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LABOR PRODUCTIVITY
OF
SÜMERBANK BAKIRKÖY COTTON TEXTILE ESTABLISHMENT

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CHAPTER I

INTRODUCTION

Comparisons made between the Turkish industry and the industries of the Western countries always reveal the fact that the Turkish industry is far behind the latter in most of the aspects in which a comparison is possible. | Similar comparisons within Turkey between the private and public sectors reflect that the odds are in favor of the former. | The weight of the argument going on between the partisans of the private and public sectors is concentrated on the fact that the weakness of the public sector, especially the State Economic Enterprises, is largely due to the lack of sound management and to administrative mistakes, partly as a result of political forces influencing the policies of these establishments.

One of the points of comparison brought forward against the State Economic Enterprises is the level of labor productivity in these establishments. Labor productivity, presently gaining importance and consideration in Western countries and in Turkey, would therefore appear to be an interesting and a useful subject of study within one of the establishments of the State Economic Enterprises due to the following basic reasons:

- 1) The study of labor productivity and the analysis of the factors which affect it were considered to be more useful and interesting than any other study of the industry, because it is believed that the level of labor productivity is the best indica-

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tor of internal operating conditions in the industries which are not highly automated. In contrast to cost of production, though closely related with it, labor productivity is universal in character, not being affected by differences in the prices of raw material, machinery and labor, nor distorted by the rates of foreign exchange and of interest on investment. Moreover, it can easily be studied, in a direct manner, in the factories and can be made public without fear of revealing data which the manufacturers might consider confidential.

*ii) It is argued that the State Economic Enterprises are the tools of government for providing employment, and consequently, there is a great deal of superfluous labor within these establishments. The study of labor productivity in one of these establishments would have clarified this matter, at least for the factory under consideration, even if the result cannot be generalized.

iii) Turkish labor has often been blamed for being largely responsible for the low level of labor productivity in Turkish industry. The managements of both private and public sectors generally believe that the Turkish workers are less productive than the workers of Western countries, by which they mean they are lazier and less skilled. Moreover, labor productivity is presently gaining higher significance in collective bargaining, especially when the labor unions demand wage increases.

Although the argument that Turkish workers are lazy has been disproved both by the high level of labor productivity they have attained in Western countries and by the different levels of labor productivity realized in private and public sectors, Turkish labor union leaders have not yet been equipped with the necessary knowledge for negotiating with employers as far as labor productivity and wages are concerned. As a matter of fact, two of the labor leaders, Türk-İş (Türkiye İşçi Sendikaları Konfederasyonu)

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representative of Istanbul District, and the Head of Teksif (Türkiye Tekstil Örne ve Giyim Sanayii İşçileri Sendikası), when consulted by the author of this report about possible thesis topics, original and useful for the labor unions in Turkey, immediately suggested labor productivity and the problems related to it.

The nature of the problem of labor productivity, the limitations of time and material resources and the requirements of such a study made it desirable to investigate labor productivity and to thoroughly analyse the factors which bear upon it in one particular establishment rather than in general for the whole Turkish industry. It should also be emphasized here that it was in no way intended to make in this research, a comparison between a State Economic Enterprise and a private one. The aim was to fully analyse the determinants of the level of labor productivity in one particular state establishment, to draw some conclusions, and to make recommendations for their correction, which were believed to be useful both for the management of that establishment and for the labor union representing its workers.

After limiting the area of selection to the State Economic Establishments, it was then necessary to select a branch of industry in which one firm would have been chosen. The cotton textile industry seemed to be the most attractive of all for the following reasons:

i) The cotton textile industry is the one in which the government and private firms are in competition under nearly equal terms¹. It would therefore be interesting to identify the deficient in-

¹Ömer Celâl Sarç, Class Notes: Problems of Industrialization in Turkey; Robert College School of Business Administration and Economics, 1965-66 Second Semester.

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ternal operating conditions of a government unit in this branch of industry in order to clarify the reasons for its lagging behind as far as its labor productivity is concerned.

ii) Turkey, presently a candidate for the membership of Common Market, is now trying to develop certain branches of its industry to be able to compete with the products of the other members of the Market. The cotton textile industry is one of these branches which receives attention and heavy emphasis in this respect. And it is strongly believed that, in order for the Turkish industry to compete with other countries, it is necessary to increase its labor productivity by a considerable degree.

The determination of the specific term was relatively simpler, since the above considerations and the limitation of time and material resources already dictated that the factory was to be in Istanbul. Sümerbank Bakırköy Cotton Textile Establishment (Sümerbank Bakırköy Pamuklu Sanayii Müessesesi) was the only state cotton textile establishment in Istanbul. Therefore it was in all aspects best suited for the aim of this research.

After the first few visits, it was found that the factory, with its typical problems, was appropriate for the intended investigation. First, the establishment had incurred a loss of 1,127,800 T.L. in 1964 and it was only by selling the past years' accumulated stocks at reduced prices that the firm avoided reporting a loss in 1965.¹ Secondly, some of the managers declared that, if they were powerful enough, they could have attained the present level of output with 1200 workers whereas the number of employees in the factory was about 2000.² Thirdly, the organi-

¹Sümerbank Bakırköy Cotton Textile Establishment records.

²Arslan Kalpakçioğlu, Acting Chief of the Personnel Department, and, Ertuğrul Boydak, Chief of the Planning Bureau, interviewed in Sümerbank Bakırköy Pamuklu Sanayii Müessesesi, November 17, 1965.

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zation chart of the establishment showed a 'Productivity Committee' under the direct supervision of the President of the establishment,¹ but the 'Productivity Committee' as such was nonexistent.² Fourthly, the factory had newly started to export cotton yarn to West Germany. In short, Sümerbank Bakırköy Cotton Textile Establishment by itself constituted an area of useful and original investigation in labor productivity, even without the above-mentioned considerations, relating to the significance of the problem of labor productivity, differences in the efficiencies of the government and private sectors, and the importance attached to the cotton textile industry in Turkey.

Sümerbank Bakırköy Cotton Textile Establishment known as Basmahane,³ was founded in 1850 as a private establishment.⁴ In 1860, it was transferred to the Treasury of the Sultan (Hazine-i Hassse), In 1867, it was again transferred, this time to the Ministry of War, the Division of Military Necessary Objects (Harbiye Nezareti, Levazimat-ı Askeriye Dairesi), and operated under this administration until 1921 for the needs of the Army,

Between 1921 and 1925, Basmahane operated under the control of the Ministry of War, Military Factories Headquarters (Harbiye Nezareti Askerî Fabrikalar Umum Müdürlüğü), and in 1924, part of its machines were renewed in accordance with a three-year reconstruction and development program. As a result of this renewal,

¹Files of Sümerbank Bakırköy Pamuklu Sanayii Müessesesi.

²Tevfik Sayan, Chief of the Personnel Department, interviewed in Sümerbank Bakırköy Pamuklu Sanayii Müessesesi, November 24, 1965.

³For convenience, Sümerbank Bakırköy Cotton Textile Establishment will be referred to as Basmahane for the rest of the report.

⁴Historical facts were taken from the records of Basmahane.

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the yearly raw cloth production increased to 600,000 meters from 1015 meters per 10 work hours. Before the revision, the cotton yarn production of the factory was 203 kilograms per 10 work hours.

In 1925, Basmahane was transferred to the Industry and Minerals Bank (Sanayi ve Maden Bankası), in 1932, to the Office of Industry (Sanayi Ofisi), it was in November 7, 1933 that Basmahane became a Sümerbank establishment.

Sümerbank, taking over Basmahane at this date, left the old building and reconstructed a new plant and equipped it with modern machinery. In 1934, it restarted its operations with 8928 spindles, 320 looms and new installations for treating and bleaching the raw cloth produced.

Basmahane was enlarged in 1949 in order to answer the continuous increase in demand for its products. In 1950, it had 29,904 spindles and 455 looms.

At present, Basmahane consumes 4400 tons of cotton each year, produces 3600 tons of cotton yarn with a large variety of counts, 650 tons of which is for the market. The yearly weaving capacity of the factory is roughly 15 million meters of raw cloth of various sorts, which is treated, bleached and sold in the Turkish market. In other words, Basmahane accounts for 2.85 per cent of the yearly raw cotton consumption of Turkey, supplies 4 per cent of the total cotton yarn and 2.50 per cent of the cotton fabric in meters.¹

The study of labor productivity and the factors influencing it in Basmahane necessitated a methodology bearing more upon person-

¹ Sümerbank Bakırköy Pamuklu Sanayii Müessesesi, Müessesemizin Durumu Hakkında Malûmat, 1964, p.2.

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al observations and interviews both with the managers and the employees of the factory, rather than interpreting the published data, translating and paraphrasing books or reports on the factory. However, in order to gain an insight into the problem of labor productivity and the operations of a textile mill, it was first necessary to make use of books and other relevant publications on the two topics. Personal observations and the information given by the technical staff during the observations were also helpful especially in coordinating the theoretical background retained from books with the actual.

After acquiring the necessary knowledge and the ability to relate the technical and human factors of labor productivity with the processes undertaken in a textile mill, the investigation was then directed to the data available in Basmahane. It was also found necessary to conduct interviews with the managers along with the evaluation of data, since the clerks in charge of the files could identify the tables and statistics only by their exact titles, and they could hardly interpret the data. Especially, the explanation of the variances from the standards was vitally important. The interviews with the managers supplied both the facts and their own opinions concerning the correction of the factors lowering the level of labor productivity. The managers' opinions were helpful even when different managers had contradictory opinions or the same manager contradicted himself in different occasions, since this led to the concentration of attention on the controversial points. It is not meant here, of course, that the personal observations were made only when there was such a contradiction, but heavier emphasis was given to the problems viewed differently by several managers. As a matter of fact, it was absolutely necessary to check closely the statements made by certain managers especially for the elimination of probable subjective evaluations such as 'the morale of the workers in our factory is good', which was not very

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infrequent although the questions directed were selected to avoid such generalizations.

A rich source of information concerning labor productivity and especially the human element influencing it was the workers themselves. Their level of education, nature of the jobs, and the variety of problems involved in different divisions and for different classes of workers made it more convenient for interviews rather than questionnaires. Contrary to the situation in the interviewing of the managers, the subjective opinions of the employees were very valuable since the feelings and the beliefs of the workers counted more for the labor productivity than the true situation did. The employees interviewed were selected at random, some 190 in number, within the plant and in the coffee houses.

It is believed that the above four sources provided the necessary information, and their comparisons and checking against each other reduced the possibility of bias and mistakes.

It is not presumed that this study has attained the highest degree of perfection desirable in this type of a research, either in the methodology or in the scope of the work itself due to various factors. The aim of this research was at first determining quantitatively the contribution of the different factors responsible for the low labor productivity of Basmahane. Thus, the findings of the research would have been expressed as the percentage of excess labor due to various factors such as the excessive wear of machinery, defects in maintenance, humidification and cleaning, inefficient organization of the textile processes, defects in the quality of the yarn, lack of training and the percentage of merely superfluous employees, even after allowing for the already-cited defective conditions.

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This methodology necessitated data and carefully determined standards and norms which Basmahane did not have. The standards of the factory were determined in 1950 by modifying the standards of the available machinery according to the standards of the Russian textile mills which resembled those of Basmahane. It would have been in vain to work with these out-of-date standards in order to reach a true breakdown of the factors of low productivity. It is true that some of the standards were revised in 1964 by a committee of experts sent by Sümerbank Headquarters, but not all the standards were reconsidered then. Moreover, they were far from being realistic, since the committee had set them almost randomly, without making any study of the actual conditions in the factory.¹ The managers of Basmahane still remember that incident with much resentment, especially when the actual figures fall more than 50 per cent off these standards, which is still the case. The use of standards applied to the cotton textile mills of countries like the United States and Japan, would also be unrealistic since the mills in these countries are incomparable to Basmahane with respect to their size, type of equipment, quality of the products and consequently the operations. It was therefore deemed necessary to make a descriptive analysis and limit the use of standards only to these set by the manufacturers of the machinery and not modified by the management. As to the standards of the quality of the products, the ones adopted by the management were considered satisfactory since, as far as the policy of Basmahane producing coarse yarn and fabric is concerned, they were realistic enough and in accordance with the conditions in the factory.

¹ Ertuğrul Boydak, interviewed on March 9, 1966.
Tefik Sayan, interviewed on March 9, 1966.
İbrahim Gül, Chief of the Planning Bureau, interviewed on March 16, 1966.
Muhittin Pekdil, Chief of the Spinning Division, interviewed on June 22, 1966,
Ahmet İlmiveri, Chief of the Weaving Division, interviewed on June 22, 1966.

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Some of the figures for the past years being not available and the reluctance of the managers and the clerks to devote more time for cooperation in this research made it impossible to make a comparative study of the labor productivity covering several years. Thus, the study was based on the figures of the year 1965. However, this in no way distorted the validity of the investigation since no changes in the conditions of the factory have occurred in those years.¹ Basmahane has three divisions, namely spinning, weaving, and treating-bleaching-and-dyeing. This research deals only with the Spinning and the Weaving Divisions, which the name 'textile mill' generally recalls. The inclusion of the third would have required a thorough knowledge of chemistry and the chemical operations in this division which is beyond the limits and purpose of this report.

The complexity and the scope of the subject of wages and its relation to labor productivity can be made an entirely new subject of another research. It is therefore hoped that the reader will overlook the limitation of the discussion of wages in Basmahane to only a few pages, drawing attention only to the most important points as far as their influence upon labor productivity is concerned.

The description of the technological processes was not included in this study mainly because a comprehensive description enabling those completely unfamiliar to the operation of a textile mill to get an insight into the processes would be unnecessarily long, while a shorter one would not tell enough. Anyhow, the context of the following chapters is so designed that it will not require a complete knowledge of the technical processes. Moreover, only the factors that significantly influence the labor productivity

¹ Ibid.

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in Basmahane were considered, leaving aside those not as significant in Basmahane in particular, such as the industrial accidents which, because of the nature of the textile operations, were very rare and did not have a significant influence upon the labor productivity.

Before starting the analysis of the conditions in detail in the Spinning and the Weaving Divisions, it is necessary to see the present situation in Basmahane, as far as the level of labor productivity and the composition of the labor force are concerned. Table I,1 shows the level of labor productivity in both of the divisions and the total number of the employees,¹ for the past four years.

Table I,1

↖ Labor Productivity in the Spinning and the Weaving Divisions (1962-1965)

| Year | Total No. of Workers | Labor Productivity | |
|------|-------------------------|----------------------|-------------------------|
| | | Spinning (kg/m-h) | Weaving (meters/m-h) |
| 1962 | 2183 | 4.348 | 10.0 |
| 1963 | 2090 | 4.550 | 10.2 |
| 1964 | 2025 | 4.566 | 10.46 |
| 1965 | 1924 | 5.090 | 12.22 |

Source: Files of Basmahane.

It is interesting to note that the level of labor productivity in both of the divisions has increased, parallel with a decrease in the number of workers in the factory. The data for the level of labor productivity in the earlier years were not available, but it is perhaps more revealing to note the number of workers in

¹ The number of the workers in each division for different years was not available.

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the factory for some earlier years than 1962 as follows: 2516 in 1957, 2542 in 1958, 2688 in 1959, 2324 in 1960 and 2184 in 1961. Recalling the fact that no changes in the manufacturing conditions of the factory have occurred during these years, these figures indicate that there has actually been a superfluity of labor in Basmahane. Correction of certain defective manufacturing conditions in the divisions may further decrease the demand for an excessive number of workers, and increase the efficiency of the processes. It may then be expected that the level of labor productivity of the Spinning Division, 5.09 kilograms per man-hour, and of the Weaving Division, 12.22 meters per man-hour, can reach the level of labor productivity in the standard mills of optimum size, 8.02 kilograms per man-hour in spinning,¹ and 18.20 meters per man-hour in weaving.²

¹Labor Productivity of the Cotton Textile Industry in Five Latin-American Countries, op. cit., p. 243.

²Ibid., p. 282.

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CHAPTER II

TECHNICAL FACTORS AFFECTING LABOR PRODUCTIVITY IN THE SPINNING DIVISION

Labor productivity is in essence measured by the input of labor time necessary for turning out a unit of output, and the increase in labor productivity is expressed in the reduction of this input. Or, conversely, it may also be expressed as the increase of output for a given amount of input.

In Basmahane's Spinning Division, any attempt to increase the labor productivity, that is to increase the ratio of output to labor time, can have as many approaches as the number of components constituting the three broadly classified factors which affect this ratio: size, type of equipment, and influence of operations.

✓ Size

In spinning mills, it is usual to express the size in number of spindles. The number of machines is not a common measure of size, since each machine of different type and model may have different number of spindles. Thus, the situation in Basmahane's Spinning Division is as shown in Table II,1. It is seen from the table that the size of Basmahane's Spinning Division is 29,904 spindles.

In order to evaluate the size of the Spinning Division and its influence on labor productivity, it is necessary first to see the

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Table II,1
Spinning Frames in the Spinning Division

| Model | Country Manuf. | Spin- dles per Mach. | Year Manuf. | Mach. Units | Total Spin- dles per Model | Per cent of Spin- dles per Model |
|-------------|-------------------|-------------------------------|----------------|----------------|--|---|
| Rieter | Switzerland | 372 | 1934 | 24 | 8,928 | 30 |
| Saco-Lowell | U.S.A. | 276 | 1950 | <u>76</u> | <u>20,976</u> | <u>70</u> |
| TOTAL | | | | 100 | 29,904 | 100 |

Source: Files of Basmahane.

significance of size as related to labor productivity in cotton spinning mills, and to set an optimum size as far as labor productivity is concerned.

The textile industry, especially spinning mills, requires that the superintendent remain in close contact with all the operations, no matter how far removed from top management they might be. Thus, although theoretically there is no upper limit to optimum size as far as productivity is concerned, in actual practice when a mill goes beyond certain limits of size, the control of operations is more than proportionately complicated and productivity decreases, because the management does not have complete control of the functioning of the larger mill. In the function of control, there cannot be a complete delegation of authority, because the coordination of all the minute operations and functions is a critical point in the success or failure of a spinning mill. Foremen, masters, and section heads, as assistants to the superintendent, share the burden of responsibility, but the latter has to cover the whole range of administrative action. The limit of the supervisory capacity of one man, therefore, limits the maximum size of a spinning mill. This condition can change only when there happens to be an extraordinarily team of men

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working as a single unit.

The necessity of close supervision and coordination in spinning mills arises from the fact that the activity of a spinning mill is composed of different operations integrated closely in such a way that the product of one operation is transferred to the next to be processed further. The success and high productivity of a spinning mill, therefore, is very much dependent upon the constant flow of products from one process to another. Any slow-down or a complete stop at one stage of operations either as a result of material shortage or because of a technical reason not considered beforehand, causes the next machines to stay idle and the products of the sections coming before it to pile up. The different processes are so integrated that the whole mill or division works like a single unit. Therefore, the supervision of one man is essential to coordinate and control the operations.

Another factor contributing to the limitations on the size of a spinning mill as far as the productivity is concerned is the highly technical specifications of the processes which necessitate some careful adjustments on the machines requiring the skill, experience and knowledge of the superintendent. Most of the spinning mills produce more than one type of yarn, expressed in 'yarn count' which is a measure of the width of the cross section of the yarn. And one spinning machine can produce yarns with different counts when some adjustments are made on the machine. Also, two yarns with the same count may have different twist factors (expressed with alpha)¹. This also requires certain changes on the twisting and drawing rates of the machines. Frequent changes in the twisting factor due to the changes in the demand both for the different kinds of yarns of the factory and for the fabrics (which works backward and affects the operations

¹This will be explained in detail in the section 'Influence of Operations'.

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of the Spinning Division) or new orders, therefore, dictate all the operations of a spinning mill to be within the supervisory capacity of the superintendent in order to make the necessary shifts in the assignment and the adjustment of the machines.

As to the lower limit of optimum size, as far as labor productivity is concerned, it is necessary to determine a level after which substantial increases in capacity yield almost unnoticable increments to productivity. Norms established by a firm of American consulting engineers¹ for the productivities of standard spinning mills, free from the influence of type of equipment and operations when plotted as productivity against size, reveal that after about 25,000 spindles, the increase in labor productivity for an increase in the number of spindles is negligible or nonexistent. The position of the points after which the curves follow a horizontal path varies slightly with the kind of yarn and type of equipment.²

As stated above, the capacity of Basmahane's Spinning Division is 29,904 spindles which represents a size above the critical point below which labor productivity falls more than proportionately for a decrease in the number of spindles. Graph II,1 and Graph II,2 show the position of Basmahane's Spinning Division as far as its labor productivity as a function of its size is concerned.

These graphs indicate that the influence of size of Basmahane's Spinning Division on its labor productivity is negligible. In other words, the relationship between labor consumption in a standard mill of a size equal to that of Basmahane's Spinning Division, and the labor consumption in standard mills of optimum

¹Lockwood Greene Engineers Inc., of New York.

²Labour Productivity of the Cotton Textile Industry in Five Latin-American Countries, United Nations Department of Economic Affairs United Nations Publications., New York, 1951.

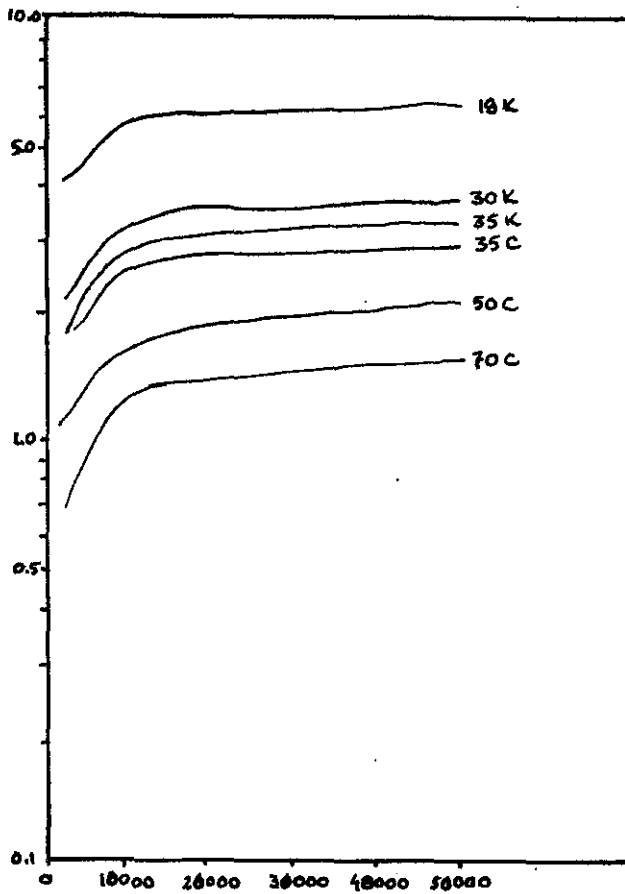
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Graph I,1

Labor Productivity of the Old Standard
Spinning Mills, As a Function of Their
Size¹



X- Size of the mill in spindles
Y- Labor productivity in kg/m-h

Note: The letters K and C near the count numbers denote 'carded' and 'combed' yarn, respectively.

¹Ibid., p. 128

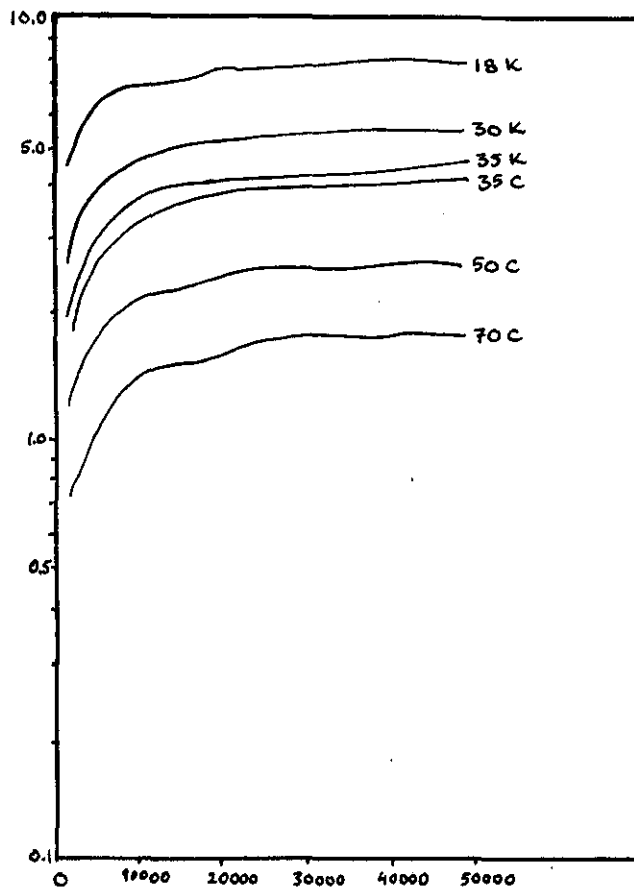
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Graph II,2

Labor Productivity of the Modern Standard Spinning Mills, As a Function of Their Size¹



X- Size of the mill in spindles

Y- Labor productivity in kg/m-h

Note: The letters K and C near the count numbers denote 'carded' and 'combed' yarn, respectively.

¹Ibid., p. 129

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size expressed in a ratio is equal to unity. What is done in the two graphs is the graphical expression of the fact that the productivity of a standard spinning mill of 29,904 spindles isolated from the influences of type of equipment and operations does not rise or fall with a significant change in the number of spindles. This is true for different kinds of yarn and type of equipment. Had the capacity of Basmahane's Spinning Division been below the range of optimum size—that is, below 25,000 spindles—, then the ratio of labor consumption expressed in man-hours per kilogram in a standard spinning mill of optimum size and labor consumption of a standard spinning mill of the size of Basmahane would show the percentage of excess labor consumption due to the influence of size, that is, the smallness of the factory. It can be concluded therefore that the size of Basmahane's Spinning Division has no negative influence on its labor productivity.

Influence of Operations

The term 'Influence of Operations' is used here broadly to refer to all the low productivity factors in Basmahane's Spinning Division, excepting the type of equipment—which will be discussed in the following section—and the size of the mill—which was shown to have no negative influence. It may be stated that the causes dealt with under the topic 'Influence of Operations' principally include those which can be corrected by good organization and internal administration of the factory. However they also take in others of equal importance, not covered by administrative action, either because they demand the investment of large sums (such as for the irreparable deterioration of machinery) or because they demand upon the joint conditions of the whole industry, general policy of Sümerbank and the overall economic conditions of Turkey. The lack of specialization in production and the quality of the raw cotton may well be two examples of the last statement.

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The effect of factors of operation in Basmahane's Spinning Division are reflected in both the abnormalities in the output of the machinery, no matter what the amount of labor allocated to it, and the amount of labor used in order to compensate for the factors lowering the volume of production yielded by the machinery. In other words, in order to force production, the management chooses to employ a considerably greater amount of labor than would be required under normal circumstances. Besides, some of the machines are being worked at the highest possible speed—which in some cases can no longer attain the standard level—, and their period of inactivity is reduced to a minimum. That is to say, production is being forced from the machines. This practice indicates that a common characteristic of the Turkish industry exists also in Basmahane: To draw the greatest advantage possible from the scarce element, namely equipment, at the cost of wastage of abundant factor, namely labor; and also, in the long run, wastage of the scarce factor, capital.

However, a number of defective manufacturing conditions make it impossible to obtain the highest yield possible from equipment. These defective conditions both diminish the efficiency of the processes and demand more labor than normal in order to obtain the present rate of efficiency. The efficiency of the processes is used here to mean the relationship between actual production of the machinery and the theoretical production that would be given by the same equipment if it were to operate without any stoppage at the speed assigned.

In order to evaluate the situation in Basmahane's Spinning Division, it is necessary first to examine the speed of the machinery to see the significance of the influence of the defective manufacturing conditions upon this factor. Although the speed of the machinery seems to be a function of the type of equipment, the present rate and its variation from the theoretical

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rate are functions of past and present administrative and manufacturing policies of the factory. The actual and the standard speeds of the machinery in Basmahane's Spinning Division are shown in Table II,2.

Table II,2

Speed of the Spinning Machines in Revolutions per Minute
(1965 average, and standard)

| Yarn Count | Type of Machine | RPM of Spindles | | Variance | |
|-----------------|--------------------|-----------------|----------|----------|----------|
| | | Actual | Standard | RPM | Per cent |
| 6 | Saco-Lowel | 5110 | 5000 | 110 | 2.2 |
| 8 | Saco-Lowel | 5150 | 5000 | 150 | 3.0 |
| 12 ^a | Saco-Lowel | 6292 | 6400 | (108) | (1.7) |
| 12 ^b | Saco-Lowel | 7079 | 7000 | 79 | 1.1 |
| 16 | Saco-Lowel | 7933 | 8000 | (67) | (0.8) |
| 20 ^c | Saco-Lowel | 6503 | 6400 | 103 | 1.6 |
| 20 ^d | Saco-Lowel | 8007 | 8000 | 7 | - |
| 20 | Rieter | 7682 | 8800 | (1118) | (12.7) |
| 30 | Rieter | 8424 | 8800 | (376) | (4.3) |
| 30 | Saco-Lowel | 8090 | 8000 | 90 | 1.1 |

Note: (a) denotes yarn produced out of Pick III cotton, (b) Pick I cotton, (c) yarn with alpha 339, and (d) yarn with alpha 433.

Source: Files of Basmahane.

As can be seen from Table II,2, the Rieters, after 31 years of service, are far from attaining the standard level in speed. The variance is 12.7 per cent in those processing Count 20, and 4.3 per cent in those processing Count 30, which are not negligible.¹ The Saco-Lowels on the other hand, which are much younger than

¹These machines may actually be the same ones with their speeds adjusted as they are shifted from one count to another.

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the Rieters, can bear speeds higher than the standard levels. The Saco-Lowels operate with higher speeds than normal in order to process six out of eight different counts of yarn processed by the Saco-Lowels. For the remaining two, the speeds are lowered by the management to cope with the qualifications of these counts. (For example, Count 12 processed at a lower speed than the normal is spun out of low quality cotton.)

The influence of the speed of the machinery upon labor productivity is self-evident. With the same labor time, an increase in the revolutions per minute of the spindles raises the production in kilograms proportionately. However, two important shortcomings of this policy set a limit to the degree of increases in the speed of the machinery; the quality of the yarn and the irreparable deterioration of the machinery. Although most of the defective manufacturing conditions have a common influence on the quality of the yarn produced, the speed of the machinery has the highest share because of its effect on the actual count, weight and strength of the yarn—the three factors determining the quality of the yarn. In Basmahane, the quality factor has a twofold significance since the Weaving Division consumes the yarn produced in the Spinning Division, and the labor productivity in weaving has a considerable dependence on the quality of the yarn used.

The quality of the yarn produced in Basmahane's Spinning Division in 1965 is shown in Table II,3. In the table, the quality index is composed of the coefficients of variance of the weight, strength and count of the yarn produced from their standard values. Everyday, the samples taken from the daily production are tested in the Quality Control Department and evaluated according to the standards. The coefficients then reflect the degree to which the physical quality of the yarn conforms to the standard quality values. Thus, '1' is 'very good' (same as or very close

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Table II,3

Quality of Yarn Produced in 1965

| <u>Yarn Count</u> | <u>Quality Index</u> | | | <u>Ratio of Actual to Standard (per cent)</u> |
|-----------------------|----------------------|-----------------|--------------|---|
| | <u>Weight</u> | <u>Strength</u> | <u>Count</u> | |
| 6 | 1 | 2 | 3 | 63.7 |
| 8 | 1 | 3 | 3 | 82.9 |
| 12 | 1 | 3 | 2 | 93.3 |
| 12 | 2 | 2 | 3 | 73.7 |
| 16 | 2 | 3 | 3 | 64.0 |
| 20 | 1 | 3 | 3 | 78.8 |
| 20 | 2 | 3 | 3 | 62.6 |
| 22 | 3 | 3 | 3 | 53.2 |
| 24 | 2 | 3 | 3 | 72.1 |
| 24 | 3 | 3 | 4 | 29.9 |
| 24 | 2 | 3 | 2 | 78.1 |
| 30 | 2 | 3 | 4 | 35.5 |
| 30 | 2 | 3 | 3 | 22.8 |
| General Quality Ratio | | | | 75.3 |

Source: Files of Basmahane.

to the standard), '2' is 'good', '3' is 'mediocre', and '4' is 'weak'. Accordingly, a general ratio of actual quality to standard is calculated. This gives in numerical terms the degree of quality specifications met in the Spinning Division. The general policy of the establishment being directed to higher quantity with coarser yarn and fabric, the management seems to be satisfied with the present level of yarn quality. This fact, therefore, acts as another component—related to the speed of the machinery—which should be considered carefully in the evaluation of the level of labor productivity measured in quantity produced per labor time.

As stated earlier, the management's wish to obtain the highest

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possible yield from equipment, that is, to attain the maximum degree of efficiency requires the compensation of the influence of certain conditions hindering this attempt by assigning more labor to these machinery. The study of Table II,4 will reveal certain factors decreasing the efficiency together with some clues to other defective manufacturing conditions.

Table II,4

Causes of Stoppage in the Spinning Frames
(1965 actual, and standard)

| | <u>Actual</u> (per cent) | <u>Standard</u> (per cent) |
|--------------------------------------|-----------------------------|-------------------------------|
| Power Interruption | 0.9 | 0.1 |
| Motor and Machinery Breakdowns | 0.1 | 0.1 |
| General Repair and Maintenance | 0.7 | 1.5 |
| Cleaning and Oiling | 0.4 | 1.0 |
| Shortage of Intermediary Products | - | 0.1 |
| Shortage of Materials | - | - |
| Absenteeism | - | - |
| Adjustment to New Counts | 2.4 | 1.5 |
| Idle Spindles | 0.2 | 0.3 |
| Production Loss Due to Yarn Breakage | 1.4 | 1.5 |
| Miscellaneous | <u>1.1</u> | <u>0.1</u> |
| TOTAL | 7.2 | 6.2 |
| Efficiency of the Spinning Division | 90.7 | 93.8 |
| Statistical Discrepancy(%, -) | <u>2.1</u> | <u> </u> |
| | 100.0 | 100.0 |

Source: Files of Basmahane.

* First, it should be pointed out that the management has no power to control and improve the situation in power supply. The managers of the factory are all very unhappy about the frequent unnotified electricity discontinuity. The electrical power supplied

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by the Municipality often becomes a serious handicap for the managers of Basmahane, as well as for most of the industrial establishments in Istanbul. The power is sometimes interrupted at unpredictable times with unknown durations. It is very rare that the Municipality notifies the factories of such a cessation.

The shortage of electrical power and the inadequate installations of Istanbul also require the distribution of electricity among the establishments in a program of shifts and in reduced quantities. Thus, it is not very rare in Basmahane that a whole division or a certain number of machines stay idle as a result of reduced power supply.

In addition to the loss of productive labor time, the reduction of the power supply has another significant consequence: since only some of the machines can remain active, usually the balance between the preparatory spinning processes (such as opening, picking, carding and drawing) and the final process, namely spinning, is disturbed. This, in turn, necessitates the readjustment of the speeds of the machines, labor assigned to them, and the unit weight of in-process products, all of which affect the level of labor productivity.

In 1965, the production loss due to power discontinuity was 0.9 per cent, which is not negligible when compared to 0.1 per cent standard allowance. However, it is readily admitted that this factor is one of the deficient manufacturing conditions whose correction is beyond the powers of the management of Basmahane, but requiring a radical change in the industrial conditions of Istanbul and Turkey.

The percentage of production time lost due to motor and machine breakdowns is not as much as is expected at first glance in view of the poor physical conditions and insufficient maintenance of

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the machinery. As it can be seen in Table II,4, the time spent for general repair and maintenance is almost half of the standard time (standard being 1.5 per cent, and actual 0.7 per cent). The situation is almost the same in cleaning and oiling (standard being 1.0 per cent, and actual 0.4 per cent). It is true that the allocation of less time for the general repair, maintenance, cleaning and oiling plays a positive role in the efficiency of the division by reducing the stoppage of the machines. However, it also indicates that the problem of maintenance vital for the machinery already working at full speed, is not being considered seriously. The author's personal observations also revealed that the physical condition of the equipment and the cleanliness of the division are not satisfactory. Eccentric spindles, machines off level as a result of holes opened in the cement floor due to vibration, parts of equipment covered with a thick layer of muddy mixture of oil and cotton dust are not hard to observe even for an inexperienced eye. On the whole, no proper attention is given to the problem of cleanliness both in the rooms and the machinery, though this factor is a very important one in obtaining high process efficiency and high quality products. It is possible that the reason for this deficiency lies in the fact that the division is active for 24 hours a day, and modern and efficient tools and equipment for this purpose are not used. The only process of cleaning in the Spinning Division is the blowing of high-pressure air upon the machinery to clean the cotton dust accumulated on them and sweeping the floor with brooms. Even this might be more effective if undertaken properly rather than done in a hurried way during lunch hours¹.

It cannot be said that the factory has any systematic maintenance program, that is, a frequent and regular inspection of the machin-

¹The blowing of cotton dust into air and letting it float in the air does not solve the problem since the dust lands on the equipment soon if the air itself is not cleaned off the dust.

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ery and its complete overhauling for repairs, cleaning and adjustment. These conditions are responsible of course for the poor quality of the intermediary and final products, and lowering efficiencies in the processes. The result is that the low efficiency is checked, or an attempt is made to check it by increasing the number of workers allocated to each machine.

The time spent for the adjustment of the spinning frames for new counts constitutes the largest portion (2.4 per cent) of the general stoppage duration. This fact reflects another important problem of the Spinning Division: the degree of product specialization. The great variety of the fabrics woven in the Weaving Division and the market demand for different counts of yarn force the Spinning Division to shift its production from one count to another very often. Although the division has been founded on the basis of Count 20, the amount produced even of this count is lower than 50 per cent of the total production. The amounts and the percentages to total production of the different counts of yarn are shown in Table II,5.

Table II,5

Quantity of Yarn Produced in the Year 1965

| <u>Yarn Count</u> | <u>Kilograms</u> | <u>Percentage of Total</u> |
|-------------------|------------------|----------------------------|
| 6 | 55,840 | 1.3 |
| 8 | 257,750 | 6.2 |
| 12 | 1,211,683 | 29.0 |
| 16 | 386,330 | 9.3 |
| 20 | 2,054,012 | 49.0 |
| 22 | 3,626 | 0.1 |
| 24 | 28,084 | 0.7 |
| 30 | <u>185,496</u> | <u>4.4</u> |
| TOTAL | 4,182,818 | 100.0 |

Source: Files of Basmahane.

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The loss due to the lack of specialization is not only the time spent in the adjustment of the machines for the new counts of yarn, but the more important influence for the labor productivity is due to the difficulty on the part of the workers of mastering the processing of so many types of product. A product is changed before the workers utilize their skills gained in processing that count. The minimization of the negative influence of that factor on labor productivity is possible only with a sound programming based on reliable demand forecasts such that the total of one count is produced without any intervals.

The different twist factors of the same count of yarn and the use of intermediary products of different quality constitute another factor of the same type and equal importance. The twist factor of a yarn is the number of twists found in a specified length of yarn, usually one inch. As the twist factor increases, the strength of the yarn increases also, while the thickness (count) of the yarn remains the same. It is obvious that the higher the twist factor of the yarn, the longer it takes to produce it. This fact is also one of the greatest deficiencies of the method of measuring labor productivity in kilograms per man-hour or kilogram-number(count) per man-hour. In both of these methods, the twist factor of the yarn is not taken into consideration.

Among the products of Basmahane's Spinning Division, Count 12, 20, 24, and 30 have usually two different twist factors. However, the quantity produced for each count is given with no consideration to that factor which as a result affects the level of labor productivity calculated. It should be readily stated here that the problem is not to increase the labor productivity artificially by revising the method of measurement. It is intended here to deal with the twist factor in the same manner as the different counts of yarn, since the influence of a variety of twist factors

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on labor productivity is similar to that factor. The workers has to gain new skills, and the machinery should be stopped frequently in order to adjust the frames and the speed, which all exert a negative influence on labor productivity.

Production loss as a result of idle spindles is a function of the number of spindles or machines assigned to one worker, and the interplant transportation. A worker (called doffer) takes out the full cones and puts them into a bucket. He then replaces empty cones on these unloaded spindles. During this interval, a certain amount of production loss occurs while the spindles revolve empty. If the machine tender is not supplied with empty cones in time, this loss increases. Of course the machine layout, training of workers and the determination of work-loads are equally important.¹ The empty cones are carried in plastic buckets by can boys and put into the boxes near the machines. The machine tender takes them from the box and replaces them on the empty spindles. He then puts the unloaded cones into another bucket, which is replaced by an empty one when it is full.

Although the production loss from idle spindles is small (0.2 per cent) in Basmahane's Spinning Division, its importance, which is not reflected in this measure, lies in the fact that the policy of the establishment is to use more labor to attain higher degrees of efficiency. Theoretically for example, if a worker is assigned to only one spindle, and a can boy to each worker, the loss from the replacement of cones would be zero. The problem is to maximize the number of spindles assigned to each worker and to minimize the number of can boys by utilizing them most efficiently.

¹These factors are mentioned here only within the scope of their influence upon the production loss as a result of the spindles revolving unloaded. They will be dealt with in detail in the coming sections.

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(The first part of the problem is a function of all the factors discussed so far and those which will be discussed in the following pages). The buckets used in the Spinning Division seemed to be of the type and size which were found to be available in the market. The optimum size and the ease of handling were not much considered although a great deal of labor could be saved by a small change in the size of the buckets. For example, a bucket which can take in 20 more cones enables a can boy to carry a 100 more cones in five tours. If small wheeled-carriers are used instead of buckets, the service will need much less effort and time. The doffer who replaces the full cones could also be supplied with a basket in which he could carry the cones. This would be more efficient than carrying them by hand and therefore walking the distance between the boxes and the spindles several times more than necessary. Putting the boxes on stools a meter high would also save the worker from bending in order to reach for the cones.

The last and one of the most important factors influencing the efficiency and the labor productivity of the division is the production loss due to the yarn breakage. Constituting the second highest percentage among the causes of machinery stoppage (1.4 per cent), it reflects the combined influence of all the deficient manufacturing conditions within the division. The factors affecting the frequency of yarn breakage start even before the cotton is picked in the fields. The quality of cotton is naturally one of the most important determinants of the quality of the final products and labor productivity.

The cotton processed in Basmahane is supplied mostly from Seyhan, Antalya, and Ege regions. Although the standards set for the factory dictate the raw cotton to be of three specific types with certain qualifications, in 1965, 19 kinds of cotton were used as raw material for the yarn produced.

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The staples of raw cotton, in order to make strong yarn, should meet certain qualifications. Their length should be between 1 and $1\frac{1}{16}$ inches.¹ Shorter staples is the main cause of the frequent yarn breakage. Therefore it necessitates higher twist factors which lowers the labor productivity of the division. More man-hours become necessary for producing the same kilogram of yarn.

The thickness of the cotton staples is another factor to be considered. The thinner the staples, the better is the yarn produced. The ripeness of the cotton and the color of the staples also contribute to the quality of final products. As the cotton ripens, the hollow part in the staple widens; this in turn provides a softness which raises the value of the cotton. Brightness of the staples makes the yarn and the fabric to be more acceptable. Propensity to curl in the staples provides a great advantage during the production of yarn since the whole process is simply the twisting of the cotton staples until the required thickness is achieved. The first two processes before the twisting starts, namely picking and carding are naturally influenced by the degree of impurities in the raw cotton since these two processes are for cleaning the cotton from these impurities. The frequency of yarn breakage is greatly influenced by the degree of impurities still remaining in the final processes. (The quality of the fabric is also a function of the impurities in the yarn). Elasticity of staples and humidity of raw cotton are the two most important factors among all the others. The breakage of yarn is mostly dependent upon these two factors. The higher the elasticity of staples, the stronger the yarn becomes, and the higher the humidity of raw cotton, the lower is the quality?²

¹Muhittin Pekdil, op. cit.

²Ibid.

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Basmahane is not equipped with modern tools and equipment to measure and evaluate all the qualifications of cotton stated above. Therefore, it has to rely on the fingers, eyes and personal evaluation of certain managers—who have become experts through experience—sent away to the cotton regions of Turkey for biddings. Even when cotton is found to be much lower than the standards, the management is sometimes forced by the market and administrative conditions to buy it¹.

As stated in earlier section, the quality of yarn manufactured is determined by its strength, weight, and uniformity in count. And all the factors mentioned above (except color) have an influence upon these three components of quality. Together with the production loss due to yarn breakage, the importance of the quality of raw cotton as far as labor productivity is concerned grows larger.

Humidity is not only of importance when the cotton is not yet processed. It becomes more significant during the processes since maintaining the level of humidity in different sections of the plant within narrow limits which vary according to the processes or group of processes, is a vital condition for the textile industry. Humidity affects the strength, softness, propensity to curl and elasticity of the fibers. It also prevents their getting charged with electricity due to friction, which makes them tufty. Consequently, the frequency of yarn breakage and the quality of products are also affected by humidity.

The humiducts in the Spinning Division are inadequate to maintain the level of humidity within the division at the required level.

¹The administrative conditions mentioned here may be the result of political forces upon Sümerbank, which is then passed on to Basmahane.

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The average for 1965 was 52 per cent, whereas the optimum level of humidity for spinning mills is 60 per cent.¹

The production loss due to the yarn breakage given as 1.4 per cent of the theoretical production of the machinery reflects a very small portion of the influence of this factor on labor productivity. The real significance lies in the fact that the work-loads and consequently the number of spindles assigned to each worker is a function of the frequency of yarn breakage. The function of a machine tender is largely to check the spindles and connect the ends of broken yarn. The machine layout is then determined in order to minimize the distance walked by the worker and the loss from yarn breakage, and to maximize the number of spindles under his control.

The machine layout of the Spinning Division is largely according to the specifications of the firm from which the Saco-Lowels were purchased. However, this does not mean that this policy provided the optimum operating conditions. Because of the deficient manufacturing conditions stated so far, the management could never have assigned the hypothetical number of spindles to each worker, and thus, the position of the machines and the machine tenders is totally disturbed. It is only since the beginning of 1965 that the management started to work with modern methods of time and motion studies on a limited number of machines and counts of yarn to determine the work-loads. As a consequence, the management is now thinking of rearranging the machine layout accordingly.

¹Ahmet İlmiveri, op. cit.
Muhittin Pekdil, op. cit.

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Type of Equipment

The 8928 Rieter spindles in the Spinning Division of Basmahane — constituting 30 per cent of the total — date back to 1934. The Saco-Lowels, adding up to 20,976 spindles were installed in 1950.

The Rieters, having been in operation for 32 years, are always a subject of joking among the managers and a matter of grievance among the workers. The breakage frequency of the yarn, and eccentric spindles are higher in the Rieters than in the Saco-Lowels. Therefore the spinners, assigned to the Rieters always demand a higher allowance for breakages, flaws, and the variance between the standard and the actual thickness of the yarn. The spindle-setters and the tape-men — repairing the broken tapes driving the spindles in the Rieter spinning frames — are also reluctant to accept overseeing the given number of spindles.

In 1964, the engineers of the factory tried to modernize the drawing systems of the Rieters. Experiments undertaken on two of the Rieters to increase the revolutions of the spindles from 8000 to 10,000 per minute, did not give satisfactory results due to the low quality of the cotton used, unsatisfactory production of the preceding processes, and the increase in the eccentric revolutions of the spindles as a result of high speed. Consequently, the idea was given up. At present, the management strongly believes that any effort to partly modernize the machinery in the Spinning Division will be in vain because of the antiquated conditions of the machinery, the low quality of raw cotton, and the necessity of maintaining the balance among the different processes within the division. Therefore, the idea of replacing the multi-process pickers with one-process pickers, low capacity bobbins with high capacity bobbins, standard draft systems with high-speed draft systems are all given up. The only effort of the

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management in this respect was using reels four centimeters longer than the old reels. This change increased the average weight of the yarn on each reel from 90 grams to 110 grams, thus reducing the efficiency loss in replacing the full reels.

Eccentric spindles within the Spinning Division are a common problem of both the managers, masters, and the spinners. Poor physical conditions of the spinning frames are best reflected in eccentric spindles. Moreover, spindle-fixing is one of the jobs in the division requiring high skill and experience. The control of the spindles is done by eyes and this necessitates highly qualified masters. Basmahane has difficulty in finding such workers due to the reasons which will be explained in the section dealing with the recruitment policy of the establishment. Moreover, these skilled masters are the first ones leaving the factory as soon as they find a chance to transfer to other textile factories with better conditions, or go to Western Europe.

Machines off level in the Spinning Division constitute another important defective manufacturing condition as far as the equipment is concerned. However, the correction of this situation requires large investments in order to completely reconstruct the floors of the division. The management therefore, can only take temporary measures to bring the machines to level. However, at present, it is still easy to find off-level machines in the division.

The maintenance, oiling and the cleaning of the machinery in the Spinning Division are not undertaken properly. The fixing of the combs in the carding frames is inadequate due to the lack of qualified personnel. There are in total 116 combs in the division and every working day one comb is adjusted. This means that each comb is fixed only twice a year, which is far from being

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sufficient for such old machinery.¹ The working of the carding frames with unadjusted combs result in the cotton's containing tufts, seeds, and other foreign material, and the fibers not being parallel to each other as required.

Although the oiling of the frames in the Spinning Division is easier than it is in the Weaving Division, the cotton dust landing on the oiled parts of the machinery necessitates more frequent cleaning and oiling which are not done properly due to the lack of strict control by the masters and foremen on the oilers and cleaners. The author's personal observations revealed that the oilers and cleaners getting paid on time basis require more control and incentive to carry their jobs properly.

¹Ibid.

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CHAPTER III

TECHNICAL FACTORS AFFECTING LABOR PRODUCTIVITY IN THE WEAVING DIVISION

The task performed in the Weaving Division and the problems concerning labor productivity resemble those found in the Spinning Division in the sense that the operations constitute an integrated flow of several processes whose success is dependent on each other's performance and the quality of their products. Certain manufacturing conditions which influence the level of labor productivity in the Spinning Division are also found to be influential in the Weaving Division. It is therefore found convenient to follow the same pattern of analysis in this chapter also .

Size

* The size of weaving mills is measured in number of looms. Although there are a great variety of looms varying especially in width, expressing the size in number of looms is considered to be an appropriate measure, since the type of machines does not have a significant influence on the intensity of the organization of operations.

The type and the number of looms in Basmahane's Weaving Division are shown in Table III,1. All the looms are model Ruti, with certain variations in the degree of automation and size.

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Table III,1

Looms in the Weaving Division

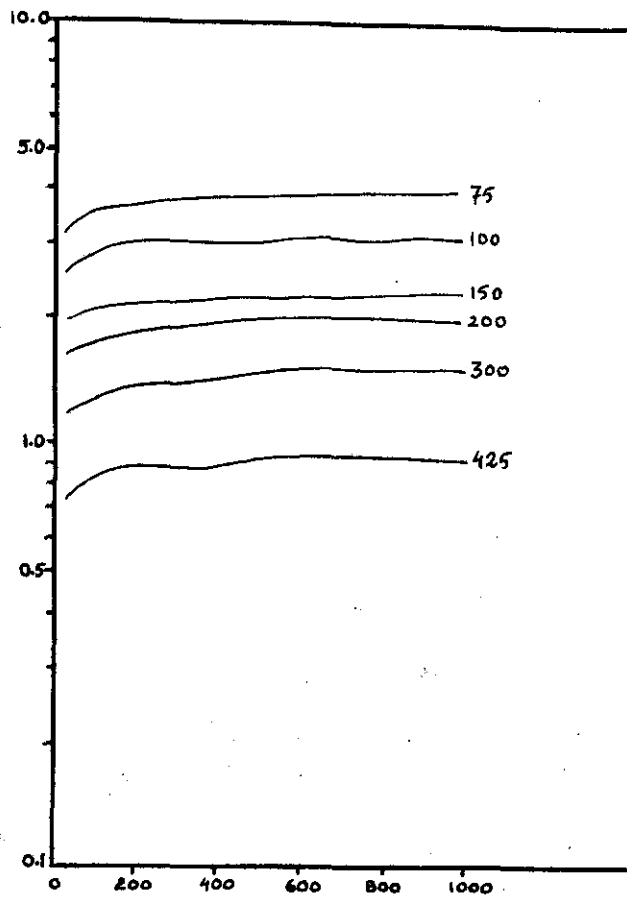
| <u>Type of Loom</u> | <u>Characteristics</u> | <u>Year Manufactured</u> | <u>Units</u> |
|---------------------|------------------------|--------------------------|--------------|
| BA | Light automatic | 1933 | 60 |
| BAL | Light automatic | 1933 | 120 |
| DRAPER | | 1950 | 175 |
| BU | Shafted | 1933 | 25 |
| BUW-4 | | 1933 | 15 |
| BAV | Heavy automatic | 1936 | 40 |
| BUV | | 1936 | <u>20</u> |
| | | TOTAL Looms | 455 |

Source: Files of Basmahane.

As was done in the Spinning Division, the influence of size of the Weaving Division on labor productivity was determined by locating the size of Basmahane's Weaving Division, 455 looms, on the curves formed by plotting the level of labor productivity in standard hypothetical mills of various size—free from the influence of operations—, against labor productivity. It is seen in Graph III,1 and Graph III,2 that the lower limit of the range in which the productivity increase is negligible for a change in size, lies around 500 looms. The situation is the same both in the modern and in the old standard weaving mills, which indicates that the type of equipment has no influence in the labor productivity of the weaving mills as a function of their size. It should also be noted that the sort of fabric does not change the picture.

The size of Basmahane's weaving Division falls 9 per cent below the lower limit of the range of optimum size, if the lower limit is taken strictly as 500 looms. However, it is more realistic

Graph III,1
Labor Productivity of the Old Weaving Mills,
As a Function of Their Size¹



X- Size of the mill in looms
Y- Labor Productivity in Kg/m-h

¹Ibid., 128

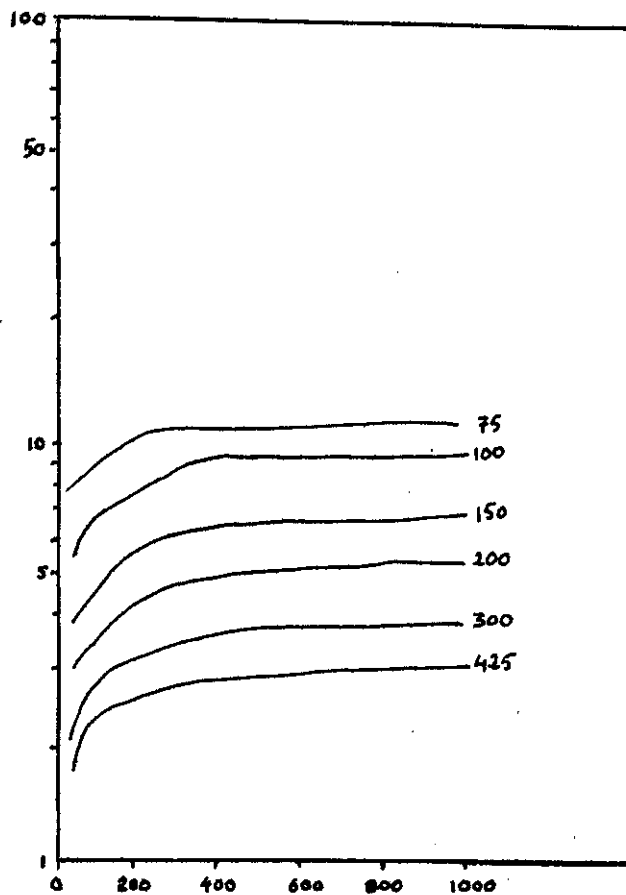
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Graph III, 2

Labor Productivity of the Modern Weaving Mills,
As a Function of Their Size¹



X- Size of the mill in looms
Y- Labor productivity in kg/m-h

¹Ibid., p. 129

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to take this limit as a range rather than one single value, which, as can be seen from the graphs may well include the size of Basmahane's Weaving Division, namely 455 looms. The responsiveness of the labor productivity to changes in size tends to diminish at about 400 looms in the modern standard weaving mills, and 350 looms in the old standard weaving mills. It is therefore justifiable to consider the size of Basmahane's Weaving Division to have no negative or positive influence on the level of labor productivity. Had the size of the factory been within the range in which an increase in size yield substantial increments to productivity, then the ratio of labor consumption expressed in man-hours per kilogram in a standard weaving mill of optimum size and labor consumption of a standard weaving mill of the actual size would show the percentage of excess labor consumption due to the influence of size, that is, the smallness of the Weaving Division.

Influence of Operations

* All of the yarn consumed in the Weaving Division is the production of the Spinning Division. Taking into account the fact that the success of operations in weaving is largely a function of the quality of the yarn used, it can be stated therefore, that the causes of low productivity in the Spinning Division are also partially responsible for the low productivity of the Weaving Division, in the sense that these factors are transferred to the Weaving Division inherent in the low quality of the yarn. Besides most of the defective manufacturing conditions found in the Spinning Division are also present in the Weaving Division, which lower the efficiency and the labor productivity of this division.

The significance of the influence of the speed of the machinery was explained in the previous chapter. The general policy of the management to draw the greatest advantage possible from the

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scarce element, namely equipment, at the cost of wastage of the abundant factor, namely labor, is also affective in the Weaving Division. Table III,2 is indicative of the fact that the production is being forced from the machines.

Table III,2
Speed of the Looms in Revolutions per Minute
(1965 average, and standard)

| <u>Type of Looms</u> | <u>RPM</u> | | <u>Variance</u> | |
|----------------------|--------------------|---------------|------------------|-----------------|
| | <u>Standard</u> | <u>Actual</u> | <u>Numerical</u> | <u>Per cent</u> |
| BA | 175 | 177.8 | 2.8 | 1.6 |
| BAL | 180 | 189.8 | 9.8 | 5.4 |
| DRAPER | 187.7 ^a | 186.2 | (1.5) | (0.8) |
| BU | 130 | 138.6 | 8.6 | 6.6 |
| BUW-4 | 130 | 138.5 | 8.5 | 6.5 |
| BAV | 152 | 152.5 | 0.5 | 0.3 |
| BUV | 142 | 147.6 | 5.6 | 3.9 |

Note: (a) 187.7 is the weighted average of two different standard speeds, 182 and 190 RPM.

Source: Files of Basmahane.

As can be seen from Table III,2, the speeds of the looms are higher than the standards, except in the case of Drapers where the speed is lower. Although the difference is as small a percentage as 0.8, it deserves further analysis under the light of the fact that the purchasing (and manufacturing) date of the Drapers is 1950 whereas all the others date back to 1933 and 1936. The significance of this difference lies in the fact that * the relatively more modern looms, in order to operate efficiently, require high quality and uniform yarn, and the produce in the Spinning Division of the factory does not meet these qualifications. The importance of the influence of the low quality of the yarn becomes heavier when one considers the efforts of the management to get the highest yield possible from the machinery.

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The frequency of the breakage of the warps and fillings become so high that the managers choose to operate the Drapers even lower than the standard speeds whereas they raise the speeds of the others to higher revolutions per minute at the cost of a rise in the loss of efficiency due to machine and motor breakdowns. The loss of efficiency as a result of this factor constitutes 2.2 per cent of the hypothetical capacity of the division calculated on the basis of continuous operation of the machinery at the given speeds. This 2.2 per cent, coming third in importance among the causes of loom stops is, not of a negligible magnitude when compared to the other causes of efficiency loss given in Table III,3.

Table III,3

Causes of Stoppage of Looms

(1965 actual, and standard)

| | <u>Actual</u> (per cent) | <u>Standard</u> (per cent) |
|------------------------------------|-----------------------------|-------------------------------|
| Power Interruption | 0.3 | 0.1 |
| Machine and Motor Breakdowns | 2.2 | 1.8 |
| General repair and Maintenance | 1.0 | 1.0 |
| Cleaning and Oiling | 0.5 | 0.4 |
| Shortage of Beams | 0.2 | 0.3 |
| Shortage of Materials | 0.4 | - |
| Absenteeism | - | - |
| Breakage of Warps | 5.4 | 5.0 |
| Breakage of Wefts | 7.6 | 7.0 |
| Change of Beams | 0.3 | 0.4 |
| Unloading raw Cloth | 0.1 | 0.2 |
| Eliminating Torn Cloth | 0.1 | 0.4 |
| Miscellaneous | <u>0.3</u> | <u>-</u> |
| TOTAL | 18.4 | 16.6 |
| Efficiency of the Weaving Division | 82.1 | 83.4 |
| Statistical Discrepancy (/-) | <u>(0.5)</u> | <u>-</u> |
| | 100.0 | 100.0 |

Source: Files of Basmahane.

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Power interruption in the Weaving Division causes a 0.3 per cent loss of efficiency whereas the same loss is 0.9 per cent in the Spinning Division. This indicates that when electrical power is supplied to the factory in reduced quantity, it is usually made available to the Weaving Division rather than to the Spinning Division. This is because the difference in the capacities of the two divisions is in favor of the Spinning Division. The Weaving Division can only consume, on the average, 70 per cent of the total yarn produced in the Spinning Division. In 1965, out of 4,182, 818 kilogram of yarn produced, 2,857,444 kilogram (68 per cent) was consumed by the Weaving Division, and the remaining 1,325,274 kilogram (32 per cent) was sold in the form of yarn. Thus, the management chooses to let the Spinning Division stay idle in the case of a compulsory termination of operations due to the shortage of power.

The loss of efficiency due to the machine and motor breakdowns, and general repair and maintenance, 2.2 and 1.0 per cent respectively, is indicative of the fact that the practice of looking after the equipment in an emergency is more frequent than the adoption of any preventive measures. The management is grateful to the loom-fixers who, by their fast service, prevents the efficiency loss due to breakdowns from being several times more than it is at present.

* The frequent breakdown of machines in the Weaving Division is obviously a result of long service life and higher than normal speeds, together with a maintenance service far from being sufficient to counteract the influences of the bad manufacturing conditions.

Cleaning and oiling, although there is less cotton dust than in the Spinning Division, is not done properly in the Weaving Division. This belief is based on personal observations rather than

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the interpretation of the figures related to the causes of stoppage of the machines. The rooms and especially the looms are very dirty, and the division is not equipped with modern and efficient tools and equipment for cleaning. Oiling, which is perhaps several times more important than cleaning, is also insufficient due to a lack of well-programmed oiling system. The loom tenders who do not want to be interrupted by the oilers (whose arrival times are random), and send them away asking them to come later. As a consequence, the oiling of the machines is neglected, and, this in turn contributes to the high frequency of machine breakdowns.

Shortage of beams, changing of beams, and unloading raw cloth are the three factors which result in relatively negligible percentage of efficiency loss. However, careful examination of the situation within the factory revealed that the true contribution of these factors to the low labor productivity of the division is much higher than what the figures in Table III,3 show. These three factors are those whose influence upon efficiency is the 'easiest' to compensate by assigning more labor. This is another symptom of the management's policy which is to use the abundant factor, namely labor, generously in order to minimize the loss of efficiency of the machines.

Shortage of beams is largely due to the low capacity of the warp-winding frames. Three of the six warp-winding frames have been equipped with primitive wooden bobbin-stands in order to increase the number of warps that can be wound onto a beam. The warp-bobbins on these wooden stands are unwound only by the yarn's being drawn by the warp-winding frames, whereas the frames' own bobbin-stands help the bobbins revolve with a steady speed. The non-uniform unwinding of the yarns from the wooden bobbin-stands cause the loose yarns to twist to each other. This in turn slows down the operations, increases the breakages, and requires

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one worker on each side of the stand to untwist the mixed-up yarns all decreasing the labor productivity of the division. Even the allocation of two excess workers to each warp-winding frame — which makes six workers in each shift and 24 workers in a day — cannot prevent the loss of 0.2 efficiency, due to the shortage of beams.

The production loss from shortage of beams, changing of beams, and unloading raw cloth is also due to the large variety of fabric produced in the factory. Except for very few of the types of cloth woven, the varieties of cloth are produced in small quantities at different times. This results in the frequent changing of beams and frequent unloading of the raw cloth, sometimes even before the raw cloth beam is full. The excessive variety of cloth shown in Table III,4, necessitates a larger number of beamers, beam carriers, and raw cloth unloaders, although the loss of efficiency due to these factors is minimized.

The lack of specialization is perhaps a more significant factor lowering labor productivity, than the loss of efficiency due to machine stoppages. The loom tenders, no matter how skilled they are, cannot get the advantage of their skill and experience as a result of frequent variety changes. Consequently, the number of machines per tender remains low.

The number of machines per tender is also a function of warp and weft breakage frequency. The low-quality, non-uniform yarn with defective twisting and winding, together with the high speeds of the machinery, yield a very high breakage frequency, which results in 13 per cent efficiency loss in total (5.4 per cent for warp and 7.6 per cent for weft). This is about 70 per cent of the total stoppage time of the machines. The breakage of warps and wefts being random, the high frequency of yarn breakage requires the assignment of only a few machines to each tender, so that he

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* Table III,4

Types of Cloth Woven in Basmahane's Weaving Division

| Catalogue <u>No.</u> | Type <u>of Cloth</u> | Meters <u>Produced (1965)</u> | Percentage <u>of Total</u> |
|-------------------------|-------------------------|----------------------------------|-------------------------------|
| 111 | Kılıflık | 17,731 | 0.1 |
| 117 | Ambalajlık | 173,735 | 1.0 |
| 131 | Nevresimlik | 107,333 | 0.6 |
| 133 | Kasarlı Bez | 149,145 | 0.9 |
| 137 | Kaput Bezi | 2,643,561 | 15.6 |
| 252 | Yelken Bezi | 86,414 | 0.5 |
| 330 | Dar Hasse (90 cm.) | 845,765 | 5.0 |
| 333 | Düz Pazen | 1,914,942 | 12.3 |
| 335 | Geniş Hasse (140 cm.) | 474,242 | 2.8 |
| 335 | resmî T-1 | 312,898 | 2.0 |
| 491 | Otoman | 142,262 | 0.8 |
| 503 | Tülbent | 871,141 | 5.8 |
| 504 | Tülbent (seyrek) | 868,730 | 5.8 |
| 506 | Astarlık-penkli Patis | 2,035,169 | 12.7 |
| 902 | Torbalık | 57,720 | 0.3 |
| 930 | Tulumluk | 1,576,003 | 10.3 |
| 931 | Brandalık | 76,827 | 0.6 |
| 932 | Portatif Çadırılık | 299,330 | 1.7 |
| 952 | Er elbiseliği | 1,898,926 | 12.1 |
| 952 | Merserize KM Kasar | 353,868 | 3.1 |
| | <u>Diğerleri</u> | <u>986,747</u> | <u>6.0</u> |
| TOTAL | | 16,956,299 | 100.0 |

Source: Files of Basmahane.

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can see the broken yarn, stop the loom, piece up the broken ends, restart the loom and not miss other breakages happening at the same time in the other looms. Time and motion studies having been undertaken only since the beginning of 1965 are not sufficient to assign the optimum number of machines to each worker. The resentment of the workers to any increase in the number of looms assigned also puts the management in a difficult position. It should also be remembered that a satisfactory job analysis and determination of work-loads with such a great variety of yarn and fabric is a very difficult task. Until the beginning of 1965, the management could have determined the work-loads for only six types of fabric produced on the Drapers.

Humidity also plays an important role in the breakage frequency of the warps and wefts. Although the Weaving Division is equipped with high-capacity humiducts, the rate of humidity stays on the average at 50 per cent, whereas the optimum rate is 65 per cent. The lack of maintenance of the humiducts and opening of the windows by the workers during the summer months prevent the maintenance of the standard humidity rate within the division. This, in turn, decreases the strength of the yarn and consequently increase the breakage frequency.

Lighting has an influence upon labor productivity by affecting the sight of the workers who have to see the yarn breakages in the machines, pick up the broken ends and piece them up. Although the looms stop automatically in case of a warp or weft breakage, the loom should be well-lighted so that the tender spends less time and effort to undertake the necessary operations. Lighting in the Weaving Division is very poor, with insufficient incandescent lamps. Only in the offices are the fluorescent lamps available. The influence of the weak lighting is reflected in the quality of the raw cloth, rated according to the number of flaws per meter. (It is not meant here that the low quality of raw cloth is the

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result of insufficient lighting only. But lighting is one of the factors influencing the quality). Table III,5 shows the grading of cloth produced in 1965.

Table III,5

Grading of Cloth According to
Number of Flaws It Contains
(1965)

| <u>Quality</u> | <u>Percentage of Total</u> | |
|----------------|----------------------------|-----------------|
| | <u>Actual</u> | <u>Standard</u> |
| 1 | 82.2 | 85.0 |
| 2 | 14.1 | 14.5 |
| 3 | 2.7 | 0.5 |
| Discarded | 1.0 | - |

Source: Files of Basmahane.

These percentages are calculated by comparing the number of flaws per meter with standard figures. Even if the standards are considered to be normal, one meter of cloth in every 100 meters is discarded due to too many defects, 2.7 meters is of very poor quality, 14.1 meters contains comparatively less number of defects, and only 82.2 meters can be graded as the first quality. Consequently, it is obvious that the labor productivity of the Weaving Division will be much lower than its present level if more weight is given to the quality factor by the management.

Type of Equipment

Out of 455 looms in the Weaving Division, 220 date back to 1933, 60 to 1936, and 175 to 1950. In other words, 61 per cent of the looms are antiquated, and the remaining 39 per cent is relatively newer, but cannot be called modern. Moreover, the looms are worn

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out due to working with higher than normal speeds and the lack of an extensive maintenance program.

The looms in the Weaving Division do not have slashers with automatic controls. It is therefore necessary for the machine tender always to keep an eye on all the looms under his control so that he can notice the abnormalities in the position of the shuttles and the beating of the slashers. This in turn decreases the labor productivity by limiting the number of looms each tender can be assigned. Besides, the low quality of the shuttles made in Basmahane's own Mechanical Division increase the frequency of yarn breakages, especially of the warps.

The capacity of the looms do not allow the use of loom beams with flanges of large diameter which automatically increase the amount of warp yarn wound on the beams.

Apart from these deficiencies which can only be corrected by a * complete modernization of the machines, there are certain other factors whose influence on the labor productivity can be eliminated by managerial action not requiring high costs. Cleaning of the machinery - as was discussed before - is not undertaken properly which affects the operation of the machines and the quality of the fabric. Oiling of the looms is also a factor preventing the proper functioning of the machinery. The machine tenders are reluctant to let the oilers lubricate the looms, since they have to stop the machinery and lose from their production. On the other hand, very few of the oilers are skilled enough to oil the looms without having them stopped and without oiling the cloth on the looms. The cloth's getting dirty is another reason for the weavers' aversion to the oiling of the machines. This can be overcome by a strict control of the masters who can see to it that the oiling of the machines is properly undertaken.

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In the Weaving Division, contrary to the situation in the Spinning Division, the influence of the type of equipment on labor consumption is of considerable importance. For the looms, both the differences in the output per machine unit for old and modern equipment, and the difference between the minimum labor requirements of each type of machinery bear great significance. Moreover, the maintenance and repair of the looms, together with their adjustment for new sorts of fabric require more technical skill and labor time than the spinning frames. It can be concluded therefore that the type and present conditions of the machinery in the Weaving Division are to a great extent responsible for the low productivity of the division.

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CHAPTER IV

NON-TECHNICAL FACTORS AFFECTING LABOR PRODUCTIVITY IN BASMAHANE

The technical causes of low labor productivity and their control are largely a function of the organizational and managerial structure of an establishment. It is therefore considered to be a necessity to study the non-technical aspects of the problem of labor productivity in Basmahane.

Formal Organization and Managerial Structure

The facts revealed by personal observations and interviews show that the managerial structure and the formal organization of Basmahane have a considerable influence upon the factory's labor productivity, directly, by affecting the morale of the workers and indirectly, by the lack of full assessment of the influence of technical factors on labor productivity.

The following facts are notable as the causes of defective managerial structure of Basmahane:

1) There are large gaps among the managerial levels of the factory, which result in poor delegation of authority, and reluctance in accepting responsibility. The top members of the organization, the president, and the administrative and technical vice-presidents, find it necessary to keep their subordinates

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under close supervision, which in turn, keeps them busy with minor details. This naturally prevents them from dealing with executive problems of higher importance. As a result of this attitude, their subordinates are reluctant to accept responsibility and they cannot take decisions and actions to solve even small problems. The lack of initiative and the fear of their superiors force them to take trivial matters to their superiors, and consequently a lot of paper-work slows down the administrative operations.

The lack of delegation of authority and responsibility is a result of the combination of various factors. First of all, the managerial education and skill of the white-collar workers are inadequate. The executives do not have a common background of education and understanding of the business. Some do not have any experience and knowledge in administration, and some in technical aspects of textile industry.

ii) There is still an autocratic understanding among the managers. A militaristic attitude and false respect of the subordinates toward the superiors prevail in the factory. The lack of free exchange of ideas in this medium, prevents the communication of a true picture of the factory to the higher executives. It has been stated by most of the younger managers that the situation is worse in the formal meetings.

iii) Not all of the managers are familiar with modern managerial techniques. Very few of the managers have acquired the knowledge and experience to apply skillfully the techniques such as time and motion studies, rational determination of work-loads, job evaluation and merit rating. However, it would not be fair not to mention that most of these notions are put forward in the general policy of Sümerbank establishments. But in Basmahane, very few of the personnel seem to appreciate their importance,

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and lack of qualified managers prevents their successful application.

iv) There is a lack of managerial motivation. It is apparent that most of the managers have a 'it is none of my business' attitude toward the problems of the establishment. After all, they receive their salary, no matter what the financial situation of Basmahane is. Even the payment of bonuses, supposedly to most efficient personnel, has become an integral part of the salary, paid to every manager without any exception.

There is also a deficiency of promotional procedure in Basmahane. None of the managers seem to be certain whether or not they are going to be promoted, and if so, when. There is a general tendency to believe that those supported from outside with other reasons than good qualifications are promoted instead of those who have actually deserved it.

The salary levels of Sümerbank in general are lower than those of comparative private firms. Consequently, the managers who find a better paid job outside, leave their post without any loyalty to their original firms¹. During the course of this investigation, for example, four top executives of Basmahane, two of whom were successively the Chief of the Planning Bureau, transferred to other firms.

v) There is still a wider gap between the managerial level and the manual workers. It will not be an exaggeration to say that there is not any cooperation between the two groups. The worker is accepted as just another factor of production. There is no joint consultation or any other occasion in which the workers and managers come together. The habitual form of interaction

¹Ömer Celâl Sarç, op. cit.

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between some managers and workers resemble that of a 'master and slave'. Such communications involve a manner of speech on the part of the 'masters', which does not conform to human dignity. Moreover, the relation among the workers, supervisors and foremen complete the picture. In fact, it is one of the main reasons of grievance on the shop-floor. The foremen and the masters, although it is on the training program (which will be referred to in the following pages), are not well-trained in the human aspects of work. The supervision is completely autocratic and job-centered. Some of the supervisors' and foremen's favoring some workers causes severe resentment among the employees. This fact was stated both by the Personnel Officer and most of the workers interviewed.

The Labor Union, TEKSİF¹

In Basmahane, 83 per cent of the workers are members of a labor union, namely Teksif. Although there is no enforcement to join or not to join, the workers usually prefer to join since they automatically get 10 kuruş more on their basic hourly wage rates, as a result of the collective agreement signed on May 22, 1964.

Despite this rather high percentage of union membership in Basmahane, the collective agreement signed between Sümerbank and Teksif contains certain points in favor of the management, which may be of great use in increasing labor productivity, if used properly.

According to Article 11, the management has the right to determine the number of workers in the divisions, to recruit the workers and to make up the working teams. The right to determine the number of workers in the factory may mean that the

¹Türkiye Tekstil Örne ve Giyim Sanayii İşçileri Sendikası.

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management can reduce the number of workers any time it chooses. Article 50 strengthens this fact by giving to the employer the right to discharge group of workers when it considers the number to be in excess of the necessary amount.

According to Article 6 of the collective agreement, the shop stewards are appointed by the union and not elected by the workers. This has one big advantage, that is, since the shop stewards are under the control of the union, the union can carry out its policy better, and so its central authority is protected

against the possible decentralized power of shop stewards—as it has happened in England. However, the appointment of shop stewards by Teksif in Basmahane has an equally important disadvantage: if the shop stewards appointed by Teksif are not the true representatives of the workers, informal leaders among the employees emerge; and the competition among the foremen, shop stewards and these informal leaders cause the division of the workers into camps, lessening the unionized power and affecting the morale of the workers. This competition, however, results mostly in favor of the foremen and therefore the management, since the workers see that the shop stewards cannot represent them against the management, and group leaders are not accepted by the management as official representatives. The foremen then remain as the only power to communicate the grievances to the executives, settle disputes and protect the rights of the workers. Article 19 of the agreement gives also the right of ultimate decision to Sümerbank in the case of a dispute on a change in the nature of a work which affects the wages. If such a dispute cannot be solved by the joint committee of the employer and the union, the decision is left to the experts of Sümerbank Headquarters. Organized union activity and the labor contract, therefore, presents no serious obstacle to increases in labor productivity as is the case in some other countries.

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Recruitment, Labor Force, and Training

Recruitment and labor force are two other factors determining the level of labor productivity, in the sense that the selection and placement of workers become the basis upon which the success of managerial efforts to make the workers more productive are depended. Selecting and assigning the right man to the right job is essential in order to raise the efficiency of the worker later on.

The method of recruitment in Basmahane is mainly done by determining the need of a division for new workers and asking the service of 'The Employment Office' (İş ve İşçi Bulma Kurumu). Only the required age and type of work are specified. The candidates sent by the office apply to the factory, and the Personnel Office makes its selection among the applicants. For the skilled workers, the norm for selection is the level of education, experience and the skill of the worker as observed in a test on the specific job. For the jobs not requiring skill and experience, the norm for selection is the level of education and the opinion of the Personnel Officer.

Methods of scientific employee selection are considered too luxurious in Basmahane. Even the level of education is tested — if the applicant does not have a diploma—by having the applicant read a newspaper happened to be on the desk. The applicant's family conditions, his physical appearance, and the impression he gives to the Personnel Officer are significant indicators that determine his acceptance or rejection. Another factor, which is attributed great importance by the Personnel Officer, is the kind of shoes an applicant wears — and it is not a joke-. The officer strongly believes that the shoes made of old automobile tires indicate that the owner is an obedient Anatolian

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villager, and this is what makes him preferable. His not being a trouble-maker counts more than his ability and skill. 70 per cent of the workers in the factory, as a result of this recruitment policy, is villagers, and only the remaining 30 per cent is composed of old workers of the factory with up to 30-35 years of service.

The majority of the recruited labor consists of unskilled workers. Technical Schools' graduates are accepted when the need for skilled workers is great, but they are considered non-preferable due to the fact that these masters, being so young, cannot supervise those who are much older than themselves. But most of the time, skilled labor is scarce for Basmahane due to its relatively low wage levels and inadequate transportation facilities. Minimum hourly wage rate at Basmahane is 125 kuruş per hour, while it is 160 kuruş at Mensucat Santral and 150 kuruş at Narin. So the skilled workers are attracted to private mills. Such private firms also provide free transportation services for their widely scattered workers, while Basmahane can do so only for those living in Kazlıçeşme, Bakırköy, and Zeytinburnu. This prevents the skilled workers living outside of this area from applying to Basmahane, and limits the choice of the Personnel Office to a narrow population.

The shortage of skilled and experienced workers is, at present, an important problem which Basmahane faces. The drainage of qualified labor to European countries makes the problem even more difficult. In 1965, of the total of 291 separations, 235 (81 per cent) were direct qualified workers against 56 unskilled workers. This indicates the flow of skilled labor away, once they acquire experience and skill in the factory. And it takes considerable time for the newly-recruited workers to gain experience and become skilled workers.

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The lack of efficient application of an effective training program also slows down this process and hinders the possibilities of increasing labor productivity by training.

During the first week following recruitment, new employees are subjected to an orientation program at the end of which they have to know certain rules of the establishment and the names of the top managers by heart. An old worker assigned to every new employee helps him learn them.

The Turkish Labor Law states that the employees in Turkish Industry must have primary school diploma, and the ones who do not have cannot be employed. It further obliges the firms to hold courses for the illiterate workers already employed. Employees who cannot read and write at the end of two years must be dismissed. As is usual in most of the Turkish industrial firms, these rules have not been applied in Basmahane, and 18 per cent of the employees in 1965 were illiterate. The courses held every year are inefficient, because attendance is free and there is little incentive to make it attractive. The result of the interviews with the illiterate workers revealed that it would have been quite an incentive had they been given primary school diploma at the end of these courses. However, it must be admitted that this is very difficult, since they cannot reach that level even at the end of the third year, and the management cannot be held responsible for this.

The first month after recruitment is a probationary period during which the management is free to register or reject the new worker (without paying an indemnity in the case of rejection). During this month, an old worker and the master of the section help him learn his job. This period may sometimes last for three months, depending on the nature of the job and the ability of the worker.

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The success of on-the-job training applied in Basmahane is hindered by several reasons. First of all, if the old worker who is assigned to a new employee is working at piece-rate, he prefers to spend as little time as possible in teaching the new worker, not to shorten his productive time and his earning. It is also possible that the monitor's own mistakes and inefficient method of work are passed on to the new worker.

Masters, on the other hand, being paid on time-basis, have no incentive to concern themselves seriously with the new workers. They usually tend to be regulative rather than instructive; and, being uneducated and selected out of the workers, their power tends to be ineffective.

The Law No.3457 which makes 'professional supervisory training' compulsory for all industrial establishments is not applied properly as far as Sümerbank establishments are concerned in general. All masters selected from each unit affiliated with Sümerbank attend to the programs held in Ankara, in order to be promoted to foreman level. In these training programs, they are expected to learn Human relations, Job Simplification, and Method of Teaching the job. These courses are too short and obviously superficial to be of a noticable use. And if some participants do avail from them, they are apt to be lost to European countries. Foremen are selected out of these candidates, and since they are assumed to be trained, no other attempt is made to train them further in Basmahane.

Working Conditions

In this section, it is intended to include only these working conditions which have a direct influence upon the productivity of the workers. Some of the conditions discussed below are also closely related to better processing and manufacturing efficiency

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as well as to employees' increased effort and safety. Although the last two appear to be purely philanthropic benefits, it should be pointed out that they become beneficial in the form of greater productivity and higher morale within the factory.

Illumination in both the Spinning and the Weaving Divisions is deficient, especially when the necessity of lighting for the processes undertaken are concerned. Incandescent lamps are the only type of lamps used in the workplaces. These should have been replaced by the fluorescent lamps long ago, which unquestionably yield higher efficiency, lower glare and larger area of light source. At present, no daylight is made use of in the workplaces, and the incandescent lighting cannot banish darkness. Needless to say, good illumination in a plant soon pays for itself in greater productive efficiency, improved morale of employees and fewer accidents. In Basmahane, the conditions are opposite requiring immediate attention for corrective measures.

Noise control, although taken as a superfluous thinking by the managers of Basmahane, is perhaps one of the most important factors to be taken care of in textile factories, especially in weaving mills. While a reduction or elimination of objectionable noises in a plant lessens the wear and tear on the workers' nerves, such a problem does not require only a paternalistic action. An increase in the amount of work performed and improvement in its quality definitely result from the control of noise. No measures seem to have been taken toward controlling noise in Basmahane, but it should also be accepted that the physical condition of the machinery and the buildings has the highest share among the other causes responsible for the excessive noise in the factory. However, proper maintenance and oiling of the machines, bearings, gears, spindles and shuttles may reduce the noise to a certain extent.

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Cleaning was mentioned in several occasions in the previous chapters. It is here intended to point out the importance of this factor as far as the morale and the health conditions of the workers are concerned. Air-cleaning facilities to clean cotton dust floating in the air are non-existent in Basmahane. No study has been carried so far on the effect of cotton dust on health of the workers—especially on their eyes. The dust in the two divisions is so dense that one can easily discriminate the workers of Basmahane in one near-by coffee house, with their white eye-brows and eye-lashes, and their ears full of cotton dust.

Despite the fact that cotton dust may influence human health, all of the workers interviewed complained about the situation, which indicates its effect on morale. Besides, some of the managers of the factory expressed their beliefs that cotton dust is detrimental for the health of the workers, and it makes it difficult to see through.

The work-cloths of the workers given by the establishment are in general so dirty that even some of the managers do not want the workers coming to their offices sit on the chairs or come close to their desks. This is of course another fact revealing the wide gap between the managers and the workers. However, the management cannot be held completely responsible for the situation, since it is true that the workers sell their new work-cloths given twice a year, and go on to wear their old ones in the factory.

Temperature in the Spinning and the Weaving Divisions is controlled only during the winter months and it is left to the natural consequence of the humidification operation during the summer months. As a result, it becomes wet hot in the divisions during the summer months, which leads to workers'—especially the indirect workers'—leaving the work-place very often to go to the

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garden. Another consequence of hot weather is that the workers prefer to work at night-shifts which create ground for favoritism as to who will work at night.

There is no officially determined rest periods in Basmahane. There seems to be no need for it anyway, since the workers paid on a time-basis are most of the time at rest, and the piece-rate workers would not leave their jobs during the rest period not to lower their production. During an interview, one of the managers answered the author's question as to where one could find the time-rate workers for interviewing, as 'on the west side of the factory in the morning and on the east side in the afternoon', which meant the shaded places during the day-time.

On the whole, the working conditions of the factory cannot be considered satisfactory and it can be stated that the influence of this on labor productivity is negative both from the point of view of health and morale of the workers.

Wages

* Perhaps the most commonly stated intention in modern wage policy is that of basing wages and salaries on the contribution of the worker. Wage and salary structures represent formal systems of rates for this purpose; they create differentials in payments assumed to represent similar differences in the contribution of jobs.¹ This assumption of representing similar differences is greatly a function of the success in job evaluation and rational determination of work-loads. As it was mentioned in the subsequent sections, these systems are never thoroughly applied in Basmahane, and this what makes its wage policy unsuccessful in the first place. That similar payments do not correspond to

¹ Dale Yoder, Personnel Management and Industrial Relations, Prentice-Hall Inc., Englewood Cliffs, N.J., 1964, p. 468.

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similar work has been the main source of grievance and dissatisfaction among the workers of Basmahane.

Incentive system on the other hand, a distinctive feature of the wage policy, does not fulfil its purpose because of unrealistic standards and job evaluation. For those working at hourly rates, the standard output above which they get premiums are generally set too low. Therefore it has become a common practice to receive premium as though a part of the wage. This in turn eliminates the stimulating character of premiums paid to individuals or groups.

* On the other hand, some of the standards set for individual work valued on piece-rate are too high. The workers, finding out by experience that they can never exceed the standard to get a premium, regress to their inefficient pace of production. Standards varying according to machines and sorts of fabric cause further dissatisfaction among the workers, especially when they create a suitable medium for foreman favoritism in job assignment.

Another point to be criticized about the wage scheme is that the piece-rate workers do not get any compensation for their production loss due to machine stoppages unless they last at least three hours. Therefore, frequent machine stoppages affect the morale of the workers, reducing their efficiency.

It should also be pointed out in this short analysis of the wage policy that foremen and masters being paid on hourly-rate basis do not have the initiative for efficient performance and accelerated rate of production.

Another feature to be considered, although not very important yet, is the fixed ratio between wages and production (in the case of piece-rate workers), neutralizing any incentive the

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management may have to introduce more efficient working methods, or mechanical modifications, which would increase the number of units that each worker can handle. It may be that certain simple attachments and changes in organization can make it possible for one worker to look after twice as many spindles as he does at present, without undue effort. If the management establishes this work-load, and if it discharges the surplus tenders, it will have to pay one man two times his present wage and pay an indemnity to the other worker displaced. The management's investment in the machines and its efforts to modernize the working methods will not, therefore, be compensated by a reduction in costs.

The last and perhaps the most important of all the deficiencies in the wage policy of Basmahane is that the workers do not have a thorough understanding of the wage system, which prevents the positive effects of the incentive scheme on labor productivity.

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CHAPTER V

CONCLUSION

To begin with, the causes of low productivity can be divided into two principal groups, the first of which comprises those which can be corrected without modernizing the machinery; in other words, without incurring expenditure of large sums. The second group consists of those which can be corrected only by the installation of new machinery, such as obsolete equipment, excessive wear on the machines, and certain other manufacturing conditions which cannot be corrected without considerable investments.

The group of causes not requiring modernization for their elimination is mainly composed of: (1) a superfluity of workers over and above those required to counteract the influence of certain defective manufacturing conditions; (2) defective manufacturing conditions which can be corrected without great expenses, like the quality of the yarn, humidification, cleanliness and maintenance of the machinery; (3) lack of specialization of production; and (4) inadequate motivation and morale of the workers. This group of causes can be called 'administrative', covering those which can be corrected essentially by the improvement of the organization and administration of Basmahane.

The superfluous labor in Basmahane is not entirely due to the incapacity of the managers to recognize this excess, but to the perpetuation of traditional work patterns and to inadequate organization and labor supervision, general policy of Sümerbank

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to provide employment, and the relatively low wage level of Turkish industry. The latter does not imply however that the attitude of the management can be ascribed to its having solved the purely financial problem of choosing between investing capital in administrative improvements, or alternately, of continuing to pay wages to an excessive supply of labor, since there have been no efforts in this respect. On the contrary, it might be said that the management has followed the easiest path, together with the other motives mentioned above.

As to the defective manufacturing conditions which can be corrected without great expense, the following list covers those affecting labor productivity in Basmahane:

- a) The physical condition of the equipment is very unsatisfactory in Basmahane. This is largely due to natural deterioration caused by many years of constant use, but the lack of an adequate maintenance service is probably even more important. It is common to find rolls and tapes of spinning frames requiring recovering, machines which are off level, and eccentric spindles. Basmahane cannot be said to have a systematic maintenance program, that is, a frequent and regular inspection of the machinery and its complete overhauling for repairs, cleaning and adjustment. These conditions are responsible for the low quality of the intermediary and final products, causing stoppages by resulting in mechanical breakdowns, and lowering efficiency in the processes. Low efficiency is frequently checked, or an attempt is made to check it, by increasing the number of workers allocated to each machine, which in turn, lowers the level of labor productivity.
- b) Machine and room layout in both of the divisions is poor, which is a handicap especially in the Weaving Division. This is mostly due to the fact that the number of machines has been

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increased within the available space which itself was not suitable for a rational layout.

- c) The control systems of humidity are not satisfactory in the divisions. Some managers believe that the natural humidity of the atmosphere is sufficient not to require the perfection of the artificial humidification equipment. This, however, does not take into account the well-proven importance of humidity constant within the narrow limits which vary according to the processes involved.
- d) On the whole, in both of the divisions, not enough attention is given to the problem of cleanliness, though some of the managers recognize this to be a very important factor in obtaining high process efficiency and high quality products. It is possible that the reason for this deficiency lies simply in the fact that the standards of cleanliness are low. The use of better tools and equipment seem to be essential.
- e) The quality of the yarn - its lack of uniformity in count, weight, strength, and cleanliness - is probably the factor which affects the efficiency of the weaving process most frequently and to the greatest extent. In some sorts of the fabric, it is also encountered together with the poor preparation of the warp, and inadequate sizing at the slashers.
- f) It can quite definitely be said that the poor quality of cotton contributes to low productivity in a considerable amount. Certain types of raw cotton used by Basmahan contain short fibers of low strength and extremely irregular in staple length. Consequently, it leads to much waste, affects the efficiency of the processes, and lowers the quality of the product.

Within the limitations set for the investigation, it was impossi-

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ble to determine the effect that each of the conditions enumerated above have on labor consumption, principally because they form a complex which is difficult to analyze. However, it can be definitely stated that the majority of these defective manufacturing conditions affect labor productivity not only by changing the output of the equipment through variations in the unit weight of the product, speed of the machinery, or organization of the processes, but by demanding a greater number of workers than is normally required. It may therefore be said that the total excess of workers found in Basmahane is partly employed in meeting this extraordinary demand; the rest may be considered absolutely superfluous, that is to say, it might be eliminated without even correcting the manufacturing conditions.

The increase in productivity which could be achieved by means of the reduction of personnel and the improvement of manufacturing conditions, demands the establishment of adequate systems for determining work-loads and controlling efficiency and the quality of the products. It would also be necessary to select the best workers and to train them so that they can adjust themselves to the new conditions.

In Basmahane, not much attention is given to the rational determination of work-loads, because there is little incentive to assign a maximum number of machines per man, and there is also the lack of qualified personnel. The work-load is mostly small and irrational, that is, it is not related to the intensity and duration of work actually performed in spinning and weaving operations. It is absolutely necessary to adopt modern systems for all the machines and types of products, based on the frequency and duration of the various elementary functions of the worker and also on the percentage of time allowed for the rest period corresponding to these functions during the working day.

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Though in Basmahane efficiency of the processes is checked, at least in the spinning frames and looms, checking the source of abnormalities, classifying them according to the apparent immediate motive, and investigating these immediate causes in order to discover the underlying factors are very rarely done. Reduction of personnel is not hindered by any rigid provisions (except the fixed ratio of wages to production) in the present collective agreement, which gives considerable freedom to the management for possible technical improvements and modernization of equipment which give rise to labor savings. It is believed that the gains resulting from the reduction of personnel would be more than the cost incurred in the form of indemnities paid to discharged personnel.

The third cause which can be corrected by administrative action, the lack of specialization of production, affects the labor productivity of both of the divisions. Its correction is feasible, but, to some extent, it would require the combined efforts of the whole industry, in order to simplify varieties of popular fabrics. As a matter of fact, Basmahane was designed to make very few counts of yarn, particularly Count 20, and a few sorts of fabric; but market conditions obliged it to manufacture a great variety of products, causing a reduction of labor productivity.

The lack of specialization and the low quality of raw cotton may be separated from the other factors as those requiring the cooperation of all manufacturers, and of the government. This means that the correction of these causes of low productivity demand external administrative action also.

Inadequate motivation and low morale of the workers may totally change as a result of the changes in the causes of low labor productivity which have been discussed so far. The worker should feel that he is treated as a human being, and this necessitates

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a change in the attitude of the managers toward the workers, in order to close the gap between the management and the employees.

As a matter of fact, it can be concluded from the above facts that it is more important to reorganize Basmahane on a new administrative basis than to modernize equipment and the installations. It is likely that many of the causes of low labor productivity in Basmahane to which reference has been made in this report occur simply because no assessment has been made of the full influence of these causes on low yield of labor. The significance of administrative deficiencies in the factory shows that there is still a wide margin to increase labor productivity without recourse to substantial investments. The correction of administrative deficiencies also involves some expenditure, but this is considerably less than that required for the acquisition of new textile equipment.

Broadly speaking, it may be said that the administrative backwardness of Basmanane is due to the combination of certain factors, some of which are connected with the human element itself. First of all, the attractiveness of the positions and salaries offered to qualified personnel by private enterprises cause their transfer to private establishments. This problem can only be solved by an overall change in Sümerbank's promotional policy and the level of salaries.

Secondly, the lack or inefficiency of media for the spreading of technical knowledge, either within Basmahane or in Turkish textile industry, results in the inability of the managers and technicians of Basmahane in acquiring the necessary tools of scientific management. The typical method of spreading knowledge regarding the textile industry and the management techniques, is direct transmission from experienced managers and practical textile experts, to apprentices or subordinates. This method has its

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difficulties and limitations, mainly because this information has been given a tone of secrecy, making it appear that it can only be acquired after long years of experience, or education abroad. Moreover, most of the qualified personnel employed in Basmahane are engineers and technicians with specific textile knowledge rather than administrative techniques. Textile literature available in Turkish, on the other hand, is nonexistent except one monthly magazine which rarely deals with subjects connected with the administrative organization of textile mills. As a solution, it seems feasible to encourage the diffusion of certain knowledge, which has not been generally made known, due to the lack of adequate methods of its spreading. One of the most effective means of obtaining this objective would be to approach experts, either in Basmahane or outside, with a request that they prepare manuals for the spreading of knowledge on the following subjects, in a manner which can be used both directly by Basmahane and by other textile mills in Turkey:

- i) Methods of controlling labor productivity and the efficiency of the processes;
- ii) Organization of labor and determination of work-loads;
- iii) Methods of quality and waste control;
- iv) Standard specifications for machine and mill layouts, lighting, humidification, and systems of internal transport;
- v) Organization of maintenance and cleaning services;
- vi) Human relations.

Rational determination of productivity standards for different types of machinery and a sufficient number of popular products is also essential, in order that the managers of Basmahane may have a sound basis of comparison for the results obtained in the factory.

The third factor causing the inefficient management of Basmahane

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is the absence of conditions which would encourage the managers to seek such knowledge, and to attempt to replace present organization by a better system, based on stricter controls and the employment of a minimum amount of labor.

This last point again necessitates an overall change in Sümerbank's salary administration and promotional policy. It is feasible to alter the payments of bonuses on a more rational basis. Also, the norms and standards set by the Headquarters especially with regard to the number of the workers in each division should be determined by scientific investigations rather than the modification of old figures at random, as was done in 1964. This would also mean a change in Sümerbank's philosophy of employment. At present, trade union contracts do not seem to be limiting the administrative action of the management toward increasing labor productivity; however, it may be expected that the situation may change in future.

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PAGE

BIBLIOGRAPHY

Books:

- Beaach, Dale S., Personnel: The Human Problems of Management, The Macmillan Company, London, 1963, 784 pp.
- Bethel, Laurence L., Industrial Organization and Management, Fourth Edition, Kogakusha Company, Ltd., Tokyo, 1962, 704 pp.
- Bullock, Paul, Standards of Wage Determination, Institute of Industrial Relations, University of California, Los Angeles, 1960, 99 pp.
- Dubin, Robert, The World of Work, Industrial Society and Human Relations, Prentice-Hall, Inc., Englewood Cliffs, N.J., 1958, 448 pp.
- Dunlop, John T., and T. Dietchenkov, (Ed.), Labor Productivity, McGraw-Hill Book Company, New York, 1964, 409 pp.
- French, Wendell L., The Personnel Management Process, Human Resources Administration, Houghton Mifflin Company, Boston, 1964, 624 pp.
- Kendrick, John W., (Ed.), Productivity Trends in the United States, A Study by the National Bureau of Economic Research, Princeton University Press, Princeton, 1961, 630 pp.
- Output, Input, and Productivity Measurement, The Conference on Research in Income and Wealth, National Bureau of Economic Research, Inc., Princeton University Press, Princeton, 1961, 506 pp.
- Pigors, Paul, Personnel Administration, A Point of View and a Method, Third Edition, McGraw-Hill Book Company, Inc., New York, 1956, 711 pp.
- Reynolds, Lloyd G., Labor Economics and Labor Relations, Fourth Edition, Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1964, 568 pp.
- Rice, A.K., Productivity and Social Organization, The Ahmedabad Experiment, Tavistock Publications Ltd., London, 1958, 298 pp.

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Sümerbank Bakırköy Pamuklu Sanayii Müessesesi, Müessesemizin Durumu Hakkında Malûmat, (mimeographed), 1964, 9 pp.

Sümerbank Genel Müdürlüğü ile (TEKSİF) Türkiye Tekstil Örne ve Giyim Sanayii İşçileri Sendikası Arasında Yapılan Toplu İş Sözleşmesi, Yürürlük Tarihi 22.5.1964, 60 pp.

Türkiye Ekonomisinde Produktivite Meseleleri, Türkiye Ekonomi Kurumu, İktisadi Araştırmalar Enstitüsü, Ankara, 1958, 463 pp.

Waring, A.B., People and Productivity, A Practical Guide to Administrators, Alday Limited, Birmingham, 1959, 95 pp.

Zaim, Sabahattin, İstanbul Mensucat Sanayisinin Büyümesi ve Ücretler, İstanbul Üniversitesi Neşriyatından No. 655, İktisat Fakültesi No. 83, Sermet Matbaası, İstanbul, 1956, 388 pp.

Interviews:

Ertuğrul Boydak, Chief of the Planning Bureau, Sümerbank Bakırköy Pamuklu Sanayii Müessesesi.

İbrahim Gül, Chief of the Planning Bureau, Sümerbank Bakırköy Pamuklu Sanayii Müessesesi.

Ahmet İlmiveci, Chief of the Weaving Division, Sümerbank Bakırköy Pamuklu Sanayii Müessesesi.

Anslan Kalpakçioğlu, Acting Chief of the Personnel Department, Sümerbank Bakırköy Pamuklu Sanayii Müessesesi.

Muhittin Pekdil, Chief of the Spinning Division, Sümerbank Bakırköy Pamuklu Sanayii Müessesesi.

Tevfik Sayan, Chief of the Personnel Department, Sümerbank Bakırköy Pamuklu Sanayii Müessesesi.

Notes:

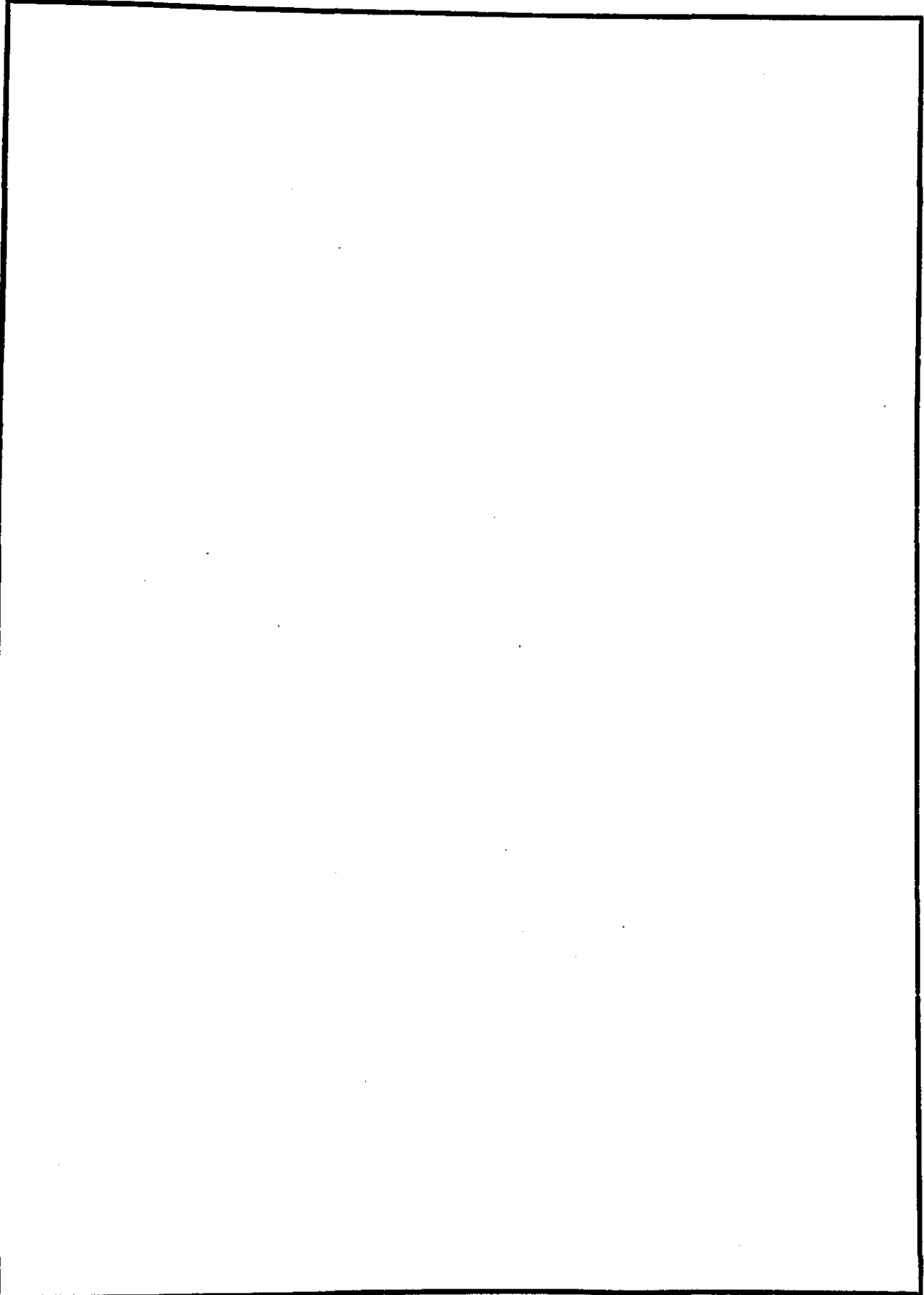
Sarıç, Ömer Celâl, Problems of Industrialization in Turkey, Class Notes, Robert College School of Business Administration and Economics, 1965-66, Second Semester.

Reports:

Labor Productivity of the Cotton Textile Industry in Five Latin-American Countries, United Nations, Department of Economic Affairs, New York, 1951, 293 pp.

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I am not familiar with the courses in the core, but I note that there is a course entitled Business Decision Making. Such a course has been a part of the Columbia core and has been viewed with some suspicion by many members of the faculty. This course has been restricted and now is in fact a course in managerial economics.

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