

Longshore Industry
(1959-60 folder)

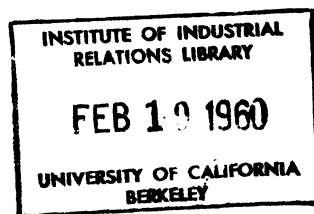
UNIVERSITY OF CALIFORNIA
Graduate School of Business Administration

Bus. Adm. 256
Fall 1959

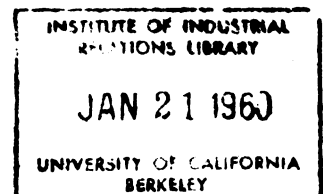
PRODUCTIVITY AND MECHANIZATION
IN THE PACIFIC COAST LONGSHORE INDUSTRY

Prepared for
Professor Arthur M. Ross

Prepared by
Robert E. Wilson



Berkeley, ~~California~~
University of California
January 13, 1960



ACKNOWLEDGMENTS

The author wishes to express his gratitude to all those whose contributions helped make this paper possible, but especially to:

Dr. Peter B. Buck, local Director of the Maritime Cargo Transportation Conference, who gave most generously of his valuable time on more than one occasion, and provided information which greatly facilitated a clearer understanding of the magnitude and complexity of the problem;

Dr. Lincoln Fairley, Research Director of the International Longshoremen's and Warehousemen's Union for his valuable insight into the union's point of view of the productivity-mechanization problem (and to some extent management's view), particularly in relation to the "productivity fund" provided for in the present contract; and thanks to his assistant, Mr. Eden, for additional insight;

Miss Anne Rand, charming librarian for the ILWU who could not have been any nicer or more helpful and cooperative, entrusting several of her carefully collected "originals" to the author and an associate,

Mr. J. Bonner Ritchie, a personal friend, and a senior in the School of Business Administration, University of California, whose insight and discernment in the many discussions on the subject had significant influence on the final approach and conclusions of this report.

To all of these the author extends a sincere "Thank you."

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	iii
LIST OF TABLES	v
 I. INTRODUCTION	 1
II. THE LONGSHORE INDUSTRY - A CONSPECTUS	4
A. Nature of the Work	
B. The San Francisco Dispatch System	
C. Cargo Handling Operations	
D. Labor-Management Relations - In Retrospect	
III. IMPROVING PRODUCTIVITY IN THE LONGSHORE INDUSTRY. .	11
A. Parties Interested in Productivity	
1. The U. S. Government	
2. Management	
3. The Union	
4. The San Francisco Port Authority	
B. Measurement of Productivity	
1. Need for measurement	
2. Problems associated with measurement	
3. The fund.	
IV. CONCLUSIONS	32
A. The Maritime Cargo Transportation Conference Study	
B. The Pacific Maritime Association	
C. The Union	
D. General	
V. RECOMMENDATIONS	36
BIBLIOGRAPHY	38

LIST OF TABLES

Table		Page
1	Breakdown of Hatch Time, San Francisco Commercial Data	15 a

I. INTRODUCTION

Americans today enjoy the highest standard of living the world has ever known. There are many contributing factors, and together they explain the reason for such material abundance: It is simply that the United States of America has the highest per capita productivity ever known.

Tremendous gains in efficiency and productivity have been realized in virtually every phase of economic activity during the last 50-70 years, although in varying degrees.

One seeming laggard in the productivity picture has been the field of materials handling. This is a function common to all industry regardless of other diversities. Materials must be received, stored, moved through the production process, and delivered to the final consumer. In general industry seems to have concentrated more on the techniques of making goods rather than on the techniques of moving them. However, notable improvements have been made in most industries during the last several decades, especially in the petroleum, steel, coal, and automobile industries - to mention a few.

A singular exception to the "rule" of increased efficiency in materials handling in the past few decades has been the Pacific Coast longshore industry. In reference to the antiquity of the materials handling methods in the longshore industry Glassell S. Stringfellow aptly states:

"It is a paradox of modern technology that the finest in modern productive and distributive activities are sandwiched between material handling methods that are no more efficient

now than they were fifty years ago." ¹

It is interesting to note that during the last two decades long-shoring costs have risen steadily while productivity remained virtually static, indicating the inflationary aspects of the problem. When one considers that such costs may represent as high as 70 per cent of the total operation costs of a general cargo vessel, the magnitude of the problem becomes readily apparent.

Great strides have been made in the shipping of petroleum products and in handling bulk products such as wheat and various ores. It is in the handling of general cargo - the multitudinous variety of dissimilar goods, frequently requiring slightly different handling techniques, -and each shipped in insufficient quantity to justify installation of optimum handling methods-- that inefficiency reigns supreme. Professor Churchman, of the University of California, Berkeley, has even gone so far as to say that there has been virtually no improvement in the handling of general cargo since the days of the Phoenicians.

Higher costs effect everyone (although in varying degrees) - the shipper, the shipping companies, the local and federal governments, and indirectly, labor.

It is the intent of this paper to examine critically the positions of each of the parties involved in the problem of productivity and the steps that are being taken improve productivity, including mechanization and its related effects. Of particular interest is the work currently being done by the National Academy of Sciences under the local direction of Dr. Peter B. Buck, which will be discussed at length. Also worthy

¹Glassell S. Stringfellow, The Port of San Francisco: Progress in Material Handling, an unpublished master's thesis, University of California, Berkeley, August 20, 1958, p. .

of special note is the rather paradoxical position of the union in regard to productivity gains, particularly through mechanization, which led to the current, rather unique - contract between the International Longshoremen's and Warehousemen's Union (ILWU) and the Pacific Maritime Association (PMA), providing for a \$1.5 million fund to compensate union members for work opportunity lost due to increased use of "mechanization." This fund has some particularly interesting implications which will be discussed in detail further in the report and in the concluding remarks.

This report is not intended to be a comprehensive coverage of the entire longshore industry but will generally be limited to the area concerning productivity and the effects of mechanization. It will further be confined primarily to the studies and efforts being made in the port of San Francisco, unless otherwise specified.

II. THE LONGSHORE INDUSTRY - A CONSPECTUS

A complete description of the nature of the longshore industry is, as previously stated, beyond the scope and objectives of this paper. This section is included to familiarize the reader with some of the basic elements of the industry to assist in general understanding of the problems involved and to facilitate subsequent writing. The treatment in this section will therefore be brief, and perhaps oversimplified, but sufficient for the stated purpose.

A. Nature of the Work

As indicated in the introduction, longshoring is a materials handling industry. It involves considerable physical labor - and in all types of weather. It is hard work. There is considerable danger from slippery holds, docks, and ladders, and from falling objects. The accident ratio relative to other industries is high.

Work is performed by longshore "gangs," of which there are 206 in San Francisco. These are "skeleton" or nucleus groups which are supplemented by additional workers from the union hiring hall as necessary. The normal gang in San Francisco consists of 12 or 14 men as follows:

<u>Discharging</u>	<u>Loading</u>
1 gang boss	1 gang boss
2 winch drivers	2 winch drivers
1 combo lift driver	1 combo lift driver
2 dockmen	2 dockmen
6 hold men	8 hold men

The gang boss is responsible for seeing that his men are used to best advantage. He has considerably less authority now than in the pre-1924, pre-hiring hall era.

The winch driver operates the ship's hoisting apparatus. This particular job requires a great deal of skill to prevent accidents, and damage to cargo.

The combo lift driver operates the fork-lift truck either on the dock or in the ship's hold (in the latter case additional men would be added to the gang to work the fork-lifts on the dock).

The hold men work below decks to stow and unstow the cargo. This part of the work is the least desirable, involving the greatest physical effort, danger, and discomfort (heat, order, etc.), and is usually performed by the younger longshoremen, the older, more senior men usually preferring the other jobs on the gang.²

The dock men rig the necessary gear for hoisting or releasing (as the case may be), and build loads on pallets if required, though additional dock men may be required in this case.

There are other categories of specialized nature but of less significance; also union clerks who keep accurate tally of the cargo received during the loading and discharging operations. They handle the paperwork (bills of lading, etc.) involved. All total, there are approximately 4,000 longshoremen in the system.

B. The San Francisco Dispatch System

When a ship arrives or is scheduled to arrive, its agent forwards gang requirements to a stevedoring company - which in turn forwards their request to the Pacific Maritime Association (PMA). Such requests

²F. T. Malm, "Wage Differentials in Pacific Coast Longshoring," Industrial and Labor Relations Review, vol. 5, No. 1, October 1951. (University of California, Berkeley, Institute of Industrial Relations Reprint No. 37, 1952). Mr. Malm points out the lack of significant wage differential, but implies a sort of non-monetary differential in this practice.

are arranged in order of priority and forwarded to the union hiring hall. The dispatcher at the hiring hall (elected from union ranks periodically to insure impartiality) assigns work to those gangs and individuals with the least hours worked in each calendar quarter.

C. Cargo Handling Operations

A brief treatment of the basic cargo handling operations may facilitate understanding of subsequently employed terminology.

First, a distinction should be made between the handling of general cargo and bulk cargo. Bulk cargos, such as oil and wheat can be loaded and unloaded in a matter of hours. Integration of facilities aboard ship and at the dock - a situation generally neglected in the handling of general cargo - allows ore to be loaded and discharged at a rate of 1,000 tons an hour. Cargo handling costs of such bulk cargoes represent a very small proportion of total costs; they represent well over half the total cost of operations with general cargo.³

It is in the area of general cargo handling that the greatest potential gains in productivity lie.

The actual loading operation for most types of general cargo can be thought of as consisting of a number of separate steps or "links." These concepts are helpful in understanding the nature of the operation:

Apron link. The apron is the loading area (or dock) alongside the ship. The apron link consists of the transfer of cargo from the dock shed to shipside, usually by fork lift trucks.

Hook link. This operation consists of lifting the cargo from the apron to the hold.

³Stringfellow, op. cit., p. 50.

Hold link. This stage consists of moving cargo from the hatch square to a position in the wings⁴ next to the final stowage position.

Stow link. The removal of each package from the pallet (in break-bulk loading operations) by the hold men and stowing it in final position for the voyage is referred to as the stow link. The type of general cargo that must be loaded onto - and removed from - pallets a box or other unit at a time is referred to as break-bulk cargo, and is the most time consuming - hence expensive - method of cargo handling. Significant improvements are being made - with union cooperation - to improve material handling of this type, such as:

1. palletization - the pre-arrangement and strapping of cargo on pallets, with the unit loaded and discharged as a whole;
2. containerization - the use of a variety of shipping containers into which loose packages are loaded prior to arrival at dockside;
3. cribs - pallets with sides; and
4. vans - basically truck bodies without wheels that may be lowered directly to a flatbed truck upon arrival at destination and driven away. These may be refrigerated, and are generally carried upon deck, but future ships may be designed to carry vans below decks as well. They are currently being used extensively to ship household effects of military personnel, as well as other military and civilian cargo.

D..Labor-Management Relations - in Retrospect

Longshore work is by nature casual. Work opportunity depends upon the number of ships in port requiring services at any one time. Work is from ship to ship and from one stevedore company after another. As

⁴ "Wings" refer to the area fore and aft of the hatch opening.

a natural result the longshoreman's loyalty is almost entirely with the union because he has virtually no community of interest with the employer. This has rather interesting implications in the area of management-labor relations, and will perhaps shed a light on historical patterns. A premise by Abraham Siegel seems apropos:

"It has been held that the characteristics of a job may draw and condition certain kinds of workers, and their attitude may in turn be reflected back onto the industrial relations scene. For example, if the job is physically difficult and unpleasant, unskilled or semi-skilled, and casual or seasonal, and fosters an independent spirit, it will generally draw tough, inconstant, and combative workers, who will be inclined to strike. On the other hand, if the job is physically easy and performed in pleasant surroundings, skilled and responsible, steady and subject to set rules and close supervision, it will more likely attract a type of person who will reject strikes as a means of expression."⁵

Longshoring fits the first example beautifully, and personal observation and history will bear this out.

In her excellent booklet⁶ on the subject of industrial relations in the Pacific Coast maritime industry, Betty Schneider reveals in condensed version the dramatic labor-management clashes and intricate inter-union feuds that have characterized the industry. At virtually no time during the 75 years or so that maritime unions have existed in the West has there been a period when peace existed at one time both between the employers and the unions, on one hand, and among the rival unions, on the other.- until the last two years.

⁵Betty V. H. Schneider and Abraham Siegel, Industrial Relations in the Pacific Coast Longshore Industry (Institute of Industrial Relations, University of California, Berkeley, 1956), p. 15.

⁶Betty V. H. Schneider, Industrial Relations in the Pacific Coast Maritime Industry (Institute of Industrial Relations, University of California, Berkeley, 1958).

The calm experienced in the past two years is in sharp contrast with previous periods. Prior to 1934 working conditions were notoriously bad, with Shanghai-ing, beatings, and robbings commonplace on the waterfront. When jobs were scarce, favoritism and bribery were the rule. Management controlled the hiring, and "black lists" were kept at various periods to discriminate against union members.

The New Deal restored vitality to the maritime unions with the passage of the National Industrial Recovery Act in June, 1933, which guaranteed the right 1) to organize, 2) to bargain collectively, 3) to be free of employer intimidation, and 4) to create "self-governing industry codes" covering prices, wages, hours, and working conditions.

When the employers resisted recognition of the unions and their demands, a three-month strike, which exploded into a general strike, tied up the West Coast waterfront. It was one of the most violent and widespread labor-management wars in American history. Out of this conflict rose a militant rank-and-filer, Harry Bridges, as the commanding general on the longshoremen's side of the battle which was destined to be fought, on one front or another, almost daily for fourteen years.⁷

The strike ended on October 12, 1934, with impressive gains for the workers: an increase in base pay; a 30-hour basic week; jointly operated hiring halls in each port, with dispatchers chosen by the union; and a coastwide settlement, binding on all ports.⁸

⁷Clark Kerr and Lloyd Fisher, "Conflict on the Waterfront," Atlantic Monthly, September, 1949. In this article the authors referenced the conflict as follows: "But 1934 meant a good deal more than the contract which concluded the strike. It became for the longshoremen a decisive social experience.....Out of the waterfront strike came heroes, traitors, and martyrs, a tradition of militance, and a leadership group which understood how to use this experience in an environment it defined as one of ceaseless struggle."

⁸Schneider, op. cit., p. 35.

Bitter conflict continued until 1948 when the Pacific Maritime Association emerged with "new faces" intent on making collective bargaining a method of solving problems rather than a field of industrial conflict.⁸ The employers made a sincere effort to bargain in good faith, and by this changed approach, made Harry Bridges, ILWU president, morally responsible to act in good faith...and in general he has.

Since 1948 there has been no major work stoppage. The relative peace has been plagued only by low productivity and increased wage demands.⁹

⁸ The significance of 1934-1948 is profound, and may never be known in full. Wytze Corter and George H. Hildebrand, in their book The Pacific Coast Maritime Shipping Industry, 1930-1948, vol. II (Berkeley and Los Angeles, University of California Press, 1952), had the following to say about this period in which Pacific coast shipping suffered five protracted coast-wide strikes, 78 port-wide strikes, and 1,255 local stoppages, a total of 349 calendar days and some 11 million man-days lost forever to the economy:

"Strikes and wage costs were of great importance in bringing about both the extreme instability and long run decline of the industry. They not only weakened demand directly, by driving away business; they also reduced the supply of water services directly in the case of strikes, and less obviously by forcing up costs and rates relative to those of land competitors in the coastwise and intercoastal trades. Yet frequent strikes and soaring wage costs were themselves the effect of deeper causes, originating within the troubled labor relation of the industry."

⁹ Since 1948 management has followed a policy of appeasement in its relations with the union. Dr. Peter Buck of the National Academy of Sciences in an interview with the author referred to the union as a "spoiled child" whom "management has given in/to/at every turn."

III. IMPROVING PRODUCTIVITY IN THE LONGSHORE INDUSTRY

One of the key issues still facing management and labor in the longshore industry is that of "mechanization." The present contract allows certain changes - primarily the introduction of labor-saving devices - to be made (for a price), but may bring the issue up for renegotiation next June, 1960. Yet to be determined is the manner in which productivity gains will be split. In fact, the two parties have yet to agree upon a standard measure of productivity - essential before any split of increased productivity can be made.

In other words, the whole question of productivity and mechanization and its impact and measurement is still very much unsettled. Until it is settled, planning for maximum efficiency will be curtailed (management is unwilling to invest in expensive labor-saving equipment unless it can be assured of a fair return on such investment).

Who are the interested parties in the productivity and mechanization issue? What are their goals? Can these goals be realized? Should they be? Who has the authority to implement the desired changes in each case? What has been done so far, and does the value of present research justify the cost? These are some of the questions which will now be investigated.¹⁰

¹⁰ These questions of conflicting goals, authority and ability to implement the steps necessary to obtain the goals, and justification of goals in relation to cost and alternatives - are essential to meaningful research of this type, according to Professor C. West Churchman, Visiting Professor of Business Administration at the University of California, Berkeley. This approach to the problem has been helpful in crystallizing the key issues of this complex study.

A. Parties Interested in Productivity

1. The U. S. Government

Perhaps THE most interested party - both in terms of concerted effort and money involved - is the Federal Government. This becomes apparent when one considers that 40 per cent of the general cargo handled in San Francisco is military or foreign aid cargo, and these cargo handling costs are paid for directly by the Government. Oakland Army Terminal alone spends over half a million dollars a month on its long-shore labor bill. Without question, lower cargo handling costs would significantly increase the recapture of operating subsidies (now averaging between \$150--200 million annually) since operators normally spend in excess of 50 per cent of their total operating budget on cargo handling and associated vessel in port costs.¹¹

With this monetary incentive - and a genuine desire for improvement - the problem is currently being studied by members of the research staff of the National Academy of Sciences-National Research Council, a ^{quasi} private, nonprofit organization of scientists and researchers, dedicated to the "furtherance of science and to its use for general welfare." The NAS was originally established in 1863 under a congressional charter signed by President Lincoln. It performs research and acts as advisor to the Federal Government on scientific matters, which explain its close ties to the Government, although the Academy is not a governmental agency.

The National Research Council (NRC) was established by the Academy in 1916 at the request of President Wilson to expand the efforts of the Academy in service to the nation, to society, and to science in general.

¹¹ National Academy of Sciences-National Research Council, Maritime Cargo Transportation Conference, News Letter, No. 12, (Washington D.C. May 8, 1959), p. 35.

The Maritime Cargo Transportation Conference is an operating committee of the NAS-NRC, and was organized in 1953 at the request and with the fiscal support of the Department of Defense and the Department of Commerce. The Office of Naval Research, as agent for these two departments, contracted with the Academy for the execution of the project, the objectives of which are:

1. to provide guidance on means and techniques leading to improvement in the sea transportation of general cargo;
2. to determine critical factors and identify possible remedial measures in the effort to reduce current ship turn-around time; and
3. to stimulate research and provide means for voluntary correlation of research in efforts to attain reduction in ship turn-around time.

Guidance and review of the work of the MCTC is vested in a Board of Advisors appointed by the Academy for this purpose; actual operations are carried on by a small professional Staff headed by a Director.¹²

The San Francisco Port Study Project

The San Francisco Port Study Project is one of a number of activities carried on by MCTC in furtherance of its basic nationwide objective, as stated above. The project is a comprehensive study of all factors affecting the turnaround of general cargo ships in the San Francisco Bay area.

The study is intended to provide pertinent facts and analyses to labor, management, and government to assist these in fair and effective solutions to relevant port problems. Or to paraphrase Dr. Peter

¹² National Academy of Sciences-National Research Council, Maritime Cargo Transportation Conference, San Francisco Port Study Project. (San Francisco, March 1, 1958).

B. Buck, Director of the MCTC research in San Francisco, the port study is trying to assist in bringing about the long needed revolution in maritime cargo handling. The research program is tailored to provide pertinent facts and analysis in order to "stimulate management initiative and promote a satisfactory climate of labor acceptance."¹³

With these basic objectives Dr. Buck and crew have channeled their efforts into three areas. The first is a system analysis to arrive at a method of computation which will allow the best long-run balance for both labor and management as productivity is improved. The work in this area is being carried out by Professor Churchman, consultant to the MCTC staff on this study. Through development of a mathematical "model" it is hoped shortly to be able to predict in terms meaningful to labor and management, what happens when such variables as number of longshoremen, productivity rate, volume of business, shift length (etc.) are changed.

The second area of emphasis is the detailed analysis of loading and discharging operations in an effort to tell how best to improve operations, and how much improvement is possible. This is aimed toward stimulating management initiative primarily, but inherent in MCTC's efforts will be the improvement of working conditions to make the job easier and safer for the longshoreman.¹⁴

Some interesting conclusions have already been produced. In one study of operations involving 10,000 measurement tons of cargo during 531 ganghours of work, the actual cargo handling in the hold occurred

¹³NAS-NRC, MCTC, News Letter, No. 12 (Washington D.C., May 8, 1959), p. 30.

¹⁴Ibid.

only 41 per cent of total time loading, and 33 per cent of total time discharging. However, since the four-on, four-off system was prevalent when the data was taken, each man in the hold gang worked only half of that time. Repeated tests verified that the hold gang is only handling cargo about 50 per cent of the total time, but because of the system, each man is only involved 25 per cent of the time (break-bulk commodities were studied). The slack time in both hook and hold operations is enormous, indicating that productivity could be increased tremendously by merely improving methods of operation. A complete breakdown of hatch time for the above study is included in table 1, page 15 a. The reader's attention is directed toward the eight per cent (8%) of total time used in rigging the ship for cargo handling and/or securing the gear after use. Also note worthy are the late starts and early quits. Should these times be included in the measurement of productivity change between two periods (where elimination of waste time from the latter would influence the degree of change)? This question - and other related ones - will be considered later.

Mr. Buck relates that theoretical system changes for a variety of typical commodities has indicated that it should be possible to achieve both manhour and ganghour productivity rates at least double the observed productivity figures. And this does not consider the additional effect of added equipment - such as port lifts, plywood dunnage, adjustable platforms, simpler hook-on and hook-off devices, safety equipment, etc. Productivity could be doubled with no change other than changes in methods of operation. However, this would involve changes in work methods presently part of the union contract, and would be the subject of additional negotiations.

TABLE 1

BREAKDOWN OF HATCH TIME

San Francisco Commercial Data

	<u>Loading Time (%)</u>	<u>Discharge Time (%)</u>
Set-up and Tear-down	8	6
Other Support Activity	9	9
Late Starts, Early Quits	7	11
Delays	1	1
Lags	12	18
Wait for Hook	22	22
Cargo Handling	41	33
	<u>100</u>	<u>100</u>

Source: National Academy of Sciences-National Research Council, Maritime Cargo Transportation Conference, News Letter, No. 12 (Washington D.C., May 8, 1959), p. 31 a.

The third area on which attention has been concentrated by the MCTC is the development of a means of measuring productivity on a port-wide basis. The purpose of this effort is to help provide labor and management with a factual basis for settling the now pressing issue of sharing the benefits of productivity improvement, for as Dr. Buck states:

"It is evident that only after a long term settlement of this "mechanization" or "automation" issue can cargo handling improvements take place at a significant pace.....During the past two years....we have developed a scheme of measuring productivity which we think is feasible. We have tested it with actual figures from a company and have established limits of accuracy.....The memorandum describing the scheme was given to the research departments of both the ILWU and PMA not as an MCTC conclusion but as a basis for discussion."¹⁵

The technical staffs primarily concerned in both organizations indicated to Dr. Buck that the type of scheme suggested by the MCTC would be feasible providing that the required data would be available from all companies. However, a program set up by the PMA for obtaining productivity information from all its member received useable data from less than 50 per cent of the tonnage handled in the port. This may partly be due to a somewhat unwieldy (in size and content) form, but primarily it is a display of disinterest on the part of PMA members with regard to the measurement program. Mr. Buck reports that the PMA welcomed MCTC's support in communicating with its members, and that he and his staff found themselves involved in a sales campaign - "not to sell to management our particular plan for measuring productivity but to sell any well-conceived plan."¹⁶

Mr. Buck also found opposition to productivity measurement programs strongest among stevedoring companies, each of which has convinced his principal (company he serves) that he is "best in town."¹⁷ Factual

¹⁵ Ibid., p. 33

¹⁶ Ibid.

¹⁷ Ibid.

comparison might prove differently. Also, it is possible that these contract stevedores fear any step toward productivity improvement since they are essentially on a "cost-plus" basis, and any reduction in the the base "cost" also reduces the "plus." They are in a somewhat similar position to the longshoreman himself in this respect, according to Mr. Buck.

The crux of the measurement problem is this: The MCTC is not trying to "sell" any particular measurement system; any and all such systems will admittedly contain inevitable discrepancies because of the variability of cargo handling conditions. But since the union is demanding a share of all cost savings resulting from productivity increases to compensate for alleged lost work opportunity, it becomes essential to know just how much - if any - productivity did improve with a given change. In other words, a reasonable, feasible measurement system will "force" labor demands to be rational. More will be said about this later.

Value of the study

The foregoing statement of the objectives and description of the efforts being made by the MCTC were treated at length because they are important attempts to influence productivity. But just how effective and how valuable has the study been?

In the first place the MCTC does not have the authority to implement the changes and schemes it proposes and/or suggests, and in this direct sense is ineffectual, although it must be said that it has stimulated much thought on the subject. In this latter sense it is of value. It is also of value in its pure contribution to science in its collection of data which can be of use to interested parties.

However, in view of the general apathy, disinterest, and even dislike of much productivity measurement scheme - even the concept of measurement - one may seriously question whether the ultimate value of the improvements made and labor costs saved justify the time and money spent in studying the problem. What good are good ideas if they are not used? Only time will tell whether two-and-a-half years of research (and money) have been wasted.

2. Management

During a two-hour interview with the author Dr. Buck made pointed reference to management's lack of concern in the important "automation" issue. Prior to the June 15 (1959) contract deadline he had personally called on the presidents of two of the bigger steamship lines in an effort to enlist their support in presenting the importance of the productivity measurement problem. One could sense the disappointment and frustration that must have accompanied his efforts to "make the horse drink." Still he is not bitter, but objective. Dr. Buck even referenced a conversation he had with one of the steamship company executives who, in answer to Dr. Buck's question about why the steamship companies did not give more thought to their future (by giving consideration to the afore mentioned measurement problem), replied: "Hell, Pete, I'm so busy with today's problems I haven't got TIME to worry about tomorrow's - let alone next year's!"

In general, this seems to be management's attitude. They are so concerned with meeting today's schedules and problems, clearing their ships through customs and immigration and quarantine, handling labor-relations problems, and (according to Mr. Buck) vying for customers and getting subsidies from Washington, that they don't have time to

sit down and consider the future.

This short run view is very unwise from a labor relations standpoint, because concessions, once made, tend to be extremely "sticky," especially in the longshore industry. The current \$1.5 million "productivity fund" now being raised by management is the direct result of failure on their part to have investigated the problem of productivity and its measurement. The fund is in essence a payment to the union members for unknown hours of work that might have been lost as a result of improvements in materials handling methods and equipment by some companies. Perhaps the amount is union's "fair" share of productivity gains (lost work opportunity); perhaps it is far too much to pay for lost work opportunity, in which case it be a "gift." The sad truth is that no one knows.

In extenuation, it should be noted that Mr. Paul St. Sure, President of the Pacific Maritime Association, has cooperated fully with Dr. Buck and the MCTC, and is very much interested in the latter's efforts to collect solid, factual data about the cargo handling end of the shipping industry. He realized the value of the factual approach to management and labor relations, and at ^{the} March, 1959 conference of the MCTC, apologized for the slowness of some of PMA's member companies, and pointed out that cooperation is greatly increased. He also expressed concern that the MCTC refrain from making any statements which might be taken as recommendations by either party (labor or management) as this might impair MCTC's position as an independent and respected fact-finding group.¹⁸

¹⁸ Mr. St. Sure pointed out, as an example, that since the size of sling-loads is a negotiated matter, the MCTC's presentation of theoretical comparisons in which draft size is a variable must, by all means, avoid giving the impression that MCTC is recommending specific action in this area.

From his talks with union representatives the writer gained the impression that Mr. St. Sure has had a definite influence on the peacefulness of management-labor relations of the last few years. He has a great deal of respect in union circles.

These remarks about Mr. St. Sure are included to point out that the aforementioned management apathy is concentrated in individual shipping companies, not in the PMA.

In addition, it should be pointed out that the interests of management (in the individual shipping companies) are considerably different those of the Government and MCTC. It would be well to review them.

Basically, management does not have the incentive to improve productivity that the Government has. With the exception of growth and additional revenue from expanded business resulting from such improvements, management does not have much to gain. Granted, a company's costs will be cut as ship in-port time is reduced, but not much of the saving will go to the company.

An example will illustrate why. If the reader was to assume the roll of a shipping company official his thinking might very well follow this line of reasoning:

"O.K., I invest in some expensive materials handling equipment. It cuts my labor costs, shortens ship turn-around time, and increases my profits. Since my profits are now up above what the Government considers normal, my subsidy will be cut by 50 per cent of the "excess," so that my dollar is now worth 50 cents. Federal income tax takes half of that which leaves me 25 cents of every dollar saved. The union,

not considering my 75 per cent shrinkage, will probably demand a large share of the remaining 25 cents, and if there is anything left I may be able to recover my investment - if I'm lucky! "

From the foregoing (somewhat over-simplified) example it may be easier to understand why management has not been more enthusiastic in its approach to the question of productivity. It is frankly easier to follow a line of appeasement of union demands - and collect subsidies from Washington (who is committed to paying them if the country is to maintain a merchant fleet - so vital to national defense) - than to invest capital in something which may not earn as much (after "deductions") as it would invested elsewhere.

Furthermore, it is not feasible for some companies to make substantial improvement in materials handling facilities - particularly those who have many ports of call. On the other hand, Matson is interested in mechanization because they have only two or three terminals to equip.

Other management efforts to improve cargo handling are noticeable. There has been some switching over to containers and vans. There is promise of further effort in these lines. Management is investigating and using palletization techniques to overcome the break-bulk problem. Recently management has commenced to exercise a firmer hand over labor practices such as early quits and late starts which we saw before amounts to as much as 7 to 10 per cent of time lost in operations. Such practices originally began because of management indifference, and it is encouraging to note this change in attitude. But others have made little or no effort to improve break-bulk operation. Why? One reason: Containers simply do not fit every situation, and Dr. Buck indicates

that we are still likely to have a large amount of break-bulk cargo. However, in neither case has management shown proper concern for productivity measurement.

When the author and a fellow student inquired over the phone if we might make an appointment to talk to someone concerning PMA's plans for productivity measurement, we were politely informed by Mr. Max Kossoris, on loan to the PMA from the Bureau of Labor Statistics, Department of Labor, that management was still in the planning stage; that they had nothing written which they might provide on the subject; and, upon hearing that the author had an appointment with the Research Director for the ILMU, Dr. Lincoln Fairley, said: "Go talk to Dr. Fairley - he knows more about our position than we do!"

This is either a compliment to Dr. Fairley or a telling comentary on the PMA ^{and} - for both.

How does management (in this case the PMA) feel about Dr. Buck's suggested method of productivity measurement (aside from the aforementioned apathy)? In general it all right. However, both the union and management are thinking about a similar, but more comprehensive method. Both Fairley and Kossoris have been working on it (jointly). And it is essential that management and the union do cooperate in their efforts to resolve the productivity issue since they are the parties most responsible for its implementation. They have the means and power to do so. That is why the MCTC (who does not have the authority or ability to force mechanization and improved work methods) has worked so hard to make productivity attractive to the shipping companies and to gain union cooperation - because it must rely on these parties to act in response to its efforts to gain its ends.

3. The Union

A popular baby food manufacturer places a slogan on each small can of baby food: "Babies are our business.....our ONLY business!" In much the same way the IAWU's prime goal is the defense and protection of their members and their jobs and working conditions. The union is therefore very much concerned with any issue - present or potential - that may effect its members.

It is vitally interested in the "mechanization" (so-called) issue, and has thoroughly investigated every aspect of the problem. They realize the public aversion to "featherbedding," and rather than resist proposed changes resulting in lost work and increased productivity, the union has used mechanization as an argument to justify general wage increases at regular wage reviews. They have not attempted to "cash in" on past operational changes because they feel an arbitrator would rule that they had already received these benefits in the form of higher wages. These thoughts are presented to illustrate that the union has thoroughly considered the implications of "mechanization," from an objective - if self-interested - point of view. Their various "caucuses" on the matter present many interesting points to ponder, and show a very logical approach to the problems which are created by technological advances in the industry.

The issue a year ago was how the union should pick up "their" share of gains from mechanization: In wage increases per se? In fringe benefits? In shorter shifts?

This issue seems to have been decided in some measure in the last contract settlement, in which the FMA agreed to compensate the union members with a lump sum for any and all productivity gains realized

before and/or during the contract year. It is understood that during this year (ending June 15, 1960) the union and management will cooperate on a productivity measurement method which will permit accurate (within limits) calculation of actual productivity gains (work opportunity lost to the union), and that the union will, most likely, in the future, receive a still-to-be-negotiated portion of such future gains. The contract allows management to make certain changes - such as the introduction of labor-saving devices and equipment - as long as the operation does not require individual speed-ups or danger, or reduction in gang sizes.

Naturally the union would like to get the largest possible slice of the increased productivity pie. As one of their representatives pointed out they are concerned primarily with bettering their own position "...like everyone else in the free enterprise system, though this is not necessarily the best way to operate."¹⁹

At present the union is offering or proposing that the registered work force receive one straight-time hour for every hour lost to productivity increase. This is not as exorbitant as it appears at first glance. The straight-time hour base rate of \$2.74 an hour represent only about 60 per cent of total wages of over \$4.50 when you include fringe benefit contributions by the employer. When you consider the overtime saved, the differential would be even greater. The 60 per cent figure, then, seems a reasonable (though perhaps excessive) first bid (Mr. Buck indicated 30 per cent would probably be a more realistic figure). Again, this would not be too unattractive if the specific increase could be done away with in a year or two. These are problems that will face negotiators this summer.

¹⁹ This union is not noted for its love of the free enterprise system.

The ILMU does not wish any reduction in the labor force, but is willing to allow normal attrition to reduce it to an optimum size (yet unknown - Mr. Churchman's study may throw light on this subject).

Insistence on maintenance of the present work force might be subject to considerable dispute in some industries, but in the longshore industry the problem is more academic than actual since the average age of the labor force is 53 years. Still, the insistence on maintaining the present work force in an expanding economy which could absorb the displaced men anyway is an interesting contrast to the view taken by John L. Lewis of the United Mine Workers who "forced" mine operators to mechanize, even though such action would cost union men their jobs. Lewis believed that other industry could absorb many of the men (it has) and that mechanization of the coal industry would benefit the operators, the miners, and the economy.²⁰ The ILMU is not so idealistic in outlook as Mr. Lewis (but then, they are not alone).

How successful has the union been in obtaining its goals? Pretty successful. The recent contract was, in the view of the author, rather favorable to the union - especially the \$1.5 million fund provision. Management's previously discussed preoccupation and indifference and slowness to start on the productivity measurement problem means that

²⁰ In a recent interview (U.S. NEWS & WORLD REPORT, November 9, 1959) Mr. Lewis stated his personal philosophy on the mechanization problem: "We have cooperated with modernization trends ever since the machines first came into the industry. They were called "iron men" at first. To give you an example typical of many throughout the industry, the UMW in Montana had an experience with modernization many years ago.

The principal operating units were owned by the railroads. They were steadily falling behind because they had not modernized. They decided to introduce new machinery. We knew that it would cut the work force in half. It was bad news, but we were obliged to tell the men that we thought it was a contribution to the American economy and to the success of these great industries. We told them it was necessary so that we could compete with other countries despite our higher wages and better working conditions. We told them that the men displaced by the machines would in part be absorbed in other segments of the economy."

again this June negotiations on this subject will be on a subjective - rather than quantitative - basis, as accurate measurement of productivity gains will be impossible until a backlog of data can be gathered for this purpose.

The part of the union in this entire productivity or mechanization issue ^{is} primary. In a very real sense the union determines the degree and rate of progress in material handling on west coast docks. The concentration of power which the union enjoys has philosophical and political implications beyond the scope of this paper, and would be a good subject for another. In a democratic society power implies responsibility. Monopolies are not permitted except where they would benefit the general public, and then they are carefully controlled (utilities, for example). In a very real sense the ILWU is in a monopolistic position, subject only to the control of public opinion (which could cause legislative action if sufficiently aroused). Compared to "Goliath" ILWU, the PMA is a "David" - without a sling; the balance of power is one-sided, and it is the opinion of the writer that the loser is the general public.

I wonder if subsequent fact has proven this generalization false

4. The San Francisco Port Authority

The San Francisco Port Authority is a state agency which acts as "landlord" of the port. It takes no part in labor disputes. It merely maintains the piers and collects the related fees. Since the more cargo delivered over the piers the higher the revenue to the state, the Port Authority has a natural interest in improving revenues through increased business to the port. Cutting material handling costs and ship turn-around time might stimulate business. Thus it favors any move to reduce such costs, in general.

For the past several years the Port Authority has been paying out more for repairs and upkeep of docks and facilities than it has taken in from revenues. The old, picturesque finger piers are extremely costly to maintain.

Ebasco Study

In an effort to find ways and means of improving the port facilities, the Port Authority commissioned the Ebasco Services Incorporated, a consultant firm, to study the problem of port facilities and make specific recommendations for improvement.

In September, 1959, the firm published the results of its four-month study. The San Francisco Port Authority was advised to rip out most of the old Embarcadero wharves and confine the bulk of cargo handling to compact, ultra-modern facilities to be built south of the Bay Bridge anchorage.

Ebasco pointed out in the study that from 1948 to 1957 the volume of shipping through this port remained almost static while shipments through Oakland-Alameda increased 172.9 per cent. San Francisco had declined from 62.2 per cent of general cargo shipments from the Bay area in 1942 to 26.7 per cent in 1957. Much of San Francisco's decreasing shares was blamed largely on the decline in intercoastal and coastal traffic. The report explains that:

"Presently the cost of loading and unloading intercoastal and coastal ships can exceed 50 per cent of the total cost of vessel operation. With the adoption of improved cargo handling methods this cost can be reduced to something less than 10 per cent of the total cost of vessel operation." ²¹

The foregoing serves to emphasize that low productivity is not due only to restrictive practices of the longshoremen. Rather, the

²¹ Ebasco Services Incorporated, Port of San Francisco, New York, September 1959, p. 5 (Summary Report).

report points out that the inadequacy of the present port facilities are a major factor in low productivity and resultant high costs of handling general cargo.

The report also pointed out that to institute these improvements in cargo handling will require the wholehearted co-operation of the labor unions serving the waterfront....and that all interests must recognize that unless something is done to solve the cost of handling break-bulk cargo, this type of cargo could disappear completely and waterfront labor would be the principal loser.

It is interesting to note that the Port Authority has since bought the land recommended for the construction site for the new terminal.

5. Stevedoring Companies

As previously mentioned, the stevedoring companies essentially operate on a "cost-plus" basis - the cost of labor to them plus their added charge or fee. The less hours worked by labor, the less "plus" the stevedoring companies can add to the bill. In a sense, they are in much the same position as the longshoreman himself, who has no reason to hurry - he would only be cutting his "buddies" out of work.

Stevedoring companies are labor brokers. Like any broker who works on essentially a commission, the more they "sell" the more they make. Hence, any move to reduce the amount of labor the stevedore company sells will not be enthusiastically received.

B. Measurement of Productivity

1. The Need for Measurement

One need for productivity measurement is to put collective bargaining on a rational, quantitative basis. This has been discussed at sufficient length on page 11,16,17,19, and 22, and need not be further emphasized.

From a scientific standpoint the work put into developing a measurement system have an intrinsic value, and the MCTC hopes to be able to use the methods and information learned in the San Francisco study in other similar situations.

2. Problems Associated with Measurement

There are many problems which must be solved or at least considered by management and labor in the development of a productivity measurement scheme.

First, there is the lack of standardized data. Historically, each shipping company has kept its own records in its own way - measuring the same type of cargo first in measurement tons, then in long tons - so that such records have been useless for accurate research. However, starting this month (January, 1960) the PMA members will be required to contribute to a "productivity fund" in direct relation to the amount of cargo they handle, and must file a uniform report of every loading and/or discharging operation, which may well solve the problem.

Another problem is the lack of distinction as to what constitutes "productivity." Should the time consumed in early quits and late starts be included in the base year(s)? Should hatch time and rigging time be considered?

Will the "tax" be the same for all types of productivity? Some improvements will be made only as a results of heavy investment, and returns must be allowed to accrue to the investor - sufficient to recover his investment as well as some profit. On simple changes requiring no investment, the union might conceivably seek a higher proportion of the gains. But what percentages? What about the percentage

on moderate investment in handling equipment?

How long will the "tax on an improvement run? Forever? Long enough to allow attrition to balance out the industry? A year? Two?

Another consideration: What base period should be used? One year previous? The average of two previous years? Three years? Should it be a moving base?

These are but a few of the problems which union and management must work out in their future settlements.

3. The Fund

The Pacific Maritime Association is currently in the process of collecting six (6) cents per man hour from each of its member companies. This money will go into a fund to compensate union members for work opportunity lost due to utilization of labor-saving devices, as previously mentioned. Next June (1960) the entire \$1.5 million fund will be turned over to the union for distribution to its members in a manner yet to be decided.. The interesting thing is that no one really knows how much work opportunity was lost!

Due to the lack of quantitative data on which to base such a payment, the fund takes on the appearance of an appeasement payoff. However, the payment has one generally good effect - it has stimulated interest and study of the problem by management. In a sense it is a penalty to be paid for not having previously developed a productivity measurement.

The future of the fund is uncertain. Just how it will be raised in the future is also uncertain. Future contributions may vary according to the amount of savings realized, a more equitable solution.

One thing is certain - future payments from such a fund will be

computed payments, based upon productivity measurement systems mutually developed by the two principal parties. Management might even have some "say" about future distribution of such funds.

It has been suggested that future funds would act like bank reserves. The amount of lost work opportunity would be computed, and the union members compensated. The balance would serve as a basis for the next year's fund.²²

Other possible uses of the fund: It could be used for severance pay, to help displaced workers and their families relocate; or to re-train workers or to retire them early. But again these suggestions are academic in view of the present economic condition, the maturity of the labor force involved, and the control over some of the more important improvement factors (such as sling loads), historically part of the contract (but which are important variables and could substantially improve productivity).

It is important to keep in mind that the fund could emerge from negotiations next June a considerably different concept - it might even be done away with for a more suitable means of remuneration.²³ It will be interesting to see what will finally evolve from the efforts and conflicting interests of the various parties involved ~~to~~ to examine new approaches to the not-so-new problems of mechanization and improved work methods, so basic to our standard of living.

²² Aumour & Company has agreed to set up an "automation fund" in its Chicago plant. A joint labor-management committee will study the problem of "automation." Although the exact purpose of the fund is uncertain, it reflects an increasing trend in all industries to assume more responsibility for employees. As T. J. Watson, Jr., President of IBM said recently: "An employee who has invested a share of his work life in a company's business and who has performed competently in his job is entitled to every consideration we can give him should he find himself affected by technological advances." (Wall Street Journal, December 1, 1959).

²³ The tax implications of the fund are still being investigated by the FMA to see if the fund will be deductible.

IV. CONCLUSIONS

The following conclusions represent the opinions of the author enlightened through reading and study, interviews, discussion, observation, more discussion, and a great deal of thought. The author accepts full responsibility for his findings.

A. The Maritime Cargo Transportation Conference Study

1. The study has been valuable; it has essentially attained its goal ^{of} devising methods of improving cargo-handling operations, measurement of such improvement, and making such information available to management and labor. Such information has not only been of intrinsic value, it has stimulated similar investigation by interested parties.

2. Main value - a restraint on the union. When productivity increase is known union is at a disadvantage. If union seeks benefits in excess of those due to this increase the results would be inflation, and inflationary wage increases are "frowned upon" today - especially when the union members earn a median of approximately \$6,500 or better.

3. However, the MCTC has no authority to implement its findings, and is thus limited in its measure of effectiveness. Its roll is that of a non partial fact finder - to assist union and management to improve conditions.

4. Cost - excessive. If the value of the research is measured in actual gains in productivity the money has been wasted. In terms of motivation of other parties to the mechanization-productivity problem, the expense of two years of research is somewhat justified but excessive. In terms of long-run benefits as a result of subsequent action taken by the interested parties - who knows? The author admits he does not.

B. The Pacific Maritime Association

1. The PMA, under the direction of Mr. Paul St. Sure, has done an excellent job at improving management-labor relations in the industry, as evidenced by the lack of work stoppages, the conspicuous restraint both parties have shown toward each other in press releases, conference reports, etc.

2. The majority of shipping companies favor a policy of cooperation with union.

3. A policy of apparent appeasement has generally been followed, but that it was inevitable in view of the balance of power in favor of the union, the new management philosophy, and a social climate favoring security and increased concern for "the working man."

4. The PMA is really interested in improving productivity.

5. It has been handicapped internally by member companies who are not so excited about "mechanization" for previously stated reasons - namely inapplicability and lack of incentive.

6. Possibly some of the members of the PMA do not care for Government interference or even suggestion (This is strictly conjecture, not fact, but the management in this industry is noted for its old style conservativeness, with its aversion to Government participation in business matters - except in the realm of subsidies).

C. Union

1. The union is the principal power in the industry. It enjoys a monopoly position with regard to the supply of labor to the industry.

2. It is almost entirely motivated by self-interest. This is acceptable in a competitive situation, but the union has no competition. It feels responsible only to itself and its members. It does not feel it is responsible for general public welfare, and is not concerned

about it, especially.

3. Similarly, the union is more interested in the future, though for admittedly selfish reasons ("Selfishness" - if used in the area of self-betterment and improvement - is not necessarily unjustifiable, but in a community situation demands moral tempering and restraint). The old idea of inevitable class conflict is still prevalent. Undoubtedly former management contributed to this feeling, as did other factors.

4. The union has the power to obtain its goals of improvement of the wages and working conditions of its members, and simultaneously strengthening its own position as a definite power - not only in the industry but in the economy and political life of the country as a whole.

5. The union is dedicated to its economic, social, and political goals - as discussed herein and otherwise. Its staff members impressed the author as dedicated to the union cause. There was a sense of urgency about them - as if they had a story to tell. They were not only helpful, they were eager to help!

D. General

1. The problem of mechanization is not new. Mechanization - or the more popular "automation" - has created more jobs than it eliminated. The problems of mechanization and use of automatic controls in some instances - are not nearly as revolutionary as was the introduction of the assembly line by Henry Ford. All parties realize this. The economy as a whole will benefit - not suffer - from mechanization, as our standard of living testifies. The ILWU realizes this, but wants to

let work force gradually decline, rather than permit method changes which in terms of the whole economy might be beneficial, but in terms of lost work would be an unhappy situation for the union, since the work force would not have had time to adjust. Adjustment would not take long in an expanding economy, but would mean unemployment in a declining one. Furthermore, there is no guarantee that increased productivity savings would be passed along to the general public. It might just as well end up as greater profits for the shipping companies, and in this case the union feels it has just as much right to it as management, particularly since the gains were made at ^{the} "expense" of the union ("Union" here used to mean members of the union). In a sense they are justified in this position.

However, to the extent that the added profits were re-invested, thus creating more jobs, or to the extent that lower subsidies could be paid to the operators, thus saving the public money, the union's position is invalid. However, the shipping companies are less interested, seemingly, in expansion than in conducting their day to day affairs. Where should the "savings" go? Where will they go? These are two still-to-be-answered questions.

2. Of all the interested parties, the Government seems to have the most important "stake" in the improvement of longshoring productivity.

a) It will save considerable money in direct shipping costs and in subsidies.

b) The development of so-called "trade fleets" of roll-on-roll-off vessels would prove very beneficial in time of war.

V. RECOMMENDATIONS

The following recommendation are presented for the reader's consideration:

1. That the MCTC study continue - perhaps at a reduced level - to assist management and labor until an equitable solution to the mechanization problem can be worked out, so that mechanization may proceed. Without MCTC looking over both union and management shoulders the public could suffer. The close relationship of the MCTC to the Government is a strong psychological inducement to good faith bargaining.

2. That the PMA intensify its productivity measurement studies.

3. That the PMA continue to clamp down on non-contract work practices, such as early quits and late starts, and if necessary ask the union's cooperation and assistance on these matters.

4. That the PMA try to make itself more accessible to students (they MUST be busy!).

5. That the following productivity "split" be considered:

a) On improvements which will take over a year to pay for themselves - 20 per cent to the union the first year, 10 per cent the second, no "tax" the third year.

b) On improvements which ^{take} less than a year to recover their investment - 40 per cent the first year, 20 per cent the second, none the third year.

In periods of economic growth when total hours lost are offset by gains in business, so that the same number of hours worked remains unchanged despite increased productivity, the justification (to compensate

for lost hours) would have less meaning, and it is recommended that the above percentages be cut in half in such periods, since workers are not suffering a drop in pay.

6. That the ILWU and PMA continue such caucuses as those held in 1949 on what could be done to improve the industry. Anything that builds mutual appreciation for the other's problems and outlook - that aids in understanding the other's point of view - will benefit everyone concerned. Present relations seem to be based on a sincere desire to "get along" and to understand each other's problems. Time is on the side of peace.²⁴ Any means that will tend to strengthen this relationship should be investigated.

²⁴ Clark Kerr and Lloyd Fisher, "Conflict on the Waterfront," Atlantic Monthly, September 1949. p. 23.

BIBLIOGRAPHY

Books

Gorter, Wytze, and George H. Hildebrand. The Pacific Coast Maritime Shipping Industry, 1930-1948. Vol. II (Berkeley and Los Angeles, University of California Press, 1952).

Schneider, Betty V. H. Industrial Relations in the West Coast Maritime Industry. (Institute of Industrial Relations, University of California, Berkeley, 1958).

_____, and Abraham Siegel. Industrial Relations in the Pacific Coast Longshore Industry.

Reports

Ebasco Services Incorporated. Port of San Francisco Facilities Improvement Survey for the San Francisco Port Authority (Summary Report) New York, September 1959.

International Longshoremen's and Warehousemen's Union. Proceedings (of the Thirteenth Biennial Convention). Seattle, Washington, April, 1959

_____. Coast Labor Relations Committee Report. (Longshore, Ship-clerks and Walking Bosses Caucus). Portland, Oregon. October 15, 1957

National Academy of Sciences-National Research Council, The Maritime Cargo Transportation Conference. Cargo Ship Loading - An Analysis of General Cargo Loading in Selected U. S. Ports. (Washington, D.C. Publication 474, 1957).

_____. News Letter. (Washington, D. C., May 8, 1959) No. 12.

_____. The SS Warrior - An Analysis of an Export Transportation System from Shipper to Consignee. (Washington, D. C., Publication, 339, November 30, 1954).

_____. San Francisco Port Study Project: Objectives - Procedure - Organization. (San Francisco, California, March 1, 1958).

Magazines

Business Week. "Automation Gains on Docks". December 12, 1959. p. 128.

U. S. News & World Report. "More Machines, Fewer Men - A Union That, Is Happy about It." November 9, 1959. p. 60.

Other Sources

International Longshoremen's and Warehousemen's Union. Personal interviews with the Director of Research and other personnel. January 5, 1960.

Maritime Cargo Transportation Conference. Personal interview with Director of San Francisco Port Study Project. November, 1959.

Pacific Maritime Association. Telephone interview with Mr. Max Kossoris, acting research director. January, 1960.