

INDUSTRIAL CHARACTERISTICS AS THEY
AFFECT COMMUNITIES, AN EVALUATION
AND CLASSIFICATION

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COMMUNITIES, AN EVALUATION AND
CLASSIFICATION

By

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A THESIS

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ABSTRACT

Statement of the Problem

The rapid expansion of American industry within the past few years has resulted in keen competition among communities for the location of new plants. As there are more communities seeking new industry than there are industries seeking new locations, promotional efforts of communities have been primarily directed toward attracting new industries per se. Little attempt has been made to evaluate the characteristics of each industry in terms of the kinds and amounts of benefits each might contribute to individual communities.

As industrial characteristics vary from industry to industry, propensity to contribute beneficially to a community varies from one industry to another. It is the intent and purpose of this study to evaluate a number of these industrial characteristics as they affect communities, and, further, to classify industries in terms of these characteristics and capacities to benefit communities.

Evaluation and Classification

For the purposes of this study, the following industrial characteristics were examined:

Reliance on supplementary industries.

Reliance on related industries.

Economic stability.

Seasonality of employment.

Composition of labor force employed.

Labor skills employed.

Personnel policies and wage rates.

Plant management and operation.

Size of establishment.

An evaluation was made to determine what possible effects each industrial characteristic might have on communities. In addition, industrial groups as determined by the United States Bureau of the Census were classified in tabular form by the capacity of each to provide benefits to communities in terms of the industrial characteristic.

Summary and Conclusions

Although primary emphasis in locating new industrial plants must be given to such locational factors as proximity, amount and quality of raw materials, labor, transportation, power, and markets, this does not necessarily result in the maximization of industrial benefits to a community.

Communities can be benefited in various ways by industrialization--depending to a great extent on the type of industry introduced. The principle responsibility in determining the most beneficial type of industry lies with the community.

Proper consideration of maximum industrial benefits will assist communities in attracting new industry. Although most industries are primarily concerned with locating in an area that will be most favorable to an industry, at least secondary consideration is given to the potential benefits of an industry to a community. An industrial promotion campaign that stresses benefits to both an industry and a community might reasonably be expected to be more successful in attracting a new industry than would a promotion campaign that stresses only the benefits that would be accruable to an industry.

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STATEMENT OF THE PROBLEM

American industry spent a reputed \$27.3 billion on expansion in 1955.¹ This rapid expansion of industry has resulted in keen competition among communities for the location of new plants. Many communities have resorted to elaborate promotional campaigns designed to attract industries. Competition has become so severe that, in many cases, direct subsidies in the form of tax reductions, rent-free facilities, and free sites have been offered as incentives to new industry.

Primary emphasis in promotional efforts has been placed on the various advantages and benefits which would be accruable to industries as a result of locating in a particular area. Principal consideration has been given to locational factors such as availability of production materials, labor, sites, industrial fuel, transportation facilities, markets, and utility systems. The importance of these factors can neither be denied nor questioned, as they form the basis upon which industries may properly select new locations.

¹ "Wanted: New Industry," Time, September 26, 1955, p. 88.

On the other hand, with the exception of anticipated increases in tax base and payrolls, most communities have given little consideration to other potential advantages and benefits that might result from new industrial establishment. Recent studies¹ have attempted to measure the impact of new industries on communities in terms of community services and functions, trade and commerce, labor and wages. These studies, however, have measured only the effects of specific industries on specific communities. No attempt was made to examine the major characteristics of industry which cause these effects.

Because of the broad diversity of industrial operations, each industry has different combinations of certain characteristics which have varying effects on communities. There are certain characteristics of industry that notably affect all cities. These characteristics not only directly affect the economic structure and composition of cities, but also indirectly affect many parts of the physical structure, such as traffic patterns and types of homes. They include factors such as reliance on supplementary and related industries, economic stability, seasonality of employment, composition

¹ See: W. Calef and C. Daoust, What Will New Industry Mean to My Home Town? U.S. Dept. of Commerce, Washington, D.C., April, 1955, 19 pp.; and What New Industrial Jobs Mean to a Community, Economic Research Dept., U.S. Chamber of Commerce, Washington, D.C., 1954, 13 pp.

of labor force employed, labor skills employed, personnel policies and wage rates, plant management and operation, and size of establishment.

It is the purpose of this study to examine each of these industrial characteristics as they relate to communities, and to further attempt a classification of major industrial groups (as established by the United States Census Bureau) in terms of these characteristics.

Data derived from this study will be presented so as to aid in appraising potential industrial expansion as it relates to the future growth of communities.

RELIANCE ON SUPPLEMENTARY INDUSTRIES¹

Evaluation

Certain industries, such as welding shops and ice plants, are of general value to an entire community. The nature of their products and services, however, also makes them of value to major industries within an area. For example, welding shops are beneficial to the electrical appliance industry, and ice plants are useful to the meat-packing industry. Concerns such as these may be considered as supplementary industries. Their value to major industries of an area is enhanced if they are readily and closely available.

Supplementary industries are useful to other industries in several ways. First, they may supply products or services which are not being produced in the major industries of an area. Although most sizable industries are self-sufficient in turning out their products, there are some accessories, parts or services which are for them cheaper or more conveniently bought than manufactured. Local availability of such supplementary products is of considerable value to these industries.

¹ Based on data from Basic Industrial Location Factors, U.S. Dept. of Commerce, Washington, D.C., 1947.

Second, supplementary industries may supply products or services to augment those already being produced in the major industries. Local availability of these supplementary industries may be of benefit to major industries in situations where continuous production is threatened or halted by an emergency such as a fire or work stoppage caused by machine failure, or where unusual peak production loads can be eased by placing work with nearby plants or shops.

Third, the presence in a community of one or more supplementary industries may be an incentive to encourage the establishment of major industries which might be aided in production by such supplementary industries. Conversely, incentive for the establishment of supplementary industries would represent a twofold gain, (1) providing added assurance of a local market and possibly expanded employment for the established firms, and (2) securing added employment from the new concerns.

As supplementary industries provide their products and services for general community use as well as for major industries of the community and surrounding area, they are not, in the strict sense, necessarily dependent upon the major industries for their existence. The establishment of supplementary industries, therefore, not only supplies a community and its major industries with

needed products and services, but also tends to strengthen the economic stability of a community (see 'Economic Stability, p. 16).

There are five supplementary industries which are of general value to most major industries where the need arises in instances such as those previously discussed. These include (1) a Machine Job Shop, (2) a Carpenter Shop, (3) an Electrical Job Shop, (4) a Sheet Metal Shop, and (5) a Mill Supply House. Except for the latter, many major industries maintain these facilities to some extent, but additional local availability of such supplementary industries is usually of value.

In addition to these five, there are fourteen other supplementary industries which may also be of production value to specific major industries, as indicated in Table I. These basic supplementary industries were selected by the United States Department of Commerce. It is not intended that the list be all-inclusive; there are undoubtedly other possibilities. An attempt has been made, however, to list those supplementary industries that are of most general use to communities and their major industries.

TABLE I
RELIANCE ON SUPPLEMENTARY INDUSTRIES

<u>Key</u>	
a. Bag plant (burlap, cloth, paper)	i. Foundry (ferrous and non-ferrous)
b. Boiler shop	j. Galvanizing shop
c. Box (wood, paper) and shook factory	k. Heating and ventilating shop
d. Car and foundry plant	l. Ice plant (natural, dry)
e. Container plant (glass, metal, tin, paperboard)	m. Tool and die shop
f. Cooperage plant	n. Welding shop (gas, electric)
g. Electroplating shop	N.R. No relationships
h. Forge shop	N.A. Information not available from source ^a

Major and Submajor Industrial Groups ^b	Supplementary Industries Used
<u>Apparel and related products</u>	
Children's outerwear	c,e
Fur goods	c,e
Men's and boys' furnishings	c,e
Men's and boys' suits and coats	c,e
Millinery	c,e
Women's and children's undergarments	c,e
Women's and misses' outerwear	c,e
Miscellaneous apparel and accessories	N.A.
Miscellaneous fabricated textiles	N.A.
<u>Chemicals and allied products</u>	
Drugs and medicines	c,e
Fertilizers	a,e
Gum and wood chemicals	c,e,f
Industrial inorganic chemicals	c,e,f
Industrial organic chemicals	c,e,f
Paints and allied products	c,e,f
Soap and related products	c,e,f
Vegetable and animal oils	c,e,f
Miscellaneous chemical products	N.A.

TABLE I (Continued)

Major and Submajor Industrial Groups ^b	Supplementary Industries Used
<u>Electrical machinery</u>	
Communication equipment	c,e,g,m
Electrical appliances	c,e,g,h,i,k,m,n
Electrical industries apparatus	c,e,g,m
Electrical lamps	c,e
Engine electrical equipment	h,i,m,n
Insulated wire and cable	N.A.
Miscellaneous electrical goods	N.A.
<u>Fabricated metal products</u>	
Cutlery, hand tools, and hardware	c,e,m
Fabricated wire products	N.A.
Heating and plumbing equipment	c,e,g,i
Lighting fixtures	c,e,g,k,m
Metal stamping and coating	c,e,f,j,k,m
Structural metal products	c,e,g,m,n
Tin cans and other tinware	c
Miscellaneous fabricated metal products	c,e,g
<u>Food and kindred products</u>	
Bakery products	c,e
Beverages	c,e
Canning, preserving, and freezing	c,e,l
Confectionery and related products	c,e,l
Dairy products	c,e,l
Grain mill products	a,c,e,f
Meat products	c,d,e,l
Sugar	a,h,i,n
Miscellaneous food preparations	N.A.
<u>Furniture and fixtures</u>	
Household furniture	N.R.
Office furniture	N.R.
Partitions and fixtures	N.R.
Public and professional furniture	N.R.
Screens, shades, and blinds	N.R.
Miscellaneous furniture and fixtures	c

TABLE I (Continued)

Major and Submajor Industrial Groups ^b	Supplementary Industries Used
<u>Instruments and related products</u>	
Mechanical measuring instruments	c,e,g,m
Medical instruments and supplies	c,e,g,m
Ophthalmic goods	c,e,g,m
Optical instruments and lenses	c,e,g,m
Photographic equipment	c,e,g,m
Scientific instruments	c,e,g,m
Watches and clocks	c,e,g,m
<u>Leather and leather products</u>	
Footwear (except rubber)	c,e
Footwear cut stock	c,e
Handbags and small leather goods	c,e
Industrial leather belting	c,e
Leather gloves and mittens	c,e
Leather tanning and refining	c
Luggage	c,e
Miscellaneous leather goods	N.A.
<u>Lumber and products, except furniture</u>	
Lumber and timber basic products	N.R.
Millwork and related products	N.R.
Wooden containers	N.R.
Miscellaneous wood products	N.A.
<u>Machinery, except electrical</u>	
Construction and mining machinery	b,g,h,i,j,m,n
Engines and turbines	b,g,h,i,j,m,n
General industrial machinery	g,h,i,j,m,n
Metal-working machinery	b,g,h,i,j,m,n
Office and store machines	c,e,g,m
Service and household machines	c,e,g,m
Special-industry machinery, n.e.c. ^c	g,h,i,j,m,n
Tractors and farm machinery	b,g,h,i,j,m,n
Miscellaneous machine parts	c,m

TABLE I (Continued)

Major and Submajor Industrial Groups ^b	Supplementary Industries Used
<u>Paper and allied products</u>	
Envelopes	c,e
Paper bags	c,e
Paper coating and glazing	c,e
Paperboard containers and boxes	c,e
Pulp, paper, and paperboard	c,h,i,j,n
Pulp goods and miscellaneous paper products .	N.A.
<u>Petroleum and coal products</u>	
Coke and by-products	a,c,e,f
Paving and roofing materials	b,f,h,i,n
Petroleum refining	b,c,e,i,n
Miscellaneous petroleum and coal products . .	N.A.
<u>Primary-metals industry</u>	
Blast furnaces and steel mills	b,h,i,m
Iron and steel foundries	b,h,i,m
Nonferrous foundries	b,h,i,m
Nonferrous metal rolling and drawing	c,e,h,i
Primary nonferrous metals	b,h,m
Secondary nonferrous metals	b,h,m
Miscellaneous primary-metal industries	N.A.
<u>Printing and publishing industries</u>	
Bookbinding and related industries	c,e
Books	c,e
Commercial printing	c,e
Greeting cards	c,e
Lithographing	c
Newspapers	N.R.
Periodicals	N.R.
Printing trades service industries	c,e
Miscellaneous publishing	c,e

TABLE I (Continued)

Major and Submajor Industrial Groups ^b	Supplementary Industries Used
<u>Rubber products</u>	
Reclaimed rubber	c,e,i,m,n
Rubber footwear	c,e,i,m,n
Tires and inner tubes	c,e,i,m,n
Rubber industries, n.e.c. ^c	N.A.
<u>Stone, clay, and glass products</u>	
Cement, hydraulic	c
Concrete and plaster products	c
Cut-stone and stone products	N.R.
Flat glass	c,e,h,i,n
Pottery and related products	c
Pressed and blown glassware	c,e,h,i,n
Products of purchased glass	c,e,f
Structural clay products	c
Miscellaneous nonmetallic mineral products . .	N.A.
<u>Textile mill products</u>	
Carpets and rugs	c,e,k
Cotton and rayon broad-woven fabrics	c,e,k
Finishing textiles, except wool	c,e,k
Hats, except cloth and millinery	c,e
Knitting mills	c,e,k
Narrow-fabric mills	c,e,k
Woolen and worsted manufacturers	c,e,k
Yarn and thread mill, except wool	c,e,k
Miscellaneous textile goods	N.A.
<u>Tobacco manufacturers</u>	
Chewing and smoking tobacco	c,e,f,k
Cigarettes	c,e
Cigars	c,e
Tobacco stemming and redrying	c,e,f,k

TABLE I (Continued)

Major and Submajor Industrial Groups ^b	Supplementary Industries Used
<u>Transportation equipment</u>	
Aircraft and parts	c,e,g,h,i,j,k,m,n
Motor vehicles and equipment	g,h,i,j,k,m,n
Motorcycles and bicycles	c,e,g,h,i,j,m,n
Railroad equipment	b,d,g,h,i,j,k,m,n
Ships and boats	N.A.
Transportation equipment, n.e.c. ^c	N.A.
<u>Miscellaneous manufacturing</u>	
Costume jewelry and notions	c,e,g,m
Jewelry and silverware	c,e,g,m
Musical instruments and parts	c,e,g,m
Office supplies	c,e,g,m
Toys and sporting goods	c,e,g,m
Plastics products, n.e.c. ^c	c,e,m

^aSource: Based on data from Basic Industrial Location Factors, U.S. Dept. of Commerce, 1947, pp. 6-13.

^bItems underlined are major industrial groups as defined for census purposes by the U.S. Department of Commerce. All other entries are submajor industrial groups. Subsequent tables are treated in like manner.

^cn.e.c. = "not elsewhere classified." All subsequent tables are treated similarly.

RELIANCE ON RELATED INDUSTRIES

Evaluation

There are many industries which are directly related to other industries in that they use products, by-products, or waste materials of these industries for the manufacture of new products. For instance, pharmaceuticals, candles, leather, gelatins, glue, bone meal, and fertilizers are all produced by industries using materials obtained from the wholesale meat slaughtering and meat packing industry.¹ Such manufacturing concerns are termed "related industries."

Related industries are benefited by local proximity to major industrial establishments through time savings, efficiency, and reduced cost in the shipment of materials. This provides an incentive for related industries to establish in an area capable of supplying needed materials through existing local major industries.

On the other hand, closely related industries are also subject to the economic vagaries of the major industries; an economic

¹Basic Industrial Location Factors, U.S. Dept. of Commerce, 1947, p. 14.

recession in a major industry might be expected to have similar repercussions in any industries closely related to it. Thus a community having as its principal economic base only one major industry and its related industries might be in an undesirable position should the major industry suffer an economic recession.

One method of circumventing this situation is to encourage, whenever possible, related industries to manufacture additional products which are not related to the basic industry of an area. In periods of economic adversity for the major and related industries, production of unrelated products might then continue in the related industries.

Classification

No attempt has been made to classify the industries which are related to each major industrial group. The list would be too lengthy and complex were it to cover all 143 major industrial groups itemized by the United States Census Bureau. Two studies, however, have already attempted to indicate such relationships. The publication Industrial Uses of Selected Timber Species is a specific aid in determining industries related to the wood and paper industries. In addition, the publication Industrial Uses of Selected Minerals aids in the determination of industries related to the mineral

industry. Basic Industrial Location Factors may also be of general value in determining related industries. These three publications are by the United States Department of Commerce.

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ECONOMIC STABILITY

Evaluation

Industries usually prefer to locate in communities already in existence and firmly established. Likewise, communities will favor sound and prospering industries. Unstable industries merit little consideration. About 50 per cent of the firms that started manufacturing between 1946 and 1948 were out of business two years later, according to the Federal Reserve Bank of Chicago. These failures, however, were usually caused by short-run factors such as faulty management, insufficient capital reserves, or canceled war contracts. They do not indicate the over-all stability of the industrial groups they represent. Primary consideration should be given instead to the long-run stability of industries.

Most growing communities desire a well-balanced economy with reasonable protection against the long-run cyclical or episodic business fluctuations. Past records have shown, however, that manufacturing industry in itself, is not particularly stable in the long run. Highly industrialized areas have shown a marked sensitivity to the vagaries of the business cycle.¹

¹ John Shirer, "What A Community Looks For in New Industry," Arizona Economic and Business Review, Vol. 1, No. 6, June, 1952, p. 5.

This does not mean that industrialization cannot bring increased stability to communities. Many areas that are industrially underdeveloped, and whose present economies are unbalanced, may be considerably stabilized by industrialization. This is especially true if incoming industries represent a variety of products, markets, and types of operation.

It is not desirable that an industry be so sensitive to fluctuations of the business cycle that it might close down at the first signs of an economic recession. The economic stability of an industry is reflected primarily through its employment pattern. In the depression years of the early 1930's, for instance, the musical instruments industry was forced to reduce its employment by 67.4 per cent; whereas the soap and related products industry continued to operate with only a 1.4 per cent reduction in employment.

Sudden or prolonged employment lay-offs are a threat to local economy, disrupting sales expectations of merchants and forcing charge accounts, time payments, and property taxes to become delinquent. Thus it is desirable for communities to encourage industries with comparatively stable employment patterns for recession as well as prosperity.

This observation is especially applicable to smaller communities. Large cities can better utilize economically sensitive

industries since they constitute a relatively small portion of total employment. Such concerns in smaller communities, however, where they constitute a sizable portion of employment, may be disastrous in an economic recession.

Classification

Table II classifies each major and submajor industrial group by percentage of employment decrease accruing to each group from 1929 to 1931 or 1933, whichever was greatest. Industrial groups are ranked in order of decreasing employment stability. No attempt was made to account for employment decreases caused by technological improvements or other similar variable factors.

TABLE II
ECONOMIC STABILITY

Major and Submajor Industrial Groups	Pct. Decrease in Employment 1929 to 1931 or 1933
Soap and related products	1.4
Paper bags	2.8
Cigarettes	4.8
Chewing and smoking tobacco	5.6
Bakery products	9.2
Sugar	10.0
Outerwear	10.0
Footwear (except rubber)	11.8
Meat products	12.1
Knitting mills	13.1
Grain mill products	13.5
Food and kindred products	13.8
<u>Tobacco manufactures</u>	14.1
Leather gloves and mittens	14.1
<u>Leather and leather products</u>	14.3
Petroleum refining	14.6
Women's clothing	14.8
Rubber industries, n.e.c.	14.9
Medical instruments and supplies	15.2
Pulp, paper, and paperboard	15.5
Leather tanning and refining	15.8
Periodicals	15.9
Dairy products	16.2
Paperboard containers and boxes	16.2
Beverages	16.4
Men's and boys' suits and coats	17.6
<u>Chemicals and allied products</u>	17.6
<u>Woolen and worsted manufactures</u>	18.4
Pulp goods and miscellaneous paper products	18.6
<u>Petroleum and coal products</u>	19.3
Paints and allied products	19.5
Drugs and medicines	19.9

TABLE II (Continued)

Major and Submajor Industrial Groups	Pct. Decrease in Employment 1929 to 1931 or 1933
Cigars	20.5
Cotton and rayon broad-woven fabrics	20.8
Canning, preserving, and freezing	21.1
Confectionery and related products	21.8
Hats (except cloth and millinery)	22.0
Industrial chemicals	22.0
Handbags and small leather goods	22.1
Undergarments	22.9
Envelopes	23.1
Lithographing	23.2
Optical instruments and lenses	23.7
Toys and sporting goods	24.7
Miscellaneous leather goods	25.0
Tin cans and other tinware	26.0
<u>Printing and publishing industries</u>	26.5
Miscellaneous food preparations	27.0
Glass products	28.1
Fabricated wire products	28.4
Wooden containers	28.8
Miscellaneous petroleum and coal products	28.9
Metal stamping and coating	29.0
Millinery	29.8
Books	30.5
Photographic equipment	30.8
Blast furnaces and steel mills	31.1
Footwear cut stock	31.6
Motorcycles and bicycles	31.8
Bookbinding and related industries	31.9
Pottery and related products	33.3
Secondary nonferrous metals	33.3
<u>Rubber products</u>	33.4
<u>Textile mill products and apparel</u>	34.1
Carpets and rugs	34.9
Office and store machines	35.1

TABLE II (Continued)

Major and Submajor Industrial Groups	Pct. Decrease in Employment 1929 to 1931 or 1933
Miscellaneous nonmetallic mineral products . . .	35.3
Coke and by-products	36.2
Men's and boys' furnishings	37.2
Fertilizers	37.3
<u>Iron and steel products</u>	37.5
Rubber footwear	38.1
Industrial leather belting	38.5
Cutlery, hand tools, and hardware	39.4
Lumber and timber basic products	39.5
Heating and plumbing equipment	40.1
Tires and inner tubes	40.9
Gum and wood chemicals	43.5
Watches and clocks	43.5
Ships and boats	43.9
Jewelry and silverware	44.7
<u>Furniture and fixtures</u>	45.4
<u>Stone, clay, and glass products</u>	45.5
Motor vehicles and equipment	45.6
Aircraft and parts	46.9
<u>Transportation equipment</u>	47.3
<u>Lumber and products (except furniture)</u>	47.6
Fur goods	48.1
<u>Paper and allied products</u>	50.0
Vegetable and animal oils	50.0
<u>Machinery (except electrical)</u>	51.4
Luggage	55.3
Lighting fixtures	55.5
Millwork and related products	55.9
Cut-stone and stone products	56.5
Concrete and plaster products	56.6
<u>Electrical machinery</u>	60.2
<u>Structural metal products</u>	61.0
Engines and tractors	62.5
Scientific instruments	63.3

TABLE II (Continued)

Major and Submajor Industrial Groups	Pct. Decrease in Employment 1929 to 1931 or 1933
Structural clay products	65.9
Railroad equipment	67.3
Musical instruments and parts	67.4

Source: Based on data from Solomon Fabricant, Employment in Manufacturing, 1899-1939, National Bureau of Economic Research Inc., New York, New York, 1942, pp. 179-214.

SEASONALITY OF EMPLOYMENT

Evaluation

Some industries, because of the nature of their products, employ workers only sporadically throughout the year; that is, employment levels in these industries vary from season to season. For instance, the fruit and vegetable canning industry has a large volume of activity and employment during the summer harvesting season, but has a relatively inactive period and lower employment for the remainder of the year.¹ Such industries are known as "seasonal industries."

There are two major causes for seasonal irregularities in industry; namely, climate and custom. Climate causes seasonal variations in two ways. First, climatic conditions control the supply of many raw materials to industries which use them. This is especially noticeable in industries using perishable crops, as in the canning industry. Second, climatic conditions control the demand for certain products during the year. Seasonal activities in the

¹See Table III, "Seasonality of Employment," p. 29.

manufacture of ice, beverages, and ice cream are representative of the effects of a climate-controlled demand.¹

Customs manifest their effect on certain industries through the recurrence of holidays, typified by Christmas and Easter, or other similar periods such as "spring house-cleaning time" and "vacation time." Each of these periods is responsible for a stimulated demand for certain products. The exchange of gifts at Christmas time is one of the most important causes of fall activity in many industries such as toy and jewelry manufacturing. Easter augments the demand for confectionery, millinery, clothing, and other articles appropriate to the season.²

The causes of seasonal irregularities are of no more significance than are the effects such irregularities have on a community which derives a substantial share of its economic wealth from seasonal industries. Seasonal fluctuations in industry possibly produce more unemployment in the long run than do cyclical variations.³

Unless some provision is made for workers who find themselves jobless at the end of a seasonal activity, both the workers and the community will suffer. The workers will lose earnings and

¹ C. Saunders, Seasonal Variations in Employment, Longmans, Green and Co., New York, 1936, pp. 41-52.

² Ibid.

³ Ibid.

be annually confronted with a recurrent drain on any savings accumulated during the work period. The community may lose or be delayed in receiving tax revenues, or lose potential home owners because of unassured incomes for local workers. In addition, because wages paid in seasonal industries may be insufficient to permit the accumulation of money reserves by workers, communities may be confronted with families who require social aid.

If seasonal industries predominate in an area's economy, other industries less subject to seasonal fluctuations should be encouraged. It is even more desirable to encourage industries that will employ personnel from existing industries in off-seasonal jobs. This coordination of employment between industries is called "dovetailing."

Dovetailing takes place when two or more industries cooperate to provide more steady employment for workers by interchanging employees during annual complementary peak and slump periods of employment.

Dovetailing of employment in communities may achieve not only stabilization of employment but also a more complete utilization of local labor markets. Dovetailing of seasonal employment will not necessarily solve a community's unemployment problem, but if it eliminates seasonal unemployment, it helps employees attached to

seasonal industries to approximate "full time" employment, increase annual earnings, and make possible a higher standard of living. Dovetailing may also be of benefit to industries by reducing their unemployment contribution rates to employment compensation funds.

There are five fundamental conditions which must be considered in dovetailing of employment by industries.¹ (1) The production periods of the industries must be high and low at approximately opposite seasons; that is, industries employing relatively high numbers of personnel during one season of the year must be dovetailed with industries employing a high number of personnel during other seasons of the year. (2) The degree of seasonal employment and unemployment must be approximately equal between industries to be dovetailed; that is, industries releasing a certain number of workers during a particular season must be dovetailed with industries that require approximately the same number of additional workers for the same season. (3) Wage rates between the industries being dovetailed should be similar. This would tend to reduce the possibility of friction arising over wage policies between the industries and employees. (4) The skill requirements between dovetailed industries should be similar. The employment of personnel in two or more industries has its limitations. Practically, it may be limited to low- or unskilled workers. Most semiskilled or skilled workers

¹Sam Arnold, Planned Dovetailing of Seasonal Employment, Ohio State University Research Monograph Number 35, Columbus, Ohio, 1944.

have only one skill, and it unreasonable to believe that a man might have to or more developed skills at his command. It is possible, however, that some job skills might be transferable from one industry to another. In addition, dovetailing would probably be most beneficial to unskilled workers in that they are, financially speaking, usually more in need of year-around employment. (5) Union jurisdictions must be permissive. This may be especially true where two or more different unions are involved. Complete understanding of the situation by all concerned would aid greatly in reducing the possibility of friction between workers, unions, and the industries.

Classification

The major industrial groups are classified by month of highest and lowest employment in Table III. High and low figures are listed as percentages of average annual employment for each industrial group. For instance, tobacco manufacturing the first major industrial group in Table III, has its period of highest employment in January. Employment for that month is 12 per cent higher than the average yearly employment. The average size tobacco factory has 103 employees.¹

¹ See Table X, "Size of Establishment by Number of Employees," p. 74.

No attempt has been made to account for the effects of economic unemployment or other types of work stoppage.

TABLE III
SEASONALITY OF EMPLOYMENT

Major and Submajor Industrial Groups	Mo. of Highest Employ- ment	Pct. of Increase over Avg. Yearly Employ- ment	Mo. of Lowest Employ- ment	Pct. of Decrease under Avg. Yearly Employ- ment
<u>Apparel and related</u>				
<u>products</u>	Oct.	7.3	July	6.4
Children's outerwear	Oct.	12.0	May	11.3
Fur goods	Oct.	18.6	Feb.	32.9
Men's and boys' fur- nishings	Nov.	4.3	July	7.1
Men's and boys' suits and coats	Oct.	3.6	July	4.4
Millinery	Mar.	13.4	[June [Nov.	12.7] 12.7]
Women's and children's undergarments	Nov.	10.3	July	6.0
Women's and misses' outerwear	Oct.	8.9	May	10.2
Miscellaneous apparel and accessories	Nov.	12.6	June	9.5
Miscellaneous fabricated textiles	Nov.	8.3	May	6.0
<u>Chemicals and allied</u>				
<u>products</u>	Oct.	1.3	June	2.7
Drugs and medicines	Mar.	2.0	Dec.	2.9
Fertilizers	Mar.	18.2	July	15.6
Gum and wood chemicals .	June	2.8	Dec.	1.5
Industrial inorganic chemicals	Dec.	2.2	Jan.	4.3
Industrial organic chemicals	Apr.	12.0	June	3.4
Paints and allied products.	Aug.	0.8	Jan.	2.4
Soap and related products.	Nov.	2.5	Aug.	1.4

TABLE III (Continued)

Major and Submajor Industrial Groups	Mo. of Highest Employ- ment	Pct. of Increase over Avg. Yearly Employ- ment	Mo. of Lowest Employ- ment	Pct. of Decrease under Avg. Yearly Employ- ment
Vegetable and animal oils	Oct.	15.3	May	10.6
Miscellaneous chemical products	Oct.	2.1	June	2.3
<u>Electrical machinery</u>	Feb.	4.3	July	4.1
Communication equipment .	Feb.	8.9	May	6.5
Electrical appliances	Dec.	7.4	Aug.	4.1
Electrical-industries apparatus	Feb.	1.1	July	1.6
Electric lamps	Jan.	3.7	Aug.	2.7
Engine electrical equip- ment	Feb.	7.1	Dec.	7.1
Insulated wire and cable .	Feb.	7.1	Aug.	5.4
Miscellaneous electrical goods	Jan.	9.4	July	9.5
<u>Fabricated metal products</u> .	Dec.	2.1	July	3.1
Cutlery, hand tools, and hardware	Mar.	4.1	July	4.5
Fabricated wire products .	Mar.	3.4	May	4.0
Heating and plumbing equipment	Nov.	3.8	July	3.9
Lighting fixtures	Feb.	4.4	July	6.6
Metal stamping and coating	Dec.	2.4	July	3.9
Structural metal products .	Dec.	3.4	Jan.	3.1
Tin cans and other tinware	Sept.	8.5	Mar.	6.2
Miscellaneous fabricated metal products	Mar.	3.7	July	2.8

TABLE III (Continued)

Major and Submajor Industrial Groups	Mo. of Highest Employ- ment	Pct. of Increase over Avg. Yearly Employ- ment	Mo. of Lowest Employ- ment	Pct. of Decrease under Avg. Yearly Employ- ment
<u>Food and kindred</u>				
<u>products</u>	Sept.	14.7	Feb.	9.2
Bakery products	Oct.	2.4	Feb.	2.8
Beverages	Sept.	8.5	Feb.	7.6
Canning, preserving, and freezing	Sept.	85.7	Mar.	34.3
Confectionery and related products	Oct.	19.0	July	13.1
Dairy products	July	12.9	Dec.	11.5
Grain-mill products	Oct.	4.0	Aug.	3.3
Meat products	Dec.	9.5	Aug.	6.3
Sugar	Nov.	61.1	Feb.	28.6
Miscellaneous food preparations	Aug.	5.7	Dec.	5.8
<u>Furniture and fixtures</u> . . .				
Household furniture	Dec.	7.1	July	4.4
Office furniture	Dec.	8.3	July	5.3
Partitions and fixtures . .	Dec.	3.3	July	4.9
Public and professional furniture	Nov.	3.5	Apr.	3.1
Screens, shades, and blinds	Feb.	1.7	July	3.7
Miscellaneous furniture and fixtures	Dec.	9.4	Mar.	5.5
Oct.	1.8	July	2.9	
<u>Instruments and related</u>				
<u>products</u>	Feb.	2.3	July	1.8
Mechanical measuring instruments	Feb.	3.8	Nov.	4.2
Medical instruments and supplies	Feb.	4.3	Sept.	3.4

TABLE III (Continued)

Major and Submajor Industrial Groups	Mo. of Highest Employ- ment	Pct. of Increase over Avg. Yearly Employ- ment	Mo. of Lowest Employ- ment	Pct. of Decrease under Avg. Yearly Employ- ment
Ophthalmic goods	Jan.	9.7	Nov.	6.5
Optical instruments and lenses	Oct.	1.1	Apr.	0.9
Photographic equipment . .	Jan.	0.6	June	0.6
Scientific instruments . . .	Oct.	2.7	Jan.	3.4
Watches and clocks	Nov.	1.9	July	2.7
<u>Leather and leather products</u>	Nov.	5.4	June	5.9
Footwear (except rubber) .	Dec.	4.6	May	5.0
Footwear cut stock	Dec.	5.7	June	7.0
Handbags and small leather goods	Oct.	20.2	June	21.2
Industrial leather belting .	Mar.	7.3	Sept.	6.8
Leather gloves and mittens	Nov.	10.0	May	10.6
Leather tanning and refining	Nov.	3.2	July	3.5
Luggage	Nov.	11.1	May	8.5
Miscellaneous leather goods	Jan.	9.0	July	12.2
<u>Lumber and products, except furniture</u>	Aug.	2.5	Jan.	5.0
Lumber and timber basic products	Aug.	3.7	Jan.	7.0
Millwork and related products	Nov.	4.6	Feb.	4.3
Wooden containers	Apr.	2.5	Dec.	4.3
Miscellaneous wood products	Mar.	2.7	Aug.	1.7

TABLE III (Continued)

Major and Submajor Industrial Groups	Mo. of Highest Employ- ment	Pct. of Increase over Avg. Yearly Employ- ment	Mo. of Lowest Employ- ment	Pct. of Decrease under Avg. Yearly Employ- ment
<u>Machinery (except electrical)</u>	Apr.	1.0	July	1.7
Construction and mining machinery	Dec.	1.8	Sept.	1.1
Engines and turbines	Feb.	3.3	Nov.	2.4
General industrial ma- chinery	Mar.	1.9	July	1.9
Metalworking machinery . .	Feb.	5.0	Nov.	3.8
Office and store machines.	Dec.	7.0	July	13.4
Service and household machines	Dec.	4.6	Jan.	6.4
Special-industry ma- chinery, n.e.c.	Apr.	0.9	Jan.	1.7
Tractors and farm machinery	Dec.	5.1	Jan.	6.7
Miscellaneous machine parts	Mar.	4.0	Sept.	3.6
<u>Paper and allied products</u> .	Dec.	2.2	July	2.8
Envelopes	Dec.	1.3	July	2.8
Paper bags	Jan.	3.4	July	5.7
Paper coating and glazing .	Dec.	1.7	July	2.3
Paperboard containers and boxes	Jan.	3.0	July	4.6
Pulp, paper, and paper- board	Dec.	2.7	Jan.	2.1
Pulp goods and miscel- laneous paper products .	Dec.	2.1	July	3.4

TABLE III (Continued)

Major and Submajor Industrial Groups	Mo. of Highest Employ- ment	Pct. of Increase over Avg. Yearly Employ- ment	Mo. of Lowest Employ- ment	Pct. of Decrease under Avg. Yearly Employ- ment
<u>Petroleum and coal</u>				
<u>products</u>	Aug.	2.5	Jan.	3.0
Coke and by-products . . .	Dec.	2.1	Jan.	3.4
Paving and roofing ma- terials	Oct.	5.4	Feb.	6.8
Petroleum refining	Aug.	3.0	Apr.	2.4
Miscellaneous petroleum and coal products	Jan.	2.2	July	3.3
<u>Primary-metals industry</u> . .				
Blast furnaces and steel mills	Aug.	1.5	Jan.	2.0
Iron and steel foundries . .	Mar.	1.1	July	1.9
Nonferrous foundries	Jan.	9.6	Aug.	6.7
Nonferrous metal rolling and drawing	Jan.	10.3	July	7.9
Primary nonferrous metals	Mar.	1.5	Sept.	1.6
Secondary nonferrous metals	May	2.9	Aug.	3.5
Miscellaneous primary- metal industries	Dec.	1.9	July	1.8
<u>Printing and publishing</u>				
<u>industries</u>	Dec.	2.9	Jan.	2.2
Bookbinding and related industries	Oct.	2.0	July	2.5
Books	Dec.	1.4	Jan.	1.1
Commercial printing	Dec.	3.1	Jan.	1.5
Greeting cards	Nov.	8.1	Apr.	4.1
Lithographing	Dec.	4.2	Jan.	3.3
Newspapers	Dec.	3.4	Jan.	3.9

TABLE III (Continued)

Major and Submajor Industrial Groups	Mo. of Highest Employ- ment	Pct. of Increase over Avg. Yearly Employ- ment	Mo. of Lowest Employ- ment	Pct. of Decrease under Avg. Yearly Employ- ment
Periodicals	Dec.	3.0	June	1.6
Printing trades service industries	Dec.	2.0	Jan.	2.2
Miscellaneous publishing .	Mar.	1.2	Sept.	1.8
<u>Rubber products</u>	Jan.	5.5	July	5.8
Reclaimed rubber	Feb.	2.3	July	3.5
Rubber footwear	Feb.	9.0	July	20.9
Tires and inner tubes . . .	Jan.	4.8	Aug.	3.1
Rubber industries, n.e.c. .	Jan.	6.0	July	5.6
<u>Stone, clay, and glass products</u>	Nov.	1.7	Feb.	1.8
Cement, hydraulic	Aug.	3.3	May	7.4
Concrete and plaster products	Oct.	5.0	Jan.	8.9
Cut-stone and stone products	Oct.	6.1	June	12.9
Flat glass	Dec.	4.2	Mar.	1.6
Pottery and related products	Dec.	4.1	July	4.2
Pressed and blown glassware	Jan.	2.3	July	4.9
Products of purchased glass	Mar.	3.9	July	5.6
Structural clay products . .	Nov.	3.6	Feb.	5.8
Miscellaneous nonmetallic mineral products	Mar.	1.4	July	2.2

TABLE III (Continued)

Major and Submajor Industrial Groups	Mo. of Highest Employ- ment	Pct. of Increase over Avg. Yearly Employ- ment	Mo. of Lowest Employ- ment	Pct. of Decrease under Avg. Yearly Employ- ment
<u>Textile mill products</u>	Dec.	4.1	Aug.	3.1
Carpets and rugs	Dec.	11.0	Jan.	6.0
Cotton and rayon broad- woven fabrics	Dec.	2.5	July	2.5
Finishing textiles, except wool	Dec.	4.1	July	5.7
Hats (except cloth and millinery)	Feb.	10.7	May	5.7
Knitting mills	Dec.	7.0	July	6.5
Narrow-fabric mills	Jan.	6.1	July	7.3
Woolen and worsted manufactures	Jan.	6.3	July	7.3
Yarn and thread mill, except wool	Jan.	5.7	July	6.1
Miscellaneous textile goods	Feb.	6.6	July	7.2
<u>Tobacco manufactures</u>	[Jan. [Oct.	12.0] 12.3]	May	16.7
Chewing and smoking tobacco	Jan.	7.8	May	16.3
Cigarettes	Feb.	5.6	May	10.0
Cigars	Feb.	8.3	May	8.1
Tobacco stemming and redrying	Sept.	50.4	July	48.6
<u>Transportation equipment</u> . .	Apr.	3.9	July	4.3
Aircraft and parts	Jan.	7.4	Sept.	4.4
Motor vehicles and equipment	Dec.	3.2	May	3.6
Motorcycles and bicycles .	Dec.	5.8	Jan.	7.7
Railroad equipment	Dec.	4.0	July	2.1

TABLE III (Continued)

Major and Submajor Industrial Groups	Mo. of Highest Employ- ment	Pct. of Increase over Avg. Yearly Employ- ment	Mo. of Lowest Employ- ment	Pct. of Decrease under Avg. Yearly Employ- ment
Ships and boats	Apr.	17.2	Aug.	23.1
Transportation equip- ment, n.e.c.	Mar.	7.7	Dec.	14.3
<u>Miscellaneous manufactures</u>	Nov.	6.9	July	6.9
Costume jewelry and notions	Nov.	10.9	June	12.3
Jewelry and silverware . .	Nov.	7.5	July	8.7
Musical instruments and parts	Dec.	6.5	Jan.	6.8
Office supplies	Mar.	8.0	Aug.	7.4
Toys and sporting goods . .	Nov.	13.7	July	7.9
Plastics products, n.e.c. .	Nov.	4.3	July	4.6

Source: Based on data from 1947 Census of Manufactures, General Summary, U.S. Department of Commerce, Bureau of Census, Chapter II, "Employment and Payrolls," 1950.

COMPOSITION OF LABOR FORCE EMPLOYED

Evaluation

The composition of the labor force employed by an industry is determined primarily by the type of product and manufacturing process used. Because of the uniqueness of manufacturing operations and products, most industries vary in the sex and age ratios of personnel employed. Some industries, such as printing and publishing, employ a large amount of youthful workers. Other industries, such as leather products, employ a relatively higher proportion of elderly workers. The apparel and accessories industry uses a considerable amount of female labor. Industries such as these may serve the purpose of turning labor composition peculiarities of an area to advantage.

Factors such as an unbalanced male-female labor supply or a surplus of youthful or aged workers are problems confronting many communities. A growing number of career women and working wives has become an increasingly important factor in the labor force of some communities.¹ Modern medical advances which increase the life expectancy of workers, and outmoded retirement plans have created unemployment problems for elderly people in many

¹ A. M. Baetjer, Women in Industry, Saunders, Philadelphia, 1946.

areas.¹ Other communities are confronted with the problem of providing adequate employment opportunities to the youth of the area who are being lured elsewhere to work and live.²

The manner in which industries can be of value in solving these problems depends to a great extent on the long-range desires of the community. For instance, a community desirous of perpetuating an existing unbalanced labor composition situation should encourage industries which will employ the existing labor supply. The state of Arizona, for example, has a proportionately large number of inhabitants who have moved to the area for reasons of health or retirement. In consideration of this, Arizona is encouraging industries which can utilize these partially handicapped or aged workers, either in split shifts or to augment regular shifts during seasonal peaks.³

On the other hand, a community wishing to achieve a more balanced labor force composition should encourage industries which

¹W. T. Donahue, Earning Opportunities for Older Workers, University of Michigan Press, Ann Arbor, Michigan, 1955.

²National Manpower Council, A Policy for Skilled Manpower, Columbia University Press, New York, 1954, pp. 76-158.

³N. M. Ringstrom and L. W. Casaday, "The Community Investment in New Industry," Arizona Business and Economic Review, University of Arizona, Vol. 1, No. 6, June, 1953, p. 3.

will attract and employ from other areas the kinds of personnel that will help to achieve the balance desired.

Planning to provide employment opportunities for an existing labor composition is not too difficult a task, as most industries are more partial to locating in an area which already has the kind of labor composition that is best suited to the industry. Planning to provide employment opportunities for a more balanced future labor composition, however, might prove to be a more challenging proposition. One of the most difficult considerations involved in the problem of determining what is a desirable labor force composition. The social and economic complexities of this problem prohibits closer examination in this study. It may be stated, however, that communities which do have an unbalanced labor force composition might benefit greatly by encouraging appropriate industries which will tend to alleviate the particular situation.

Classification

Table IV ranks in order the employment of female labor in various industrial groups.

Table V ranks in order the industrial groups employing youthful workers. It is generally considered that twenty-one years of age places workers in an adult classification. The maximum age

of nineteen years was selected on the basis that it was the age group closest to twenty-one for which statistics were available.

Table VI ranks in order the employment of elderly workers in various industrial groups.

TABLE IV
COMPOSITION OF LABOR FORCE EMPLOYED:
FEMALE EMPLOYEES, BY INDUSTRY

Major and Submajor Industrial Groups	Pct. of Total Em- ployees-- Female
Apparel and accessories	72.4
<u>Apparel and other fabricated textiles</u>	71.0
Knitting mills	62.3
Miscellaneous fabricated textile products	55.0
<u>Tobacco manufacturers</u>	53.7
Confectionery and related products	50.0
Footwear (except rubber)	49.6
Watches and clocks and clock devices	47.3
Leather products, except footwear	45.8
<u>Leather and leather products</u>	43.4
<u>Textile mill products</u>	42.5
Yarn, thread, and fabric mills	41.0
Canning and preserving fruits, vegetables, and sea foods	39.6
<u>Miscellaneous manufacturers</u>	37.0
Miscellaneous textile mill goods	36.1
Pottery and related products	36.0
<u>Electrical machinery, equipment, and supplies</u>	35.4
Miscellaneous paper and pulp	35.2
Paperboard containers and boxes	34.0
<u>Professional and photographic equipment and watches</u>	32.9
Not specified food industries	32.7
Carpets, rugs, and other floor coverings	30.1
Professional equipment and supplies	30.0
Photographic equipment and supplies	29.2
<u>Rubber products</u>	25.0
<u>Printing, publishing, and allied industries</u>	24.9
Glass and glass products	24.6
Office and store machines and devices	23.9
Drugs and medicines	23.9
Synthetic fibers	23.7

TABLE IV (Continued)

Major and Submajor Industrial Groups	Pct. of Total Em- ployees-- Female
<u>Paper and allied products</u>	23.7
Miscellaneous food preparations and kindred products . .	23.2
Bakery products	23.0
<u>Food and kindred products</u>	23.0
Dairy products	20.4
Meat products	20.4
<u>Chemicals and allied products</u>	19.9
<u>Fabricated nonferrous metal</u>	19.6
<u>Fabricated metal products</u>	17.6
<u>Stone, clay, and glass products</u>	17.6
<u>Not specified metal industries</u>	17.4
<u>Fabricated steel products</u>	17.3
Paints, varnishes, and related products	17.1
Miscellaneous chemicals and allied products	17.1
Miscellaneous wood products	17.0
Dyeing, finishing textiles, except knit goods	16.8
Miscellaneous nonmetallic, mineral, and stone products .	16.0
<u>Furniture and fixtures</u>	15.9
Leather: tanned, curried, finished	13.9
<u>Machinery (except electrical)</u>	13.6
<u>Grain mill products</u>	13.3
Miscellaneous machinery	13.0
Aircraft and parts	12.8
Motor vehicles and equipment	12.5
Beverages	12.4
Pulp, paper, and paperboard mills	12.0
<u>Transportation equipment</u>	11.8
<u>Petroleum refining</u>	11.2
<u>Structural clay products</u>	11.1
<u>Primary nonferrous industries</u>	11.0
Railroad and miscellaneous transportation equipment . .	10.9
Tractors and agricultural machinery	10.9
<u>Petroleum and coal products</u>	10.7
<u>Primary metals industry</u>	6.5

TABLE IV (Continued)

Major and Submajor Industrial Groups	Pct. of Total Em- ployees-- Female
Miscellaneous petroleum and coal products	6.2
Ships and boats, building and repairing	6.2
Other primary iron and steel industries	5.9
Blast furnaces, steel works, and rolling mills	5.4
Cement, concrete, gypsum, and plaster products	5.1
<u>Lumber and wood products, except furniture</u>	<u>4.6</u>
Sawmills, planing mills, and millwork	3.5
Logging	1.1

Source: Based on data from "Industrial Characteristics,"
Census of Population, U.S. Department of Commerce, Bureau of the
 Census, 1950.

TABLE V
COMPOSITION OF LABOR FORCE EMPLOYED:
YOUTHFUL EMPLOYEES, BY INDUSTRY

Major and Submajor Industrial Groups	Pct. of Total Em- ployees-- Under 20 Years Old
<u>Printing, publishing, and allied industries</u>	15.1
<u>Footwear, except rubber</u>	8.5
<u>Logging</u>	8.2
<u>Leather and leather products</u>	7.5
<u>Knitting mills</u>	7.2
<u>Sawmills, planing mills, and millwork</u>	7.1
<u>Lumber and wood products, except furniture</u>	7.1
<u>Leather products, except footwear</u>	7.0
<u>Bakery products</u>	7.0
<u>Miscellaneous fabricated textile products</u>	6.9
<u>Food and kindred products</u>	6.5
<u>Apparel and other fabricated textile products</u>	6.4
<u>Apparel and accessories</u>	6.3
<u>Dairy products</u>	6.3
<u>Watches and clocks and clock devices</u>	6.2
<u>Paperboard containers and boxes</u>	6.2
<u>Confectionery and related products</u>	6.1
<u>Furniture and fixtures</u>	6.0
<u>Miscellaneous manufacturers</u>	5.7
<u>Miscellaneous paper and pulp products</u>	5.6
<u>Miscellaneous wood products</u>	5.5
<u>Miscellaneous textile mill goods</u>	5.5
<u>Not specified food industries</u>	5.3
<u>Drugs and medicines</u>	5.2
<u>Beverages</u>	5.0
<u>Textile mill products</u>	4.8
<u>Leather: tanned, curried, and finished</u>	4.7
<u>Pottery and related products</u>	4.6
<u>Canning and preserving, fruits, vegetables, and sea foods</u>	4.6

TABLE V (Continued)

Major and Submajor Industrial Groups	Pct. of Total Em- ployees-- Under 20 Years Old
<u>Paper and allied products</u>	4.5
Yarn, thread, and fabric mills	4.4
<u>Electrical machinery, equipment, and supplies</u>	4.3
<u>Structural clay products</u>	4.3
Grain mill products	4.3
Glass and glass products	4.2
Fabricated nonferrous metal	4.1
Cement, concrete, gypsum, and plaster products	4.1
<u>Professional and photographic equipment and supplies</u>	4.0
<u>Stone, clay, and glass products</u>	4.0
Paints, varnishes, and related products	4.0
Miscellaneous food preparations and kindred products	4.0
Carpets, rugs, and other floor coverings	3.9
Not specified metal industries	3.7
Dyeing and finishing textiles, except knit goods	3.7
Professional equipment and supplies	3.6
<u>Tobacco manufacturers</u>	3.6
Meat products	3.6
Office and store machines and devices	3.5
Tractors and agricultural machinery	3.4
<u>Fabricated metal products</u>	3.4
Photographic equipment and supplies	3.3
Fabricated steel products	3.3
<u>Chemicals and allied products</u>	3.0
Pulp, paper, and paperboard mills	3.0
Miscellaneous nonmetallic mineral and stone products	2.9
<u>Rubber products</u>	2.9
<u>Machinery (except electrical)</u>	2.8
Motor vehicles and equipment	2.7
Miscellaneous petroleum and coal products	2.7
Miscellaneous chemicals and allied products	2.7
Synthetic fibers	2.5
Miscellaneous machinery	2.4

TABLE V (Continued)

Major and Submajor Industrial Groups	Pct. of Total Em- ployees-- Under 20 Years Old
<u>Transportation equipment</u>	2.2
Primary nonferrous industries	2.2
Other primary iron and steel industries	2.0
Blast furnaces, steel works, and rolling mills	2.0
Primary metals industry	2.0
Railroad and miscellaneous transportation equipment . .	1.6
Aircraft and parts	1.3
<u>Petroleum and coal products</u>	1.3
Petroleum refining	1.1
Ships and boats, building and repairing	1.0

Source: Based on data from "Industrial Characteristics,"
Census of Population, U.S. Department of Commerce, Bureau of the
 Census, 1950.

TABLE VI
COMPOSITION OF LABOR FORCE EMPLOYED:
AGED EMPLOYEES, BY INDUSTRY

Major and Submajor Industrial Groups	Pct. of Total Em- ployees-- Over 64 Years Old
Miscellaneous wood products	6.2
Leather: tanned, curried, and finished	5.8
Leather products, except footwear	5.0
Carpets, rugs, and other floor coverings	4.5
<u>Furniture and fixtures</u>	4.4
Railroad and miscellaneous transportation equipment . .	4.3
Miscellaneous nonmetallic mineral and stone products .	4.2
Pottery and related products	4.2
Other primary iron and steel industries	4.1
<u>Leather and leather products</u>	4.1
Dyeing, finishing textiles, except knit goods	4.1
Canning and preserving fruits, vegetables, and sea foods	4.1
Miscellaneous machinery	4.0
Structural clay products	4.0
<u>Printing, publishing, and allied industries</u>	4.0
Sawmills, planing mills, and millwork	3.9
<u>Lumber and wood products, except furniture</u>	3.9
<u>Miscellaneous manufacturers</u>	3.8
<u>Machinery (except electrical)</u>	3.8
Miscellaneous petroleum and coal products	3.8
<u>Stone, clay, and glass products</u>	3.7
Grain mill products	3.7
Footwear, except rubber	3.6
<u>Tobacco manufacturers</u>	3.6
Miscellaneous food preparations and kindred products .	3.6
Paints, varnishes, and related products	3.5
Office and store machines and devices	3.4
Glass and glass products	3.4
Fabricated steel products	3.3

TABLE VI (Continued)

Major and Submajor Industrial Groups	Pct. of Total Em- ployees-- Over 64 Years Old
Cement, concrete, gypsum, and plaster products	3.3
Miscellaneous paper and pulp products	3.3
Confectionery and related products	3.3
<u>Fabricated metal products</u>	3.2
<u>Primary metals industry</u>	3.2
Miscellaneous textile mill goods	3.2
Beverages	3.2
Professional equipment and supplies	3.1
Apparel and accessories	3.1
<u>Apparel and other fabricated textile products</u>	3.1
<u>Tractors and agricultural machinery</u>	3.0
Fabricated nonferrous metal products	3.0
Primary nonferrous industries	3.0
<u>Paper and allied products</u>	3.0
<u>Food and kindred products</u>	3.0
Logging	3.0
Not specified metal industries	2.9
Pulp, paper, and paperboard mills	2.9
Miscellaneous fabricated textile products	2.9
<u>Textile mill products</u>	2.9
Not specified food industries	2.9
Ships and boats, building and repairing	2.8
Blast furnaces, steel works, and rolling mills	2.8
Motor vehicles and equipment	2.7
Paperboard containers and boxes	2.7
Yarn, thread, and fabric mills	2.7
Bakery products	2.6
<u>Professional and photographic equipment and watches</u> . .	2.5
<u>Transportation equipment</u>	2.5
Drugs and medicines	2.5
<u>Rubber products</u>	2.4
Dairy products	2.4
Meat products	2.3

TABLE VI (Continued)

Major and Submajor Industrial Groups	Pct. of Total Em- ployees- Over 64 Years Old
Watches and clocks and clock devices	2.2
Miscellaneous chemicals and allied products	2.2
<u>Chemicals and allied products</u>	2.2
Knitting mills	2.1
<u>Electrical machinery, equipment, and supplies</u>	1.5
Photographic equipment and supplies	1.4
Aircraft and parts	1.3
<u>Petroleum and coal products</u>	1.2
Petroleum refining	0.9
Synthetic fibers	0.8

Source: Based on data from "Industrial Characteristics,"
Census of Population, U.S. Department of Commerce, Bureau of the
 Census, 1950.

LABOR SKILLS EMPLOYED

Evaluation

The present trend toward automation of industrial production, as well as mechanization of office operations, will probably eliminate the need for many workers who now perform variously specialized and routine jobs. In addition, greatly increased capital investment per worker will increase the risks of using workers with limited training. These two factors will increase demands for highly trained workers in industries.¹

A high ratio of such trained workers is a desirable trait of the labor force in most communities, as it usually results in larger payrolls and higher average earnings. Employment mainly of untrained labor usually tends to lower the general level of earnings in a community.

Most communities would also benefit by the development of industries that require a great variety of jobs and occupational skills. Industries such as these would provide a wider range of job

¹ National Manpower Council, A Policy for Skilled Manpower, Columbia University Press, New York, 1954, pp. 101-105.

opportunities for residents not now employed. Potential employment might also be provided for workers whose employment in present occupations is seasonal or intermittent. Diversity of occupational skills might also provide higher-paid jobs for some local workers. These in turn would promote larger consumer purchases and more business profits in general.

Less generally appreciated in communities are industries which employ or require the services of professional people and scientists. Industrial research laboratories and engineering firms are among the better prospects. Industries such as these should be encouraged in areas which can provide higher-education facilities. For instance, New England, which lost more than a quarter-million textile jobs to other areas in thirty-four years, is now recouping its losses with new electronics industries. Principal attractions for these industries have been the availability of skilled labor and research facilities, such as Massachusetts Institute of Technology and the American Research and Development Corporation.¹ Aside from purely economic considerations, professional and other highly skilled workers are likely to become home owners and civic leaders, and generally contribute to the social and cultural development of a community.

¹ "Wanted: New Industry," Time, September 26, 1955, p. 88.

A further consideration is that the industrial composition of an area also sets the pattern of labor skill distribution. A new industry in an area will either attract the necessary skills from other areas or convert existing skills to fit its needs. The implication of this is that communities confronted with a predominantly untrained labor force need not be so burdened forever. Substantial improvement in the training level of a labor force can be accomplished by the introduction of appropriate skill-dependent industries in the area.

Classification

Table VII lists by percentages the composition of eight major occupations by major industrial groups.

TABLE VII
LABOR SKILLS EMPLOYED

Major and Submajor Industrial Groups	Per Cent of Total Workers in Industry ^a							
	A	B	C	D	E	F	G	H
<u>Apparel and other fabricated</u>								
<u>textiles</u>	1	5	7	2	6	77	1	1
Apparel and accessories	1	4	6	2	6	79	1	1
Miscellaneous fabricated								
textile products	2	7	9	3	9	66	1	3
<u>Chemicals and allied products</u> .	12	6	15	5	16	33	3	10
Drugs and medicines	18	8	22	8	11	26	3	4
Paints, varnishes, and related								
products	10	8	19	7	11	37	2	6
Synthetic fibers	8	2	7	0	21	53	2	7
Miscellaneous chemicals and								
allied products	12	6	15	5	16	32	3	11
<u>Electrical machinery, equip-</u>								
<u>ment, and supplies</u>	9	3	15	2	18	47	2	4
<u>Fabricated metal products</u>	5	5	12	2	24	43	2	7
Fabricated nonferrous metal								
products	4	8	11	2	32	38	1	4
Fabricated steel products . . .	5	5	12	3	23	43	2	7
Not specified metal industries .	5	7	11	2	25	39	2	6
<u>Food and kindred products</u> . . .	3	8	11	5	15	45	3	10
Bakery products	1	7	8	7	32	39	3	3
Beverage industries	3	9	11	9	14	41	2	11
Canning and preserving fruits,								
vegetables, and sea foods . .	3	6	10	2	12	51	2	14
Confectionery and related								
products	2	5	11	5	8	61	3	5
Dairy products	4	9	14	3	10	49	2	9
Grain mill products	3	11	13	5	15	34	3	16

TABLE VII (Continued)

Major and Submajor Industrial Groups	Per Cent of Total Workers in Industry ^a							
	A	B	C	D	E	F	G	H
Meat products	2	6	11	5	8	53	2	13
Miscellaneous food prepara- tions and kindred products . .	5	9	11	5	14	39	2	15
Not specified food industries .	11	9	17	7	13	30	4	9
<u>Furniture and fixtures</u>	2	5	8	2	26	50	1	6
<u>Leather and leather products . .</u>	1	3	8	2	6	76	1	3
Footwear (except rubber)	1	2	8	1	6	79	1	2
Leather products (except footwear)	2	6	7	3	7	72	1	3
Leather: tanned, curried, and finished	2	4	8	1	10	63	1	11
<u>Lumber and wood products, except furniture</u>	1	6	4	1	10	38	1	39
Logging, sawmills, planing mills, and millwork	1	4	1	0	6	10	1	77
Miscellaneous wood products . .	1	6	4	1	11	45	1	31
<u>Machinery (except electrical) . .</u>	7	5	14	2	31	35	2	4
Agricultural machinery and tractors	6	4	15	2	26	38	2	7
Office and store machines	8	5	17	6	23	39	1	1
Miscellaneous machinery	7	5	13	2	33	34	2	4
<u>Paper and allied products</u>	3	4	11	2	15	53	2	10
Paperboard containers and boxes	2	5	10	3	13	57	1	8
Pulp, paper, and paperboard mills	4	3	9	1	16	52	2	13
Miscellaneous paper products . .	4	6	16	4	13	48	2	7

TABLE VII (Continued)

Major and Submajor Industrial Groups	Per Cent of Total Workers in Industry ^a							
	A	B	C	D	E	F	G	H
<u>Petroleum and coal products</u> . .	14	6	17	2	21	28	2	10
Petroleum refining	15	6	18	2	22	26	2	9
Miscellaneous petroleum and coal products	6	7	9	5	18	34	2	19
<u>Primary-metals industry</u>	4	2	10	1	29	34	2	18
Blast furnaces, steel works, and rolling mills	4	2	10	1	30	30	2	21
Other primary iron and steel foundries	3	3	7	1	31	36	2	17
Primary nonferrous industries.	5	3	11	1	23	41	3	13
<u>Printing and publishing industries</u>	10	8	18	15	35	12	1	1
<u>Professional and photographic equipment and watches</u>	10	5	16	3	22	40	2	2
Photographic equipment and supplies	14	3	18	2	19	38	2	4
Professional equipment and supplies	10	6	17	3	25	35	2	2
Watches, clocks, and clock- work-operated devices	6	8	12	1	13	55	2	3
<u>Rubber products</u>	5	4	14	2	14	52	3	6
<u>Stone, clay, and glass products</u> .	4	5	9	2	15	46	2	17
Cement, concrete, gypsum, and plaster products	4	8	7	2	18	39	1	21
Glass and glass products	4	3	11	2	14	53	2	11
Pottery and related products . .	5	3	7	1	9	62	1	12
Structural clay products	4	5	7	1	13	36	1	33
Miscellaneous nonmetallic and stone mineral products	6	7	12	2	21	38	2	11

TABLE VII (Continued)

Major and Submajor Industrial Groups	Per Cent of Total Workers in Industry ^a							
	A	B	C	D	E	F	G	H
<u>Textile mill products</u>	2	3	6	1	10	71	3	4
Carpets, rugs, and other floor coverings	4	3	10	1	12	59	2	9
Dyeing and finishing textiles, except knit goods	3	3	10	1	11	65	2	5
Knitting mills	1	3	6	1	8	79	1	1
Yarn, thread, and fabric mills.	1	2	5	1	11	73	2	5
Miscellaneous textile mill products	2	6	11	3	9	62	2	5
<u>Tobacco manufacturers</u>	1	4	6	2	8	68	3	8
<u>Transportation equipment</u>	7	2	12	1	29	42	2	5
Aircraft and parts	15	2	15	0	36	29	2	1
Motor vehicles and equipment .	4	2	11	1	23	51	2	6
Ships and boats, building and repairing	5	3	10	0	54	18	2	8
Railroad and miscellaneous transportation equipment . . .	7	3	14	1	30	35	3	7
<u>Miscellaneous manufacturers</u> . .	3	8	12	4	17	51	2	3

- ^a A = professional, technical, and kindred workers.
 B = managers, officials, and proprietors.
 C = clerical and kindred workers.
 D = sales workers.
 E = craftsmen, foremen, and kindred workers.
 F = operatives and kindred workers.
 G = service workers.
 H = laborers.

Source: Based on data from "Industrial Characteristics,"
Census of Population, U.S. Dept. of Commerce, Bureau of the Cen-
 sus, 1950.

PERSONNEL POLICIES AND WAGE RATES

Evaluation

Modern management has had many advocates of personnel policies that stress good employee relations. This factor may be taken as a rather reliable indicator of whether management has kept abreast of the times. Such matters as effective employee counseling and supplementary benefits, including recreational facilities, group insurance, and retirement plans, reflect quite accurately the degree to which an employer feels a community responsibility.

Many industries have inaugurated training programs of their own. In such cases, employees are given time off during working hours to attend school. Thousands of workers are annually given rudimentary training of one type or another. The educational level of a community stands to rise both by added educational interest and by immigration of workers from other areas. These training programs are also of benefit to the industries in that they serve to increase the transferability of workers within the plant. It is now considered good management to train workers so that they may be shifted from one job to another as the market demands changes in products or new technology creates new methods of production.

A community usually will have a more favorable attitude toward industries known to have had good relations with labor. Any concern with a long history of labor strife will be regarded as a doubtful community prospect. Areas which are relatively undeveloped industrially are typically characterized by congenial relations between workers and management (see "Size of Establishment," p. 72). As the working force becomes more industrialized a greater incidence of labor disputes may be expected to occur.¹ This aspect of industrialization can be minimized, however, by devoting some community attention to the character of the labor force likely to be employed or imported, and to the attitude and policy of the management toward its employees, particularly with regard to wage rates.

An employer in search of substandard wages should not be regarded as a good industrial prospect. Payment of fair wages provides the best assurance of a quality market. Also, it is against such a background that a community may anticipate a high ratio of home ownership and a general high level of business activity.

¹ N. M. Ringstrom and L. W. Casaday, "The Community Investment in New Industry." Arizona Business and Economic Review, University of Arizona, June, 1952, p. 4.

Classification

Table VIII lists annual wages and salaries per employee by major industrial groups. Wages and salaries per employee for such major industrial groups are recorded by percentage of wages and salaries per employee for all industries. The average wage and salary per employee for all industries was \$2,777. No attempt was made to consider loss of wages due to work stoppages or other factors that may have affected statistics.

TABLE VIII

AVERAGE ANNUAL WAGE AND SALARY, BY INDUSTRY, 1947

Major and Submajor Industrial Groups	Pct. of Avg. Annual Wages for All Industries per Employee ^a
Fur goods	152.5
Printing trades service industries	148.4
Lithographing	132.5
Petroleum refining	132.3
<u>Petroleum and coal products</u>	125.6
Periodicals	123.4
Metalworking machinery	122.3
Tires and inner tubes	121.7
Soaps and related products	120.0
Paints and allied products	119.4
Reclaimed rubber	119.2
Miscellaneous primary metal industries	118.8
Engines and turbines	115.6
Aircraft and parts	115.4
Partitions and fixtures	115.3
Miscellaneous petroleum and coal products	114.9
<u>Printing and publishing industries</u>	114.6
General industrial machinery	114.4
Special industry machinery, n.e.c.	114.3
Newspapers	114.3
Blast furnaces and steel mills	114.2
Motor vehicles and equipment	113.4
<u>Transportation equipment</u>	113.4
Industrial organic chemicals	113.2
Paper coating and glazing	112.8
Ships and boats	112.5
Industrial inorganic chemicals	112.5
Construction and mining machinery	112.4
Structural metal products	112.1
Railroad equipment	112.1
<u>Machinery (except electrical)</u>	111.9

TABLE VIII (Continued)

Major and Submajor Industrial Groups	Pct. of Avg. Annual Wages for All Industries per Employee ^a
<u>Primary metals industry</u>	111.8
Office and store machines	111.6
Commercial printing	111.5
Flat glass	111.1
Coke and by-products	111.0
Secondary nonferrous metals	110.7
Pulp, paper, and paperboard	110.6
Jewelry and silverware	110.0
Nonferrous foundries	109.7
Photographic equipment	109.2
Scientific instruments	109.0
<u>Chemicals and allied products</u>	109.0
Rubber products	108.9
Paving and roofing materials	108.5
Service and household machines	107.9
Miscellaneous fabricated metal products	107.8
Nonferrous metal rolling and drawing	107.1
Primary nonferrous metals	106.9
Iron and steel foundries	106.9
Beverages	106.4
Leather tanning and refining	105.9
Electrical industries apparatus	105.4
Miscellaneous publishing	105.3
Motorcycles and bicycles	105.3
Miscellaneous machine parts	105.3
Mechanical measuring instruments	105.3
<u>Fabricated metal products</u>	105.1
Heating and plumbing equipment	104.8
Drugs and medicines	104.3
Optical instruments and lenses	104.1
Tractors and farm machinery	103.9
Miscellaneous chemical products	103.6
<u>Instruments and related products</u>	103.3

TABLE VIII (Continued)

Major and Submajor Industrial Groups	Pct. of Avg. Annual Wages for All Industries per Employee ^a
Miscellaneous nonmetallic mineral products	103.2
Public and professional furniture	102.8
Engine electrical equipment	102.8
Metal stamping and coating	102.6
Meat products	102.6
<u>Paper and allied products</u>	102.5
Millinery	102.5
Envelopes	102.3
<u>Electrical machinery</u>	102.1
Fabricated wire products	101.7
Electrical appliances	101.4
Books	101.3
Medical instruments and supplies	101.2
Office furniture	101.2
Cutlery, hand tools, and hardware	101.1
Finishing textiles	101.1
Communications equipment	100.6
Lighting fixtures	100.5
<u>AVERAGE ANNUAL WAGE = \$2,777</u>	100.0
Musical instruments and parts	99.8
Cement, hydraulic	99.6
Rubber industries, n.e.c.	99.6
Carpets and rugs	99.4
Grain mill products	99.1
Watches and clocks	98.9
Bakery products	98.7
Miscellaneous furniture and fixtures	98.6
Insulated wire and cable	98.2
Tin cans and other tinware	97.8
Millwork and related products	97.6
Vegetable and animal oils	97.2
Miscellaneous electrical goods	97.2
Women's and misses' outerwear	97.2

TABLE VIII (Continued)

Major and Submajor Industrial Groups	Pct. of Avg. Annual Wages for All Industries per Employee ^a
Men's and boys' suits and coats	96.9
Industrial leather belting	96.2
Paperboard containers and boxes	95.6
Plastic products, n.e.c.	95.3
Stone, clay, and glass products	94.9
Pulp goods and miscellaneous paper products	94.6
Food and kindred products	94.6
Cut-stone and stone products	94.5
Office supplies	93.7
Miscellaneous manufacturing	93.5
Rubber footwear	93.1
Pressed and blown glassware	92.9
Sugar	92.8
Hats (except cloth and millinery)	92.7
Luggage	92.6
Furniture and fixtures	92.0
Transportation equipment, n.e.c.	91.8
Miscellaneous textile goods	91.4
Woolen and worsted manufacturers	91.4
Products of purchased glass	91.3
Pottery and related products	91.2
Miscellaneous food preparations	91.2
Ophthalmic goods	91.1
Bookbinding and related industries	90.9
Screens, shades, and blinds	89.0
Structural clay products	87.9
Household furniture	87.9
Greeting cards	87.7
Dairy products	87.6
Electric lamps	87.5
Gum and wood chemicals	87.4
Paper bags	87.1
Concrete and plaster products	87.0

TABLE VIII (Continued)

Major and Submajor Industrial Groups	Pct. of Avg. Annual Wages for All Industries per Employee ^a
Confectionery and related products	84.3
Apparel and related products	84.1
Costume jewelry and notions	83.9
Narrow-fabric mills	82.1
Toys and sporting goods	82.9
Textile mill products	82.4
Cigarettes	82.2
Leather and leather products	82.1
Fertilizers	80.7
Miscellaneous wood products	80.0
Miscellaneous leather goods	79.4
Handbags and small leather goods	79.3
Cotton, rayon broad-woven fabrics	78.9
Footwear cut stock	78.0
Footwear, except rubber	77.5
Miscellaneous fabricated textiles	77.1
Knitting mills	76.9
Lumber and products, except furniture	75.8
Children's outerwear	75.7
Women's and children's undergarments	75.4
Miscellaneous apparel and accessories	75.2
Canning, preserving, and freezing	74.8
Chewing and smoking tobacco	73.3
Wooden containers	72.7
Lumber and timber basic products	70.4
Yarn and thread mills, except wool	70.4
Tobacco manufacturers	66.3
Men's and boys' furnishings	64.9
Leather gloves and mittens	64.7
Tobacco stemming and redrying	60.6
Cigars	58.4

^a Avg. annual wage per employee for all industries = \$2,777.

Source: Based on data from 1947 Census of Manufactures, General Summary, U.S. Dept. of Commerce, Bureau of the Census, Chapter II, "Employment and Payrolls," 1950.

PLANT MANAGEMENT AND OPERATION

Evaluation

Industries in search of new locations usually insist that communities be progressive. Towns or cities are expected to have up-to-date schools, streets, water and sewer systems, and fire and police protection. Reversing the situation, communities may similarly demand of industries that they, too, be progressive--that they have the latest in plant equipment, production controls, marketing systems, personnel policies, and in general a responsible attitude toward the community. In other words, such communities are placing a premium on good management.

In the industrial communities of the nineteenth century, industries were powerful forces because industrial leaders usually dominated local activities and organizations. As cities grew in size, these industrial leaders lost much of their power because they were no longer able to control the multitude of local activities and organizations.¹ Many modern industrialists, however, realize

¹D. C. Miller and W. H. Form, Industrial Sociology, Harper and Brothers, New York, 1951, pp. 804-805.

that they still have an important part to play in the community--a part of less power and more responsibility.

Managers of many industries have inaugurated broad community programs including such items as student scholarships, athletic teams, youth organizations, community services, and many philanthropies. Other industries which require public support and good will for their operations have developed complex public relations departments.

Many industries also accept their responsibility in the growth of communities by bearing an equitable share of the cost of building new schools and other capital facilities. New industries should have no less interest than established firms in assuring that civic installations not supported by tax revenues are maintained. New industry usually brings about an influx of new residents. Acceptance of a fair share of the responsibility for the added burden placed on existing facilities would recommend an industry to most communities.

An often overlooked but potential benefit of such industries to a community is that of improved civic spirit. The influx of new ideas and economic activities often brings an awakened interest in civic affairs and a general social and environmental improvement to a community.

Rather than searching elsewhere for possible candidates, civic leaders might well examine the capabilities of local enterprisers. The quality of management can thus be appraised more easily. A local industry with outstanding managerial talent may lack only new capital and community support to develop into a substantial enterprise worth having in any community.

Local ownership also usually gives greater recognition to the interests and needs of the community than do those who control or determine policies from far away. One study reports a situation wherein absentee owners of local factories lost the support of managers of locally owned factories in a labor dispute problem. Local businessmen as well as citizens were supporting local laborers against absentee ownership.¹

A distinction should also be made between moving an entire plant to a new location and establishing a new branch plant. If the industry has been strongly dissatisfied with an old location, the new community might also find it difficult to meet expectations of the industry. Greater confidence in the permanence of a plant location would result if it were known to have resulted from long and careful

¹W. L. Warner and J. O. Low, The Social System of the Modern Factory, Yale University Press, New Haven, 1947.

study. A financially unsound industry might be seeking a new location in a desperate attempt to forestall bankruptcy.

Opening up a new branch plant, however, is a normal incident of an expanding organization. With the establishment of a branch plant there is probably less uncertainty as to future moves than where a main plant has been relocated. A branch plant whose output is integrated with many products of the parent concern is usually expected to have more stable employment than a branch making a specialized product (see 'Economic Stability, p. 16). Branch plant operations are also believed to offer the best source of supply for small industrial units¹ (see 'Size of Establishment,' p. 72).

The degree of autonomy granted the local plant manager is also an important consideration. The higher the delegation of authority the more likely it is that the plant will be responsive to local needs.

Classification

Unfortunately, detailed data for corporate management and type of operation are not available. Existing census data compiled

¹N. H. Ringstrom and L. W. Casaday, 'The Community Investment in Industry,' Arizona Economic and Business Review, Vol. 1, No. 6, June, 1952, p. 5.

statistics only for the twenty major industrial groups listed in Table IX. Data are listed in this table by relative percentage of multi- or single-unit operation and corporate or noncorporate management.

TABLE IX
TYPE OF OWNERSHIP AND OPERATION

Major Industrial Classification	Pct. of Multiunit Operations	Pct. of Corporately Owned Units
<u>Apparel and related products</u>	6.7	45.3
<u>Chemicals and allied products</u>	30.0	74.7
<u>Electrical machinery</u>	22.3	72.4
<u>Fabricated metal products</u>	10.5	54.9
<u>Food and kindred products</u>	23.6	48.7
<u>Furniture and fixtures</u>	7.2	50.3
<u>Instruments and related products</u>	12.5	57.8
<u>Leather and leather products</u>	13.4	59.6
<u>Lumber and products, except furniture</u>	15.8	23.8
<u>Machinery (except electrical)</u>	10.0	53.6
<u>Paper and allied products</u>	35.2	81.3
<u>Petroleum and coal products</u>	46.9	82.8
<u>Primary-metals industry</u>	24.5	65.6
<u>Printing and publishing industries</u>	4.9	40.0
<u>Rubber products</u>	21.1	74.7
<u>Stone, clay, and glass products</u>	14.7	42.8
<u>Textile mill products</u>	22.5	72.2
<u>Tobacco manufactures</u>	21.3	37.3
<u>Transportation equipment</u>	18.6	58.9
<u>Miscellaneous manufacturing</u>	7.0	45.9

Source: Based on data from 1947 Census of Manufactures, General Summary, U.S. Dept. of Commerce, Bureau of the Census, Chapter IV, "Type of Organization," 1950.

SIZE OF ESTABLISHMENT

Evaluation

A recent study¹ of the effects of plant size (as determined by number of employees) on industrial relations in communities indicates the following generalized conclusions: (1) Small plants were less susceptible to unionization. (2) Small plants as a group had lower wages and smaller fringe benefits than large plants. This was offset, however, by the use of more planned overtime and informal fringe benefits by the small plants. (3) Small plants had a major advantage in the form of plant atmosphere between workers and management. (4) Strikes were less prevalent in small plants. (5) Small plants offered steadier year-around employment than large plants.

Indication was also given that small branch plants of multi-unit corporations may have some of the advantages of both small and large plants. Their small size may allow them to develop a small-plant atmosphere utilizing the personal approach while having

¹The Influence of Plant Size On Industrial Relations, Industrial Relations Section, Dept. of Economics and Sociology, Princeton, New Jersey, 1955.

higher wages and fringe benefits and drawing upon the specialists provided through their relationship with the large parent corporation. However, corporation-wide strikes may increase the incidence of local strikes. The lack of decentralized decision-making may also prevent utilization of many advantages of small size.

The size of plant as pertains to the number of workers employed per acre of land also bears consideration. Industries employing a high ratio of workers per acre of land are called "intensive" industries. Those employing only a few persons per acre of land are called "extensive" industries. In areas where industrial lands are limited and employment needs are high it may be well to encourage the operation of intensive industries, as they will offer more employment opportunity for a limited amount of available industrial land.

Classification

Table X lists the size of establishments by the relative number of employees for each major industrial group. The average number of employees for all industries was fifty-nine.

TABLE X
SIZE OF ESTABLISHMENT, BY NUMBER OF EMPLOYEES

Major and Submajor Industrial Groups	Avg. No. of Employees
Concrete and plaster products	11
Costume jewelry and notions	12
Cut-stone and stone products	15
Commercial printing	16
Dairy products	17
Miscellaneous leather goods	17
Printing trades service industries	19
Miscellaneous fabricated textiles	20
Miscellaneous furniture and fixtures	20
Lumber and timber basic products	21
Products of purchased glass	21
Millinery	22
Miscellaneous food preparations	23
Miscellaneous petroleum and coal products	23
<u>Lumber and products, except furniture</u>	24
Partitions and fixtures	24
Screens, shades, and blinds	25
<u>Printing and publishing industries</u>	25
Handbags and small leather goods	26
Grain mill products	27
Industrial leather belting	27
Luggage	27
Jewelry and silverware	27
Miscellaneous wood products	28
Newspaper	28
Children's outerwear	29
Miscellaneous chemical products	29
Beverages	30
Women's and misses' outerwear	31
Periodicals	32
Bookbinding and related industries	32
Soap and related products	32
Miscellaneous apparel and accessories	33
<u>Miscellaneous manufacturers</u>	33

TABLE X (Continued)

Major and Submajor Industrial Groups	Avg. No. of Employees
Leather gloves and mittens	34
Toys and sporting goods	34
<u>Apparel and related products</u>	35
<u>Millwork and related products</u>	35
<u>Food and kindred products</u>	36
<u>Vegetable and animal oils</u>	36
Footwear cut stock	36
Lithographing	37
Nonferrous foundries	38
Bakery products	39
Medical instruments and supplies	39
<u>Stone, clay, and glass products</u>	40
<u>Office supplies</u>	40
Metal stamping and coating	41
<u>Furniture and fixtures</u>	42
Paving and roofing materials	44
Plastics products, n.e.c.	44
Fertilizers	45
Women's and children's undergarments	46
Wooden containers	46
Household furniture	47
Paints and allied products	47
Structural metal products	47
Metal-working machinery	50
Confectionery and related products	52
Miscellaneous fabricated metal products	52
Miscellaneous machine parts	52
Canning, preserving, and freezing	53
Special industry machinery, n.e.c.	53
Cigars	57
Narrow-fabric mills	57
Secondary nonferrous metals	57
Optical instruments and lenses	57
<u>Fabricated metal products</u>	58
<u>AVERAGE FOR ALL INDUSTRIES</u>	59
Drugs and medicines	60

TABLE X (Continued)

Major and Submajor Industrial Groups	Avg. No. of Employees
Structural clay products	62
Fabricated wire products	62
Men's and boys' furnishings	63
Books	63
<u>Chemicals and allied products</u>	63
Musical instruments and parts	65
Miscellaneous nonmetallic mineral products	66
Meat products	69
Paperboard containers and boxes	72
Gum and wood chemicals	72
<u>Leather and leather products</u>	72
Fur goods	73
Knitting mills	74
Public and professional furniture	74
Miscellaneous textile goods	77
Pulp goods and miscellaneous paper products	77
Men's and boys' suits and coats	78
Pottery and related products	78
Hats (except cloth and millinery)	79
Miscellaneous electrical goods	82
Cutlery, hand tools, and hardware	83
Envelopes	84
<u>Machinery (except electrical)</u>	86
<u>Instruments and related products</u>	89
Scientific instruments	94
Leather tanning and refining	95
Office furniture	98
General industrial machinery	99
Paper coating and glazing	100
<u>Tobacco manufacturers</u>	103
<u>Paper and allied products</u>	110
Greeting cards	111
Paper bags	115
Mechanical measuring instruments	115
Heating and plumbing equipment	118
Finishing textiles except wool	122

TABLE X (Continued)

Major and Submajor Industrial Groups	Avg. No. of Employees
Ophthalmic goods	122
Insulated wire and cable	124
Ships and boats	135
Electrical appliances	136
Reclaimed rubber	138
Iron and steel foundries	138
Photographic equipment	139
Rubber industries, n.e.c.	146
Watches and clocks	146
<u>Textile mill products</u>	151
Construction and mining machinery	152
Chewing and smoking tobacco	153
<u>Petroleum and coal products</u>	153
<u>Tractors and farm machinery</u>	156
Miscellaneous primary metals industries	157
Tobacco stemming and redrying	159
Industrial inorganic chemicals	159
Footwear (except rubber)	160
Yarn and thread mill, except wool	188
Carpets and rugs	193
Sugar	196
Miscellaneous publishing	197
Service and household machines	202
<u>Electrical machinery</u>	202
<u>Electrical industrial apparatus</u>	205
Motorcycles and bicycles	205
<u>Primary-metals industry</u>	216
<u>Tin cans and other tinware</u>	216
Woolen and worsted manufactures	217
Pulp, paper, and paperboard	223
Cement hydraulic	230
Lighting fixtures	231
Coke and by-products	233
Communication equipment	251
Transportation equipment, n.e.c.	273
Office and store machines	274

TABLE X (Continued)

Major and Submajor Industrial Groups	Avg. No. of Employees
<u>Rubber products</u>	296
<u>Transportation equipment</u>	318
<u>Petroleum refining</u>	334
Industrial organic chemicals	366
Motor vehicles and equipment	368
Electric lamps	385
Engine electrical equipment	399
Cotton and rayon broad-woven fabrics	410
Pressed and blown glassware	419
Primary nonferrous metals	486
Nonferrous metal rolling and drawing	549
Engines and turbines	616
Aircraft and parts	661
Railroad equipment	747
Flat glass	801
Cigarettes	988
Rubber footwear	1,082
Blast furnaces and steel mills	1,711
Tires and inner tubes	2,029

Source: Based on data from 1947 Census of Manufactures, General Summary, U.S. Department of Commerce, Bureau of the Census, Chapter I, "Summary Statistics," 1950.

SUMMARY

Industries in search of new locations are primarily concerned with locational factors of the communities considered. On the other hand, most industries are also anxious to locate in areas where they will be most welcome and beneficial. It is here that the most profitable returns from community industrialization can be maximized.

The point to be primarily emphasized is that communities should not encourage industries simply to add new payrolls and increase the tax base per se. These are very real and worth-while benefits to be sure, but these benefits will also result from the location of almost any reasonably stable industry in almost any community. There are other possible benefits which a community can but will not gain unless they are considered.

This study has analyzed various industrial characteristics as they affect and benefit communities. The analyses are intended to serve as supplementary criteria to the presently accepted methods of determining industrial locations. Consideration of the effects of these industrial characteristics in conjunction with other standard

locational factors would aid considerably in maximizing the benefits of community industrialization.

A community which can stress the potential benefits of an industry in conjunction with the locational advantages would have an advantage over a similar area which has stressed only its locational advantages. Such efforts would also indicate to an industry that there is active local interest in improving the community.

This study has made no attempt to determine or establish criteria from which a community can select fixed goals. For instance, no criteria are available from which a community could establish an ideal labor force composition. On the other hand, it is possible for a community to evaluate its labor force composition and determine a marked degree of unbalance. From such a determination the situation could be alleviated by encouragement of appropriate industries. Similar analyses and remedies could be applied to other peculiarities of almost any community.

More thought and consideration should be given by communities to the potential benefits of industrialization. Establishment of an industry in a community is a relatively short-term proposition, but the effects of industrialization on the character of a community will persist for the duration of the community's existence.

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