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Proceedings of the  
First Missouri Conference on  
Land Utilization

University of Missouri College of Agriculture  
February 23 and 24, 1933

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# PROGRAM AND PROCEEDINGS

February 23, 1933

*Morning Conference. Chairman, R. W. Brown, President of the Missouri Farm Bureau Federation.*

- Statement of Purpose. Dean F. B. Mumford, Missouri College of Agriculture.
- Recent Economic Changes and their Effect on Agriculture in Missouri. Mr. Nils A. Olsen, Chief of the Bureau of Agricultural Economics, U. S. Department of Agriculture. (Page 5.)
- Land Inventory and the Problem of Marginal Land. Prof. M. F. Miller, Chairman of the Department of Soils, Missouri College of Agriculture. (Page 16.)
- Urban and Rural Interest in the Back-to-the-Farm Movement. Dr. E. L. Morgan, Chairman of the Department of Rural Sociology, Missouri College of Agriculture. (Page 21.)

*Afternoon Conference. Chairman, W. A. Cochel, Editor of the Weekly Kansas City Star, Kansas City, Mo.*

- Forestry Possibilities in Missouri. Mr. Frederick Dunlap, State Forester. (Page 27.)
- The Mineral and Water Power Resources of Missouri. (No paper prepared.)
- Elements of a Program for Curbing Tax Delinquency. Dr. C. H. Hammar, Assistant Professor of Agricultural Economics, Missouri College of Agriculture. (Published in the May issue of the Journal of Land and Public Utilities Economics.)
- Foreclosed Land and the Farm Debt Problem. Prof. O. R. Johnson, Chairman of the Department of Agricultural Economics, Missouri College of Agriculture. (Page 31.)

*Evening Banquet. Toastmaster, Dean F. B. Mumford.*

- Experiences and Policies of Other States in Planned Land Use. Mr. E. W. Tinker, Regional Forester, U. S. Forest Service. (Address not included here.)
- Synthesizing a Land Policy for Missouri. Dr. F. D. Farrell, President, Kansas State Agricultural College. (Page 35.)

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*Morning Conference. Chairman, Prof. Ide P. Trotter, Field Crops Extension Specialist, Missouri College of Agriculture.*

- History of Drainage in Southeast Missouri. Mr. S. P. Reynolds, Chief Engineer, St. Francois Levee District. (Page 37.)
- Drainage Problems of Grand River Bottoms. Mr. Hezekiah K. Johnson, Consulting Engineer. (Page 45.)
- Extent and Cause of Drainage Tax Delinquency. Mr. W. A. Oliver, Attorney, Little River Drainage District. (Page 47.)
- The Investors Stake and His Attitude. Mr. Wyllys K. Bliss, First National Bank, St. Louis, Mo. (Page 53.)
- Critical Elements of a Program of Adjustment in Southeast Missouri. Mr. W. W. Martin, Board of Directors, Federal Land Bank, St. Louis, Mo. (Page 55.)

*Afternoon Conference. Chairman, George W. Wilkerson, President of the Missouri Council of Agricultural Organizations.*

- Local Governments and Planned Land Use. Dr. Ralph T. Compton, Research Director, Associated Industries of Missouri. (Address not included here.)
- Scenic and Recreational Possibilities of Missouri. (No paper prepared.)
- The Human Factor in a Conservation Program. Dr. Walter Burr, State Director of Unemployment Relief. (Page 59.)
- Current Agricultural Relief Proposals and the Missouri Farmer. Prof. C. L. Stewart, Department of Agricultural Economics, University of Illinois. (Address not included here.)



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## *FOREWORD*

Since 1920 the accusation has often been made that American agriculture is suffering not only from overdevelopment but from too hasty and often disorderly development fostered by the war era of high food prices. Agriculture's plight since 1920 and particularly during the present depression has attracted national attention, and the avowed purpose of the legislation now (April 1, 1933) being proposed in the National Congress is to provide the means for a needed readjustment. In large part the need for this readjustment arises out of a deranged monetary and credit structure. The decline in the export demand for the country's agricultural products and the growth of foreign competition, however, suggest that the American farmer must, for the time being at least, be prepared to find a domestic market for a larger part of his production than at any time in the recent past. Some retrenchment in agricultural production if farm incomes are not to be ruinously low apparently is advisable.

That the situation is entirely temporary seems highly questionable as many acquainted with the facts of the recent period, viz., low farm incomes, rapidly declining farm land values, the mechanization of agricultural production, the growing carry-over of wheat and cotton, the changing food habits of the nation, the rapid depletion of timber reserves and the like, will agree. Rather, while the immediate problems arising out of the acute depression will attract the major share of the attention, American agriculture is apparently passing from a phase in which the keynote was rapid expansion to one in which a great reordering of land use will be the prime objective.

Opposed to the tendency for decreasing the cultivated area, is the increasing attention directed to land colonization as an antidote for our economic and social ills. Utilizing land for subsistence farming in order to reduce unemployment in the cities, has serious limitations. Should the standard of farm living be lowered in order to keep land in use? How to reconcile a reduction of land in use, and at the same time make land contribute to the economic recovery is a problem that can be solved only by a sound land use policy.

A most significant step in the direction of providing the information and organization for promoting greater intelligence in land utilization was taken

when the National Conference on Land Utilization, called by the Secretary of Agriculture and the Executive Committee of the Association of Land Grant Colleges, was held in Chicago, November, 1931. The first Missouri Conference on Land Utilization, the proceedings of which are herewith presented, was a similar meeting on a smaller scale. The land use problems of Missouri are in part only a smaller section of those which concern the entire nation; in part they are peculiar to the state.

The purpose of the Missouri conference was, as stated in the program, "To stimulate private and public interest in the development and conservation of the natural resources of Missouri. To seek, and so far as possible to provide, information furthering the adjustment of the forms and methods of land use to changing economic and social circumstances and conditions. To establish contact with agencies of the Federal Government and of other states that are interested in land use problems and to coordinate the efforts made in Missouri with those being and to be made in other parts of the country."

During and after the conference a considerable demand for the papers presented arose and a decision was made to publish the papers as the proceedings of Missouri's First Conference on Land Utilization. Limitation of space forbade the publishing of all papers and necessitated the compressing into shorter length of those printed. The editing of the papers in the interests of shortening them has, however, been done with great care and with as little sacrifice of the thought and meaning of the original author as was possible.

CONRAD H. HAMMAR AND H. H. KRUSEKOPF, *Editors.*

## RECENT ECONOMIC CHANGES AND THEIR EFFECT ON AMERICAN AGRICULTURE

NILS A. OLSEN, *Chief,*  
*Bureau of Agricultural Economics,*  
*United States Department of Agriculture.*

I value this opportunity to take part in Missouri's first state conference on land utilization. The situation is serious and calls for united action. The purposes of the conference are admirably stated in your program. It is timely and sound to make provision for the economic development and conservation of your natural resources, for adjusting the use of your lands to changing economic and social conditions, and to further the utmost cooperation in your efforts to aid a sorely distressed agriculture. We have all done some planning, but we can plan together much better. What's more, we can do a better job of putting well-conceived plans into action. It is not for a lack of natural resources or of scientific knowledge that the world is suffering today. The potential output of agricultural and industrial products seems almost to have no limit. But we have not learned to utilize these resources to best advantage, to avoid excesses and resulting maladjustments, to distribute the national income equitably, and in general to so order our economic life as to escape the human distress and want we see about us today in the midst of plenty.

### **The World Economic Crisis**

This is not an American crisis. It is a world crisis. Its manifestations, in varying degrees, are the same everywhere. Demoralized prices, onerous debts and taxes, dislocated production, deranged or broken trade relations, upset currencies and financial embarrassments are in evidence in practically all parts of the world. All phases of economic life have been sucked into its orbit—financial, industrial and agricultural.

The recovery following the devastation wrought by the World War was rapid. By 1929 we had reached a higher level of industrial prosperity and a higher standard of living than prevailed before the War. But this recovery, as we now realize, was built upon an unsound foundation. The crash was inevitable.

It is essentially a money and financial crisis. The machinery of exchange has broken down. The Gold Standard as a medium of international exchange has been undermined and we are now drifting in a sea of uncertain and fluctuating currencies. Since the fall of 1929 wholesale prices of the world measured in gold have fallen about 45%. This drastic drop in prices affects all commodities. It can not be explained by the disproportionate production of particular commodities or by the overproduction of all commodities. Since 1929 the world has been producing less and less of industrial goods and consumers' purchasing power has been greatly decreased. A basic cause of the crisis is the failure of the world to properly direct and control the flow of credit to the various uses to which it is put. Prior to 1929 credit was unwisely advanced, and led to overcapitalization, excess plant capacity and inflated values that could not be sustained. Deflation was the inevitable results, and the world has now gone to the other extreme in contracting the use of credit. Our trouble, in short, traces in considerable part to our failure to direct and control the credit superstructure built on gold.

The monetary and financial disturbances have had a blighting influence upon international trade. The War left Europe a heritage of reparations, war debts and dislocated economic activities. The load of debt was further augmented by reckless borrowing following the War. With the development of an intense nationalism following the War and the erection of tariff and other barriers to trade it became practically impossible for many countries to maintain their balance of international payments. Exports to the great creditor countries were checked by tariff and other barriers, new foreign lending was stopped for lack of confidence, and gold flowed to the United States and France in settlement of accounts. As a result most countries were driven off the Gold Standard. Frantic efforts have been made especially since 1929 to establish a favorable balance of trade by cutting off imports and increasing exports. This has had the effect of driving prices still farther on their downward course, and the value of products in our international trade has been reduced to discouragingly low levels.

Various influences have served also to introduce serious dislocations in production activities the world over. The World War upset existing economic arrangements and the world has failed to establish a new equilibrium. Credit stimuli and bad planning undoubtedly led to excessive expansion in some lines of industrial production. Industrial expansion based on inadequate appraisal of the future demand for specific commodities resulted in excessive supplies which were unloaded upon the market when the crash came. The resulting demoralization of prices was intensified by the fact that the demand for many commodities now produced is capricious and tends to vanish when hard times come. Furthermore, many rigidities have been introduced into the economic structure which seriously retard the adjustment of some prices to changed economic conditions and thus hinder the guiding of production by the free play of prices. In short the system of regulating production by prices has failed to function.

There is also dislocation in agricultural production. Mechanical and other developments in grain production, for example, have led to excessive supplies of wheat. Even without the industrial depression there probably would have been some depression in agriculture because of the relatively inelastic demand for food and the inability of agriculture to adjust its output to the changed conditions.

But whatever the causes, the effects of the debacle upon industrial output and employment and the domestic and foreign demand for our farm products have been far-reaching. Industrial production in the United States dropped from 125% of the 1923-25 average in June 1929 to 58% in July 1932. Building activity as measured by contracts awarded declined from 126 in 1929 to 26% in March 1932. The national income declined from about \$91,000,000,000 in 1929 to somewhat under \$55,000,000,000 in 1932, or more than 40%. But the incomes of certain groups of urban wage earners dropped even more. The combined wage payments by factories, railroads and construction activities have declined as much as 65%, as a result of unemployment, part-time employment and reduced wages. An unofficial estimate now places the total unemployed at 13,000,000. It is not surprising, therefore, that the domestic demand for products of our farms has fallen to such low levels.

Much the same situation obtains with reference to foreign industrial activity and unemployment. Two-thirds of our agricultural exports go to the industrialized countries of northwest Europe, and to Japan. If we exclude textiles, it appears that the general industrial activities of most foreign countries at the close of 1932 was below that of 1931. Unemployment in Great Britain was almost 30% greater than a year earlier and in all European countries except Poland the number of the unemployed had increased in 1932 over the preceding year.

At the same time the production of agricultural products in foreign countries has been brought to a high level. In the deficit agricultural countries of Europe production has continued to mount, aided by the protection of tariffs and other trade restrictions. The wheat acreage in deficit European countries this past year was 7% higher than in 1929 and 20% greater than in 1920. The all-Europe wheat acreage, excluding Russia, was 2% above the prewar average. The number of hogs in Europe, again excluding Russia, has averaged during the last few years, about 30% above the average in the years immediately following the War and 10% above the prewar average.

In exporting countries like Canada, Australia and Argentina, there also have been shifts in crop areas during the last three years. While the total area in cultivation in 1932 in these three countries has declined somewhat, the area in wheat was 3% larger than in 1929, more than 10% larger than the average of the five years ending in 1929 and over 80% above the average before the War. Shipments of beef and mutton from the Southern Hemisphere have increased a third and shipments of butter have almost trebled since prewar years. In like fashion the world production of vegetable oils has been enlarged by 50% over prewar levels.

Thus industrial stagnation and unemployment, a high level of world agricultural production, trade barriers and declining populations in various European countries go far to explain why the foreign demand for our agricultural products has fallen to a new low level for the depression. The value of our agricultural exports the past fiscal year was 60% below that of 1929.

#### **Some Effects of the Economic Crisis on American Agriculture**

The effects of the crisis on American agriculture have been tragic. Missouri farmers have shared with others in these losses.

Prices of agricultural products have plunged to levels unmatched since 1896 and are now about one-half of what they were before the War. Some products have suffered more than others. Prices of grains are now 34 and cotton 45% of the prewar levels, reflecting the combined influence of domestic and foreign conditions. Meanwhile excessive stocks of wheat and cotton have piled up to complicate the situation.

This collapse in the prices of farm products has its counterpart in the shrinkage in farm incomes. The gross farm income in 1932 is estimated at about \$5,000,000,000 compared with \$12,000,000,000 in 1929.

A great disparity, in fact the greatest in the past 60 years, exists between prices received by the farmer for his products and prices paid by him for commodities which enter into farm living and production. It is true that prices of commodities bought by farmers have receded from 155% of prewar in 1929 to 105% now, but prices of farm products have dropped so much more

that the ratio of prices received to prices paid by farmers is now only 49% of prewar levels.

Meanwhile debts and taxes have mounted and weigh heavily on the industry. The total interest-bearing debt of agriculture today exceeds 12 billion dollars. By far the largest part of this debt is in the form of farm mortgages, totaling now around eight and a half billion dollars. Four-fifths of the mortgage debt is in the West North Central States and the South. This mortgage burden is borne by less than half of our farms, but around 75% of it is carried by actual farmers.

The severe drop in land values has seriously impaired the collateral behind these loans. Farm land values in 1932 were 11% below prewar levels and in several states they were materially lower. In 1930 the mortgage debt amounted to 40% of the value of mortgaged farms and the further drop in land values in the past two years has substantially increased this percentage. But this does not tell the full story. A special inquiry made about a year ago showed that almost 27% of the mortgaged farms were encumbered for half or more of their current value, and about 19% were encumbered for 70% or more. A further drop in land values since the inquiry no doubt has intensified the problem.

The annual interest charge on the farm mortgage debt is now about half a billion dollars yearly. If we add the charge on other interest-bearing debt the total interest bill of agriculture is somewhere between 800 and 900 million dollars annually. This load is increased by the weight of the tax burden. Total farm property taxes gradually increased to a peak of about 777 million dollars in 1929 and 1930. Since then farm taxes have dropped by about 20% and this past year were estimated at about 629 million dollars. This substantial reduction in taxes, incidentally, is encouraging.

Altogether then, the total annual fixed charges for taxes and interest amount to more than one and a half billion dollars, or roughly, two and a half times more than before the War. The gross income of agriculture in 1932 on the other hand was nearly a fourth less than before the War. Taxes and interest on mortgage loans probably absorbed around a fourth of the gross and more than a third of the cash farm income in 1932, and it required between four and five times as many units of farm products to pay them as before the War. Both in 1931 and in 1932 a great many farmers had no income left with which to pay these charges and were driven to borrow, if they could.

This phase of the situation has been made much more acute by the breakdown in the rural credit structure. Over 10,000 banks, located largely in agricultural areas, have failed since 1920 and the deposits of solvent banks in rural areas are only about one-half what they were three years ago. This has greatly reduced the ability of the farmer to borrow funds with which to meet current interest and taxes. Furthermore, all mortgage lending institutions have had to reduce their new loans drastically during the past three years.

The inevitable result has been an epidemic of farm foreclosures and tax delinquencies. Fully 9½% of the farms in the United States changed hands on account of defaults during the last five years. Sales on account of tax delinquencies affected 3½% more farms, and in addition there was a turnover of another 11% through trades and nominally voluntary sales. Forced sales

increased last year to 41.7 per thousand farms, or roughly double the average for the preceding five years.

Unpaid taxes also have increased rapidly since 1929. In about 30 widely scattered farming countries, for example, seven and five-tenths per cent of the property taxes were unpaid in 1929 at the date when penalty was applied, whereas this percentage had mounted to 15.8% in 1931. Although temporary tax delinquency does not entail immediate dispossession of the farmer it does set up a debt at compound interest, usually at a very high rate.

All of this is reflected in the shifting in the tenure of our farm lands. In 1930 over one-half (52.8%) of our farmers rented from others part or all of the land they farmed, and the number now undoubtedly is much greater. At no time in our history has the proportion of farmers renting the land they farm been so high. Large amounts of distressed farm lands too have been acquired by lending agencies, often to deteriorate in value and still further depress land values.

The depression in agriculture has had a marked influence upon the status of large bodies of our land. Great shifts have occurred in the use of lands. The area in harvested crops east of the Mississippi has been reduced by 19 or 20 million acres in the past ten years and increased by, roughly, an equal amount west of that river. Some of this shift no doubt reflects present abnormal conditions, part of it no doubt reflects normal adjustments. The "abandoned farm" which until recently at least dotted the landscape in many parts is mute evidence of the slow and painful adjustments farmers have been compelled to make.

Vast areas now occupied are so handicapped by nature or location that they yield a return so low as to place them distinctly in the marginal class. It is roughly estimated that such lands amount to as much as 100,000,000 acres of our farming area. Large areas of cut-over lands, perhaps totaling 100,000,000 or more also lie idle with wholly inadequate provision for restocking. And financially distressed drainage and irrigation projects are to be found in all parts of the country.

### **The Outlook and the Way Out**

But what we are most concerned with now is the outlook ahead and the way out of these difficulties. In turbulent times like these when the course of developments hinges so much upon the political and economic rivalries and even the military activities of nations it would be precarious to venture upon a forecast as to the future. It is perhaps no less precarious to venture out upon suggestions looking to the amelioration of conditions. This is not, however, a time for timidity and it behooves us to consider together lines of action that promise constructive results.

One fact is clear and that is that the agricultural crisis is a part of the world economic crisis. Policies affecting agricultural welfare can not be considered apart from the conditions that have laid prostrate other segments of the nation and the world. Leveling out economic inequalities is not the sole consideration now. Our aim should be the restoration of our entire economic life. The situation calls for a program of reconstruction along the entire economic front.

The crucial spots in the agricultural situation will be found in the disparity between prices of farm products and industrial goods and services farmers

buy, the contraction of markets for agricultural products, the burden of the debts contracted when prices were much higher, as well as in onerous farm taxes. The situation has become an intolerable one for many farmers. Either prices of farm products and farm incomes must move up or debts, taxes, and the costs of products and services farmers buy must come down.

It is apparent, therefore, that the outlook for agriculture during the years ahead depends in no small degree on what happens to the general price level. Prices seem to be behaving much as they did in the depression of the thirties and the seventies of the last century, both of which followed great war periods. There is some encouragement in the fact that in these earlier depressions prices of agricultural products reached their lowest levels before non-agricultural prices and the general price level touched the bottom of the decline. In any event further adjustments must be made before a high degree of stability in the price level is attained.

But it may well be asked if the history of prices must repeat itself. Steps can be taken, it is urged, to reverse the trend of agricultural prices or even of the general price level. Sometimes such measures are advocated as emergency aid to relieve a desperate situation, sometimes as more permanent policies.

Special devices to lift agricultural prices have been under consideration in this and foreign countries for more than a decade. Many of them have been tried and with varying success. As emergency aid to agriculture there is much to argue for experimentation with such devices. Their adoption, furthermore, may serve to awaken the nation to the need of correcting a situation in which some groups enjoy unreasonable economic advantages. A number of questions, however, arise as to the workability and ultimate effects of such measures. Will they bring the desired enhancement of agricultural prices now that incomes are at such low ebb in other parts of our population? Can they be effectively administered? Would they tend to introduce still more rigidity in our price structure, prevent desirable adjustments in production, and run counter to the policy of removing restrictions upon international trade?

There is now as much justification for and perhaps as great possibilities in measures aimed at lifting the general price level. Deflation has gone to excess. Some induced inflation, if it can be effectively and safely brought about, would prove a boon to debtors and would not work an injustice to creditors. It is a problem in credit and monetary technique. Experience shows that there are dangers in certain kinds of inflationary measures. On the other hand there appear to be substantial possibilities of favorably and safely influencing the general price level through credit controls and monetary policies by the central banks of this and other countries. At any rate the technique of controlled inflation as well as the possibilities of cooperation with other nations to this end should be adequately explored.

No less urgent is the need for far-reaching banking reform. Our banking system has grown up in mushroom fashion with wholly inadequate provision for supervision, coordination and control. It should receive drastic overhauling. Unwise advances of credit are at the bottom of the inflation which culminated in 1929. The problem of controlling credit is a difficult one, but some means must be found to prevent the excesses which have brought us to the present pass.



Yet another method of stimulating a rise in agricultural prices, and which is closely associated with the effective use of credit, is through the restoration and broadening of domestic and foreign markets for agricultural products. That the domestic market for agricultural products has been seriously injured is apparent from the drop in gross farm income from 12 billion dollars in 1929 to 5 billion dollars in 1932 though there had been little change in the total volume of agricultural production. An early return of domestic demand to the former level is not generally anticipated. The volume of industrial activity at the close of 1932 was only one-half of what it was in 1929 and one-third of the persons formerly gainfully employed in industrial pursuits were unemployed in industry this past year. Our industrial growth has been very rapid. Between 1899 and 1929 our population increased 60% whereas our industrial output increased 200%. That industrial expansion of 30 years has been wiped out since 1929 and the ratio of output to population is what it was 30 years before. This phenomenal industrial growth was stimulated in large part by war and post-war conditions which are not likely again to assert themselves to the same extent. Our population also is increasing at a slower rate. Ten years ago the population increased nearly 2,000,000 annually. Now the net increase is about 800,000. Furthermore, it is unlikely that a substantial industrial revival would absorb all of the unemployed. Factory production expanded 45% between 1919 and 1929, while the number of factory workers actually declined at least 5%.

Nevertheless there are promising opportunities for reviving industrial activity and thus broadening the market for farm products. We need more, not less, production of industrial goods. Increased industrial activity will make for more employment and greater purchasing power. Stocks of consumers' goods have been depleted. There are still the old human desires and demands to be satisfied. The restoration of industry will call for further substantial reductions in costs of production, the development of new processes and new products, the opening up of new markets at home and abroad and the narrowing of profits. It will require renewed confidence and daring initiative on the part of our leaders in business and banking.

The reemployment of the unemployed is so vital to our well-being that nothing should stand in the way of its accomplishment. Private industry alone can not be counted upon to bring this about quickly enough. The situation is such as to make desirable and necessary the use of the Government's credit in providing employment for the unemployed.

But American farmers can not place their sole reliance upon the domestic market. For many of their products they must have a foreign outlet. Normally we export over half of the cotton crop, a third of the tobacco, a fifth of the wheat, almost a fourth of our rice, a twelfth of our pork products and increasing amounts of our fruits. It is sometimes suggested that we reduce our production to our domestic needs and thus retire behind the tariff wall. That would appear undesirable even if it were feasible. Around 60 million acres of land are now used in producing our agricultural exports. It is difficult to see how we could reduce our agricultural plant by that amount particularly in the face of the present countryward movement. It is no less difficult to see how this acreage could be shifted to other commodities without seriously imperiling their position. It has been suggested we shift much of this acreage to crops we normally import. Here again we are con-

fronted with the fact that even under the most favorable conditions we could not expect to shift more than fifteen or sixteen million acres in this manner and it would probably be more nearly one-half of that amount. Then too we must not overlook the fact that such a policy would be tantamount to surrendering to our competitors foreign markets which we could ill afford to lose permanently.

We should seek out ways and means of restoring our foreign markets. These markets have been all but ruined by tariffs and other trade barriers, the depreciation of currencies and restrictions on foreign exchange, reparations, debts and the like. Barriers to trade are not new but with the creation of new states since the War they have greatly increased in number and kind and since the collapse in 1929 there has been a veritable orgy of protective devices, aimed at protecting currencies and maintaining favorable balances of payments in international trade, until now scarcely a foreign market remains untouched by their restrictive influence.

Difficult as it may be and involving concessions on our part as it will, the restoration of our foreign markets through the reestablishment of a stable medium of international exchange, resumed capital movements and better coordinated credit policies, adjustments in international debts, the reduction and readjustment of tariffs and other barriers to trade between countries, is a promising avenue of relief for agriculture. The adoption of such a program would assist in restoring confidence and stimulating industrial activity. It would broaden markets and strengthen prices.

We have considered the possibilities of a strengthened price level which would go far to relieve the present distress. It would be difficult now to forecast what course prices will take. If the general price level rises agriculture will be one of the first industries to benefit. If on the other hand the price level tends to stabilize at somewhat near present levels there will be a continuation of the liquidation and readjustments now in progress. In fact under such conditions the position of agriculture will improve as the readjustments are hastened that will bring debts, taxes and costs of all kinds into line with the lower agricultural prices that prevail. The gulf between income and outgo must be bridged.

Even with a substantial rise in agricultural prices, however, there will be need for further adjustments in debts, taxes and the costs of commodities and services that farmers buy. In the heyday of our prosperity we recklessly mortgaged the future and built up as a nation a staggering load of debts. It is now generally recognized that there must be adjustment in the burden of debt that hangs over our economic organization before we shall have substantial business recovery.

Farm debts, although small in comparison with our total public and private debt, have become a serious burden under present income levels in many parts of the country. Some farmers no doubt are so financially involved that little help can be extended except perhaps to facilitate and ease liquidation of their debts. The majority can and should be aided to carry on. A loss, of course, has been incurred. That loss it would appear should be fairly shared by creditor and debtor. But in considering plans for debt adjustment we must not overlook the interests of creditors. Almost 30% of the farm mortgages are held by private individuals whose life savings in many in-

stances are bound up in such mortgages. The great lending agencies that have advanced large sums to farmers have their responsibilities to depositors, policy holders and investors who number into the millions. These are important sources of agricultural credit. The adoption of extreme measures might well result in drying up these valuable sources of credit for the future. Furthermore, many of the lending agencies have gone far in adopting liberal policies toward debtors.

But adjustments in farm debts are needed and should be made. Naturally they will vary with the individual case, at times requiring merely extensions of loans or assistance in meeting delinquent payments, at other times involving some adjustment in the volume of the debt itself to better conform to the paying capacity of the farmer. Whatever the adjustments they should proceed in an orderly way in fairness to debtor and creditor, and on the assumption also that there will be some improvement over the present demoralized farm income levels.

It would seem desirable that these adjustments should be made as a result of voluntary agreement between debtor and creditor. But some additional machinery, such as voluntary local committees supplemented with official debt adjustment counselors seems necessary to expedite the process. Additional financial facilities also may well be provided by the Federal Government not with the purpose of assuming a major part of the debt load or to replace existing agencies in the farm mortgage field, but to service and facilitate the process of debt adjustment.

Taxes on farm lands, fortunately, have begun to recede but they are still beyond the farmers' capacity to pay. There are good grounds for believing that farm taxes will decline still further. It is unlikely, however, that they will be brought down to their prewar relation to farm prices because of the tendency for public expenditures to increase and because of existing public indebtedness. Further tax reduction on farm lands, whether through economies effected in expenditures or through a redistribution of the burden, is imperatively needed and would materially ease the lot of farmers. There is danger, of course, that in our efforts to reduce taxes we will unduly sacrifice services that are now more essential than before. The problem is one that calls for enlarged and intensive investigation by State and Federal agencies, coupled with concerted efforts to translate well matured tax revision programs into action.

But there must be adjustment also in the prices of commodities and services farmers buy to the lower farm income level. The prices of some items in the farmers' budget have receded materially but prices of other items have not been adjusted to the lower price and income levels. Social justice and economic necessity requires that transportation, equipment, and other operating and living costs be brought within the farmers' capacity to pay. Unfortunately, a great deal of rigidity has developed in our economic structure which seriously retards the adjustment of prices and charges to changing conditions. Price levels in such cases probably are influenced by costs, overcapitalization, drastically curtailed production programs, and price maintenance policies. Where overcapitalization is a dominating cause of unreasonable and rigid price levels, reorganization of capital structures is essential. If the costs of producing such commodities or rendering such services are at

prohibitive levels, the necessary adjustments should be made. In the long run the interests of such industries will be best conserved by a policy of lower prices and reasonably maintained production and employment. If more equitable price relationships can be had only through more competition, let's have it; if less competition but more effective regulation is the answer then let's have that.

I may appear to have wandered rather far afield for possible answers to our many agricultural difficulties. On further reflection I believe you will agree that I have not. But there are equally constructive pieces of work within the fields of agricultural production and marketing to which we can turn our hand. The agricultural plant is now in a badly disorganized state. Far-reaching adjustments in land use as well as improved methods of production, transportation and marketing will be required.

We can not eliminate competition in agriculture whether we are on a domestic or on a world basis. Whatever may be done in other directions the battle for increasing efficiency and lower costs of production will continue. In the long run it is likely the battle for the markets of the world will be settled in the arena of competition and victory will go to those who know and apply the best technical production and economic information in their business. Much is said of the uselessness of technical production research at a time when we are surfeited with supplies. This viewpoint fails to sense that but for the increased yields per unit of land and expenditure resulting from such research the costs of production would be measurably higher and net incomes lower.

But in adopting this policy we must pursue it unrelentingly to its logical conclusion. In this competitive struggle inevitably there will be lands so handicapped by nature and location that they will yield but the most meagre living. Such lands, after it has been determined that they are submarginal, should be retired from the agricultural plant and be devoted to forests, wild game refuges, recreation and to other uses for which they are better suited. A land policy such as this may seem to run counter to plans that call for the settlement of large numbers of the unemployed on abandoned lands that have been removed from agricultural use because of their inability to compete with other lands. There is some conflict in these movements, but as an emergency measure and from a national point of view it is probably wise to provide shelter and food temporarily in this manner against the time when a reviving industry will be able to reabsorb a large share of the unemployed and thus reestablish the desired equilibrium between agriculture and industry.

What is urgently needed now is intelligent direction of this countryward movement to avoid complicating an already serious agricultural situation, to prevent the permanent settlement of lands on which only a poverty agriculture can be built, and to assure that the financial burdens of caring for the unemployed shall not be shifted to farming communities.

Much of the farm relief thought of the day revolves about the elimination of surplus supplies by means of production controls. It is significant in this connection that the crop area since 1920 has remained fairly constant at around 355,000,000 acres. There have been, of course, during the past decade marked shifts in the geographic location of the crop area and in the

relative importance of various crops. More than likely the contraction of our foreign markets will continue to exert a material influence upon the course of our agricultural developments. We shall no doubt for many years to come continue to export large amounts of cotton, wheat, tobacco and lard, but if there is a growing dependence upon the domestic market, relatively more of our lands will be devoted to the production of dairy products and meat, fruits and vegetables. In other words comparative advantage will continue to determine the emphasis placed by farmers on the several farm enterprises. If their decisions are made on the basis of an adequate appraisal of the outlook, it is likely that the desirable adjustments as between farm enterprises will result.

Proposals to lift agricultural prices through drastic reduction of the crop area present a number of interesting questions. Will the individualistic farmers of this country submit to a regime of production control? Will the individual farmer whose overhead costs are relatively fixed profit through the contraction of the supply he will have for sale? Can we be sure that the reduction in acreage will reduce the total supply? We know that slightly over one-half of the variations in cotton supplies from year to year are due to yield and that yield has a still greater influence on output in the case of wheat and corn. Beyond that short supplies at home are frequently offset by larger supplies abroad. Withdrawal of lands from crop use is necessary but there is much to argue for the withdrawal of such lands in the submarginal areas where returns must be distressingly low and after adequate determination of the alternative uses to which such lands can best be put.

I pass over the need of improving the processes and reducing the costs of marketing agricultural products not because it does not exist but because I have overstayed my time now. I should not feel at ease, however, if I did not dangle before you the old adage that "An ounce of prevention is better than a pound of cure." The wisdom of this thought is driven in upon us as we grope about for ways out of the present dilemma. The world has come to the present pass, I believe, because of a lack of foresight and wisdom in ordering its life. We have permitted, even encouraged, excesses that have upset the effective functioning of our economic machine. We have failed to take stock of disruptive tendencies and make in time the necessary adjustments. We need a planned economy, not in my judgment rigidly controlled by the State, but individual and cooperative planning assisted and guided by the State.

## LAND INVENTORY AND THE PROBLEM OF MARGINAL LANDS

M. F. MILLER, *Professor of Soils, Missouri College of Agriculture.*

It seems wise in this discussion to use the term "land inventory" in the restricted sense of referring to the condition of the land as it now exists, including the soil types as they are recognized in the Soil Survey, as well as the general characteristics of the land for agricultural purposes, such as fertile and infertile lands, tillable and non-tillable lands, forests and prairie lands. It seems wise also to consider certain matters which may be included under the agricultural classification of lands, that is, the grouping of them as to their adaptation to crops and to systems of farming. To be complete an agricultural land inventory should include not only the nature of the lands as they exist, but a variety of other data such as the amount of land in harvested crops, the amount in pasture, the amount of abandoned land or that on which taxes may be delinquent, the assessed valuation, and a number of other items. No such complete inventory is available for the lands of Missouri at this time.

The fundamental basis for any agricultural land inventory and land classification for a state is found in the Soil Survey. As is well known, the United States Department of Agriculture has been engaged in such a survey throughout the country for almost 40 years. This survey is usually conducted in cooperation with the states, using the individual county as the unit. Through such a cooperation with the Federal Government, surveys of 60 Missouri counties have been completed and the maps and reports have been published. In this type of survey the natural characteristics of each soil type are recognized and its area shown on the published map. The total number of soil types thus far mapped and described in Missouri is about 175. These doubtless include practically all of the soil types existing within the State, although a few more of minor importance may be found in the remaining counties.

In addition to these county maps and reports there has also been prepared and published, as Experiment Station Bulletin 264, a reconnaissance map and report outlining and describing the principal soil areas of the State. This map was prepared by using the data from the available detailed county maps and by making a reconnaissance survey of the remaining counties. Naturally such a map is a very general one and is not in sufficient detail for working out complete land use maps of the counties.

### Fertility Grades of Land

The general data already available for the majority of the soils of the State offer a basis for some interesting inventory observations. A key to the various soil types has been prepared in which these types are ranked as to fertility and agricultural value. There has also been prepared a more general map covering the whole State and classifying the 30 principal soil areas into five grades according to their productivity. According to this general system the amount of first grade land in the state is approximately 15% of the total area, the amount of second grade land 20%, the amount of third grade land 15%, fourth grade land 30%, and fifth grade land 20%.

### **Tillable and Non-tillable Land**

The areas of tillable and non-tillable land in Missouri are naturally closely related to those of different fertility grades. In general, the non-tillable land is found largely in grades four and five, with small areas of very rough topography in the other grades. Of course, not all of grades four and five are non-tillable, the principal areas of this type being those of very steep topography and of excessive gravel or stone content. Such non-tillable areas total about 40% of the land area of the State.

### **Prairie and Forest Land**

The areas of prairie and forest land as originally differentiated by nature are again related to the five fertility grades. The greater part of the prairie land is found in the three higher grades and most of the timber land in grades four and five. Roughly speaking, around 40% of the State was originally prairie land and 60% timber land. About 40% of the State still remains mostly cutover. The topography of the prairie land is on the whole much better suited to agriculture than is that of the timbered areas. Moreover, prairie grasses usually leave in the soil a much larger percentage of organic matter than does the growth of timber, so that most of the prairie soils are considerably higher in organic matter and nitrogen than are those of timber land.

### **Land Subject to Water Erosion**

Missouri lies within the climatic belt where water erosion is rather intensive. As a consequence, erosion has caused excessive damage to large areas of land. Unfortunately too, this action is continuing, due mainly to the large acreages of cultivated crops, which comprise almost exactly 50% of the cropped area. As is well known, erosion is at its maximum when the land is cultivated. Investigations show that with slopes of 5 to 10%, and with a large percentage of the agricultural lands in cultivated crops, erosion is the most important factor in causing soil deterioration. There is no doubt therefore that erosion is very largely responsible for the majority of the abandoned lands now found in the State.

It is difficult to make a very close estimate of the land which has gone out of cultivation through the influence of erosion. However, a careful study has been made of the acreage of the important soil types which are influenced by erosion processes. From the data secured it has been estimated that approximately one-third of the total land area in Missouri is subject to severe erosion, one-third to moderate erosion and one-third, including the bottoms and level prairies, to little or no erosion.

### **Drained and Undrained Alluvial Land**

The extensive areas of swamp land which originally existed in southeastern Missouri have now largely been drained. The same can be said of the wet land of the Mississippi and Missouri River bottoms. Large areas of wet land are still found along the Grand and Chariton Rivers in northern Missouri, where the difficulties of water removal and the heavy soil have presented great obstacles to drainage. Similar bodies of such land are found along some of the smaller streams in northern Missouri, as well as along the streams of the southwestern Missouri prairies. The total amount of alluvial land is about 20% of the State's area, of which approximately 20% still remains undrained. As time goes on and as economic conditions

make possible the more complete levee protection and drainage of this great area, some of the lower grade lands of the upland will doubtless be used to a greater extent for grass and timber and these alluvial lands for the production of higher priced crops, including not only corn, small grain, alfalfa and cotton, but a great variety of truck crops as well.

LAND AREAS IN MISSOURI, 1930  
(In Acres)

Total land area of State .....	44,000,000
Total land not in farms (Rough forest land, roads, cities, towns) .....	11,000,000
Total land in farms .....	33,000,000
Cropped land .....	14,000,000
Plowable pasture .....	7,000,000
Forest pasture .....	5,000,000
Other pasture .....	2,000,000
Total pasture .....	14,000,000
Total forest in State .....	16,000,000
Total stony and gravelly land .....	5,700,000
Total bottom land .....	8,700,000
Maximum tillable area (Including marginal and unimproved bottom) .....	26,000,000

### Agricultural Land Classification

The term "land classification," as related to agriculture, usually refers to the separation of different types of land into grades according to their agricultural value. Naturally the agricultural value is closely related to the fertility grades and is based on the yields of different harvested crops or on the adaptation of the lands to grazing or forestry. While corn is generally conceded to be the best crop index of fertility, yet in a balanced agriculture there are other crops to be considered, so that generally speaking the most desirable agricultural land is that which will produce the largest number of stable crops well. In the final analysis therefore agricultural land classification is fundamental in working out systems of farming as these are determined by fertility and crop adaptations.

### National System of Land Classification

As a result of the National Conference on Land Utilization held in Chicago in 1931, national committees are now at work dealing with land use. One of the subcommittees is working on a land classification of the country, and, in its work, is making an intensive use of the soil survey. The plan provides for a grouping of similar soils into groups and ranking each group as to its production of the various crops in the region where it is located. The Department of Soils of the Missouri College of Agriculture is cooperating with the national agency in working out such a classification in those Missouri counties for which soil maps are available.

It should be understood that such a classification of agricultural lands serves merely as a basis for further work. The economic and social conditions in the different regions of the State will have a profound influence in determining proper land utilization. Such conditions, particularly markets and transportation facilities, may sometimes render a given type of farming, such as trucking, quite profitable on land to which it is not ideally adapted by nature. Moreover, there are various degrees of adaptation to crops and many farms comprise several classes of land for which a system of farming



must be worked out. But in spite of much complexity the fact remains that on the great majority of farms the land is the foundation of success or failure for a given farm enterprise.

### The Problem of Marginal Lands

There are different conceptions of the term "marginal lands." Popular parlance commonly accepts the term as referring to those lands which under a moderate agricultural price level are on the margin of profitable use for harvested crops. So far as the country as a whole is concerned much of these so-called marginal lands, along with very sparsely settled areas of poor land not usually considered agricultural in character, and areas needed for the protection of watersheds, for game preserves, or recreational centers could be managed better if in public rather than private ownership. Such lands bring little to the county or state in taxes at the best, and under periods of depression great areas become tax delinquent, thus increasing the tax burden for the farmers on better lands. Moreover, the problem of road and school maintenance in such areas is a serious one. While Missouri has her share of marginal lands she is not alone in this and the question of how to handle such lands in the best interests of the farmers now on them, as well as for the good of the people as a whole, is a difficult one to answer.

Referring to the marginal crop lands, it should be understood that during periods of high agricultural prices, such as those resulting from the World War, much of this land was in profitable crop production. At the present time with crop prices greatly depressed, it can not be cropped with profit and it is either being abandoned to grow up in weeds or brush, or it is being converted into pasture. We may also recognize the two extremes of marginal lands. There are first the barely supermarginal lands, or those of better grade, which can be cropped with some profit when farm prices are a little above normal, and with considerable profit when farm prices are high. Second, there are the submarginal lands that can be cropped with profit only when agricultural prices are very high.

Much land that was originally good farming land has been so depleted by erosion and exhaustive systems of farming, principally in the production of corn, that it has reached such a state of impoverishment as to place it in the marginal class. According to the records of the Missouri Crop Reporting Office, a little over 2,000,000 acres of Missouri land have been removed from cultivation during the last eight years, and more is constantly being added to this total. The exact amount of marginal crop land in Missouri is rather difficult to estimate; but certainly from the standpoint of land capable of producing ordinary farm crops under favorable conditions the 2,000,000 acres indicated is definitely marginal and there is probably another million which while still in cultivation, should properly come in this class.

Even under what may be considered normal economic conditions, when much of this marginal crop land is in cultivation, it is widely recognized that its use for cropping purposes is a detriment to the farm operators on better lands since the amount of produce thus added, particularly during favorable seasons, tends to depress agricultural prices, while the owners or operators are barely making a living. Doubtless it would be better for such individuals to rent good land than to attempt to farm this marginal land. However,

marginal crop land farmers are usually poor farmers. They are not skillful operators and they would not usually make the best tenants on the better lands.

As human beings, marginal farmers on these marginal crop lands, may in most cases be better off than in cities. The problem therefore from the standpoint of human welfare becomes complicated. It is easy to say that the government, state, or county should remove such lands from cultivation permanently, but it is not so easy to accomplish this and do justice to the individuals concerned. Some way should be found for taking care of these farmers so that they will not suffer unduly, preferably a way which will improve their conditions without too great injury to agriculture as a whole.

It should be remembered that because of the wide use of machines, unemployment may continue for years to come, and it might be better for many people now in cities to take over much of the better grades of this marginal land, even if they make but a bare living, than for them to continue to be cared for by charitable or public funds. However, this does not warrant the recommendation that such individuals should purchase or rent the poorer farms in these marginal crop areas, neither does it warrant the development of colonization plans on poor lands, such as those now going on in some parts of the State.<sup>1</sup>

The unemployed city worker who moves to the country to take up farming should select good land or only the best of the marginal crop land, if he is to succeed. Moreover, his success will depend largely on his previous experience. Those with no farm experience whatever are certainly running a great risk in taking up such an enterprise.

In considering the utilization of marginal crop lands it must be understood that a fair share of such land is located on farms which are partly made up of better lands, sometimes of very good lands. Such land is now being converted into pasture. This land can, of course, be taken out of cultivation with little detriment to the individual farmer, if he can be convinced that other systems, such as permanent pasture or the production of cheap forage crops, or even of planing to timber, are better for him than that of putting these lands into cultivation when agricultural prices are high.

It may not be too much to hope that under the impetus of financial readjustments, not only county forests will be possible, but certainly that we shall see some constructive action by both the federal and state governments looking toward the utilization of these submarginal lands, along with the non-tillable lands, as forest reserves, game preserves, recreation centers and state or federal parks. Under such plans it is important that many or most of the farmers operating these farms could be employed in connection with such enterprises.

A second important use to which these marginal farms may be put is that of grazing, along with the production of the cheaper forage crops on the better soils. Naturally such a use would require the shipping in of corn or other feed grains. There seems no reason, however, why in those regions

<sup>1</sup> On this point see also the papers of Professor Morgan (pp. 21-26) and Professor Burn (pp. 59-62).

where such lands are located near grain producing areas, dairying or the production of stocker cattle and hogs, along with poultry and even some fruit might not be profitable, while the land would be kept almost entirely in pasture. In this connection it should be mentioned that Korean lespedeza, which has increased in Missouri from a few thousand acres in 1930 to almost half a million acres in 1932, offers marked pasture possibilities on such lands.

There is little doubt that as agriculture becomes older we shall find it more economical to farm good land more intensively than has been the case in the past. It would seem the part of wisdom, therefore, to divert marginal crop lands largely to uses other than that of general cropping. The best policy from this time forward will doubtless be first, to find the proper uses for the various types of marginal land and second, to institute positive measures whereby these lands may thus be utilized. This objective is certainly one of the most important in the development of a properly coordinated systems of land utilization.

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## URBAN AND RURAL INTEREST IN THE BACK-TO-THE- LAND MOVEMENT

E. L. MORGAN, *Professor of Rural Sociology, Missouri College of Agriculture*

### The Extent of the Movement

One of the outstanding characteristics of American life has been the freedom with which individuals or families have migrated at will in response to the various lures—economic or social—which may have been foremost at a given time.

The movement of farm youth to the cities has been rather persistent during the past 75 years, in response to what appeared to be greater social and economic opportunity. Let us not be surprised, then, if now under changed conditions of the present emergency there is a reversal of this movement.

The United States Department of Agriculture estimates that in 1932, 1,472,000 persons left farms for cities and 1,679,000 left cities for farms. Thus the migration from cities to farms was 207,000 more than that from farms to cities.\*

This excess of the city to farm movement was general for all sections of the United States except New England and the South Atlantic states, where the farm to city migration was slightly in excess of that from city to farm. These urban migrants, together with normal increase because of the excess of births over deaths, place farm population for 1932 at 31,260,000 compared with 30,612,000 in 1931, or a total increase of 638,000. At present farm population is close to the peak of 32,000,000 reached in 1910.

\*Monthly Labor Review, September, 1932, p. 512.

### Who Are Going To Farms

1. Unmarried men and women who have returned to homes of parents or other relatives. For most of these the shift is a return to the land, where they take the place in the family life they had previously left.

2. Families which have gone to live with relatives on farms. In many cases this has meant a doubling up in living quarters and a division of food supply in order that a larger number may be accommodated.

3. Families migrating while they still had sufficient funds to purchase at least a small farm and the necessary equipment for its operation.

4. Families moving to a small acreage near a city while the wage earner continues to be employed in the city, cheap rent and a subsistence garden being the chief attraction.

5. Families with little or no funds who proceed to occupy an abandoned farm house with the hope that they will be able to make a go of it in some manner.

6. Families placed by city relief agencies usually on small acreages, with the view that the family may become partially self supporting through a subsistence garden, some chickens, and possibly a pig. In these instances the relief agency assumes some oversight of the family and supplements its income by providing those portions of the necessities of the family which require a cash outlay. Usually these families have had previous farm experience and make the change of their own choice.

### The Migrant's Interest

The back-to-the-land movement is now and perhaps always will be the backwash of unemployment. Farmers' sons and daughters have flocked to the cities by hundreds of thousands in recent years,\* particularly during the war and in the boom years up to 1929. Undoubtedly they often enjoyed in improved standard of living—housing, amusement, education and recreational facilities. No doubt they considered their new work on the whole more agreeable than farm work, and were for the most part happier in their new surroundings. Then came the depression and unemployment.

Then it was that these city sons and daughters of farmers and their families and some others, no doubt, began to think about the farm, the chance to make a living that it affords, the opportunity to grow foodstuffs. The trek back to the farm began in an effort to satisfy the desire for security, and all over the country abandoned farms, tenant houses, and laborers' cottages began to be reoccupied.

The lure of the land is real, and the ear of the city dweller is attuned to such slogans as "Three acres and liberty" when industrial conditions become such that he is thrown out of employment. An appreciation of this fact results in a voluntary migration to farms of those who can readily make the adjustment. Add to this what now appears to be a decided movement on the part of certain city interests to give definite stimulus to the landward movement, either for individual families or for groups of families, with the colonization idea prevailing, and the movement assumes large proportions.

For those who have had farm experience, it may be largely a matter of going "back home," where they may make satisfactory settlement if they

\*The Agricultural Situation, U. S. D. A. Monthly Publication, March, 1931, p. 3.

have sufficient equipment to make another start. In many instances the depression migrants are apparently lacking in both equipment and in the necessary capital to afford a living for the family until a crop may be produced. For those who know nothing of agriculture, the situation is even more adverse. Usually without necessary equipment, they also lack information regarding the ordinary processes of agriculture, which in many respects are decidedly technical. Likewise they are unacquainted with the manner of life of farm people which has come to be a part of the agricultural vocation. This handicap is commonly sufficient to result in failure.

If the agricultural industry were now in a prosperous condition so that it could absorb the 1,679,000 persons who are reported to have migrated thence from cities during the last year, some of the deficiencies of the migrant might be made up through tenantry and day labor on farms. Unfortunately, a great many farmers are themselves in a precarious financial situation, and the condition of agriculture, with very low commodity prices, is such that it is already confronted with a decided labor surplus. Some of those who are now migrating, having experienced the seamy side of city life, are, we may assume, going to the land with a view to remain permanently. For others, the change is apparently made only to secure cheap rent and a supply of home grown products until the depression is over, when they can return to former jobs in the city.

#### **The City's Interest**

Under prosperity conditions the city had no interest in a landward movement. Indeed, a need for additional labor often makes urban interest quite the reverse. With the coming of the depression and the accompanying great increase in unemployment and the unemployment relief load, the city has, however, become definitely interested in such adjustments in its unemployed as will reduce relief costs. In this sense the city's interest has been largely that of economizing in its expenditure for material relief.

An accompanying feature of the city's interest, however, has been the belief that many families of the unemployed will fare much better and be happier on a farm, where they may be kept busy, than if they remain idle in the city. This presumption may be true and the city may be justified in making migration possible under proper conditions. In some instances those who now go to the land are of the skilled class of workmen whose return the city will welcome as industry revives, while others of the marginal group will probably find it difficult to return to former jobs in view of competition of younger men.

#### **The Rural Interest**

1. As additional acreage is brought into cultivation there will be an increase in the volume in agricultural products. Such an increase could hardly be other than decidedly against the interests of farmers already on the land.

2. Since most of the migrants are near the economic margin, they will be inclined to depend upon day labor in the vicinity as a means of supplementing their incomes. Thus they compete with resident labor, of which there is now a surplus, for such work opportunities as may exist.

3. Any addition to rural population increases the load upon rural service institutions, particularly upon the school system, which is maintained by

local taxation and to which migrants would hardly be able to contribute materially.

4. Migrant families have presumably remained in the city as long as their economic resources would permit. This means that when they reach the land they find themselves in very unfavorable economic circumstances. County courts report that many are already applying for relief. The result is an increase in the present unemployment relief load of the county, which is now heavier than many counties are able to carry alone. Since there is in Missouri no legal responsibility upon a municipality for the subsistence care of its destitute legal residents who may reside elsewhere, the county to which the migrant goes must bear the expense, and this is obviously unfair.\*

5. After city residence, migrants do not usually appreciate and affiliate with the various social institutions which the rural community has developed and maintains.

Assuming that in any community those in the age grouping of 20 to 64 inclusive represent the productive or sustaining portion of the population, and those above and below these ages comprise the dependent portion of the population, we find that per thousand of population in Missouri in 1930 the city had 633 of producers and 367 of dependents, or one person of the dependent group for each .7 persons of the sustaining group. On farms the ratio was 500 sustaining to 500 dependents, or one person of the dependent group for each one person of the sustaining group. Thus on farms the load of dependents was nearly twice as heavy as in the city. Migration to the land of a marginal group in considerable numbers will only add to this load, which has already laid a heavy burden upon the rural dweller.

Where migrating families merely want low rent, subsistence gardens, with relief agencies providing a portion of the living, something to occupy their time, and opportunity for children to benefit by fresh air and sunshine, the rural interest will not appear to be so acutely transgressed.

#### A Policy for a City

Assuming that unemployment may be a factor in city affairs for some time and that the question of migration of some of the unemployed to the land will continue with the city assuming an increasing interest in such movement, it appears worthwhile that we consider the nature of a general policy which should determine the city's procedure in relation to migrants, most of whom will have become legal residents of the city.

Since the city in prosperous times welcomed migrants from farms into its industries, and since most of the migrants have established a legal residence there, it appears the city now has a recognized moral responsibility for them during this period of unemployment. One of the outstanding incidents in the present situation is the heroic effort cities are putting forth to fulfill this obligation and meet the constantly increasing problem of unemployment relief. This the cities are endeavoring to do in three ways:

1. Furnish employment, either through a readjustment of labor hours in industry or through emergency projects of the nature of public works.

\*Many states, through legislative enactment, provide that a municipality (city, town or county) shall be legally responsible for the cost of care and maintenance of its citizens who may become public charges elsewhere within the state within one year.

2. Provide maintenance on a subsistence basis through the regular channels of individual and family relief.

3. Direct families toward smaller communities and toward farms, where there will be cheaper rents and the possibility of subsistence gardens.

The first two of these possibilities most cities are now using. Since there are decided limits to the possibilities of made work, and since the relief load is becoming increasingly heavy, the item of migration is reported now as being promoted in a number of instances. Before pursuing this new alternative the city should carefully consider its obligation to its unemployed, remembering that as legal residents they have equal claim to at least a minimum of subsistence with every other citizen. In any migration proposal the city should proceed on the basis of the following conditions:

1. That the family prefers to migrate to a farm.
2. That there is sufficient vitality and knowledge of agriculture within the family to perform the ordinary work on at least a small farm.
3. That a local group be found in the community to sponsor the incoming family during at least the period immediately after settlement. This group may be made up of relatives or former friends who might lend tools or live stock in order that the family might get a start.
4. That the city, through its relief agencies, assume financial responsibility for the family until sufficient time has elapsed for the family to make a reasonable readjustment. This responsibility should extend through at least one cropping season.
5. That the city assume responsibility for counsel and advice to the family in much the same manner as if it were receiving financial aid within the city. Such counsel may be delegated to individuals or agencies in the county to which the family may go, but the responsibility remains that of the city.

#### **Is Colonization Practical?**

This country has had a long and varied experience in colonization. To the casual and somewhat uninformed observer who looks no deeper than the surface, it appears a feasible project. He sees on the one hand destitute families in need of food and a place to live, and on the other hand a cooperative group of families living on broad acres which produce abundantly at the hand of bountiful Nature. The picture is an enticing one but the basic considerations may be false.

Unfortunate as it may be, recent experience with colonization has often been far from successful. Numerous such enterprises have been launched in the midst of high hopes, only to result in failure involving economic loss and disappointment. Among the causes for failure the following appear to be outstanding:

1. Lack of knowledge of the processes of agriculture.
2. Lack of capital both for land and equipment and for operating and living expenses.
3. Lack of continued competent supervision and managerial direction.
4. The variability of the returns of agriculture as an industry.
5. The breakdown of the cooperative spirit because of the vagaries of human nature, resulting in internal strife.

Outstanding in the midst of the many instances of failure are certain attempts which appear to have been relatively successful. Among these are those promoted in western Connecticut and Massachusetts by the Jewish

Agricultural Aid Society,\* those by the American Red Cross in the vicinity of Greenville, South Carolina,† those by certain religious bodies in various parts of the United States, and those promoted by Mr. Hugh Mac Crae, of Wilmington, North Carolina,‡ who considers that one of four of his projects may be said to have been successful.

From projects representing both failure and success there may be found certain minimum conditions which should serve as a guide in our thinking concerning colonization at this time. The following, some of which were previously stated, should be included in any statement of minimum requirements:

1. That the enterprise be launched with a view to permanency, rather than as a temporary measure.
2. That participating families be very carefully selected as to
  - a. Their previous experience in agriculture.
  - b. The physical vitality within the family, relative to the necessary manual labor required.
  - c. The extent to which the family will be homogeneous within the group as to race, religion, education, and living and behavior standards.
  - d. The extent to which the family will assume a cooperative attitude in the enterprise.
3. That the land selected be average to superior in productivity, certainly not marginal land. It should be suited to the purposes in mind and not chosen because of its low cost.
4. Sufficient capital for the purchase of land and equipment and for the expenses of operation and family living.
5. Sufficiently easy access to good markets for the products produced by the group.
6. Continuous competent oversight, counsel, and direction until the group has become sufficiently well established to successfully pursue its own affairs, i. e., until land can be developed and put on a productive basis.
7. City relief agencies should definitely assume financial responsibility for the material relief for any or all of the group which may need assistance.
8. Provision of the usual service institutions and agencies which the families may require, such as school, church, and recreation.

It should be borne in mind that although the conditions for success may appear to be adequate and relatively complete, still any such enterprise is at the mercy of that most variable and limiting factor, human nature, which so commonly bases many of its attitudes upon prejudice and emotion.

Whether it be in conformity with the best interest of city and country, it appears that migration from cities to farms will probably continue during the present emergency. We are in a democracy, where the individual is free to embark upon such migrations as he may see fit. Those interested in rural affairs may well make clear the hazards of such migration likely to be encountered unless there is an understanding of certain conditions which are often merely assumed to be relatively favorable. A specific service can be rendered certain urban institutions and agencies which are now definitely promoting the city-to-farm movement.

\*Sims, Newell L., *Elements of Rural Sociology*, Crowell, p. 131. †"The Outlook," June, 1932, p. 81. ‡*Ibid.*



## FORESTRY POSSIBILITIES IN MISSOURI

FREDERICK DUNLAP, *State Forester*

Forestry is the use of the land for the growing of stands of trees. Forestry ordinarily contemplates the harvesting of the timber and its sale as its primary objective but many times this objective is displaced by some other purpose such as the conserving of water resources, of game, or of recreational opportunities. Timber is a frugal crop which endures unfavorable soil conditions and makes little demand on soil fertility; it maintains rather than destroys the most productive physical condition of the soil so that it is possible to grow timber on soils unfit for cultivation. It is exactly this capacity of the woods to grow on flooded soils and on poor, thin rocky soils and to maintain and even to restore in these soils those physical conditions most favorable to plant growth that gives to forestry its unique place among cropping practices for land in Missouri.

The forestry possibilities of Missouri are not unlimited but are conditioned upon a variety of factors some of which, like our climate, are fixed while others, like our tax system, are liable to abrupt change.

Nature has set certain limits upon what trees we can grow in Missouri as well as upon the rate of growth per acre per year that our woods can attain. Trees from the tropics and even the hard pines from the Gulf States can not endure our winters while the redwood from the humid coast of California and the firs from Canada find the dry air and bright sun of our summers more than they can endure. The growth of forests, as of other crops, is essentially a process of storing up in complex organic compounds the energy received from the sun and this process can be accomplished only within a definite range of temperature. Thus the maximum forest growth possible in Missouri is determined, in the last analysis, by the amount of energy received from the sun during the growing season.

While these natural conditions are fixed and definite and not to be set aside, we are not by any means to conclude that we know what they are or have any *a priori* means of finding out. Certainly we are not to conclude that nature has exhausted herself in Missouri and that what we have represents all that is possible to us. The thrift of trees like the black locust, Chinese arbor vitae, and white pine when planted in Missouri encourages us to experiment with other non-indigenous species while the slow growth of woods that have had the humus burned out of the soil they occupy every year for a hundred years is hardly a criterion of what the same species might do on the same ground when freed from the blight of fire. Missouri's climate is matched all the way around the earth and we should experiment with growing a large number of trees of the middle temperature zone and especially from those regions subject, like our state, to the abrupt extremes of a continental climate.

In particular we should interest ourselves in the useful trees of the states to the east of us for possible additions to our woods. Missouri's forests are a westward extension of the forests of the Ohio Valley, reinforced by a few southern species, and their present composition indicates that the natural progress of tree succession has been from east to west across Missouri and that the process is still going on. If this is the case we can reasonably hope for success in favoring the westward progress of those species that we find useful.

While there is thus opportunity to add to the useful species growing naturally in Missouri there is need to emphasize the high value of the species we have. The white oak may be taken as the standard; it is found in every part of the State. It is valuable alike for railroad ties and for furniture; for the interior finish of houses and for farm implements. The black walnut is the most valuable of all American woods and Missouri contains a larger growing stock of black walnut than any other state. The shortleaf yellow pine of the Ozarks is the premier softwood of the country not excepting even the northern white pine. In the eastern states where these two trees once grew in the same woods settlers chose the shortleaf in preference to the white pine. Missouri woods stand pre-eminent in their fitness for the higher uses we make of wood; for furniture, interior trim and cabinet work and all the uses in which we come in immediate contact with wood. It is uses such as these that will persist, the beauty of wood and the comfort of its use appealing to the discriminating and preventing its displacement by the metals.

If nature has been generous toward Missouri in the high proportion of valuable trees in her woods she has favored her no less in the absence of weed trees and especially of weedy undershrubs in her woods. There is nowhere in upland Missouri any growth at all comparable to the witch-hobble of the northeastern states or the rhododendrons of the Appalachians. Such undergrowth makes fires harder to control and interferes with the growth of seedling trees. The black jack oak is our worst weed tree and it is rather a scavenger than a weed since it covers dry sandy soils and resists fires better than any other species. It is neither fast-growing nor shade-enduring and good forestry easily crowds it out of the woods.

While Missouri's climate determines the kinds of trees we have their distribution within the State depends in large measure on the soil. Soils determine tree distribution not because some trees prefer one soil and some another but because trees differ in their ability to endure unfavorable soil conditions and to compete with rival species for the possession of the best soils. The deep, porous, well-drained and yet moisture-retentive loess soil of our river hills, particularly on northern slopes, will probably afford optimum growing conditions to every kind of Missouri tree. The sugar maple is abundant on such soils because its ability to endure shade permits it to crowd out other varieties. The cypress is crowded into the swamps not because it prefers flooded soils but because it demands light and can endure standing water that would kill most other trees. Cottonwood and willow possess newly-formed islands and mud flats because their wind-borne seeds permits them to arrive first; ultimately they are displaced by soft maple, elm, sycamore and other trees more tolerant of shade.

The outstanding feature of the relationship between our soils and the forests of the future arises from the ability of forests to make profitable use of those extensive areas of soils that are too wet or too steep or too stony for cultivation or even for the growth of grass though of fair fertility. The largest areas of absolute forest soils in the State lie in the Ozark Region and the natural growth of timber there, now almost entirely removed, gave clear indication of the natural fitness for forestry of those agriculturally worthless soils. And there is a growing conviction that timber is the proper crop for those extensive lowlands in southeast Missouri where drainage has proved uneconomical.

If nature has favored Missouri in fair measure so that her natural wealth of forest trees and forest soils is above the average much more can be said of the markets that stand ready to absorb the growth of her forests. From the oil fields of Oklahoma through the wheat belt and the corn belt to the orchards of southern Illinois there is now a market for wood in its various forms and this market has no nearer source from which it can supply its needs. But we have no need to look beyond the borders of our own State for a market. Missouri is already using in her industries and on her farms four times as much lumber as is being cut in the State and is cutting more than grows—how much more we do not know because there are no figures on what grows, but indications are that it is four to ten times the growth.

As long as industry and agriculture in Missouri continue to remain dependent on the Pacific Coast for their supply of lumber they will be burdened with a transportation tax which is especially heavy because lumber is an expensive commodity to transport. The freight on a shipment of lumber from the west coast is roughly the same as the cost of the lumber at the mill. Many considerations make it worth while for those Missourians who use lumber to promote development of the home supply. In doing so they not only assure themselves cheap supplies of quality material but at the same time they raise the purchasing power of that part of their own State that has never been as good a customer as it should be developed into.

Missouri needs forestry to insure a supply of timber for her farms and her industries. But even if there were available to us an adequate supply of timber in neighboring states we should still be faced with the problem of finding some use for that large part of the State that is now in woods. More than 40% of the area of Missouri is now under forest cover. It promises to remain in woods but in unproductive woods, kept so by annually recurrent fires. Being unproductive, it furnishes no employment and yields no income from which the owner can pay the taxes on it. Instead of being an asset such land is an impediment to the progress of the community in which it lies. How serious this impediment is may be learned from the history of saw-mill towns in ours as well as in all the older forested states. Railroads built to haul out lumber no longer pay and are pulled up. Schools, churches, and other social institutions languish, their costs being more than the community can carry. Those business men who are willing to sacrifice their local investment, particularly the younger men, move out. Public improvements cease and the blight of idle land settles down over the country and extends its influences even to distant industrial centers because our cities depend on the country for the market of many of their wares.

While in Missouri the evil effects of forest neglect show up most clearly in those parts of the State where the forest acreage is large, the same effects make themselves felt where idle lands comprise but a small part of the region. A neglected timber patch on a fertile farm is still a liability in those years when the farmer's profits cover his loss on this part of his farm.

An adequate supply of labor that is not only experienced in woods work but well disposed toward such employment favors the practice of forestry in Missouri no less than does the advantageous market situation. Woods work is not subject to high specialization as is factory work. To fall a tree on a prepared bed where it can most conveniently be bucked into logs requires clear thinking and considerable skill. A natural pride flows from the prac-

tice of such an art. Such skill and such pride are quite general in Missouri, not only in the Ozarks but in the better farming regions as well.

In the Ozarks, where lie the largest bodies of forests in the State, the natural distribution of the population with reference to the timber is ideal. The timber occupies the ridges and the farming communities extend in shoe-string development along the valleys. The result is that the timber is accessible to the people; at the same time the roads and telephone lines, the schools and churches have been built in the valleys with particular reference to the needs of the farm population and paid for out of farm profits, the woods being taxed but little for their support. This natural development has been upset by the construction of our new highway system along ridges in entire disregard of local needs. While these highways are not a tax burden on the woods through which they pass they have led to a new form of development which bears little relation to the resources but depends mainly on traffic facilities.

The control of wildfire, the most urgent of all the problems in the woods of Missouri, depends entirely on the sentiment of the local community. Practically all the fires we have in Missouri are man-caused,—started by local residents and not by transient visitors. Because the problem is a local one it is susceptible of piecemeal solution and need not be attacked on a large scale in the beginning. Suffice it to say that even this stubborn problem has been solved locally through community cooperation with practically perfect results even in the face of naturally high fire risk.

Timber trespass in Missouri is a hazard of the negligent non-resident owner rather than a thing the managing forester must guard against. It is the fruit of poverty and is accentuated by unemployment. When there is no work to be had and the merchant accepts railroad ties in payment for groceries hunger leads to trespass. By furnishing employment to those who seek it in the woods, forestry cures the situation by removing the cause.

Taxes on timberland in Missouri are not the serious obstacle to permanency of management that they are in some states. They are rather a threat. That present taxes are moderate is no assurance, under our system, that future levies will remain so. Taxes particularly threaten the well-managed property of moderate size since it may easily become the outstanding item of value on the tax list and as such be called upon to bear a very large part of the cost of local government. For this reason what we need is a program of mild forestry covering practically all the woods in a county rather than the intensive management of a small area.

The prevalence of fire and trespass and the uncertainty of taxes are reasons enough why forestry does not move forward in Missouri. Each of these obstacles traces back to the unsympathetic attitude toward the holding of land in timber that is traditional not only in Missouri but throughout the United States. This attitude rests on the sentiment that regards all timberland as potential farm land and holds it to be the duty of the owner to clear it and put it into cultivation as rapidly as possible. There is in Missouri today a growing recognition that communities have not given to forestry the place it should have but no agreement has yet been arrived at as to just what this proper place is. There is promise of some adjustment; but there is no assurance as to how early, how thorough, or how effective it will be. Until adjustment is made forestry may properly hesitate to make radical departures from practices designed to yield immediate profits.

## FORECLOSED LAND AND THE FARM DEBT PROBLEM

O. R. JOHNSON, *Chairman, Department of Agricultural Economics*  
*Missouri College of Agriculture*

Farm foreclosure is not ordinarily different from bankruptcy in other lines of business, but there are some factors in the present situation of particular significance. The first one is the growth in farm debt. The 1910 farm mortgage debt for the United States was about three and one-half billion dollars.\* At this time land was worth about \$50 per acre, hogs \$8 and cattle \$5 per hundred, wheat \$1 a bushel, and butter 26 cents a pound. The 1920 mortgage debt had increased to 7.9 billions. Corresponding farm product prices were, hogs \$13 and cattle \$8.50 per hundred, wheat \$1.50 a bushel, butter 55 cents a pound, and Missouri farm land \$94 an acre.

The percentage of owner operated farms in the United States mortgaged and carrying by far the greater portion of this debt is given as 46.1 per cent in the 1930 Census. In Missouri the average is somewhat higher (48.5 per cent). The percentages of owner operated farms mortgaged are highest in the northern, western and extreme southeastern counties, with the greatest concentration of high percentages in the northern three tiers of counties in an area which is usually deemed as containing most of the finest agricultural lands in the state.

At the present time the total farm mortgage debt for the entire country is estimated at approximately eight and a half billion dollars. The shrinkage since 1928 is presumably due chiefly to the increased volume of farm foreclosures. Foreclosures have indeed probably been greater than this decrease, with real estate mortgages replacing unsecured farm paper offsetting part of this decrease.

Farm debts must be paid with farm products, and while mortgage debt has been climbing the gross value of farm production has not kept pace (see table, page 32). The 1910 product value was estimated at six and six-tenths billions or about twice the mortgage debt. In 1920 it was thirteen and a half billions or a little less than twice the debt. In 1925 it was about twelve billions or one and one-third times the debt. The 1932 situation indicates a gross production of about four and a half billions as contrasted with the farm debt of about eight and a half billions. Between 1910 and 1932 the relationship between debt and gross value of production has been just reversed. In 1910 value was twice debt. In 1932 debt had climbed to a position where it was twice value.

Changing farm product prices and rising taxes are major causal factors in the farm foreclosure problem. Data relating to these changes are presented in the table. Gross agricultural production has for the last ten years been a constant or decreasing quantity. Farm commodity prices have fallen steadily since 1925 and in 1932 were at a level only 57 per cent of the 1910-14 average. Most of the mortgages now in trouble were placed on farms when the price level was two to four times what it is today. In 1918 land values were about one-third the 1912-14 level, while farm product prices were essentially double that level. In 1920 land values were 70% above and product values 205 per cent of the 1912-14 level. In 1929 land values

\*See U. S. D. A. Technical Bulletin Number 288.

were 116 and commodity values 138 per cent of prewar. Since then commodity values have fallen much more rapidly than land values. If the relationship in earlier years was fair, land values are now too high compared to commodity values. A loan made in 1920 at one-half the appraised value of land would now equal that appraised value and, as many loans were then made at more than half the value, such loans are now more than the full value of land. On April 1, 1930, before the great decline in real estate values of the last two years, a larger number of farms were mortgaged for more than 50 per cent of market value. If similar data for 1933 were available a much larger number of counties would undoubtedly be found to have climbed above the 50 per cent mark.

TREND IN AGRICULTURAL PRODUCTION, MORTGAGE DEBT, TAXES, AND FARM PRICES, 1910-1932.

Year	Gross Income from Farm Production in Million Dollars*	Index of Farm Product Prices†	Taxes on All Farm Property‡	Total Farm Mortgage Debt in Millions‡
1910	6,643	103	---	3,320
1911	6,372	95	---	
1912	6,784	99	---	
1913	6,975	100	---	
1914	7,028	102	100	
1915	7,395	100	102	
1916	8,914	117	104	
1917	12,832	176	106	
1918	15,101	200	118	
1919	16,935	209	130	7,858
1920	13,566	205	155	
1921	8,927	116	217	
1922	9,944	124	232	
1923	11,041	135	246	
1924	11,337	134	249	
1925	11,968	147	250	9,361
1926	11,480	136	253	
1927	11,616	131	258	
1928	11,741	135	263	9,468
1929	11,950	138	267	
1930	9,406	117	266	9,038§
1931	6,955	80	---	
1932	4,500 (Estimated)	57	---	8,500 (Preliminary)

\*From U. S. D. A. Circular 261. †From Agricultural Situation, Feb., 1933. ‡From U. S. D. A. Bulletin 288. §Interpolation from trend in series.

Assuming that present commodity values shall not change materially for some time we may expect further downward readjustments in land values and it will avail us little to postpone this reckoning. This assumes that we can do nothing about commodity values. The rate of foreclosure on these lands is increasing rapidly. The rate from 1927-29 was, for the United States, from 15 to 18 farms per 1000.\* Beginning with 1930 the rate increased until in 1932 it was double the 1929 rate. The largest increase occurred in the southern, the west north central and Pacific divisions. Data from a research

\*See Table 8, U. S. D. A. Circular Number 261.

project under the direction of Dr. C. H. Hammar of the Department of Agricultural Economics of the College of Agriculture give complete information for 13 representative Missouri counties covering the last four years. Using 1929 as a base or 100, the index of foreclosures in these 13 counties would be 104 in 1930, 175 in 1931, and 270 in 1932.

In the foregoing summary of the farm mortgage situation, the major problems calling for adjustment have been touched upon. Interested parties, both farmers and mortgage holders, are seeking the answer to the question, how can a debt burden nearly three times the 1910-14 burden and a tax burden two and one-half times that of 1914 be met with a farm dollar possessing a purchasing power of one-half the 1910-14 value. Some present debts have been contracted under circumstances where present full payment would be approximately fair to both debtor and creditor, looking at it from a product standpoint. Other debts would require at least four times the borrowed product value in settlement. One thousand dollars borrowed in 1910 was equivalent to 61 hogs, 3846 pounds of butterfat or 1018 bushels of wheat. In 1920 this same \$1000 was equivalent to only 38 hogs, 1818 pounds of butter or 673 bushels of wheat. In 1932 it would represent 167 hogs, 5000 pounds of butter, or 2857 bushels of wheat. This illustrates the essential features of the problem. If our chief concern is facilitating the exchange of goods and services, the exchange medium must have a fairly constant exchange value. The one we do have is highly variable and this variability is the chief basis of our present difficulty. It would seem just as unfair for a creditor to expect a loan equivalent to 38 hogs to be repaid with 167 hogs plus interest, as it would be for a borrower to expect to satisfy a loan of 61 hogs by returning 38 hogs plus interest. Thus to illustrate in terms of a single commodity, debtors might take the position that if they borrowed the equivalent of 38 hogs in 1920, they should be expected to repay at maturity 38 hogs plus interest. Thus \$1000 borrowed in 1920 becomes \$230 in 1932 if based on hogs. If based on butterfat, it becomes \$364.

Most loans are made by the borrower's estimating that under present price conditions he can meet the principal payment and interest by the time the loan matures. He cannot make proper allowance for change in prices due to a change in the purchasing power of our medium of exchange. Lenders usually disregard the purchasing power of money and expect the same number of dollars to be returned. This expectation might be more than fair or grossly unfair to the lender, depending on which way the price level moves.

Difficulty in adjusting to meet this change in price level is inherent in our system. Savings accounts are used by savings institutions with the understanding that the same number of dollars will be returned to the saver. With this understanding the savings institution must expect borrowers to return the same number of dollars with interest. Under our present money system no other conclusion is possible.

The conclusion that a large part of the farm mortgage debt will be impossible of repayment under present price conditions is, however, inescapable. If these debts are liquidated, the borrower will lose his entire savings and the lender will not receive all of the dollars loaned, because the market for farms is now overcrowded with foreclosed properties and also because investors lack confidence in the future of farm land values. Fifteen per cent

of our mortgaged farms have, however, been liquidated. Perhaps as much as half of the remaining mortgage debt would be involved if such a settlement were pushed thru to completion. Losses to debtors and creditors together would inevitably involve several billions of dollars.

Because of the varied conditions surrounding individual loan agreements it would probably be inadvisable to make blanket adjustments. Too many cases of injustice to some debtors and some creditors would be inescapable. A better method would be to make adjustments on an individual basis. Fairness to both parties should be the guide. As long as repayment gives the creditor as much buying power as was loaned together with interest, he apparently has no more right to insist on receiving more than has a debtor to insist on repaying in buying power less than was borrowed. If such attempted adjustments cannot be secured, then the only recourse is to follow the procedure laid down by law. In the case of lending agencies such as insurance companies and investment banks, the problem is more complex because of the legal obligation of the trustees of this loan fund. Such a trustee has one advantage. Volume of business may enable that agency to spread the losses due to adjustments over a sufficient amount of time and over a sufficient volume of business to absorb these losses without affecting more than the interest earnings. Rates of accumulation may be reduced and charges for new business may have to be increased for the time being. Again, with some postponement of foreclosures the price level might recover to some extent and to that extent prevent the taking of losses. It is possible that for some time we may be compelled to sacrifice interest in order to prevent a greater loss in the loan fund itself. For many borrowers foreclosure and the writing-off process is the only recourse. In these cases foreclosure is probably a kindness.

The difficulty of fairly applying a moratorium lies in two directions: first, some do not need such a postponement, but if applied they have as much right to it as anyone; second, where one has overborrowed, the end of a moratorium would not necessarily find him any more able to pay. A blanket moratorium might indeed be harmful rather than helpful.

In many instances refinancing will lighten the burden. This procedure would not effect a reduction in the annual payments demanded, but to extend these payments over more years and might easily be preferable to taking the loss at once. In some cases creditors are giving the debtor credit on principal for interest payments made. This encourages the debtor to make the largest possible payments and increases the security of the remaining loan. In other cases the creditor accepts the deed to the farm, returns the cancelled note to the maker, and resells the farm to the debtor on an annual payment basis. In this case the creditor often reserves considerable supervision over the farming system until the annual payments have reduced the principal sum to a safe point.

The situation is dangerous. Many debtors draw the conclusion that creditors and the general public are at the present time ignorant of the great injustice being done or wilfully blind to the real situation. Thus acts are committed which may permanently injure the agricultural credit structure, doing great harm to honest and capable users of credit for agricultural production.

Conciliation commissions where set up must be unbiased and fearless in making recommendations.



## SYNTHESIZING A STATE LAND POLICY

F. D. FARRELL, *President, Kansas State College*

To build up a satisfactory land policy, for Missouri or any other state, it is necessary to recognize and understand the elements of which such a policy must be composed. These elements may be divided roughly into two groups: (1) elements that are essentially imponderable, or abstract, and (2) elements that are essentially ponderable, or concrete.

Of the two, the imponderable elements are of first importance. They are a *sine qua non*. Unless they are adequately dealt with it is likely to be a waste of time to attempt to deal adequately with the concrete elements. Before the abstract elements can be realized in practice, there must be a vigorous campaign of education based on a comprehensive body of facts obtained through the most careful research.

Important abstract elements include the following:

(1) The policy must have a dominant object. The objective must be based upon full cognizance of the economic, industrial, and particularly the social needs, possibilities and limitations of the state.

(2) There must be an overwhelmingly favorable public sentiment. The basic principles of the policy must be clearly formulated and widely understood. The public must be sufficiently convinced that the policy is necessary so that people will support it wholeheartedly.

(3) The convenience, and sometimes even the immediate interests, of individuals must be subordinated to the public interest, somewhat as in the control of contagious diseases. In land use as in disease control, the welfare of the individual depends in the long run upon the general welfare. The welfare of the individual farmer is related to the use of land by his neighbors. The welfare of every city and every town in the state is related to land use in tributary districts.

(4) The general public must share the burdens imposed on individual land owners. For example, taxes must be adjusted to land use to enable the land owner to seek long-time results rather than forcing him, as is now commonly done, to seek immediate returns. As the individual must make concessions to the public interest so the public must encourage the individual to use his land wisely.

(5) The control of credit employed in land use must be exercised in the interests of land conservation instead of land exploitation. Lenders must consider not only the supposed security of loans but also the effects of the use of credit on the use of land.

(6) The public must set up and maintain effective control of the land policy. No policy can be satisfactorily effective unless it is enforced. The more a policy is enforced by public sentiment through private initiative the better and the less the need for public control; but public control must always be available for those inevitable occasions when private control fails and the public interest is jeopardized.

(7) There must be provision for handling inter-state relationships involved in land utilization. These relationships may involve flood control, drainage, transportation and other important factors. Their proper handling requires effective arrangements with adjacent states and with the Federal Government.

Doubtless there are other important imponderables but those named are sufficient to illustrate the nature of this group of elements.

The second group, the concrete elements, includes the following:

(1) There must be a comprehensive inventory of the land resources of the state. This would include the areas of land having distinctive characteristics of soil, topography, vegetative cover, location, size, plant adaptations, water supply, drainage, population, tenure, transportation, markets, etc. Much of the information needed for a land inventory of Missouri already is available, particularly in the records of the soil survey and of other work of the College of Agriculture.

(2) Land must be used predominantly for purposes to which it is well suited—geographically, physically, economically, socially; and its use must be related to the long-time needs of the state. Some land should be used for forestry, some for general farming, some for somewhat specialized types of farming, some for recreation. The general public, particularly through the exercise of the taxing power, and the credit agencies, through the control of credit, are highly influential in determining the use to which land is put.

(3) The physical nature of some land must be improved by some form of reclamation—drainage, terracing, dyking, etc. All forms of reclamation should be based on carefully determined economic needs. When reclamation involves bond issues or other means of public financing, it should be carefully supervised in the public interest.

(4) Special attention must be given to reforestation and forest conservation. The social and economic status of the general public is closely related to its timber supply.

(5) For both economic and social reasons a land policy should make provision for recreation, particularly through the conservation of fish, game and other wild life resources; and provision for increasing the beauty of the countryside. This element is important chiefly because man is an outdoor animal with an elemental need for the physical and spiritual refreshment of outdoor activity.

(6) Careful attention must be paid to the utilization of land that comes into public ownership through tax delinquency or otherwise. Much of such land is capable of beneficial use for forestry and recreation.

(7) Finally, there must be socially and economically desirable physical relationships between urban and industrial life, on the one hand, and rural and agricultural life, on the other. This may require extensive application of the principles of zoning so that city and country, industry and agriculture, will supplement one another to their mutual benefit and in the public interest.

The development of a comprehensive and practical land policy is "a large order." It cannot be done quickly. The policy must grow. It must be planned, not all at once, but step by step. It must come from the compelling pressure of events and from the gradual but persistent synthesizing of such elements as I have named by well informed public spirited citizens, supported by an increasingly intelligent public opinion. A satisfactory land policy must be based ultimately upon a clear and widespread conviction of the simple fact that we are all dependent upon the land.

## HISTORY OF LEVEES AND DRAINAGE IN SOUTHEAST MISSOURI

S. P. REYNOLDS, *Chief Engineer, St. Francois Levee District*

The swamp lands of the United States, after having been often given consideration by Congress, were finally granted to the respective states in which these lands were situated, by an Act approved September 28, 1850, for the purpose of reclaiming the lands within their borders.

In 1853 the State of Missouri, being unwilling to assume the burden of their development, granted these swamp lands to the counties in which they were situated.

Nine counties, viz., Cape Girardeau, Bollinger, Scott, Stoddard, Butler, Dunklin, New Madrid, Mississippi and Pemiscot in Southeast Missouri include the north end of the Alluvial Valley of the Mississippi River delta area. There are nearly three and one-half million acres of land in these counties and two million acres, in 1920, had been organized into drainage and levee districts.

The popular belief is that the whole territory was a swamp, but when looked at carefully some outstanding topographic features are apparent. Only about one-tenth of Cape Girardeau and Bollinger counties is within the alluvial area, the other nine-tenths being a part of the Ozark hills. In the northeast part of Scott county are 50,000 acres of detached upland, apparently cut off by the Mississippi River from a ridge of Illinois hills at the Chain of Rocks. In the North end of the valley are some smaller detached hills, like Hickory Ridge, Baker's Hills, Bird's Hill, and that larger upland known as Crowley's Ridge. Sikeston Ridge, standing about 15 feet higher than the adjacent swamp land on either side, extends southward from the Scott county hills to Tiptonville and Ridgeley in Tennessee and separates the upper and lower St. Francis basins. The Mississippi River cuts through the ridge near New Madrid.

Crowley's Ridge, standing detached at its north end from the Ozark hills by an arm of swamp land, extends southward to Helena, Arkansas, dividing the swamp area into two parts. The lowland between the Ozark upland and Crowley's Ridge is supposed to have at one time been occupied by the Mississippi River, which flowed thence southward through eastern Arkansas to a junction with the Ohio far to the south of the present confluence.

Probably during the Tertiary epoch the whole valley was filled by deposits practically to the level of Crowley's Ridge which is now all that is left of that early deposit; the other part or swamp portion as we know it was probably eroded by the great flood of water that flowed southward for many thousand years as the glacial ice cap receded. Since that time the swamp region has been building up by the erosion from the hills on the north and west, and on the eastern side by the deposition of sand and silt from the overflows of the Mississippi River. The result of this building up process on the area between Crowley's Ridge and Sikeston Ridge is a valley relatively higher on the east and west sides, with a trough in the middle part occupied by Little River in the mid-valley portion of the swamp area.

The drainage works of the three swamp areas, that, is west of Crowley's Ridge, the area between Crowley's and Sikeston Ridges, and that east of the latter ridge, are generally independent of each other. The region east of Sikeston Ridge, known to government engineers as the upper St. Francis basin, has its outlet to the Mississippi River through St. John's Bayou just east of New Madrid. The trough of the Middle Area is the Little River Drainage District, covering roughly 500,000 acres, being a strip of swamp land averaging 7 to 8 miles wide and 90 miles long, extending from the Cape Girardeau hills to the Missouri and Arkansas state line near and south of Hornersville in Dunklin County, Missouri, and thence through Big Lake, Arkansas, and Little River into the St. Francis, 20 or more miles south of the Missouri-Arkansas state line.

There is one other peculiar topographic feature and that is that two Ozark streams, Castor and St. Francis Rivers, should flow across part of the west swamp area and then break through Crowley's Ridge into the Middle Area. Still another interesting feature is the sand terrace along the Eastern edge of Crowley's Ridge south to where the St. Francis broke through the Ridge and thence south along the St. Francis on the east side into Mississippi county, Arkansas.

Last of all, your attention is directed to the fact that the Mississippi River has, like all sedimentary streams, built up its banks, in this instance as much as 20 feet. This sedimentary deposit thins out to the westward, giving the eastern side of the Middle Area South of New Madrid a slope of one foot per mile toward the west to the Little River Basin.

The climate of Southeast Missouri is decidedly warmer than its latitude would indicate, as shown by the fact that the isothermal line passing east and west across the United States in the latitude of Pine Bluff, Arkansas, takes an abrupt bend to the northward as far as Cairo, Illinois, when it enters the valley proper, and thence southward to its normal location on the east side of the Mississippi delta lands, passing through western Kentucky and Tennessee. This fact accounts for its adaptability to the growth of cotton of the great strength and length of lint which results from the fertility of the land.

These lands are flat, having not more than a general fall of a foot to the mile to the south and southwest covered with low lying ridges and sloughs interspersed along with streams and bayous with velocities so slight as to be almost imperceptible and all covered with heavy growth of timber.

This district is annually subjected to a rainfall of forty-five to sixty inches, falling largely in the first six months of the year, sufficient with the low run-off to make a veritable swamp without any help from the flooding Ozark streams.

The counties not adjacent to the Mississippi River were flooded by the rapid run-off from the Ozark hills and Crowley's Ridge, debouching into flat lowlands with so little fall that months were required to pass the waters onward to the State of Arkansas, even though assisted by evaporation and transpiration, plus seepage into the earth itself.

There were three impelling factors leading to the reclamation of this swamp area. First, the great fertility of the ridge land occupied by the early population induced additional settlers to come to the country. Second,

the district was almost annually flooded by the Mississippi River and other streams. Third, the malarial condition of the district.

The United States by granting the swamp lands to the states passed the buck of reclamation to the states, the states passed it on to the counties, and the counties, as will be shown later, to their own citizens.

The eastern tier of counties had to be leveed against the recurring floods of the Ohio and Mississippi Rivers before the drainage of these lands was possible. Likewise the St. Francis and the Black River had to be leveed before adjacent lands could be successfully reclaimed; while on the north the water, draining rapidly out of the Ozark hills, an area of six hundred thousand acres, had to be diverted into the Mississippi River, coincident with and as a part of the reclamation of the trough of the Little River valley as a part of this plan. Also, in the carrying out of the reclamation of this drainage district, averaging 7 to 8 miles wide and 90 miles long, many miles of levee had to be constructed in order to transmit the drainage from the upper part of the district into Big Lake, Arkansas, so that other ditches might be constructed on each side of a double line of levees to receive the lateral drainage in the lower part of the basin. Thus it is plain that the subject of levees is intimately and necessarily connected with the subject of drainage. Given the levees, drainage was the natural step thereafter.

In 1857, after the swamp lands had passed into the ownership of the respective counties, the settlers began to build a line of levees from the Scott county hills, near Commerce, Missouri, to the state line, and by the year 1858 a nearly complete line of low levees had been constructed by issuing script in payment of the labor used to do the work. The laborers transferred the script to the merchants for food and clothing; the merchants in turn traded the script to the county courts of the counties adjoining the river for the better grades of the swamp land. In the spring of the year 1858 one of the large overflows of the river occurred and destroyed the line of levees so recently constructed and caused the country to lapse into its pristine condition. The Civil War delayed development for a quarter of a century. However, during the period from 1858 to 1882 the area was visited by fewer floods than were ordinarily expected, there being only one or two of large size. In 1882 a period of very high waters set in that reduced the inhabitants of the district to the state of poverty. These floods, 1882, 1883, 1884, 1886, 1888, 1890, 1892, 1893, following each other so frequently, caused the residents of the valley all the way from Cape Girardeau to Natchez, Mississippi, to start to building levees rather than leave their homes and the accumulations of a life time. The necessity of these levees brought about the enactment of laws authorizing the people to incur indebtedness with which to protect themselves. The Legislature of the State of Missouri passed a special Act organizing the St. Francis Levee District of Missouri in 1893, and in accordance with its requirements a levee was constructed from a point near Point Pleasant, Missouri, to the state line between Missouri and Arkansas, where it articulated with a similar levee constructed in the State of Arkansas. The north end of this levee started at Highland, normally above overflow. This continuous line of levee through southeast Missouri and Northeast Arkansas, together with a levee on the Kentucky-Tennessee side from Hickman to Slough Landing constricted the floods of the Mississippi and naturally raised the flood waters to heights heretofore

unknown. The high lands along the river from New Madrid to Point Pleasant, due to this rise of flood plane, became overflow territory and necessitated the building of levees northward from the first beginning point to and by the town of New Madrid and northward up the west side of St. John's Bayou on the eastern edge of the Sikeston-New Madrid high land. Also, a levee was early constructed from the Cape hills to the Scott county hills, thus the overflow waters of the Mississippi were prevented from flowing into the low lands of the central swamp basin. The added restrictions, aided by increased run-off in the streams of the upper valley brought about by drainage, induced further rises in the flood plane. This fact meant the levees all along the line had to be enlarged. The local districts were unable to finance themselves to the extent of meeting the increased heights that were necessary.

In 1879 Congress passed an Act establishing the Mississippi River Commission and prior to that time, about 1855, though the Government had given away these swamp lands without reclaiming them, authorized the appointment of two eminent United States engineers, Messrs. Humphreys and Abbott, to make a study of the Mississippi River and its flood waters. The reports made by these men foretold the conditions that would be met and the results of building levees and served as the foundation of much of the work that has been done. The Mississippi River Commission at an early date after its organization in 1879 began the study of the river with the express purpose of improving the channel for navigation. Soon thereafter it was helping the districts to build levees with the idea that the increased flood height would help to maintain the channel for navigation. The early assistance was sporadic. The great floods of 1912 and 1913 with disaster all up and down the stream, forced an organization of the various districts with the purpose of getting additional aid from the Congress of the United States. Congressional Acts resulted authorizing the Commission to participate with the respective levee districts in levee construction. This partnership continued up to the year 1927 when the disastrous floods breached the levees in many places. On May 15, 1928, the United States Congress passed an Act taking over the construction and up-building of the levees in the valley, known as the Flood-Control Act and to be done in accordance with the Jadwin Plan after it had been adopted by the Plan Commission composed of General Jadwin, General Thomas Jackson, President of the Mississippi River Commission, and C. W. Sturdivant, an eminent civil engineer. The local districts under this Act are required to furnish the river-front right of way and take care of all drainage problems incident to any changes of levee line. I have detailed this growth from 1880 to the present time in order to show that the protection by levees has been a matter of growth and that numerous changes in grade-lines and levee slopes have from time to time been adopted in order to meet the conditions as they arose.

After the swamp lands had passed into the ownership of the counties they remained in public ownership for many years. In the early eighties of the last century the county courts of this territory, not feeling able and willing to undertake drainage reclamation, began to peddle the lands to their citizens for road and railway purposes. For example, Mississippi, Scott, Stoddard and Butler counties granted thousands of acres for the building of the

old Cairo, Arkansas & Texas Railroad from Cairo to Poplar Bluff, where it articulated with the Iron Mountain system, now the Missouri-Pacific. Likewise New Madrid county granted many thousands of acres to citizens of New Madrid and Dunklin counties and Mr. Charles Luce of Toledo, Ohio, for the building of a plank road over about half on the distance between Malden and New Madrid, Missouri. During the period of this construction an agreement was entered into with the County Court whereby the building of a narrow gage railroad was substituted for that of the initially proposed highway. The railroad was completed not long thereafter and sold to the St. Louis-Southwestern Railway, now known as the Cotton-Belt. At the time of this sale Mr. Luce acquired the interests of his partners in the swamp lands conveyed to them by New Madrid County. Mr. Luce, coming from northwestern Ohio where swamp land drainage was already in progress, believed that the swamp lands of Missouri could be effectively drained, and desiring to perfect his title, believing that the lands had been acquired not in perfect accordance with the law, entered into an additional contract with the County Court of New Madrid County, to construct a ditch from the Iron-Mountain Railroad near Bookerton along the general course of Little River, straightening and shortening the flow of the water and cleaning out the channel where coincident with it, at the price of 14 cents per yard for the dirt removed, the pay for which he was to accept in swamp lands at \$1.25 per acre. This work was begun in 1886 and continued to 1888 when the dredge boat was destroyed by fire. In the meantime Mr. Charles Luce died and Isaac Himmelberger and John Himmelberger, his son, acquired an interest in the Luce lands. The heirs of Luce and the Himmelbergers, likewise feeling that their title was not perfect, again took up the construction of the ditch started by Mr. Luce. Mr. James Pollard was employed in 1896 to finish the ditch begun in 1886. This ditch was completed in 1899 and extended across the New Madrid-Pemiscot line about one mile into the county of Pemiscot. While this ditch did not drain the swamps, it was very effective in hastening the run-off that heretofore had taken months to pass through the swamps. After the levee had been completed from Point Pleasant to the Arkansas line Louis Houck of Cape Girardeau, decided to build a railroad from Kennett to Caruthersville, and got a grant of lands from the County Court of Pemiscot county amounting to about 40,000 acres as a donation to assist him in building the road. This road was completed into Caruthersville in 1895. The County Court was induced to look over the road and study the condition of the borrow-pit ditches and, on the theory that these pits were sufficiently connected to constitute a ditch, granted the lands to Mr. Houck, notwithstanding the fact that the railroad line was constructed at right angles to the natural flow of water. J. E. Franklin of Fredericktown had associated himself with Mr. Houck in the building of this railroad for an interest in the same, furnishing much of the necessary capital for its construction. Later on Mr. Franklin took over the ownership of the lands granted. Feeling that his title, like that of Mr. Luce, was not in exact accordance with the reclamation of the lands, in 1899 he contracted with the court to construct a ditch from Tanner and Spear Lakes to Duland's Lake, a distance of about 5 miles. The writer of this article was, without preliminary consultation, appointed engineer of the proposed work. Knowing the conditions of the country, I refused to accept

the appointment, feeling that any such construction would be of no service to the community. My refusal, becoming public, induced the County Court to further consider the matter and it finally agreed or contracted with Mr. Franklin to continue the proposed ditch southward through Grassy Bayou and Cooter's Ridge into Pemiscot Bayou south of Cooter, a total distance of 17 miles. While this ditch did not drain the country thoroughly, it was, like the one in New Madrid county, of sufficient service to partially educate the people as to the matter of drainage. The lands of the counties having passed out of their hands without complete reclamation of the territory, it became a matter of private organization to carry out further reclamation. While the title to the swamp lands had passed into private ownership without getting reclamation, it is only fair to state that the things done helped to develop the territory, made communication between the ridge districts easier, helped to get their products to market, and induced other settlers to come into the country.

The lands having passed out of the hands of the respective counties into private ownership, it was now either necessary for each individual owner to drain his own holdings or go at it by organization. It was an impossible thing in this territory for the individual owner to drain his own property because of the flat nature of the terrain and the consequent distance of outlet. While the old common law allowed each man to fight water as a common enemy and drain the same into any existing channel, few such well defined water courses existed in this territory. That being the case, only organized effort could effectually reclaim the lands. To begin with there was no law covering the situation. As in most instances, the serious need for a thing serves almost to give it spontaneous evolution, so in the last years of the nineteenth and first part of the twentieth centuries the Legislature of Missouri became a prolific source of such legislation, each law, in a measure complementing the omissions of the one preceding. By 1905 and 1906 workable county court and circuit court law had been evolved, made up by noting the deficiencies of the earlier efforts. The county court law became an easy method of organizing small areas within county limits. The circuit court law was of wider application and workable where more counties than one were concerned. From 1899 to 1907 many districts covering small acreages from five to fifty thousand each were organized and the drainage works completed. In a large measure on each side of the Little River basin (of course referring now to the Middle Area of swamp territory) many districts were organized, constructed and completed, turning their waters into the trough of the basin, which afterwards became known as the Little River Drainage District. The man who petitioned for the organization of these districts, the court that effected the organization and the engineers who were appointed by the court to survey, plat and inspect the territory in company with commissioners appointed by the court to determine the feasibility of the project, were all unschooled in the necessary knowledge of securing ample reclamation. If, however, these gentlemen had been wise enough and had had the necessary technical skill and information, they probably could not have done very differently from what they did do. When the work began the lands composing the districts were very cheap, varying from two to five dollars per acre, and any extended plan providing for sufficient drainage would have been vetoed by the inability to get



the necessary money to pay for the same. These people were forced to do the work step by step, allowing the first effort at reclamation to reclaim or drain the higher lands of the district, thus elevating the price of all the lands within its boundaries. This increased valuation of the land produced by partial drainage served as the basis for additional work repeated often two and three times in order to raise sufficient money to do the work.

By 1907 the owners of the land in the trough of the Little River basin, the dumping ground for the drainage districts on each side of itself, by petition to the circuit court of New Madrid county attempted to organize the Little River Drainage District. Certain objecting parties forced the organization into the circuit court of Butler county which completed the organization and has since had jurisdiction. In December, 1907, the preliminary organization was effected and at a landholders' meeting at Morehouse, Charlie Henderson of Jackson, John Himmelberger of Cape Girardeau, Al Harty of Bloomfield, A. J. Matthews of Sikeston, and S. P. Reynolds of Caruthersville, were elected as the Board of Supervisors which organized immediately with John Himmelberger as President, George Hanford as Secretary-Treasurer of the District, and Otto Kochtitzky as Chief Engineer. A careful topographic survey was made, a plan evolved and eminent consulting engineers, namely, Mr. Isham Randolph of Chicago, Col. Ockerson of St. Louis, Mr. Arthur Morgan of the Morgan Engineering Company, Memphis, Tennessee, and Dr. Mead of Wisconsin were called in to advise and discuss the plan of reclamation that had been suggested by the Chief of Engineers and finally adopted by the Board of Supervisors. The district soon found even the carefully devised system of these men inadequate and after operating the district for a period of more than ten years at a cost of nearly five million dollars, called a meeting of the landholders of the district which instructed the Board of Supervisors to do much additional work. This was done under the direction of L. L. Hidinger, President of the Morgan Engineering Company, who had become Chief Engineer on the death of Mr. O'Brien who had himself succeeded Mr. Kochtitzky. After having made an addition to the district called the West Extension and performing the work under the second plan, the total cost of the district had reached practically eleven million dollars. Even now, after more than doubling the original expenditure, in some portions of the district the work is inadequate and the Board of Supervisors was so informed by the Chief Engineer at the time the second plan was put in operation.

I have recounted the work of the Little River Drainage District somewhat in detail because it is one of the early types of the circuit court districts, organized with greater care than most early projects, and calling in some of the highest talent in the whole country. I have shown you that even this work has been done by successive steps and some time or other another step will have to be taken.

One of the interesting things connected with this particular district was the conclusion reached by the engineers and the supervisors that the drainage of about six hundred thousand acres of land from the Ozark hills had to be diverted before the Little River Drainage District could itself be reclaimed. It was easy to see that the water from this hill country debouching into the flat valley below could not be carried 90 miles through the district at

any reasonable expense, but must be diverted to the Mississippi River and even this diversion by means of a levee 30 miles long was itself an expensive operation. Other circuit court drainage districts like the Mingo and the Inter-River Drainage Districts on the west of Crowley's Ridge and the St. John's Drainage and Levee District lying to the east of the Sikeston-New Madrid ridge were organized and constructed within the next few years. Many of the county court and circuit court districts succeeded in paying the bonds issued to construct the original plan, but have since gone bankrupt in trying to improve their drainage over what was first attempted. The next problem before the tax-payers in these districts is to reach an adjustment with the actual purchasers of the bonds issued.

I believe you will agree with me that the whole reclamation process in Southeast Missouri has been educative. It was undertaken step by step. Such procedure was, indeed, the only process, after the land had passed into private ownership, by which the work could have been done.

Nearly forty years of effort elapsed in the building of levees along the Mississippi river, before a single agency with power over 28 districts could be induced to take over their management, thereby giving the unity of plan necessary for effective construction.

By looking over the census of the United States for the year 1920 relative to drainage reclamation in Southeast Missouri I find that the acreage in the nine counties comprising the Southeast Missouri swamp land district is 3,500,000, and that 2,000,000 of these acres have been organized into drainage districts either by county or circuit courts, and that a total exceeding \$50,000,000, covering both interest and principal, has been expended to reclaim these lands, with both levees and ditches, and I have not included in this estimate any sporadic attempts at tile draining. Nearly 160 miles of levees have been constructed along the western front of the Mississippi River to prevent the lands overflowing and approximately 3,000 miles of open ditches, varying from 6 to 140 feet bottom width, have been constructed to dispose of the surface water of this territory. Several times as many cubic yards have been moved to drain and levee this land as were moved by the national government in digging the Panama Canal.

## DRAINAGE PROBLEMS OF GRAND RIVER BOTTOMS

HEZ K. JOHNSON, *Consulting Engineer, Chillicothe, Mo.*

Grand River has its source in the prairie lands of southern Iowa, winds in a southeasterly direction through the northwestern counties of Missouri, and flows into the Missouri River near Brunswick in Chariton county. The outlet is about 260 miles above the mouth of the Missouri River and about 130 miles below Kansas City. The length of the Grand River is about 215 miles and it has an average fall of about 3.6 feet per mile. The fact that the lower 150 miles has an average fall of only about 1.4 feet per mile is basis enough upon which to predict the result of straightening the more rapid flowing tributaries of the upper end. It is no longer necessary to theorize on what would happen. It has already happened.

A very extensive program in an effort to obtain protection from damaging overflows within the Grand River Basin has been consummated. The prevailing method used was channel straightening by means of cutoffs or new channels constructed of less capacity than the original stream, with the hope that natural erosion would enlarge the channels to carry even a greater flow than the old river bed. In only a few instances did this plan fail to function. These failures invariably can be attributed to unwise location impelled by local interest. While in some of the separate units that installed works appreciable benefits were realized within the area, matters were commonly made worse in the downstream areas. There could hardly be a better demonstration of the futility of separate drainage districts, without coordinating their plans, to accomplish universal benefits from their efforts to control floods, than the consummation of the works along the Grand River Basin.

The Secretary of War transmitted the report from the Chief of Engineers on Grand River, Missouri and Iowa, covering navigation flood control, power development, and irrigation, which was referred to the Congressional Committee on Rivers and Harbors and ordered printed on January 27, 1932. This report was made under the provisions of section 10 of the Flood Control Act of May 15, 1928, and is an elaborate record of the study of the engineers of the Grand River Basin. The report covers 195 pages of printed matter, together with 51 maps and charts.

It appears that the initial purpose of this study was to determine whether it would be advisable to ask appropriation for funds as a Government or Federal Aid Project in improving the Grand Basin, in addition to aid already being contributed to the development of plans for the specific purpose of controlling flood waters of the Missouri or Mississippi Rivers, or for benefiting navigation on these streams. With this primary purpose in view tentative plans were devised and formulated which contemplated the protection of lands within the Grand Basin that have not already been wholly or partially reclaimed. The statistics of this report reveals that there are "368,453 acres of which approximately 143,000 acres are now completely protected, about 84,000 acres have partial protection, and about 141,000 have virtually no protection. The estimated flood damage over the entire basin for the 22-year period 1909-1930, inclusive, is \$17,045,000 or an average of \$775,000 per year. The total cost of all the works constructed within the organized drainage districts was about \$9,655,700, including interest charges. The unpaid balance of this total cost is about \$6,000,000." Records show that more than a half million dollars in delinquent drainage taxes has accumulated with

more than 100,000 acres affected. Under the stress of present financial conditions this delinquency may be expected to increase to the extent of forfeiture.

The government engineers submitted as the best plan that they considered could be devised for the protection of as much of the affected lands as possible, within reasonable cost, the use of levees with a few cut-offs in certain localities. The plan would furnish complete protection of 135,030 acres of the 265,000 acres that now have partial or no protection. This plan was estimated to cost \$13,252,500 for construction, and an annual operation and maintenance cost of \$272,500. To debit this expense to the small area of 135,030 acres of land actually reclaimed from present flood damages would appear to be an unwarrantable expense, and the obvious conclusion is that "the protection of the lands in the Grand Basin from floods by any agency would be an unsound economic measure under the existing economics of agriculture."

In reference to the economic value of flood control General Jadwin said, "The question must be viewed from the standpoint not only of those in the valley needing flood protection but also of the taxpayers in other parts of the country, including the regions from which the flood waters come." The alleviation of the distress within the Grand River Basin, as proposed by the Government Engineers, viewed from the standpoint suggested by General Jadwin, would not appear so extravagant when it is considered that there are five million acres contributing to flood conditions of the Grand River Basin.

To the casual observer the plans submitted by the government engineers may seem so exhaustive as to prelude any other plans that may be worthy of consideration. However, the writer has visions of still other plans, proposed by a citizen of the Grand River Valley, that might prove interesting enough to make further study of the problem necessary. It would be too tedious to go into detail here in devising the plans, but a few suggestions may suffice to disclose some ideas of the plan. In the narrows of the Thompson River, the largest tributary of the Grand River, at a point a few miles above its outlet into Grand River, solid rock is said to be encountered at a shallow depth across the valley with rocky cliffs on either side. At this point a dam could be constructed of sufficient height to raise the water to an elevation that it would not be difficult to construct a spillway across to the Medicine Creek valley, and thus diverting the waters of this stream to enter the Grand River far below the great alluvial valley extending above and below Chilli-cothe.

Under the present chaotic conditions, however, it is difficult to propose a remedy that would be both technically adequate and financially practicable. As a suggestion for the immediate benefit to the agriculturalists of the lower reaches of the Grand Basin, efforts should be made to create a market by promoting the establishment of industrial plants, such as canning factories, within the district. These plants would furnish ready markets for short period culture fruit, grain, and vegetable crops, which could be produced between floods without the danger of loss that accompanies the attempted long period culture crops. It would also encourage agriculture in the smaller acreage farming and do much to furnish labor for the unemployed, not only in the industrial plants, but in reaches of the whole surrounding community.

## THE EXTENT AND CAUSES OF DRAINAGE TAX DELINQUENCY

W. A. OLIVER, *Attorney, Cape Girardeau, Mo.*

In dealing with the extent of "drainage tax delinquency" the question of what is a drainage tax needs first to be answered. Technically, from the lawyers' standpoint, the levy made by the district and theoretically paid by the landowner, is not "a tax" but "a special assessment," but for the purpose of this discussion we shall continue to designate it, as stated on the program, as a tax. Whether called a tax or special assessment, it constitutes the annual charge levied against the land by the drainage district for (1) the retirement of the bonded indebtedness of the district, if any, (2) interest on outstanding bonds, if any, and (3) a maintenance charge for the up-keep of the ditches.

Some misconception has arisen as to the status of the drainage tax. It is paramount over all other liens, except general taxes for state, county, school and road purposes. As to them it is subordinate. The Supreme Court of Missouri has held that when property was sold to enforce the collection of delinquent general taxes for any given year, the drainage tax on the same property for the same year was cancelled and wiped out, but that the drainage tax to be levied for subsequent years in order to pay bonded indebtedness of the District, was not affected by the previous sale for State and County purposes. Should, however, the State have cause to foreclose its lien for any subsequent year, the same situation with respect to the drainage tax would then arise. The portion of the drainage tax levied for maintenance purposes is a very small amount compared to the portion of the tax levied to retire maturing bonds and pay current interest.

While the drainage tax constitutes a secondary lien on the land itself, a drainage district bond does not constitute a mortgage on the land. The bond is secured by a lien on the annual tax or benefit levied by the District and in the event the tax is not paid, the land can be sold by the district to enforce the payment of the tax. That is to say, it can be offered for sale, though in recent years, in many instances, thousands of acres so sold have failed to bring the amount of the delinquent drainage taxes and statutory costs.

Data compiled by the census bureau reveal that in 1930 drainage districts aggregating a capital investment of \$112,962,986.00 or 16.6% of the total capital investment in drainage districts in the United States, were in trouble because of tax delinquencies. In Missouri, districts having a capital investment of \$24,479,980.00, or representing 23.9% of the total investment for drainage districts in the State, were in difficulty from the same cause. The average amount of capital invested in 31 districts in Missouri known to be in default, averages nearly \$700,000.00 per district and in Arkansas, the average of 52 districts is \$250,000.00.

Since the census data were compiled, the defaults in drainage district bonds have increased. For example, in one of the counties in Missouri, the records disclose that of the 15 county court drainage districts having outstanding bonds, 14 are now in default, most of them having defaulted in 1931 and 1932. Two circuit court districts with offices in the county are also in default. This is a

typical county and probably indicative of the increase of drainage tax delinquency that has occurred generally since 1930.

The record of increase in tax delinquency of a large Circuit Court District is also indicative of the general trend. The following table demonstrates the constant increase in tax delinquency for the various years in that district.

Year	Percentage of Taxes Delinquent
1923	2.39%
1924	4.18
1925	5.53
1926	13.54
1927	28.62
1928	41.47
1929	55.32
1930	56.12
1931	90.33
1932	95.00 (estimate)

The increase in drainage tax delinquency reflects, presumably, the decline of agricultural prosperity and is highly though inversely correlated with the decline in land values as reported by the United States Department of Agriculture. Thus, during the period 1923 to 1932 when delinquency increased so rapidly, farm land or real estate values in Missouri fell from 127% of the 1912 to 1914 level in 1923 to 67% of the same level in 1932.

Court calendars are also beginning to reflect the extent of drainage district delinquency. The cases usually arise over the inability of a drainage district to pay the full amount of matured bonds issued by it and presented for payment by the holder. The district having been unable to collect sufficient taxes to pay all bonds and realizing that it can under no conditions pay all, frequently adopts the policy of insisting that the bondholders accept a pro rata distribution of the taxes collected.

In other instances, the districts refuse to pay out any funds at all, awaiting a court decision as to how much and to whom they should pay such funds as they have on hand. Certain courts, notably those from the far West, have approved the pro rata distribution between all bondholders. On the other hand, the Courts of Florida and other Southeastern States have held to a "first come, first paid" rule which has resulted in a scramble by bondholders for the funds available. This same question is now before the Appellate and Federal Courts of Missouri.

Clearly established facts relating to the extent of drainage tax delinquency then are that such delinquency is widespread and that in certain districts, payments of these taxes have virtually been stopped.

#### The Cause of Drainage Tax Delinquency

The causes of drainage tax delinquency are numerous and may generally be said to fall in two divisions, first, economic; second, engineering.

Some of the more important economic reasons are:

(1) Over-capitalization of the district, that is to say, too heavy a tax burden, even under normal conditions.

(2) Depreciated value of commodities produced on the farms.

(3) Too large a percentage of timbered land in the districts and its inability to carry the tax burden assessed against it.

- (4) Failure of new capital to seek investment in drainage districts.
- (5) Short maturities of bond issues.
- (6) High state and local taxes having a paramount lien on the lands in the districts.
- (7) Failure to consider type of soil and its fertility at the time of organizing of districts.

Among the engineering causes that might be mentioned are:

- (1) Inadequate and incomplete drainage because of faulty planning.
- (2) Failure to maintain ditches.
- (3) Organization of new and overlapping districts with a resulting overloading of discharge capacity of ditches first dug, necessitating either their enlargement at heavy expense or submitting to overflow.
- (4) Organization of districts in areas not fully protected from overflow by rivers.

Over-capitalization, listed first above, has been taken as referring to the condition which results, when the drainage taxes levied by a district are so heavy, taken with other fixed charges, that the income from the land is insufficient to pay the drainage tax and other fixed charges. A farm, owner farmed, to be an asset as distinguished from a liability, must annually produce enough to pay

- (1) Reasonable cost of living expenses of owner.
- (2) General taxes.
- (3) Drainage and other special improvement taxes.
- (4) Amortized installment on mortgage indebtedness.
- (5) Depreciation and repairs.

Failure to meet the fixed charges embarrasses not only the drainage districts, mortgagees and civil authorities but the farmers themselves in so far as such failure casts a shadow on their titles to their lands. The situation on rented farms is much the same save that the embarrassment rests on the shoulders of the landlord rather than on those of the tenant farmer.

Most of the ditches within the area upon which payments of principal and interest are still due were constructed during the decade and a half prior to 1929. Prices generally, and particularly farm prices, were during that period much higher than at present. Presumably, drainage systems were based upon the anticipation that farming within the area would be as profitable as it had been under the price relationships of the war period and the decade following its close. Such presumptions have been rudely shaken by the events since 1930 and it takes no great discernment to understand why a tax burden designed prior to 1920 should prove impossible of discharge with 10- and 20-cent corn and cotton at two cents a pound.

Closely connected with the over-capitalization and a further contributory cause of delinquency is the extent of cut-over timbered land in many of the districts. In one of the larger drainage districts of this State, 24% of the area is cleared and cultivated, 32% partly cleared, 44% is still in the woods. If returns from cultivated farms, such as have just been discussed, are not sufficient that drainage taxes assessed against them will be paid, it is apparent that owners of cut-over timber land, from which no income is being secured, will be even more reluctant to pay the levies against them.

When many of the drainage districts were organized, large areas in them were still in timber. The owners of the land in many instances had been

manufacturers of timber products and having removed all merchantable timber, desired to dispose of their property. There was during the years 1905 to 1920 a demand for cut-over timbered land for settlement purposes. Land could be then cleared and prepared for farming at a cost ranging from \$20.00 to \$35.00 per acre dependent upon extent of improvements. When thus improved, it could be sold for from \$40.00 to \$50.00 per acre. The theory upon which all drainage districts are organized is that the property can be taxed for drainage district purposes to the extent of the benefits conferred. The drainage districts, having made possible the use of the land for agricultural purposes, were judged by the courts to have been benefitted to the extent of \$30.00 or \$40.00 an acre and that amount was fixed as a potential lien on the land.

The amount of the benefit varied from the figures mentioned, to zero, depending upon the elevation of the land, previous ditches that had been dug and other facts that entered into the equation in assessing benefits. In most instances, the lands of the lowest elevation were assessed with the highest benefit and they were usually timbered lands. The result was that in many instances, where land was along the outer edge of the district and then in cultivation, it was assessed a lower benefit, either because of its natural elevation or artificial drainage previously constructed.

It was possible to farm such land with partial success and the benefit conferred by the new district was not so great as that on the timbered land.

This theory while sound in law, has resulted in bringing about much of the tax delinquency. Theoretically, the low-lying timbered land should yield in taxes the greater amount because its condition was changed more than that of any other land in the district. It was literally converted from a swamp to land adapted to growing of crops. As a matter of fact, it is always the last land in a district to be cleared and so long as it is in timber, it pays nothing and the land on the edge of the district that is now in cultivation, receiving the benefits of the district, carries a much smaller tax.

A horizontal reduction in the tax rate to a point that would make it possible for the owner to pay the levies on the more highly assessed lands of the trough of the valley would practically wipe out the taxes on all other lands, and the holder of the bonds would be no better off than prior to the reduction. Neither is the landowner bettered much by extending the time, if the district is over-capitalized. The burden is simply shifted to a later day.

Among the other causes for tax delinquency I mentioned the failure of new capital to seek investment in land included within drainage districts.

As the districts were first organized the owner of the property, because of his hope and expectation of selling his cut-over timbered lands, paid the taxes for the first few years out of capital earned in the lumber business.

As time went on, the country gradually developed, land banks, insurance companies and other agencies, began making loans on lands in drainage districts. At the time that these loans were made, all delinquent taxes were paid and the records of the drainage districts were in excellent shape so far as meeting its obligations was concerned. This fact, of itself, was an incentive to the organization of other drainage districts because the investing



public were educated to believe and did believe drainage district bonds would always be promptly met at maturity.

The insurance companies and land banks, having previously made loans in the districts, are now refusing in many districts to advance money to pay taxes on the land covered by their mortgages and today the individual farm is left to stand as a separate unit. If it earns the money, the owner pays the tax. If it does not, and it has not been doing so for a number of years, the tax usually goes unpaid.

I also mentioned short maturities of the bond issues as being a contributing cause. The great majority of Missouri drainage bonds were of Serial Five-Twenties. The first five years nothing but the interest was levied in the way of taxes, the theory being that the owner within that period of time would clear and house and fence his timbered land and put it on a revenue producing basis and that from that time on, the land would be enabled to sustain a heavy tax. This left 15 years in which the bonds were required to be matured and consequently the tax rate was increased to such an extent during those years that the lands have been unable to bear the load. Even under the so-called normal conditions, prior to the war, the owners were unable to clear the land as fast as was anticipated. Today, and for the past ten years, there has been but little, if any, incentive for owners of land in heavily burdened drainage districts to attempt to clear any more land. Why should capital be invested in clearing land when the land already cleared was not paying its own way, much less earning a profit. Therefore, the short maturities automatically raise the tax, retard the clearing of any additional land and increase the delinquency.

I also mentioned high taxes having a paramount lien on the lands in the districts as a contributing factor.

The state tax in Missouri is not particularly burdensome. It is the local taxes, such as roads and schools and special improvement districts that have run our taxes in rural Missouri to the point where the lands cannot sustain the burden. In one of the Southeast Missouri counties notwithstanding a reduction in assessed valuation of more than a half million dollars, the taxes in that county were increased. The same thing can be said about many others.

The special improvement taxes being secondary, are cancelled by the sale of the land for general tax purposes as hereinabove referred to.

In numerous counties in the State, tract after tract of land has been and is now being offered for sale for state and county tax purposes. The purchaser acquires a good title at such a sale and is vested with immediate possession. At many such sales the land has brought a sum insufficient to pay the costs of the tax suit. Where the demand for land is such that it fails to bring the amount of paramount tax, it is idle to expect it to bring enough to pay the special taxes.

Another contributing cause to the failure of drainage districts to meet their obligations is that in some instances promoters of the District paid no attention to the fertility of the soil.

Many areas of what we commonly call white or greyish crawfish soil are included in drainage districts and bonds issued against benefits assessed against it. If any investigation had been made by soil specialists or prac-

tical farmers at the time the district was organized, they would have advised both the promoters of the district and the investment bankers who bought the bonds to have nothing to do with the district or its bond issue.

Turning to difficulties of an engineering nature, one of the paramount problems involved concerned the size of the drainage districts. The first districts organized were usually comparatively small areas where a goodly part of the land was in cultivation. Small ditches only were required and the expense was light. Such a district proved attractive, benefits were apparent and a desire to include other lands began to take hold. The demand for the organization of drainage districts gradually grew.

In the beginning no particular attention was paid to the hydraulics involved. Farmers in a neighborhood would decide they wanted to dig a ditch and frequently agreed upon the size and dug it. Sometimes it served its purpose—sometimes it did not. There was comparatively little engineering data dealing with the hydraulics of the problem available in 1910, and since then the formulas used by the engineers have been very radically changed.

Practically all of the districts organized since 1910 have been revamped in one way or another, generally by enlarging the ditches. Surveyors, instead of engineers, were often employed to design a plan of reclamation for many of the districts and, in some instances, men with no engineering knowledge whatsoever, laid out the plans for comparatively large districts. By employing such a hit and miss method, many districts were improperly planned with resultant imperfect and incomplete drainage and consequent inability to raise crops.

Another and perhaps one of the most important causes for tax delinquency in drainage districts is the failure of the districts to properly maintain their ditches. This is not so much an engineering fault as it is a lack of money to do the work. A considerable amount of engineering data has however been obtained on this particular subject. Suffice it to say, that it is just as necessary to maintain a drainage ditch as it is to maintain the road bed of a railroad or the surface of one of our main traveled highways. Without maintenance all of them go to pieces and will not serve the purpose for which they were intended.

Another contributing cause that I mentioned is the overlapping of one district by another. The engineers in designing the ditches for a particular district naturally computed the capacity of the ditch to serve the area within the district, but as the community developed, the owners of outlying lands not included in the original district, desired to promote a smaller district. The natural course of drainage from their lands was often toward the ditch previously dug by the original district. The feeling was that these out-lying lands had a natural right to drain toward the ditches in the original district. The result was often a disastrous one to the landowners in the original district. The original ditches thus became overloaded and unable to carry the water thrown into them by the ditches of the new and overlapping districts.

## THE INVESTOR'S STAKE AND HIS ATTITUDE

WYLLYS K. BLISS, *First National Bank, St. Louis.*

The problems and conditions confronting the holder of levee and drainage district bonds have been unusually well presented by previous speakers on the program. In order, however, to properly approach the subject to be discussed, it is essential that two phases of the situation be discussed in some further detail: the first of these is the history of this type of financing; the second is the nature or character of the obligations now held by investors.

Strange as it may seem, levee and drainage district bonds were considered prime investments at the time they were being distributed, and both large and small investors found a place for them in their portfolios and also, for a good many years subsequent to their issuance, they were generally traded in. When an issue went into default in the payment of interest or principal, or both, it was not unusual to find bonds scattered in all parts of the United States. This particular situation has made it necessary for some central agency to represent the scattered interests, in that in most instances the board of supervisors of the district were more concerned over the landowner's problem than they were over the bondholder's problem. Because of this, bondholders' protective committees have been organized, and are in effect boards of trustees, who volunteer to do the best they can in working out the collection or liquidation of outstanding bonds of any particular issue. These committees usually function under very broad general powers, but their ability to represent the holders of outstanding bonds is purely determined by the willingness of bondholders to surrender their securities to them. They usually carry on, representing from 30% to 95% of the outstanding bonds. There are very few situations wherein the committee represents 100% of the bondholders.

Feature Number 2, as set forth above, which has to do with the nature or character of the obligation, can be covered generally by stating that the bonds are "creatures of statutes." Our good legislators, undoubtedly in answer to public demand, created the machinery for the issuance of obligations of incorporated communities for levee and drainage improvements, but merely provided for fair weather operation. When the storm came, those of us who volunteered as members of bondholders' protective committees found many legal problems and questions presented to us which could not be answered by a study of the statutes, and such simple matters as, "Who is entitled to the funds collected when insufficient to pay all of the outstanding past due bonds and coupons?" are now being worked out through long and tedious litigation. As a matter of fact, we are still in the midst of this type of litigation, although many issues of levee and drainage district bonds have been in default for several years. As a result, it is rather difficult to formulate and further to explain to landowners the plan of procedure which satisfactorily answers the problems at hand and still conforms to the legal authority granted at the time the bonds were issued.

However, in spite of these difficulties, I feel that real progress is being made: first, in the general education of bondholders with respect to the type of security held and the depreciation which has taken place in the underlying security; and, secondly, in arriving at a plan which seems to offer a satisfac-

tory basis to both bondholder and landowner over the period during which we are compelled (also by reason of statutes) to carry on. Conclusions reached to date have been on a purely trial and error basis, subject to continual change, because the experiments are still being carried on. There is only one fact which we feel is definite and that is that each individual district has to be considered separately, and there is no general cure-all for the situation as a whole. We are also prone at this time to believe that the matter will have to be broken down even further, in that each district will have to be worked out by the consideration of each individual landowner's problem.

The procedure which apparently is obtaining the best results is one adopted several years ago, wherein the property owner is given three alternatives:

(a) As they accrue, he is permitted to pay his taxes, which we attempt to revise from year to year, in accordance with general economic conditions, but which ultimately will produce sufficient revenue to pay the principal and interest on outstanding bonds.

(b) The landowner is permitted to contract the purchase of land free and clear of levee or drainage district taxes at an agreed price with a substantial down payment and the balance payable in annual notes secured by deed of trust.

(c) The landowner is permitted to accept either of the foregoing bases for settlement and, by assignment of the rents from the property, through a crop mortgage, permit the earnings of the land to pay the taxes or the purchase price, as the case may be.

I am hopeful that this Missouri Conference on Land Utilization may prove of sufficient value to insure future conferences and that those of us who represent bondholders may be able to take some part in the developments resulting from the conference. Certainly the time is now ripe for us all to work together.

This meager presentation of the investor's position will well serve its purpose if it merely results in more careful thinking regarding the problem at hand.

## CRITICAL ELEMENTS OF A PROGRAM OF ADJUSTMENT IN SOUTHEAST MISSOURI

W. W. MARTIN, *Member Board of Directors, Federal Land Bank, St. Louis.*

Some years ago, I heard a prominent lawyer say that the law never caused him very much trouble in a lawsuit but that the most stubborn thing he ever ran up against was a fact. The most critical element in a program of readjustment in Southeast Missouri is to get all parties to see the facts. Whenever they look the facts squarely in the face, they will realize that an adjustment is imperative and that one fair to all is the only one that will last. It has been very hard to get the bondholders and the landowners to realize that an adjustment is mutually profitable. Delay not only means increased difficulties but it also means very heavy losses. In the Little River Drainage District alone, the daily loss in interest to the bondholder on an adjusted basis is \$2,000.00. In all of Southeast Missouri, this loss on an adjusted basis approaches \$10,000.00 daily.

### First, The Bondholder

The bondholder's attitude is a most serious element. His cash developed the district. He bought the bonds because of the assurance of safety and care taken in the organization of the district. Naturally, he wants to know why the bonds are in default and when you give him the reason, it is mighty hard for him to face the facts. There are many reasons why these bonds are in default.

1. Over-capitalization. The land would not produce the taxes.
2. Undeveloped lands in the district. At least 40% of the lands in Southeast Missouri are in the cut-over stage, their merchantable timber gone but as yet undeveloped for farming.
3. Development of poor quality land. Several years ago, the zeal to get as much of Southeast Missouri cleared as possible was so great that much poor quality land was put in cultivation. Some of this land because of its hard pan or excessively sandy character will not produce in normal years enough to justify the expense of clearing and improvements.
4. Changes in the prices of farm products and the general economic depression have contributed much to the default in the payments on the bonds. Fifteen cent corn, five dollar hay and five cent cotton will not enable the farmer to support his family and pay much in the form of benefit assessments.
5. Unusual floods and unusually wet seasons. The flood of 1927, which was one of the biggest in the history of that territory, and the wet season of 1928, when one month had a normal half year's rainfall, contributed greatly to the financial condition in the district.
6. Engineering mistakes. On the whole, the engineering work in Southeast Missouri was very satisfactory, but too many districts were organized and the main channels were not built to carry the enormous amount of water that was finally drained into them; so that engineering mistakes have contributed some to the situation, as it now exists.

Regardless of the reasons given, the stubborn fact exists that the bonds are in default in over 90% of the districts in Southeast Missouri. If a re-

organization is to take place on a successful basis, there are some facts that the bondholders must realize.

1. He must have the landowner. It will not be profitable for him to take over the district and try to operate it. The experience of other districts and of the irrigation districts of the Northwest have proved conclusively that this statement is true. If the entire district should be taken over by the bondholders they would find it a very expensive proposition to operate the land. They would also find it a real problem to sell the land and get it into the hands of other farmers. Such expense, experience has shown, would run anywhere from 15% to 25%. This statement might not be true under normal business conditions, but in these days of economic stress few people are looking for land and it is a very expensive proposition to dispose of it.

2. The bondholder must realize that he can't have the entire income of the land. The landowner or renter must live and under present economic conditions, the entire income of the land would not be sufficient to pay the present cost.

3. The maintenance of the farm is essential. Otherwise the value of drainage bond securities is constantly depreciating.

4. The maintenance of the district is essential. During the past four or five years, the districts have been sadly neglected and a great deal of work must be done at once or many of the benefits of the past will be lost.

5. The landowner must be financed and no hard bargain can be driven that will put him in a position where he cannot get money to finance his crop from year to year.

6. It is too late now to change the facts. The bonds are in default and the drainage districts are in bad shape. The bondholder will either decide now to take what is fair or in the end he will do worse.

7. If an adjustment of the bonded debt is made, it should be done so the landowner will feel that he has an equity in his land. Otherwise much of the incentive for work is taken away from him and the property will depreciate in value.

8. The drainage taxes must be reduced to a point where they can be paid. Experts figure that the maximum of all taxes that the land will produce is from \$2.00 to \$2.25 per acre. At the present time, there are farms in Southeast Missouri that are carrying a total tax of over \$5.00 per acre and one farm carries a tax of \$5.78 per acre. The tragedy in this latter case is that not a foot of the land is in cultivation.

9. The bondholder must realize that when the Bondholders Protective Committee is organized, it must have absolute power. If they are not in position to make any arrangement that is fair and satisfactory, the Committee will not be in position to render a service.

10. If a readjustment is made and the lands are loaded to the limit of taxation, there must be a plan made to readjust the taxes in the event of radical price changes. Such an arrangement is fair to all parties concerned. If farm prices improve rapidly, then the land will be able to carry heavier taxes. It would seem that it would be impossible for them to go lower, but if such a thing took place, then the taxes must be readjusted to protect the landowner.

11. The bondholder must realize also that he has only a lien upon the annual assessment of the lands in the district.

12. Every bondholder must realize that the Bondholders Protective Committee is organized for the protection of all. The bondholder who feels that he will withhold his bonds and in the end be able to drive a hard bargain is a great hindrance to any readjustment program.

### Second, The Landowner

The landowner is also a critical element in the readjustment program of Southeast Missouri. Like the bondholder, he is discouraged. Because of conditions over which he has had no control during the past ten years, he finds himself heavily in debt and unable to make his tax payments, but there are some stubborn facts that he must face.

1. He must be willing to pay all the land will earn for the benefit of the bondholder, after operating costs, taxes and upkeep. In other words, he must have the sacrificial spirit.

2. He must realize that adjustment **does not mean cancellation**. It is his debt. He had the use of the money and he must be willing to pay all the land will earn. Many of the bonds are held by charitable institutions, endowment funds of schools and colleges and widows from one end of the country to the other, and he should be willing to pay every dollar that it is possible to pay. The bonds are his obligation to pay. He must realize that capital is essential for the development of his community, and the future credit of his district is of vital importance to himself and his family. If he takes an attitude that is unfair to capital, when he needs additional help, it will be impossible for him to get it.

3. It is unfair to insist that an adjustment be made on the basis of the present market. He has no right to expect to drive such a bargain.

4. He must realize that he needs outside capital for his present farming operations. Southeast Missouri is unable to furnish this capital and unless he is willing to do all in his power to maintain the good name of the district, it will be impossible to get such help unless it comes from the Government.

5. In the event of a substantial increase in the price level, he must be willing for an upward readjustment of the taxes.

### Third, Proper Classification of Land Essential

Any organization of drainage districts in Southeast Missouri to be effective and enduring must correct the causes of default. Therefore, it must be known what the land can pay. This will call for expert advice and the help of the College of Agriculture of the University of Missouri will be very essential.

1. The soil must be considered. There are many soil types in Southeast Missouri and it is essential to know how much each one of them will produce under normal conditions.

2. Drainage must be considered. This applies not only to the drainage ditches but it also applies to the individual farms. Many farms in Southeast Missouri are inclined to be wet and some farms in a wet season will produce very little. Manifestly, such land cannot bear heavy taxes.

3. Location, roads, markets and community developments must be considered. This fact is too obvious to need discussion.

4. Provision must be made for readjustment in the land classifications. There are nearly two million acres in Southeast Missouri drainage districts

and it would be rather remarkable if they could all be classified without mistake. Where mistakes do occur, they must be corrected.

#### **Fourth, Overlapping Drainage Districts**

Another critical element in the program of readjustment is the many overlapping drainage districts. This makes total taxes often confiscatory. One body of land has drainage taxes of \$3.70 and total taxes of \$5.78 per acre. The ideal condition would be to consolidate these districts but if this is impossible or improbable, then surely there must be close cooperation for proper management, maintenance and adjustment. In the past it has been difficult to secure cooperation of overlapping districts, but it is very essential for the benefit of the small districts, especially.

#### **Fifth, State, County, School and Road Taxes**

In many instances, these are critical elements. In some districts the state county, school and road taxes amount to \$2.08 per acre. Experience has taught that the land will not support these taxes and therefore some adjustment must be made.

#### **Sixth, The Landowner Who Hasn't Paid His Taxes**

In making adjustments the landowner who hasn't paid his taxes, feeling that he will gain in the end, presents a critical problem. However, all parties must realize that it is impossible to have an absolutely fair adjustment in every case.

#### **Conclusion**

The facts clearly show that an adjustment is to the best interest of all parties. The landowner and the bondholder will both greatly profit if an adjustment can be had.

1. The present set-up is unsound. The districts are clearly over-capitalized, the burdens improperly distributed and an adjustment is imperative.

2. The bondholder is losing from \$7,500.00 to \$10,000.00 a day on an adjusted basis and this money will never be recovered. As soon as an adjustment can be made his capital will begin drawing interest again, provided the adjustment is made on a basis that will last.

3. The landowner is discouraged and won't carry on much longer under the present tax burden. It does not make any difference whether the land is owned by the individual or by a mortgage company, the facts are the same in either case.

4. The longer the adjustment is delayed, the longer it will take Southeast Missouri to overcome the bad financial reputation being created by having their obligations in default.

5. Forty per cent of the land in this section of the state is uncultivated and undeveloped, and, under present conditions, there is little inducement to place it in cultivation. It is desirable both to the bondholder and the landowner to have all desirable land placed in cultivation as soon as possible.

6. Land in the district is now often a liability. Under present conditions taxes commonly exceed the income.

7. Drainage systems are rapidly deteriorating. There is little money for improvements. Some inducement must be made that will cause the landowner to want to pay his taxes and maintain the districts.

8. If the landowner will agree to pay all the "traffic will bear" and the bondholder will "face the facts," this problem can be solved. It is to the interest of both parties to solve it as quickly as possible.



## THE HUMAN ELEMENT IN A CONSERVATION PROGRAM

WALTER BURR, *State Director of Unemployment Relief*

If one did not thereby lay himself liable to the charge of begging the question he might well declare that the human element is the only factor worth considering in a conservation program. The farming enterprise has been carried on for the purpose of adequately maintaining the farm family. In the last analysis the only reason for giving attention to animal life, land conservation and all proper development of natural resources, is that such action may contribute to the health, happiness and prosperity of men, women and children.

We fall into grave errors of thinking which lead to more serious failures in planning and achievement when we fail to recognize the unitary nature of physical, economic and social life. In much of our conservation programs of the past it is apparent that we have failed to realize a balanced development. In semi-arid lands men have worked their life energy out on irrigation ditches with the desire to bring water onto infertile land, too often without a carefully considered plan from an engineering standpoint.

Large numbers of people have been settled on these so-called reclaimed lands only to find in later years that an inadequate soil became water-logged and that they could not make a living, or even pay their taxes or retire the irrigation district bonds. One can even see in certain semi-arid regions the astounding extent to which such land has been water-logged by irrigating, with the result that, in some cases, by the time the irrigation district bonds have been retired it has been necessary to organize a drainage district. In Missouri we have notable cases in which lands have been reclaimed by the drainage process and the building of levees, and such reclamation in certain instances has resulted in the burdening of people who were brought in, with such heavy taxes to retire the drainage bonds that they could not by any sort of management get enough out of the land to pay their benefit assessments. In some such instances the calamity of breaking levees has trod hard behind the load of unpaid benefits. These incidents of human tragedy occur when interest in the reclamation of land for its physical, and economic value run their course without due consideration of the human element involved.

We have in certain Missouri counties relatively large populations who are now in pressing need. These people were brought in during the big timber days. They worked at logging, in the saw mills and in wood products factories. A local culture based upon the physical fact of available timber and the economic process of manufacturing its products is found now to be utterly stranded. Other similar instances appear in our Lead Mining areas and even in certain of our coal mining areas. The physical setting proved attractive for economic development. Human beings were essential to the economic development since there must be workers in the mines. In some such places the mines are now shut down or working only intermittently, many of them never to function again. The human group concerned with the mining has been most unfortunate. One sometimes sees the enthusiasts for conservation of natural resources painting pictures of vast

areas of land, being restored for park and recreational purposes, and this entirely without reference to what is to become of the people who are living on that land.

The conservationists speak of "marginal land," the sociologist speaks of "marginal people." By marginal land the conservationist means that land which is on the verge of being shifted from one use to another. By "marginal people" the sociologist means those people who have marginal social status or ability. Socially, they are on the edge, as it were, of a social order. I presume that the conservationist would agree that good land may, under certain conditions, be changed to marginal land. The sociologist would certainly agree that adequate people may become marginal people, also that land marginal in one use may be quite adequate for another use, and that marginal people might be made adequate people for certain purposes. Instead of raising any question of the statistical norm as applied to land and people, however, it might perhaps be better to agree that both land and people exist on different levels of characteristics, utility and ability. Perhaps it is not necessary to say that one level is **better** than another, but only to admit that these levels are **different**. There is danger of loose thinking also when we begin to classify certain groups and certain lands as "marginal." Thus in the words of the poet:

"Nothing useless is, or low,  
Each thing in its place is best  
And what seems but idle show,  
Strengthens and supports the rest."

I might add that one person would consider the isolated ignorant hill family as marginal and another might consider as marginal the Insulls, Kruegers, and their kind. Certainly the latter are less adequate and a greater menace to society than are the former. But it seems true, nevertheless, that a certain kind of marginal people are likely to be found on marginal lands.

Alexander Hamilton early evolved a plan whereby good lands were to be sold by the government at a fairly high price to only a high-type people who had capital funds to invest. He declared that by this method the United States would have great revenue for a thousand years, and would also in that period populate itself with a high type of people. Instead the country may fairly be said to have squandered its free lands in an orgy of settlement. By 1880—a century after Alexander Hamilton—not only all of our good land but much of our marginal land had been settled.

The point I am making is this, that we cannot in Missouri now approach the question of marginal lands as though we were dealing with the lands only and could plan a land conservation program on that sole consideration. The people are on these lands and therefore present a very significant part of the problem which we are facing as we now seek to do some planning—a program that we should have undertaken a century ago.

There has been some argument as to whether marginal people naturally gravitate to marginal lands or whether marginal lands cause people to become, themselves, marginal. The controversy while largely academic is per-

tinant at this juncture. People of low economic resources may go to marginal agricultural land because it is the only land of which they can get possession, but on poor land they will remain poor people. Poverty of the land will even sink them into deeper poverty. A high type of people may be driven through persecution onto marginal land and from that time on may present a case of arrested social development. The native biological quality of such a people may be extremely good but without opportunity to manifest itself in achievement. A normal people may migrate to lands where there are mineral, or oil or timber resources, and where there is for the time being superior economic opportunity, but with the depletion of these resources they may find themselves stranded on land which has become, by such depletion, marginal. They are likely to remain there and from the economic standpoint and the social standpoint they become marginal people.

It is difficult, if not impossible, to move large bodies of people from what has become their native habitation. The engineer and scientist could blue-print a system of water power development, public park improvement, game preserves and the like—but there is no place in his blue print for the people who stand in the way of consummation of his blue print plan. Archaeologists find around the rim of Vesuvius one civilization below another, silent and tragic proof, lava imbedded, that human beings have the homing instinct and that even when their places of habitation are buried in molten lava, as soon as the lava has cooled they go back and build their homes on top of the new formation. It may be then that we would do well in planning our conservation program to deal with marginal people and marginal land as an integral whole and devise some means of providing for the marginal people on the marginal land.

Perhaps we may best illustrate the significance of such a policy by a concrete illustration. For illustrative purposes, we may consider in a general way the area lying south of the river in the State of Missouri. A great portion of this domain has been naturally a timber area. Here and there are deposits of zinc, lead, iron and coal. It is an empire of varied resources which, if located in the old world, might have been carved out into a nation. If it had been by some quirk of history made into a nation, its statesmen would have been confronted with the necessity of finding ways to maintain the physical, economical and social resources of the people in order to support a national economy. As a mere part of the larger economy of the United States, however, the timber in the area was cut off and practically no effort made to promote regrowth in the interest of a continuous timber supply. This area formerly maintained vast resources of wild animal life, both of game animals, fish and fowl. Old timers tell me that in their boyhood days in certain portions of this area when they were riding through the forest blue stem grass came up to the horse's knee. There had been up to that time no burning off of vegetation and little destruction of trees which prevented soil erosion and controlled the water supply for vegetation.

Hundreds of thousands of people were eventually attracted into the area by timber and mining prospects and are, through no fault of their own, deterio-

rating with the deterioration of natural resources. They do not wish to move from their homes and if they did so wish they have no funds to pay for such a migration, and there is no place to which they can go and which would be ready to give them a cordial reception.

Missouri needs as an initial step in reconstruction to make an intensive study of these people as part of a conservation program. Such a proposal ignores state constitutional limitations on the assumption that in time some of these can and will be removed. In brief the suggestion is that the rehabilitation of people should go hand in hand with the conservation and the development of mineral resources, timber resources, wild life, fish, etc. Vast recreational areas could be well developed which would bring the touring world into our beautiful Ozarks. Road developments, already well begun, would be an important part of the program.

Now, for all of these developments we need the labor of people. Extending a program of this sort over a period of forty years, using the labor of the native people on a part time basis would throw into that part of the State much needed funds to maintain and lift the lives of these people while they develop the resources of their own land. I am visualizing such a use of state controlled domains with the families given concessions for living purposes. I am picturing the family with a cow, some pigs, some chickens and a garden, producing their own food (few if any goods for the market) around their own domiciles. The able bodied man would work say two days a week for cash paid, employed in this great reconstruction project. That would mean the rearing of children with those constructive ideas that develop when youth is surrounded in the main by a constructive and not a destructive environment. I could hope that through federal self-liquidating loans or otherwise, Missouri might embark upon some such far-reaching program of reconstruction. The self-liquidating features would lie in certain service charges for recreational purposes, in the added gasoline tax money that would be paid by tourists, in the added hunting and fishing license fees and later in the value of the conserved developed timber production.