MONTHLY REVIEW

Contents:

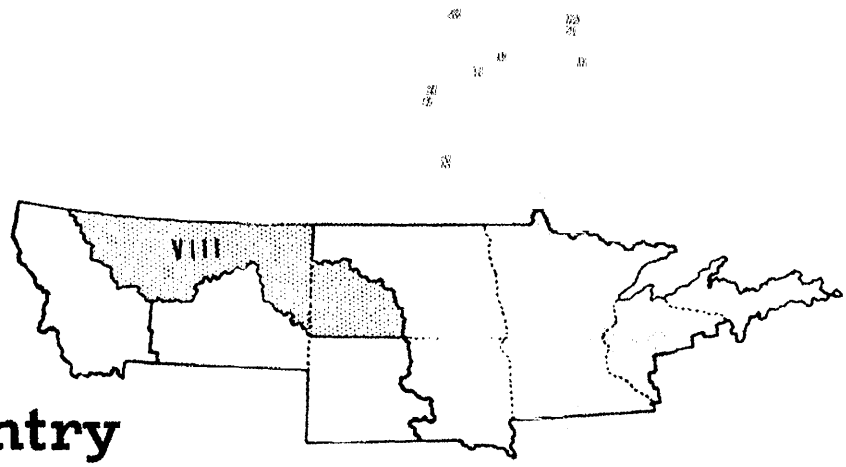
The wheat and cattle country . . . . . p. 2
Current conditions in the Ninth district . . . . p. 8
Mining industry sees future in district taconite . . . . . p. 12

FEDERAL RESERVE BANK OF MINNEAPOLIS

MAY 1962

This article is the third in a series concerning agriculture in the Ninth district. The material used as a basis for this article is taken from the research that is in progress in conjunction with the Upper Midwest Economic Study. Each article discusses a particular "type-of-farming" area as delineated in the study. The first, published in the September 1960 **MONTHLY REVIEW** *discussed Area VII. Area IX was covered in the October 1961 issue of the* **MONTHLY REVIEW**. *In the current issue, Area VIII is reviewed.*

The wheat and cattle country



Great expanses of gently rolling plains broken occasionally by gullies and small green river valleys are the mark of the wheat and cattle country of the northern plains. It is a rugged, semiarid country. In the summer, hot winds sweep across the plains creating serious hazards to farming operations. Drouth and crop failure are not uncommon. In the winter, cold waves and blizzards are typical, with occasional relief from the sudden warm chinook winds and their mild temperatures. This region, termed herein Area VIII, extends some 550 miles from east to west and includes north central and northeastern Montana and southwestern North Dakota.

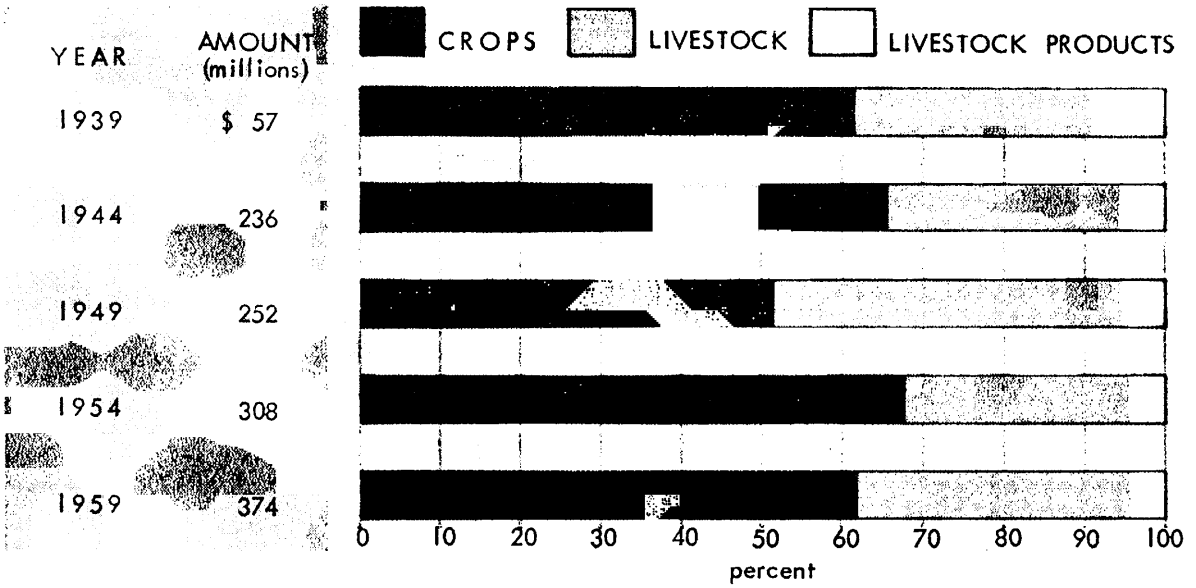
The soils of Area VIII are, for the most part, the brown to dark brown soils of the semiarid grasslands. The rough, broken lands, such as those in southwestern North Dakota, are comprised of soils which often are poorly weathered and structured. Sandy soils are generally found in the hilly areas. Rainfall averages 13 to 16 inches annually, and the growing season ranges from 115 to 125 days.

Because of its vast size, the area includes a variety of livestock and farming operations. The tillable land is devoted mainly to wheat and barley. Livestock ranching occurs mainly in the roughlands and breaks along the rivers and streams. Irrigation of land in the Milk River Valley has given rise to integrated wheat farming and sheep raising.

Marketings

Cash receipts from farm marketings in Area VIII increased from $57 million in 1939 to $374 million in 1959 (Chart 1). Crop marketings accounted for more than one-half the total in each year. The proportion of total receipts from live-

Chart 1—Cash receipts by source, area VIII



stock reached a high of 43 per cent in 1949, but typically it accounts for about 30 percent of the total. There was no apparent trend in the relative importance of the various sources of cash receipts except for a decline in dairy and poultry products. Many of the variations in the proportions result from cyclical changes in livestock output and the effects of drouth on crop yields. While cattle and sheep have been the major sources of livestock receipts, a gradual shift from sheep to cattle has taken place over the years.

Land, farm size and numbers

Since World War II, the amount of land in farms in Area VIII has increased from 38,262,000 acres in 1944 to 41,011,000 in 1959, an increase of 7.2 percent. About 40 percent of the land in farms is classified as cropland and 58 percent remains in open pasture.

Large wheat farms and ranches are the dominating type of farm unit. In 1959, 21 percent of all farms were 2,000 acres or larger in size. During the period 1949 to 1959, farms of 1,000 acres or more in size increased from 40 to 50 percent of all farms. This change has come about through the reduction in the number of farms with fewer than 500 acres. The proportionate number of those farms fell from 31 per cent in 1949 to 23 per cent in 1959. The emphasis on large units can be seen in the amount of land controlled by the larger units. In 1954, three-fourths of all farms were 500 acres or more in size and accounted for 95 percent of all land in farms. The total number of farms has declined from about 33,000 to 26,255 between 1939 and 1959.

These changes in farm numbers and size, and an improvement in cash receipts in farm marketings, however, fail to depict the true nature of the agricultural situation in Area VIII. This is well illustrated in Table 1. For research purposes, farms were divided into two classifications: commercial farms, those farms with $2,500 or more

annual farm product sales; and noncommercial, those farms with annual products sales of less than $2,500. Commercial farms were further divided into two groups: Group I, farms with product sales of $10,000 or more; and Group II, farms with product sales of between $2,500 and $10,000. Some of the trends toward larger units is reflected in the increasing proportion of commercial farms and, more importantly, in the relative increase in Group I commercial farms. However, in 1959 about 16 percent of the farms had sales of under $2,500 and 62 percent had sales of less than $10,000 (Table 1). Relatively more Group I farms are found in the western part of Area VIII and, conversely, a higher proportion of the Group II and noncommercial farms are situated in southwestern North Dakota.

The average size of all farms in 1954 was 1,406 acres. The Group I farms, however, averaged 2,713 acres while Group II averaged 1,037 acres and noncommercial farms averaged 643 acres. The average size in each of the sales volume classifications tended to be larger in the western part of the area.

TABLE 1—NUMBER OF FARMS BY SALES VOLUME GROUPS, AREA VIII

	All Farms		Commercial		Non-Commercial
	(number)	(percent)	Group I	Group II (percent)	
1949	29,532	100.0	20.2	52.7	27.1
1954	28,595	100.0	27.0	51.8	21.2
1959	26,255	100.0	38.1	46.2	15.7

Capital investments

The agricultural activity in Area VIII represents a large capital investment. On an annual average during the period 1954-58, a total of $1,592 million was invested in farm real estate, livestock and machinery. The farms classified as commercial accounted for about 92 percent of the total. The large Group I farms, 27 percent of all farms in 1954, controlled 53 percent of the investment; and Group II, 52 percent of all farms, controlled 39 percent. A comparison of farm classification shows that for each $1.00 invested in a noncommercial farm there were $3.00 invested in a commercial farm. Within the commercial classification, the larger Group I farms represented an investment of $2.60 for each $1.00 invested in a Group II farm.

It was found that 75 percent of the total investment of commercial farms was in farm real estate, 15 percent in machinery, and 10 percent in livestock. The relative importance of these items varied to some extent, depending on the type of farming dominant in a particular location. In comparing Group I farms with Group II units, real estate generally accounted for a larger proportion and machinery for a lesser proportion of total investment on Group I farms. The investment in machinery per crop acre on Group I farms averaged $12.68 compared with $17.82 on Group II. In southwestern North Dakota, Group I and Group II farms tended to have about the same per acre machinery investment.

The investment in the typical commercial farm averaged $64,728 during the 1954-58 period, ranging from $108,605 per Group I farm to $41,885 per Group II farm. The average for both groups tended to be higher in the western part of Area VIII than in the east.

Annual production expenses also represent a considerable financial outlay on the part of farmers in Area VIII. In total, these amounted to more than $168 million per year during the 1954-58 period. Commercial farms accounted for about 92 percent of the total.

Cash expenses made up about three-fourths of all production expenses for all farms, ranging from 80 percent on the Group I farms to 70 percent on Group II and 68 percent on the noncommercial farms. The two most important items of cash expenses were hired labor and petroleum products. Expenditures for these two were about equal on Group I farms, but expenses for petro-

leum products greatly exceeded those for hired labor on Group II farms.

Depreciation, as a proportion of production expenses, was relatively larger on Group II and noncommercial farms than on Group I farms.

Labor utilization

One of the major problems found throughout Ninth district agriculture is the underutilization of farm labor, and Area VIII is no exception. By comparing the amount of labor available for farm tasks with standard rates of labor requirements, it was found that only 67 percent of the total labor available was effectively utilized on an annual basis. For commercial farms alone, this figure rose to 72 percent with the utilization rates running 75 percent on the large Group I farms and 70 percent on Group II farms. The inefficiencies associated with the small noncommercial farm are confirmed by the fact that less than 40 percent of the available labor was effectively utilized.

These utilization percentages need some qualification before they can be properly interpreted. Where cash crop farming is highly important, such as in Area VIII, much of the farm work is of a seasonal nature. Thus, much of the labor, particularly that of the farm operator, is used intensively during relatively short periods of the year. Given this type of farm operation, lower rates of labor utilization on an annual basis can be expected. Regardless of seasonality, however, it is evident that much labor, particularly on the Group II and noncommercial farms, is underemployed.

Farm product sales and production

The larger Group I farms in Area VIII received a much greater proportion of their cash receipts from the sale of crops than did the Group II farms (Table 2). The sale of wheat provided more than one-half of the total receipts for both groups of commercial farms and just less than one-half for the noncommercial. Cattle and calves, the most important livestock produced, accounted for over 20 percent of the total cash receipts from all farms.

In an attempt to increase incomes the Group II and noncommercial farm operators have turned to more livestock production in order to diversify their units. These farms gain over 40 percent of their cash receipts from livestock and livestock products, and account for almost all of the hogs, dairy products and poultry produced in the area. Typically, the larger Group I farm has emphasized crop production and during the 1954-58 period received less than 10 percent of total cash receipts from sources other than crops and beef cattle.

TABLE 2—DISTRIBUTION OF CASH RECEIPTS AMONG COMMODITIES, 1954-58 AVERAGE, AREA VIII

Source	All Farms	Group I	Group II	Non-commercial
		(percent)		
Total cash receipts	100.00	100.00	100.00	100.00
Wheat	56.13	59.49	51.24	45.24
Barley	6.04	7.79	3.21	2.66
Flaxseed	1.44	.80	2.47	2.69
Other crops	2.56	3.03	1.88	1.02
Cattle and calves	23.72	21.48	27.14	29.52
Sheep and lambs	1.94	2.64	.71	1.45
Hogs	2.02	1.24	3.36	2.79
Livestock products	6.15	3.53	9.99	14.63

While crop yields differed between geographic locations within the area, significant differences were also noted in the yields of individual crops among the classes of farms. For example, in southwestern North Dakota, spring wheat yields averaged 17.2 bushels per acre on Group I farms and 14.4 bushels on Group II. One of the most extreme differences was that in barley yields in north central Montana where the yield on Group I farms averaged 32.9 bushels per acre and 25.0 bushels on Group II farms.

Farm income

The gross agricultural income of Area VIII averaged $341,615,000 during the period 1954-58.

Chart 2—Per farm gross income, expenses and net income, 1954-58 average, area VIII

	All Farms	Group I	Group II	Non-Comml.
Cash receipts from farm mktgs.	11053 00	25472 00	7224 00	2073 00
Government payments	243 00	479 00	188 00	78 00
Noncash income	651 00	812 00	601 00	567 00
Gross farm income	11947 00	26764 00	8012 00	2718 00
Cash expenses	4396 00	9107 00	3155 00	1438 00
Depreciation	1508 00	2385 00	1379 00	708 00
Production expenses	5904 00	11492 00	4534 00	2146 00
Net income	6043 00	15271 00	3478 00	572 00
Estimated costs of capital and operator's labor	4924 00	7672 00	4264 00	3039 00
Returns to management	1119 00	7599 00	-786 00	-2467 00

At the same time, farmers expended $125,706,000 for items used in farm operation. Virtually all of this money was the income and outgo of the area's commercial farmers. The Group I farms alone accounted for more than 60 percent of the total gross income. In terms of net income, the total was divided 68 percent, 30 percent, and 2 percent among Group I, Group II and noncommercial farms, respectively.

While the total income to agriculture is important to an area, the per farm income is perhaps more significant to the economic condition of the farmers themselves. The average commercial farmer earned a net income of $7,516 per year, more than 13 times greater than the $572 net farm earnings of the noncommercial operator. Within the commercial class the Group I farms fared much better, averaging a net income of $15,251 per year. The Group II farmer averaged $3,478 of net income per year (Chart 2). The gross incomes per farm on these three classes of farms ranged from $26,764 on Group I to $8,012 on Group II and $2,718 on the noncommercial farms.

As the farm operator embodies both management and labor, it is useful to separate these components in order to find the returns the farmer receives as a business manager. To do this it is necessary to deduct charges for the use of capital invested in the farm and for the labor of the farm manager. A charge of 5 percent of the invested capital was imputed therefore as an alternative cost of capital, and the annual farm wage rate for hired labor was used as the imputed cost of the operator's time. Subtracting these estimated costs and annual production expenses from gross income approximates the return to management.

As seen in Chart 2, the operators of Group II and noncommercial farms received negative management returns.

Given the above levels of net farm incomes, it is not surprising to find that 30 percent of the farm operators worked at least part of the time off the farm (Table 3). This proportion was highest among the noncommercial farms where 45 percent were employed in off-farm positions and more than one-fourth earned more from those jobs than from farm activities. That more farmers didn't take off-farm jobs or spend more time on off-farm work is more than likely an indication of lack of opportunity than lack of willingness.

TABLE 3—OFF-FARM EMPLOYMENT OF FARM OPERATORS, 1954

	Working off-farm	Working off-farm 100 days or more	Off-farm income greater than farm product sales
	(percent of operators)		
All farms	29.7	10.8	7.9
Group I	20.6	4.3	1.6
Group II	28.4	8.1	4.2
Noncommercial	45.7	26.8	26.5

Intra-group comparisons

One of the more significant findings in this study of Area VIII is the apparent differences among the classes of farms. To bring these differences out more sharply, Group I and Group II farms were compared as to certain costs and income relationships. The differences in the use of farm inputs (production expenses and the imputed costs of capital and labor) are reflected in the differences in income between the two groups of commercial farms. As shown in Table 4, the Group I farms expended more than two times the input costs of Group II farms, and received a gross income of more than three times that of the smaller units. More specifically, for each $1.00 of total costs, the Group I farm received 53 percent more gross income than did the Group II farm. In dollar terms, the Group I farm averaged $1.40 gross income per $1.00 of cost and the Group II farm averaged $.91 per $1.00 of cost. The Group II farms not only received a much smaller gross income for their total costs than the Group I but failed to recover the full cost of the input (Table 4).

TABLE 4—TOTAL COSTS* AND GROSS FARM INCOME

	Group I	Group II	Ratio of I to II
Total costs	$19,164	$8,798	2.18
Gross income	26,764	8,012	3.34

*Includes production expenses and the imputed costs of capital and labor.

Labor also provides a common denominator that is helpful in making a comparison between the groups of farms. The efficiency of labor is closely related to the output per worker as measured by the amount of cash receipts attributable to each man employed on the farm. For the Group I farm, cash receipts amounted to $13,874 per man and on the Group II farms, $5,285 per man. This productivity on the Group I farm generated a net income of $8,317 per man, compared with $2,544 per man on the Group II farm (Table 5).

TABLE 5—TOTAL COSTS* AND INCOME PER MAN EMPLOYED

	Group I	Group II	Ratio of I to II
Total costs	$ 8,434	$4,666	1.81
Gross income	14,577	5,861	2.49
Net income**	8,317	2,544	3.27

*Includes production expenses and the imputed costs of capital and labor.

**Net income, as used here, is the difference between gross income and production expense.

Summary

Wheat and cattle raising are the main agricultural enterprises in Area VIII. Over the past 20 years, these commodities have maintained

their relative importance as a source of cash receipts; wheat at around 50 percent and cattle and calves at 20 percent. Total cash receipts amounted to $374 million in 1959.

The adjustment toward larger farms has moved at a fairly rapid pace in the area. In 1959, more than one-half of all farms averaged 1,000 acres or more and 20 percent averaged 2,000 acres or more. As the proportion of large farms has increased, the number of farms of 500 acres or less has fallen from 31 percent in 1949 to 23 percent in 1959. The total number of farms has declined from 33,000 to 26,000 between 1939 and 1959.

While the increase in average acreage size indicates an adjustment toward more profitable units, a measure of size in terms of the value of sales of farm products presents the agricultural organization in a different perspective. During the period 1954-58, less than 40 percent of all farms in Area VIII were classified as Group I commercial (farm sales volume of $10,000 or more). These farms accounted for more than 50 percent of the total investment in farms and achieved net incomes averaging $15,000 per year. The remaining farms, those in Group II (farm sales of between $2,500 and $10,000) and noncommercial (farm sales of less than $2,500), received net incomes of $3,500 and $572, respectively. The operators of the smaller farms were generally less efficient in the use of resources than the Group I farmers, and had turned to farm diversification and off-farm work in an attempt to better their income situation.

The productivity advantage held by the larger Group I farmers not only is derived from size but from the ability to command more resources, particularly capital, and to better manage them. Thus, all indications would point toward a continual advance in farm size and a decline in farm numbers. Many of the smaller Group II farms, and especially the noncommercial farms, will face the difficult choice of living with low incomes or deemphasizing farm operations and depending more on off-farm work. In Area VIII, the availability of off-farm work is not great, so for many the best chance of improving incomes will be to leave the farm as opportunities become available.

Current conditions . . .

In most areas of the Ninth district, precipitation this past winter was above normal and substantially above that of the previous winter. This was a welcome development in view of the drouth which enveloped much of the western part of the district last summer. Topsoil moisture, as a result, is currently adequate over the area and subsoil moisture conditions also have improved gener-

ally. Nevertheless, some areas in northern Montana and northwestern North Dakota remain relatively dry in terms of subsoil moisture supplies. The irrigation water supply is reported near normal, and in the Missouri watershed, reports indicate a better supply situation than existed last year. Over much of the district, cold and wet climatic conditions this spring have delayed farm work, but the excellent surface moisture conditions should provide a good start for the 1962 small grain crops. In general, winter wheat came through in good shape. Livestock also wintered well and are reported in fair to good condition in all district states.

A look at current spring planting plans indicates a probable sharp cutback in spring wheat acreage—perhaps as much as 25 percent. This reduction is due to some shift from hard spring wheat to Durum wheat, and to farmer participation in the more restrictive 1962 wheat program. Since Durum wheat is in short supply, the acreage planted in 1962 may increase 20 to 30 percent over last year's figure.

In spite of last summer's drouth, district cash farm incomes in recent months have exceeded year earlier levels by 1 to 3 percent. This increase is largely a reflection of improved livestock and livestock products marketings.

Total district personal incomes also have moved ahead in recent months at approximately 5 percent higher levels compared with a year ago. District nonagricultural employment, too, appears to be gaining with an estimated 2.7 percent gain noted in mid-March compared with March 1961. In fact, most of the region's economic indicator series shows measurable gains in recent months in comparison with year earlier data. Average weekly earnings in manufacturing have come up 3.3 percent, for example; hours worked per week have gained slightly, and insured unemployment has declined 17 percent. Building permit valuation, industrial use of electric power, and bank debits all have moved up quite substantially. Department store sales, on the other hand, have lagged since the first of the year until recently, when vigorous Easter buying came into the picture.

In banking, a substantial growth in loan demand occurred at the district's city banks during the first quarter of this year. Loan demand at the country banks was about normal. It is noted, too, that total bank deposits in the district declined less than seasonally during the first quarter, thanks largely to the advance in interest paid on time deposits, stimulating large gains in the time deposit category. For the district as a whole, loan deposit ratios measured bank liquidity during the first quarter at a slightly improved level compared with the same period a year ago.

The following selected topics describe particular aspects of the district's current economic scene:

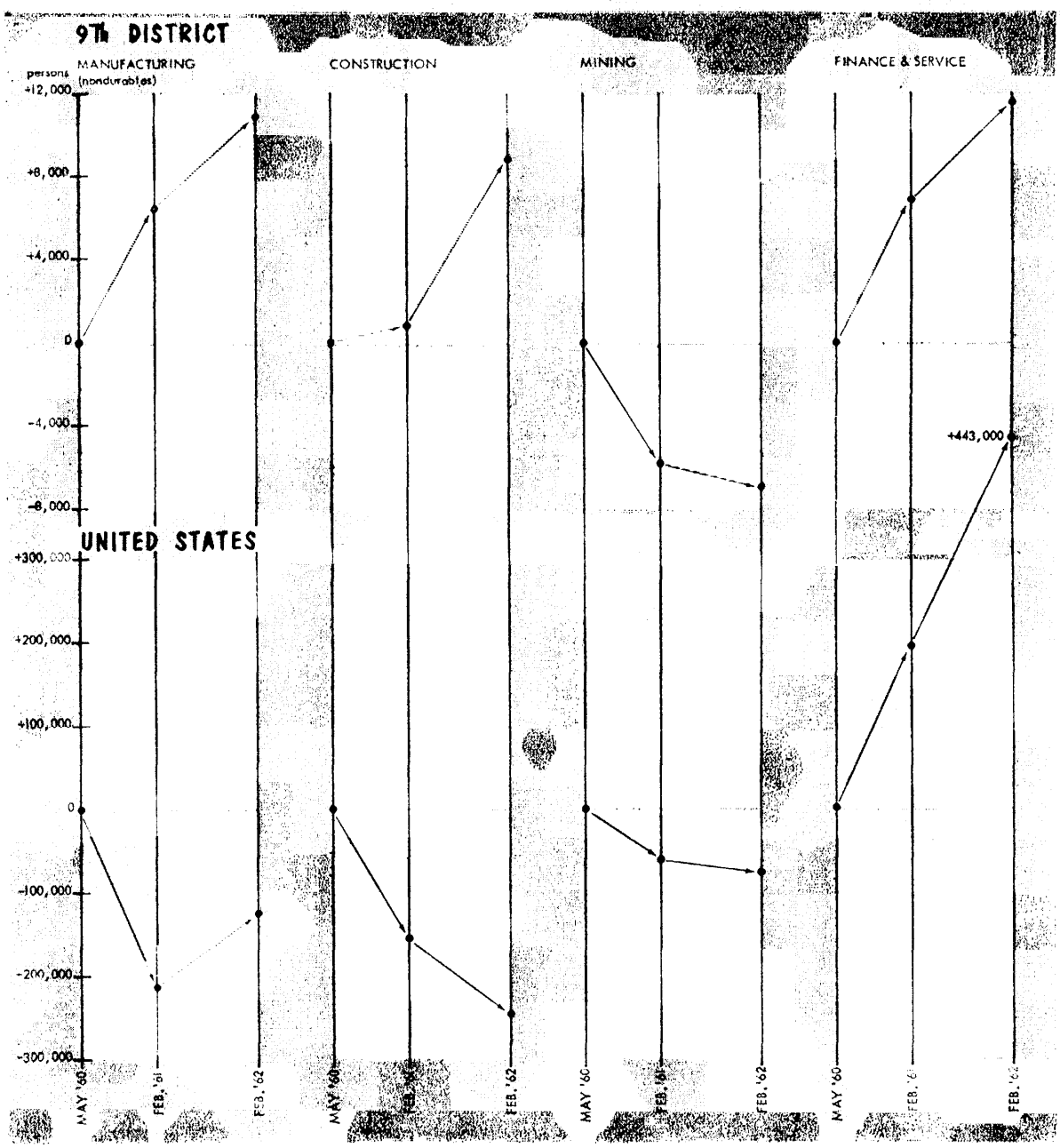
EMPLOYMENT GAIN

Ninth district nonfarm employment has improved significantly in the period from February 1961, through February of this year.

According to published figures, the seasonally adjusted index (1947-49=100) of total nonfarm employment in February stood at 124.2 compared with 121.5 a year ago, and while all major industry classifications contributed to the improvement, manufacturing showed the most substantial gain. In one year, the index in this category jumped from 108.1 to 113.5.

Employed nonfarm workers numbered 1,422,900 in February, according to surveys completed by state employment agencies. This was an increase of 37,200 or a 2.7 percent gain over the February 1961 figure. Manufacturing, which increased 15,200 workers or 5.7 percent, accounted for over 40 percent of the growth. Construction and government employment also showed sizable

Employment changes, seasonally adjusted, in selected industries for the May 1960-February 1961 recession period and the February 1961-February 1962 recovery period, Ninth District and U.S.



gains, and trade and service industries improved, but to a lesser extent.

District employment rise mirrors national

Overall Ninth district improvements in nonagricultural employment reflected the sharply improved national job situation in February. Seasonally adjusted national nonfarm employment rose by 1,300,000 from the low point of the recession a year ago, and was back to the level of May 1960, when the general downturn began. Unrecovered national job losses in manufacturing, construction, mining and transportation, since the spring of 1960, totaled 900,000; however, a net gain of more than 1,000,000 jobs occurred in the service-producing sector. Half of the increase occurred in state and local government employment, and the remainder took place in the service and finance industries.

According to preliminary information, total U. S. employment (farm and nonfarm) in March showed substantial improvement over March 1961, and set a new record for the month. Employment was up 800,000 and the armed forces increased 300,000. Since the labor force did not rise over the year, unemployment was down 1,100,000. Some former job seekers left the labor market to account for some of the decline in unemployment. Projected manpower needs, according to employer reports to public employment offices in 150 surveyed labor market areas, have indicated a continued employment uptrend.

State by state picture

In Minnesota, nonagricultural wage and salary employment in February was 25,800 over last year's figure, or a 2.8 percent gain. This increase was split almost evenly between manufacturing and nonmanufacturing workers. Hard goods metalworking and food processing industries accounted for most of the gain in manufacturing, while trade, government and services showed the largest over-the-year growth in nonmanufacturing employment. The gain in metal work manufacturing reflects recovery from last year's recession as well as a continued significant growth in the electronics field. Durable goods showed three times the gain in nondurables, in the total manufacturing employment increase of 6.0 percent. In nonmanufacturing, retail activities accounted for much of the increase in trade employment, while government and services showed increases about parallel to long term trends. The building construction gain of 13 percent reflected an increase in construction employment, although declines were noted in highway and heavy construction and in special trades contracting.

Montana nonagricultural employment in February showed a growth of 2,900 or almost 2 percent over the same month a year ago. Employment remained at the same level as last year in manufacturing industries, although finance, real estate and insurance services, and government recorded slight improvement. The significant gain occurred in construction, up 2,300, or 31.5 percent. Federal projects, including missile site bases, air bases, preliminary work on dam sites, and highway and bridge construction, were credited for 2,100 of the increase. An estimated $200 million in contract construction projects are active or soon to begin. Slight declines were noted in Montana transportation, mining and utilities industries.

Nonfarm wage and salary employment in South Dakota for February showed an increase of 5,400 workers or 4.0 percent over a year ago. Manufacturing contributed to the improvement with 1,400 additional workers or 11.6 percent, while a gain of 900 workers or 30.0 percent was noted in lumber and wood products employment. Fabricated metals and machinery jumped 850 or 56.7 percent and construction gained 1,250 employees or 15.0 percent, due to missile site activities in the western part of the state. Employment increased only slightly from February to March because of heavy snowfall and cold weather conditions that persisted through the entire month. Accelerated hiring in April should bring payrolls up to nor-

mal in most areas, and by the end of May the employment picture is expected to be quite bright.

North Dakota recorded a year's increase of 1,460 or 1.2 percent in nonfarm wage and salary employment from February 1961. Manufacturing employment gained 100 workers over the year or 1.7 percent, while the service industries noted an increase of 540 jobs or 2.6 percent. Government employment was up slightly. The greatest improvement, however, in number and in percent, occurred in construction, which increased 780 workers or 14.4 percent. Building and special trade construction contributed to most of the increase. Trade, transportation, communications and public utilities were down slightly; and mining dropped 110 workers or 6.3 percent, reflecting a continued cutback in oil field services.

On the Upper Michigan peninsula, nonfarm employment in February was down by 4,200 from one year earlier. A net decline of 1,200 occurred in manufacturing, while mining dropped 300, and other nonfarm jobs were down 2,700. February storms and heavy snow accumulations caused layoffs in outdoor work and depressed retail trade activities. Employment is expected to rise sharply with the return of warm weather.

Although unemployment is high, a shortage of qualified workers with certain skills continues to exist.

NINTH DISTRICT BANKING DEVELOPMENTS

The first quarter gain in loans at district city banks was $33 million. Although this was larger than any first quarter gain in the past ten years, it was just slightly above that registered in the recovery year of 1959. All of the extra seasonal growth was recorded in the month of February when city bank loans were up by more than five times the normal increase of about $6 million. In January and March, loans advanced less than usual.

Country bank loans rose $14 million in the first quarter. This was well within the usual pattern, and it compared with the average first quarter country bank loan increase in recent years, of about $15 million.

Normally, the liquidity of district member banks is reduced in the first quarter of the year by the seasonal deposit outflow. This year the rapid growth of time deposits in response to the change in regulation Q, limited the loss of total deposits in the first quarter to the smallest amount in years.

The first quarter growth of time deposits at both city and country banks showed a much greater increase this year than in any previous year. The percentage growth in time deposits at district city banks was also larger than that registered in any other Federal Reserve District.

Mining capital sees future in district taconite

Continuing low levels of employment and ore production in the iron mining areas of the Ninth district are posing problems for mining firms and communities, but despite these difficulties, capital investments by the region's mining companies hold a measure of promise for the future.

Much of the new capital in the northern Minnesota and upper Michigan iron areas is focused on

the taconite "family" of industry facilities. In Minnesota, the first-generation source of concentrate is *magnetic taconite.* Upper Michigan industry is built around a non-magnetic equivalent called *jasper* or *jaspilite.* A resume of plant capacities for facilities processing these materials is shown in Table 1, along with projected expansions.

At present, Minnesota has two commercial-scale taconite pellet plants with an annual production of 13 million tons. In 1960, Erie Mining Company's plant at Hoyt Lakes broke all taconite production records with an output of 7,590,679 tons of high grade pellets. The Reserve Mining Company's plant at Silver Bay shipped 5,939,168 tons of pellets last year, an increase of 20 percent over 1960. Production of the crude ore came from the Peter Mitchell mine at Babbitt. Plant expansion at both Silver Bay and Babbitt is currently underway to enlarge the capacity of taconite facilities to about 9,000,000 tons by 1963. Oliver Iron Mining division of United States Steel also operates a pilot plant at Iron Mountain with a capacity of 700,000 tons of taconite concentrate annually.

Cleveland-Cliffs' Humboldt plant, the first concentrating plant in Upper Michigan and the first venture outside the Mesabi area, began operation in 1953 on "jaspilite," and has a present capacity of 750,000 tons of pellets per year.

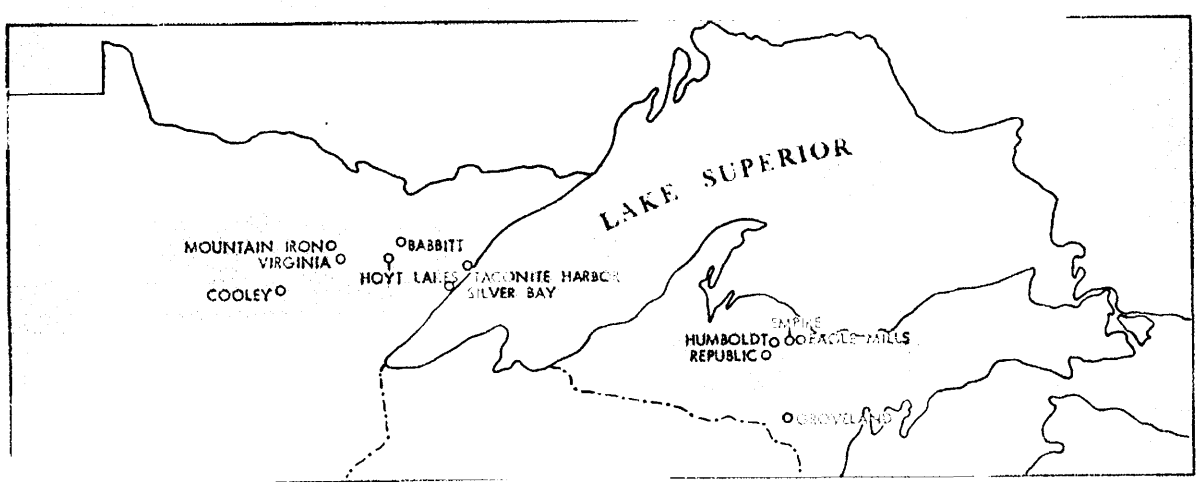
The company plans to have in operation by next year a new taconite plant with an annual capacity of 1,200,000 tons. The new Empire project at Cleveland-Cliffs, just south of Negaunee, will process jasper ore to high grade pellets.

Cleveland-Cliffs' Republic mine on the Marquette range completed construction of an 800,000 tons per year pelletizing plant in January. By October 1962, when further expansion of Republic is completed, the mill will have the capacity to produce 2,400,000 tons of high grade iron ore concentrate per year, and the agglomerating plant will be capable of pelletizing 1,600,000 tons of concentrate annually. The excess 800,000 tons of concentrate will be pelletized at Cleveland-Cliffs' Eagle Mills agglomerating plant, 20 miles east of Republic.

The Hanna Company's Groveland property on the Menominee range produced 785,079 tons in 1961. Expansion work, which will be completed by 1963, will double the plant's capacity.

The near-term future of the Ninth district mining areas undoubtedly lies with the processing of

Location of taconite and related facilities



"first generation" taconite and taconite-like materials. Both Minnesota and Upper Michigan have immense reserves of these types of raw material. But beyond the presently used supplies of taconite exist virtually unlimited supplies of "second generation" iron bearing materials as a basis for future plant construction. These materials, such as *nonmagnetic taconite* and *semi-taconite* are the subject of several current research efforts directed at perfecting commercial methods of treating them. One such effort, for example, is the recently constructed Hanna Mining Company semi-taconite pilot plant at Cooley, Minnesota.

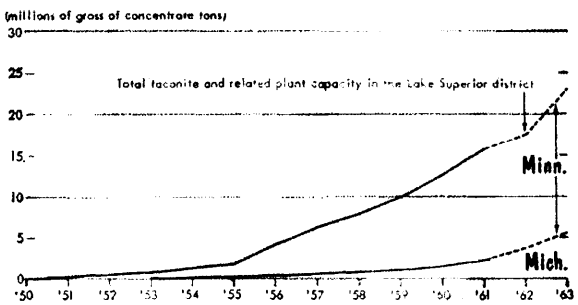
NINTH DISTRICT TACONITE AND RELATED PLANTS

State	Plant	Annual Rated Capacities (in gross tons*) Present	After Expansions
Michigan	Groveland	750,000	1,500,000 (1963)
	Humboldt	750,000	750,000
	Empire	0	1,200,000 (1963)
	Republic-Eagle Mills	800,000	2,400,000 (1962)
	TOTAL	2,300,000	5,850,000
Minnesota	Reserve	5,500,000	9,000,000 (1963)
	Erie	7,500,000	7,500,000
	SUBTOTAL	13,000,000	16,500,000
	Oliver Pilot Plant (Nodules and sinter from taconite)	700,000	700,000
	TOTAL	13,700,000	17,200,000

*2240 pounds

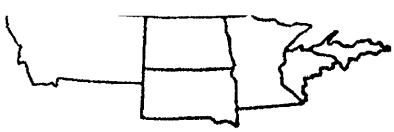
While the taconite "family" of iron-bearing materials is rapidly growing into the principal commercial base for mining operations in the Lake Superior district, the mining of "traditional" ores is not about to pass from the economic scene in the northern Ninth district. An estimate of the Mesabi reserves made recently by engineers of the Meriden Iron Company shows that 436,402,000 gross tons of known ore, exclusive of

Total taconite and related plant capacity in the Lake Superior district, with projections to 1963



taconite, are still recoverable. Of this, 270,449,000 tons are in the direct shipping category and 165,953,000 tons in open pit concentrates. This estimate is about 17 percent of the grand total of 2.5 billion tons of ore shipped between the time of the discovery of the Mesabi Range and May 1. 1960.

Companies mining "traditional" ore, too, have invested in recent times, hundreds of thousands of dollars in plant and mine expansions and modernizations. As just one example, Pittsburgh Pacific Company is presently erecting for operation this year, a new crushing and screening plant to serve the Albany iron mine at Hibbing, Minnesota, on the Mesabi range. Other new open pit mines have begun operating within the past two years in northern Minnesota, too, showing at least a measure of vitality in the face of closures and production cutbacks that have occurred in many higher cost operations across the entire range area. While uncertainties over immediate prospects still plague many iron range communities, no doubt the plant expansion and construction which have gotten underway recently for both taconite and iron ore production represent a substantial underwriting of the general future in the Ninth district range areas.



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