype was being introduced, on the other hand, the locals of the International Typographical Union were in a position to make apprentice rules more stringent. In large measure this was due to the fact that the linotype operator continued to be a skilled workman, and union regulation required that machines be operated by journeymen printers only. This regulation made the employment of apprentices less profitable for employers. Before the introduction of the linotype it had been the usual practice in printing establishments to permit apprentices to do any work that a journeyman could do. Since the wages of apprentices were much lower, it was profitable for employers to use as many apprentices as possible. In 1899 regularly employed apprentices in machine shops were permitted to "practice" on machines during all of the last 3 months of their apprenticeship only. Since the product of apprentices who "practiced" could not be used, employers were not anxious to let them operate machines. It was not until 1903 that the union printers were willing to permit the machine product of apprentices to be used, providing the "learners' scale" was paid for this work. This scale was higher than the apprentice scale and was limited to a short period only. The needs of business, therefore, and not the profit that could be derived from apprentices, became the prime factor in regulating their number.67

In the glass-bottle industry the number of apprentices was regulated by national agreement between the Glass Bottle Blowers' Association and employers, and apprentices were paid much lower piece rates than journeymen for the same work. When machinery was introduced the employers therefore were reluctant to yield to a reduction in the ratio of apprentices to journeymen. Nevertheless some reduction in the number of apprentices was accomplished by raising the wages of apprentices and lowering the wages of journeymen.66 With the introduction of automatic machinery, particularly the "flow and feed" devices, regulation of apprenticeship lost its importance, for no extensive training was required for machine operation. At the same time it became difficult to get enough apprentices to learn the trade even in those branches of the industry which

68 Ibid., pp. 151-2.
continued to manufacture by hand, and in 1929 the union expressed regret that the art of bottle blowing was passing out of existence because it was practically impossible to get young men to learn the trade.69

In the window-glass industry, too, the continual substitution of machinery for hand production made it increasingly difficult to get men to train for certain operations, particularly blowing, and the National Window Glass Workers Union expressed concern in 1920 that unless apprentices would learn blowing, hand production would have to be curtailed.70 A device of operating the hand plants during two periods of the year, adopted during the World War in order to make it possible to operate the plants at full capacity and thus conserve fuel, was later used in order to enable the union to supply enough trained men to operate all hand plants. As far as mobility of the workers would permit, the same labor force was used to operate half of the plants during one period of the year and the other half during another period. The fact that no new workers wanted to acquire a skill which was rapidly being supplanted actually produced a shortage of hand workers and necessitated this arrangement.71

The problem of limitation of entrants by trade-union regulation on the basis of an entire locality can best be illustrated by the measures adopted by the printing-pressroom unions. With the introduction of automatic machinery in the pressroom, the pressmen have continually feared that the assistants would encroach on their jobs. Apprentice rules agreed to in the contracts between the Printers' League and the International Printing Pressmen's and Assistants' Union of North America have been stringent. In New York City in 1932 only 3 or 4 percent a year, or less than 100 of the 2,500 members of the Assistants' Union, could be appointed as apprentice pressmen. Those eligible for selection had to have 5 years of experience as assistants. In order to become a journeyman pressman a candidate must have served 4 more years as an apprentice, or 9 years in all. Moreover, since 1925 the New York Assistants' Union has been closed to new members.72

On the whole the instances where apprenticeship limitation plays an important role in reducing displacement are confined to industries where a relatively long period of training is still required. With the gradual

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71 Ibid., December 1923, pp. 15-6.
elimination of skills, the need for lengthy preparation for a trade has been considerably reduced. Today, with the further division of labor, the possibility of enforcing apprenticeship rules is becoming more limited. "In occupations which remain on a primarily handicraft basis, particularly in the building trades and in machine repairing, or in industries where production is unstandardized and varies appreciably from unit to unit, as in custom tailoring, pattern making and some molding and printing work, or where the responsibility for machines and lives is great, as is the case in engineering, a considerable period of practical preparation is needed at the job itself." Only in such occupations, where apprenticeship is now found principally, is it now possible to seek to reduce technological displacement of labor by limiting apprenticeship.

LIMITATION OF WORK LOADS

Limitation of work loads as a trade-union policy involves considerations which are not directly related to the problem of minimizing displacement. They concern primarily the relationship between intensity of labor and workers' health and between size of crews and both health and safety of operation. The problem of intensity of labor and the various methods that have been evolved to determine such intensity will be discussed in relation to the problem of rate setting (chapter III). In this section the primary concern will be with the effects of limitation of work loads on employment opportunities. Where increases in work loads have been prevented by union action, the effect has been that of maintaining employment opportunities regardless of whether or not such limitation has been secured on the ground of safety requirements or protection of health of the workers involved. In fact, because of the highly controversial character of the whole question of what constitutes a proper work load, trade-unions have frequently emphasized such factors of safety and health in preference to the direct problem of maintaining employment opportunities. Limitation of output will be used in this section in its broadest sense; it will include such problems as resistance to reductions in crews and limitation of the number of machines to be assigned to a person.


74 The distinction may also be made on the basis that the changes in work assignments considered in this section of the report have a direct and observable effect on the number of jobs available before and after the change (for example, the change from streetcar operation with two men to the one-man car, the assignment of two hosiery-knitting machines to one knitter, or the elimination of the fireman on Diesel engines). The other phase of the problem of limitation of work loads (the determination of how many units of a product a worker is expected to produce in a given time, or the amount of time that should be allotted for the completion of a single unit of product) arises more frequently in connection with rate setting and wage determination. Here questions of speed of operation, intensity of labor, health, and safety are more prominent in negotiations. Although the rate of performance has a bearing on the number of jobs available, the relationship is more obscure.
Opposition to reduction in the size of crews has been most frequent in the transportation industry, including streetcar and railroad transportation. The struggle of the Amalgamated Association of Street and Electric Railway Employes against the one-man car is one example.

The first horse-drawn cars required only one operator, the driver, who usually performed the functions of the conductor. As the cars became larger, especially with the introduction of electricity, it became customary to employ a driver and a conductor. With improvements in design and construction of cars and the development of safety devices, however, a movement to eliminate the conductor began. As early as 1899 a company at Belleville, Illinois, discharged all conductors and assigned their duties to the motormen. The union called a strike which was aided by the local labor organizations and the company was forced to reverse its order. During the World War and immediately afterwards the one-man car made considerable progress. Labor was scarce and union opposition was slightly relaxed. Furthermore, by this time an improved type of safety car was introduced equipped with better brakes, better registering devices, and other facilities for one-man operation. When the union again renewed its campaign against the one-man car it succeeded in obtaining a differential of from 2 to 7 cents per hour in the rate of pay for one-man car operators. By 1921 the union realized that other tactics were needed to supplement opposition, and it was decided to concentrate on gaining union control over systems where one-man cars were in use and at the same time to continue opposition to the spread of the practice into new centers. But opposition was only partially successful despite the union campaign showing pictures of hold-ups and collisions incident to one-man operation. The differential rates in favor of one-man car operation proved too attractive to workers.75

The substitution of Diesel gas-electric and oil-electric power for steam on the American railroads has, from the early twenties, constituted an immediate threat of displacement to some occupations of the engine-service crews wherever such changes have been instituted. On steam locomotives the engine crew normally consists of the engineer and a fireman or helper. The substitution of the Diesel engine usually resulted in the elimination of the fireman or helper except in such cases where the Brotherhood of Locomotive Firemen and Enginemen was able to secure agreements providing for the employment of an engineer and a helper in the Diesel-engine cab. Although the Brotherhood did not object to the change in equipment, it conducted a vigorous campaign against the manning of the Diesel-engine cab by one man on the ground that such operation is unsafe.

75Schmidt, op. cit., pp. 244-7.
Minimizing Displacement

Any railroad that must subordinate safety to financial success is a failure as a business institution. To risk a railroad horror involving the destruction of the lives of travelers and employees, in order to realize the wage saving incident to dispensing with the services of a needed train employee is a policy so shortsighted, so calloused, so mercenary as to demand vigorous determined action thru any and every available agency with a view to its termination.76

The practice of one-man Diesel-engine operation was fought by the Brotherhood with every means at its disposal, including an educational campaign, threats to strike, and pressure for State and Federal full-crew legislation. Although the Brotherhood succeeded in having the full-crew laws, passed in connection with steam-locomotive operation in some States, extended to include Diesel locomotives, its main successes came as a result of direct negotiations with individual and groups of roads. The employees on the Union Pacific and Chicago and Northwestern roads appear to have been among the first to obtain an agreement with their managements covering the employment of two men on Diesel cabs in passenger service.77 In September 1935 the Brotherhood of Locomotive Firemen and Enginemen stated in its magazine that for many months it had insisted that the Chicago, Burlington and Quincy Railroad abandon its policy of using one man in the cab of its streamlined Diesel-propelled locomotives on the grounds that the Union Pacific and the Chicago and Northwestern, both competitors of the Burlington, had two men in the cabs of all their streamlined trains. The management declined to comply with this request and the union proceeded to take a strike vote. On December 7, 1935 (2 days before the strike was to go into effect), the management concluded an agreement with the union which provided for the employment of two men on all Diesel-electric locomotives in streamlined passenger-train service.78

A more extensive agreement was concluded between the Brotherhood and the managements of the Boston and Maine; the New York, New Haven and Hartford; and the Maine Central railroads in May 1936, after the employees of these roads voted to strike. The agreement provided:

A fireman (helper) taken from the ranks of firemen, shall be assigned to operation of Diesel-electric locomotives and Diesel-electric streamline trains in passenger service . . . . 79

This agreement also indicated that the problem was far from settled insofar as other than passenger service was concerned, and that it was

77 Ibid.
79 Ibid., Vol. 100, No. 6 (June 1936), p. 351.
desirable to extend the provisions of the agreement to Diesel locomotives in other types of service:

Firemen ( helpers ) shall be assigned to certain Diesel-electric locomotives in yard service . . . . , and the managements agree to become parties to a concerted movement if and when inaugurated by our Brotherhood for the purpose of securing firemen as helpers on that type of power in switching service 80.

In February 1937 the Brotherhood of Locomotive Firemen and Enginemen met with the managements of 90 Class I railroads, and an agreement was reached which was to govern the employment of firemen ( helpers ) on Diesel-electric, other internal-combustion, and steam-electric locomotives in passenger as well as other service. Thus far the practice of employing two men in the engine cab had been adopted in passenger service mainly. According to this settlement two men were to be employed on all Diesel locomotives in passenger service and, in addition, on all Diesel locomotives weighing more than 90,000 pounds on drives in any kind of road and yard service 81. This agreement, it was generally estimated by railroad managements and union officials, would not only check further displacement of firemen but hundreds of "firemen-helpers" would actually be employed on locomotives that were being operated with one man 82. Mr. D. B. Robertson, president of the Brotherhood, stated that the organization's campaign for the inclusion of a helper on Diesel engines was based on the following three arguments:

First, the union emphasized the necessity of safety to both the traveling public and to railroad employees.

The second point touched on the economic necessity of the railroads bearing their share of the burden of unemployment by providing against its increase in the industry.

A third point was that the railroads should permit employees to share in the increased production of labor and in the results of technological improvements 83.

Railroad unions have in general been in a more favorable position to secure provisions against displacement of their members than other unions. This is so largely because of the semipublic character of the railroad industry, which, because of the requirements of safety and uninterrupted operation, has been subject to public regulation for a long time. Regulation of competitive conditions in the industry makes it

80Ibid., pp. 351-2.
82Railway Age (Vol. 102, No. 10 [Mar. 6, 1937], p. 402) estimates that "230 new jobs will be created for firemen." The Brotherhood estimated that 700 additional jobs would result from the provisions of the agreement (Brotherhood of Locomotive Firemen and Enginemen's Magazine, Vol. 102, No. 3 [Mar. 1937], p. 147).
83Fight for Two-Man Engine Cab Crews Won by B. L. F. & E.; loc. cit.
possible to safeguard the interests of the workers to a greater degree. Besides, the railroad unions have also been in a strategic position to press for State and Federal full-crew legislation and for various safety regulations. In many instances such legislation has indirectly acted to minimize the possibilities of displacement.

In the textile industry improvements in machinery in the form of greater automaticity made it possible to extend considerably the number of machines assigned to one worker's care. Frequently such changes in work assignments were contested by the unions, and in some instances by spontaneous movements on the part of unorganized workers, on the grounds that the necessary mechanical changes had not been made and there was therefore no basis for increased work loads. The problem of employment security, however, was closely tied up with these arguments, for in many instances the increases in the work loads resulted in dismissals and demotions.

The United Textile Workers of America has opposed the stretch-out on many grounds, including the claim that it leaves out of consideration the limit of human health and endurance. The position of the union with respect to the labor-displacing effects of the stretch-out was stated as follows by Vice-President Gorman at the hearings on the proposed National Textile Act in 1936:

... Increasing stretch-out, and declining wages are closely related. Stretch-out increases unemployment and part-time work, so, directly decreases labor's income. Through creating unemployment, it weakens labor's bargaining power, and makes it easier for the employers to reduce wage rates.

Although concerned primarily with the problem of decreasing wages, the policy of the union was in effect also directed toward the unemployment which the stretch-out occasioned.

In the hosiery industry the problem of multiple-machine operation has caused much friction between the American Federation of Hosiery Workers and the manufacturers. Although the union has been opposed to the double-machine system, opposition was relaxed from time to time because of scarcity of trained knitters and competition from unorganized areas where high-speed machines and the multiple-machine systems were characteristic. The problem was further complicated by the fact that, unlike the cotton loom, the knitting machine can be doubled only if additional help is


provided for the knitters. Where this is done the helpers perform unskilled tasks while the knitter assumes the function of an expert. A considerable amount of the skilled knitter's work is thus transferred to unskilled helpers. On the long-section footing machines of high speeds even single-machine operation cannot be done effectively without a helper. Although there has been a tendency in recent years to improve the machines by making them more automatic, the increase in size and speed of machines, coupled with a tendency toward production of more varied and complicated styles, increased the degree of skill and vigilance required.

Throughout the period that double-machine operation has been a problem in the full-fashioned hosiery industry there has been a differentiation in the union policy with respect to the two types of knitting machines used for the completion of the stocking: (1) the footing machine, or the "footer", which knits the foot of the stocking, and (2) the legging machine which knits the leg. Although both operations require the work of a skilled knitter, "footer" operation and "legger" operation have been specialized jobs and are not interchangeable. Although union rules were relatively favorably inclined to permit double-machine operation on leggers from time to time, they were continually more stringent if not prohibitive toward double-machine "footer" operation. This was so for two reasons. First, knitting the foot is a shorter operation and normally the ratio between "footers" and "leggers" is on the average about one "footer" to three "leggers"; doubling up of footers would further curtail comparatively limited employment opportunities for footer operators. Second, there has been a tendency at all times to make footing machines longer (more sections per machine capable of producing more stockings at a time), on the average, than legging machines; doubling up is therefore more difficult.

When the double-machine system was introduced in the Philadelphia market in the early 1900's the knitters objected to the change only in rare instances. In the first place, the expanding industry required more skilled knitters than could be supplied and the employment of helpers on the double jobs provided opportunity for the training of knitters; in the second place, earnings on double-machine operation were much higher. By 1910, however, enough knitters had been trained to cause a good deal of concern among the union members, particularly the footer operators, and the Philadelphia local ruled, in October of that year, that union knitters must refuse to run two footing machines. However, the rules continued to permit the operation of legging machines of from 12 to 20 sections on the double-machine basis. In 1913, when the American Federation of Full Fashioned Hosiery Workers was formed, it responded to
the sentiment of the locals outside of Philadelphia who worked to a large extent on silk ingrain, as well as to that of some of the members of the Philadelphia local, against the double-machine system by adopting a rule against double-machine operation on "black ingrain." A year later it adopted the same provision with respect to machines operating with silk, a new development in those years. It was difficult, however, to get the Philadelphia local to fall in line on the issue of double-machine operation in spite of the depression and curtailment of employment opportunities in 1913-14. The local was expelled from the Federation and the dissatisfied elements in the local, operating primarily on silk ingrain, set up a separate branch. During 1915-19 the Federation operated on the policy of checking the spread of double-machine operation by prohibiting its use wherever new equipment was installed. By 1919 the Philadelphia local had fallen in line with the Federation and demanded that all new machines be operated as single jobs. In 1922 it rejoined the Federation, thus making it possible to carry out a more uniform policy with respect to double-machine operation.

Throughout the 1920's the industry continued to expand, but much of the expansion took place in new, ununionized areas. Although there was considerable apprehension that the double-machine system was rapidly becoming a menace to the security of knitters, little could be done, for manufacturers offered higher wages for double-machine operation.

With the advent of the depression the National Agreement in 1930 extended the percentage of equipment which might be doubled to include all 18- and 20-section standard speed-legging machines of 39- and 42-gauge as well as 45- and 48-gauge machines operating with gum silk. Since the doubling up of many of the legging machines in 1930 coincided with a sharp falling off in total production which led to widespread unemployment, the locals of the Federation demanded that the machines be single-up and that the national officers secure the best terms possible upon which machines could be operated again on a single-job basis. The 1930 agreement was therefore soon modified by amendment which adjusted the rates so that there would be less inducement to double-up machines. When the NRA hosiery code became effective in 1933 it provided that all footing machines were to be operated on a single-machine basis; it forbade any knitter to operate more than two legging machines, and only with two helpers at that. The tendency toward larger machines of higher speeds operated by this time to check the growth of the double-machine system. The 1937-38 agreement also provided that all knitting machines shall be operated on a single-machine basis and that helpers shall not be employed on legging machines or on 18-, 20-, and 22-section footing machines. On
footers larger than 22 sections the agreement permitted the employment of helpers, but if the manufacturer wanted to operate these machines without helpers, the knitter was to receive one-half of the helper's rate in addition to his regular rate.  

It is difficult to generalize on the experiences of the hosiery workers with respect to double-machine operation since there were many tendencies, such as the scarcity of knitters and better earnings as well as competitive conditions between unionized and ununionized areas, which favored the extension of double-machine operation from time to time; on the other hand such factors as increase in the size, speed, and automaticity of machines and more diverse styles tended to counteract the pressure for double-machine operation. On the whole the policy of the union has been to eliminate such operation even when concessions in wage rates had to be made on single-machine jobs.

The introduction of new and improved printing presses led the International Printing Pressmen's and Assistants' Union to adopt a policy which opposed increases in work assignments. With the introduction of automatic feeding devices the press assistants became more and more general assistants to pressmen. The union sought to prevent displacement of assistants by limiting the number of presses upon which assistants might work and by preventing a pressman from feeding his own machine. This policy was developed as a result of a rule adopted as early as 1896. The rule stated:

> No member of a subordinate pressmen's union shall be allowed to feed his own cylinder press or operate an automatic feeding machine when so attached, nor shall he perform any work in the nature of making ready or preparing a press to produce any printing product without an assistant.

This rule applied only to large cylinder presses, but since 1901 feeders of the smaller presses sought similar protection. At first they were not successful. In 1909 they succeeded only in establishing a differential wage rate between assistants engaged in feeding one machine and those engaged in feeding two machines. However, an informal rule of the union prevented assistants from working on two machines by imposing penalties — loss of union card and fines — for such practices. But by 1911 the New York printers faced such serious competition from nonunion and


87Baker, Displacement of Men by Machines, p. 121.
outside shops that the union was compelled to discard the wage differential. During the World War the assistants strongly attacked the tendency of more than one continuous feeding machine. No national agreement was reached, but separate agreements were made in several New York shops to employ one assistant on each continuous feeding machine.

During the post-war depression there was a large increase in the number of improved presses. The labor surplus at that time put the Printers' League in a stronger position to demand that one assistant run two automatic feeding machines. Since this would have involved the displacement of approximately 20 percent of the assistants, there was strong opposition on the part of the union. Neither side gave way until 1925, when the assistants completely relinquished jurisdiction over certain of the smaller presses for all-black printing; for half-tone and color work, however, one junior assistant was to be employed for each two automatics. By 1928 they gave way on larger machines when they agreed to the employment of one assistant to two machines on the two larger sizes of the small cylinder presses. In that year, moreover, the assistants were also required to cut their complement of men on the large rotary presses.88

In the examples cited thus far the relationship between limitation of work loads and maintenance of employment opportunities is fairly clear, for in each case increased work loads meant either a reduction in the number of workers assigned to a specific operation or an increase in the number of machines per operator. The policies adopted by trade-unions in the effort to control these changes were generally related to the size of the labor reserve and were intended to minimize or at least delay displacement.

Although trade-unions have increasingly advocated the measures outlined in this chapter, the actual instances where the introduction of technological changes has been planned with a view to minimizing displacement have been comparatively few. In general, trade-unions have adopted the policy that every effort should be made by employers to make adjustments for their members in cases of changing conditions of production, thus obviating the tendency on the part of workers to resort to some form of opposition to new techniques. They have also carried on educational campaigns among their members in order to popularize this policy. Whether or not they have been successful depended on what other adjustments were possible which would provide some measure of employment security. Recent technological changes in the steel industry, for instance, have occasioned considerable displacement. The problem that the

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88 Ibid., pp. 109-61.
union has been confronted with in the face of these changes is typical of other industries.

The SWOC favors technological improvements and carries on a continual program of education among its members as to the futility of opposing progress. But unless provisions are made to care for displaced workers, the speed with which industry is introducing labor saving devices may be checked by the revolt of the men involved.  

In recent years some employers have realized the undesirability, from an economic standpoint, of a feeling of insecurity on the part of their personnel and have planned the introduction of technological changes so that workers' jobs would be more secure.

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CHAPTER III

MAINTENANCE OF EARNINGS

Technological change has been one of the principal factors making for change in the basis of determination of established standards of earnings for various occupations and differentials between them.

Where some method of payment by result is prevalent, whether it is on a direct piece-rate basis of piece-rate combined with a bonus for more than standard output, "standard output" and "standard conditions of operation" have to be determined. Basically, all such methods of payment imply that variations in productivity and consequently earnings of workers performing like operations are caused primarily by variations in efficiency and application of effort. Collective agreements, frequently, provide for revisions in piece rates whenever the productivity of workers is substantially affected by a direct change in the technical conditions of operation, such as the introduction of new machinery or new methods of production. Also, the introduction of new techniques usually requires a period of experimentation during which the piece rates determined under a different set of technical conditions no longer apply, whereas the new technical conditions of operation have not been sufficiently standardized for the establishment of new piece rates. During such transition periods the earnings of workers are subject to considerable fluctuation under a piece-rate method of payment unless some basis of adjustment is provided for. Moreover, where the productivity of all workers performing a specific operation has changed substantially over a period of time owing to minor improvements in operating conditions or minor changes in the product which require varying amounts of effort, one party to a collective agreement usually requests a revision of the piece rates. In all such instances trade-union policy toward setting standards of output and new piece rates assumes considerable importance, since hourly earnings under a piece-rate method of payment vary with the rate per piece as well as with the output per hour.

Payment on a time basis, of course, does not mean that earnings are not related to output in some manner, even though the process may be more indirect. No employer willingly pays for filling in time only. When wage payments are made on a time basis the problem of standards of output frequently arises in different forms, such as charges on the part of employers that limitations on output are placed by trade-unions or that the efficiency of individual workers is below standard.
Aside from the determination of standards of output and standard conditions of operation, the setting of new rates on new or modified operations involves some basic considerations with reference to the degree of skill required before and after a change and to whether or not wage rates should be changed when changes in skill requirements occur. There is also the question of whether wage rates should be adjusted so that workers share in the benefits of technological change through higher average earnings.

Trade-unions have from time to time coped with all of these problems in their effort to maintain or improve earnings of workers whose jobs have undergone technological change. In the light of these considerations, trade-union policies on earnings and technological change are discussed under the following topics: (1) Standards of output, (2) earnings and new operations, and (3) earnings and increasing productivity.

STANDARDS OF OUTPUT

From the point of view of a wage policy the setting of standards of output and the definition of the standard conditions of operation, as well as the manner in which such standards may be changed when technical conditions of operation change, are of utmost importance. Trade-unions are not only interested in the problem of rates per piece or per hour but also in the conditions under which the workers have to work in order to earn these rates. When standards of output are set too high or when changes in the product, in operations, and in equipment make it more difficult to maintain them, it frequently becomes difficult to approximate established levels of earnings. The questions therefore arise: Who shall determine what the standard task for any operation shall be, and in what manner may the standard task be changed when changes in techniques take place? These questions have been constant causes of friction between organized labor and management. Management has charged frequently that labor attempts to limit output by setting its own standards of output either through open restrictions or tacit understanding among workmen. On the other hand, where management exercises complete control over setting and changing standards of output, labor frequently charges that "speed-up" methods are employed and that the standards of output are set at a level that only the fastest workers can obtain.

Among the iron molders, for instance, there was a practice to observe a "set day's work." A "set" was considered to be the number of castings which an employer expected a molder to do in a day. The workmen later began to adopt "sets" for themselves, and finally the amount of work which was expected of workers came to be subject to agreements between
employers and shop committees. The average daily output of the man who made a particular casting on a trial was ordinarily recognized as the basis for calculation of the standard output by the shop committee. The union sometimes imposed fines upon molders who exceeded the established rate of output. Foundrymen continually complained about the restriction of output, particularly when molding machinery was being introduced into the industry. But the union molders justified "sets" on the ground that they offered protection against rushing. The problem occupied considerable attention in collective-bargaining negotiations between the International Molders' Union and the employers from the last decade of the nineteenth century until 1908, when "it was agreed to determine the piece rate by setting a four-dollar base and dividing this by the number of good castings produced in one day on the machine by a demonstrator hired for the purpose by the employer."2

Similar problems were faced in other industries. In the sanitary-ware branch of the pottery industry a fixed day's work was established by custom among the pressers and the question was a continual source of friction and threat to collective-bargaining relations; the employers wanted to remove all barriers to changes in output while the union opposed the employers' demands.3 The Amalgamated Association of Iron, Steel and Tin Workers included several limitations on output in its agreements with manufacturers up to 1905. The limitations took three forms and involved restrictions on the size of the charge and the number of heats per turn in puddling mills, restrictions on the number of bars to be rolled per turn in sheet mills, and restrictions on the number of pounds of tin plate to be rolled in tin-plate mills. These standards of output, although mutually agreed upon, were a constant source of friction and had to be abandoned in 1905 after a series of technological changes made it impractical to maintain any fixed standard.4

In some industries the problem of measuring and setting the standard for a day's output is complicated by the fact that the unions oppose every attempt to set standards of output. Although there is usually some generally accepted standard of what is expected of a workman in a normal day's work, any attempt to specify the length of time required to perform a specific task is rejected. In the organized centers of the printing

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industry, for example, the employment of skilled printers is controlled by the union. The employer is usually given a certain period of time during which he may test the competency of a worker sent by the union; this is his only opportunity to check the worker's output. Although the union does not permit the employer to set a definite time for a task, there is nevertheless a certain level of efficiency expected of workers which is established through indirect methods. Practices similar to the one current in the printing industry with respect to setting standards of output are also prevalent in other industries where, because of lack of standardization in the product, workers can exercise a good deal of control over the rate of performance. In such industries the attempts to measure the day's work and to set definite quantities of expected output may be the subject of constant friction between workers and employers, either open or implied.

In contrast to these situations where trade-unions exercise a good measure of control over setting standards of output, in a number of industries management has insisted that the setting of standards of output is its exclusive function and that workers must adjust themselves to whatever standards are set. With the advent of scientific management and its methods of standardization of work and the setting of standards of output with the aid of time-and-motion study, the claim was generally advanced by the early exponents of scientific management that a solution to the problem of setting standards of output, both quantitatively and qualitatively, was at last found, since time study affords a completely objective method for setting such standards. According to this point of view, expressed by Frederick W. Taylor, time-and-motion study investigates scientifically what a worker's task shall be, and this is not subject to collective bargaining, for "as reasonably . . . . might we insist on bargaining about the time and place of the rising and setting of the sun." In commenting on this position Mr. Hoxie was of the opinion that, in order to make it possible to uphold the claim that the determination of the task is completely objective and that the task set for a worker can be accomplished without overstrain and exhaustion, it must be shown that the judgment of the time-study man does not enter into the process.

But this is exactly the case with tasks set by the process of time study . . . . . At a score of points in this process, the judgment of the employer, the time study man or the workers may

be exercised so as to produce variation that will affect and alter the task itself.\footnote{Ibid., p. 46.}

Thus, although the value of time-and-motion study is not denied, its infallibility with respect to setting the task has been seriously questioned by economists, exponents of scientific management, and trade-unions.\footnote{See Morris Llewellyn Cooke, *Preparedness Plus Democracy Knocks at Industry's Door,* American Federationist, Vol. 46, No. 2 (Feb. 1930), pp. 136-42; Spencer Miller, Jr., *Labor's Attitude Toward Time and Motion Study,* Mechanical Engineering, Vol. 60, No. 4 (Apr. 1938), pp. 289-94; and Harold B. Bergen, *Problems of Scientific Management in Unionized Plants,* Mechanical Engineering, Vol. 60, No. 3 (Mar. 1938), p. 239.} In a survey made of 30 leading unions in the United States with respect to their attitude toward time-and-motion study it was found that organized labor is reluctant to place its stamp of approval on the use of time-and-motion study without qualifications. The conclusion that could be generally drawn from the study was that in those cases where time study has been conducted most successfully in union shops the time study and its objectives have been carefully explained to the union and workers in advance, and both "consent" and "cooperation" have been secured from labor as a result of "conference and discussion."\footnote{Miller, op. cit., p. 290.} President A. O. Wharton of the International Association of Machinists emphasized the point of view that time study did not always take into account the length of time that a worker can maintain set standards without impairing his health. He maintained that organized labor does not judge efficiency from the point of view of a single plant but is also interested in the social consequences of a given efficiency method. He stated:

"Our membership will not stand in the way of human progress or industrial efficiency. However, they will not accept every system of industrial management that claims for itself the virtues of promoting progress or efficiency as being in the social interest. The mere fact that some one designates an industrial policy as scientific, does not make it meritorious or successful. We always ask, scientific — for what purpose? in whose interest? to what end?"

"From a social viewpoint, to be truly scientific, even if only in connection with the efficiency of the worker, we need to know more than what a spurt can do in a dash. We need to know what a worker can do week after week, month after month, year after year, for his working lifetime. To be truly scientific from the viewpoint of our economic welfare as a Nation, we have to know considerable about fields of knowledge which most advocates of 'scientific management' disregard entirely."

"Providing jobs for our nine million unemployed in productive work would create more goods and services than could any
plan of 'scientific management' directed toward increasing the
efficiency of workers who now have jobs.10

In recent years there has been a tendency to include provisions in
collective agreements which emphasize trade-union participation in the
setting of standards of output. These provisions vary from provisions
for the right of workers to protest when they think that the standards
of output have been set too high by management to actual joint participa-
tion in their determination. In one agreement in the flat-glass indus-
try, for example, the right of management to set standards of output
independently is specifically provided for, but provision is also made
for review in cases where grievances arise in connection with changes in
work assignments. The clause reads:

NUMBER OF EMPLOYEES ON AN OPERATION. The Company does not
recognize the right of its employes to dictate or declare that
any certain number of employees shall be maintained in connec-
tion with any of its various operations. Consideration shall
be given to the possibility that increased production or speed
of operation may possibly impose undue hardship on employes.
The Company will give consideration to such increased work as
may be imposed upon employes by increase in production and
speeds of operation or an increased number or size of machines
and any other matters that may increase the work of the em-
ployes or impose upon them undue hardships; and will cooperate
with the Industrial Relations Committee in studying and working
out agreements covering the number of employees to be used and
additional employes to be added so as not to impose hardships
on the employes.11

"Speed-up" was one of the chief grievances of the automobile workers
during the campaign for organization in this industry. Many of the
agreements signed by various automobile-manufacturing concerns provide
for the handling of grievances without specifically mentioning speed of
operation. A number of agreements, however, include specific clauses
dealing with the workers' rights with respect to requests for retiming
of jobs. One agreement provides:

In consideration of the abolition of piece-work it is agreed
that employes shall apply themselves to the work with the same
diligence as formerly and that the Corporation will establish
a rate of production for its different operations which said
rate shall be considered a day's production for each employe
engaged therein. If a Shop Steward believes a rate of produc-
tion is incorrectly set he may take it up through the grievance
procedure.12

10bid., p. 288.
11Agreement Governing Wages and Working Rules of the Federation of Flat Glass
Workers of America for Members Employed by the Mississippi Glass Co. (Dec. 30,
12Agreements Entered Into Between International Union, United Automobile Workers
of America and Employers in the Automobile and Other Industries (International
Union, United Automobile Workers of America, May 1937), Vol. One, p. 22.
Another agreement provides:

The policy regarding speed of operations is that time studies shall be made on a basis of fairness and equity consistent with quality of workmanship, efficiency of operations and the reasonable working capacities of normal operators. The local management of each plant has full authority to settle such matters. If an employee or group of employees claim the timing of their work is too fast and the foreman is unable to adjust the matter, the job will be restudied and if found to be unfair an adjustment in the time will be made.\textsuperscript{13}

In this agreement some attempt is made to define what the speed limits are to be. In any such attempt the usual difficulties arise regarding who should measure the speed and what factors are to be considered. This clause refers to "the reasonable working capacities of normal operators." Another clause goes even further in the attempt to set up standards of speed. According to this agreement, "time studies shall be taken and rates set, using a selected average man, actual working time recorded, and dated as to effort. All time studies shall be taken on not less than 10 pieces."\textsuperscript{14} One agreement not only defines what type of person should be used for the timing process but provides a detailed procedure on how the employees designated for time study are to be selected. The clause reads:

Time studies will be conducted with the knowledge of the employee whose time is studied and the employee will be selected by the members of the department in which the study is being made. The operator so selected will have his time during which the study is made put on his departmental base rate plus 10 per cent, as otherwise he would have no opportunity of making a bonus. He is to act in this capacity both in the interests of the Company and the employees. The records of the time study will be made known to the employees in the department and proper allowances made in accordance with the time study system and the necessities of the particular operation in order that a fair rate be set.\textsuperscript{15}

The relationship between speed of operation and level of wages may be inferred from one of the agreements which provides that the speed of operation be so set that the workers involved are able to earn a definite stipulated hourly wage:

All piece work rates will be adjusted to make it possible for the operator to make fifty-five cents (55\textcent) per hour average for the week while on piece work. This means that any rate on which it is impossible to make fifty-five cents (55\textcent) per hour will be adjusted to make it possible and the operator will be paid at the new rate for any saws that have been done between

\textsuperscript{13}Ibid., pp. 90-1.
\textsuperscript{14}Ibid., p. 138.
\textsuperscript{15}Ibid., Vol. Two, p. 16.
the date the low rate is called to the Company's attention and
the date the new rate is established. 16

The clauses from various agreements in the automobile industry quoted
above do not exhaust the number of such provisions. These were selected
with a view to presenting the range of variations between them. Many
more of the agreements include clauses similar to one or another of these
provisions, and they aim, basically, at the same thing—the right to
have a job retimed under certain specified conditions. It may be stated
in general that organized labor is seeking to have a voice in the deter-
mination of what the standards of output shall be:

A worker will want to live up to a standard that he himself
helps to set, and agrees to. There can be no dispute between
foreman and men about the proper speed of work when production
standards have been carefully set up by agreement between the
union and management. Some of the most progressive and suc-
cessful unions have employed this method with benefit. 17

One writer who investigated collective bargaining in the automobile
industry writes:

Since complaints of undue speed were among the most serious
grievances, the unions were active from the start in efforts
to slow down the lines. In many plants it was possible to
reach agreement through negotiation on fair speed of the con-
veyors, or proper manning of the lines. In some, lines were
locked after the agreement in order to assure a steady speed.
In others, men watched the conveyor clocks and were quick to
object to any increase. In some plants the matter of speed
and man-power was the source of great and continuing friction,
ever satisfactorily removed by negotiation and resulting in
frequent slowdowns and sitdowns. 18

The automobile industry has had comparatively little collective-bar-
gaining experience. There is a good deal of mistrust on both sides and
charges of "speed-up" and "restriction" of output are still prevalent.
The absence of established procedure for determining rates of perfor-
mance with actual union participation makes for a good deal of individual,
subjective judgment on the part of the workers and friction with manage-
ment. 19 There is a general belief that workers cannot participate in
determining rates of performance since that would involve interference
with management. At best, it is felt, workers "should certainly protest"

16Ibid., p. 81.
17Production Problems (Pittsburgh, Pa.: Steel Workers Organizing Committee,
18Emily C. Brown, "The New Collective Bargaining in Mass Production: Methods,
19Ibid., pp. 48-50.
when they think that their jobs are not properly timed. Such provisions for protest can hardly solve the problem because each worker has to judge for himself what constitutes speed-up.

In the clothing industry the development of collective bargaining resulted in the establishment of an apparatus for joint control over setting standards of output. In the Chicago market, for example, all piece rates are set jointly and specifications are made setting forth the quality and quantity of work required of a worker under a specific rate. The right to maintain specifications mutually agreed upon rests with the management even to the extent of suspending workers who fail to comply with the standards set. Once rates have been set and standards of output determined, they cannot be changed by either the management or the workers. If either party finds that a specific rate is out of line, it can bring action before the impartial arbitration machinery for review. There exists a complete set of measurements for the performance of each operation. These time elements were arrived at jointly, partly by time study where time study was needed and partly by acceptance of existing standards of output in the industry.

The information available regarding trade-union policies with respect to standards of output indicates, in general, that although trade-unions in different industries differ in their approach to the problem, all of them are reluctant to leave the determination of what the standard should be solely to management. Wherever trade-union participation is secured, setting of standards of output involves a definition of standard conditions of operation, the selection of workers for tests of performance, an agreement regarding the number of times a specific operation is to be tested, and provision for review. The objective of trade-union participation has been to make certain that standards of output will be so set that workers will be able to maintain their earnings without undue strain.

EARNINGS AND NEW OPERATIONS

During the process of installation of a new technique a period of experimentation is usually necessary in order to determine the output of the new operation and the new rate of pay. When the process of experimentation involves a period of training and adjustment to the changed


conditions of operation, trade-unions have usually sought the adoption of some provision which would prevent the shifting of the expense of experimentation with new methods of production to the workers in the form of lower earnings.

Although the forms that the specific provisions for the maintenance of earnings, before a new rate on a new operation has been set, have differed in individual industries, the objectives of the provisions are usually similar. In the words of a delegate to a Shoe Workers Union convention, "in the event of a new machine coming in, you can arbitrate, but first make him (the employer) pay the wage scale which your agreement with the manufacturer says he must pay, the day price until the machine is tried out, and you won't have any trouble." The difficulties of adjusting claims as to rates and earnings are attributed at least partly to the lack of a wage policy during the process of introduction.

A similar point of view is embodied in the 1920 award of the Bituminous Coal Commission appointed by President Wilson to arbitrate the bituminous-coal strike of 1919. Section 4 of the award provides:

That pending the joint district agreement between the miners and operators covering a fair schedule of rates for piece-work or tonnage operation of any new device or machinery, the right of the operator to introduce and operate any such new device or machinery shall not be questioned, and his selection of such men as he may desire to conduct tests with or operate such device or machinery shall not be in any way interfered with or obstructed by the miners or their representatives, provided the wages offered are at least equal to the established scale rates for similar labor.

After the device or machine shall have passed the experimental stage and is in shape to be introduced as a regular component part of the production of coal, then for the purpose of determining a permanent scale of rates (such rates to continue until the joint scale conference above referred to fixes a scale) for operating such device or machine, the mine workers may have a representative present for a reasonable time to witness its operation, after which a schedule of rates shall be determined by mutual agreement, which scale shall be concluded within 60 days after a fair test has been made.

Thus the procedure established by the award specified that during the period of experimentation with new machinery, before a rate is set by mutual agreement between the union and the operators, the rates offered should be "at least equal to the established scale rates for similar
labor." The provisions of this award became official policy of the United Mine Workers of America. In 1923 President John L. Lewis called a conference of district officials of the union to discuss the problems relative to the introduction of loading machines in coal mining. At this conference a resolution was adopted which embodied the policy to be followed in establishing rates when machinery is introduced. The motion stated:

That it be the understanding in this matter, that in Districts where coal loading machines are in operation, the Mine Workers will insist upon the appointment of a joint commission in their respective Districts, to determine exactly what the machine will do, and that all data on the subject made, secured in the respective Districts, through the negotiations of joint commissions, be submitted to the International Union, and that in all Districts where it is necessary to make agreements governing the operation of these machines, that those interested adhere strictly to the terms of the award of the Bituminous Coal Commission, and while in the experimental stage, the respective Districts shall adopt such day wage scale for temporary purposes as they may deem necessary to protect their membership.24

The substance of this resolution has found concrete expression in individual agreements between the various districts of the United Mine Workers of America and individual operators. For instance, in the 1930–32 agreement between District 15 and the Rocky Mountain Fuel Company it was provided that "day wage rates shall prevail during the installation and experimentation stage. After passing the experimental stage a conference between the parties to this Agreement will be held to determine a schedule of permanent rates for such work."25

The establishment and guarantee of a temporary day wage rate are not the only problems that technological change occasions with respect to rate setting on new operations. In most instances it is necessary "to determine exactly what the machine will do." In order to illustrate the kinds of problems which arise when changes in techniques occur, the procedure followed under the collective-bargaining mechanism in the hosiery industry will be discussed in considerable detail. This procedure is embodied in the 1937–38 National Labor Agreement between the American Federation of Hosiery Workers and the Full-Pashioned Hosiery Manufacturers of America in a clause which states:

For operations for which piece rates are not provided by the agreement or by a decision "90% Style Development Rate" is payable, computed at 90% of the average normal earnings of each

24 Ibid., pp. 180, 193.
individual for (5) five weeks prior to the style development experimentation. If a new employee is placed on such jobs, payment is to be made at a rate equivalent to 98% of the average hourly earnings of the department.26

This provision summarizes the results of previous decisions of the Impartial Chairman with respect to style development. It is appropriate, therefore, to review briefly the reasoning that underlies the "98% style development rate" which is embodied in one of the decisions of the Impartial Chairman.27

An understanding was reached, according to this decision, which set forth that a new style or a style development is defined as a style of product for which no rate has previously been set. Such development usually requires a period of experimentation. During such time the employees were to receive a compensation that more nearly approximated their actual average earnings than did the minimum hourly rates provided in the agreement. The union maintained that for style development 100 percent of the average actual earnings should be paid. The manufacturers, on the other hand, advanced the argument that style development involved expenses and risks to them and benefits in the form of employment to their employees; the latter should therefore bear part of the expense. Besides, they argued, if an employee were to receive 100 percent of his average earnings while a style was being developed, he would lack the incentive to develop the style to a production basis when piece rates could be established. The Impartial Chairman saw merits in these arguments and ruled that the 98-percent average rate be established during the period of development. Thus, although this rate provides a measure of protection against loss of earnings, it also makes the workers bear some of the expenses of experimentation.

The following examples will illustrate the procedure followed in the process of a few actual changes. The introduction of the three-carrier tackle as an attachment to the knitting machine not only constituted a style change but a technological change. A number of hosiery mills had been experimenting with the three alternating main carriers instead of a single main carrier in order to minimize the possibility of rings on stockings caused by uneven silk. The knitters who worked on the new attachment were being paid, on a time basis, at 98 percent of their former average hourly earnings, and it became necessary to determine a piece


rate for leggers and footers who were working on the machines with this attachment. The National Agreement provided no rate for this development, and none had been evolved by negotiations between the parties concerned. It was therefore the duty of the Impartial Chairman to set a rate.

The Chairman, before whom this case came in October 1933, was of the opinion that in setting a rate for the three-carrier tackle a uniform rate should be set for the "average prevailing experience" rather than for each variation in each mill. A number of production reports were secured from companies operating the three-carrier tackle, and an "extra rate" (a wage differential) was established on the basis of those records that "will be a fair average for various types of tackle, for the different gauges and sections of machines, and for varying mill experience."²⁸ In other words, since the fundamental principle of the agreement was to secure uniform labor cost per unit of product, it was determined that identical rates should apply to standard operation defined so that a range of variations above and below average would still be considered standard. This procedure resulted in variation of hourly earnings rather than of piece rates. Where operating conditions were so far below standard as to make it impossible for a knitter to earn within 12 percent of the average solely because of inferior equipment, an "old machinery extra" was applied in order to raise the hourly earnings. This piece rate, however, was to be considered a temporary rate until further experience would accumulate.

In 1934 the manufacturers requested that a permanent rate be set on the three-carrier tackle and a hearing was held with both parties participating. According to the decision of the Impartial Chairman, production records substantiated the manufacturers' claims that a reduction of the temporary rates be made, but not to the extent asked for. The contention of the union was upheld that earnings should, on the average, be somewhat higher than earnings on the single carrier because of added responsibility and effort. The "extra" was set on a lower basis than the temporary rate but with the objective of providing somewhat higher earnings to operatives of machines equipped with the three-carrier tackle. This rate was to be considered permanent.²⁹

A similar procedure is followed whenever new equipment is introduced. In each case the development of the process or style and the setting of a rate pass through three distinct stages. First, the 95-percent average rate is paid during the period of experimentation. Later a temporary

²⁸Ibid. (Ser. P-28, mimeo., Nov. 15, 1933).
piece rate is set until the output per worker on a full-production basis is determined. Finally, a permanent rate is set on the basis of the experience during these two stages.

Often the temporary rate is adjusted a number of times before the permanent rate is agreed upon. For example, in the case of the introduction of the Paramount electric drying equipment the company which introduced the equipment began paying the boarders who operated it on the basis of 98 percent of their average earnings prior to the installation. In October 1934 the case was referred to the Impartial Chairman in order to set a temporary boarding rate. Both the company and the union wanted to have a piece rate set for the boarders. An analysis was made of the production that had been attained by the boarders and a temporary rate was suggested by the Impartial Chairman based upon the output of the boarders who were "most experienced on the new equipment." This temporary rate was to be revised later when more data on the experience with the new equipment became available.30

A few weeks later another case came before the Impartial Chairman involving the same equipment. In this case the company began to pay its boarders according to the temporary rate set by the previous decision, for this rate applied to all signatory concerns. Facts presented showed that this rate, because of the change in method of operation and experimentation with different procedures, resulted in a striking decrease in earnings during the first few weeks of operation. The Impartial Chairman ruled that workers who were transferred from other types of equipment to this type were to receive 98 percent of their average earnings for the first 4 weeks on the new equipment, and after this period the temporary piece rate was to become applicable.31

In January 1935 these temporary rates came up again for revision before the Impartial Chairman. Investigation of the operation of the new equipment indicated that the temporary rate should be revised in order to prevent a decrease in the boarders' earning power and to prevent a labor-cost advantage to the manufacturers using this equipment compared with other signatory concerns. The investigation also disclosed that the claim of the manufacturers that boarders could adapt themselves to the new equipment in 2 weeks had no merit. After several months of operation production records gave no indication, according to the Impartial Chairman, that production would reach a level claimed by the two companies operating this equipment. While improvement over the then-existing level

30 Ibid. (Ser. 0-30, mimeo., Oct. 11, 1934).
31 Ibid. (Ser. 0-32, mimeo., Oct. 28, 1934).
of production was deemed likely, it was considered inequitable that the boarders should bear the burden of the change.

The Impartial Chairman was also of the opinion that the rates could not be set for the operation of a department on the basis of the output of an expert, who, on a test, received much more servicing than is normally provided to employees in the department. Since variations in production normally exist between plants, the rate for this operation should not be set on a flat rate per dozen but should be related to the rates paid for similar operations on other equipment which are provided for in the National Agreement. Such a rate, it was argued, must be set to provide equitable earnings to the boarders and to insure that no signatory concern gets a labor-cost advantage not fully supported by an improved method of operation. The temporary rate was therefore revised to conform to the rates set for similar operations on other equipment, with a differential for the change in productivity. The new rate remained on a temporary basis.\(^{32}\)

Subsequently the question again arose in connection with setting a permanent rate. The companies involved again submitted production records and requested that the rate be set on a flat per-dozen basis lower than the temporary rate without regard for the relative output of this and other boarding equipment. The Impartial Chairman ruled in May 1935 that the rate for this equipment was to be related to the rates already available in the National Agreement for other types of equipment, that is, on the basis of the percentage change in production on this equipment as compared with other types. Although the rates determined on this basis were revised slightly downward from the temporary rates set at the previous hearing, they were much higher than the rates proposed by the manufacturers; the objective was to provide higher earnings for this equipment than for other, less productive equipment. These rates were to have a permanent status.\(^{33}\)

Thus the question of rate setting was considered carefully over a long period of time; meanwhile, earnings for various classes of labor were maintained during the period of experimentation. During this period the question of what the output of the operation should be was determined on the basis of records of production and comparison with other operations of similar nature. Other methods were to be used in individual instances. The union has no objection to the use of time studies. However, production records are most frequently used to determine the output


\(^{33}\)Ibid. (Ser. H-20, mimeo., May 20, 1935).
of a specific operation, and the collective-bargaining process assures the workers of a good measure of participation in determining the rate, whatever method may be used.

Examples of guaranteed average earnings during the process of rate setting similar to that of the hosiery industry may be found in other industries. According to the manager of the Time Study and Standards Department of the B. F. Goodrich Company, time studies are used by this company under its collective-bargaining relations to set standards of performance in connection with its wage-incentive system. When technological changes take place and new standards have to be set, "the usual plan followed is to invalidate all obsolete labor standards and pay the employees daywork rates while the time studies are being made." The temporary day rates are established under the company's "time study manager's policy." According to this policy the men receive on day work up to 95 percent of the previous week's average hourly earnings when they were on a piece-rate basis, but not more than that. These rubber workers thus bear a greater share of the expenses of experimentation than the hosiery workers. Here, too, this policy is maintained in order to induce the workers to get to a full-production basis, in this case back to the "incentive basis."  

The agreements between the Brotherhood of Operative Potters and the manufacturers of pottery, on the other hand, did not limit the payment to any percentage of former earnings but provided for the payment of "average earnings" during the "experimental stage" when new machinery was introduced.  

Another form of temporary-rate setting, the "protest price", also serves to protect workers' earnings during a process of change. The protest price or some similar arrangement is generally used where new piece rates are to be established immediately when the change occurs. In the pottery industry the protest price, which is applied in some instances, means that the rate established by the employer is received "under protest" by the workers, until such time as the "standing committee" determines what the permanent rate shall be for a specific operation. The wage rate finally agreed upon is retroactive and is to be paid for all the work done since the date of protest. The protest price is thus a device which guarantees that the worker's grievance will be heard and that adjustment

will be made while work is going on. In some industries such disputes have frequently resulted in stoppages. According to a pamphlet published by the American Federation of Labor, "most of the flint glass workers are on a strictly piece work basis. However, there is a rule that stipulates the number of pieces of various articles constituting a day's work. If a workman finds that he will fall short of that number, he brings the matter to the attention of the manager, with the result that he is either paid day work or ceases to work for the day." The protest-price device provides another alternative and therefore greater flexibility in the adjustment of wages when changes occur.

The methods of setting rates current in some sections of the New York dress industry provide for review of grievances; this is similar in effect to that of the protest price. Because of the great variation in styles and quality of products in this industry, it is practically impossible to establish piece rates for specific garments that would hold beyond a single season. It was found, however, that many of the operations involved in making dresses can be expressed in terms of standard time required for their completion. These units of time are accepted as approximations only. When a jobber has prepared his line of samples for the season he applies to the union price-settlement department to arrange the piece rates for the various styles of dresses. The settlements are made on the basis of the standard units established and are subject to bargaining between representatives of the union and manufacturers. When the two parties agree the price of the specific garment and the specifications are submitted to the shop chairman who checks up whether the price agreed upon does not involve lower earnings to workers due to variations in actual operation. If the chairman finds that more work is involved than was originally estimated, he notifies the price-settlement department, and this department in turn notifies the Impartial Chairman who holds a hearing on the matter and adjusts the rates. If adjustment is necessary, the adjusted rates are retroactive. In this manner room for protest is provided.

Although the collective-bargaining mechanism in most industries does not provide for such intimate participation of the union in the rate setting as in the case of the full-fashioned hosiery and dress industries, the articles of agreement usually provide for some sort of grievance

36Ibid., pp. 325-6.
machinery for the workers when they feel that the job is incorrectly
timed. Some of the agreements of the United Automobile Workers contain
clauses similar to the following:

Employees shall have the right through the proper person or
persons to question the time study of any job that may appear
to be improperly timed, even to the extent of asking for the
retiming of any job. Upon receipt of a request for retiming
any job the company shall have a period of three days from the
date of request for such retiming. If an increase or decrease
is made on their retiming said increase or decrease shall be
retroactive to the expiration of this three-day period.39

EARNINGS AND INCREASING PRODUCTIVITY

When technological changes alter the nature of the work of specific
occupations, a basis is frequently provided for conflicting claims on the
part of employers and trade-unions with respect to the determination of
the wage level that should be provided for the modified operation or the
category of workers that should be assigned to perform the work. Employ-
ers have frequently tended to rate the new jobs on a lower basis when the
work could be assigned to workers of lesser skill than was required be-
fore a change. The arguments that were usually presented by organized
labor against reductions in earnings were based on the proposition that,
when technological changes had resulted in increased productivity and
economies to the manufacturers who instituted them, these economies should
be so disposed of that the workers involved would receive a share of them
in the form of either increased compensation or shorter hours; in no
case, it has been argued, should such economies result in reductions in
the workers' earnings. In the words of one labor leader:

Organized labor carrying thru a sound policy tries to see that
the introduction of machinery does not lower and if at all
possible, that it may increase the standard of wages, so that a
part of the savings effected by the use of the machines may
thus be given to the workers.40

Arguments in favor of sharing the benefits of increased productivity have
not, however, been confined to cases of reclassification; trade-unions
have in recent years increasingly used them when attempts were made to
increase earnings.

Whether or not earnings are reduced as a result of technological changes
depends to a large extent on the nature of the change, the degree to

39Agreements . . . Between International Union, United Automobile Workers of
America and Employers in the Automobile and Other Industries, Vol. One, pp. 54-6,
62 ff.
40Sidney Hillman, "The Problem of Employment in the Clothing Industry," The Advance,
which the skill and experience of the workers are still important for the
efficient operation of the industry, as well as the degree of control the
unions retain over the labor supply in spite of the change. In other
words, the bargaining position of the union in an industry has had an in-
fluence in individual instances on the degree to which economies due to
technological changes have been shared by workers.

However, the proposition that labor should share in the economies in-
cident to technological change implies a certain degree of flexibility in
the determination of the distribution of the economies from technolo-
gical innovations. Such freedom, no doubt, actually exists where a tech-
nological change has placed individual enterprises in an advantageous
position with respect to other competing enterprises if the enterprise
which introduced it is in a position to exercise a measure of control over
its installation by competitors or if the change has not been generally
introduced. It may also exist in industries where production is con-
centrated in a few large establishments which exercise a good deal of
control over competitive conditions in a given market. In highly com-
petitive industries, on the other hand, or in industries which are sub-
ject to competition from substitute products, the freedom with which gains
from technological changes may be diverted into selected channels becomes
considerably modified. However, to the extent that deliberate planning
with respect to the disposition of the gains has been possible and to the
extent that trade-union organization has been an important factor in wage
negotiations, labor's insistence on a share in such gains in the form of
increased earnings has frequently been met. In fact, it has been argued
by managers and economists in recent years that it is necessary to in-
clude labor in any plan for the distribution of the gains from techno-
gical changes in order to forestall the development of opposition policies
to technological change on the part of labor.41 In this connection one
author writes:

So the whole problem centers around the dual question of the
profits from the machine. Who is to get them and what is to be
done with them? There are essentially five different courses
which may be taken:

1. We may pay the same wage rates for labor, but using less
per unit output, sell the product at a lower price.

2. We may maintain the selling price, but increase wages, 
dividends and bonuses.

3. We may use the additional margin to further expand and
improve the plant.

41Bergen, loc. cit.
4. Governmental authorities may impose greater taxes.
5. We may hoard the profits, either in cash or inventories.

He also suggests that sharing the profits with workers is the most practical method of disposing of the gains.

In the face of the crying need for improved living standards, opposition to new machinery is a tragedy. It calls for a better job of merchandising labor-saving devices. We must introduce them so that workmen are eager to use them, so that everyone profits by them, and so that the investor can finance them.42

The forms through which the benefits of increased productivity may be reflected in the earnings of the workers involved are varied. As far as collective-bargaining negotiations over wage rates are concerned, cases falling into two classifications are of particular importance: cases where the maintenance of the level of earnings prevalent before the change may be enforced through collective bargaining in the face of demands of employers that a reduction in skill merits lower earnings; and cases where the benefits may be passed on partly through a differential in the rate which permits workers on the new operation to increase their earnings relative to the earnings of workers who operate under the old method. A few examples taken from the records of wage policies and wage negotiations of individual unions will illustrate these applications of the proposition that workers should share in the economies of increased productivity.

President Hughes of the Brotherhood of Operative Potters formulated the wage policy of that union with respect to introduction of machinery as early as 1899, when the introduction of a "dish jigger" threatened to take away the work on certain types of ware from the dish maker "at the bench":

"It appears to us that it would be wise for the dishmakers to regulate a price for ware made in this manner. If it is longer neglected, the result may be disastrous to that branch. In endeavoring to regulate such matters, we believe it best to first ascertain just what advantages a man operating a machine has over another working on a whirler. Then regulate the price to allow for the difference. In this way we do not antagonize improved machinery, but endeavor to derive whatever benefits that may accrue from the machine, lightening the labor and at the same time regulating your prices, so as to enable you to earn the same or as good wages as the man working by hand."43

MAINTENANCE OF EARNINGS

This policy was applied in later years when other changes were introduced. When casting was introduced in place of pressing casters in some pottery shops succeeded in obtaining pressing piece rates for casting in spite of the fact that employers maintained that the piece rates for casting should be lower because less skill was required. The pressers supported the casters in their wage policy. They did this, apparently, with a twofold purpose. In the first place, it was believed that the establishment of equal rates for both kinds of work would slow down displacement; in the second place, the pressers found the favorable wage scales for casting advantageous when they were transferred to the new process. In the list of rates agreed to in 1907 the Brotherhood conceded a rate for casting which was 10 percent lower than that for pressing for a few classes of ware only, but the rates of all other articles were to "remain as paid for at present in the various potteries." The arguments presented by the employers which served as a basis for the reduction were that the skill required for casting was less than for pressing, that men could earn more even at the lower rates offered by the manufacturers, and that the cost of the equipment which they had to install for casting made it impossible to pay pressing rates for casting. Some firms even threatened to abandon casting and return to pressing. Apparently the higher earnings afforded by casting made casters reluctant to return to pressing, and the union was forced to reduce the rates for casting. The new rates were to be set, however, so that a caster could still earn more than a presser.

Similar problems were involved when the saggermaking machine was introduced in 1917 and when tunnel kilns began to supplant the upright kiln. In each case the earnings were set on the new process so that the workers who were transferred to these new tasks could earn as much or nearly as much as they did at the former jobs regardless of the relative skill involved in the two jobs. In the case of the saggermaking machine the workers received somewhat lower hourly rates than the hand workers who worked on a piece-rate basis. But the employers argued that they found the piece-rate basis more advantageous even though the workers earned higher hourly rates. The kilnmen not only received the same rates when they were transferred to the upright kilns but they changed the basis of payment from piece rates to the hourly basis.

Although the policy of obtaining as good or better earnings when changes occurred was carried out in most instances, there were cases where this could not be done, particularly when the union was not successful in enforcing its transfer policy. When decorating kilns were introduced
some firms employed new crews recruited from nonunion sources, and lower rates were established. In general, however, the aims of the union to maintain earnings were clearly manifest during all the negotiations. The policy as a whole was based on the contention that workers are entitled to share in the benefits of increased productivity.\textsuperscript{44}

In the men's clothing industry in Chicago the wage principles involved when a machine is introduced is illustrated by a case heard before the Trade Board and the Board of Arbitration. In this case the employers contended that they could employ a group of workers at the machine who were less skilled and who should, therefore, receive a comparatively lower wage rate. Both the Trade Board and the Board of Arbitration ruled against it. This case involved the question of whether the shop trimmers or the joker-sewers should run a stamping machine which would perform the work that had been performed by both classes of workers until that time. A higher rate would be set if the trimmers were to perform the work than if the joker-sewers were to do it. The Trade Board ruled that a machine was replacing hand work in the trimming section, and therefore trimmers should man the machines. The company appealed from this decision on the grounds that the machine is a substitute for joker-sewing and that the company should not be required to use persons who do not know the work and receive high rates. The Board of Arbitration ruled that since most of the hand work had theretofore been done by trimmers, the work on the machines should go to them at trimmer's earnings. Thus, unlike other instances where such change frequently resulted in the payment of lower rates, the higher rate was established and the Board commented in the following way: "This decision does not give the company the greatest immediate gain from the new machine. The Chairman is of the opinion, however, that the company's interests are best served in the long run by avoiding the development of opposition to machinery and new methods."\textsuperscript{45}

Another arbitration case exemplifies a situation that involved the distribution of the benefits from increased productivity. The Children's Dressmakers' Union, Local 91 (New York City), of the International Ladies' Garment Workers Union, and a firm manufacturing house dresses and bathrobes could not agree on the division of the economies in production costs which resulted from the introduction of improved machinery. An investigation disclosed that hourly earnings of the workers who operated these machines had increased over 14 percent. The arbitrator decided

\textsuperscript{44}Ibid., pp. 256-64.
that the workers and the firm should share the increased earnings equally and stated:

"The arbitrator is of the opinion that the firm . . . . is entitled to the benefit of savings in cost resulting from increased production which was made possible by the investment of a large sum of money in new machinery. . . . It would seem but fair that the employer and the employees should share these benefits to an equal degree. A reduction of 7 per cent in the present piece rates would result in an increase of the workers' earnings of at least 7 per cent over their earnings before the introduction of the improved machinery and would effect a saving in cost of production to the employer of not less than 7 per cent."46

Thus, in this case, the workers' earnings were not merely maintained but the increased productivity was ruled to be a basis for a claim to increased earnings.

In another instance, which also occurred in New York, a direct tax was imposed on machinery for the benefit of the displaced workers. The important fact about this tax, relevant to this discussion, is that the whole question arose in connection with sharing the economies derived from increased productivity. The pressers at power-driven machines had been paid $15.00 weekly above the minimum scale fixed for hand pressers; machine pressing is more strenuous than hand pressing and turns out twice as much work. The employees demanded a 20-hour week for machine pressers in order to reemploy displaced hand pressers. The matter was turned over to an impartial chairman for arbitration. He ruled that the wage differential for machine pressers be reduced to $12.00 a week and that the difference of $3.00 plus an additional $5.00 a week per machine be paid by every employer using pressing machines into a pressers' unemployment fund to be administered by the union and "used for equitable distribution among unemployed pressers, members of the union."47

In 1932 a significant technological change was introduced in the cotton-garment industry—the straight-line system. Although the installation of this system requires in some instances introduction of new or additional machinery, its chief feature lies in the reorganization of the method of assembling a garment which eliminates a good deal of handling required under the old bundle system. To forestall rapid progress of the straight-line system among nonunion manufacturers, which would give them a competitive advantage over union shops, the Union Made Garment Manufacturers Association and the United Garment Workers Union agreed,

46Women's Wear Daily, April 15, 1932, p. 18.
in March 1937, to experiment with the new system of production by installing it in a single shop. During the month of April production under the straight-line system exceeded by 40 percent the quota set on the basis of the former output under the bundle system. It was agreed between management and labor in this case that the benefits resulting from this change be divided equally between the workers and manufacturers. Thus the manufacturers were not only pledged to maintain former earnings but to increase them when productivity was increased as a result of the change.\textsuperscript{48}

Although the cases cited thus far deal with isolated instances, they nevertheless illustrate one of the chief concerns of organized labor to evolve a policy with respect to technological change which aims at the protection and improvement of workers' earnings when changes are introduced. In some industries the very structure of the wage scale, evolved over a long period of time, takes into account increases in productivity caused by technological changes and secures for the workers participation in the benefits derived from such changes. The dual system of wage payments prevalent on the railroads for the train- and engine-service workers is so constructed that it is of special interest to the employees to speed up traffic. In the road-freight service, for example, 100 miles or less constitutes a day's work for the train- and engine-service crews. On an hourly basis the standard output is calculated at 123$\frac{1}{2}$ miles. When an engineer has performed his standard day's work, that is, 100 miles run in 8 hours or less, he receives the scheduled daily wages regardless of the number of hours actually consumed in making the trip. If the same 100-mile run consumes more than 8 hours, that is, if traffic conditions were such that it was impossible to average the standard 123$\frac{1}{2}$ miles per hour, the engineer receives pay for 100 miles on an hourly basis plus "time and a half" for all hours over 8. In the event that the engineer performs a longer run than 100 miles in 8 hours, or when he averages more than the standard 123$\frac{1}{2}$ miles per hour, he receives additional pay for every mile above 100 on a straight-time basis. Thus the train crews stand to benefit from increased speed in freight service because of technological changes either in the form of leisure when the standard day's work is completed in less than 8 hours or in the form of higher pay when the output per day exceeds the standard output. Further, by cutting the running time the train-service crews not only increase their leisure but also increase the availability of the tracks and engines for other service.\textsuperscript{49}


The rate schedules for train- and engine-service crews vary with the type of service performed. Freight service generally provides for somewhat higher rates per day than passenger service. Freight rates further vary in accordance with the type of service; local service commands a higher daily rate of pay than through freight service, because local service requires frequent stops and it is therefore more difficult to achieve the standard hourly output. Indeed, there are a whole series of extras for all sorts of variations in traffic conditions. The logic behind all of them seems to be the desire on the part of labor to remove all obstacles to the attainment of standard and above-standard output. Under certain conditions carriers tend to slow up traffic by excessively long trains or by combining all sorts of services which add to the difficulties of the crews.\footnote{\textit{ibid.}}

The wage policy of the United Mine Workers of America with respect to technological changes in coal mining is also based on the proposition that the machine should not be used to lower wage standards of either hand or machine miners. In fact, in the course of the application of this policy, first to the undercutting machines and later to the loading machines, the union insisted that the workers should share in the benefits of increased productivity which accompanies the introduction of machinery. As early as 1898, when the first national agreement was signed between the United Mine Workers and the mine operators of the Central Competitive Field (Illinois, Ohio, Indiana, and western Pennsylvania), the principle of "competitive equality" was introduced as a factor in the determination of wage rates. Although the unions and operators continually disagreed on the interpretation of "competitive equality", basically both parties desired to regulate competitive conditions so that, in the same market, no individual operator would be in a more favorable competitive position than any other because of differences in labor costs. It was recognized that the mechanization of a mine would put nonmechanized mines to a competitive disadvantage if lower labor costs stemming from increased productivity could be used by an operator to full competitive advantage. The miners argued that the difference in rates between machine-cutting and pick mining should be sufficiently large to allow the owner of the machine a "fair" return on his investment in the machine and yet sufficiently small to prevent the operators of machine mines from underselling their pick-mine competitors. According to the union, a "fair" return should pay for installation, depreciation, and upkeep and yield a "fair" rate of profit on investment. Exactly what this differential should amount to has been subject to collective bargaining whenever
agreements have been negotiated. The award of the Bituminous Coal Commission of 1920 specifically recognized the contention of the union that miners should share in the savings from new techniques when it stated that after a period of trial of a loading machine the "mine worker shall receive the equivalent of the contract rates for the class of work displaced plus a fair proportion of the labor-saving effected." Although there is no conclusive evidence to show whether or not earnings of machine miners have increased substantially over earnings of pick miners, it is generally believed than an effect of the differential has been to prevent a decrease in earnings of hand miners because of machine-mining competition. Demands that the wage negotiations in the mining industry should take into account increases in productivity because of mechanization are still part and parcel of the policy of the United Mine Workers of America. In 1937 it was agreed between the mine operators and the union to establish a Mechanized Mining Commission to study the problems which have arisen as a result of mechanization in coal mining and to provide data on changes in productivity which would serve as a basis for wage negotiations. According to the proceedings of the Mine Workers' convention of 1938, the preliminary findings of the commission indicate:

1. That there is a wide enough margin in cost reduction due to mechanical loading to allow participation in the benefits;
2. That a high day-rate is inadequate without a guaranteed number of working days per year, or guaranteed annual earnings.

In some instances the establishment of a differential wage on a new method of operation has served as a means of overcoming resistance to change. Officials of the Amalgamated Association of Street and Electric Railway Employes, for example, complained that although the delegates to the conventions press for action against one-man car operation, the workers "break their necks to get on the one-man car" because of the union's insistence on extra pay for such operators. In many instances the companies granted the differential of from 2 to 7 cents voluntarily in order to induce the workers to accept the one-man car. Thus the union was confronted with a struggle against the one-man car while the wage differential which it obtained in the course of that struggle actually encouraged the acceptance of the change on the part of many of its members.

In contrast with the policy of the United Mine Workers, where the wage differential on machine operation has served to prevent reduction of

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63Emerson P. Schmidt, Industrial Relations in Urban Transportation (Minneapolis, Minn.: University of Minnesota Press, 1937), pp. 244-7.
earnings of hand miners, competition from machine production has in some industries actually forced down the wages of the workers on the hand process. The glass-bottle blowers, for instance, accepted a reduction in the wages of hand workers when the Owens machine was being introduced. Until 1908 the union took the position that no reduction in wages could stop the machine. But the 1908-9 depression and the threatened disruption of collective bargaining in the industry caused the union to agree to a reduction in the wage rates of hand blowers on those lines of ware which could be made on the Owens machines in order to make it possible for smaller plants to stay in business. By 1914 wage reductions of from 20 to 38 percent were made. The policy was finally terminated because it had little effect on retarding the rate of displacement of hand blowers.  

The cigar makers, too, voluntarily reduced the wage rate on hand-bunched cigars in addition to prohibiting their members from working on the mold. This, however, was of little avail, except in the manufacture of high-priced cigars. Similar attempts to keep out machines were also made when the automatic cigar-making machines were introduced. For example, in 1928 the local union in Manchester, New Hampshire, by instituting a reduction of $3.00 per thousand cigars, persuaded the most important employer in the area not to introduce machinery. However, in 1931 this company also mechanized its plant after proposing to the union another reduction of $4.50 per thousand but refusing to guarantee that this reduction would stave off the introduction of machinery indefinitely.

In general, the evidence presented in this chapter points to a few basic conclusions relevant to the problem of maintaining earnings in the face of technological changes: (1) trade-unions are seeking participation in the determination of standards of output; (2) they are concerned with every change which affects the conditions under which agreed-upon rates are to be earned, and they are particularly on guard against shifting of the expenses of change to the workers; and (3) they strive to secure for the workers involved a greater measure of enjoyment of the benefits of increased productivity. As far as was possible, the discussion concerned itself primarily with those problems which have actually played an important role in collective-bargaining negotiations at various times. General trade-union claims with respect to the influence of technological changes on wages in the long run were not considered.

CHAPTER IV

REDUCTION IN HOURS OF WORK

Shorter work periods, per day and per week, have always been a major objective of organized labor, regardless of scarcity or abundance of employment opportunities. The various philosophies underlying the shorter-hour movements have been expounded along two general lines: that shorter hours are necessary in order to provide adequate leisure and relief from increasing intensity of labor and that shorter hours are an effective method of coping with unemployment, particularly unemployment occasioned by technological change. The arguments that trade-unionists have used in favor of shorter hours have been as varied as the range of virtues at any period of time. In the words of one trade-unionist:

To diminish the hours of toil is to increase the value of labor, is to multiply the number of laborers, is to add to the moral dignity and religious spirit of the times, is to change for the better the social state and character of the people, and this will be to strengthen the patriotism, the commercial credit, and the political institutions of the country.\(^1\)

Although shorter hours were to "multiply the number of laborers", the case for shorter hours in this statement is based primarily on moral grounds. When this statement was made (sometime in the 1860's) hours of labor were very long and the problem of securing more leisure time was of paramount importance. Trade-unionists argued that a reduction in hours of work, whether it is accompanied by increased wage rates or not, was desirable, since such reduction would make labor more scarce and, in consequence, wages would rise. This theory was expressed in a jingle which was current during the latter half of the nineteenth century:

Whether you work by the piece or work by the day,
Decreasing the hours increases the pay.\(^2\)

In later years, however, trade-union policy definitely insisted that a reduction in hours of work be associated with increases in hourly rates so that earnings for the shorter work period should equal the earnings prior to the reduction.

As it stands at present, the policy of organized labor with respect to shorter hours centers primarily around the need to increase jobs and to reduce unemployment. It embodies the argument that shorter hours

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without an increase in rates of pay to maintain purchasing power is of little value as a remedy for unemployment. In a pamphlet on the 30-hour week William Green outlined the position of the American Federation of Labor on this question in the following way:

The cure proposed by the American Federation of Labor is the adoption of a work-week which will absorb the unemployed, assuring wage-earners the maintenance of their incomes at previous levels. The proposal rests on two fundamental principles: First, that genuine recovery is impossible unless achieved through the normal channels of production; and, second, that industrial stability can be realized only through a broad stabilization of employment and the assurance of purchasing power adequate to initiate and sustain increased production of wealth.\(^5\)

The argument usually presented by opponents to such a general reduction of hours as the introduction of a 30-hour week has been that such a reduction would result in increased cost per unit of product and therefore increased prices; where demand for the products is elastic, this would result in decreased production and a decline in employment.\(^4\) Organized labor, on the other hand, counters this argument with the contention that in major manufacturing industries wages comprise a relatively small portion of the cost of production; an increase in wages would therefore make for a much less than proportionate increase in cost.

Of course, in practice this relatively small deterrent is apt to be even smaller, for much of it will be absorbed by the reduction in the per unit cost of production incident to the increase in the volume of output. \dots To say that the shortening of hours of work is bound to curtail production because of the inevitable price increases, is to apply medieval economics to the most highly developed industrial system in the world.

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In their efforts to achieve shorter hours, trade-unions have distinguished in recent years between reductions of hours of work in industry as a whole, such as the proposal for a 30-hour week in all manufacturing industries, and reductions in hours of work in individual industries where technological changes have resulted in economies in labor costs per unit of product. Whereas in their arguments for a general reduction in hours of work without a reduction in total earnings the problem of increased unit costs could not be avoided, where technological changes have resulted in economies in labor costs in specific industries labor has more and more come to look upon the shortening of working hours as one of the methods of sharing the economies achieved by technological changes. The resolution adopted at the 1938 convention of the International Lodge of the Amalgamated Association of Iron, Steel and Tin Workers, for instance, asked that the organization submit to Congress a proposal for legislation for a "six-hour day and a thirty-hour week for all industries in Interstate Commerce without any decrease in the established wages" only as an initial step to an investigation by Congress of the "curtailed job opportunities in specific industries through technical improvements" in order to obtain appropriate legislation "which will make the proper and fair adjustment between Capital and Labor of the benefits which are derived through such technological improvement." The reasons for this resolution, it was stated, are the beliefs that (1) because of technological improvements it is anticipated "that within the next three years only 20% or 25,000 of the 125,000 Steel Workers normally employed on the sheet bar, heavy plate, sheet and black plate mills will still have jobs" and (2) that "corporate management and invested capital have absorbed the predominant share of the benefits of such technological improvements with Labor's only share being greater unemployment." A similar resolution making practically the same points as to lack of workers' participation in the benefits derived from technological change was adopted at the 1938 convention of the United Mine Workers. These resolutions and others adopted by other unions indicate that where technological changes have affected employment opportunities trade-unions have sought to share in the benefits of reduced production cost which resulted from such changes through a reduction in hours of work without a reduction in earnings.

Trade-unions have used two main arguments with respect to the relationship between shorter hours and physical output: that shorter hours
reduce the weekly output per worker and therefore increase employment
and that owing to the shortening of hours of work total output will in-
crease (or certainly will not decline) because the average output per
hour during the reduced working hours will be greater than before. Both
may be illustrated by the experiences of the International Molders' Union.
In 1874 President Saffin of the Molders' Union advocated the 8-hour day
"in the hope that there will be a corresponding reduction in the amount
produced by each individually . . . until the demand for laborers equals
the supply." This position was adhered to with minor modifications un-
til 1897. In that year the union began to stress the second argument,
namely, that shorter hours would increase hourly productivity. 8

Similarly, in 1887 Samuel Gompers stated:

Much can be done by the trade unions to relieve the distress
caused by the displacement of labor by machinery. Within the
past few years the trades unions have sought and in many in-
stances secured a reduction in the hours of labor; . . .
"so long as there is one man who seeks employment and cannot
obtain it, the hours of labor are too long." 9

In 1910 he argued that

in proposing an eight-hour day the first question to be set-
tled is economic. It is whether the total output will warrant
the possible lessening of effective toil. In other words, can
society sustain itself and progress on eight hours' work? To
this query the industrial wage-workers reply: There has been
no diminution of output by reason of the reduction of hours
of labor from ten to eight; in not a few occupations the output
has not varied from the results of ten hours, the number of hu-
man workers remaining the same in proportion. Workers with the
aid of new machinery within the period of the present genera-
tion have in nearly all occupations vastly increased product. 10

There is, of course, no essential conflict between these two arguments.
They merely express the facts that (1) at any one time shorter working
hours usually mean that more workers are needed to turn out a given vol-
ume of product and (2) shorter work periods frequently result in a more
intensive utilization of labor. To illustrate the first point, the con-
clusions drawn in a series of studies by the National Research Project
of employment trends in specific industries indicate that in the recent
past reductions in hours of work, achieved through collective bargaining,
and the NRA codes have offset to a considerable extent losses in employ-
ment caused by increased productivity in the production of, for instance,

8 Frank T. Stockton, The International Molders Union of North America (Baltimore,
10 Ibid., pp. 100-1.
crushed stone, bituminous coal, and petroleum. As an illustration of the second point the resolution adopted at the International Ladies' Garment Workers' convention in May 1937 may be cited. It observed that

"the shorter work-week, as established by the thirty-five hour week, was promptly met by employers with new labor-saving devices, a more intense speed-up system of production and the establishment of the section system of production in factories where it never existed before, thus, tending to destroy the immediate gains which were obtained by the thirty-five hour week . . . ."12

The resolution, therefore, provides

"that immediately after this convention the incoming General Executive Board shall commence an active campaign in all markets where coats, suits and dresses are being produced . . . . to put into effect the thirty hour week, . . . . that in all future negotiations for the shorter work week there shall be no reduction in wages by reason thereof, and that particular attention be paid to safeguarding the interests of the workers in all cases where the introduction of new machinery may create undue hardship and additional unemployment."13

Although shorter hours usually provide more jobs at first, increased productivity eventually outstrips the gains made and the maintenance of a given number of jobs comes to depend, in most industries, upon a continuously expanding volume of production. This has been the experience throughout our industrial history and is likely to be the experience in the future. It is of interest to see how this dynamic process works in given instances.

Such studies as have been made of the effects of reduced hours on labor productivity frequently do not separate the effects of other managerial changes which are introduced simultaneously with the reduction in hours. Thus the change from three shifts of 8 hours each to four shifts of 6 hours each at the Kellogg Company, Battle Creek, Michigan, is sometimes cited as an example where the reduction in hours alone resulted in numerous economies. But in this instance the reduction of hours was accompanied by a series of other changes. Under the old plan of working


13 Ibid.
8-hour shifts the workers were given $\frac{1}{2}$ hour for lunch; under the 6-hour shifts the lunch period was eliminated. Two of the 8-hour shifts used to receive special bonuses because of the inconvenient hours of work. Under the four-shift system the bonuses were eliminated because "under such a schedule there are no inequalities." Besides these economies and the elimination of a cafeteria, the speed of operation was increased.

It used to be that toward the end of an 8-hour shift, the employees grew somewhat careless and waste increased. We had to adjust the speed of our processes and machines to this human factor. In a shorter working-day the workers are much more alert and efficient, knowing that the working time is short, and that it "won't be long now" until the whistle will blow. Because of this we were able to make a slight increase in the rate of our production lines that multiplies itself into a substantial increase in total production and gives us a greater return on our investment and machinery.\[14\]

There were also the economies from the reorganization of the working force to "rectify inequalities and fit all 'pegs' in appropriate 'holes.'"\[15\]

Another study is based on a change from one shift of 9 hours to two shifts of 6 hours each. When the two shifts of 6 hours were worked at full capacity the workers were employed for 36 instead of 49$\frac{1}{2}$ hours per week as formerly, whereas total operating hours of the plant were increased from 49$\frac{1}{2}$ to 72 per week. The economies reported in this case are indeed startling. In the first place, the half-hour lunch period was curtailed. Under the 6-hour shifts "each worker is given a 13-minute rest or lunch period." While formerly the machinery was shut down during the lunch period, under the new plan the reduced rest periods are "staggered so that other workers with the assistance of the supervisors can keep the machines in operation." But this was not all.

Some changes and economies have been put into effect. Formerly each operator tended one machine on the line, but under the two-shift system, with overhead belts and better delivery of material, each woman operates two. Under the old system there was one packer to a single line; under the new system each packs for one and one half lines. In addition to supervising, the foreladies now help to instruct new workers, a change that resulted in the elimination of an instructor in each department and a saving in foreladies' salaries when they were reduced to the status of supervisors and instructors.\[16\]

Under the new schedule the number of workers has been increased. It should also be noted that in this case the pay of the women workers was


\[15\]Ibid., p. 152.

on a straight hourly basis both before and after the change, and that with the exception of the foreladies who suffered a reduction in hourly rates, the rest received the same hourly rates of pay despite their increased productivity.\textsuperscript{17}

In 1920 the National Industrial Conference Board published the results of a survey of the effects of a workweek of 48 hours or less on output. The survey involved 436 plants and 373,536 workers. In 87.2 percent of the establishments studied a reduction to a workweek of 48 hours or less was accompanied by a decrease in weekly output per worker; in 8.7 percent of the plants the workers were able to maintain their output; in 4.1 percent output was increased. Of the establishments which showed a decreased weekly output, slightly more than two-fifths maintained the same hourly output; in about one-fifth of the establishments hourly output was increased sufficiently to offset at least partially the loss in working time; in one-sixth of these establishments there was a decrease in hourly as well as weekly output. Changes in management or equipment accompanied the changes in hours in a number of establishments and in a significant number of instances accounted for marked increases in output.\textsuperscript{18}

The character of the work, i. e., whether the process was largely handwork or machine work, for the most part determined whether or not it was possible for the worker to increase hourly output.

In those industries, such as cotton manufacturing, where highly automatic machine processes predominated, the output was limited almost entirely by the speed of the machines. In practically every case a reduction in hours was accompanied by a decrease in output. In those industries, however, where handwork predominated in the manufacturing processes, or where the skill and speed of the operative in handling the machines were the controlling factors - such as in the boot and shoe industry or in certain kinds of metal manufacturing, and in certain miscellaneous industries - it was possible to increase the hourly output of the workers, in some cases to the extent of entirely compensating for the loss in working time or even exceeding the previous weekly production.\textsuperscript{19}

In 1929 the National Industrial Conference Board published another study of the experiences of manufacturers with the 5-day week. Of 94 plants which had reduced their workweek from 5\(\frac{1}{2}\) or 6 days to 5 days, 6 reported a "substantial loss" in output per week and approximately one-quarter reported that output had declined in the "same proportion." Forty-six of the plants reported no appreciable change in output, and 18 companies

\textsuperscript{17}Ibid., p. 2.
\textsuperscript{18}Practical Experience With the Work Week of Forty-Eight Hours or Less (New York: National Industrial Conference Board, Dec. 1920), pp. 7-8, 10.
\textsuperscript{19}Ibid., pp. 9-10.
reported an increase. Nearly 70 percent of these companies have suffered no loss in total output per week and were obtaining greater output per hour than under the longer working schedule.  

The report attributed the increased efficiency to operating economies which resulted from the 5-day week as well as improvements in the morale of the working force. The following were stated to be the most important sources of economy: (1) Operating economies and savings in overhead were achieved because of the fact that power plants and machinery often had to be started, stopped, and cleaned for a short period of time on Saturdays; (2) absenteeism was reduced and punctuality of attendance improved; (3) Saturday mornings could be devoted to repair and overhauling of machinery; and (4) improvements in morale and health of workers were secured.  

In 1931 the president of E. R. Squibb and Sons reported that a reduction of 9 percent in the working time through the establishment of the 5-day week resulted in a proportionately smaller decrease in output because of increased productivity. 

In large operations where we can maintain an actual check-up, on efficiency it was found that production in the 5-day week amounted to $86\frac{1}{2}$ percent of the production heretofore attained in $5\frac{1}{2}$ days, or that 7.5 percent of the 9 percent cut in working time was picked up in the added efficiency of the 5-day week. Results obtained from the aggregate of a large number of smaller operations indicate that the 5-day week gave even better results.  

Although trade-unions have continually regarded the attainment of shorter hours as one of their major objectives, in recent years, primarily because of the persistence of severe unemployment, the arguments in favor of shorter hours have emphasized that unemployment is at least partly ascribable to technological change and that shorter hours provide one means of relieving it. These arguments have found expression in negotiations for agreements in individual industries where technological changes have been prominent as well as in proceedings of conventions.  

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CHAPTER V

SECURITY OF JOB TENURE

Regulation of job tenure - either in the form of provisions in collective agreements or of crystallized shop practices embodying the specific claims of workers on available work in a plant or even in a single occupation in a plant - has always been an important factor in collective-bargaining relations. Even under normal conditions, when jobs are readily available and technical conditions of operation are relatively stable, separation from a specific plant involves some loss of income. The magnitude of the loss varies with the period of unemployment, the degree of transferability of acquired skill and experience, and the geographical accessibility of other plants where similar categories of labor are employed. When technological changes take place, however, the value of experience and skill frequently disappears. In instances where such changes are accompanied by a decline in employment opportunities, loss of tenure in a plant may mean prolonged unemployment for some, complete separation from an industry for others, and the industrial scrap heap for the older workers. Furthermore, in the mass-production industries where large numbers of semiskilled and unskilled workers are employed, the experience acquired through years of service is often of a highly specialized character and is valuable only in a limited market, frequently in a single plant or a single department in a plant. Loss of tenure in such instances deprives workers of a valuable market for the employment of their experience.

Under conditions where employment and income vary to a considerable extent with the character of the tenure and the worker's claim on available work within a plant, it is only natural that insistence on the elimination of arbitrariness in matters of lay-off, dismissal, and re-employment should become important; this is particularly true when there is a scarcity of jobs. In recent years there has been a tendency in collective-bargaining relations to provide that security of job tenure should increase with the number of years of service.\(^1\) Trade-unions have

increasingly adopted the point of view that a worker's acquired experience represents an investment on his part in industry. To a considerable extent such policies have coincided with the requirements of industry, particularly where experience is an important factor. In some instances the workers' insistence on job-tenure security has been met by employers with guarantees of all-year-round employment or income. In a sense, most of these plans are similar in their effect to seniority provisions, since the guarantees of annual employment or income usually apply to the workers who have served with a company for a definite period of time. In general, the value of tenure to a worker has been recognized to an increasing extent by employers and in collective-bargaining relations. The payment of dismissal wages when permanent separation from a plant has become necessary is a concrete expression of this recognition. In the words of Mr. Eastman, Federal Coordinator of Transportation, "dismissal wages do not primarily compensate for unemployment but for the break of the valuable employment relation."² Although seniority, plans for annual employment and income guarantees, and dismissal compensation have not been applied exclusively in situations of technological change, they were applied in individual instances.

**Seniority and Its Modifications**

In the strictest sense, the principle of seniority as used in collective-bargaining relations provides that security of job tenure, as well as the chances of promotion, should increase with length of service in a given industrial unit. In actual application, however, various modifications of this strict definition have taken place. In general, the modifications most frequently encountered are the result of the employers' insistence that selection for lay-off and reemployment should be made primarily on the basis of the requirements for efficient plant operation.³ Moreover, so far as labor is concerned the insistence on seniority as the sole criterion of the right to the job tends to create a division in its ranks along lines that are frequently inimical to the proper functioning and growth of its organizations. In some instances, therefore, trade-unions have insisted on certain departures from the strict application of seniority in order to protect specific groups of workers, usually members of local committees or younger workers who would bear the major portion of unemployment if strict seniority were to prevail. The specific types of seniority provisions in collective agreements are the result of the

interaction of union demands, industry requirements, and management policies; and no matter how these provisions are phrased, they require much interpretation in actual operation. Aside from these modifications, which are a source of continual friction, the unit in which the seniority principle is to operate frequently provides further cause for disagreement. Where variations in skill requirements exist between departments, application of seniority on a plant-wide basis naturally implies a system of transfer of workers from department to department and requires a training program in order to enable workers to take the jobs of those displaced in the process of "bumping." All this, it is claimed by employers, results in inefficiency and added cost per unit of product. The tendency in such cases, particularly where highly skilled occupations are involved, is to restrict the operation of seniority to a single department and at times to a single occupation in a department.

As was stated above, the most frequent modifications are those which provide, in some form, that "ability", "merit", or "experience" shall constitute the first principle in selection for employment or promotion and that seniority shall prevail only where the ability of two or more workers is equal. Where such qualifications are introduced, room is left for many disputes, particularly where the test of "ability" is in the hands of management exclusively. Trade-unions have therefore insisted that they have a voice in rating the employees and that a definite, agreed-upon procedure be worked out for such rating. In some instances, particularly in the skilled occupations, successful performance for a period of years is usually accepted as proof of ability.

Some agreements provide that employees with exceptional ability or employees who, because of their specific skill or ability, are indispensable in a plant should be exempted from the application of seniority. Trade-unions frequently accede to such demands of employers, but as part of the bargain members of the shop committees are also placed on such exempt lists. Agreements incorporating such provisions are frequent in the automobile industry.

The management in each plant will prepare a separate list of employees, who in the judgment of the management should be retained or recalled to work, regardless of any other provisions, in order to facilitate tooling or rearrangement of the plant, the taking of inventory and the starting of production and similar situations. In the selection of this list, length of service shall be secondary to other qualifications, but should be given reasonable consideration.

4Mowatt, op. cit., pp. 1254-5.
The list of such employees will be maintained in the Employment Department and be available to the accredited representatives of employees. Any changes therein will be listed promptly.

The members of shop committees who have been designated to represent other employees shall be included in this list.\(^5\)

The detailed application and interpretation of the seniority principle in such instances are usually the result of negotiations on disputed cases. The most serious difficulties in the automobile industry have arisen over these "special ability" lists. In some plants, when the lists were discussed with union representatives and the numbers kept small, there was little friction. In others, where the union claimed that the number on the list was unreasonable and suspected the management of antunion purposes, there were frequent appeals to the higher officers of the union and corporations, and there was considerable unrest before the questions were settled.\(^6\)

Some of the agreements in the steel industry are of particular interest in the number of exemptions that are made before seniority is applied.

Seniority.—It is understood and agreed, however, that in all cases of promotion, or increase or decrease of forces, the following factors shall be considered, and where (b), (c), (d), and (e), are relatively equal, length of continuous service shall govern. (a) Length of continuous service; (b) knowledge, training, ability, skill, and efficiency; (c) physical fitness; (d) family status—number of dependents, etc.; (e) place of residence.\(^7\)

The various modifications of the seniority principle result in making its application extremely difficult, particularly when lay-offs are involved. Grievances based on the contention that the seniority principle had been violated constituted the largest group of all grievances in the steel industry in 1937 when many lay-offs were made. One author states:

Most mills were without scientific merit ratings. Many of them, however, gave very thorough consideration to the making of the layoff lists. In general, seniority ruled, but in special cases the weight to be given skill and efficiency, under the contract, was a matter for negotiation. The result was, on the whole, a more careful and impartial selection for layoffs than had existed before. Other cases occurred on scattered subjects—a few appeals from discharge, occasional cases on

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\(^5\) Agreements Entered Into Between International Union, United Automobile Workers of America and Employers in the Automobile and Other Industries (International Union, United Automobile Workers of America, May 1937), Vol. One, p. 90.


\(^7\) Howatt, op. cit., p. 1285.
overtime and the work-week and working conditions, accounting for most of them. In several mills the question of the seniority status of foremen who were demoted to the ranks because of the layoffs was a serious issue—one not yet satisfactorily settled.\(^8\)

In some instances, the desire of trade-unions to distribute the effects of layoffs more equally among all workers attached to a plant resulted in a combination of some form of distribution of available work with seniority. For example, the agreement between the Firestone Tire & Rubber Company and the United Rubber Workers of America provides that "before laying off in any department the hours shall be reduced to twenty-four (24) hours per week for a period of eight (8) consecutive weeks."\(^9\) At times unions have gone out on strike in order to enforce such provisions. In October 1938 the United Automobile Workers, claiming that its seniority agreement had been violated, called a strike in Chrysler's Plymouth plant. The men insisted that the workweek should remain at 32 hours until all persons on the seniority lists should have been reemployed when the usual seasonal pick-up in activity began. At that time the company was about to increase the workweek to 37 hours. According to the agreement, the Chrysler Company was to dismiss probationary employees first; then the hours were to be reduced to 32 per week; finally, when further reduction in the labor force was necessary, the layoffs were to be made on a seniority basis. The union contended that in reemployment the reverse order was to be followed. Men were to be reemployed on the basis of seniority and work 32 hours per week until the seniority list was exhausted, and then the hours were to be increased.\(^10\) The union was anxious to protect the eligibility of the workers for reemployment, because extended unemployment might mean loss of status and eventual elimination from the industry.

While some form of sharing the work has been frequently used as a modification of seniority, it has a broader function, and some unions have used various share-the-work plans as a means of retaining tenure for the workers. In the needle trades, for instance, hiring is done through the unions, usually from lists established by the unions. When a worker is sent to a shop he serves a specified trial period. Once the trial period is over he becomes a permanent employee of the shop and is thereby entitled to share with all the other workers whatever work is available.

\(^{8}\) C. Brown, op. cit., p. 41. This was the conclusion reached from a study in 1937 of three steel corporations employing about 100,000 men in nine plants. The study was based on interviews with both management and union officials.

\(^{9}\) Agreement Between the Firestone Tire & Rubber Company and the United Rubber Workers of America, Local No. 7 (Akron, Ohio, Apr. 26, 1937), p. 3.

\(^{10}\) Auto Union Cools on 32-Hour Week, The New York Times, October 20, 1938, p. 2.
A worker's loss of status in a shop may mean no work at all for him for an entire season and sometimes permanently when employment opportunities are on the decline. His attachment to a shop, therefore, established his right to share whatever work might be available and at times his right to work at all.

In coal mining there are no seniority provisions in the national agreements; however, seniority is practiced in various localities. The extent to which seniority is an important factor in employment relations in the coal industry is determined by custom. In the Illinois district it was expected that laid-off mine employees would be reinstated in their former positions when operations were resumed. The agreement of the United Mine Workers for Illinois provides, however, for sharing the work when miners lose their jobs because of mechanization:

In any mechanized shaft or strip mine where men belonging to the Local affected have been thrown out of work due to such mechanization, the men so affected shall be entitled to share the work equally up to the point where the further sharing of work would impair the efficiency of operation or the quality of product.

The operator shall keep and post in a conspicuous place a continuous turn sheet of all employees within their respective classifications. The employees shall be notified of their turns in accordance with such turn sheet by a member of the local union, designated for that purpose by the local union and without cost to the operator.

The foregoing is designed to secure to the miner the greatest practicable division of work under present existing conditions, while protecting the operator from any abuse, and should disputes arise as to the division of work hereunder they shall be taken up jointly for determination.

As a form of tenure security, sharing the work has its limitations. Where the reduction in the volume of work is of short duration sharing the work aids the worker in maintaining his status in a shop. Where the decline in employment opportunities is of a long-run nature, sharing the work may mean very low earnings and, in effect, the maintenance of a larger labor supply than is necessary.

Some agreements provide for a trial period for new employees during which the workers must prove their ability to perform the duties of the job. While they are on trial, seniority does not apply; after the probationary period is completed, seniority begins from the day of hire.

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12Wage Agreement and Working Conditions Between the Illinois Coal Operators Association and the International Union, United Mine Workers of America and District No. 12, United Mine Workers of America (United Mine Workers of America and Illinois Coal Operators Association, Apr. 1, 1937), p. 33.
Other agreements provide for a classification of "temporary" employees to whom seniority does not apply. When the "temporary" workers acquire a "permanent" status, however, they are sometimes given credit for the entire period of employment.\textsuperscript{13} Classifications of "temporary" employees were created in a number of instances where technological changes were introduced and attempts were made to regulate the rate of introduction. Such employees were usually informed when they were hired that their employment was of a temporary nature and that they would be the first to lose their jobs. In such instances the employees with "permanent" status enjoy a greater degree of tenure security.

\textbf{Seniority and the Older Worker}

Usually years of service and accumulated experience coincide to the benefit of the worker, but at times (especially in cases of technological change when the value of experience disappears) long attachment to a plant tends rather to become related to the disadvantages of advancing age. Loss of tenure for an older worker frequently means extreme difficulty in finding other employment.\textsuperscript{14} In the building trades, where plants in the ordinary sense of the word do not exist and where attachment to an employer is usually of a casual nature, special provisions are frequently made in collective agreements for the employment of definite proportions of older to younger men. An agreement of the Painters' District Council No. 9, of New York City, provides that an employer employing 10 journey-men but less than 20 shall employ at least 1 journeyman aged 55 years or over; those employing 20 or more are required to hire at least 2 such older workers. Similarly the Plasterers' Local No. 60, of New York City, has an agreement which requires the employment of not fewer than 10 percent of "superannuated" men wherever more than 10 journeymen plasterers are at work. The Bricklayers' Local No. 1, of Philadelphia, Pa., has an agreement which requires that one man in six be at least 55 years old where less than eight men are employed and that one in eight be this age where eight or more are employed.\textsuperscript{15} The New York Electrical Contractors Association and Local No. 3 of the International Brotherhood of Electrical Workers signed an agreement on December 13, 1939, which requires

\textsuperscript{13}\textsuperscript{13}Mowatt, op. cit., p. 1251.

\textsuperscript{14}\textsuperscript{14}The Committee on Employment Problems of Older Workers appointed by the United States Secretary of Labor reported in March 1939 that "older workers have an advantage in seniority rules and general personnel policy, on the whole, but when they are once displaced by lay-offs, shut-downs, mergers, technological progress, or other impersonal causes, it is very difficult for them to secure reemployment." See "Employment Problems of Older Workers," Monthly Labor Review Vol. 49, No. 5 (May 1939), p. 1077. See also WPA National Research Project reports in the series "Studies of the Effects of Industrial Change on Labor Markets" and "Philadelphia Labor Market Studies."

\textsuperscript{15}\textsuperscript{15}Protecting Older Workers," The Hosier Worker, April 1, 1938, p. 3.
the employment of 1 union member past the age of 55 in every group of 10 workers.  

In industries where the seniority principle has been in operation over a long period of time it is possible to summarize some of the influences of seniority in tenure on employment and income of older workers. The railroad industry provides such an example. The years of decline in employment opportunities on the railroads caused by technological improvements and reduction in the volume of traffic resulted in demotion among the train- and engine-service employees from higher to lower occupational groupings on the basis of seniority; many of the younger men with least seniority were completely eliminated. One survey shows the following results:

(a) On the average, conductors in employment are today at least 50 years of age and have 25 years of railway service. Young conductors are virtually non-existent.

(b) From 75 to 99 per cent of trainmen are "broken" conductors. Trainmen of 15 to 25 years seniority are already on furlough or discharged. Practically every trainmen today has at least 20 years seniority.

(c) The great majority of white firemen were formerly engineers.

(d) Men of nearly 50 years seniority are on "extra boards."  

The effects of the depression upon the earnings of junior employees were the subject of a study made by the Federal Coordinator of Transportation. The study states:

The operation of the seniority system has resulted in a measure of protection against loss of earnings of long service employees and has concentrated the wage losses due to the depression upon junior workers. This tendency was found to be most marked in the train service group. In 1933 employees in this group with 25 or more years of service received more than twice as much as those with 9 years of service or less. . . . . In the same year train and engine men with short periods of service did not earn much more on the average than maintenance employees and laborers, but the large number of depression furloughs greatly reduced the relative number of these short service workers in railroad employment.  

The influence of seniority on earnings is shown in the report by comparing the differences in earnings of workers with different service records in the major railroad occupational groupings. Thus, train- and

engine-service employees with records of less than 10 years of service had their earnings reduced by about one-half from 1929 to 1933; those with service records of 25 to 29 years lost on the average only 25 percent of their earnings; the group with longest service records (30 years or more) lost only 17 percent on the average. A similar spread in earnings between the employees with long and short service records was found among station agents, telegraphers, and dispatchers: those with less than 10 years of service suffered a reduction of about one-third from 1929 to 1933; the workers with service records of 20 years or more in the same occupational classes lost only 14 percent of their earnings. Although the differences were not so prominent between the younger and older maintenance employees, they were significant: those with records of less than 10 years of service had their earnings reduced from 40 to 45 percent; the group with 25 to 29 years of service lost only 28 percent; those with 30 or more years of service earned 26 percent less. The average length of service of all railroad employees was found to have doubled between 1925 and 1933. 19

These findings show that in the railroad service the position of older workers is much more favorable than that of younger workers. This is due to a large extent to the operation of seniority which is adhered to more strictly in this industry than in any other. These facts have been generally recognized by railroad labor, and vigorous efforts were made for an old-age retirement system to supplement the seniority arrangements. At the hearings before a Congressional committee a representative of the employees summed up the position of the railroad employees in the following way:

> Without a satisfactory retirement system the aged employees are often continued in the service when it would be in the interest of economical operation to retire and pay them pensions, and without making this compulsory on all the very employees who will be most in need of the pension on retirement will not have taken advantage of the benefits of the retirement system.

> If it be good business judgment to replace worn-out and depreciated equipment with new and efficient equipment, it is equally in the interest of efficient and economical operation to retire employees worn out through long years of service to the industry and to bring into the industry an equal proportion of younger and more active employees. 20

19 Ibid., p. 17.
20 73d Cong., 2d sess., June 8, 1934, p. 17.
The International Typographical Union was also among the first organizations to apply the "priority law" in regulating job tenure. In 1926 one firm, which had many older men in its plant, decided that it would take some drastic steps in order to reorganize its working force with the objective of eliminating the older men from the composing room. The firm practically closed the department for several months and sent most of its composition work to trade plants. According to union rules, a man laid off for lack of work may protect his tenure by leaving his union card with the employer. Once he takes his card and goes to work elsewhere, he loses his priority in the first plant. The employer hoped that the compositors would find work elsewhere and would withdraw their cards. The union permitted the men to work elsewhere without cards and insisted that the men be reemployed in order of priority when the firm again tried to build up a working force, but the issue was later dropped and the firm accomplished its purpose.21

The degree of security of job tenure that a worker may achieve under the seniority principle depends on the types of seniority provisions that are included in the agreements as well as on the interpretations placed on these provisions by the review machinery established under collective bargaining. The various modifications that are made in different agreements require the establishment of objective and jointly determined standards for rating workers. To the extent that seniority provides against arbitrary dismissals, it provides a greater measure of job-tenure security. The advantages of the seniority principle from a trade-union point of view have been summarized as follows by Morris Field, educational director of the United Automobile Workers:

"It is one of the major clauses in any agreement because it protects the workers’ jobs and gives them security. . . ."

"Today if a worker hears that a lay off is to take place in his department, he does not have to impress the foreman by breaking speed records in the hope that he will not be laid off, as he knows that he will be laid off in his turn according to seniority. . . . When he is laid off, he does not have to go to the plant every day in the hope that he will be called back, or worry that the company has forgotten him, as he knows that . . . he will be called back to work according to his seniority.

"As the worker grows old, he does not have to worry any longer that when the foreman looks at him he may be discharged because of his age, as he also knows that the contract protects him."22

22J. D. Brown, op. cit., p. 18.
Although the principle of seniority eliminates to a considerable extent arbitrariness in lay-off and reemployment and assures a greater degree of job tenure to those who have been attached to a plant for a longer period of time, it by no means provides any promise that such attachment will result in any definite employment or income security. In fact, where technological changes are accompanied by a reduction in the number of jobs, those with least seniority may find little consolation in the fact that their names are at the bottom of a seniority roster. The realization of the fact that job tenure has value only when it provides some actual advantage in the form of income has prompted some employers to combine some form of annual employment and income guarantees with preferred tenure. Such guarantees have been adopted primarily in establishments where some degree of stabilization of production was possible. Some annual-employment and income-guarantee plans were adopted through collective bargaining; others were instituted as part of company personnel policy.

The oldest of the union plans, adopted in the wallpaper industry in 1894, provided for a guarantee of full-time employment for 11 months of the year. In 1892 the National Wall Paper Company was formed, acquiring control over most of the manufacturing industry. As a result of the reorganization, operations were suspended in 1894 for a longer period than usual in order to effect some economies. Since the company had no stock on hand, it was forced to yield to the machine printers and color mixers who refused to begin work unless their demands for annual employment and annual income guarantees were satisfied.

Although the guarantees of employment and income on an annual basis were successively modified, the employers continued to bear the responsibility for a minimum number of weeks of work or income. At first the agreement provided for a guarantee of 52 weeks of work or full-time pay; later the guarantee was reduced to 50 weeks. In 1912 a basic change in the guarantee took place. The period of guaranteed full-time work or full pay was reduced to 45 weeks, but when a worker was unemployed he was entitled to an additional 5 weeks per year with half pay. In 1929 these provisions were further modified and provided only 40 weeks of guaranteed employment or full-time pay without other benefits in case of unemployment.
SECURITY OF JOB TENURE

There was no general fund established in the industry to pay for the time lost; each employer was responsible for the time lost in his own establishment. There was a requirement that every machine printer or color mixer added to the force after the beginning of the year should receive wages for the contract year to date, unless he was taken on to man newly installed machinery. This provision was adopted in order to bring all firms up to the standards of those who started operations first and set the styles. It resulted in the employment of a normal force which worked a great deal of overtime to meet unusual demands. In 1929 the retroactive wage clause was abandoned.26

Another important union plan was the result of an agreement in 1921 between employers in the cloak-and-suit industry of Cleveland and the International Ladies' Garment Workers Union. The union had been attempting to abolish the prevailing piece-work system and to substitute straight-time payments. The employers would agree to time work only on the conditions that performance standards be set up with the aid of time studies and other tests and that weekly wage rates be fixed on that basis. The union feared that this would so speed up output that seasons would be shortened and that there would be less employment. To allay this apprehension, the employers agreed to guarantee minimum annual employment.26

This agreement, known as the "Cleveland Plan", provided that workers regularly attached to a shop were to receive 41 weeks of work each year. If an employer fell short of this guarantee, the workers involved were entitled to two-thirds of their weekly wages during each week of unemployment provided that sufficient funds were available for that purpose, for an employer was required to put into the fund a sum equal to $\frac{1}{2}$ percent of his direct labor costs during the guaranteed period. Once this fund was exhausted, he bore no further responsibility.27 In 1922 the employers applied for a general decrease in wages and gained the option of either maintaining the status quo or reducing wages by 10 percent if the liability to the guarantee fund was raised to 25 percent of the pay roll.28

In the meat-packing industry, the George A. Hormel plan was first established by the company on a voluntary basis. However, the company was subsequently unionized by the United Packing House Workers and the plan

26 Ibid., p. 168.
27 Ibid., p. 377.
was incorporated into the agreement. According to this plan, the expected volume of business for each department is estimated at the beginning of each year. The labor cost for this estimated volume of work is budgeted into 52 weekly allotments for the number of workers which, as past experience has indicated, would be required to do the work. The workweek is figured at 40 hours.

In a sense, the security involved in this plan is also intended to stimulate greater output. If at the end of the year a department has produced less than its budgeted volume, then the members of the department become indebted to produce that much work at the first opportunity. Bonuses are paid if production is exceeded. In 1936 the workers completed their allotted output with much saving in time:

... the dry sausage department completed its 5,280,000-pound budget in thirty-nine weeks. Theoretically the workers could have taken the next thirteen weeks off, with nothing to do but... collect pay checks. Instead the company persuaded them to work the remaining thirteen weeks for nine extra pay checks as a bonus. And in all likelihood the department budget of production will be raised next year.

Charges of speed-up raised a good deal of discussion. The National Industrial Conference Board had this to say about the plan:

Another problem arising out of the operation of the straight-time plan was that each department did its work faster, because the employees had a certain amount of work to do, rather than a certain amount of time to put in. For this reason, there was a natural tendency to put more work on a department. Some of the early agitators charged that the straight-time plan was a speed-up, and, finding that there was some justification for this claim, the company incorporated a bonus clause in the straight-time arrangement.

Since the unionization of the plant the union has been active in settling grievances arising out of the operation of the plan, particularly with respect to work assignments.

A drawback, from the standpoint of the supervisory group, is that the grievance committee representatives have been zealous at all times in holding the company to the letter of the agreement in respect to the work expected of them.

The Proctor and Gamble plan guarantees 48 weeks of employment each year to all regular employees having a minimum of 2 years of service with the company. This plan has been in effect, with certain modifications, since

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32 Ibid., p. 7.
1923. The most important modifications have been with respect to the weekly hours of work; the "standard" is determined by the company. In 1923 the standard workweek was 50 hours; in 1932 it was reduced to 45 hours; in 1933 a further reduction was made to a 40-hour, 5-day week. Another important modification was the extension of the length-of-service requirement for participation from 6 months to the 2 years now in effect.33

This plan does not offer full security. In the first place, since 2 years of service are needed, the temporary or new employee receives no guarantee at all. The company also reserves the right to limit the hours of work to 75 percent of the established workweek, the right to discharge any employee at any time, and, finally, "the unqualified right, to be exercised in its sole discretion, to withdraw this guaranty at any of its factories, or to terminate or to modify this guaranty at any time."34 There was, indeed, a period in 1933 when three Proctor and Gamble factories shut down for a number of weeks and temporarily invalidated the employment guarantee.35

The plan of the Nunn-Bush Shoe Company, introduced in 1935, guarantees to permanent employees a weekly pay check throughout the year. The magnitude of the check is calculated on the basis of two estimates: (1) the individual annual earnings of each employee and (2) the group salary fund which provides the weekly pay rolls for all employers who participate in the plan. The individual annual earnings of each employee are determined by multiplying his hourly rates by the estimated number of hours that the factory is expected to work in the year. The group salary fund is set up by the company at the start of each year and is based on the estimated labor cost of the expected yearly volume of business. This fund acts as a check on the individual salary estimates. If the total weekly salaries amount to more than the labor-cost percentage of the current weekly sales and there is a likelihood that this relationship will continue to prevail so that it will be impossible to balance the fund at the end of the year, the weekly salary checks are reduced. If, on the other hand, there is a surplus at the end of the year, the sum is distributed among the participating employees.36

All workers who were on the permanent employment list when the plan went into effect participate in its benefits; temporary employees, consisting of about 5 percent of the total working force, are not eligible.

33 Annual Wage and Guaranteed Employment Plans, pp. 52-3.
34 Ibid., pp. 53-4.
35 Annual Wage and Guaranteed Employment Plans, pp. 54.
36 Annual Wage and Guaranteed Employment Plans, pp. 54.
H. L. Nunn, president of the company, had this to say of temporary employees:

At the time we entered into this contract with our workers, the employees who were then with the company were designated as 'Class A' members. New employees were 'Class B' members. The contract was not intended to cover the 'Class B' group until the 'A' workers and the management agreed that existing conditions and the service records of the 'B' workers had made it safe and desirable to absorb them as 'Class A' members. ... The tenure of 'Class B' workers was indefinite at the time the first contract was made, and still is to a certain extent. Under the last contract the workers and the management agreed that after a 'Class B' member had been with the company for two years he would participate in all the benefits of the contract except security of employment.37

Thus the permanent employees achieve a measure of tenure security and share in the fortunes of general business conditions, whereas the temporary employees absorb most of the insecurity.

The General Motors Corporation recently announced that it has set up two plans, an Income Security Plan for all employees with 5 years of service and a Lay-off Benefit Plan for all employees with more than 2 years but less than 5 years of service. The Income Security Plan will assure a weekly pay check of 60 percent of the standard weekly earnings based on a 40-hour week. When the employee's pay falls below the 60-percent minimum, the company will advance sufficient funds to bring the total up to the guaranteed level. This advance is payable in work only and without interest. When weekly earnings are over 60 percent, the employee will repay the advance at the rate of one-half the excess. The Lay-off Benefit Plan will guarantee eligible employees 40 percent of the standard weekly earnings, except that the total advance is limited to earnings for 72 hours.38

In most instances the plans which guarantee employment or income on an annual basis guarantee only a limited degree of tenure, and that only to portions of the working force. Temporary employees usually do not participate in whatever benefits the plans provide. The conditions under which the status of an employee may be changed from "temporary" to "permanent" vary, and in some instances as much as 2 years of service are required. One feature which distinguishes the plans under collective agreements from voluntary ones is the fact that the trade-unions have a voice in the formulation of the plans and the conditions of their

38 1939 Employe Benefit Plans (General Motors Corporation, Nov. 1938), pp. 1-6.
operation. Most of the voluntary plans may be amended or abandoned at the discretion of the employers.

**DISMISSAL COMPENSATION**

As has already been pointed out, tenure in itself does not necessarily provide any employment or income; it provides a valuable market for a worker's experience and skill as long as there is enough work. When technological changes over a period of time result in a situation where the number of attached workers is far greater than would be needed in the plant, the workers may share the work as long as sharing still provides some sizable income and in instances where the lack of sufficient work for all is of a temporary nature. When underemployment becomes chronic, however, the labor force frequently has to be reduced. Although seniority may serve as a basis for selection for dismissal in such instances, those who lose their tenure frequently face elimination from the industry. Trade-unions have therefore increasingly sought to negotiate agreements which would provide for dismissal compensation. In many instances employers have voluntarily adopted dismissal-compensation plans. The term "dismissal compensation" includes: (1) Payments in lieu of notice of termination of employment; (2) informal plans which, at the discretion of the employer, provide that employees may receive a bonus when their services are no longer required; and (3) formal plans, which include stipulations that employees in designated categories should receive payment in the event of specified reasons for dismissal. From the viewpoint of this study, the formal plans are the most significant, for this category includes the plans which specifically provide for compensation in cases of dismissals resulting from technological changes and those negotiated through collective bargaining.

**Extent of Utilization and Coverage**

Few plans are specifically designed to operate in cases of technological displacement. Those plans which cover all cases of dismissal naturally include technological displacement; those which provide for payments in special situations, such as shut-downs of plants or departments, are frequently created specifically to provide for dismissal resulting from technological change.

Dismissal-compensation plans were first adopted in the early twenties, but it was not until the depression of 1929-32 that a significant growth in their number could be observed. A survey made in 1932 by the Industrial Relations Section of Princeton University revealed that "well over half the companies visited which have definite plans formulated them
within the last two years."^{39} Another study made by the United States Bureau of Labor Statistics in 1934 indicates that up to April of that year 221 plans had been in use in the United States, including plans of companies making informal payments and payments in lieu of notice. Of the 182 plans for which complete information was available, only 98 were formal plans.^{40} To some extent, however, figures on the number of dismissal-wage plans underestimate the extent to which workers are afforded this form of compensation; as is the case with other forms of employee welfare, such plans are most commonly found among the larger companies. Over 80 percent of the companies with formal plans studied by the Bureau of Labor Statistics employed 1,000 persons or more.^{41} On the other hand, any attempt at evaluation of the extent of coverage requires further qualification, since only a portion of the employees in most concerns are eligible for such compensation. Dismissal-wage plans, moreover, were used more often by companies in nonmanufacturing industries which "deal rather directly with the public, and so are especially desirous of maintaining good public relations . . . ."^{42} Few plans were found to have any age requirements for eligibility but since many firms have long-service requirements, the effect in such instances is to pay compensation mainly to older workers. The minimum-service requirement varies greatly from plant to plant. The study indicates that in general long-service employees are more likely to receive compensation and that the salaried employees with short service records are more likely to receive compensation than the wage earners with equal service records.^{43}

Selected Cases

One of the first companies to adopt dismissal compensation for manual workers was the Delaware and Hudson Railroad Company in 1922. In a sense, however, this was not a genuine dismissal-compensation plan because the requirement for eligibility stipulated previous contribution on the part of the workers to two out of three company insurance plans. The plan provided for a payment of $15.00 per week to discharged workers for a maximum period of 6 weeks, providing that they were unemployed during this period and their annual earnings had been over $1,000; payments of

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^{41} Ibid., p. 1068.

^{42} Ibid., pp. 1068, 1070.

^{43} Ibid., pp. 1070-1.
$10.00 per week were provided when the annual earnings had been less. Since that time several hundred employees have been so compensated.\textsuperscript{44}

An important collective-bargaining agreement providing for dismissal compensation was concluded in the railroad industry in 1936. This agreement was largely the result of the pressure of the railroad unions in hearings before the Interstate Commerce Commission, before various legislative bodies, and, with respect to consolidations, in the field of collective bargaining. Prior to 1928 railroad labor seems to have shown little organized opposition to railroad consolidations. When the Interstate Commerce Commission announced a plan in 1929 for consolidating the railroads into 21 systems, the Railway Labor Executives Association demanded that the commission make some provision to safeguard the rights of employees. But no concrete results were achieved until the passage of the Emergency Railroad Transportation Act in 1933.

Largely as a result of the activities of the Railway Labor Executives Association, provisions in the act were included specifically to safeguard the workers' tenure. The act did not prohibit consolidations, nor was there any provision for dismissal compensation. But the act prohibits the carriers from reducing their personnel below the level of employment during the month of May 1933, less a deduction of not more than 5 percent annually to allow for normal attrition due to death, retirement, and resignation. The act was passed for 1 year but was twice extended. As the date for its final expiration drew near in 1936, the unions proposed to make an agreement which would continue substantially the protective provisions of the act. An agreement providing for dismissal compensation was concluded in May 1936.\textsuperscript{45} The general theory which was developed in favor of dismissal compensation is summed up in a report of the Federal Coordinator of Transportation. The report states:

One justification for assigning the cost of dismissal compensation to the employing industry, where displacement is due to labor-saving improvements, is the fact that such change will result in economies and increased earnings. There is little reason for making the employee . . . . or the taxpayer . . . . bear all of the cost of labor displacement involved in such improvement. Dismissal compensation places a part of the social cost of lost employment upon the employing corporation, just as the cost of obsolete equipment must be met out of the earnings which improved facilities may augment.\textsuperscript{46}

\textsuperscript{46}Report of the Federal Coordinator of Transportation, 1934, p. 63.
The agreement of 1936 provides for a dismissal wage in cases of the coordination of facilities of two or more carriers but does not apply to consolidations where only one carrier is involved. A summary of the provisions of the act follows:

1. Each carrier who contemplates a "coordination" must give at least 90 days' written notice to the employees affected; within 10 days of receipt of such notice a conference between representatives of the employees and the railroads interested in such a change must be set which is to begin within 30 days of the date of receipt of the notice.

2. For a period of 5 years from the date of the coordination, any employee who has been transferred to a position which commands lower earnings shall receive the difference in earnings between the second and the first position. If in the course of the 5-year period, however, there becomes available a third position which commands higher earnings than the second position but lower than the first and if the employee does not want to accept it (providing the third position does not require a change of residence and the employee is entitled to it under the seniority rules of the working agreement), he shall then be considered as occupying the third position; that is, he shall receive, in addition to his salary at the second position, the difference between the first and the third instead of the difference between the first and the second positions.

3. Employees who lose their positions as a result of a coordination of facilities shall receive a "coordination allowance"; this is to be based on length of service and is to be equal to 60 percent of the average monthly compensation of the position held by an employee for the 12 months prior to the coordination. It shall be paid for a period of from 6 months to 60 months according to the employee's length of service. Employees with less than 1 year of service shall receive a lump sum equivalent to 60 days' pay at the straight-time daily rate of the position last held at the time of the coordination.

4. Employees who elect to resign because they prefer an allowance to all other benefits associated with tenure shall receive a lump sum, and this sum is to be equivalent to from 3 to 12 months' wages, according to length of service.

5. An employee is to be reimbursed for all losses incurred because of moving to his new position, such as traveling expenses for himself, his family, and personal effects and losses incurred because of an unexpired lease or sale of home of other real estate.

6. Disputes arising as a result of this agreement are to be submitted to arbitration.47
Aside from the benefits derived by labor as a result of this agreement, the importance of its provisions goes beyond the immediate issue. In the first place it definitely dissociates unemployment due to certain types of technological changes from unemployment as a whole. In the second place it implies a definite social attitude toward the distribution of the benefits derived from technological improvements and places the responsibility for bearing the cost of such unemployment at least partly on industry itself.

Another well-known example of dismissal compensation is that paid by the Hart, Schaffner, and Marx Company. After 1921 there was a decrease in the demand for high-priced men's clothing which affected the Chicago shops particularly. Most of them began to manufacture low-priced goods more amenable to machine production and standardization of operations. Despite the provisions for job security in the industry, by 1926 the Hart, Schaffner, and Marx cutters were losing, on the average, 1 day in 3. The firm wanted to dismiss the surplus cutters. Finally, by agreement with the union, 236 were discharged and given dismissal compensation of $500 each on condition that they give up all claim on tenure with the firm. Many of those dismissed volunteered to go. Of the total amount disbursed, $25,000 came from the unemployment-insurance fund, maintained jointly by the firm and the union; the rest was paid by the company.48

During July and August, 1936, agreements covering about 1,200 ferryboat employees were signed between three unions and four companies operating ferryboats in the San Francisco Bay area, providing for dismissal compensation for loss of jobs due to the completion of the San Francisco-Oakland and Golden Gate Bridges. According to these agreements (which were substantially identical) the employer must provide either comparable employment or dismissal wages.49

The United States Rubber Company adopted a plan which covers all cases of long-service employees dismissed because of reorganization, the closing of a plant, or the discontinuance of a process. In 1928 it closed its "old ill-adapted" New Haven plant. Within a year its Hartford factory and two more of its Boston plants were shut down. The procedure adopted in 1928 served as a model for the other shut-downs: First, 1 month's notice was given that the plant was to close operations; second, efforts were made to secure other jobs for the workers; and third, the

remaining — all long-service — employees were given 1 week's pay for each year of service. In the four plants mentioned above, 3,200 were displaced, 509 of whom received dismissal compensation varying from $104 to $2,088.50

Results

Two studies have been made which permit some comment on the practice of the dismissal wage as a method of alleviating the hardships of unemployment. In 1928 R. J. Myers traced the employment histories of displaced cutters in the Chicago men's-clothing industry from the time of their displacement, comparing data for 217 of the 236 who had received a $500 dismissal wage from the Hart, Schaffner, and Marx Company in 1926 with 153 other cutters thrown on the labor market without a compensatory allowance.51 Those in the first group lost an average of 5 months before getting regular employment; those in the second group lost 5.8 months. It is believed that the discrepancy would have been greater if a number had not used their dismissal wage to take a vacation. After the lapse of several years, 25 percent of both the former Hart, Schaffner, and Marx employees and the other cutters were reemployed in the industry either as cutters or tailors; 7.4 percent of the Hart, Schaffner, and Marx cutters and 6.5 percent of the other cutters were still seeking work; the rest were spread over a variety of occupations. Over 46 percent of the former Hart, Schaffner, and Marx cutters and over 45 percent of the other group were earning less than formerly. The following conclusions were drawn: Practically the same proportion of both groups had gone back to their old occupations in Chicago; the distribution among other occupations was similar for both groups; the former Hart, Schaffner, and Marx employees lost somewhat less time, on the average, in obtaining regular jobs; and they were somewhat more successful in readjusting themselves.

In 1930 Clague and Couper of the Yale Institute of Human Relations made a study of workers displaced by the closing of two United States Rubber Company plants in New England. For one of these plants, which shut down on April 6, 1929, those receiving a dismissal wage (all persons 45 years of age or over with 10 years or more of service and all persons with 15 years or more of service regardless of age were given 1 week's pay for each year of service) were compared with those not receiving it. Of the 97 who had received dismissal compensation, 90 were interviewed. The amounts they had received varied from $137 to $2,088. Losses in earnings were heavy; in 1929-30 the yearly earnings of the men were only 40

51Myers, loc. cit.
percent and of the women only 36 percent of their 1928 earnings. Although
the losses were considerably reduced by dismissal-compensation payments,
they were still high. The following conclusions were drawn:

(1) Those receiving the dismissal wage were just as aggressive as their
fellows in looking for work; they even had a slight advantage in the
speed with which they found jobs. The dismissal wage was not a drag on
their initiative.

(2) They suffered heavier wage reductions than the average, largely
because they were in the older age groups. (Myer's study showed that the
earnings of the 35-39 age group in their new jobs were higher than those
of the other age groups, earnings tending to decrease most with remote-
ness in either direction from this group.)

(3) At the end of a year, only 26 had any dismissal-wage money left.
The compensation "was not quite adequate to cover the lost earnings of
the displaced workers over a period of one year." It seemed clear, how-
ever, that the providing of current spending money was a vital factor in
facilitating readjustment.62

62Gowan Cague and W. J. Couper, *The Readjustment of Workers Displaced by Plant
See also Brower, Dismissal Compensation, p. 1; Myers, loc. cit.
CHAPTER VI

UNION INTEREST IN MANAGERIAL PROBLEMS

The information presented in the preceding chapters has shown that behind many of the adjustments providing some measure of security for the workers involved there lay the interest of both management and organized labor in preventing the resentment against insecurity occasioned by changes in techniques from crystallizing into opposition to change of any kind. From the standpoint of management, optimum performance by labor under changing conditions of production frequently required not merely labor's "grudging submission" to managerial policies but also its active interest in their execution. Such participation in the solution of managerial problems has been especially important in instances where the introduction of new techniques involved the changing of shop customs and rules evolved through collective bargaining. Trade-unions have generally come to recognize, moreover, that questions of employment, wage rates, work loads, job tenure, and all other working conditions cannot be dealt with effectively under collective bargaining without considering the general economic context of each industry, particularly when the industry is a highly competitive one. In brief, interest in efficient management and in regulation of undesirable competitive practices in industry as a whole and the desire to regulate technological change through collective bargaining have served to interest trade-unions in managerial problems.

To a considerable extent, also, trade-union interest in managerial problems developed in response to the spread of "employee representation" after the World War. In the face of intensified mechanization in industry and a widespread application of "scientific management" and efficiency engineering in the mass-production industries, employers found the employee-representation schemes flexible instruments for initiating and maintaining the workers' interest in managerial problems. Management contended that trade-unions are exclusively protective organizations and that "restriction of output" is inherent in their functions, not only because of their occasional outright opposition to technological changes but also because their numerous rules and regulations on every phase of shop conduct hamper management in its drive for lower unit costs. To

2These arguments were quite general even before the World War. They were particularly pronounced during the struggle of organized labor against certain features of "scientific management" in the early part of this century, and were crystallized during the investigation of the United States Commission on Industrial Relations in 1914 and 1915. See Robert F. Hoxie, Scientific Management and Labor (New York: D. Appleton and Co., 1915), pp. 15-7.
counter this, the American Federation of Labor elaborated and systematized the already existing tendencies in collective-bargaining relations into a policy of "union-management cooperation." According to this policy, it is to the interest of trade-unions to participate with management in its drive to reduce unit costs, providing the employers bargain collectively and the workers involved share in the results of such economies.\textsuperscript{3}

The mechanisms through which trade-unions have participated in the solution of managerial problems have found expression in the extension of the scope of collective bargaining as such to include questions previously considered to be the management's concern and in the creation of special jointly controlled organs for the purpose of dealing with managerial problems. It is the objective of this concluding chapter to present the various manifestations of such developments in trade-union policy and to indicate the conditions under which they were adopted. An attempt will also be made to relate these tendencies to the developments of trade-union policy with respect to technological change.

**SCOPE OF UNION INTEREST IN MANAGERIAL PROBLEMS**

The scope of union participation in the solution of managerial problems varies in accordance with the limits ascribed to collective bargaining. Thus if collective bargaining were mechanically limited to negotiating agreements regarding wage rates, hours of work, and a fixed set of employment conditions, any function falling outside of these fixed limits could be easily designated as a managerial function. In reality, however, there are no fixed boundaries between trade-union and managerial functions. The existence of a collective agreement usually requires a day-to-day interpretation of its provisions. This is true, for example, when new rates have to be set because of technological changes or when in setting new rates consideration has to be given to complex economic problems arising from competitive marketing situations. To the extent that the solutions of such problems make for continuity in production, it is difficult to separate trade-union from managerial functions. In some industries trade-unions have increasingly participated in functions previously considered the exclusive sphere of managerial interest. Besides, though some of these functions have come to be considered normal collective-bargaining content in one industry, they are still regarded as managerial problems by either labor or management in other industries.

What, then, constitutes union interest in managerial problems? The phrase requires some elucidation, because in the course of the development

\textsuperscript{3} Lorwin, \textit{op. cit.}, pp. 240-8.
of collective-bargaining relations a large variety of activities has at one time or another been included under it. In the printing industry, for example, it meant an agreement between the International Printing Pressmen's and Assistants' Union and the employers which provided for joint apprenticeship training, advanced training under union direction exclusively, and a consulting service provided by the union to companies with which it had agreements. In the pulp and sulphite paper-making industry in Maine it consisted of joint participation in an accident-prevention program. In the electrical industry the International Brotherhood of Electrical Workers and the employers maintained a Joint Council on Industrial Relations for the settlement of disputes, and in New York the union made a survey of the kinds of electrical installations contractors were permitting and supplied advice on standards of workmanship and economical methods for installations. In the full-fashioned hosiery industry it involved arbitration of disputes, the establishment and maintenance of production standards, and "servicing" the industry, that is, sending in expert workers to teach the less skilled how to get better production. The interest of the International Photo-Engravers' Union in managerial problems is said to consist of a union-financed research department which acts as a clearing house for technical information and as a testing ground for new ideas, with a full-time director whose services are available to employers as well as to members. The International Ladies' Garment Workers Union's interest in managerial problems consists of participation in a joint procedure for setting piece rates and utilization of expert engineering service for this purpose. In maritime shipping on the Pacific Coast it consists of an agreement between the International Longshoremen's Association, Pacific Coast District, and the respective employer's association for joint control and financing of the hiring halls, provided that the persons in charge of dispatching men to their jobs be selected by the union. Thus the range of activities said to be indicative of the changes in collective bargaining is quite varied and includes problems of training, expert service, shop discipline, rate setting, determination of standards of output, and, in general, improvements in productivity.

The report of the Executive Council of the American Federation of Labor, presented at the annual convention of the Federation in 1925, analyzed

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the spread of the employee-representation plans and the various company-welfare schemes and proposed a policy which became the basis of formal union participation in the solution of managerial problems. This policy was termed "union-management cooperation." The report stated:

Labor believes that the best interests of all participating in production are promoted by cooperation and that seeming conflicts of interests may be harmonized in the light of more comprehensive information and experience from cooperation itself.

The first function which the trade union seeks to perform is that of collective bargaining. The establishment of this practice enables the group of producing workmen to have a voice in determining standards of work and pay. . . .

After collective bargaining becomes an established practice, it can provide methods and agencies for rendering continuous service in interpreting [sic] and applying the terms of the working agreement and in meeting new problems. By developing this continuous service the functions of the union become increasingly interwoven in plant procedure.\(^6\)

Among the services which a union can render once collective bargaining has been established is "that of participating in finding better methods of production and greater production economies." Other references at the convention pointed to "waste elimination" as another service. In 1925 President Green was invited by the Taylor Society to present his views on labor's policy. Among other things he stated:

The mental attitude of labor toward industry and industrial processes is undergoing revision and readjustment. Management is understanding more and more that economies in production can be brought about through the cooperation of labor and the establishment of high standards rather than through the autocratic control and exploitation of labor. Labor is understanding more and more that high wages and tolerable conditions of employment can be brought about through excellency in service, the promotion of efficiency and the elimination of waste.\(^6\)

Some of the comments on this policy at this meeting indicate that trade-union participation in raising productivity in industry was considered the crux of the change:

Mr. Green's frank statement that the success of management means the success of labor; that increased production, the elimination of wastes, and the cutting down of costs is quite as much the concern of labor as of management; that lower costs of production are perfectly compatible with higher wages and increased profits; and his pledge on behalf of labor to assist management in tackling industrial problems, all go further than

any previous authoritative utterances by American trade union leaders, and, in respect to industrial management and research, place American trade unionism in advance of labor in any European country, so far as my knowledge goes.\textsuperscript{7}

Regarding the implications of this policy with respect to increased productivity, Sumner H. Slichter stated:

Public opinion in this country has been tolerant of the employer who refused to deal with organized labor because the man in the street – rightly or wrongly – has felt that unions took insufficient interest in production and were too disposed to practice restrictive policies. If it now appears that unions are both able and willing to render substantial assistance to management in increasing output and reducing costs, the open shop employers of the country are likely to be faced with an ever more insistent demand that they recognize unions and accept their offer of cooperation.\textsuperscript{8}

Thus, in spite of the manifold meanings that were attached to the growth of trade-unions' interest in managerial problems, the attempt to arouse the workers' interest in increasing productivity and reducing unit costs stands out as the central objective of the policy. In specific instances the means for achieving this objective are varied and may assume many forms. In 1927 the Executive Council of the American Federation of Labor listed the following activities of unions as representative of the new orientation: Maintenance of agencies to interpret collective agreements, arbitration based on research, joint determination of production standards, joint plans for educating craftsmen, union supervision of production, and joint committees to consider improvements in operating efficiency.\textsuperscript{9}

One of the unions which enlarged its scope of collective-bargaining relations to include managerial functions is the Amalgamated Clothing Workers of America. In the middle 1920's this union embarked upon a policy of assisting one of the largest firms in the clothing industry, the Hart, Schaffner, and Marx Company, to reorganize its production on a more efficient basis; the object was to enable the company to change to a lower-priced line of garments and thereby improve its competitive position with respect to nonunion competitors who were catering to the growing demand for cheaper clothing. The character of the changes involved and the degree to which the union helped to install them are exemplified in the agreement between the union and the company, known as the "X-Construction Plan", which was introduced in one shop in 1925 and was later extended

\textsuperscript{7}\textsuperscript{Ibid.}, pp. 249–60.
\textsuperscript{8}\textsuperscript{Bulletin of the Taylor Society, Vol. XI, No. 1 (Feb. 1926), P. 3.}
to other shops of the firm as orders for the lower-priced clothes were secured.

The main features of the plan involved the following: A minute sub-division of labor and the shifting of unskilled tasks from skilled occupations to unskilled workers, a considerable substitution of labor-saving devices and machinery for manual operations, improvements in lay-out of plants and routing of materials, and a reduction in piece rates. The managerial functions assumed by the union in this reorganization were highly significant. The union accepted responsibility for maintaining discipline among the workers. It took over the task of preserving the established standards of quality, thus making it possible for the company to reduce the number of examiners. It agreed to a change in the rate-setting procedure from that of setting rates for each operation to an agreement over the total labor cost of a garment, and the union itself set the rates for individual operations. Most important, however, was the agreement to abandon the established shop customs which had been developed into a code of industrial law over a long period of years through rulings of the Impartial Chairman.

These changes, it is believed, placed the company in a better competitive position, and because of the increased orders weekly earnings were improved in most of the departments even though piece rates were reduced. In the cutting department, however, drastic reductions in the number of jobs occurred. The changes in this department resulted in the cutting of garments in lays of 12 or more instead of single garments or in lays of 3. Moreover, much of the cutter's work in planning the lay-out of his pattern was shifted to the clerical staff. The result was the discharge of many cutters.10

The participation of the Amalgamated Clothing Workers in the solution of managerial problems has taken on a variety of forms. The union has maintained a group of experts who have advised individual firms regarding specific production problems. One firm known as the "Golden Rule" Nash Company, after years of operation on a nonunion basis, asked the union to come in and assist its management in a thorough reorganization of the company's production methods in order to enable it to meet competition. The employer himself urged his workers to join the union.11 Similar aid was extended to another nonunion firm which was about to go out of business in 1932. The union was brought in by the manager to help him install

efficient production methods. The firm was subsequently put on a sound basis, and its manager is quoted as saying:

"I wouldn't have attempted to reorganize the plant without their help. They know more about piece rates and production methods than any single factor in the industry. But, above all, they handle the human problem, the problem of getting our 1,400 employees to give their best to the job far better than we could. We've increased wages steadily. They've increased production. We've been able to lower prices without cutting quality one whit. Our inventories are no higher now than last year and we've had no lay-offs."

In one instance a firm was in such bad financial shape that its bank refused to extend further credit. The union stepped in and through its own bank arranged for a loan which enabled the firm to stay in business.

The thorough familiarity of the union with managerial problems enabled it in 1928 to open up its own plant in Milwaukee in an attempt to induce a nonunion firm to deal with the union. A company which had been dealing with the union tried to inaugurate an open-shop policy; this resulted in a lock-out of about 800 employees. The union's decision to open its own plant was both a financial expedient and an organizational tactic. The employment of 235 of the locked-out workers made it possible to reduce the drain on union funds because of the payment of unemployment benefits, while the union's competition served as pressure on the company to resume collective-bargaining relations. The plant was opened by the union as a contractor for Hart, Schaffner, and Marx. The union received bundles of cut goods from the company and was in complete control over all phases of management.

The different phases of managerial functions in which the Amalgamated Clothing Workers has been engaged at various times included the following: Services of expert technicians to union employers, introduction of production standards and piece work, assumption of responsibility for discipline, extension of credit, and advice on the installation of new machinery and efficient production methods and on the regularization of production. The union's position in regard to such cooperation is stated by one of its officials as follows:

The question has been raised in this conference: How can a union cooperate with management in increasing efficiency and production without adding to the already distressing situation of making the workers so productive that they produce themselves out of jobs? It is a very proper question to ask and
one that deserves careful consideration. Ours is a highly competitive industry. For years the industry was cursed with inefficient shops, and inefficient shops meant low wages, long hours and bad conditions. And we couldn’t get very far in bettering the wages and conditions of our people as long as the industry was cluttered up with these inefficient shops. The policy of cooperation for efficiency meant the gradual elimination of the inefficient shops and with dying out of these a good many people lost employment temporarily. We were compelled to face that and in the working out of the process the temporary hardship of displacements has been compensated for a hundred fold in the tremendous improvements in wages and conditions that have been made possible in a more efficient industry.\footnote{Frank Rosenblum, "Trade Union Tactics Under Changing Industrial Conditions," The Advance, Vol. XVI, No. 11 (Mar. 14, 1930), p. 7.}

Actions similar to those of the Amalgamated have been taken from time to time in recent years by the American Federation of Hosiery Workers. In one instance, instead of permitting wage reductions, the union's officers were able, because of their extensive knowledge of production problems, to improve the efficiency of a number of plants and thus avoid cuts.

The Executive Board of the union reported:

> The activities of your national officers in establishing efficient systems in the mending departments and in the finishing departments as a whole in a large number of mills during the past seven months, show a great need for a labor union to thoroughly understand every phase of the manufacturing of the product. Present day competition in highly competitive industries such as ours requires that union leadership understand all of the problems which arise in the manufacturing of the product. It may be necessary for this Federation to establish such a department in order to insure its members proper earnings and provide the employers with whom it has contracts, competitive costs throughout in order that he [sic] remain in business.\footnote{Report of President and Executive Board to the Twenty-seventh Annual Convention of the American Federation of Hosiery Workers (Charlotte, N. C., May 2, 1938), p. 19.}

One of the first plans in union-management cooperation in the railroad industry was initiated in Pittsburgh in the Glenwood shops of the Baltimore and Ohio Railroad in 1923. Mr. Otto S. Beyer, one of the chief advocates of union-management cooperation, supervised the experiment, first as an employee of the International Association of Machinists and later of the Railway Employees' Department of the American Federation of Labor. The main features of the plan subsequently became the official policy of the shop crafts affiliated with the Railway Employees' Department, and the plan was introduced at all repair points of the Baltimore and Ohio Railroad. According to Mr. Beyer, no detailed program of procedure was worked out, and there were no specific objectives agreed upon.
as to what was to be accomplished. The cooperative relationship was to evolve in the process of solving day-to-day shop production problems as they arose. The general objective was to improve operating conditions in the shop. Later the plan was extended to all the B. & O. shops.\textsuperscript{17}

The mechanism for cooperation was the same as that for collective bargaining — the regular shop committee. Until this time the functions of this committee were to take up with the management grievances regarding working conditions and enforcement of shop rules. These functions were retained by the committee. However, the problems of running the shop from the production angle were not discussed at the same meetings as were the grievances. Separate "round table" conferences were held, and proposals were made both by management and union representatives for the improvement of operating conditions.\textsuperscript{16} The suggestions discussed at these conferences concerned installations of new cranes to eliminate much strenuous lifting, construction of a rack for tools, better routing of materials, job analysis and standardization, installation of safety devices, and other problems dealing with efficient operation.

The conditions for cooperation were the regularization and improvement of employment and the evolving of some method by means of which workers would share in the benefits of such cooperation through some financial gains. Regularity of employment was to be accomplished by abolishing the "contracting out" system and planning a program for the rebuilding of locomotives and cars. Mr. Beyer regarded the regularization of employment as the chief requisite for successful cooperation:

Frankly, it is fatuous to expect intelligent workmen in this day and age to become enthusiastic about increased production, the elimination of waste, or greater shop efficiency, if the net result is to throw them out of work that much sooner, even if only temporarily.\textsuperscript{19}

There was no definite plan on the method of sharing financial gains. It was claimed both by the management and the unions involved, however, that earnings were improved and that overtime pay for Sunday work was restored. In some instances the benefits were to be shared in the form of vacations with pay. There is no definite information as to the magnitude and exact nature of these gains.\textsuperscript{20}


\textsuperscript{18}Beyer, op. cit., p. 18.

\textsuperscript{19}Ibid., p. 13.

\textsuperscript{20}Louis A. Wood, Union-Management Cooperation on the Railroads (New Haven, Conn.: Yale University Press, 1941), pp. 233-56.
As a result of his experience with union-management cooperation, Mr. Beyer formulated a series of requirements for successful cooperation. These requirements are:

**First.** The right of employees to choose their own organizations and representatives, absolutely free from interference or help by management, must be recognized. In other words, there must be true freedom of association for the employee as well as for the employer.

**Second.** Genuine collective bargaining must be established, resulting in written agreements as to wages, working rules, and the prompt and orderly adjustment of grievances.

**Third.** Management must conceive of the unions as potential assets rather than as liabilities, and be willing to accord them constructive as well as protective functions, i.e., to accept their help in furthering the purposes of the management - improved service to the public, especially.

**Fourth.** Management must agree to do everything within its power to regularize employment; it must consider that this is as important as maintaining the financial credit of the railroad.

**Fifth.** Management must be willing from time to time to share the benefits arising from cooperative effort with the employees.

**Sixth.** As already pointed out, joint administrative machinery, representative of both management and men, must be created to realize these requirements.21

Another important experiment in union-management cooperation was the one carried on at the Naumkeag Mills from 1928 to 1930. In this case the objective of cooperation was clear and definite. The company wanted to increase the work assignments. Although the union was at first opposed to this change, charging that it was an attempt to institute a "stretch-out", it was eventually won over to it. A joint research committee composed of union representatives, company officials, and an engineer hired by the company as chairman was set up to guide the work. The mechanism of the plan, as described by Francis Goodell, the engineer, consisted of a waste-elimination committee or research committee and a research staff. The staff members, all of whom were on the waste-elimination committee, were full-time research workers. The other members of the research committee were the union representatives. The committee as a whole was called together from time to time as an additional medium for getting information to and from the body of employees. The union representatives consisted of the presidents of the two locals of the United Textile Workers and two other members, one of whom was changed in accordance with the general operation under discussion. The chairman or the engineer,

although hired by the company, was engaged with the approval of a union official.\textsuperscript{22}

The research committee's procedure in setting up job standards was unique. After an operation had been decided upon for study, a union delegate and the overseer of the room concerned jointly selected a number of average men for study. When standards had been set, the union representative explained to the operator the standard practice agreed upon and requested that the operator explain any difficulties that he might encounter. After the job was thus set and checked, it was subject to review by the waste-elimination committee. This, however, did not involve any voting; in fact, joint agreement was not required. The technician usually presented the figures for each job standard, and both sides could offer criticism and objections. It was up to the engineer to decide whether any of the criticisms or objections should be given any weight and how much weight. In other words, the function of the committee as a whole was consultative, and the technician had the final say.\textsuperscript{23}

In this case, too, the question of employment guarantee is considered by the technician as one of the chief problems in the successful participation of workers in measures designed to increase their productivity. Mr. Goodell stated that

\begin{quote}
any company desiring to enlist the genuine cooperation of its employees must safeguard their jobs. No group of American workmen will help you saw off the limb on which they are sitting. But they will help you save the tree.\textsuperscript{24}
\end{quote}

In actuality the results did not completely protect the workers' jobs. Many workers were dismissed and others were demoted to less favorable positions. The seniority rules of the union agreements generally protected the workers with longer service records. The company also adopted the plan of hiring employees on a temporary basis only during the period of change. To a large extent dismissals were confined to these temporary employees.\textsuperscript{25}

The savings achieved by the management as a result of the change were substantial, one estimate placing such savings at $230,000 a year in direct labor costs. According to estimates, the results of the change showed that expenses involved in the joint research were paid for by the

\begin{footnotes}
\item[23]\textit{Ibid.}, pp. 284-6.
\item[24]\textit{Ibid.}, p. 286.
\end{footnotes}
savings of 7 months, whereas the expense for new equipment usually requires nearly 6 years for liquidation. Further attempts at joint research during the depression, coupled with wage reductions, resulted in drastic opposition on the part of labor in the form of a strike. Eventually this scheme was abandoned.

In 1929, while the Naumkeag experiment was still in progress, a series of strikes involving thousands of textile operatives broke out in Tennessee and the Carolinas. Though the list of grievances included long hours, low pay, and unsatisfactory working and living conditions, the immediate cause of the strikes was the introduction of the "stretch-out" system. The American Federation of Labor decided at its Toronto convention in 1929 to initiate a vigorous campaign for organization in the South. A central feature of this campaign for unionization was the offer by the American Federation of Labor to cooperate with employers who recognized the union in an effort to improve plant efficiency. The services to be placed at the disposal of employers were outlined in a statement by Geoffrey C. Brown in the American Federationist. He stated:

To the employers of the South we offer, in the first place, sound organizing methods conducted along conservative and scientific lines. The American Federation of Labor maintains an engineering service and an educational department. Both features are available to Southern employers.

To the employers of the South we offer, also, a new level of effectiveness and economy in management, based on sound industrial relations, a level quite unattainable under any such inadequate substitute as a company union.

The workers of the South, in their turn, will gain materially in the higher wages and better conditions rendered possible through scientific cost reduction. Union-management cooperation, proceeding along sound economic lines, first reduces cost by eliminating unnecessary waste in production, and then shares the resultant savings equitably with the workers.

Despite this cooperative approach, only three small enterprises agreed to give the plan a full trial: a small food-packing establishment employing from 15 to 20 employees, a sirup factory with 32 workers, and a hosiery mill with 30 operatives.

Another important plan for the participation of workers in waste elimination has been published recently by the Steel Workers Organizing

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27 Trepp, op. cit., p. 611.
29 Trepp, op. cit., p. 617.
Committee of the Congress of Industrial Organizations. The pamphlet suggests that under certain conditions local shop organizations may take the initiative in developing cooperation with management for "better practices" with the objective of waste elimination. In the first instance, the union cautions the lodges not to begin anything unless collective bargaining has been securely established on a contractual basis. "The union may then appoint a Research Committee. This should be, in most cases, entirely separate and distinct from the committees or officials engaged in negotiating about wages or grievances. It should be composed of men who have a knack for handling facts and figures, and of men who have ideas about better ways of doing things." The committee is to study the problem of whether there is a possibility for the improvement of shop practices for the benefit of both employer and worker. If there seems to be any chance of that sort, then the committee is to report to the union's governing body and obtain approval. The employer should then be sounded out, and the following type of agreement should be concluded:

1. The union agrees to co-operate with the management in order to reduce costs, enlarge sales, improve quality and in general to advance the interests of the industry.

2. The management agrees to share equitably with the union any benefits so obtained, in the form of increased employment, better working conditions, increased wages or decreased hours.

3. Nobody is to lose his job as a result of any improvement that is installed. If ways are discovered to do more work with less labor, they are to be put in gradually, and then only with the consent of the union. They must be installed in such a way that no discharges are necessary – as for instance at a time when sales and output are increasing.

4. The research must be truly joint in every respect. All facts and plans are to be revealed to the union committee, and its understanding and consent must be obtained at every step.30

Although there is no information on how this plan is actually operating in specific instances, its exposition of the problems involved is of special interest. There is some information as to the extent of its adoption by employers. According to an article published recently, an official of the Steel Workers Organizing Committee reports that of the 541 employers under contracts with the union, 30 percent have concluded or begun negotiations to put into effect in their plants the program outlined above.31

30 Production Problems (Pittsburgh, Pa.: Steel Workers Organizing Committee, Pub. No. 2), pp. 4-5.
The experiences of trade-union participation in the solution of managerial problems suggest that, in the main, the objective of such activities has been the reduction of unit costs; this involved, in turn, the introduction of technological changes with the aid of the unions concerned. In some cases the plans revolved around specific technological changes, such as the introduction of the increased work loads at the Naumkeag Cotton Mills; in other instances the objectives were stated in more general forms - those of waste elimination or improvements in efficiency of operation. Various activities involving technological changes in which trade-unions have participated may be listed as follows: (a) The installation of new machinery and achievement of efficient production methods, (b) establishment of standards of output, (c) advice on better plant lay-out and routing of materials, (d) suggestions for waste elimination, and (e) promotion of safety and accident-prevention programs. Some trade-unions maintained, either at their own expense or jointly with employers, a staff of technicians who planned and supplied these services.

Participation in the solution of these technical problems frequently required participation in the solution of certain personnel problems which usually arise as a result of technological changes. Some of these problems were the assumption of responsibility for the maintenance of standards of quantity and quality of output, job analysis and standardization, introduction of new methods of wage payment and rate setting, training of apprentices and skilled workers, and elimination of shop customs and rules which interfered with the introduction of technological changes. To a considerable extent these activities involved the participation of trade-unions in the solution of shop discipline problems. This was accomplished in most instances through the maintenance of joint agencies for the interpretation of collective agreements and for the arbitration of disputes.

Although an attempt has already been made to indicate that interest in managerial problems was secured only after certain desires for security had been taken into consideration, it will be of interest to indicate more explicitly some of the limits of trade-union interest in managerial problems.

LIMITS OF UNION INTEREST IN MANAGERIAL PROBLEMS

In 1925, when the Executive Council of the American Federation of Labor proposed the policy of union-management cooperation, it warned that "a group of workers can not enter into this type of cooperation unless they know the results of their work will not be used to their disadvantage."32

Although this advice was not adhered to in all instances, the basic needs of the workers, namely, employment and income security, nevertheless constituted a limit to the degree to which their interest in managerial problems could be secured. "For workers", in the words of William Green, "cannot wholeheartedly cooperate to improve efficiency if they have no share in the results and if, by increasing production and eliminating waste, they succeed only in working themselves out of a job." In the cases where trade-unions have participated in the solution of managerial problems, the problem of employment and income security has been variously approached.

In the first place, there were the provisions for regularization of production and employment. In the men's clothing industry an attempt was made to attract a line of lower-priced clothes into union shops. In the hosiery industry, as well as in clothing, improvements in efficiency in individual plants were made with the objective of enabling union plants to operate in competition with nonunion plants. In the repair shops of the B. & O., abolition of the contracting-out system was to provide more regular employment. The Steel Workers Organizing Committee requires that agreements for waste elimination provide that no one should lose his job as a result of any technological change. In the Naumkeag Cotton Mills an attempt was made to confine dismissals to temporary employees. In most instances, some form of regularization of employment or assurance that no dismissals would result from the workers' participation in the solution of managerial problems was of paramount importance.

Second, although provisions for definite methods of sharing the economies of increased productivity were rare, there was sufficient indication that trade-unions have considered such provisions important. In the men's clothing industry and on the railroads the main financial gains were to come from improvements in employment. The Amalgamated Clothing Workers of America negotiated specific agreements for unemployment insurance and dismissal compensation in its various markets. The SWOC plan stipulates that definite proportions for the sharing of the economies be provided in every agreement for waste elimination.

During the 1920's when the American Federation of Labor worked out its policy of union-management cooperation, it also developed its "social wage" theory, which was to be part of the entire policy, and the

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employment-stabilization program. The "new" wage policy is outlined in a "declaration" in the August 1927 issue of the American Federationist. The history of workers' struggles for wages is considered in three different stages, developing progressively until the third stage— the "social wage"— is reached. The first stage is represented as a struggle for "higher money wages." The second stage was reached when organized labor realized that it was necessary to relate money wages to prices, and the struggle of labor was for "higher real wages." The third stage came when labor realized that it was necessary to relate wages to the ever-changing productivity of labor. In this stage the laborer not only strives to get high real wages but also "higher social wages", or wages which increase as measured by prices and "productivity." This wage is termed social because it attempts to maintain earnings of workers relative to improvements in the standards of living of other social groups so that the benefits from increased productivity may not be absorbed entirely by these other groups.\(^{34}\) This wage policy became part of the general program of the A. F. of L. Besides higher wages, unions were to secure "greater regularity in employment with a stable work group", a low turnover, and a shorter workday and workweek. These guarantees were to be achieved by individual unions as a result of cooperation and in a manner suitable to the particular situation.

Third, prominent among the conditions for securing union interest in managerial problems was the requirement that trade-unions should participate in the setting of standards of output. In the case of the "X-Construction Plan" and subsequent activities of the Amalgamated Clothing Workers of America, the union assumed a large measure of control over the setting of standards of output when it negotiated rates for the entire garment and later set rates for individual operations. This union, as well as an ever-increasing number of unions, has resorted to some form of joint machinery for the setting of standards of output. In the case of the Naumkeag Cotton Mills a good deal of dissatisfaction was caused by the fact that no agreement on the part of the union representatives was necessary for the setting of standards of output.

In general, trade-union participation in the solution of managerial problems has been based on the needs of the workers for security of income and employment. In the final analysis, whether or not workers can be interested in improvements in efficiency depends upon the degree to which security can be attained. During the years 1922-29, when

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employment opportunities were relatively abundant, plans for union participation in the solution of managerial problems were discussed everywhere. With the advance of the depression there was a lull in the enthusiasm. No doubt the large volume of unemployment made it difficult to gain the workers' interest in waste elimination and increased productivity, particularly when their jobs were at stake. In an article published in August 1933, Mr. Beyer, hitherto an enthusiastic advocate of union-management cooperation, almost sounded a note of despair.

The scientific evidence available, in short, reveals that both the immediate and long-range effect of unemployment in industry, especially that type resulting from technological causes, i.e., introduction of labor-saving machinery, consolidation of facilities, transfer of work, application of so-called scientific management devices and the like, is the generation of attitudes and methods on the part of industrial workers designed to protect themselves against the encroachments of unemployment. It is the contention of all those who have studied the phenomenon conscientiously, that this situation is far more serious than is ordinarily appreciated, that it does not make for the best in the employee as a member of society, nor for his best as an employee of industry. It is conducive, in short, to antisocial character traits which reflect themselves in the performance of industry.38

Thus success or failure in securing trade-union cooperation to improve production efficiency does not depend on trade-union policy alone. The insecurity with which workers in industry are faced, particularly periodic mass unemployment, reacts on individual workers and tends to evoke attitudes which result in inefficiency and waste, regardless of trade-union policy.36 To the extent that technological changes have contributed to the feeling of economic insecurity, the workers' resentment against loss of skill, employment, and earnings has frequently developed into opposition to the changes themselves. On the other hand, the adoption of measures which have tended to reassure workers in the face of technological changes and to aid them in the making of difficult adjustments has tended to remove their opposition to change.

Finally, union interest in managerial problems could not be secured unless the employers accorded the unions full recognition and assured their status as collective-bargaining agencies for the workers involved. In fact, in industries where highly competitive conditions prevailed between union and nonunion shops, trade-unions frequently aided management

in union shops to improve their competitive position with respect to nonunion shops. In such cases many of the protective measures normally constituting a condition for securing trade-union interest in managerial problems were frequently relaxed.

To a considerable extent such relaxation prevented the workers from sharing in the economies of increased productivity or lower unit costs. The success with which organized workers have been able to maintain and improve working conditions in the face of such changes has depended largely on whether or not they have been able to establish and maintain fairly uniform labor standards over the entire area of the "competitive market." Such markets may be local, regional, industry-wide, or national in character, and in some instances they may extend to a group of competing industries. In highly competitive industries, the firms which manage to lower their costs by improving their production methods, often with the aid of the unions, frequently lose their cost advantages as a result of the competitive pressure from the "sweated" portions of their industry which manage to exist only because they are able to shift the major burden of competition to their employees by lowering their work standards. In his testimony before the Committee on Education and Labor at the hearings on the Fair Labor Standards Act of 1937, Isador Lubin, United States Commissioner of Labor Statistics stated:

Now we know only too well that it is not necessarily those who produce most efficiently or those who render the greatest service to society that secure the lead in the race for economic returns. All too frequently the honors — profits — go to those who can take the greatest advantage of their fellow men. By cutting wages, compelling labor to work inhumanly long hours, employing children, many a producer has not only weathered economic storms but has actually profited from them. And he has usually done so at the expense of his competitor who has refused to stoop to similar tactics. In too many instances the ability to sweat one's labor has supplanted efficiency as the determinant of business success.  

Such competitive situations have frequently prompted both trade-unions and those employers who operated under collective agreements to seek the extension of unionization to all the firms competing in the same market.  

38 The problem of extending labor standards under collective agreements to unorganised sectors of an industry is dealt with in an article by L. Hamburger, "The Extension of Collective Agreements to Cover Entire Trades and Industries," International Labour Review, Vol. XL, No. 2 (Aug. 1939). An editorial note (p. 153) states the problem in the following manner: "The extension of collective agreements to persons other than the parties [to the agreements] is a problem [Com.]
By the introduction and maintenance of approximately uniform labor standards on an industry-wide basis, or on the basis of that segment of an industry which operates in the same competitive market, collective bargaining has sought to remove labor standards from the field of competition. To the extent that this has been possible in individual industries, opportunities for the adoption of measures designed to counteract the insecurities resulting from technological changes have increased, and, consequently, the scope of union interest in managerial problems has been enlarged.

38[Con.] which is at present engaging the attention of a great many Governments. It is a matter of immediate concern both to workers and to employers. The object of the procedure is to give all the workers and all the employers of an industry the benefit of the same conditions of labour - implying the same conditions of operation - which the employers' and workers' organizations have established by spontaneous collective bargaining. The organised workers have thus a guarantee that the standard of living fixed by collective agreement will not be undermined by unorganised workers accepting lower wages, and the employers are similarly protected against unfair competitive practices as regards labour conditions. (Italics in original.)
# INDEX

<table>
<thead>
<tr>
<th></th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
</tr>
<tr>
<td>American Bottle Company</td>
<td>19</td>
</tr>
<tr>
<td>Automobile Workers of America, International Union, United</td>
<td>56-9,68,68-9,90,95</td>
</tr>
<tr>
<td>B</td>
<td></td>
</tr>
<tr>
<td>Baltimore and Ohio Railroad Company</td>
<td>115-8,122</td>
</tr>
<tr>
<td>Bell Operating Companies</td>
<td>31-2</td>
</tr>
<tr>
<td>Board of Education of the City of New York</td>
<td>26</td>
</tr>
<tr>
<td>Boot and Shoe Workers' Union</td>
<td>39,60</td>
</tr>
<tr>
<td>Boston and Maine Railroad</td>
<td>43-4</td>
</tr>
<tr>
<td>Bricklayers, Masons, and Plasterers' International Union of America</td>
<td>16,92</td>
</tr>
<tr>
<td>Burns Brothers</td>
<td>27</td>
</tr>
<tr>
<td>C</td>
<td></td>
</tr>
<tr>
<td>Carpenters and Joiners of America, United Brotherhood of</td>
<td>16,17</td>
</tr>
<tr>
<td>Chicago, Burlington &amp; Quincy Railroad Co.</td>
<td>43</td>
</tr>
<tr>
<td>Chicago and North Western Railway Company</td>
<td>43</td>
</tr>
<tr>
<td>Chrysler Corporation</td>
<td>90</td>
</tr>
<tr>
<td>Cigar Makers' International Union of America</td>
<td>6, 12-3,29-30,38-9,77</td>
</tr>
<tr>
<td>Clerks, Freight Handlers, Express and Station Employees, Brotherhood of Railway and Steamship</td>
<td>22</td>
</tr>
<tr>
<td>Clothing Workers of America, Amalgamated</td>
<td>23, 32-4,36,59,72,90-1,105,108,112-5,122,123</td>
</tr>
<tr>
<td>Congress of Industrial Organizations</td>
<td>85</td>
</tr>
<tr>
<td>Coopers' International Union of North America</td>
<td>14</td>
</tr>
<tr>
<td>D</td>
<td></td>
</tr>
<tr>
<td>Delaware and Hudson Railroad Corporation, The</td>
<td>102-3</td>
</tr>
<tr>
<td>E</td>
<td></td>
</tr>
<tr>
<td>Electrical Contractors Association, New York</td>
<td>92-3</td>
</tr>
<tr>
<td>Electrical Workers, International Brotherhood of</td>
<td>92-3,110</td>
</tr>
<tr>
<td>Engineers, Brotherhood of Locomotive</td>
<td>23,74-5,93-4</td>
</tr>
<tr>
<td>F</td>
<td></td>
</tr>
<tr>
<td>Firemen and Enginemen, Brotherhood of Locomotive</td>
<td>22-3, 42-5,74-5,93-4</td>
</tr>
<tr>
<td>Firestone Tire &amp; Rubber Company</td>
<td>90</td>
</tr>
<tr>
<td>Full-Fashioned Hosiery Manufacturers of America, Inc.</td>
<td>35-8,61-6</td>
</tr>
<tr>
<td>G</td>
<td></td>
</tr>
<tr>
<td>Garment Workers of America, United</td>
<td>73-4,90-1</td>
</tr>
<tr>
<td>Garment Workers' Union, International Ladies'</td>
<td>67, 72-3,82,90-1,97,110</td>
</tr>
</tbody>
</table>

---

1 This index was prepared by Sara Oberman.
<table>
<thead>
<tr>
<th>Organization/Company</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Motors Corporation</td>
<td>100</td>
</tr>
<tr>
<td>Glass Bottle Blowers' Association of the United States and Canada</td>
<td>13-4,15-8,18-9,39-40,77</td>
</tr>
<tr>
<td>Glass Workers of America, Federation of Flat</td>
<td>56</td>
</tr>
<tr>
<td>Glass Workers Union, National Window</td>
<td>6,11,40</td>
</tr>
<tr>
<td>Glass Workers' Union of North America, American Flint.</td>
<td>15-8,67</td>
</tr>
<tr>
<td>Goodrich, B. F., Company</td>
<td>66</td>
</tr>
<tr>
<td>Hart, Schaffner &amp; Marx</td>
<td>32-3,105,106,112-3,114</td>
</tr>
<tr>
<td>Hormel, Geo. A., &amp; Company</td>
<td>97-8</td>
</tr>
<tr>
<td>Hosiery Workers, American Federation of</td>
<td>35-6,45-8,61-6,67,110,115,122</td>
</tr>
<tr>
<td>Interstate Commerce Commission</td>
<td>103</td>
</tr>
<tr>
<td>Iron, Steel, and Tin Workers of America, Amalgamated</td>
<td>53,80</td>
</tr>
<tr>
<td>Kellogg Company</td>
<td>82-4</td>
</tr>
<tr>
<td>Longshoremen's Association, International</td>
<td>110</td>
</tr>
<tr>
<td>Machinists, International Association of</td>
<td>55-8,115</td>
</tr>
<tr>
<td>Maine Central Railroad Company</td>
<td>43-4</td>
</tr>
<tr>
<td>Mechanized Mining Commission</td>
<td>76</td>
</tr>
<tr>
<td>Mine Workers of America, United</td>
<td>29,30,60-1,75-8,80,91</td>
</tr>
<tr>
<td>Holders' Union of North America, International</td>
<td>6,12,14-5,52-3,81</td>
</tr>
<tr>
<td>Nash Company (Cincinnati)</td>
<td>113</td>
</tr>
<tr>
<td>National Bituminous Coal Commission</td>
<td>60-1,76</td>
</tr>
<tr>
<td>National Board of Jurisdictional Awards</td>
<td>16</td>
</tr>
<tr>
<td>National Founders Association</td>
<td>12,14-5</td>
</tr>
<tr>
<td>National Industrial Conference Board</td>
<td>84-5,98</td>
</tr>
<tr>
<td>National Railroad Adjustment Board</td>
<td>21-3</td>
</tr>
<tr>
<td>National Research Project</td>
<td>81-2</td>
</tr>
<tr>
<td>National Wall Paper Company</td>
<td>96-7</td>
</tr>
<tr>
<td>Naumkeag Steam Cotton Company</td>
<td>36-8,117-9,121,122,123</td>
</tr>
<tr>
<td>New York, New Haven and Hartford Railroad Company, The</td>
<td>43-4</td>
</tr>
<tr>
<td>Nunn-Bush Shoe Company</td>
<td>99-100</td>
</tr>
<tr>
<td>Packing House Workers, United</td>
<td>97-8</td>
</tr>
<tr>
<td>Painters, Decorators, and Paperhangers of America,</td>
<td>92</td>
</tr>
<tr>
<td>Brotherhood of, District Council No. 9</td>
<td></td>
</tr>
</tbody>
</table>
INDEX

Paper Makers, International Brotherhood of ................... 23-4
Photo Engravers' Union of North America, International ... 110
Potters, National Brotherhood of Operative .. 20-1, 53, 66-7, 70-2
Pressmen and Assistants' Union of North America, Inter-
national Printing .................. 14, 26, 34-5, 40, 48-9, 53-4, 110
Princeton University, Industrial Relations Section ...... 101-2
Printers' League Section, New York Employing Printers'
Association, Inc. .................................. 26, 34, 40, 49
Proctor & Gamble Company ................................. 98-9

R

Railway Employees' Department, American Federation
of Labor ........................................... 22, 115-7
Railway Labor Executives Association ......................... 103-4
Rocky Mountain Fuel Company ................................ 61
Rubber Workers of America, United ............................. 66, 90

S

Seaman Body Corporation ....................................... 28
Sheet Metal Workers' International Association ........... 16
Squibb, E. R., and Sons .................................... 85
Steel Workers Organizing Committee ............................ 24-5,
......... 49-50, 89-90, 119-20, 122
Stonecutters' Association of North America, Journeymen .. 8, 11-2
Street and Electric Railway and Motor Coach Employees of
America, Amalgamated Association of ......................... 16, 42, 76

T

Teamsters, Chauffeurs, Stablemen, and Helpers of America,
International Brotherhood of ............................... 16, 27-8
Telegraphers, Order of Railroad ............................... 21-2, 94
Telegraphers' Union of North America, Commercial ........ 27
Textile Workers of America, United ......................... 37-8, 45, 117-9
Tile and Mantel Contractors of America ...................... 16
Transport Workers' Union of America .......................... 24
Typographical Union of North America, International 19-20, 39, 95

U

Union Made Garment Manufacturers Association ............... 73-4
Union Pacific Railroad ....................................... 43
United States Bureau of Labor Statistics .................... 31-2, 102, 125
United States Rubber Company ................................ 31, 105-6
Wall Paper Crafts of North America, United ................. 96-7
Woodworkers International Union ............................. 17
Work Projects Administration, see National Research Project.

Y

Yale Institute of Human Relations ............................. 37, 106-7