Industrial Relations in a New England Textile Mill :

The Pequot Mills of the Naumkeag Steam Cotton Company, Salem, Mass., U.S.A.

by

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This study of industrial relations in a New England textile mill is published in continuation of the series of reports on industrial relations in particular undertakings issued in the International Labour Review *and in the volumes of " Studies and Reports ".*[1]

It is a pleasure to the International Labour Office to place on record its gratitude to Mr. J. Foster Smith, the Agent of the Company, for permitting the author of this study to visit the mill, and for giving much time to facilitating his work.

While the Naumkeag Steam Cotton Company was itself founded nearly a century ago, its plant is of essentially modern construction and equipment, having been entirely rebuilt in 1915 after a fire. The principal products are plain sheetings and pillow-cases, and all the processes of manufacture—spinning, weaving, bleaching, making up, etc.—are carried out in the undertaking. Since the war, and especially since 1927, the autocratic and even paternalistic pre-war form of management has gradually been replaced by an elaborate system of Union-Management co-operation, which has undoubtedly played an important part in enabling the management to assure the continued operation of the mill during a period of intense competition and acute depression.

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[1] INTERNATIONAL LABOUR OFFICE : *Studies on Industrial Relations. I. Siemens Works. Lens Mining Company. London Traffic Combine. State Mines of the Saar Basin. Bata Boot and Shoe Factory.* Studies and Reports, Series A (Industrial Relations), No. 33. Geneva, 1930. *Studies on Industrial Relations. II. The Zeiss Works. The F.I.A.T. Establishments. The Philips Works. The Sandvik Steel Works.* Studies and Reports, Series A (Industrial Relations), No. 35. Geneva, 1932. The studies on the London Traffic Combine, the State Mines of the Saar Basin, the Bata Boot and Shoe Company, and the Zeiss Works have also been published separately in the *International Labour Review.*

The History, Scope and Nature of the Mills

THE mills of the Naumkeag Steam Cotton Company are situated at Salem, Massachusetts, U.S.A. An interesting feature of the company's annals is that in its inception and at critical stages in its history it has been essentially influenced by international conditions. To a complex of international circumstances was due its original establishment in 1839.

At the beginning of the nineteenth century Salem was a prosperous shipping town. But the embargoes and blockades of the Napoleonic wars dealt a blow to the shipping of Salem from which it never recovered. During the embargoes hundreds of ocean-going ships lay rotting alongside the wharves of the historic town, with their seamen scattered wherever employment could be found. Many old and famous concerns went out of business, or transferred their affairs to the rapidly growing town of Boston, or the already outstanding city of New York. The shipowners, shipmasters and merchants of Salem began to look about for other investments. Their attention was naturally drawn to the new and successful industry of cotton spinning and weaving, as carried on along the Merrimac and Charles Rivers in Massachusetts and in the Blackstone Valley in Rhode Island. The result of their investigation was the establishment, in 1839, of the Naumkeag Steam Cotton Company on the harbour front.

Naumkeag has never had an undue respect for tradition, and both its location and its source of power constituted, when it was founded, a break with convention. At that time, cotton mills were always situated on the banks of water-courses, for two reasons. In the first place, the water-wheel supplied the necessary power for the mill, and in the second, the river valley produced the humid atmospheric conditions essential to the successful manipulation of cotton fibre. The founders of the Naumkeag Company believed, however, that coal would generate power more cheaply and efficiently than the water-wheel, and that the necessary humidity would be obtained from proximity to the sea. Their calculations proved correct, and the Company continued to operate successfully until 1914, when the entire plant was completely destroyed by fire.

Again the fortunes of Naumkeag were bound up with world

events. The plant was entirely rebuilt on the same historic site [1], and by the end of 1915 the new Naumkeag was in full operation. Rebuilt at pre-war scales of costs, it was ready, with completely new construction and machinery, but with mature experience, to take advantage of the immense boom in the cotton textile trade produced by the World War.

The Naumkeag mills, as they stand to-day, are of improved reinforced concrete construction, special attention having been paid to the details of light, ventilation, sanitation and everything contributing to the well-being of the operatives. The weaving shed, covering 9 acres, is claimed to be the largest of its kind in the world. The machinery is of the latest design, largely automatic and electrically driven. Although none of this equipment dates from earlier than 1915, the management has already made large replacements, and consistently throws out old machinery as fast as more efficient or more economical machines are tested and proved.

The main product of the Naumkeag Company's mills is plain sheetings and pillow-cases, known under the trade name of Pequot. The Naumkeag Company has, in fact, always specialised in plain sheetings. Even in the first year of its operation it was awarded a medal, at the Annual Exhibition of the Massachusetts Charitable Mechanics' Association, for the excellence of its product. As early as 1860 the mills began to pay special attention to the weaving of wide sheeting. Many years ago they initiated the custom of supplying housewives with bed linen made up ready to use, and a large proportion of their output is marketed in this form.

The capital of the Naumkeag Steam Cotton Company amounts to $6,000,000. During the years of prosperity large reserves were built up, which amounted on 30 November 1930 to over $3,600,000. In the succeeding year, however, a net loss of some $50,000 was registered, and dividends, although not earned, were continued throughout the year, with the result that the surplus was reduced on 30 November 1930 to below $3,200,000. The quarterly rate of dividend of $2.00 per share was reduced to $1.00 per share, beginning with the October 1931 quarter.

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[1] Just opposite the water-front is the famous Derby Wharf where East India merchantmen used to unload, and a few hundred yards away is Nathaniel Hawthorne's " House of the Seven Gables ".

Production and sales have been well maintained since 1928, although in that year a heavy fall occurred from the peak year of 1927. The actual figures are as follows:

PRODUCTION AND SALES, 1927-1931

Year	Production		Sales	
	lb.	yds.	yds.	$
1927	19,888,984	32,328,371	30,766,299	10,583,100
1928	13,017,464	20,945,905	20,397,142	7,273,535
1929	12,908,725	20,836,475	21,058,163	7,887,608
1930	12,692,542	20,086,821	20,335,881	7,162,267
1931	12,248,393	19,601,887	19,460,503	5,895,004

The undertaking is governed by a Board of seven Directors, the President of which is Mr. Henry P. Benson, and the Managing Director, with the title of Agent, Mr. J. Foster-Smith. The Agent is responsible to the Directors for the management of the mill, and has under his orders three superintendents, each responsible for one of the three main divisions: spinning, weaving and maintenance. Under the superintendents are overseers, each responsible for one of the ten operating departments of the mill.

During its long history Naumkeag has naturally drawn its workers from many sources. When it began operations, it started with a nucleus of trained spinners from England and Scotland, but the majority of the workers were native born and residents of Salem. It will be remembered that the mills started work when the other industries of the town were suffering from depression, and a reserve of workers who had been thrown out of employment in their previous occupations was therefore available. In addition, as has always been the case in other countries at the beginning of the development of the cotton textile industry, many girls came in from the country to work in the mills. After a few years, however, waves of immigrants began to flood the country. The Naumkeag mills were well situated to absorb this immigrant labour, and the native American workers gradually left the mills, attracted to other

occupations. In the 60's the workers were chiefly Irish, but after a few years they too passed into other industries.

The present workers consist largely of the descendants of two other immigrant streams, the French Canadians, who began to come to Salem in the 70's, and the Poles, who arrived in the two subsequent decades. In the last forty years, therefore, the working population of the mill has been remarkably stable. Many of the workers own their own homes in Salem, and their horizon is largely limited by the life of the mill and their immediate surroundings. The number of workers in April 1932 was about 1,300, 500 males and 800 females.

The History of Industrial Relations

In the very early years industrial relations in Naumkeag were marked by paternalistic and even theocratic conceptions. The corporation controlled rigidly not only conditions in the mill but also conditions outside. The mill bell rang a curfew at nine o'clock every evening, as an intimation that everybody must then be off the streets. And on Sunday all mill employees were obliged to attend church.

Soon, however, the attempt to control the conditions of life of the workers outside the mill was abandoned. It became obviously impossible to do so when the employees were no longer recruited largely or exclusively from Puritan New England homes, but were of different nationalities, different religious beliefs, and different manners and customs.

Control of conditions within the mill, on the other hand, continued to be paternalistic right up to the war years. This control would appear to have been on the whole benevolent and free from a dictatorial spirit. In any case no serious collective divergence of opinion between management and workers occurred until 1918, eighty years after the establishment of the company.

The last year of the war and the first of the peace were periods of industrial strife in all countries, and Naumkeag did not escape. In June 1918 a strike occurred in the Naumkeag spinning and carding department, employing 300 workers. A local Union was organised and chartered in the United Textile Workers of America, affiliated to the American Federation of Labour, and machinery for dealing with the management was

established. Agreement was reached at the end of five days to return to work and submit the entire controversy to arbitration under the auspices of the Massachusetts State Board of Arbitration.

In the autumn of 1919, 75 per cent. of all workers were members of the Union, and demanded its recognition with collective bargaining in its fullest sense *plus* a general increase in wages. After a seven weeks' strike, a conference was called, and the management and Union officials agreed upon: (1) recognition of the Union ; (2) a minimum wage for women ; (3) collective bargaining ; (4) withdrawal of the demand for a wage increase ; (5) a system of collecting union dues within the mill ; and (6) the establishment of a shop committee and foreman conferences to adjust grievances.

In neither of these disputes was there any resort to violence or to measures of which either side might subsequently feel ashamed. The Agent of the Company closed the plant on both occasions, and did not resort to injunctions, " yellow-dog " contracts, or other methods of strike-breaking. The strikers on their part adopted a responsible attitude, and sought through conference and not through violence to make their point of view effective.

With the resumption of work began a closer co-operation between employer and employee, and a united effort for quantity and quality production. Added to this was a sincere effort on both sides to eliminate, or at least alleviate, the causes of friction, misunderstanding and resentment. Next followed an agreement to accept seniority rule as a means of still further improving morale. It is believed on both sides that honest effort in quality and quantity production is rendering faithful service, and is entitled to reward in the form of promotion as well as in security of job.

A further extension of the co-operative spirit came about when the management and the Union, through their legally qualified officers, signed in 1927 an agreement, the main object of which is the removal, as far as possible, of all causes of misunderstanding and friction, and the promotion to the greatest possible degree of mutual helpfulness between the two organisations.

The agreement recognises the desirability of trade unions ; pledges the co-operation of employees in effecting such economies in manufacturing as may be brought about by the introduction

of improved machinery; provides for a proper and orderly holding of conferences in the event of differences which may arise in the natural course of the operations of the mill and bleachery; and further provides for regular meetings between the management and the representatives of the Union.

As this agreement constitutes the basis of the practice of industrial relations in the undertaking, it is necessary to quote it *in extenso*:

Agreement by and between the United Textile Workers of America, through its legally qualified officers, party of the first part, and the Naumkeag Steam Cotton Company, of Salem, Massachusetts, through its legally qualified officers, party of the second part, with the object of removing, as far as possible, all causes for misunderstanding and friction and of promoting to the greatest possible degree the mutual helpfulness of the two organisations.

First: The party of the second part agrees to a cordial and full membership recognition of the *bona-fide* trade unions of its employees, known as party of the first part, as their proper agents in matters affecting their welfare, and further agrees that these trade unions are acceptable. It recognises them as desirable, not only in regard to the welfare and protection of their members, but also desirable to the management, inasmuch as the co-operation of their members is essential to the continued and successful operation of the Mills.

Second: The party of the first part agrees to promote in every legitimate way the distribution and sale of "Pequot" sheets and pillow cases, and other products of the party of the second part, and pledges its support in a constructive and responsible way to the end that quantity and quality production may be maintained, and further pledges its co-operation in effecting such economies in manufacturing as may be brought about by the introduction of improved machinery.

Third: The party of the first part, realising that continuity of operation is essential to the successful operation of the Mills, agrees that in the event of differences which may arise in respect to details of operation, compensation, hours of labour, working conditions, or any other matter of controversy between the management and the employees, a period of not less than sixty days shall be allowed for the proper and orderly holding of conferences between the management and the executive or other committee of the Union, and further agrees that no action tending to disrupt production shall be taken before the expiration of the said period.

In the event of the unauthorised cessation of work by an employee or group of employees the said party of the first part agrees to use every effort at its command to assist in maintaining continuous operation.

Fourth: The party of the second part, appreciating the advantage of a spirit of co-operation and loyalty inspiring the personnel of its employees, and desiring to further cement the feeling of friendly and sympathetic understanding, agrees to use every effort to maintain good working conditions, fair wages and continuity of employment.

Fifth : Representatives of the party of the first part shall meet with the representatives of the party of the second part at regular intervals, preferably once a month, or as often as necessity may require, for the discussion of any questions that may arise and for the further extension of a spirit of loyalty, helpfulness and co-operation.

Sixth : This co-operative agreement is binding upon both parties in spirit as well as in letter, and shall be changed only by mutual agreement, after notification in writing, served by either party upon the other at least sixty days before such change is to become effective.

Seventh : This agreement shall be operative for the period of one year from date of acceptance, and either party may withdraw from this agreement on sixty days' notice.

This agreement has since continued in operation, unchanged, from year to year. With this joint machinery in force, monthly conferences started to discuss competition in manufacture, sales and markets, quality and quantity production, regularisation and continuity of employment, technical changes and economies to be effected through new and improved machinery.

In 1928 the management considered that it was essential to reduce costs of production. This was a period of intense competition in the cotton textile industry, when the New England companies were threatened with extinction as a result of the rapid development of the mills of the Southern States, operating close to the sources of supply of the raw material, with the most modern automatic machinery and with cheap labour.

The management of the Naumkeag therefore brought to the attention of the Executive Committee of the Union the fact that the Naumkeag, owing to the lower costs of its competitors, was put to most serious disadvantage in marketing its product, and that its costs of production must be brought to a figure comparable with mills making an identical line of goods. To this end the management, believing an undertaking can prosper and give employment to its workers only to the degree to which it is economically in balance with industry as a whole, presented a new schedule of labour and wages. This schedule provided for a rearrangement of work in every department, and inevitably involved the elimination of a considerable number of operatives. On the other hand it provided that no wages would be reduced. In other words, this reapportioning of jobs in each case carried with it an increase in pay, and stressed the further belief of the management that no employee doing a fair day's work should have any addition made to his task without some commensurate improvement in working conditions. The schedule was worked

out by the supervising executives from their intimate knowledge of the jobs, and not by factual tests.

Several conferences were held between the management and the Union, but it was difficult to reach agreement. The Union recognised the necessity of a reduction in costs, but was reluctant to accept without further examination the programme of the management. The Union then took an interesting and unusual step. It consulted Mr. Morris L. Cooke, management engineer of Philadelphia. It then presented to the management a counter-proposal. It agreed that cost reduction was desirable to safeguard its employer, and thus its own status. It agreed that proposals of the nature suggested by the management would accomplish the result. But it pointed out that they should not be adopted wholesale, because of the effect on employment. Furthermore, detailed study of each suggestion was desirable. Why not employ an engineer, to be selected by Mr. Cooke, who could make analytical research into each process, recommend standards of performance in accordance with experimentally ascertained facts, and discover new possibilities of waste elimination ?

The management agreed to this proposal, and Mr. Francis Goodell was employed by the Union and with the consent of the mill management made a fortnight's survey of the whole situation of industrial relations in the mill.

As a result of this survey, the Union submitted to the management, in January 1930, a series of proposals relating to the new schedule suggested by the management, and providing for the employment by the Company of a trained technician, and for the appointment of a committee representing the management and the Union to act with him in the making of tests on a factual basis. The object of these was the elimination of waste—both of labour and of materials—and an ultimate reduction in cost. The proposal further provided for master planning on the part of the management, for the budgeting of sales and for the forecasting, as far as is humanly possible, of continuous operation.

In detail, the Union proposed that each question under discussion should be settled separately and upon the basis of analytical research. It was believed that this analytical approach would not only settle the points at issue, but would supply elemental facts leading to other forms of economy, aid in the selection or rejection of new equipment, and, above all, give

practice to both parties to the agreement in discussing upon a factual basis matters at issue.

This research work would be headed by a technician employed by the Company. The Union was prepared to accept someone recommended by Mr. Morris L. Cooke as having the requisite viewpoint.

It was also proposed that the existing machinery for discussion should be supplemented by a Committee on Waste Elimination. This Committee would act, or appoint individuals to act, to give assistance to the above-mentioned technician, and have the power to review the facts leading up to decisions relating to manufacture recommended by the technician. The Committee confined itself to such constructive proposals, under provisions somewhat as follows :

> The parties to this contract (or agreement), recognising their common stake in eliminating waste, and realising that wasteful practices generally result, not from intention but from lack of common understanding of such practices and their injurious effect upon both earnings and wages :
>
> Hereby agree to set up a joint research committee composed of three (four or five) representatives of the management and three (four or five) representatives of the Union, whose duty it shall be to ascertain the facts and to devise methods of co-operation for the elimination of waste and the improvement of working conditions as related to quality and quantity of production. This research committee shall in no case entertain complaints or grievances, but shall concern itself exclusively with constructive suggestions for the promotion of the common interest of the parties signatory to this agreement in eliminating waste.

The Committee should be furnished, in the view of the Union, not only with relevant figures obtained by research but also with information concerning the major cost and quality problems arising from competition which confront the management. Although the employees might at times realise that the costs must be upon a sound basis, they did not have any way of knowing the effect of their output upon the costs. There was a psychological need for concrete and immediate facts of this nature if habits of economy and pride in achievement were to be further developed.

This procedure, first of research and second of joint factual consideration, would furnish the machinery for sufficiently frequent and constructive discussions.

Master Planning. The Union realised that the elimination of waste in its several forms was partly dependent upon other

considerations than the provision of adequate machinery for constructive discussion. They could not indefinitely continue to endorse a programme which would reduce the labour requirements per unit without reasonable assurance that the sales problem was being met in the same forward-looking and resourceful spirit. They were concerned about distribution at a time of unprecedented change in this field. They could co-operate fully upon the basis that, humanly speaking, future sales were under control, and that plans were made ahead for preventing sudden drops in production due to failure to forecast sales, and to co-ordinate the forecasts with the labour requirements in terms of the immediately succeeding years.

If the necessary sales planning to give assurance to the employees did not already exist, this lack should be the major concern in order that the place of " Pequot " in the market might not be injured by the many powerful changing elements in the field of distribution—the increasing chain-store development, the general dissatisfaction with and review of present sales methods, the introduction of new basic fabrics and the intensive study of product design.

Unemployment Reserve. It was considered by the Union that if sales planning were adequately carried out, it should become possible for the management to develop plans running at least a year or two in advance, to provide for an unchanged or an increasing staff coupled with a decreasing cost. The Union felt that steps should be taken to work out a financially sound unemployment reserve fund. They did not insist that this fund be started immediately, but believed that with a competent sales planning function, which is integrated with the other administrative functions of financing, buying, manufacturing and planning labour requirements, such a fund would not be a drain upon the Company. On the contrary, it would give two vitally important benefits : first, it would provide a valuable stimulus to continuing and far-sighted sales administration, and second, it would liberate an unprecedented degree of co-operation.

In addition, such a fund should not mean a heavy outlay. With a highly effective control of the distribution problem, the amount expended might be relatively small. And the financing could be made conservative by limiting the amount of liability to the amount of the reserve.

To sum up, the Union believed that the Company could supply conditions which would cut waste in line with their proposals by supplying the machinery for constructive discussion, by getting and giving out the facts relative to the cost requirements, and supplying in some way the confidence that lower costs would not only work to the ultimate benefit of all concerned but that readjustments within the Company, or from the Company to other companies, would be made in conformity with the practical needs of the employees.

The management agreed to these proposals, and, on the nomination of Mr. Morris L. Cooke, Mr. Francis Goodell was retained by the Company to undertake, in co-operation with management and workers, the necessary technical study.

The Machinery of Industrial Relations

Waste Elimination and Joint Research

The co-operation of management and workers has been ensured, in the first place, through two pieces of joint machinery: the Waste Elimination Committee, sometimes called the Research Committee, and the Research Staff. The Research Staff are all on the Waste Elimination Committee, but, unlike the others, they give full time to research work. The Committee is called together occasionally for advice and review of findings and as an additional medium for getting information from and to the body of employees.

The Waste Elimination Committee is composed of nine members. Its Chairman is the Technician. The Technician is paid by the Company, but the choice must be approved by both parties to the agreement. The management members are appointed—the acting Superintendent, the Plant Engineer, an overseer, and an official who was at one time night superintendent. The Union members are the presidents of the two Locals—the United Textile Workers No. 33 and the Loom Fixers' Union No. 30—and two other members, one of whom is changed in accordance with the operation under discussion.

There are two ways in which the activities of the Waste Elimination Committee are spread among the rank and file. The best is the informal method whereby the Committee members are regularly and most of the time available for questions by the rank and file. The other is by means of posted

notices telling about the meetings. The Chairman prepares minutes of the meetings ; the Company has them mimeographed, and then they are posted on the bulletin boards. Other copies are given to the interested parties for record.

The Research Staff consists of the Technician, assisted by two of the Union members of the Waste Elimination Committee, and a similar number of Management members, all of whom are paid by the Company.

The work done by the Committee and Staff has consisted principally in an analysis of various jobs with a view to ascertaining the practical possibilities of increasing the number of machines to be tended by each operative.

The problem of increasing the number of looms per operative has recently become an issue not only in the East and South of the United States, but also in the countries of Europe. It has become an issue mainly because of the installation of more perfect looms, the organisation of better maintenance, and the institution of better operation control.

The number of looms per weaver was formerly limited by the frequency of stops and breakdowns which necessitated the weaver's attention. But with better maintenance of the machinery and operation control, the number of stops is reduced, and more looms per weaver are possible. How many he can tend depends not, as before, upon the emergency work he has to do, but on the incidental work. Some of this may be delegated to others. Some requires the skilled hand of the weaver. To make new adjustments of work which really aid efficiency instead of injuring it requires careful study.

If the given looms have a large number of unexpected stops per hour, naturally the weaver has to be on hand to provide for these emergency breakdowns. If he has to be on hand ready for an emergency, then he might as well do the incidental work around the loom while he is waiting, because this incidental work can be set aside when the emergency comes. Incidental work consists of cleaning the looms, taking out the finished cuts of cloth, " burling " the battery end of the cloth, and oiling. These things do not have to be done on the instant. Therefore the weaver has until recently cleaned his looms and performed most of the incidental work. In recent years, however, the art of maintenance has taken a great step forward. It has been learned that there is an emphatic economy in prevention of these breakdowns, in periodic inspections and renewals. As a

result the "end breakage" is much lower. Now that the end breakage is low, the unexpected stops are almost negligible, and the weaver need no longer be assigned looms on the basis of serious trouble. He can, therefore, handle more looms. How many more depends upon whether he is still to do the incidental work around the loom. Some of this incidental work really requires help as skilled as the weaver himself. But some of it, such as cleaning, can be done by a less trained and experienced worker, and at a lower wage cost. The cleaner can become expert—intensively trained in that single operation and equipped with tools well adapted to that one special job—and the other advantages of division of labour can be enjoyed.

A great many companies have tried to make extensions, i.e. to increase the number of looms per weaver, without improving and controlling the end breakage. They have usually failed to maintain their new standards. Others have made extensions without specialisation by virtue of their improved maintenance.

The joint research work undertaken in this field of job analysis in the Naumkeag company has been organised as follows.

After an operation has been decided upon for study, Union delegates and the Overseer in the room concerned jointly select a number of so-called "average" operators for study. In addition to the joint selection of operators to be studied the tentative standard practices which are to obtain while making the tests are reduced to writing. More often than not these standard practices have to be changed as the studies throw light on the fact involved. For example, the interval which should elapse between examinations of the cloth on the looms is a matter of quality and cannot be set without the approval of those in touch with sales problems. But the similar interval in the spinning room is a simple matter of economy which can be determined without difficulty by a couple of tests. When the tentative standard practices have been put in writing, the Union representatives go over them with operators in touch with the operations. There is not infrequently some valuable complaint or suggestion in regard to this standard practice.

When the standard practice is ready for adoption, the Union member goes to the operator, or operators, to be studied and tells him the purpose of the study, and explains the value of Union protection in the study and the importance to him and his colleagues of telling the Research Staff of the difficulties

which the operator is likely to be " up against ". In this way, the co-operation of the employee is usually obtained in a shorter time, especially when that operator becomes convinced that a thorough study is to be made.

There have been two sorts of studies. There are the formal tests of the machines in the exact way that they are to be manned and operated in accordance with the Company objectives. These are called " critical " tests. On some other tests more empirical methods have been used, learning what standard practices are economical, and sometimes showing the operative that some job is less than a fair standard for a day's work. These tests, " critical " or empirical, are made where those who are concerned can see them. Such tests often carry more conviction in regard to the practicability of a given arrangement than would any assemblage of figures.

After a job is analysed in this way, the next step is the review by the Waste Elimination Committee. It has been established that this is *not* a voting matter. The Technician presents the figures and each side has an opportunity to criticise the details. Is any factor forgotten ? What precautions have been taken against unforeseen delays ? Up to what end breakage will the figures be usable ? The job of the Committee members in this review is merely to present any objection. But the Technician decides as to the weight of these objections. Responsibility is thus kept single, and one of the main difficulties of the Committee is swept away. Also the onus of any unpopular move cannot seriously be charged to any management or Union delegate. If the delegates have presented their views clearly and forcibly, they have done their part. After the job standard has been made and reviewed, the payment, whatever its form, will be left to negotiations between the Company and the Union, just as in the years previous to this joint research.

Mr. Francis Goodell, the Technician who is undertaking this joint research, claims that the method has definite advantages to offer both to the Company and to the Union.

He urges that co-operation is required in setting job standards on an economical basis. Not only are operators informed by joint discussion, but these operators also bring out promptly and very willingly the points which the study may not show to be important, or may not show at all.

It seems too soon to say [Mr. Goodell admits] that we can make such standards more quickly than research which is not joint. Whether

any industrial engineer can do it quicker depends upon what he finds to be done. Of course an autocrat can operate faster than a man with an educational task. But in any textile mill I ask whether that educational task can be ignored with economy. Can you get low end breakage without at least passive support of the Company policies ? If we are going to assign the job of setting standards *plus* what we mean by educational work, then I claim that joint research is quicker as well as more thorough. There are times, of course, when you have to subordinate this educational work or sink ; I do not wish to make an extravagant claim applicable to every mill.

This joint machinery of research provides the employees with a stimulus to take a vigorous part in seeing that no error occurs in setting job standards. Similarly, management representatives perform a like service from their point of view.

In order to set a job standard, certain definite conditions have to be obtained. Many of them boil down to the " end breakage " per unit, as the one condition which must be obtained in order that the standard may remain fair. But there are others : What is to be done with dirty bobbins when detected ? What precautions are expected in order to detect it ? Exactly how should piece-ups be made in the interests of uniform and strong yarn ? What services are to be performed by the section hand, the fixer and others ? How are they to be summoned ? In each of these cases a standard practice is devised which can scarcely be decided on until it represents an economical and practical answer. The conditions are recorded and no serious slip can arise, no uneconomical practice which alters those salient conditions can creep in, without some prompt and justified complaint. This is worth a great deal to the management.

As a direct result of this establishment of standard practices, comes a profound improvement in the position of the overseer and in his relations to his staff. If an employee does not see fit to follow the standard practice which he has had a hand in setting, then that employee is clearly in the wrong. Discipline cases do not normally arise when the employee sees that he is clearly in the wrong. This establishment of standard practices, therefore, restores a form of operation control which has not always obtained where the co-operation between plant and Union has been less detailed.

Joint research, in Mr. Goodell's view, also offers distinct advantages to the Union. Joint research offers full representation throughout the processes of setting standard jobs. This is a considerable measure of protection against judgments which may be seriously prejudiced. This may be said very briefly and in

chilly technical terms. But it means to the wage earner an increasing protection against inordinate demands upon his or her health ; it means an increase in security against having to leave or being fired, because some assignment, due to error, was actually out of reason. Where the old bluff technique obtains, the operative acts exactly as though he were terribly overworked, and when the management is obliged to resort to meeting bluff with bluff, this risk of error is greatly increased. Joint research should invariably prevent such cases from arising.

Finally, as Mr. Goodell points out, the method provides what a psychologist might call " emotional escapes along constructive channels ". The typical worker, Mr. Goodell finds, thinks that he is not appreciated, broods, and uses ingenuity in " soldiering ". The typical employer " has his desk piled high with matters that should never have gone to him, which could have been settled better and more promptly at the point of the job ". Joint research uses the ability of the worker, saves the time and worry of the manager, changes obstruction to construction.

The joint research undertaken by Mr. Goodell in this spirit and with the co-operation of management and workers continued until a new system of standard practice was evolved. This system is now in operation, and is working smoothly.

Regular Collaboration between Management and Workers

While joint research in the elimination of waste has been the outstanding achievement of management-employee co-operation in Naumkeag, it would be a mistake to overlook the day-to-day, unspectacular relations which normally take place between management and workers in every department of the firm. In every department there is a delegate of the Union, and if any worker employed in that department has a grievance, he goes in the first place to the Union delegate. If the Union delegate considers that the grievance is a real one, he will consult the overseer on the matter, and in the great majority of cases the question is settled in the department. If, however, it is impossible to arrange matters amicably in the department, the grievance may be brought to the attention of the Agent at the monthly meeting which he has with the representatives of the Union. At this monthly meeting, at which 24 Union representatives are present, the Agent gives an account of the development of general business conditions in the course of the last

month, together with particulars of the influence of these conditions on production and sales at Naumkeag. He also explains the progress made in any particular question of Union-Management co-operation which may be in evidence at the time. Finally, opportunity is given for the chairman of the Union to raise any question relating to industrial relations and to mention any grievance that may have been brought to the attention of the Union representatives, and which they have been unable to settle directly in the various departments.

This monthly meeting, which brings representatives of the workers into direct touch with the managing director, enables them to feel that they are *au courant* with the progress of the firm, and are directly co-operating in that progress. They, on their part, after the meeting, are able to pass on to the Union members the information which they have received directly from the managing director. They are also in a position to give to Union members explanations with regard to particular aspects of Union-Management co-operation. In April 1932 the particular question at issue was the elimination of oil in spinning. In the spinning departments, on the bulletin boards were to be seen recommendations with regard to the elimination of oil, typed on paper with the Union letterhead. In this and other ways, regular collaboration between management and workers takes place and serves to maintain a spirit of good industrial relations.

Conditions of Work

Hours of Work

The main features of conditions of work in the undertaking can be very briefly described. Under normal conditions of production a 48-hour week is worked, the daily distribution of hours being 7.15 to 12 and 1 to 5 ; on Saturdays 7.15 to 11.30. In the last year or two, however, short time has been worked, thus : from 1 June 1931 to 1 March 1932 a four-day week was worked, namely, 7.15 to 12 and 1 to 5 from Monday to Thursday, giving 35 hours a week. On 1 March 1932, however, owing to increasing demand, a five-day week was put into operation, namely, 7.15 to 12 and 1 to 5 from Monday to Friday inclusive, giving 43¾ hours per week, and sometimes, if extra production were required, work would continue on Saturday, making the full 48-hour week.

Rest Pauses

In each department and on each job, periods of actual work are carefully scheduled so as to provide for adequate rest pauses. In the case of spinning, on an average about 25 per cent. of the total active working period is rest, which includes waiting and watching. In weaving, about 33 per cent. of the total active working period is rest, including waiting and watching. The actual amount of rest allowed depends to some extent on the nature of the job. If the operations required by the particular job involve stooping or other awkward postures, then more rest is allowed for. In other jobs, less rest is normally provided for, because rest periods automatically occur during the operation. For example, in the cloth room, two girls sit at a machine examining cloth unrolled from a machine, with a view to detecting and repairing small defects. If one girl stops the machine to mend a defect on her side of the roll, the other girl on the opposite side automatically rests.

In the case of cleaners in the spinning room, the following time-table of rest pauses is applied : work begins 7.15 ; rest 9.34 to 10.10 ; rest 11.45 to 12 (12 to 1, lunch hour) ; rest 3.07 to 3.30 ; rest 4.53 to 5. At 5 work stops. This provides for a total of rest periods during the course of working hours of 81 minutes. In the case of other operations, an actual schedule of rest periods is not laid down and the operative gets his rest as and when he can, reasonable provision being made for this purpose.

In the case of a weaver operating twenty looms on 90-inch Pequot, the following table summarises the average time taken per hour for each of the operations required of him :

Item of operation	Per loom per hour	Minutes per operation	Minutes per hour
Patrolling backs	3 times	0.214	12.83
Patrolling fronts	3 times	0.123	7.83
Piecing up ends	1.05	0.900	18.93
Pickouts	0.0165	8.600	2.85
All else (call fixer, cloth boy, mark cut, get pay, smashes, etc.)			3.01
Total : Work			45.00
Watching and waiting			15.00

It will be seen that out of each hour 45 minutes is occupied in actual active work and 15 minutes is left free for watching and waiting, personal and fatigue. It should be noted, however,

that watching and waiting time is not necessarily pure rest. A weaver during watching and waiting time sits down and does not actually perform any operation on any of his looms, but if a loom stops the man must go and attend to it. It will also be noted that, as one of the mysteries in weaving not yet completely solved is the wide fluctuation that may take place from hour to hour in end-breakage, the amount of time which the weaver may spend on piecing up ends varies appreciably for short periods. The figures given in the table quoted above are based on careful observation and experience over a long period and under widely different atmospheric conditions.

Wages

The average wage for operatives employed by the undertaking in April 1932, calculated on a 48-hour basis, was $22.00. Wages of loom fixers were $34.00, weavers $33.00, and the minimum wage paid in the establishment was $14.00.

Employment and Training

Employment

New hands are hired directly by the overseers in charge of the various departments. The overseer is responsible for the quantity and quality of production in his department, and it is considered right, therefore, that he should have the opportunity of choosing his own personnel. In actual practice, if the overseer finds at 7.15 in the morning, when work commences, that any of his staff are not in their places, he goes to the "spare floor" where those in search of employment are waiting. He selects by personal interview the most suitable person or persons, and they are immediately set to work. The system of "call girls" is not applied at the Naumkeag mills. "Call girls" are girls who are not regularly employed, but remain at home ready to come at a moment's notice to take the place of absentees.

There is no central employment bureau in the Naumkeag mils, and no central employment system. It is not considered that it would be justifiable to set up central machinery for employment, for two or three reasons. In the first place, the rate of labour turnover is extremely low, so that the number of new hands taken on in normal times is very small. Further,

employment is greatly sought after in the Naumkeag mills, and the overseers have large numbers of candidates to choose from, many of whom will be relations or friends of trusted employees. As each overseer is responsible for doing his own hiring, so he is also responsible for discharging. As, however, a careful selection is made before hands are taken on, the number of dismissals is in normal times not great. When it is necessary to lay off employees owing to reduced production or as a consequence of rationalisation, one of the main principles applied in selecting employees for dismissal is that of seniority. In every department a list of the operatives employed is posted on a bulletin board in accordance with the date of first engagement. Employees are proud of their seniority rating, and if it becomes essential to reduce staff, the most junior are, other things being equal, those who are obliged to go.

While, however, each overseer is allowed liberty, in accordance with the general principles of employment laid down by the firm, in respect of hiring and firing, he is limited in respect of employment by his quota. Each department is allowed a certain quota of employees which must not be exceeded. The Agent personally supervises the monthly recapitulation of the actual payroll of the department in comparison with the quota allowed for that department. All staff records are kept in the central office, to which each department submits a weekly record of movements in the staff employed in that department, indicating, in the case of separations, the reason for the separation, for example, " retired on pension ", " left to marry ", and so forth.

Training

Ordinary operatives normally get their training in the department in which they are hired. They are put first of all on unskilled work, in which they have opportunities of learning more skilled work, and gradually they are promoted. In the weaving department, for instance, a new hand normally begins as a sweeper. As a sweeper she gradually acquires a working knowledge of the next higher job, namely, that of the cleaner. The cleaner gradually learns the work of the battery hand, and the battery hand, in her turn, that of the weaver. Whether promotion is slow or rapid from one job to another naturally depends on a variety of circumstances, the occurrence of vacancies, and the intelligence, adaptability and skill of the

employee. In the case of technicians, provision is made by the mill for its technicians to take courses in Textile Technology from time to time at the Massachusetts Institute of Technology, Boston, the undertaking paying their salaries and expenses throughout the course. Permission is also freely granted to technicians to attend meetings of technical bodies, in some cases leave with pay and travelling expenses being accorded.

Safety, Health and Welfare

Accident Prevention

Much attention is paid to the prevention of accidents. In addition to the measures for industrial safety required by legislation, every endeavour is made to provide additional mechanical safeguards, and to educate the employees, with the co-operation of the Union, in the prevention of accidents. In each department there is a special bulletin board on which records are prominently displayed of the accidents occurring in that department, together with the accidents taking place in the whole mill. The causes of the accidents in each department are given on a typewritten sheet affixed to the board. Posters containing publicity and educational matter relating to accident prevention are also displayed. A representative of the insurance company visits the mill once a week, and meets the members of the workers' accident committee, which consists of one worker from each department. He discusses with them any additional measures, either of a material or psychological order, that could be taken with a view to accident prevention. The representative of the insurance company also meets the foremen, and has access to the superintendents and to the Agent.

Health Provisions

Industrial nurses are employed who attend immediately to all accidents. It is impressed upon employees that even the slightest accident should be reported, and attended to without delay. The nurses also give attention in cases of sudden sickness or malaise on the part of workers, and give them advice on general matters of health. Serious accidents are immediately reported to the works doctor and are treated by him. The works doctor and the industrial nurses are also responsible for the

general hygienic provisions of the mill, which are maintained in a high state of efficiency.

In the case of employees in the bleachery, where good eyesight is indispensable, the eyes of every employee are periodically examined at the expense of the undertaking by an oculist, and glasses are supplied to them free in accordance with the oculist's prescription.

Workmen's Compensation and Pensions

Workmen's compensation is provided for in the mills in accordance with the Workmen's Compensation Law of the State of Massachusetts.

Although there is no regular pensions scheme in operation, the Agent has discretionary power to provide pensions for operatives of advanced years with long service in the firm, who become incapable of work. Operatives have no right to a pension, but in cases of long service the Agent, in his discretion, grants retiring allowances. The pension given depends on a variety of conditions, such as age, wage, long service and personal circumstances. In the month preceding the writer's visit to the mill, three operatives were placed on pension, on allowances varying from $5.00 to $15.00 per week.

Welfare

With regard to welfare, the general policy of the undertaking is to pay its employees the highest wage possible, and not to spend money on accessory and marginal welfare institutions (" The welfare of the workers is placed in their pay envelopes "). It is not considered necessary by the undertaking to make special provision for the employees after their hours of work in the mill. Salem is not a large town, its population numbering less than 50,000, and it abounds with religious and charitable associations making provision for recreation and for the health of its inhabitants. The Young Men's and Young Women's Christian Associations and the corresponding Catholic and Hebrew associations provide educational and recreational facilities. Playing fields are within easy reach, and in the summer the sea beaches afford opportunities for healthful and invigorating recreation.

From the point of view of health, there are excellent hospitals in the town, and various national and religious organisations

maintain orders, fraternities and sororities which take care of the sick.

As a large proportion of the workers return to their homes for the midday meal, no need has arisen for the provision of a cafeteria or restaurant. For the convenience of those who remain in the mill at the lunch hour, however, a lunch room is provided, with an attendant who will heat food which the employees bring with them from their homes. Employees may eat their lunch in the lunch room, in their departments, or in the open air. After having eaten their midday meal, employees often join in ball games in the grounds of the mill.

No general stock ownership scheme is in operation in the mill, but all employees—executives, overseers, office employees and operatives—are permitted to purchase shares in the company by a system of deferred payment. It is considered, however, that owing to the wide market fluctuations in the price of general textile securities, they are not suitable investments for the general body of employees to acquire in this manner.

Finally, reference may be made to the Americanisation School conducted in the factory in the winter months. The factory supplies the room for the School, and the State furnishes the teachers. The School meets two hours per week and its main aim is the teaching of English to employees whose knowledge of this language is rudimentary. In March a little graduation ceremony takes place, with an entertainment provided by the Company. A knowledge of English is useful both to the employees and to the Company: to the Company because it prevents misunderstanding of orders given by the overseer, and to the employees because it supplies them with one of the conditions necessary for naturalisation. As a matter of fact, in the case of new employees, only those who understand English are now hired.

Influence of Labour Legislation

Little reference has so far been made to the effect of labour legislation on industrial relations within the mill. That effect is, however, far-reaching, for basic conditions are largely determined by the system of labour legislation of the State of Massachusetts. It is necessary here only to mention the more important provisions of the various laws.

Work is prohibited on legal holidays, except such work as

is absolutely necessary, and it is also prohibited to make up time lost by reason of a legal holiday by working more hours on any one day than the law permits. Work on Sunday is prohibited unless the worker is allowed during the six days next ensuing 24 consecutive hours without labour. Before operating on Sunday, every employer, with certain specified exceptions, must post in a conspicuous place on the premises a schedule containing a list of his employees who are required or allowed to work on Sundays, and designating the day of rest for each.

Conditions of work of women and children are particularly carefully regulated. Their hours of work are normally limited to 8 in the day and 48 in the week, with provision for additional hours on the first five days of the week in order to provide for the Saturday half-holiday. No woman over 21 may be employed in any capacity before 6 a.m. or after 10 p.m., or in the manufacture of textile goods after 6 p.m. This provision, it will be noted, prevents the application of a two-shift system in the textile industry in Massachusetts. Similar provisions, varying according to age, apply to boys under 18 and girls under 21. No child under 14 is allowed to be employed in any industrial occupation. Employment of minors under 16 is prohibited in the case of certain specified occupations and employment of minors under 18 is prohibited in a further series of dangerous or heavy occupations. Women may not be employed in industrial undertakings within two weeks before or four weeks after childbirth. Women and children, subject to certain specified exceptions, must be allowed their meal times at the same hour. No woman or child may be employed for more than 6 hours at a time in a factory or workshop without an interval of at least 45 minutes for a meal. Provisions are also contained in the law with regard to the employment of children in street trading and other similar occupations, the lifting and moving of weights, and so forth. Further, laws provide for the establishment of minimum wages for women and minors and the establishment of the necessary wage boards.

The laws further contain detailed provisions as to health and safety in factories and mills. These are particularly comprehensive in the case of textile factories, where detailed regulations are made with regard to the use of standardised wet and dry bulb thermometers for the purpose of recording and regulating the humidity of the atmosphere and the temperature. Detailed regulations are also made with regard to the installation

of safety devices for machinery and for the lighting, ventilation and cleanliness of the premises. Further, sections of the general laws contain regulations with regard to the weekly payment of wages and precise specifications concerning the payment of wages in cotton textile factories. It is provided, for example, that no employer shall impose a fine on any employee engaged in weaving for imperfections arising during the process of weaving. In every textile factory, in every room where any employees work by the job, specifications are to be posted of the character of each work to be done by the employees and the rate of payment.

Workmen's compensation, as already indicated, is also provided for by law.

The law also provides for action to be taken by the board of conciliation and arbitration in the case of industrial disputes.

This very brief enumeration of some of the provisions of the system of labour legislation of the State of Massachusetts will give some indication of the extent of the control exercised by the law over conditions of employment.

The Competition of the Industrial South

The general background of this study in the situation of the New England textile industry is one not of prosperity, but of acute depression. The cotton textile industry of New England, once so flourishing, is at present passing through a very lean period. Its troubles began some years ago when the competition of the new mills of the Southern States began to make itself felt. The situation became worse as a result of the economic depression. The Naumkeag mills are among the very few to weather the storm without serious loss. The situation of the textile towns of New England has well been styled "tragic". In such towns as Lowell, Lawrence, Maynard, New Bedford, and Fall River in Massachusetts and most of the textile towns in the Blackstone Valley of Rhode Island, distress is widespread and intense. There are approximately 280,000 textile workers in New England, and of these more than 50 per cent. were estimated to be unemployed at the beginning of 1932. A certain proportion of them had been unemployed for years. Many of the unemployed have migrated elsewhere in search of work. The town of Lowell, for instance, decreased in population between 1920 and 1930 from nearly 113,000 to about 100,000. New Bedford

and Fall River, both towns of over 100,000 population, declined in the last decade by 6.9 and 4.3 per cent. respectively. These population decreases took place, it will be noted, before the effects of the present economic depression had time to make themselves felt on movements of population.

The decline of the New England textile industry is, as already indicated, usually attributed to the competition of the Southern mills. That competition is based in part on lower labour standards. A report issued by the Institute of Research of the University of Virginia [1] states that for a number of selected tasks the average full-time weekly earnings in Southern cotton mills were $5.70 less than those in the North, while the average actual weekly earnings in the Southern mills were $6.71 less than in the North. The cotton-mill workers in the South work from five to six hours more per week than those in the North. A more detailed comparison may be drawn from the statistics published in June 1931 by the United States Bureau of Labour Statistics [2]:

AVERAGE HOURS AND EARNING, 1928 AND 1930, BY SEX AND STATE

Sex and State	Number of establishments		Number of employees		Average full-time hours per week		Average earnings per hour		Average full-time earnings per week	
	1928	1930	1928	1930	1928	1930	1928	1930	1928	1930
Males :							$	$	$	$
Massachusetts	23	24	9,223	8,443	49.7	49.0	0.427	0.431	21.22	21.12
Georgia	16	15	6,679	7,355	56.2	56.5	0.281	0.286	15.79	16.16
N. Carolina	52	55	12,561	13,318	55.8	55.0	0.312	0.322	17.41	17.71
S. Carolina	23	26	8,116	9,924	55.0	54.8	0.381	0.292	15.46	16.00
Females :										
Massachusetts	23	24	9,112	7,724	47.9	48.0	0.353	0.353	16.91	16.94
Georgia	16	15	4,598	4,272	56.0	56.5	0.228	0.232	12.77	13.11
N. Carolina	52	55	6,949	6,963	55.8	55.0	0.262	0.257	14.62	14.14
S. Carolina	23	26	5,254	6,039	55.0	54.8	0.224	0.240	12.32	13.15
Males and females										
Massachusetts	23	24	18,335	16,167	48.8	48.5	0.392	0.395	19.13	19.16
Georgia	16	15	11,277	11,627	56.1	56.5	0.260	0.268	14.59	15.14
N. Carolina	52	55	19,510	20,281	55.8	55.0	0.295	0.301	16.46	16.56
S. Carolina	23	26	13,370	15,963	55.0	54.8	0.260	0.274	14.30	15.02

[1] *Labour in the Industrial South.*

[2] *Wages and Hours of Labour in Cotton-Goods Manufacturing, 1910-1930,* p. 9. Bulletin No. 539.

Conclusion

The working of industrial relations in the Naumkeag mills combines, it will be seen, several features of interest. A thoroughgoing system of Union-Management co-operation has been developed in an undertaking with a long tradition of labour management on autocratic and even paternalistic lines. All that is good in that tradition has been transmuted into the maintenance of cordial personal relations between management and workers within the framework of collective agreements and labour legislation.

The trade unions cordially co-operate with the management not only in the regulation of labour conditions, but also in the elimination of waste and in the development among workers of diverse national origins of a spirit of *esprit de corps* and loyalty both to the Union and to the mills. The unions also do what they can to push the sale of the products of the mills for they realise that the prosperity of their members depends on the prosperity of the mills.

The management, on its part, takes the workers into its confidence, realising that better work will be done if causes of suspicion and ill-will are removed before they have time to breed trouble. By associating the workers in technical research, the management has been able without arousing antagonism to apply the principles of scientific method throughout the whole plant, and thus assure the continued operation of the mills in the face of intense competition and throughout a period of profound economic depression.