



A Selection of Papers on

MECHANIZATION AND AUTOMATION IN SMALL BUSINESS

Editor

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Selected Papers on

MECHANIZATION AND AUTOMATION IN SMALL BUSINESS

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Editor

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Mechanization in industry is one of the “facts of life” in this modern age. Business firms of all sizes find it advantageous to use improved process and service equipment and automatic machines and controls to replace manual or less mechanized operations. All segments of our society are vitally concerned with the impact of mechanization. Our present high standard of living as well as many social and economics problems stem from mechanization and industrialization.

Mechanization is like a woman—difficult to live with, but impossible to live without. There is a growing realization that mechanization is both an asset and a liability. Frequently, it is the best means of assuring continuing profits and retaining a sound competitive position. However, there are numerous problems involving technical, financial and personnel matters. On the other hand, failure to mechanize, in the face of similar action by competitors, may be disastrous.

Mechanization is of particular concern to the small business firm because of its competitive implications. Larger firms appear to operate in an economic climate more conducive to rapid mechanization and therefore en-

joy the competitive advantage of lower costs and better quality which often result. This is because the larger firms usually have more cash available for new equipment and a staff of specialists for dealing with the variety of problems which are involved.

How can Small Industry meet this Challenge?

In the interests of providing answers to some of the questions this challenge presents, a regional conference on mechanization in small industry was planned for the fall of 1960 to be held at the University of Missouri in Columbia. Although it was necessary to cancel the conference, it is felt that the papers which were to be presented at the conference were of great value to those interested in the affairs of small business firms. Accordingly, these papers have been edited for publication under the auspices of the Engineering Experiment Station of the University of Missouri.

February 1960

Columbia, Missouri

“The Promise and the Problems of Mechanization and Automation for Small Business”

by—George Philips, Assistant Director, Techno-Economics Research, Armour Research Foundation, Chicago.

Automation is an “emotional” word. In some quarters, it is viewed as the coming of the Messiah. In others, as an instrument of the devil.

In 1954, a survey of select segments of the Detroit population indicated that next to the “Russian threat,” automation was most feared over and beyond all other matters. Automation has been the subject of a variety of congressional and administrative agency hearings. It has been and will be the subject of many professional talks and papers. But in reviewing our history and current newspaper articles, one comes to the conclusion that automation has now matured. On the whole, it is accepted as a valuable, inevitable tool of production and management. Consequently, there is a need to clearly un-

stand both its inherent promise and the problems it brings for business-at-large and, for the purposes of this discussion, for the small businessman in particular.

Some General Points

First, the continued growth of mechanization and automation is inevitable. From an historic point of view, we have seen a continued sophistication of mechanization—the replacement of manual effort by machine. The natural tide of events have indicated that this trend will continue into automation—which is the replacement of manual and mental efforts by machines. From a national point of view, automation fulfills an extremely important need. It provides a mechanism for maintaining U.S. in-

dustry on the forefront of technological and price competition. It is a major means for combating the competitive advantages enjoyed by manufacturers in overseas, low-wage areas. But more important in projecting the increased usage of automation is the fact that we have now come to know it. We have gained a technical know-how, a personnel know-how, and a management know-how. Industry has a more realistic impression of what automation will or will not do.

Specific Points

Turning now specifically to some of the problems offered by automation and the small businessman:

Automation is deceiving. Often, there still is a tendency to view it in an optimistic light expecting it to serve as a cure-all for a host of sales and management problems as well as production problems. Obviously, it is not, it is only one important tool. It will not solve all problems.

Automation requires a good deal of study prior to settling upon any given system for plant or office operation. There is a need to very clearly define the relative cost/benefit ratios of automation versus various degrees of mechanization and possible improvements in methods and procedures. Management may not have the talent, the time, nor the patience to undertake such needed studies. There is the danger of a hasty decision.

Automation can give rise to employee and community relations problems. Much has been written and said on these subjects—the key point to be recognized is that unless automation is introduced gradually and with the knowledge and participation of the employees and the community, it may give rise to chaotic management problems arising from the employee's natural fear of displacement and loss of security.

In many instances, automation demands a re-orientation and training of management. With automation, a variety of decisions which have long been considered as management decisions are acted upon by technicians. Additionally, various functions require different degrees of control. It is not easy to come by any formalized procedure or test which will train management in any specific application. In many instances, the knowledge comes only as a result of experience.

Automation may call for a substantial redesign of a basic product. To reap the full benefits of automation, consideration should be given to product design as well as plant design. This is an analysis that requires a high degree of technical, operating, and marketing know-how. This package of talent is not easy to come by in any one firm.

Automation and inflexibility are synonymous. By definition, automation requires a fairly heavy capital expenditure in a highly specialized system of machines.

This gives rise to an inflexibility that will limit an important competitive advantage enjoyed by the smaller firm.

The increased use of automation by the larger firm will serve to intensify price competition with the smaller operator. The growing use of automation, in the medium and large-size firms, may force the smaller plant to automate if it's to compete on a price basis. Again, the small businessman must walk a narrow line between his competitive advantage of flexibility versus low cost.

Now Turning to the Promise of Automation . . .

Probably the most important potential benefit of automation is the production of a better quality product at reduced costs. This enables the manufacturer to quickly develop an outstanding industry reputation and to increase sales either through improved market penetration or expansion into new geographic areas.

Automation, as previously mentioned, may create new problems in personnel management. But it has the advantage of reducing the number of individuals which have to be managed. Management characteristically works with three things: people, things, and ideas. Of the three, the management of people is probably the most difficult. Anything to reduce this burden is a welcomed relief.

Automation in the office leads to better management information. The introduction of quick automatic processing of data enables management to gather more complete information with greater accuracy and improved timeliness. This provides the basis for better over-all decision making.

Automation can result in added degrees of freedom in plant location. As often noted, automation is a replacement of physical and mental effort and, hence, the replacement of personnel. Consequently, the relative importance of locating specific types of plants in close proximity to large skilled and semi-skilled labor pools is reduced. This added degree of freedom allows management to select locations which are better suited in relation to other factors such as market proximity, tax structure and transportation.

The increasingly widespread use of automation offers the opportunity for "speciality" competition. Just as automation offers a threat to the small businessman in terms of price competition, it also offers an opportunity to further capitalize upon his capability to produce quickly and along specialty lines.

Often times, the study and preparation for the introduction of automatic equipment leads to many efficiencies and cost benefits. Professor Schoeller in an article for the *Journal Of Industrial Engineering* reports the following:

“Recent studies brought to my attention indicate that up to eighty percent—in some cases more—of the total savings attributed to Automation, have really been brought about through preparatory work in setting up for Automation, rather than in the application of machines and systems themselves. These savings will accrue whether the new equipment is obtained or not. In fact, we may draw the conclusion here that when top management has merely expressed a wish to investigate the potentialities of automation, the necessary investigation starts chains of reactions that when properly handled bring about major savings and cost reductions.”

The above points are not intended to provide a detailed analysis of all the possible benefits and problems that might accrue as a result of automation. Their intent, however, is to provide an appreciation of the flavor of the types of problems which management must be prepared to meet at various operating levels. If one conclusion can be drawn, it is that there is no easy answer to the question: “Should I automate?” The problems and the promise of automation must be studied carefully on the basis of each individual application.

Mechanization’s Influence on Industrialization of Mid-Missouri

by—Robert M. Eastman, Professor and Chairman, Industrial Engineering Department, University of Missouri, and Director of Industrial Survey, Mid-Missouri Development Council Grant, Columbia

Mechanization of manufacturing and office work has been discussed in other papers in this collection. However, mechanization has reached other economic activities in our civilization. In one of these areas, agriculture, the output of food and other products has been rising steadily at the same time the number of farmers and farm workers has been declining. This is the result of constantly rising output per worker which is due in large part to the mechanization of farming operations. The declining number of jobs in farming has affected almost every agricultural area in the United States. The trend has been particularly strong in the Mid-Missouri area. In some of our counties in recent years, one farmer out of every ten who starts the year as a farmer quits farming during the year.

The Mid-Missouri Development Council

The Mid-Missouri Development Council was organized in 1957 by a group of civic leaders and businessmen from the communities in the area. The purpose of the organization is to promote economic development of the area by developing industry and by increasing the job opportunities in the tourist and travel business. The Council is a not-for-profit organization organized under Missouri law. It has no official status and depends upon volunteer contributions and work to promote its program. At present, there are thirteen counties in the council. Twelve of these counties which are participating in the industrial survey are shown in Figure 1.

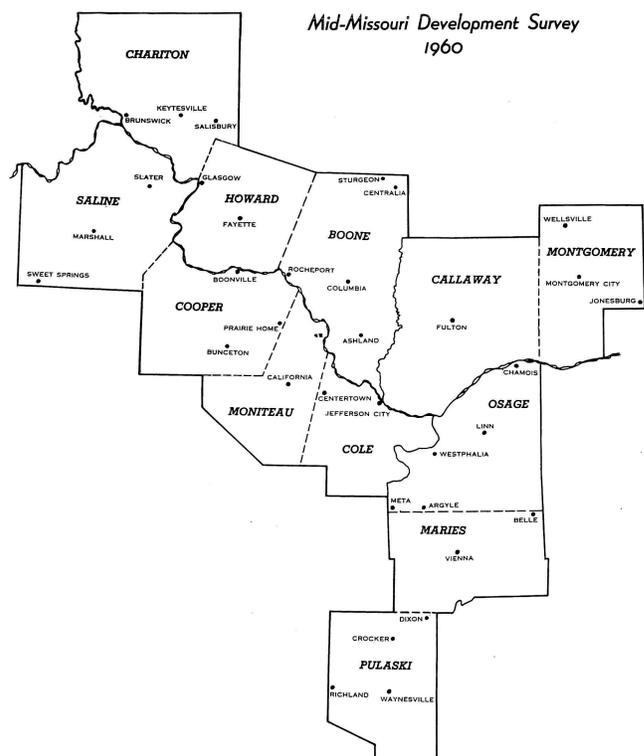


FIGURE 1

The Council decided to make an industrial survey of the Mid-Missouri area to determine the area's advantages and liabilities for industrial development. The Council contracted with the Department of Industrial Engineering of the College of Engineering of the University of Missouri to undertake this survey. The investigation was conducted during the calendar year 1960 with the report being published in March 1961.

History of Mechanization

As we investigated industrial development and the assets of the Mid-Missouri area, we quickly found that mechanization of industry has influenced the area's potential for industry, and the type of industry which can be obtained. Industrial patterns of the past have disappeared along with horse-drawn farm equipment. New industrial patterns are emerging. Industrial development in the future will follow these new patterns and be quite different from those of the past.

The facts of mechanization are familiar. Mechanization in the modern sense started about 200 years ago. It began with the introduction of machinery and steam power into the textile industry of Great Britain. From this start, it expanded to other industries, to transportation and to other countries, including the United States. At first, machinery depended on water power, later steam power took over and now electricity is the chief source of industrial power. In the future we may see important power derived from the sun and from nuclear fission.

During the last 200 years, we have seen a constantly rising amount of power per industrial worker. Two hundred years ago the worker himself supplied most of the power. Today he furnishes only a tiny fraction of the total power used. Our evidence shows that the mechanical power per worker will increase steadily in the foreseeable future.

A recent development is the application of automatic control to industrial processes. In the past, mechanized operations still had to be controlled by a human operator. The operator had to start the operation, see that it stayed within bounds, feed in raw materials, remove the finished product and make needed adjustments. In many industries, these functions are performed automatically. New automatic controls are being developed and installed every day. Thus, in addition to increasing output per worker due to mechanization, we have automatic controls which further increase the productivity of the worker.

Economic Effects

The constantly rising output per worker and per manhour has produced the highest living standard the world has ever seen. It has also produced complications

in employment since production has not been expanding fast enough to absorb displaced workers from industry and agriculture and the new entrants into the labor force.

In our competitive economic system, the decision to mechanize is frequently out of the hands of the individual firm. Mechanization normally results in reduced unit cost. If a company does not keep pace with its competitors in mechanization, its unit costs, and consequently its prices, will remain high. Eventually the laggard concern inevitably loses ground to competition. Profits for dividends and for expansion decline. Sooner or later, the backward industry will go out of business or be absorbed by a stronger organization.

Another corollary of increasing mechanization and output per unit of labor is the increased volume of production and sales required for an economically workable unit. You can not build a modern gasoline refinery nor a modern automobile plant unless you have an enormous market for the product. In many lines of industry, the result is fewer competing companies and larger production units.

Trends Resulting from Mechanization

What are some of the features of the new pattern of industrial development? Several trends are discernible.

1. The output of product per unit of floor space has been steadily going up. As processes become mechanized and therefore faster, the processing from raw material to finished product takes less time. Thus, a larger volume of output can be manufactured in about the same floor space as before.
2. Mechanization usually increases the amount of floor space required for each industrial worker. Since each worker is supported by a larger capital investment which takes more space, he will usually require more floor space for his job. For a given area of floor space the number of workers may very well go down while production is rising.
3. Mechanization favors one floor plants. Mechanized material handling is more efficient and much simpler in a one floor plant than it is in a multi-story building. Material can be transported in a direct line from point of entry to point of use. The one floor factory eliminates the elevator bottleneck which is extremely time consuming and costly.
4. Mechanization has brought a different labor force composition. More skilled labor for maintenance, tool making and process control is required. The proportion of office and clerical workers goes up. On the other hand, the number of unskilled and semi-skilled production workers is reduced.
5. Mechanization has reduced the labor force needed in many cases. In many mechanized factories, the labor force is smaller even through production is greater. In some, direct production labor has all but disappeared.

The net result of these trends on the individual company or industry varies. In some cases, the total floor space rises because demand expands faster than mechanization increases output. On the other hand, some industries which have not expanded require less floor space. Fewer workers are needed in the production unit, although the number of workers in overhead office and maintenance operations may have increased.

Decentralization

Decentralization of industry has been another trend of recent years. Mechanization has accelerated this trend for several reasons.

1. Limited space in established industrial communities. Many a company wanting to expand in its present location has been unable to acquire adjoining land at a reasonable cost. More space may be necessary for the firm to keep its share of the market and expand its sales. In many cases, the best course is to abandon the old location and to move to a completely new site. If a company is going to do this, it may move to a new community if the community offers advantages which the old location did not.
2. Obsolescence of production facilities and equipment. In many cases, it is far more economical to abandon an obsolete factory and build a new one in a new location than to remodel and re-equip the old factory. Modernizing the old factory may not be feasible because of outmoded construction, lack of space, multi-story building or other reasons. The best solution may be to build an entirely new plant. A good example of this is the New England textile industry which has been building new plants in other areas and leaving behind its old production facilities which had become uneconomic and obsolete.
3. Increased competition has brought decentralization of industrial plants for faster and better service to the customer. Small but highly mechanized production units are being located near centers of market concentration. This has been an important cause of industrial growth on the Pacific Coast and in the Southeast. Another interesting example of decentralization and mechanization has been the automobile industry. For the production of many parts and subassemblies, the mechanization and automation of the production equipment is so expensive that it is not feasible to duplicate this production equipment in more than one location. On the other hand, transportation costs from the central factory location for the finished automobile are very large. The solution has been a combination of centralization of automated production equipment and a decentralized location for assembly plants. It is economic for the automobile company to manufacture the parts and subassemblies in a highly

automated factory, ship them to an assembly point in compact or nested form and assemble the automobile at a decentralized location.

4. Military dispersion. Some production facilities for military hardware are located away from major industrial centers which are prime targets. In some cases, highly mechanized factories are in locations which are otherwise not industrial.
5. Optimum size of production unit. In the past, the central factory tended to grow larger and larger indefinitely as increased output was needed. The result was industrial complexes which were difficult and expensive to operate. The loss of time alone in getting to and from work for thousands of workers was considerable. Transportation of goods in and out was costly. A primary deficiency was the difficulty of supervising and controlling a huge, sprawling factory. Many industries have found that the optimum size plant for best over-all efficiency is around 300-600 workers. Instead of a small number of larger plants, many industries have gone to a larger number of smaller units spread throughout the country. As the company builds these smaller units, they will be constructed in areas near markets and in locations away from previous plants. This trend has been noted in baking, soap manufacture and other lines which sell to the consuming public.

Concentration of Industry

On the other hand, there are certain factors which favor concentration of industry into a smaller number of locations. These are:

1. Need for production volume.
2. Closer control of operations.
3. Lower overhead per unit of output for auxiliary services and overhead.
4. Availability of supplies and services in an industrial center.

The need for large volume of output is probably the most important factor favoring concentration of industry. Mechanized industrial production requires that the firm's production equipment be in use almost all the time. Even a modest proportion of time idle will cause a financial loss. This means that a mechanized installation must have high-volume continuous operations in order to pay for the expensive mechanized installation.

An example of this occurred to the author when he was working on a technical assistance program as part of the Marshall (later Point Four) Program. An inquiry came from a South American country asking what American machinery was available for making approximately 50,000 square yards of asphalt building paper per year. Investigation showed that we could be no help at all to this manufacturer. The smallest plant in the United States turns out 50,000 square yards of asphalt building paper in less than a week. This is the minimum volume to justify a modern economic plant in the United States.

Mechanized production calls for closer control and supervision of operations. Since the rate of output is much higher, a large quantity of scrap can be generated in a hurry if the process is not closely monitored and controlled. From the point-of-view of effective control, concentration of output into smaller number of units is often advisable.

Another factor favoring centralization is a reduction of overhead per unit cost. This arises from the fact that utilization of skilled labor, such as maintenance and tool making, can be more efficient in a large unit. Other groups of employees such as accountants, engineers, tool designers, and others can be more effectively used in a single location than in several decentralized ones. In addition, many of these skills are in an extremely short supply. There may not be enough men of a particular skill available to staff a series of plants. By centralizing operations, the skilled men can be better utilized and apprentices and beginners more effectively trained and put to work.

Another important factor favoring concentration of industry is the availability of supplies and services in a modern industrial center. A mechanized factory requires a large number of auxiliary repair and supply services. In a large industrial city, these are available on short notice. If a repair part is needed for a machine, it can frequently be obtained on an hour's notice. In a non-industrial location this may take two days. Loss of the production for a two day period can be an extremely serious financial blow.

Conclusions

Several conclusions can be drawn on the effect of mechanization on the Mid-Missouri Development Council area. They are:

1. Mechanization will continue to increase and to influence industrial development.
2. Mechanization creates new industrial patterns.
3. Fewer production workers will be needed for a fixed output.
4. Increased proportion of workers in overhead and distribution activities.

Mechanization has been increasing the output per worker steadily for at least 200 years. There is no indication in sight that the trend will change in the foreseeable future. The available workers will not be absorbed into the industrial work force simply to maintain current levels of production. The influence of mechanization in holding down costs will certainly prevent any large scale change in the trend.

Mechanization is creating new patterns of industrial development. New type factory units are being built. These are one-story plants which spread over a large acreage. In addition to the plant itself, a company must now

furnish the parking space for its employees, outdoor storage, auxiliary buildings and other space consuming facilities that were not necessary in the old style factory in an industrial city. The new style factory will need considerably more ground area than did its predecessor. Often the only place that this land can be obtained is in a previously agricultural area such as Mid-Missouri.

Fewer workers will be needed for each unit of output. This means that the community will have to obtain more and more industry in order to absorb its available work force. If a community has 600 workers available and obtains a factory which will employ the 600, it should certainly look forward to the day when because of increasing mechanization, the work force in the factory may be down considerably. The community must be always looking for new industry or expansion of existing industry if it is to have employment for its available work force which increases every year.

Another change in industrial development is the increasing proportion of people in overhead and distribution activities as compared to the employment in manufacturing. The proportion of our work force engaged in transportation, warehousing, selling and related activities constantly rises. This means that we must look to an increase in this type of activity in our area if we are to absorb our workers. This may create considerable problems in financing since distribution activities normally furnish fewer jobs per unit of floor space than do manufacturing activities. Furthermore, distribution activities tend to be concentrated near the large markets.

Effects on Mid-Missouri Development Council

The Mid-Missouri Development Council and its communities will have to take a new look at industrial development activities. The communities will have to make provision to develop the new skills that are needed in mechanized industry. They will need to develop more electricians, millwrights, mechanics and similar skilled workers because more of these people will be needed. The number of semi-skilled or unskilled production workers will certainly decrease in the modern mechanized factory. Most industries do not want to spend the time and money in developing these new skills themselves. They prefer to move into an area where these skills are readily available.

The tendency to decentralize near large markets means that Mid-Missouri has an opportunity to attract branch plants. A plant located in Mid-Missouri can service a market area of almost five million people within a radius of an overnight truck haul (150 miles). We can furnish many economic locations which have plenty of high quality labor, good transportation and other factors needed by modern industry.

We must be alert for plants that are moving out of congested locations. Mechanization and modern equipment have made many plants, particularly in our older centers, obsolete. We should be able to attract some of the plants to our area where we have plenty of room for modern facilities and other cost advantages in addition.

In conclusion, the future for industrial development in Mid-Missouri is bright. The Mid-Missouri area has many features attractive to new industry. We have a good labor supply, we are near major markets and we

have good transportation facilities. We have many good sites for industry. We can furnish a location for many industries which is economically superior to a location in any other area.

If the Mid-Missouri Development Council and its member communities keep up with present and future trends in mechanization, the future looks bright. New industry will be obtained, employment will grow and prosperity will increase in Mid-Missouri.

Sources of Technical Assistance for Small Firms

by—Lincoln E. Walker, Chief, Technical Research Division, Small Business Administration, Regional Office, Kansas City

The SBA is concerned with most all of the problems of small business, one of which is the development and exploitation of new products.

Another is to insure that "a fair proportion of the total purchases and contracts for property and services for the Government (including but not limited to contracts for maintenance, repair, and construction) be placed with small business enterprises, to insure that a fair proportion of the total sales of Government property be made to such enterprises, and to maintain and strengthen the over-all economy of the Nation";

To assist small business with its technical and management problems;

To assist small business with its research and development problems;

To make size determinations;

To make loans to small business;

To make loans to victims of natural disasters;

To license and supervise the operation of Small Business Investment Companies under the recently passed Small Business Investment Act.

We have designed numerous programs to carry out these missions assigned to us by the Congress.

In 1958 the Congress in amending our legislation greatly increased our responsibilities in the field of research and development. In writing a new "R&D Section" of our Act the Congress said in part:

Sec. 9. (a) Research and development are major factors in the growth and progress of industry and the national economy. The expense of carrying on research and development programs is beyond the means of many small business concerns, and such concerns are handicapped in obtaining the benefits of research and development programs conducted at Government expense. These small business concerns are thereby placed at a competi-

tive disadvantage. This weakens the competitive free enterprise system and prevents the orderly development of the national economy. It is the policy of the Congress that assistance be given to small business concerns to enable them to undertake and to obtain the benefits of research and development in order to maintain and strengthen the competitive free enterprise system and the national economy.

Pursuant to this legislation we established in the SBA a Research and Development Division. Since new products and research and development are so closely related, one of the principal duties of this division is the collection and dissemination of information on new products. With respect to new products it is well to bear in mind the following pertinent facts:

1. New products are a means of survival shared by all manufacturers, both large and small.
2. New products are a mixed blessing since there is no guarantee of their success and there is a high mortality rate in their promotion.
3. There is no infallible means of judging whether a new product will be successful.
4. Case histories of unsuccessful ventures into new products can be as informative as case histories of successful ventures.
5. Capital is needed to develop and market a new product.
6. A successful new product is usually developed on a team basis by the planners, producers, the cost accountants, the sales force, and the marketing personnel.

We in the Small Business Administration are keenly interested in new products, because we realize their importance to a continued high volume of national production.

When I speak of new products, I don't necessarily mean something radically new. In most cases, a new product represents just a basic improvement on an old one. Take automobiles. When automatic gear shifts and transmissions were developed, they created what amounted to a new demand for a new product. Now we have another new product—automobiles with power steering and power brakes.

You see the same thing in television. From screens of only six inches in size, sets have grown to screens several times that size; color television promises eventually to supplant black-and-white TV, and the day is coming when our television sets will be picture-size and, like pictures, will hang from the wall.

Now, what is common to these and other product developments which create demand and sales? It is newness—and that includes the original, the improved, the easier to operate, the cheaper, the bigger, and even the merely different.

And how is newness achieved? It is achieved at times by the individual inventor, the genius with an idea. But far more often it is the result of vast programs of research and development carried on by industry and the Government at a cost of billions of dollars annually.

Heads of large manufacturing firms realize that research and product-betterment are the keys to survival of their companies. To succeed and to grow, their companies have to keep a step ahead of competitors in the vital field of research and development.

When the McGraw Hill Publishing Company surveyed businessmen's plans for new plants and equipment, it found that in laying their future plans manufacturers expect over 10 percent of their 1960 sales to be from products they did not produce in 1956. Just last year the pharmaceutical industry estimated that 60 percent or more of its sales and an even higher percentage of its profits were resulting from products that it did not have five years previously.

What can the small manufacturing company hope to do about this matter of research? It doesn't have vast assets to draw upon for such a program. And yet it needs to be constantly seeking to improve its product, making it more attractive to the public, or developing new products that will insure long-term expansion and profitability.

Furthermore, the time for the small manufacturer to be concerned with new product development is not when the pressure of competition or a falling off in sales and products has made the need for a new product urgent. When these conditions occur, the new product must be developed hurriedly and under pressure. The fact is that the small firm should seek out new product ideas as a continuing function.

The Small Business Administration will be glad to give its full cooperation. We have a Products Assistance Program which is specifically designed to acquaint small firms with new products and inventions which may be of interest to them in diversifying into additional or alternate products. We are also prepared to help small firms obtain data needed in solving problems related to product and process development and marketing.

For several years the SBA has published a monthly "Products List Circular." This circular contains abstracts of products available for commercial development and distribution through purchase, licensing or other agreements. The circular is designed to provide small business concerns with additional sources of information on products and processes which may open up new fields of endeavor for them. We receive an average of 300 inquiries per month regarding the items in the Products List Circular. A request to our nearest field office will get your name on the mailing list to receive this circular.

In addition to the patents listed in the Products List Circular, we can provide small firms information on thousands of patents that have been released for public use as a result of Government antitrust suits. If you are interested in these patents, you can obtain full information on them through our Washington and field offices.

In helping small business firms with their product development and marketing problems, we do not ourselves engage in research and development or conduct market surveys. That obviously would require a very large staff of experts in many fields.

What we do is serve as a means of access for the small firm to the great storehouse of non-confidential information that has resulted from study and research by private industry and the Government. The data is there for the asking—the small firm's problem is that it does not know where to go for the data, or whom to ask for it.

When a small firm sends us a specific technical or management problem, our specialists frequently know the answer from their own training and experience. But if they don't know the answer, we refer the problem to the best sources in industry and the Government for their recommendations. Industrial organizations, trade associations, Government agencies and educational institutions are all working with us in solving the problems of small firms.

Here are a few problems we have tackled recently at the request of puzzled small firms: how to manufacture fiberglass wire screen; where and how to market etched copper products; what are the methods for making charcoal briquettes; how can original paintings be reproduced on ceramic surfaces; and whether or not it is feasible to roast coffee in sealed cans by means of high-frequency electric current.

As you can see, the problems sent in to us cover a very wide range. But each one has been a welcome challenge.

All of the programs of the SBA are designed to assist small business. One of these, of course, is the Grant Program under which Rensselaer Institute is undertaking this study in new product development. Over 100 grant studies are being conducted at present, not necessarily on new products but on other subjects of interest to small business.

I will not go into any great detail regarding the other programs of our Agency. However, since they are designed and conducted for your benefit I should like to outline them very briefly.

1. We make loans to small businesses and to "pools" of small companies who join together for production or research and development purposes.
2. We make loans to victims of natural disasters.
3. Programs are conducted with all Federal Government procurement agencies to insure the procurement of certain items exclusively from small business.
4. We conduct administrative management courses for owners and operators of small businesses in co-sponsorship with educational institutions. Over 800 of these courses have been co-sponsored by 300 universities and colleges. Over 26,000 owners and operators of small companies have successfully completed these courses.
5. We conduct symposia and study courses to assist small businesses with their management and merchandising problems.
6. In addition to the foregoing we:
 - a. Guide small firms to areas where competition is needed.
 - b. Counsel on procurement problems.
 - c. Help develop subcontracting opportunities for small firms.

- d. Bring Government purchases to the attention of small firms.
 - e. Assist small firms to obtain research and development contracts.
 - f. Assist small firms to procure timber and other commodities and items disposed of by the Government.
 - g. Participate in the surplus labor and rural development programs.
7. We are also vitally interested and actively engaged in assisting small companies to obtain subcontracts with the large Government prime contractors.

In all of these activities, we strive to do for the small firm only what it cannot do for itself, because of its limited resources. And as a basic principle, we emphasize co-operation with private enterprise, as with banks and development corporations in our financial assistance program.

Our efforts are guided by the words of President Eisenhower that a strong and expanding economy depends upon "keeping open the door or opportunity to new and small enterprises" and in making certain "that small business has a fair opportunity to compete and an economic environment in which it may prosper."

There is evidence all around us that millions of Americans are now changing their habits of living, changing their motives for purchasing goods and services, changing their ideas of what satisfies them—in short, stepping up their demand for the infinite variety of goods and services and investments that measure their standard of living.

The task facing the businessman of today, in whatever line of endeavor he may be engaged, is that of setting his sights to these new horizons and determining now to build soundly and well, so that he may share fully in the economic expansion that lies ahead.

Bank Financing of Office and Plant Mechanization

by—Robert C. Wolford, Assistant Cashier, Loan Department, Mercantile Trust Company, St. Louis

A friend of mine, not a member of the clergy, recently delivered the sermon on Sunday in his church. When one of the younger members of their ministerial staff who had not been present asked how it had gone, my friend allowed that he'd done all right apparently since only two walked out. The young minister replied, "You must not have thrown out much of a challenge if only two walked out." The challenge we are faced with is to mechanize our industries and find ways to finance it.

My topic has to do with bank financing of office and plant mechanization. I assume that we are arbitrarily ruling out the possibility of obtaining additional equity investment although, in fact, this may be precisely what is needed and may be a prerequisite to obtaining additional funds from banks and other creditors. I am also assuming we are talking about capital expenditures of such a size that we can't expect the business to pay for them in two, three, or a few months so as to make the use of

short term credit feasible. The question is, "Do banks make this type of loan?" and the answer is yes, with some limitations.

A bank's liabilities to depositors are due on demand or at least on relatively short notice, and for many years prior to the 1930's it was felt that a prudent banker should therefore extend only short term credit. Time has changed this considerably but bankers nevertheless must be concerned with liquidity. Today banks' loans are at or near the highest point relative to deposits that has been seen in several decades; banks have sold many of their more liquid assets, e.g., government securities, in order to increase loans, resulting in a loss of liquidity for the banking system. Term loans are relatively illiquid assets. Moreover, we have been experiencing tight money for several years with only limited and temporary relief. By restricting our credits to short term loans we may accommodate the seasonal needs of two, three, or even more of our customers during a year with funds which, if invested in a term loan, would only accommodate one customer. Hence, there has been pressure to reduce our aggregate investment in term loans and restrict maturities on new term loans made.

Well, what do we offer? You are probably all familiar with real estate loans. If you own real estate, this is a possible source. I've never loaned a dime on grain storage facilities, but in a grain producing area which had not over-expanded such storage facilities, this would seem to me to be good collateral if we ignore the vicissitudes of the government's farm program. It could be sold at something approximating its depreciated cost. On the other hand, a single purpose structure designed for a particular industry of which your company is the only representative in town, or of which yours is one of a very few in town, e.g., a radio tower, may be very poor collateral. Nevertheless, real estate loans on commercial property are a type of credit with which we are all familiar and which in many cases may be most readily available. National banks are limited to a 75 percent advance on appraised value and 20 year maturities. To my knowledge there are no similar limitations on State banks in Missouri, but as a matter of policy, we limit real estate loans to 60 percent of appraised value and ten year maturities.

On other types of term loans, we like to keep them down to three year maturities, although a few go for five and, on rare occasions, banks have granted maturities up to ten years. Aside from the liquidity limitation, the loan maturity will never exceed the life of the asset to be acquired; the loan, rather, will be tailored to pay out before the useful life of the asset is exhausted. If the equipment won't earn you something more than depreciation charges and interest cost, you shouldn't buy it, so funds for payment should be available and, of course, if it is

pledged as collateral, we want you to have some equity margin in it. One eminent New England banker reportedly said he figures the cash flow, that is, profit plus depreciation, allowing some margin for safety, divided the resulting figure into the amount of the loan and then from a determination of the company's anticipated ability to repay, set the maturity. Actually this is probably the most common method assuming it doesn't yield a maturity which would exceed other limiting factors, e.g., the life of the asset and liquidity requirements of the bank.

The percent of cost banks will advance will depend on too many things to give even a rough indication—things such as the relationship of your debt to your equity, your earnings record, and the marketability of your collateral.

I don't mean to imply that banks never extend term credits on an unsecured basis; we do. But presumably the funds we're talking about will be used to acquire fixed assets which should be available as added protection in exchange for the added risks of term lending. A bank in term lending is taking considerably more risk than in granting seasonal credit in exchange for what is frequently a very nominal increase in the price it charges, i.e., the interest rate. Conditions can change radically over the life of a five year term loan and the bank, therefore, seeks some protection. Think of the changes in your business since 1955.

If your credit and collateral are good enough, this may be all for which your bank will ask. Frequently, however, your banker will want the agreement between you, as well as certain assurances and rights, embodied in a formal term loan agreement. For example, there frequently will be covenants prohibiting any major change in the company's business, the sale of a substantial part of a company's assets or the merger of the borrower with other companies. Additional borrowing is frequently limited, and if the credit is unsecured there usually is a provision prohibiting the pledge of assets to others, i.e., prohibiting giving another lender a prior claim to assets otherwise behind the bank's loan. The amount which may be expended on fixed assets, the compensation of the principals and distributions to stockholders are many times limited. Usually there is a minimum working capital and a minimum current ratio provision. In short, the bank, like other lenders, wants to protect its interest and to be in a position to accelerate the maturity, that is, make the entire debt immediately due and payable, in the event of any development which adversely affects its position. Any of these provisions can, of course, be waived if the bank is agreeable, and since your bank has an interest in your progress, you can be sure of a sympathetic hearing. One borrower, after extensive negotiation of a term loan, supposedly came to the bank on the

appointed day to execute the completed document. After giving it one final reading he turned to his attorney and said, "Do you think I should sign this?"—a little like the confirmed bachelor as he approached the altar. His attorney replied, "If you have the money, you're going to pay it, and if you don't, what difference do all these covenants make?"

Finally, the bank may ask for the personal endorsement or guarantee of the principals if for no other reason than to impress upon them their responsibility. And if they do have a substantial outside worth, their endorsements may make possible a loan which the bank could not otherwise grant. Certainly they are the major beneficiaries of the company's progress, and we therefore would not hesitate to ask them to stand behind the credit if we believe it necessary.

I've been talking about straight bank credit, but I suspect you and your banker may have to display real ingenuity in your financing if you are to meet the challenge of the '60's, particularly if you are experiencing a rapid growth. I therefore would like to mention briefly some alternatives to 100 percent bank credit.

One is subordinated debt. Your creditors, among other things, are interested in the relationship of your total debt to your equity, or, simply stated, how much can the company lose before the creditors suffer? Perhaps your friends or local people interested in your success may be willing to lend financial assistance but insist on a recovery position ahead of the owner's in the event of financial difficulty. They may, however, be willing to legally recognize a priority position for the bank in order to allow you to obtain maximum bank support. In this event, a subordinated note might be appropriate; if properly drawn, the bank will usually consider such debt as capital insofar as the bank's advances are concerned. *To this extent* you have the advantage of additional stock without any loss of your control. Moreover, the interest payments are tax deductible whereas dividends on additional stock would not be. The subordinated notes, of course, like any debt, must be repaid with interest and hence impose additional fixed charges on your operation.

Another possibility is the commercial finance companies, several of which will finance equipment purchases for you. I know one that welcomes bank participations. The bank gets the benefit of the finance company's experience and loan servicing, and the borrower gets the benefit of any reduced interest rate the bank may be willing to accept on the portion of the funds supplied by it. The bank also retains you as a customer while limiting the risk to the amount it is willing to assume. This same commercial finance company will factor your receivables and lend on inventory, likewise with bank participation if the bank so desires. It will also lease equipment to business, large or small.

I know of one large insurance company, and there may be others, that has a small business loan division willing to grant loans up to \$350,000 for from three to ten years if they meet the insurance company's standards, and if a commercial bank will participate to the extent of at least 10 percent and service the loan. They are usually secured by a mortgage on real estate and/or machinery and equipment.

Just one word about leasing, a method of equipment acquisition enjoying increasing popularity. Donald Freeman, Assistant Treasurer of Ryder System, Inc., one of several in the business, said in a speech he made in July of this year, and I quote: "We have two balance sheets which show different figures but which can represent the same identical business. The big difference is that the credit standing of the company with Balance Sheet B (the one that leased its equipment) is almost invariably better than that of Balance Sheet A (the one that owned the equipment). This doesn't make sense, and I'm the first to say that it should not be this way, but most banks and other lenders simply do not attach the same significance to a lease that they do to other forms of obligations. This is not necessarily the smaller banks that I am referring to either." He went on to cite a survey, the results of which appeared in the November-December 1959 issue of the "Harvard Business Review", and which tend to support his statement. Nevertheless, I believe all lenders are increasingly going to ask for your lease commitments and to view them essentially as term debt. Unfortunately our friends, the accountants, do not feel obligated to disclose all these obligations although this too may eventually be rectified.

Also, let me suggest you thoroughly understand the cost of leasing before you commit yourself to any sizable transaction.

I would now like to make some suggestions:

First of all, look to your own resources. See if funds are unnecessarily tied up in slow accounts receivable, if you are carrying excessive inventory, or if you can trim expenses. Don't borrow unless you need to. The interest cost of unnecessary borrowing could be much more profitably devoted to additional advertising, hiring another salesman, or other purposes which will contribute directly to your profit and growth.

2) Do your utmost to improve your earnings. I don't mean to borrow earnings from future periods or resort to other forms of misrepresentation, but ordinarily term loans must be repaid from future profits, and any lender's impression of you is greatly influenced, perhaps too greatly, by your past record.

3) If you are not well informed on financial matters, hire competent people to assist you. I might say at this point we prefer audited statements. Because outside auditors are, at least in theory, independent and objec-

tive, we will place more reliance, generally speaking, on an audit than on company prepared figures. An unqualified audit report can be a great help in obtaining credit.

4) Project, or assist your auditors, in projecting future performance. This will provide you with a budget, a target for planned progress. By frequent comparison with actual performance you can readily determine the areas of your business requiring attention before the problem gets out of hand. This pre-supposes that you get periodic statements throughout the year. Furnish this information to your banker. It will show how you propose to repay term credits and if your performance over a period of years approximates your projections your banker will naturally gain increased confidence in your ability to attain your announced goals.

5) Don't ask for equipment financing until you have fully explored the acquisition. Know what it will do for you in terms of profits and be convinced in your own mind of the desirability of acquiring it. Then go to your banker armed with the facts.

6) Finally, if you have not already developed a close working arrangement with your banker, start tomorrow and keep him informed of your progress. You have all heard the old saying that banks lend only to those who don't need it. This obviously is not true. Banks do have an obligation to their depositors and they do not provide what is essentially equity capital. No doubt you would all like to borrow equity capital at bank rates. But in its own enlightened self-interest, your bank is in-

terested in you and your growth. You are a source of future deposits and loans, and in most communities the prosperity of many of your bank's customers, perhaps even their continued residence in your locale, depends on your success. Your banker, therefore, has a very real reason, an impelling one, for helping you when such help is consistent with sound banking practice. The better he knows you and your operation the more he can do for you. In addition, your banker receives frequent inquiries from your trade creditors concerning your ability to handle trade credit. And if you approach another lender, one of the first sources of information he will check will be your local banker. He can do a great deal for you. Theodore W. Johnson, Vice President and Senior Loan Administrator of the Security First National Bank, Los Angeles, said in an article written for the Small Business Administration's pamphlet entitled, "Equity Capital and Small Business" and, I quote:

"Too often, among smaller concerns, operators seem to be afraid of the banker. They are reluctant to confide fully in him, and hence never get the maximum benefit from their relationship. A qualified banker, of course, is not an all-powerful and all-knowing genius who knows more about everything than do businessmen. But he does have wide contacts and sources of information. He can be an excellent counselor, available to you on financial affairs. Credit should be established with one's banker whether it is needed or not. Usually—it *will* be needed!"

Growth Capital for Small Business

by—William B. Dunaway, Senior Investment Analyst, The Prudential Life Insurance Company, Kansas City

What Constitutes Small Business

The term "small business" is one which is much used and one which generally refers to the smaller companies in each industry. There are a number of criteria which are often used in drawing the line of demarcation between small and large businesses. Total number of employees, total assets, gross sales or revenues, and net earnings are some of the yardsticks more frequently used in classifying business by size; yet, a scientific method has not been devised to classify businesses in all industries according to any uniform size classification. To explain, a business with \$1 million in annual gross sales could well be the largest competitor if the total sales volume of the industry were \$10 million. Another company, competing in a much larger industry, could have a sales

volume several times larger than the first company discussed and not be a significant factor in its industry. The first company could be considered a big business in its industry while the second company (with larger sales) could be considered very small in its industry.

Size classification reached by total number of employees is questionable because such a substantial number of U.S. businesses employ less than 1,000 workers. Of the 4,582,600 U.S. businesses in 1959, only slightly more than 3,000 had more than 1,000 workers, a percentage of about 1/10th of 1 percent.

Total assets and net profits vary so greatly between industries and also between competitors within an industry that size classification cannot be readily determined by this means.

It seems that the term "small business"—according to its use by financial writers and in most discussions among financial and business leaders—more accurately defines certain characteristics prevailing in business entities or pertains to a period in the life of a business entity rather than being solely descriptive of size characteristics, per se. One financial writer has discussed this period, which may span several years, and referred to it as the time when management is faced with a dilemma of deciding whether to "expand or die".

Future of Small Business

Management of small business is not pessimistic about its growth potential. A May 1959 report published in "Dun's Review and Modern Industry" reveals that 57 percent of small industries felt they would grow 25 percent or more during the immediately succeeding five years. Of those interviewed representing large industries, 37 percent felt that their firms would grow 25 percent or more.

Small business has, in the past, and should, in the future, play an important role in both commercial and industrial activity in America. There are many competitive advantages which small businesses possess over their larger competitors. Most prevalent among the advantages are: (1) lower overhead; (2) satisfactory profits can be made on shorter and more specialized production runs and, in most cases, with relatively lower investment; (3) labor may be less costly and freer of union pressure; (4) fewer fringe benefits; (5) better personal relationships with customers and a better understanding of customer needs; (6) ability to make faster decisions; and (7) relatively free of attack—political or other—because of size. Of course, there are some advantages to larger businesses. Included would be: (1) mass production which may produce a lower unit cost; (2) the ability to establish price patterns because of a dominant position in the market; (3) greater funds available for research; (4) more diversified sources of capital; and (5) more adequate management time and talent available for long term planning. Most management groups of small business emphasize two limiting factors which will affect the amount most small business concerns can grow, although they feel that they are only minor limitations to the growth of their companies. The most serious obstacle of business growth, according to most small business management groups, is financing. This would include both short term loans for current asset purposes and long term loans for working capital, machinery and buildings. The second factor affecting business growth is lack of management talent. In growth businesses, management must have imagination and vision to adequately plan for its future and to cope with its problems.

The Commercial Bank and Small Business

Financial writers have, in my opinion, (1) over-emphasized the lack of financial assistance available to small business and (2) under-emphasized the responsibility of management of small business to prepare themselves to make an intelligent and sophisticated presentation to the proper financial institutions which do welcome financial inquiries from small business. The Committee of Economic Development (a group of political and educational leaders) and the Federal Reserve Board both have stated, and at various intervals repeated, that small business is not getting its share of capital to finance the growing position of small business in industry.

The most recent Federal Reserve Board study was dated October 16, 1957 and was in preparation for many months. It was made comparable to a previous report dated October 5, 1955. The purpose of the 1957 report was to cover three major objectives: (1) to investigate whether the credit and monetary policy of the 1955-1957 period had adversely affected the position of small business; (2) to marshal all available data which would serve to determine if existing financial facilities were capable of meeting the financial needs of small business under normal conditions; and (3) to discern what gaps may exist in our present financial structure.

Before reviewing the report, let's consider the commercial bank's role in financing business. It must be recognized that a commercial bank is a short term lender of necessity as its principal source of lendable funds is demand deposits. The bank is compelled to maintain a high degree of liquidity to maintain the ability to meet possible demands of depositors. Therefore, the bank should not be considered as a source of term loans, but should be thought of as a source of short term borrowings to be used primarily to meet the current asset requirements of a business which are principally brought about by the seasonal factor of business activity.

Business loans by banks have shown a significant increase during recent years. Between December 31, 1950 and December 31, 1958, commercial and industrial loans by all active banks increased from \$21.1 billion to \$40.8 billion. The Federal Reserve Board report reveals that business loans by member banks increased by nearly \$11 billion between 1955 and 1957, or 32 percent. However, large firms which had outstanding less than one-third of the 1955 volume accounted for more than one-half of the increase. To further break down the increase, small business accounted for 6.9 percent, medium sized business 39.5 percent and large business 50.4 percent. Small business, according to the report, tended to rely on banks as a single source of financing. Larger firms make greater utilization of insurance companies and other term lenders for term loans, and the investment banking fraternity for equity financing. The larger firms are more prone

toward budgeting and financial planning than small businesses and tend to match debt service requirements with cash flow. Moreover, the larger firms, by providing themselves with an improved capitalization, are more successful in competing for the short term funds available by active banks.

To emphasize that commercial banks are not lenders of term loans and that term loan requirements of small business cannot be met by commercial banks, note that of the \$40.8 billion in business loans outstanding in October 1957, \$25.2 billion or 61.8 percent were of maturities of one year or less, \$7.7 billion or 18.9 percent were of maturities between one and five years, and \$7.7 billion or 18.9 percent were of maturities beyond five years. It is obvious that banks do not seek substantial term loans and that small business is going to be only moderately successful in securing short term bank loans for growth capital purposes.

Shall we examine the Federal Reserve Board's study relative to its findings pertaining to major disbursements of cash by manufacturing corporations for the third quarter of 1955 and 1957? The major disbursements included property, plant and equipment, inventories and a net increase in receivables. The disbursements for the 1957 period represented a 24.3 percent increase over the same period of 1955. Most significant, and bearing out the point that small business must avail itself of term loan and equity finance markets, is that funds generated from internal sources (retained earnings, depreciation and surplus) were even less adequate to finance the companies' growth than they were in 1955. The corporations did 11.9 percent more financing from outside sources.

The high tax rate and inflation definitely consume a good share of corporate America's funds needed to expand and modernize production facilities. Since earnings and depreciation are not providing adequate funds for growth, both small and large businesses must seek term loans or equity financing to provide for growth capital and fixed asset increases.

It is discouraging to note that small businesses increased their short term borrowings by 28 percent between the 1955 and 1957 dates while large manufacturers increased theirs by 196 percent. Perhaps this is evidence that larger corporations which make greater utilization of term borrowings and the equity capital market receive a much better reception because of adequate capitalization when they make application to a commercial bank for short term loans. It is encouraging that small business scored small percentage increases in both long term bank and non-bank loans. Long term bank loans to small business increased by 65.5 percent while term bank loans to large business increased 47.8 percent.

Capital expenditures of large business are outstripping those of small business. This could have material

adverse effects on small business if it does not augment and improve its production facilities, both real property and fixtures and equipment. The improvement of big businesses may enable them to produce superior products at a lower cost than their small business competitors. Small businesses spent 10.6 percent more for property, plant and equipment in the third quarter of 1957 as compared to the same quarter of 1955 while large businesses spent 29.2 percent more, or at the rate of almost 3 to 1.

The U.S. Life Insurance Industry and Small Business

The insurance industry has played an increasingly important role in providing term loans for both small and large businesses. Most insurance companies are well known as mortgage lenders, not only in farm and insured and uninsured residential lending, but in commercial and industrial lending. Mortgage loans usually are restricted to a percentage of value, generally ranging between 60 percent and 75 percent. Therefore, the business generally is required to provide equity of about one-fourth to one-third in the real property, per se, and bear the cost of any new equipment as well as the incidental cost of commencing operation in the new facility. Despite the fact that mortgage financing will generally not provide the total amount of financing needed, the mortgage loan departments of the insurance companies have played a vital role in financing commerce and industry. The total mortgage holdings of the insurance industry were \$39.2 billion in 1959. Conventional loans, excluding farm loans, have increased from \$8.2 billion in 1950 to \$20.7 billion in 1959.

Another significant phase of the insurance companies' lending role to industry is conducted through their bond departments. The insurance industry's investment in industrial and miscellaneous bonds has increased from \$9.5 billion in 1950 to \$25.1 billion in 1959. The dollar increase is very significant; however, I feel that the insurance industry's percentage increase of investments in industrial and miscellaneous bonds to total assets is more significant. In 1950, 14.9 percent of the insurance industry's assets was invested in industrial and miscellaneous bonds and the percentage rose to 21.1 percent in 1959. Therefore, it is evident that the insurance industry is becoming a greater factor in providing for the long term capital needs of both small and large business.

There are two types of investments by the insurance industry which represent an equity rather than a creditor position on the part of the life insurance companies. These are stock and real estate investments. Holdings of preferred and common stock by U.S. life insurance companies were valued at \$4.6 billion at the close of 1959 and represented 4 percent of total assets. Ten years ago, in 1949, the percentage was 2.9 percent of total assets. Many states permit life insurance companies to own real

estate for investment purposes. Investments at the close of 1959 totaled \$3.7 billion and represented 3.2 percent of total assets. Commercial and industrial rental properties owned by life insurance companies accounted for more than three-fifths of real estate holdings at the close of 1959, or a total of \$2.2 billion. The majority have been purchased during the past ten years.

Truly the life insurance industry is a vital source of term capital for American industry. At the close of 1959 the life insurance industry had total assets of \$113.7 billion of which 43.9 percent was invested in securities of business and industry, 34.5 percent in mortgages, 4.0 percent in stocks and 3.2 percent in real estate.

The U.S. life insurance industry has, in my opinion, evidenced a sincere interest in making term loans to qualified small businesses. Corporate bonds or note issues of small corporations are eagerly sought by several of the large as well as the small life insurance companies. Term lending activity of the insurance companies is usually conducted through each company's bond department. However, a few of the larger companies have established separate departments which are charged with the responsibility of making term loans to smaller corporate America. In establishing separate departments, the insurance industry is hoping to create better rapport between the major insurance companies and small business. Traditionally the insurance companies have been getting a substantial portion of their investment opportunities through the larger investment banking firms. Most of these firms have been more interested in the large, private placements of corporate America and have not been equipped to provide a financial placement service for small corporations at reasonable cost. The new departments which have been created by some of the insurance companies are styled to bring their lending facilities closer to smaller corporate America and have been getting most of their business through banks, national, regional and local investment banking firms, Certified Public Accounting offices and, in many cases, directly from the prospective borrowers.

The Prudential Insurance Company of America created a new department in May 1956 designed to cater specifically to the term loan needs of what we call "smaller corporate America". The department was named the Commercial and Industrial Loan Department and it is interested in purchasing note issues ranging in size from about \$100,000 to \$5 or \$6 million. The terms of the loan agreements between the borrowers and The Prudential are very similar to those negotiated with larger corporations who have for many years made great use of the term lending facilities of the insurance industry.

The officials of The Prudential are pleased with the quality and the quantity of the notes which we have

purchased from small business. By the end of 1960 the total volume—placed on the books since mid-summer 1956—exceeded \$300 million. The size of this account would rank 13th in comparison with the industrial and miscellaneous investment accounts of all U.S. life insurance companies.

Equity Financing Sources and Small Business

The investment banking fraternity is playing a more important role in providing equity capital for smaller businesses. In most growing businesses, it is essential for the company to raise at least a part of its growth capital requirement through equity capital either private or public. There is a tendency for owners of smaller companies to be more conscious of the percentage of their ownership in the company than their counter-parts in larger businesses. The desire to minimize dilution of ownership has undoubtedly caused many companies to settle for less than their potential; however, management of small business is becoming more aware of its need to grow and has found that smaller percentages of ownership may be more valuable than larger percentages.

The investment banking fraternity, during recent years, has become much more friendly toward small businesses which seek equity and debt financing. The investment bankers, all the way from the local investment house to Wall Street, are providing greater amounts of capital directly and economically to smaller businesses. Most issues have at least some public participation which tends to free management of concern about a concentration of ownership by non-management groups.

There are several reasons why equity issues of smaller businesses are becoming more attractive to the investment banker.

1. The bond market has fluctuated (mostly downward) since 1958. The attractiveness of bonds has been maintained by increasing the interest rate and has brought about a renewal of inflationary psychology in the stock market and it is reflected in both the sales volume and price. An active stock market and rising prices have offered management a potent incentive to undertake equity financing.
2. Earnings have been good, particularly during 1959, and have aided management in selling equity issues on favorable terms.
3. Businesses in many industries are forecasting marked improvements in earnings over the next several years. The rising cost of interest on debt plus amortization of debt issues have caused many companies to consider equity financing which would require minimal payments to the investors.
4. A trend toward broader share ownership is apparent among investors. This has eradicated the portion of the fear small business had of investing individuals or

groups exerting unwarranted control because of substantial stock ownership.

5. A broad distribution of stock ownership of small corporations will produce the same favorable public relation benefits as it provides for larger businesses.
6. Many Wall Street experts feel that there will be a continued good acceptance of securities, both of new issues and of resale securities, of smaller businesses. Institutional buyers are increasingly buying the "blue chips" and as a result many investors are turning toward smaller companies which offer more attractive investment opportunity.

To this point we have talked about commercial banks, the U.S. life insurance industry and the investment banking industry as being three of the principal sources of short term loans, term loans and equity financing. A new type of banking institution is being fostered under the Small Business Act of 1958.

Small business investment companies are being created to aid in filling the gap in our existing financial institutions. It is hoped that small businesses may use these firms as a source of term capital. To date there have been in excess of 100 SBICs created. It is anticipated by many financial writers that this form of institution will be of material aid to small businesses. The SBICs provide term capital for small business.

Most of the larger SBICs are providing a management advisory and counselling service. This service customarily furnishes technical, economic and statistical information related to specific industries. Exhaustive study and analysis usually precedes any investment by an SBIC. Most SBICs cater to one or to a selected group of industries. Therefore, for a small business to receive the most favorable consideration, and to receive the management service, it should select its SBIC carefully.

Conclusion

In conclusion, I would like to make one observation about the small businessman and the financial environment in which he finds himself a competitor for funds along with the management of big businesses. I would not say that lenders or investors discriminate against the financing proposals of small business in favor of offerings from big business. As a matter of fact, the investment statutes regulating the investment policies of most lending institutions place limitations on the maximum amount which the institutions may lend to one customer. This imposes a maximum lending ability on most in-

stitutions and the requirements of big business outgrow the capacity of a single lender and the loan requirements of larger businesses must be handled by a group of lenders.

I think that we could safely say that if you match an amateur against a professional, the professional will win almost every time. Perhaps this is what is happening to small businessmen in their attempts to obtain growth capital financing. Forty-two percent of the small industrial companies do no tangible long range planning, yet 93 percent of small businessmen expect to be bigger five years from now than they are today. As a group they expect to grow 69 percent during the five-year period. The word "planning" insofar as management is concerned is a synonym for "objectives". Well laid plans of management are no guarantee of the company's success in the future but they do measure the risk of possible alternate courses of action and usually tend to exert a steadying effect on the company in all kinds of economic weather.

Faster technological change and the tougher competition it produces in innovations and product improvement put a high premium on sound planning. It seems that management of small businesses must recognize in their growing process the necessity for planning ahead. Working capital and fixed asset requirements of a growth company must be financed through term loans or equity, except for the amount which can be financed internally. Management cannot continue to expect their total financial needs to be financed by short term lenders—banks. Large businesses have shown that they are more competitive for the short term funds available as they increased their short term borrowing by 196 percent between 1955 and 1957 while small business increased theirs by 26 percent.

I feel that more favorable financing for small business is available. I suggest that small business prepare itself to compete for the available financing and recognize that it is not receiving its fair share presently not because it is small, but because its loan requests are being passed over in favor of requests of larger companies which make a more tangible and sophisticated presentation of their financial requirements along with supporting data indicating the probability and source of repayment. Management of small business must learn to plan ahead; use its plan as a tool of management, as it should be; and in a sophisticated manner intelligently seek the type of financing which more adequately serves its needs.

How SBA Can Help with Financing

by—Charles D. Bobrer, Assistant Chief, Financial Assistance Division, Small Business Administration Regional Office, Kansas City

The Small Business Administration's financial lending program was created to further meet the financial needs of small business in cooperation with private lending institutions.

It has been said many times, in our Regional Office, that inadequate accounting records contribute more than any other single reason to the necessity of declining loan applications. Long term financing requires a study both of past and future operations, and to obtain that history of an applicant's operation without reasonably good accounting records is most difficult. The necessity of better records and more up to date management reports is making obsolete the many "estimated" and "rule of thumb" answers to business problems. Accurate, current, information is just as important to the success of the small manufacturing organization as it is to a large concern. In fact, the more modest the business, the more important it becomes to make the right decision the first time.

Understanding the facts of a business—facts presented in an organized, easily understood form—is the starting point for intelligent management. For example; you need facts to answer such typical questions as:

How is the money being spent, and what for?

What materials are being used and how much?

What is our working capital position?

Can we get financing for mechanizing our business?

How do you get answers to questions like these?

There should be no serious disagreement with the supposition that most of the facts management needs must come through the record keeping system. Mechanization of this system offers great opportunity for improving speed, competency and accuracy. Practical mechanization is not limited to just large concerns. Small concerns can use it too.

As heretofore stated, one of the principal ways in which the SBA serves small business is by helping them obtain needed financing not otherwise available on reasonable terms and such loans may be made for the purpose of purchasing equipment and machinery.

I am sure many of you have a question as to what a small business is. A manufacturing concern is considered small if its average employment is 250, or fewer, persons, including employees of affiliates, if any. Of course, there are some manufacturing concerns that are considered small if their total employees are 1,000 or less. This variance is brought about by the necessity of employing more people to manufacture certain kinds of items than

others, but as a general rule, the breaking point in manufacturing business is 250 employees. A wholesale concern is classified small if their annual sales are \$5,000,000 or less. Retail and service trades are considered small if their annual sales, or receipts, are \$1,000,000 or less. If you are a manufacturer and concerned as to size classification, we would suggest you contact our Regional Office in Kansas City or our Branch office in St. Louis, Mo., to determine whether you are classified large or small by the number of your employees.

In general, our credit requirements are along the same lines as those of your banker or other privately owned lending institutions, the major difference being the length of time in which we can extend our maturity. Our maximum maturity is 10 years, however, loans for machinery and equipment are usually limited to 5 to 7 years because of the use of proceeds.

The interest rate on SBA Direct Business Loans is 5½ percent, however, we encourage participation in our loans with privately owned lending institutions, such as banks, building and loan and insurance companies.

Should our loan be on a participation basis the interest rate on the share of the loan by the lending institution may be set by them so long as the rate is legal and reasonable. At the present time, most of our participation loans have a split rate of interest. SBA's is 5½ percent and usually the participant share is at 6 or 6½ percent.

SBA is without authority to make an unsecured loan. The Act which created SBA, requires that the agency's loan be of such sound value and so secured that repayment will be reasonably assured. Accordingly, the proposed collateral for an SBA business loan must be of such a nature that, when considering the integrity and ability of the management of the applicant and the applicant's past and prospective earnings, repayment of the loan will be reasonably assured.

Most of the SBA loans are amortized on a monthly or quarterly repayment schedule; that is, the payments through the entire life of the loan are on the same level.

I must repeat that we are without authority to make loans if the financing is available to you from privately owned lending institutions. Being a Government Agency we are not in competition with private lenders.

In this connection, before applying to the Agency for a loan, a businessman must first seek the needed funds from his bank or other local sources of financing.

If they are unable or unwilling to make the requested loan or to participate with SBA in the loan, then the businessman should contact the nearest SBA office to determine the extent of financial assistance available from us.

The maximum loan available from the SBA is \$350,000, however, this figure does not include the amount of money available from the participating institution. To explain further, should a lending institution care to participate on a 50-50 basis with us we could consider an application of \$700,000. The minimum amount of participation is 10 percent. I realize that you are business people and not bankers but should you care to talk to your lending institution about a participation loan, they can be handled in two different ways. First, on a deferred basis and secondly on an immediate basis. This can be better explained by saying that on a deferred basis the lending institution furnishes all of the loan proceeds. Our Agency has a Participation Agreement which states that on a ten day notice we will pick up our share of the loan if so requested by participating institution. Under the deferred plan the lending institution receives all of the interest except a small fee that we charge on a percentage basis for agreeing in the Participation Agreement that we will pick up our share on a ten day notice.

Loans made on an immediate participation basis means that at the time the borrower receives funds, the lending institution immediately puts up their share and the SBA furnishes their share of the loan. The lending institution receives interest only on their share of the loan, the SBA receives the interest on their share of the loan; however, the participating institution receives from the SBA interest of $\frac{1}{2}$ of 1 percent per annum for servicing the loan. Most of our participating loans are serviced by the participating institution and they remit to us our share of the loan payments. However, if they should request us to do so we will close and service the loan

and remit to the participating institution their share of each payment.

Our office has the authority to approve direct loans up to \$20,000. We can approve participating loans up to \$100,000 provided we have at least 25 percent participation or participation in the amount that the participating institution is paying themselves off, whichever is the greater.

To give you an example: The applicant has requested a \$50,000 loan in which \$10,000 is to be used to pay a note at the bank and \$40,000 is to be used to purchase new machinery and equipment. The bank will participate 25 percent, or \$12,500. A loan of this type may be approved at the Regional level. Say that we had an application for a loan of \$50,000, of which \$20,000 was to be used to pay the participating bank and \$30,000 was to be used to purchase machinery and equipment, it would be necessary for the bank to participate at least \$20,000, or 40 percent of the loan, in order that this loan could be approved at the Regional level.

Any loan exceeding \$100,000, regardless of the amount of bank participation, must go to our Washington Office for final action.

You realize that our services are restricted to small businesses and management of small business is charged with every responsibility which contributes to the success of his operation. We would hope that his business not only affords him a livelihood but contributes to the economy and well being of the community. We think that for him to do all of these required tasks, he must have the machinery and tools to assure a profitable operation. To you, as management of businesses, we think that you should investigate and determine the advisability of mechanization and should you inquire as to the services of the Small Business Administration we will be more than happy to talk with you about your financing problems.

Planning Capital Expenditures in Small Business

by—E. M. Lieberman, Industrial Consultant, Kansas City

It is unusual for the heads of small businesses to make poor investments. It is not unusual, however, for them to make wrong investments. The main reason for the small businessman's making the wrong investment is that he lacks adequate information for making the right investment. Instead of using just break-even period and his intuition, he should also make sure that the investment conforms to his over-all plan for growth, does not impare his current position, and will yield the greatest possible capital earnings.

Adequate information necessary to make these determinations includes:

1. A detailed balance sheet to know where he stands and to know how far he can go at the present time.
2. A good Profit and Loss Statement to tell him how he got where he is in the recent past and to tell him how he can improve.
3. Accurate knowledge of characteristics of his own business, his fixed expense, his variable expense, and his true gross profit.

4. An accurate projection including a projected P&L, projected cash flow, and a projected Balance Sheet.

To get this information, the small businessman must insist on the proper and logical detail and arrangements of accounts so that the various phases of his business can be analyzed directly and compared conveniently with his periodic audits.

These accounts should be divided into their fixed and variable parts so that the true gross profit of the business can be determined and so that the head of the business will have accurate knowledge of the net operating profit to be gained under different conditions.

Each proposed capital expenditure should be analyzed to determine its effect on changes in fixed expense, variable expense, true gross profit, and its effect on other departments, equipment, jobs, and people. The proposed expenditures should be compared on this basis and on their relative merits concerning conformance to the over-

all plan for growth, the break-even period, the capital earnings, and the effect on the company's short term, long term, and credit position.

After making a comparison of this kind, one investment usually emerges as the patently right investment, frequently giving the lie to the small businessman's intuition. If, however, the decision is a close one, he should seek help from someone not directly connected with the business, such as his accountant or his banker.

Following this procedure should prevent him from investing in equipment when what he really needs is a marketing program. Conversely, it should prevent him from spending more money in advertising when what he really needs is a piece of production machinery. In any case, it will enable him to make the capital expenditure which most nearly meets the requirements of his business and promote its sound and quick growth.

What—in Ten Years?

by—Lloyd Krofft, Assistant Secretary-Treasurer and Manager of Data Processing Division, MFA Insurance Companies, Columbia

First of all, I would like to ask a few questions. How many here can think back and remember when you worked in an office without air conditioning? This change has probably come within the last ten years. How many remember the first jet airplane you ever saw? This also was within the last ten years.

During World War II, Engineering, Management and Imagination were turned to the job of doing more work with less help and this I believe is the key to our present day automation trend. It was triggered then and the blast has never stopped. The main reason it has never stopped is because of the competition on which our great national economy is founded. The ideas were generated for the most part by the pressing needs of the war, and paid for by the tax payers of America. So it is only right that our business should reap a reward for these expenditures and the savings turned over to the people—the tax payers themselves.

They tell the story in one of the eastern air line terminals about the loading out of the first electronic commercial airplane. Upon the final check-in of all the passengers, the attendant pushed the button, the loading ramp automatically slid back, the door closed and a recording came on. This recording said in part . . . you are now aboard the modern American Electronic Airplane. This airplane is handled entirely by electronic equipment. It will take off and land electronically without the aid of a pilot or co-pilot. You have nothing to

fear because all of the latest gadgets have been hooked to this electronic equipment, and we repeat you have no need—you have no need—you have no need—you have no need—. What would you think if you were loaded onto a plane and this happened to the electronic equipment—even though it was only the recording equipment that had failed? I tell this little story to prove to you that man will never be replaced.

What is involved when we speak of Automation, Automatic Data Processing and so forth? Really nothing but the same old ingredients:

1. Materials
2. Equipment
3. People
4. Production
5. Money

Let us examine these items or ingredients one at a time.

1. MATERIALS: Outside of the atom nothing new has really been added and most of us still work with the same raw materials that we always did. Oh, there may be improvements but basically they are the same. As an example in the case of manufacturing it is still paper products, iron or metal products, lumber products, chemical products that we still use as raw materials. In the case of the office worker, it is still printed forms, pencils, pens, typewriters, recording of dollars and cents in the form of entries on our books. Therefore, basically the raw materials have not changed but simply the steps and means

of getting the results have been changed. In fact, in many offices automation is not here. We still post books by hand, sign checks by hand and do many things like we always did. However, on the other hand many offices have become modern in many respects—almost to the point that we do nothing by hand anymore, except on a summary basis or on a report basis. Therefore, material wise there has not been much done toward automation.

2. EQUIPMENT: This is not the same, and for this I would like to give some examples, and keep in mind that most of this has happened during the last ten years, and I hope I will not bore you with some details of the last ten years.

A. Dictating Equipment: In 1940, shorthand was the big rage. By 1950 dictation switched to machines, that had replaced the voice to cylinder machines, by the voice to electronic tube to cylinder machines. By 1960, there were no tubes—the machines were all transistorized—there were no cylinders and all recordings were made on discs or magnetized belts. One machine, now, even automatically starts recording when the voice activates an electronic switch. Another one automatically back spaces a few words for the secretary when she presses the start button for transcription, thereby allowing a trend of thought to be continued.

B. Recording Secretaries: Conversation many times goes something like this: Mr. Long is out. Will you please leave your number and a brief message. Then you leave a message like this: "This is Lloyd Krofft, Gibson 2-5161. Please have him call. Thank you." When you stop to think about it, this could make you real mad because you added the 'Thank You'. But the fact is, we must develop a manner to speak to a machine and a different manner to speak to individuals—if we do not want to say 'Thank You' to a machine. Isn't this a revolting thought?

C. The Fountain Pen: Ten years ago the 'Snorkle' fountain pen was unheard of and the ball point pens were not born. It is only in recent years that you can write on butter or under water. Of course, I am not sure that this is automation, other than it is true that, in the use of the Snorkle, you don't waste time to wipe the pen. The ball point pen doesn't need refilling every morning, but there may be some advantage in being able to read what you write.

D. The Typewriter: Ten years ago a new manual typewriter was a secretary's pride and joy. Today you could easily insult her to even consider anything but an electric typewriter. There have been all kinds of claims here as to the benefits but really very few people type any more within a day's time than they ever did. Of course, the girls are not as tired at night, and perhaps, that is the reason they now have to take sleeping pills.

However, I will agree that where a number of copies are needed this is probably considered automation, since more copies can be made and they are still legible.

E. The Copying Machine: Here, there has been a great improvement. There are many items that we have to copy in the office that we did not need to copy in earlier years. I think this can be partly explained by the fact that our American people are on the move. People think nothing of traveling 300 miles, or moving to another state over the week end and, therefore, their records need to be moved to a different area for service. As an example, some of our insureds living in Columbia drive to Springfield, Missouri and have a wreck over the week end. The insured's policy records must be moved temporarily to Springfield, Missouri until that claim is paid. Likewise, centralization of records cause the need for the transfer of records, as records still need to be moved close to people when service is needed. I would also like to say that there has been more untrue advertising on these machines than any automation item that I know of. You can only copy all colors of paper and ink through the use of a lens.

One of the latest copying machines to be announced is the Haloid 914, which is fast—the first copy can be received within 20 seconds and each additional copy within 5 seconds. The entire process is a dry process and it uses only regular bond paper. No special operator is needed and the cost is about 4 cents for each copy if more than 2,000 are made per month. This is truly automation in the field of copying, since cost is at a minimum and the speed is the fastest known.

F. Adding Machines: There is not much change here. There has been an increase in speed from the 150 cycles per minute to 250 cycles per minute, but then not many people could keep up with the 150 cycles. There is not much change as far as automation is concerned.

G. Punch Card Accounting: I will restrict my remarks primarily to IBM equipment. However, I would like to say that I have done a great deal of research on Burroughs, Remington Rand and others. Now, let us examine some of the components of the punch card machine room and let us try to determine what has happened here in the last ten years.

1. PRINTERS COMMONLY KNOWN AS TABULATORS

405. Which could print list 80 lines per minute or tabulate 100 cards per minute.
402. Print list 100 lines per minute or tabulate 150 cards per minute. Also has an increased storage and control panel features over the 405.
403. Same specifications as 402 except has a multiple line list feature from any one card.
407. Print up to 3 lines from 1 card. Print list 150 lines per minute—tabulates 150 cards per minute. Increase storage and control panel features

and for the first time all type wheels were alpha numeric.

1403. (Print Unit of 1401 System) Print control by stored program instead of control panel. Prints up to 600 lines per minute. Tabulates up to read and write tape speed.

2. SORTERS:

075—Sorts one column 450 cards per minute

082—Sorts one column 650 cards per minute

083—Sorts one column 1,000 cards per minute

084—Sorts one column 2,000 cards per minute

7070—Tape sorter-speed of tape read & write and can sort all 80 columns at one time.

3. COLLATORS

077—Collate one column 240 cards each feed per minute.

088—Collate one column 650 cards each feed per minute, and also has selection capacity increase to 5 pockets. 1401 or 7070—tape collated at read-write tape speed.

4. CALCULATORS:

Ten years ago none or at least none widely known.

602A—Control panel wired input-output. One of the first of a long line of work horses.

604—Control panel program—first of large computers, 2,000 radio tubes—easy to program—100 cards input-output. Later changed and 200 card input-output was made available.

650—250 card input per minute. 100 card output per minute. Storage program on drum. Program and storage total capacity 20,000 positions. Harder programming than 604 but much more powerful and not as limited. This calculator is one of the first so called logical computers. Logical only in that it can make a decision as to whether two items are equal or unequal.

700 Series—Including 702, 705 and etc.

Tape or card input-output—Density of Tape 200 characters per inch. Stored program—large storage—electronic tube storage and control units. High speed printing online.

7070 Series—7070 and 7080 and etc.

When coupled with the 1401 system used only tape input-output. Density of tape 200 or 556 characters per inch stored program. Core storage, high speed tape read and write. This is truly automation. Sometimes with this speed we have to watch cost in order to determine whether speed is true automation—more about cost a little later.

No doubt some of these details of Punch Card Equipment mean very little to some of you but to some

of us who have run the full line for the last 10 years can recall some awful and wonderful experiences.

Let us now leave equipment for a little while and talk about the next subject.

3. PEOPLE: This primarily consists of three groups—Top Management, Supervisors and Workers.

A. Top Management: It is said that Top Management is like a bottle in that all bottles have a neck and the neck is always at the top. Top Management should decide what information they require. This sounds like a simple thing but it is very hard for Top Management to know what information they are going to need in a few years from now. This is serious in this day and age where complicated programs are required in the keeping of vast records. Unnecessary records that may be carried because of a 'may be needed' basis are expensive. On the other hand there are many records needed that are not kept. Let me also say, management needs to let people know what their job is and then what authority they have to get it done. Communication of ideas to supervisory staff and in turn to people is a lost art and must be relearned in this day of Electronic Equipment. This is a summary of management's job in very few words but if these were carried out as far as automation is concerned this job would begin on a much easier basis.

B. Supervisors: The job of supervision is becoming more and more important. Good office supervision is needed because of the tight daily schedules that must be adhered to in this business of Centralized Office Data Processing. Our schools need to have courses on Office Management and Supervision. Instead of these jobs being passing jobs as some people feel, I believe that these jobs are becoming more important. True, this is not the office manager or supervisor that we have known in the past but a whole new field of office management is in the making along with automation. I would like for you to note what Webster says about this in his dictionary. A manager he defines as one who manages an enterprise. Management is defined as the skillful direction of an enterprise. These differences when noted can mean the difference between making or breaking a company.

C. People: Last but not least, the people are the heart of any organization. We have discussed Top Management, and we have discussed the Supervisor or Office Manager level and now let's discuss the people themselves.

First of all, let me say that we have all types of people and we can develop all types of machines that we want to, but people are what make automation tick. People are still the rulers of all machines. Therefore, let us classify a few types of people we will find in our offices.

1. DOG IN THE MANGER TYPE

He is always backed up against the wall growling—trying to defend his job. He can't even see the new way for thinking about the old way and his favorite saying is, "I don't see why we should change." Let me give you an example of this. This example almost made me decide at one time to quit dealing with people, methods and procedures. A certain procedure was put into operation in our office and a certain man fought this procedure every day—he did everything in the world to foul it up—and remember he did have some authority. But one year and ten days from the time it was installed he came into my office and made this remark. "You know, I believe it is going to work." Now here was a real compliment, since he had tried for a year and ten days to not make it work. From that time on we had no problems because he was convinced that it would work, but still he would have to be classified as a "dog-in-the-manger" type because he didn't learn and the very next time a change was made he was back, saying, "I don't see why we should change." I might add he is no longer with us.

2. THE NEED HELP TYPE

This is the person that comes up and says I need some help to get this report or work out. Of course, a supervisor is always supposed to see that this is done so you ask Mary to help this person out. Three months later you ask what Mary is doing—you then find that three months ago you told Mary help this 'Need Help Girl' and she is still needing help. The fact of the matter is, Mary is doing her job and all she is doing is setting back dictating. Watch these 'need help people'!

3. BEAUTIFUL BUT DUMB

My, isn't it a blessing that all of us aren't beautiful and that most of us aren't dumb.

4. THE NEEDLER

Don't you just want to strangle people sometimes when they needle you and never come up with any constructive criticism. I have never found a real way to get them out of my hair.

These are only a few of the different types of the people we find around the office, but it brings out the point that I want to make at this time concerning people. Considering that we have all types of people, let us see how we can do the best with what we have. First of all, let us remember that someone hired this person and they must have had a good reason for hiring him or her. Therefore, it may be poor supervision, which is causing the problem. Always classify the work to be done before you select the people to do the work. Then assign the

work to the people qualified to do the job. Too many times we work a procedure around a personnel bottle neck, instead of removing the bottle neck. Remember people can be laid off or fired but normally it is only necessary to place people in their proper perspective in a procedure. As jobs change, instead of firing or working procedures around people, simply move people to fit the procedure. People will appreciate the move if you take time to explain to them that they are qualified to do this job better than the old job which they had.

Now we have covered Materials, Equipment and People and let us now consider the last two items:

4. PRODUCTION: Production is no job as long as we remember that production is attained by the proper management of material, equipment and people. However, this proper management is not easy to come by—hard work and patience are needed.

5. MONEY: Most people like money. There is nothing dirty about this word. It's true the Bible said that, "The Love of Money is the Root of all Evil." But it doesn't say that we should not have or respect the use of money.

This leads us to the question, What is Automation? Many books have been written on this subject but briefly it is the proper use of all of the things we have been talking about:

1. Materials
2. Equipment
3. People

These go together to increase production, and increased production makes money. Is this definition too simple? Many times we overlook the simple things in life.

Therefore, what has happened in the last ten years? Materials haven't changed to any great extent, people haven't changed and, therefore, there is one major item that we need to watch out for and this is equipment, but remember not all equipment when matched with material and people will increase production and, therefore, make money. Also remember that increased production, when not kept within a realistic balance of the cost of equipment, will not make money. I would also like to say that people who don't keep in touch with equipment and with improvements on equipment in our competitive economy will soon be left out. We can rest assured that the competitor will be using the very latest equipment and using it in the best way. Therefore, if equipment is kept in harmony with all of the other items mentioned, a company will continue to make money and continue to sell products at a lesser cost than their competitor.

Machine Accounting—Step by Step

by—Louis C. Weith, Manager, Statistical Tabulating Corporation, Kansas City

When I was asked to prepare this paper on office machine mechanization, I was asked to discuss some of the advantages of punched card systems as well as some of the pitfalls. And if there is one thing I want to emphasize, it is to be careful of the pitfalls. No matter what you do; no matter what you think punch cards or an automated system will do for you; analyze what you are doing, and criticize what you are doing. Be pessimistic about what you are doing. If you know what the pitfalls are; if you analyze and tear apart what you are doing, you can't help but learn the advantages. So I say this—and I repeat, be critical, be pessimistic; analyze each of the steps that you take in going to an automated system.

Let's talk about the pitfalls of punched card accounting. I think in the past four years people have become much more aware that automation is playing a larger role in business than ever before. I think that they realize that business is becoming more competitive. And this means that there is more paper work to be done within an organization. Paper work has really become a necessary evil in the business world. More businesses than ever before are now being run by paper work. And it is strictly overhead. It has grown so fast, that people are doing many paper work projects that really aren't necessary. Here is one of the first steps to take—one of the first pitfalls to be careful of. If you are going to punched cards, analyze the things that you are presently doing. Say, "Is this really necessary to put a profit in my pocket?" Tear it down; tear it apart; analyze it; realize what is going on. If you can add up more on the debit side than on the credit side, then go ahead. But go to punched cards step by step. Know each application as it now stands on a manual basis. Know what is going on in your company so that you are better qualified to judge.

Another pitfall which I think people find themselves in quite frequently is deciding who within their organization is qualified to spearhead an automated system. Again, I say, be pessimistic, be critical; analyze your people; ask yourself these questions—"Who within my organization can spearhead a program? Who is sold 100 percent on automation? Who is capable of making the transition from a manual operation to an automated system?"

I know of many organizations that we call on where we talk to the President or the Vice President and he might be convinced that automation is for him. We may look at his project or his application. We may agree that

it is a project which can be automated. But here we may have problems. He may be sold, but his Office Manager or his Comptroller may feel that there is a certain portion of his job being taken away from him and he will fight you tooth and nail. I only use this as a reference. I use the Office Manager or Comptroller as an example, but again there may be someone below him who feels that you are taking his power away. You have to be 100 percent sure that he is sold on going to automation. If he isn't, you have to educate this man that automation is not taking away, but enhancing, the prestige of his job.

Be sure to consult with the man of your choice. Let this man who is going to spearhead the program in on every detail. Let him know what is going on. Be sure that your right hand knows what your left hand is doing.

I want to tell you about a fellow who was a personal friend of my family's. For years on Sunday nights they would get together and play bridge. I can recall one night that they were playing bridge and talking about this small town of Perryville, and how badly they needed a park. And everybody agreed that they needed a park. And after the conversation was over, he hit the table with his fist and said, "By God, you know what else this town needs—a city park." I say, let this be a lesson to each of you. Do not turn a deaf ear to your men. Maybe two people are working toward the same goal. But here again, let them have a common end result and understand what each is trying to accomplish so that there is no misunderstanding—that they are working hand in hand toward the same goal.

Another pitfall which is encountered in automating a system in any company is the need for properly educating all employees affected by the program. Not only should the man who is spearheading the program be educated, but many other people within your organization as well. Do not keep secrets from anyone in your organization. Basically, people fear that when a system is automated they will be replaced by a machine. This is not true. People are not generally fired. Only when they leave of their own accord, are their jobs not re-filled. Be sure that your people are informed as to what is transpiring. That they understand what part they play in a conversion to a punched card application. These are the people who work closest with the equipment—these are the people who must be accurate in preparing the source data for the equipment. If they don't understand the mechanics of the operation; if they don't understand the

goals which have been set up, how are they expected to do an intelligent job? And, in turn, these people are an integral part of the system. Without them, the system would fail. They are the people who will dream up the ideas. They are the people who will dream up the short-cuts, which will make the system run more smoothly. Again, it is a matter of education. And you will be surprised as to where you will find some of your answers. So listen to your people. Don't turn a deaf ear to them. Understand your people. See what criticisms they have. You will find that you will learn a lot from them—the people who work closest with your system.

Speaking in broad, general terms, another pitfall is in communication, or understanding one another. I remember the preacher condemning the use of liquor one Sunday in his sermon. He was a very dramatic man and liked to use examples. On his pulpit that morning he had a glass of water and a glass of whiskey. He was telling his congregation that he would demonstrate what liquor would do. So he pulled a little worm out of a box and dropped it in a glass of water. It just fought and wiggled. He pulled another worm out of the box and dropped it in the glass of whiskey, and immediately it died. The preacher looked around at his congregation and spied one fellow who he knew tipped the bottle rather regularly, and said, "Tell me, John, what does this mean to you." And John rose from his seat and said, "If you drink whiskey, you'll never have worms." Somewhere there was a lack of communication.

Never take for granted what the other man means. I can tell you from my experience that this is one of the biggest obstacles to overcome. We will design an application for a company; write a proposal for presentation; and invariably the man will say it is not exactly what he meant. Somewhere we had failed to communicate. For this reason, I am constantly preaching—tear it down—tear it apart—be pessimistic, and above all, take it step by step.

Before you heard me say to educate your people. But this isn't enough. They must find a common language to communicate. Believe me when I say people won't question your ability if you ask questions. To make any punched card application a success, there must be much time spent in communications between the different department heads, and the man spearheading punched cards, as well as his people. He must have a clear cut understanding of what you expect from the finished report. And you must, in turn, understand what they have to work from so that you can give them the proper reports. I realize that what I have said has been in broad terms. In summary, find out what your present applications are, so that you can educate man spearheading automation. Educate your people and communicate with each other. Then the other pitfalls can be avoided.

I would like to mention a few specifics, without going into detail, in regard to other pitfalls. 1. Namely, should I run a dual system for a certain length of time? 2. What type of equipment suits my purpose? 3. Should I go to tape, or direct to punched cards? 4. How should I design my reports? 5. What should my target dates for conversion be? 6. To what extent do I automate my office? 7. Should I purchase my equipment rather than lease? 8. Should I contract with a service bureau rather than lease equipment? I could go on and on, but again I say, if you will criticize, analyze, tear it down, tear it apart, be pessimistic, and above all, take it step by step, you will find the answers most profitable to you. You will also find the advantages of going to an automated system.

Up to now, I think I have painted a rather dismal picture, in so far as what transpires in automating a system. I would like to point out now, just a few examples of what punched cards can do for you. What some of the advantages are. Here, I will cite a few examples that show very definitely the advantages of punched cards:

1. I know of insurance agencies, and I might add that we have some seventy-odd in our Chicago office alone, that now get their accounts receivable in the mail the first day of the month instead of the fifteenth; which means that they get paid in ten days rather than forty days.
2. I know of a structural steel firm that reduced its inventory by one million dollars; and a million dollars at 6 percent interest, paid for their tab operation plus putting additional profits in their pockets.
3. I know of a lumber company that has put their accounts receivable on punched cards, and it has cut down on the Credit Manager's collection letter from 100 per day to (and it's no lie), to one letter per day, average. This was a benefit which they hadn't even thought of. I know of a chemical company which is now getting its P & L statement out on the fifth of the month instead of the 25th, and can analyze their picture in time to remedy a bad situation before the second month rolls around. They don't have to live with an undesirable situation.
5. I know of a company that analyzes sales statistics on punched cards, using the buying power index. They can measure their salesmen and see who is getting his fair share of the business and who isn't. They can be specific with their men—not by hearsay alone.

Another application particularly pleases men because we did have a finger in the pie, so to speak, in Kansas City. And it was recently in the Chicago paper, and concerned Raytheon. The topic was "Raytheon Cuts Costs by Electrons". In the article, they say that they had reduced their inventory by six million dollars because of going to automation. Not only did they reduce their inventory by six million dollars but they closed six warehouses, which required somewhere between \$30,000

and \$100,000 per year in fixed costs, such as salaries, rent, heat, taxes, insurance, etc., plus additional inventory which ran between a quarter of a million dollars in each warehouse. Now I say this—the new system is far cheaper than tying up capital investments in things such as warehouses.

I could go on and on, but it would be impossible for me to tell you what the advantages would be to each of you in an automated system.

In parting, let me say just once more—tear it down, tear it apart, criticize, analyze, be pessimistic, and above all, take it step by step.

Mechanization and Employee Relations

by—Russel S. Bauder, Professor of Economics, University of Missouri, Columbia

Discussion of mechanization has come up in the literature of Economics from the time that Economics itself was recognized as an intellectual discipline. What we have today is not different in principle from what existed in England almost two centuries ago when the textile revolution was starting. Basically what it involves is an increased use of capital relative to labor in particular employments. Whether the stimulus for such changes comes initially from new technology or whether an increase in capital provides the stimulus for developments in technology, will undoubtedly be debated among economists, physical scientists and engineers for many years to come.

Today the whole issue on mechanization and its consequences acquires a greater prominence than was the situation even a few years ago for two reasons. First, until the tight money policy was adopted, we had a long period of very low interest rates—at least for those business firms that could borrow at prime rates. At the same time, while the cost of capital was low, wages as cost were rising. Under this kind of situation we would expect an economizing on labor—a change in the proportions of labor and capital used in the production process. Second, largely arising out of governmental investment in defense technology there has been a technological break-through centering in electronics which probably has wider possibilities of application than most specific technological developments. As a result of all this it appears that the rate of change has accelerated very appreciably. Consequently the impact of change as well as the fears of the impact of change is more wide spread through our society. To borrow a slogan from the steel strike period—“The Job you Save May be your Own”—is an appeal that reflects an almost universal fear.

In all the economic discussion of technological change, controversy has centered on its effects on employment. Roughly, the orthodox economists have concluded that these changes—substitution of capital for labor—do not decrease the demand for labor. However, this conclusion involves, for anything short of the very long run, assumptions of flexibility of wages and prices and neutral money. It ignores important short run ques-

tions such as the prospects of displaced older workers being able to find new employment, the obsolescence of skills, and the barriers to geographic mobility for all but the younger people. When T V makes the journeyman college professor obsolete, I, at least, expect to enter the ranks of the unemployed.

The future effect of changes arising from mechanization and related things should be viewed against the probable changes in our labor force. We have some careful projections of our labor force which compare 1955 with the probable situation in 1965. Some of the major changes can be indicated.

1. The total labor force which was almost 69 million in 1955 will be almost 80 million in 1965—an increase of nearly 11 millions.
2. There will be about 2.7 million more young men 14-24 seeking employment in 1965.
3. There will be practically no increase in the number of men in the ages of 25 to 44. Indeed the number between 25 and 34 will decrease slightly.
4. While there will be only a slight increase in the number of women workers ages 25-34, some four million more women 35 and over will be seeking work.
5. Men in the age group 45-64 in the labor force will increase about 2.25 millions.

In summary, we face a growing number of younger workers under 25 and an increase in married women over 35 seeking employment. We face shortages of male workers in what labor force specialists are calling “the prime age group” 25-44. Older male workers will increase substantially. This projection, it should be emphasized, is based on population we already have.

Does this projection of the characteristics of the labor supply fit projections of labor requirements in an automated age? Here we have to leave statistical projections behind. Writers on future labor requirements do not show close agreement. Still, I think we could get considerable agreement on the following general points:

1. Many unskilled jobs will disappear—particularly in materials handling.

2. Many "automated" jobs will require less over-all skill than was needed on the jobs displaced.
3. There will be a substantial need for more of the many kinds scientists, engineers, technician and skilled maintenance and repair men.
4. The over-all skill requirements including educational requirements, will continue to rise.

It is apparent that the bulk of the additions to the labor supply—young people under 25, married women over 35 and older workers over 45 do not fit readily into this picture of demand. A great need for more and more effective education and training certainly is suggested. How we are to get it is not very clear. Must we adapt our work processes to the available labor force or can we up-grade the labor force?

Next, we should ask what the accelerated process of mechanization means to employee relations. On the assumption that my colleagues will discuss this in terms of the more strictly personnel activities, I shall direct my few remarks on union—employer relations. Here the most conspicuous development is that unions, with a few exceptions, are not growing. Although a number of attempts have been made to expand membership in the professional, technical and white collar fields, the results have been quite unproductive.

Many have been led to the conclusion that this means a decline in union power. I am not at all sure this will prove to be true. The evidence available indicates that wage earners are more worried about job security than they have been since the depression. This fear is extending to the white collar workers and, if recent attitude surveys are correct, even to the ranks of middle management. If the human relations people are correct, fear creates frustration which leads to aggression. Can it be that this fear will provide the basis for a great expansion of labor organization, reaching the white collar workers and, in the blue collar field to the small businesses where as yet organization is not wide-spread?

Whether or not there are unions in particular enterprises, I think this fear of the loss of job security will affect employee relations. It is probable that the expressions of unrest are heard first where there is collective bargaining. Certainly, we heard a lot in the steel strike. We can expect growing pressures on issues of job security and job protection. Already there is an increasing demand for shorter hours. The method of supplemental unemployment compensation has been worked out and it has been proven that it can be done. Termination allowances are becoming more common. Pensions are wide spread but they will spread further with rising benefits and greater degrees of vesting. Health care plans of one sort or another cover nearly 75 percent of the employed work force. There is substantial dissatisfaction over their coverage, the health care provided and the ris-

ing costs. These items do not make an exhaustive list of the rise in demand for greater general security; they are just illustrations.

More specifically, we have the developments that center on specific job security. Seniority rules take on greater significance when we fear for our jobs. Wider seniority units and bumping rights appear. We have many plans which extend seniority rights to new plants and even provide for companies paying some of the costs of moving.

Much evidence indicates a rapid spreading of what might be termed a craft outlook and this extends beyond the traditional craft occupations. The current issues on work rules and work assignment rules center on this development. Each work group wants assurance that no one else will be permitted to perform the tasks it has been performing. And, on the other side of the coin it wants to be assured it will not be required to perform tasks outside its customary work. Each group also seeks assurance that it will be permitted to continue the tasks which it has performed in the past.

All these developments demonstrate a sense of insecurity among wage earners. While many of the actual expressions are found under collective bargaining, we delude ourselves if we think the feeling does not exist among wage earners generally.

Management cannot avoid these developments because it cannot stop technological change. What, then, is to be done?

First, I think, management has rather generally made a mistake by limiting itself to opposition—both to legislation and to personnel innovations. The position that nothing can or should be done so far has merely resulted in letting the unions write the tickets. I believe the various programs developed would be improved if both managements and unions contributed to their development.

Second, all writers seem to agree that communication needs to be improved. Communication, everyone agrees, should include the bad news as well as the good news. However, most literature is delightfully vague as to just what should be communicated and how it is to be done. In addition, much of what is said about communication in relation to shop changes seems to be management to employees. The management receiving end seems to be lost in the preoccupation with the new technology.

Third, the impact of change must be cushioned to a greater degree. Opportunity for reassignment must be expanded. This will require more effective ways of retraining. The impact on seniority practices here is obvious. Some companies have absorbed the costs of over-staffing and permitted normal attrition to reduce the work force. We are hearing more and more of termination allow-

ances. Related to this is either supplemental unemployment benefits or higher levels of benefit under the unemployment insurance laws.

Fourth, we must realize that there is no single abstract answer to these developments. Each firm must plan out in advance the personnel aspects of new mechaniza-

tion with as much care and detail as it plans the technical aspects. As a side-line observer, I would like to suggest to you that you have, ultimately two choices. You as managers can work out ways to meet this wide sense of insecurity among wage earners. If you don't, either the unions or the government will.

Effects of Mechanization on Industrial Relations

by—Lee B. Hawthorne, Personnel Manager, A. P. Green Fire Brick Company, Mexico

It is impossible to understand the employee relations in any company, without knowing a little about that company's historical background—the setting, so to speak, which shapes the company's Industrial Relations.

For the 200 years prior to the early 1900's all refractories brick were handmade, soft mud brick. Clay was obtained from underground shaft mines, which required many mules and men with shovels and pick axes. Material handling was all strong back, legs, and hands. About 1910 when the Green Company was established, the industry was just starting to mechanize. The Green Company in 1916, for example, pioneered open-pit mining. The resulting economies plus a fine raw material allowed the Company to compete more effectively. Later as modern mining equipment became available, further economies became possible. In the early 1920's, one of the first Tunnel Kilns in our industry was built in Mexico. Their use spread through the entire industry. Yet, as late as the early 1940's, special wheelbarrows were still used to transport products from the kilns to railroad cars. We were still a back, legs, hands industry, even though mechanization in all components of the company from Prospecting through Mining, Manufacturing, Shipping, Setting, Office, had made slow but steady progress.

Despite these labor saving devices, company employment continued to grow. In the early 1940's we had over 1700 employees in the Mexico Plant—more than we have today. The effect of mechanization on the industrial employee, was for this period, primarily good because:

1. More jobs became available.
2. Pay increased beyond advances in cost-of-living.
3. Opportunities for advancement constantly improved.
4. Individual work loads became lighter.

At the same time, of course, the so called "fringe" benefits were being improved almost year by year. Training programs were conducted which enabled the employees to keep even with increased mechanization. So, like many another company and industry in general, mechanization actually helped employee relations. Problems

arising from mechanization were minor and affected only a few employees.

During World War II the widespread use of newly developed equipment and machinery was, of course, limited, although our company, as a member of a basic War Industry, utilized all it could obtain.

It was after the War, when some of the fine employee relation "pluses" of mechanization began to slack off a bit. To set the stage for our company, which is typical of many during this period, it's necessary to further chart the course of the company—a single unit plant which had grown to be the largest single refractory plant in the World.

After the War, the company determined to continue its growth by branching out. It moved to add all refractory products—not just fireclay—to its line. This meant adding silica, basic, zircon, mullite, silicone carbide, etc., refractory products to its line. To maintain a competitive position it was necessary to locate manufacturing facilities nearer the sources of raw materials. Consequently within the last ten years:

1. The Company grew from one plant to sixteen in North America and with ten plants in foreign locations.
2. Net sales increased from about \$17 million per year to almost \$40 million per year.
3. Net worth increased from over \$10 million to almost \$30 million.
4. Employment increased to about 2500 employees—almost double.

In this process, employee relations were naturally complicated. The large Mexico operation had never been organized; some of the outside operations were. Decentralized management practices became company policy, with each segregated unit being held primarily responsible for over-all performance. Company philosophy and policies had to be extended and made applicable to a multi-plant operation.

In addition, during this Post-War period, our company has been just like everyone else, in that we have

been faced with the necessity to produce top quality products with ever tighter specifications at the lowest possible unit cost. Under such circumstances, improved methods, higher productivity, and mechanization have played an ever increasing part. We too have been caught in the cost-price squeeze.

Prior to and during World War II, you have seen that the effect of labor-saving devices had little effect on employee-relations. If anything they were improved. Immediately after the war there was an adjustment period when the work force was revised. Temporary war-time labor was replaced by returning veterans. This caused many problems, but mechanization was not a particular factor.

Since then, two human factors have played a great part in the effect of further mechanization on employee relations: (1) The desire of employees to exert less physical effort, and (2) the desire for security.

On the one hand, there is the natural acceptance of anything to make a job easier whether it be a lift truck, mechanical sweeper, conveyor or just an easier way; on the other hand, the extreme reluctance to "engineer" oneself out of a job.

In once heard a supposedly true story of a plant manager, who, whenever he had a particularly tough problem on efficiency, always picked the laziest, Oneryest no-account employee he could find and put him on the job. The resulting short-cuts and labor saving gadgets surpassed anything his engineers were able to develop. We don't suggest here that a company doesn't need engineers. Far from it. But this story does point up a fact known to all of us—the man doing a particular job can and does offer many suggestions which will make that operation more economical. How many times have you developed new incentive work standards for a particular job—standards which the employees themselves swear they cannot possibly meet? Six months later what's happened? They're exceeding even what you thought they could do by from 10-20 percent.

In awareness of these two obviously conflicting interests we very carefully plan every step of each proposed or anticipated change in methods, standards, equipment, etc.

Not only do we carefully work out every detail from obtaining the new equipment to the development of new work standards, but we explain these details thoroughly to every supervisor and employee involved. Frequently this results in additional ideas which can be incorporated into the plans. Our experience has been that our employees, almost to a man, cooperate enthusiastically when they become part of the project.

Then, timing plays an important part in implementing these plans. Sometimes, we can mesh our changes to normal or anticipated events which will help in the solu-

tion of a problem. If crew size, for example, is to be cut, we determine in advance where employees are to be transferred. No one is laid-off in such instances. The size of our Mexico operations and the variety of products is such that there frequently is a need to beef up one or another of the unit operations.

If earnings are to be decreased, sometimes we can gear a change to a planned general wage increase—the net effect of which may well sustain the take-home pay level. In other instances the pay is actually cut. Here timing cannot be a factor and we try to justify using job evaluation data and/or comparative earnings for like work as a selling medium.

How then do we reduce the number of employees as more and more labor saving devices are installed? Not only do we guarantee employment, but insofar as possible we guarantee each employee a full schedule of working hours. This isn't quite as tough as it might seem. First there is normal turnover—the retirements, deaths, quits, etc. Experience allows us to fairly well anticipate what this will be. By holding back here or straining a short time there, this normal turnover works for us.

Secondly, our work and training programs are such that nearly everyone can do not one but several jobs. When our business is such that we have too many people to do the available work, our most junior employees are the ones laid-off. The ones remaining are then transferred to fill any gaps. If, then, we had such a terrific and immediate mechanization program that we ended up with too many employees in one or two departments, most of those whose jobs were eliminated would be transferred to other work. The junior employees throughout the company would be the ones laid-off. Fortunately, or unfortunately, depending on how you look at it, we have never been quite in this position.

Naturally, we try to avoid peaks and valleys in our production as much as possible, but as our fortunes fluctuate generally to the ups or downs of the over-all economy of the country, lay-offs are inevitable. Actually for relatively short periods of time, the effect on the community is minor. The fact that our wage rates compare favorably with those in metropolitan areas, coupled with our adoption of supplementary unemployment benefits plan which added to the state plan gives such employees 65 percent of their take-home pay, reduces the impact on local merchants considerably.

What happens then when business improves and we start calling back employees. Two things really. First, some of the laid-off employees have found other employment, and normal turnover continually eliminates a number. And, secondly, a vastly increased research program for the development of new or improved products, creates new jobs. The net effect over the years has made possible a gradual reduction of the working force, with relatively minor effect on the two basic desires of our employees.

While I have given a picture here of fast progress in mechanization—and I can list hundreds of examples—coupled with a continued high morale on the part of our employees, all is not peaches and cream. For example, many indirect labor jobs have been eliminated from the company scene. For years, those employees who because of age and physical inability, have been placed on these jobs, and year by year the quantity of such jobs has become smaller. The struggle to satisfactorily place such employees, correspondingly, becomes more and more difficult. To date we have been able to cope with this problem satisfactorily. We feel confident we will continue to do so, although the “how” is still in process of development.

The industrial relations problems in some of our acquired operations are, in some instances, a “horse of a different color”. Located in other industrial areas where the “climate” of Industrial Relations has been historically different—and understandably so—than in Mexico, it will take some time to expand the home operation pattern. In one location, for example, 65 percent of the employees have 10 or more years of service. They have been doing basically the same jobs for years. We are currently in the process of negotiating a completely new labor contract. This is at their request. Anticipating the need to improve productivity—our studies have shown

that theirs is extremely low—we inserted a paragraph on incentive work. While we are not ready to install incentive, we were anticipating the need to do so within the next year or so. Their initial reaction was a flat “no”, despite the fact that other competitor plants in the area all have some incentive jobs. Not only that, presumably fearing that they would be required to produce more, with a corresponding reduction in work force if they did, they asked for a clause giving the Union the right to approve all contemplated reductions in the work force. Obviously we can’t agree to this and it’s equally apparent that we have quite an education job before us.

In other locations, only minor changes have been necessary to extend our philosophy and procedures in the areas we are discussing. We’ll make some mistakes, we’ll have some rough problems. We have before. When every employee, however, realizes that our company is simply made up of people, who are working together at the job of earning a living—that we share common interests as a way of life—we feel that each will have the feeling of security he needs and an opportunity to grow and develop as the company progresses. Consideration of the individual, effective planning and communication, plus practical timing are the keys, we feel, to minimizing or eliminating human problems arising from mechanization.

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