



# Better Crops

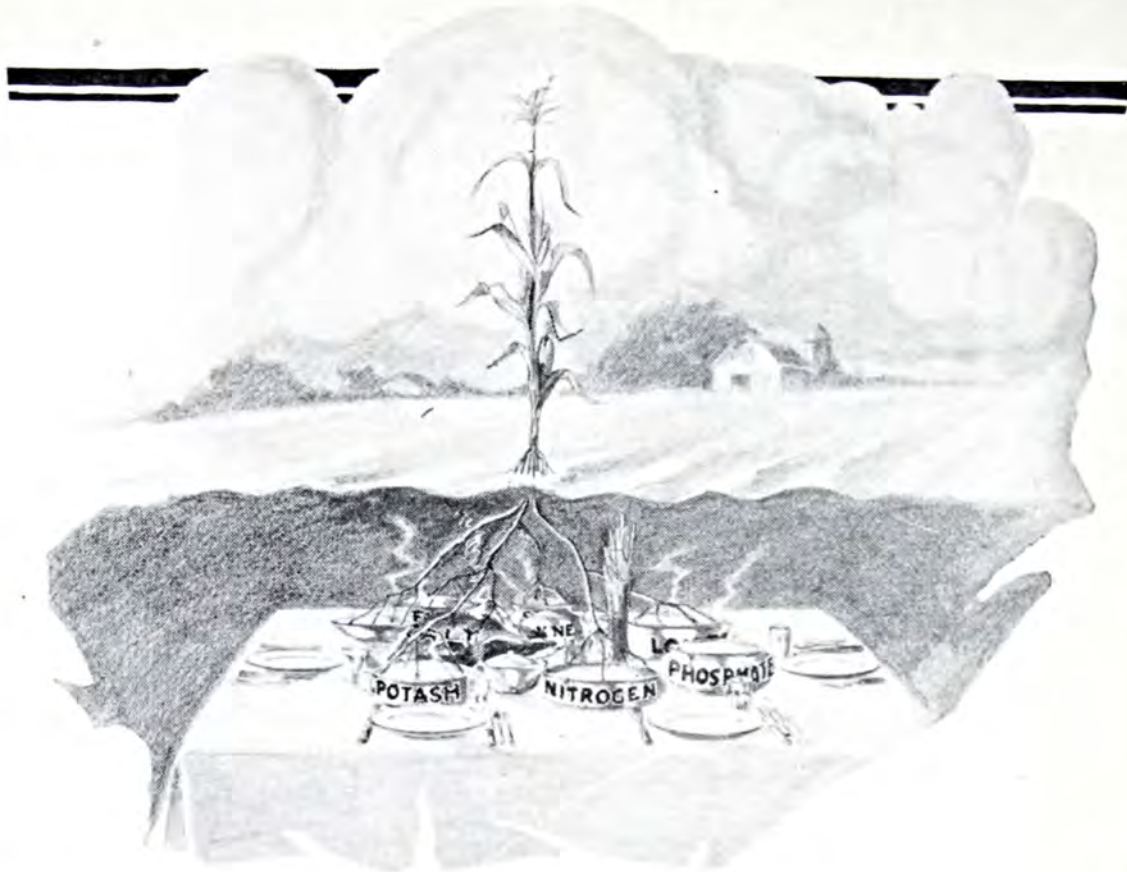
The Pocket Book of Agriculture

March 1922



In this issue—Howard M. Gore—Frank A. Simmonds—Dr. Frank Crane—H. R. Smalley—Jeff McDermid—C. J. Brand





## The food you cannot see!

**A**LL soils look somewhat alike. Some may be darker than others, or of a closer texture, but after all, soil in itself is but a *receptacle*—a bowl in which Nature places her food for plants. The important part of soil is the food it contains. You cannot see the food. You cannot tell how much of any of the important plant-foods remain in the ground.

But the crops know how much food there is. Their groping roots, seeking here and there in the soil for moisture and food, soon discover whether the soil is fertile or futile.

How much potash is there left on the farms of your county? Are you sure that the lack of this important plant-food is not limiting the yields of your crops?

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# A GLANCE AHEAD

IN this issue we are starting two new departments which will interest you. Our Washington correspondent, Mr. Butlar, will send us each month a brief digest of the bills pending in Congress which affect the farmer and agriculture. You will find his first article under the title, "The Legislative Grist Mill."

At one time I hoped to include a summary of the bulletins and publications of the Department of Agriculture and the various state extension services. I find, however, that this would take up so much room that I have decided to confine myself instead to those publications which seem to me most interesting and worth while. Each month, then, we will select the more important publications and briefly summarize them under the title, "Worth While Reading."

Among the many interesting features in our April issue will be the following articles:



## MARKETING A HUNDRED MILLION DOLLAR CROP

by W. B. Geissinger

One of the foremost cooperative enterprises in this country is the California Fruit Growers' Exchange. Mr. Geissinger, who is connected with it, outlines its policies and methods in a stimulating article.



## FOOD FROM SUNFLOWERS

by Dean Robert Stewart

The use of sunflowers as ensilage has interesting possibilities. Dean Stewart tells of experiments that have been made along this line.



## REDUCING CROP LOSSES BY SATISFACTORY INSURANCE

by George H. Dacy

They are insuring almost everything now-a-days. Why not crops? Watch for Mr. Dacy's article. It will set you thinking.



A number of other interesting articles and departments not forgetting

Yours truly,





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# Better Crops

## The Pocket Book of Agriculture

VOLUME II

NUMBER ONE

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### Who's Who of BETTER CROPS

EDITOR	JEFF McDERMID
PUBLISHER and SECRETARY	VERNEUR EDMUND PRATT
PRESIDENT	E. K. HOWE
VICE-PRESIDENT and TREASURER	H. A. FORBES
BUSINESS MANAGER	MORTON E. HIDDEN

Business Offices: 81 Fulton Street, New York  
 Editorial Offices: 461 Eighth Avenue, New York





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¶ These corn stalks, on a farm in the Yakima Valley in the State of Washington, were 20 feet, 3 inches high. One acre produced  $28\frac{1}{2}$  tons of ensilage corn—a new record for the United States. The ordinary corn harvester broke down under the height and toughness of these stalks and the corn had to be cut by hand.





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VOL. II

NEW YORK, MARCH, 1924

No. 1

# COOPERATE

—can you do it?

By *Jeff McDermid*

WE hear a great deal about cooperation these days. There are cooperative stores, cooperative marketing, cooperative this and cooperative that. The word itself is getting so abused and battered and dog-eared that I hesitate to write about it—and I wouldn't have used cooperation at all had there been another word of precisely the same meaning!

THERE is a danger in the too sudden popularity of this word—folks may become imbued with the idea that cooperation is a species of economic panacea that will cure economic ills by merely rubbing it on the afflicted spot.

Not so, my friends. Cooperation starts with a subtle stirring of the atoms of friendliness and the love-

corpuscles in the brain. Cooperation is mental; it springs from the same source as neighborliness, the desire to see others become successful. Cooperation means subjugation of selfish interests to those of the common herd of which we are but a part.

Cooperation is a movement of the spirit—not an industrial or



economic cure-all. Certainly there must be physical means of administering it; but the means, to my view, is as unimportant as the spoon in which medicine is taken—it is a vehicle, nothing more. Until we get this viewpoint we are but pseudo-cooperators, crying in the wilderness a dogma or ritual, the words of which we have been taught to utter, but the spirit of which is foreign to our understanding.

**C**OOPERATION is mental, and it is elemental.

Cooperation is one of Nature's first laws. How useless an upper jaw without a lower jaw against which food can be chewed. The Universe is harmoniously cooperating every moment of the day and night; with the cessation of harmonious joint operation this world might dash itself into atoms against a far star.

To prove to yourself how cooperation pays, try to pick up a pin with your thumb alone. It cannot be done; until the thumb and a finger agree to cooperate the pin stays there. But let the thumb and first finger agree to work harmoniously together and not only are pins picked up, but the work of the world is done.

Nature believes in both cooperation and competition. I can prove it to you and at the same time demonstrate that each is useful in its place. Seldom do we find a cat and a dog cooperating. The dog chases the cat because their interests are not identical; they have different aims in life and a consequent inherent hate is engendered that passes down from generation to generation. Here is a species of competition set on foot by Nature, who believes in the survival of the fittest.

But watch a dog madly in pursuit of a hated member of the female feline family; you will see in a glance Nature's dual uses for competition and for cooperation. The dog and cat are bitter competitors; but all parts of the dog cooperate beautifully and harmoniously because their interests are as one. And all parts of the cat work sympathetically and in unison, because each part knows that it is sorely needed if this life and death race with the feared competitor be won—if any part, such as a hind leg, refuses to cooperate in a time of stress like this, it is not harming the rest of the cat any more than itself will be harmed. The hind legs work as fast as they can and in perfect harmony with the muscles that control the front legs—all with a view to covering as much ground as possible in as short a space of time as is consistent with good form!

**I**N other words, Nature has arranged in her perfect plan for cooperation between parts whose interests are identical and competition between groups of these parts whose interests are opposed.

Herbert Spencer, famous scientist, said, "Society flourishes by the antagonism of its atoms." I cannot believe this. It seems to me that to win any great success the individual must be subordinated to the collective wish—the cat's hind leg must think first of the welfare of the whole cat and lastly or not at all of its own welfare, for if the cat loses its life, the leg dies also.

If men are to progress it must come through intelligent cooperation between groups of like minded individuals whose interests and aims and plans are (*turn to page 70*)



# How One COMMUNITY Solved a Big Problem

*(A cooperative undertaking  
proved successful in this county)*

By Miles H. Fairbank

County Agent, Howard County, Maryland

WHEN the Farm Bureau Local was organized at Pfeiffer's Corner, down in Howard County, Maryland they (that is the members), immediately turned their attention towards a program of work. The members of the Pfeiffer's Corner Local are among those who believe that the Farm Bureau is an organization that should be used to improve agriculture from a production as well as an economic standpoint. They are a live bunch, those fellows, and they knew that they had much cleaning up to do in their own backyard before they howled around about prices, taxes and the rest.

So, together with the writer, a program committee sat down one day last winter to map out a program of work. The proceedings of that day need not be recorded.

There were arguments, a few storms and several amusing incidents, and late that afternoon the meeting adjourned, but not before working out a very comprehensive, not to mention, ambitious program to be taken up during the coming year.

Neither do we need to discuss the various phases of that program.

Practically all of the projects were carried out. Now looking back on the year's work, it is apparent that the project that achieved greatest success and accomplished the greatest good was the cooperative spray ring.

Pfeiffer's Corner is a community of small orchard owners. Practically all of the farmers in that part of Howard County depend on their truck crops and fruit as a principal source of income. And yet, while they knew from practical experience the value of spraying, very few orchards even received a full complete spray schedule. The reasons for this were the same as those confronting any owner of a small farm orchard. First, they could only afford to use small barrel outfits which, even at the best, can be expected to give only average results. The biggest problem, however, is to find time to put on the summer sprays during the rush of farm work. All of these problems are overcome by the spray ring.

THE spray ring as organized had seventeen members with a total of twenty-eight (turn to page 68)



# The Chinese Burbank of Florida's Citrus Industry

*(This Chinaman specializes in solving horticultural riddles. Lue Gim Gong ranks as America's leading orange breeder)*

By G. H. Dacy

**S**PEAKING of horticultural magicians, don't forget to give due credit to Lue Gim Gong, Florida's wizard orange grower. Lue can make an ordinary orange or a grapefruit do most anything except talk and turn a sommersault. He is a veritable Chinese Burbank—an amateur scientist who has achieved more than any other southern producer in developing and perfecting new sons and daughters of our great citrus industry.

**T**HIS talented and educated Chinaman produces new types of oranges, grapefruit, tangerines and mandarines with skill as great as that shown by the artist who paints a masterpiece or by the sculptor who transforms a mass of clay into a symmetrical and graceful statue. A variety of oranges that can be stored directly on the tree for from one to four years after attaining maturity without impairing the marketability of the luscious fruit is Lue's most notable contribution to modern agriculture.

The creation of new living plants, the training of them to bear bountifully, the intercrossing of such varieties on others for their mutual

improvement—such activities require a comprehensive knowledge of both the vagaries of nature and science. Their perfection demands the nicety of adjustment between laboratory theory and sensible field practice which will favor the potential commercialization of the products that are produced. Assets like these are the tools which the Chinese Burbank uses so efficiently.

Florida and California citrus industries pay homage to Lue Gim Gong who has worked out the solutions of their most perplexing plant breeding puzzles. The Lue Gim Gong orange is a marvel of plant growth. It is a luscious, sweet,



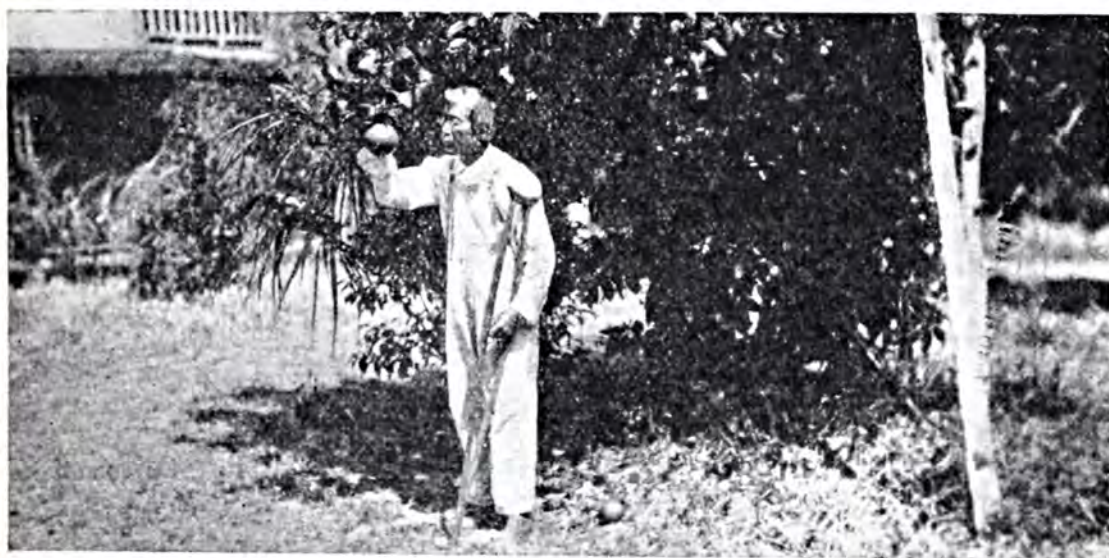
heavybearing orange that commands premium prices wheresoever marketed. The fact that the oranges can be held in storage on the tree after they are fully ripe until market conditions are most propitious for their sale is outstanding. Latterly, the writer inspected trees in the Chinaman's grove which bore oranges that were from one to four years old and still delicious and edible. There is no other species of orange produced in the world today that will hang on the tree for long periods without deteriorating.

In his grove near DeLand, Florida, Lue Gim Gong treasures the parent orange tree which gave rise to the new variety. Scientists and citrus growers by the thousands from all parts of creation have visited the queer old Chinaman and marveled at his plant polenization experiments. Just think of an orange tree that at present bears four generations of fruit. The blossoms of the current year, fragrant with the delicious odor of the orange bloom, shortly will mature another crop of fruit. The longer the oranges hang on the trees, the larger they become and the darker in color. The four year old veterans are as large as small grapefruit.

Lue Gim Gong is also the developer of a remarkable perfumed grapefruit, the like of which has never previously been grown. Pluck one of these extraordinary fruits, remove it to your dining-room table and shortly it will perfume your entire house.

Horticulturists say that the pleasant odor comes from curious cells in the skin of the fruit which secrete and exude a highly perfumed oil. How the Chinaman ever was able to breed this peculiar property into the grapefruit is a secret which has evaded the search of research. The perfumed grapefruit is the progeny of a cross of the pomegranate on the ordinary grapefruit with much oriental magic injected into the union.

THE Lue Gim Gong grapefruit—another citrus celebrity brought into being by the bantamweight Chinaman—is a heavy yielder and is qualified to withstand much lower temperatures than can the general run of citrus products. This particular grapefruit can successfully resist temperatures fifteen degrees lower than those which freeze the varieties that are commonplace in both Florida and (turn to page 63)



Lue Gim Gong has developed a grapefruit that will withstand temperatures 15 degrees lower than that which freezes the ordinary grapefruit.





*Experiment on Cotton Rust by E. L. Jenkins, Midland, Ga.*

*Incomplete Fertilizer (without potash)—Yield: 656 lbs. seed cotton per acre.*

Helpful facts for checking this common disease.

# COTTON RUST

ONE of the common diseases of the cotton plant is generally known as rust, and due to the fact that it is often caused by a lack of available potash in the soil it is sometimes referred to as potash hunger. This disease is widely distributed and, at times, may become of such a serious nature, especially upon poor and light soils, as to be the chief cause of unprofitable yields.

The fact that losses from cotton rust "range from slight to as much as 50 or 60 per cent, with an estimated average for the entire cotton belt of 4 to 5 per cent," should be a matter of grave concern to farmers in those sections where this malady is prevalent.

Reports show that more than a half a century ago rust was recognized by cotton planters to be of sufficient importance as to justify the employment of control measures. In the Annual Report of the United States Commissioner of Agriculture, Honorable Isaac Newton, for the year 1866, we find the following reference: "Rust is generally the worst in soils of moderate depth, which have been planted in cotton for a number of successive years. Rotation of crops and a liberal application of manures, especially those that are rich in potash and phosphoric acid, will, in nine cases out of ten, relieve the cotton field of this malady."

Although cotton rust was long





*Experiment on Cotton Rust by E. L. Jenkins, Midland, Ga.  
Complete Fertilizer (containing 50 lbs. Muriate of Potash per acre)  
Yield: 1,000 lbs. seed cotton per acre.*

# *and its Control*

*By John S. Carroll*

recognized by practical occurrence, very little was known concerning its cause until 1889, at which time Dr. George F. Atkinson, Biologist of the Alabama Experiment Station, began a pathological study of this disease. Since the publication of the early results of his investigations, showing the value of Kainit in checking cotton rust, further experiments have been carried out by the agricultural experiment stations with the result that Sulfate of Potash, Muriate of Potash, and Kainit seem to be equally effective in proportion to the per cent of potash contained.

Our present knowledge of cotton rust and the best known methods of controlling this disease are clearly

set forth by W. W. Gilbert, Pathologist, Office of Cotton, Truck and Forage Crop Disease Investigations, Bureau of Plant Industry, United States Department of Agriculture in Farmer's Bulletin 1187 on "Cotton Diseases and Their Control" as follows:

## *"Occurrence and Losses"*

"One of the most common and serious troubles affecting cotton on the poorer soils throughout the cotton belt is generally known as rust. Other names are black rust, yellow leaf-blight, and potash hunger. It occurs quite generally on the worn-out and light sandy soils, and in the aggregate the losses are large. (turn to page 65)



Helpful advice on one  
of our biggest problems.

# GIVE THEM *a n*

An exclusive interview with

*Howard M. Gore*

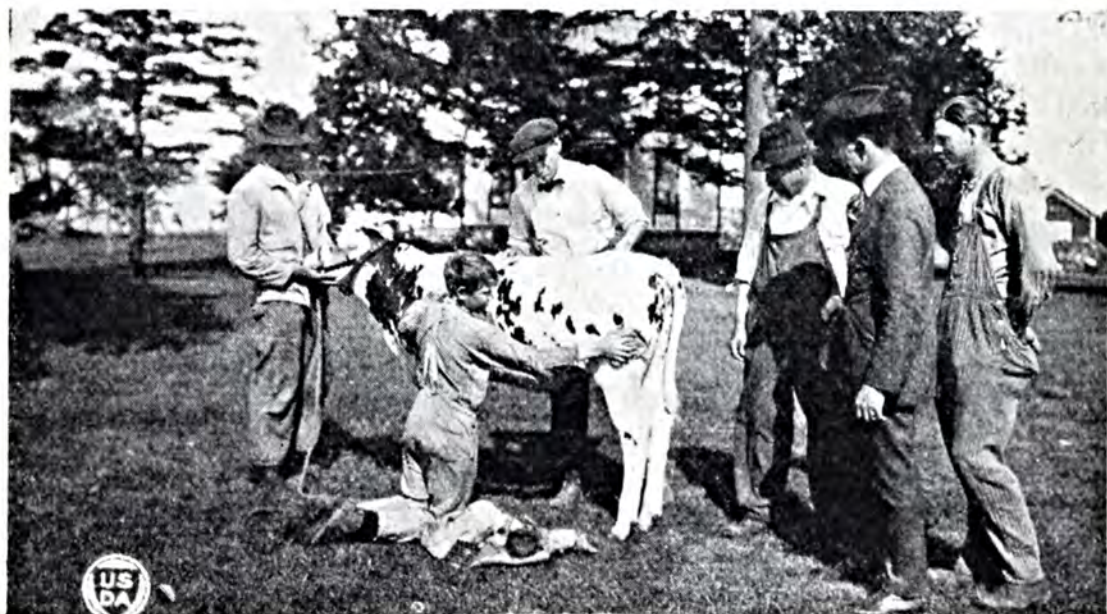
Assistant Secretary of Agriculture

66 **W**HAT can we do to make agriculture more attractive to our young people?" In one form or another I constantly hear this question being asked.

Knowing that the Assistant Secretary of Agriculture, Howard M. Gore, is intensely interested in this very problem, I took occasion to discuss it with him on a recent trip to Washington. Hardly a day passes that he does not receive some word or token of appreciation from

an ambitious member of a boys' or girls' club in whom he has inspired a desire to master the intricacies of modern farming. Talking to or about boys and girls active in club work is, I verily believe, Howard Gore's greatest pleasure. And he has spent a great deal of time doing both.

"Pride of ownership and the desire for individual responsibility and initiative, properly directed, are largely responsible for the interest



Here is an ambitious member of a boys' club preparing his calf for a prize exhibition. Thousands of boys and girls all over the country are learning the value of pure-bred cattle and how to breed them and care for them. They are studying under the greatest teacher there is—Experience.



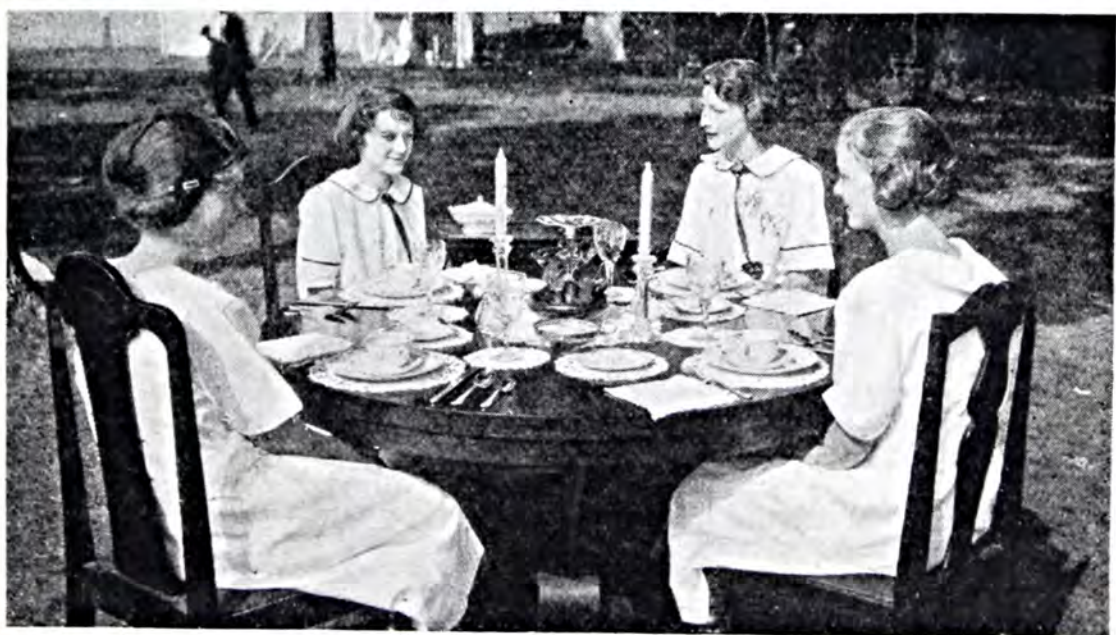
# Early START!

By Jeff McIlernid

and success of club work today," said the Assistant Secretary. "Nothing impels a young lad on the farm to greater things than the fact that the ownership of a calf or pig is placed entirely in his hands and that his success in competition with the boy across the road depends largely on the care and feeding he gives his charge. And the same is true of the little girl who takes part in poultry, cooking or other phases of club work. It is only human nature

that the very thought of competition among individuals will bring out the best effort. The spirit of competition among club members and the success or failure attached thereto is the same that governs failure or success in farming. And the experience gained in youth, as we all know, is lasting and valuable in the years to come."

AT this point, the Assistant Secretary produced figures to show



These four farm girls were sent to the Interstate Fair in Sioux City, Iowa, last year, to give a demonstration in meal preparation and serving. Over 36,000 meals were prepared last year by club girls learning by practice the best known methods of carrying on home and home making enterprises, under the direction of cooperative extension workers.



the extent of club work. "During the fiscal year, 1923, the Department of Agriculture finds that 28,200 clubs made up of 600,957 boys and girls engaged in demonstration work in agriculture and home economics, an increase of about 12 per cent over the previous year," he said. "The estimated total value of club products was \$8,650,000. The largest enrollment was in connection with the work on clothing which consisted of 123,000 boys and girls, of whom 78,600 completed their work and made nearly 300,000 garments. Next in importance was the enrollment in poultry clubs, which was approximately 80,000. These young people handled 940,000 birds that produced 1,357,000 dozen eggs. This is only an indication of the extent of club work the past year. Other examples could be cited to show what these young folks are doing with approved methods recommended by the Department and the state agricultural colleges.

"Of the over one-half million boys and girls active in club work naturally only a comparatively small number are awarded highest honors," he continued. "Records show, however, that a large number of them keep at it from year to year, ever bearing in mind that success comes only to him who works honestly and consistently. They exhibit that same determination which accounts for ultimate success and the same dogged spirit which has enabled the American farmer to survive three of the most severe years in history.

"The successful calf or pig club boy of today will be the successful farmer of tomorrow and the successful girl club worker will be the happy homemaker. These young people are learning the rewards of hard work and endeavor. They know what it is to meet with success or failure in honest competition and they are taught to accept either gracefully. In this respect they are setting an (turn to page 71)



(Herbert Willer of Woodbury County, Iowa, began his club work with feeding and caring for a Shorthorn calf. This calf gained under his management 625 pounds in 9½ months, making the owner a profit of \$7.17 per hundred pounds gained. Herbert next bought a purebred Hampshire sow, about four years ago, and is building up a show herd. He has exhibited both Shorthorns and Hampshires with success, winning first for Hampshire gilt in the junior classes at Sioux City, Iowa, Interstate Fair, 1923. Herbert and his father now own together over 200 head of purebred Hampshire hogs.



# The Cooperative Idea

## PART ONE

By Charles J. Brand

Consulting Specialist in Marketing, U. S. Department of Agriculture

*“The interest aroused by Mr. Brand’s articles on cooperation in the November, December and January issues of BETTER CROPS was so great that we persuaded him to give us more on the same subject. There are few men in the country who know this subject as well as Mr. Brand.”*

NOT long ago when talking with Ex-Premier Luzzati, of Italy, he referred to Germany as the cradle of cooperation. As a matter of fact, it appears that Switzerland was the scene of the first recorded cooperative enterprise. There cheese producers joined together and by turns each sold the product of all. Later, the ablest trader in the group devoted himself exclusively to selling, leaving the producing field altogether. He thus, as a matter of fact, appears to have evolved into a middleman.

All this occurred some hundreds of years ago and has no particularly great meaning to cooperation in its modern sense. In modern forms of cooperative enterprise the Germans were, and still are, the undoubted leaders. Some one has said that in organization the Germans have no superiors, in psychology no inferiors. Without challenging the latter, the former is generally admitted.

The great American Commission sent to Europe in 1913, composed of

many of America’s ablest agricultural leaders, brought home from there a vast amount of information that was of great value in promoting renewed cooperative effort in America in the recent period of greatest development.

There were sporadic and isolated attempts at cooperation in carrying on business activities from the earliest days of the Republic. Many farmers’ associations were organized but their purposes were educational and for mutual improvement. In 1810, however, a dairy enterprise, based on cooperative principles, was started at Goshen, Connecticut. It was short lived.

WITH the recent high tide of cooperation in public favor several contenders for early honors have come to light. In 1841, a Wisconsin farmer made cheese from his own and a few neighbors’ milk. The products were sold together and the proceeds were divided ratably. From this time on, here



and there without reference to each other, small cooperative dairy enterprises sprang up in various parts of the country. Their aggregate number was small, perhaps not over a dozen or two up to the end of the Civil War. Only one of these early efforts, so far as is known, proved permanent and is in operation today. This is a cooperative creamery at Fonda, New York, which was started in 1863 and still carries on successfully.

Creameries and cheese factories predominated among the first attempts at agricultural cooperation. They lend themselves well to this way of doing business. Dairy farmers also came from countries or are descended from nationalities whose historical development tends somewhat less to individualism and more toward common effort. The small quantity of product on the average from each farm also calls for some method of pooling the raw material for the manufacture of the finished product and its sale.

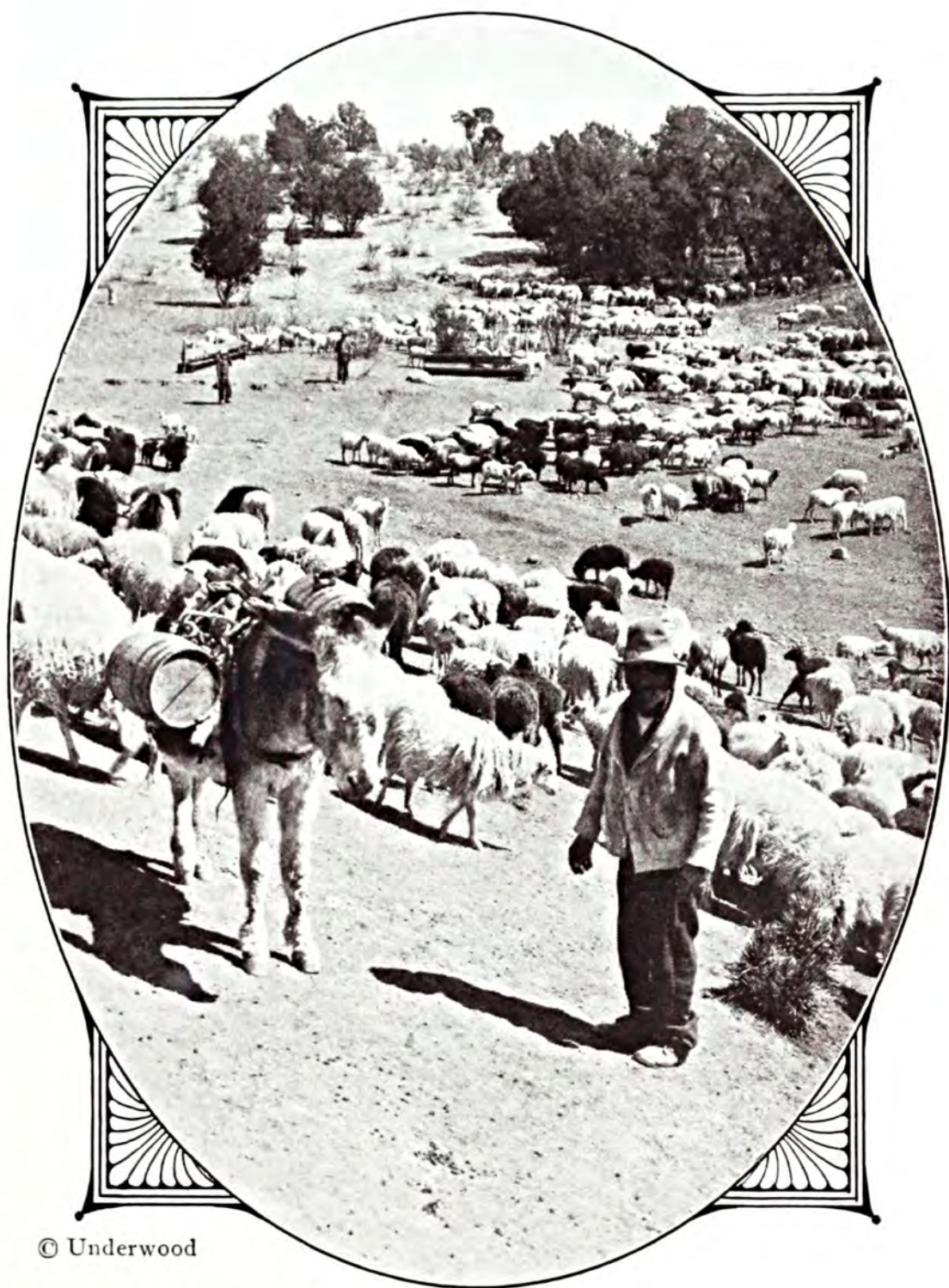
**D**URING this same period consumers' cooperation of various kinds waxed and waned at different times. Stores were opened in several cities, notably Philadelphia and Cincinnati. They flourished for a brief time and then passed on. In 1825 Robert Owen, the father of modern collectivism whose genius and spirit later fired the 28 pioneers in consumers' cooperation at Rochdale, near Manchester, to carry to a successful conclusion their great experiment, came to America and organized his cooperative colony at New Harmony, Indiana. Owen was a great industrialist in England, a large employer of labor, and, while regarded as visionary, was nevertheless a man of very high standing.

At about the same time Moravian and other immigrants from Germany came to America and started similar colonies. Such were the ones at Freedom and Harmony, near Pittsburgh, Pennsylvania. Owen's experiments included the one at New Lanark, Scotland (1813), the one at New Harmony (1825), Ralaline, Ireland (1830-33), and the one at Queens Wood, Hampshire, which began in 1839 and went out of existence in 1844.

**A**LL of these were really experiments in cooperative production and communistic ownership. Alongside these, which were usually called "Utopias," cooperative stores and workshops grew up in large numbers. By about 1830 there were in England 266 cooperative societies, with 16 stores in Manchester alone.

Between 1830 and 1844, the movement had gradually expired. In the latter year 28 poor flannel weavers, who had just lost out in a strike undertaken to improve the wretched lot that then prevailed in their trade, decided that a cooperative store would benefit themselves and their fellow workers in solving their cost of living problems and enable them to attain a decent standard. They called their organization "The Rochdale Equitable Pioneers' Society." Their capital was very small, one pound sterling each, a total of 28 pounds, about \$135.00. This was accumulated by saving two pence or about four cents a week, and putting it in the common treasury. The first weeks' sales of a few staples like flour, butter, and sugar handled amounted to about \$10.00. This contemptuously and derisively treated fragment of business (*turn to page 62*)





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Not Asia nor the Levant but our United States near Berino, N. M. These sheep are Rambouillets and Karakuls, raised for fine Araby furs as well as for meat.





© U. S. D. A.



© F. Dickie

**A** rare bird! A white crow now captive in the Vancouver, B. C., Zoo. It is pure white except wing tips and beak. Ordinary crows always set upon such freaks and try to kill them.

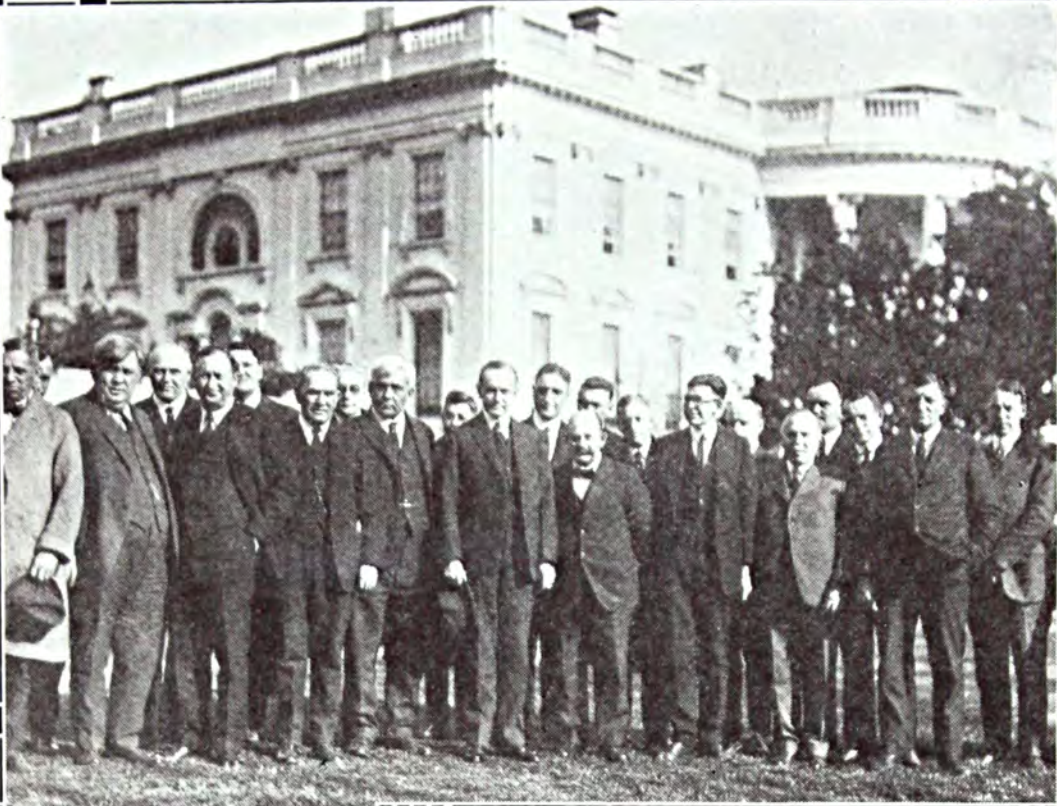


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**T**he only woman cotton broker, Miss May A. Davis of Philadelphia.





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**F**armers from the Northwest in company of members of House Agricultural Committee calling on President Coolidge. These delegates came to urge Congress to pass the Farm Loan Bill.



**A**t the National Co-operative Marketing Conference in Washington last month. Left is Frank O. Lowden, former Governor of Illinois, one of the speakers, and Robert W. Bingham of Louisville, Ky., chairman of the council.



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**D**ean C. B. Williams, Chief of the Division of Agronomy of the North Carolina State College of Agriculture and former Director of the North Carolina Experiment Station. His life has been devoted mainly to helping solve some of the more important problems connected with farming such as increasing the income and bettering the conditions of Southern farmers.



# Making a More Prosperous FARM Community

*Dean Williams presents some interesting thoughts on a subject that is in everyone's mind.*

By Dean C. B. Williams

North Carolina Agricultural Experiment Station

IN a purely rural community there can hardly be a shadow of doubt that the first and most important factor in the development of the farm home and the rural church, as well as in the betterment of the schools and health conditions, is that of making farming a better paying occupation. To do this, it is obviously necessary to increase the acreage production at a minimum cost, and at the same time, secure at least reasonably fair returns from the crops produced. Poor homes, inadequate church and school facilities are more prevalent than we should like to see them in the South, and elsewhere throughout the country, mainly because so many farms are producing so poorly and thereby yielding such small net returns for the efforts put in their operation.

During the past few years, in visits to different sections of the South, we have been forcibly struck

with the marked correlation which exists between the productiveness of the soil on the one hand; and the excellent character of the farm homes and their surroundings, the splendid schools and churches, the healthfulness of the families, and the educational qualifications of the people on the other. In close proximity to such areas, it is not uncommon to find other less productive areas, sparsely settled, where the people are living in humble homes without beautification and their children are without opportunity to benefit by the social, religious and educational advantages enjoyed by those communities established on the more productive lands. The underlying conditions largely responsible for these differences are not hard to find. My observations are, that to a large extent it is fundamentally connected with the differences in the productiveness (*turn to page 50*)



# *The Attitude of the* *American Bankers* *Association on* **COOPERATIVE**

**C**OOPERATIVE endeavor is as old as history itself and the wisest teachers of the race have taught that the test of civilization is the ability to exercise intelligent cooperation in the solution of public problems.

While cooperative marketing of farm products as a general proposition is a comparatively new venture in our country, nevertheless a sufficient fund of successful experience has already been developed in certain commodities, to establish a few basic principles of procedure. More and more, cooperative marketing when sanely applied is being regarded as a sound, logical, economic development.

**E**VEN as order is said to be Heaven's first law, so in time orderly marketing may prove to be agriculture's primary law. At any rate, the orderly marketing idea has taken firm hold on the public mind and there is a widespread feeling among consumers as well as producers that it promises the elimination of much needless waste and expense, and that appreciable benefits will accrue to both producer and consumer.

It seems to me, however, that it will be unfortunate for the farmer if he becomes imbued with the idea that cooperative marketing in itself is a panacea for all agricultural ills. For whatever the merits of cooperative marketing, it is wise to bear in mind that it has definite limitations. A well organ-

ized, wisely managed, cooperative association can be most helpful and can accomplish much that might otherwise be impossible in solving marketing problems—it may prevent untimely dumping of products, it may secure better credit facilities, it may extend existing markets, it may even create new markets as a Pacific Coast enterprise has successfully demonstrated in selling its fruit in a new Eastern market—but obviously it cannot accomplish the impossible; for its operations will be as amenable to economic law as those of other business enterprises. Cooperative marketing cannot prevent other countries with cheaper land and labor from producing a surplus and selling it in foreign marts at a price unattractive to us. It cannot



When Mr. Simmonds delivered this talk before the National Council of Farmers' Cooperative Marketing Associations at Washington, D. C., last month, it created unusual interest. Mr. Simmonds has courteously given us permission to print it for the benefit of our readers who were not at the conference.

# MARKETING

By Frank W. Simmonds

Deputy Manager, American Bankers Association

successfully over-ride the law of supply and demand or maintain for any length of time an artificially high price by unduly withholding from market a product when there is a demand for it, or by any fiat of law or ironclad rule unduly limit production. Sane orderly marketing must be accompanied by sane orderly thinking.

Denmark is frequently cited as a successful time-tested example of what cooperative marketing will do for agriculture. However, there is a phase of the Danish plan that is not sufficiently emphasized: where we stress cooperative marketing, the Dane stresses cooperative agriculture. With us, so far, cooperative marketing is chiefly a marketing proposition, with them marketing is only the final element in a long series of steps in the cooperative enterprise. With them marketing is stressed only about 10%, while 90% of the cooperative effort is devoted to a careful scientific study and solution of factors preceding the marketing stage; such as, soil chemistry, cultivation, breeds of live stock, cost of product, accurate records, improving and standardizing grades of products, producing and packing a product suitable for the market catered to. They feel that when these questions are solved marketing becomes a comparatively simple problem.

Moreover, in Denmark, cooperative marketing is on a competi-

itive basis between various cooperative associations. For instance, there are 46 baking factories selling on a competitive basis with each other. Similarly, this is true of bacon factories, cheese factories, butter factories, etc.

It seems to me we may wisely take a leaf from the Danish notebook of experience, and emphasize more than we have done, the vital factors in cooperative agriculture preceding cooperative marketing—that of efficient, economical, maximum production of standard grade products, for however important cooperative marketing may be in solving the exigencies of the present time, cooperative marketing is only one link in the chain of agricultural problems, and alone it will not offer a sufficiently broad program for permanent, profitable agriculture.

A great deal of interest is being manifested in the cooperative marketing attitude of the American Bankers Association. The bankers have a vital concern in agricultural problems and agricultural prosperity, and they have a sympathetic attitude toward orderly marketing of farm products; also the cooperative enterprises dealing with the problem preceding the marketing step.

**B**ANKERS are using every means at their command to fully inform themselves so that they may act



intelligently and cooperate helpfully—for they fully realize that the banker and farmer are partners in prosperity and in adversity at all time and under all circumstances.

THE Agricultural Commission of the Association for many years, at a large expenditure of effort, time and money, has been performing a wonderfully helpful work in bringing together farmers, bankers, and representatives of agricultural colleges in the various sections of the country for frank conferences and the working out of a definite program of cooperation between bankers and farmers, with special attention to the problem of diversified farming and stimulation of boy and girl club work. In order that there may be no misunderstanding as to the position of the American Bankers Association, I shall take the liberty of quoting the resolution of the Association adopted September, 1922.

"We are glad to note a steady improvement in the condition of the farmer, and we congratulate the agricultural community upon having organizations generally led by men who are showing marked breadth of vision and soundness of judgment in respect to the problems confronting this most important of our industries.

"We can assure the farmers and livestock producers of the country that the bankers will continue to lend them their best aid in the solution of their manifold problems, which solution should be sought through private enterprise and not through government aid. We, therefore, approve of the various endeavors being made by the farmers themselves to increase the facilities for the orderly marketing of their products."

Moreover, the State Bank Division of the Association, with a membership of over 12,000 banks most closely identified with farming and agricultural interests, has been devoting a great deal of attention to the problem of cooperative marketing, and at the Annual Meeting, September, 1923, stated its position in the following resolution.

"Resolved, That we reaffirm our faith in the wisdom of orderly marketing of crops and in the efficacy of the cooperative marketing idea; provided, however, that organizations employing this idea are conducted on sound economic principles.

"We believe that the ultimate success of any such organization will be great or small, depending upon the sound business judgment of the men who control its affairs and the complete divorce of any element of speculation."

THE Public Service Committee of the State Bank Division has confined its work during the past year almost exclusively to a careful study of cooperative marketing and related problems. For the purpose of obtaining first-hand information upon which to base logical deductions, a questionnaire on the subject was sent to the 12,000 member state banks, including a majority of banks in rural communities, also secretaries of State Banking associations and State Commissioners of Banking.

The consensus of replies received is presented in the following conclusions by the Committee.

1. The farmer has gone through several very difficult years which have impressed upon him the absolute necessity for the elimination of all wasteful and uneconomic practices, and have convinced him that only constructive effort and real cooperation can help to solve his problems.

2. The organization of cooperative associations rests on sound economic principles, to which even the most conservative bankers may conscientiously subscribe, but their ultimate success will be great or small depending upon proper organization and the sound judgment of the men who manage their affairs.

3. This new economic development points the way to a permanent solution of the whole problem of financing the production and marketing of our principal farm products, and will, if successful, result in great benefit for the farmer, will bring about a more even distribution of business activity, (*turn to page 46*)



# Three Ideals

By Dr. Frank Crane



HERE are three words which seem to express the three types of civilization which the world so far has worked out. ¶They are Enjoyment, Contentment and Achievement. ¶We might say that the ideal of life in Europe is Enjoyment, in the Orient Contentment, and in America Achievement. ¶Of course there are infinite exceptions to this, but as broad generalities they may hold. ¶The European who works looks forward to the time when he shall have laid up enough money to enable him to quit work and devote himself to enjoyment. ¶He is still more fortunate, or so both he and his fellows deem him, if he does not have to work at all, but can live on the money that his father or his grandfather left him. ¶So ingrained is this in the European mind that a man can hardly be called a noble so long as he has to make his own living. ¶The corollary of this is that work is a misfortune, that the great masses of people who have to work are out of luck, and that only those people work who are so unfortunate or so stupid that they are not able to live upon the labors of others. ¶Most of the literature that comes out of Europe treats of the lives of idlers, of those who devote themselves to sports or to the artificial amusements of what is known as society. ¶This explains why Socialism is so strong in European countries. As a theory it is illogical, but the real force of it is a protest against idleness as an ideal. ¶In the Orient the ideal is Contentment. Buddhism, the prevalent Eastern religion, emphasises this virtue. The great toiling masses live in conditions of unspeakable poverty, yet in the main are cheerful and contented. ¶This makes plain in a measure "the lure of the East." ¶For a person coming out of the turbulent conditions of life in the West and finding in China a vast population that is docile and peaceful, there is a certain charm, especially when he can live in luxury and keep many servants at little expense. All of us love to be coddled, and when we can have a whole nation coddle us quite as a matter of course the sensation is appealing. ¶In America we find neither Contentment nor Enjoyment as ideals. The mainspring of every American is Achievement. He thinks he is born to do something and he is not happy unless he is doing it. ¶That class of Americans who imitate the Europeans and spend their time in sports, amusements and social dawdling, are regarded by the general public with more or less contempt. It is not fashionable in America to do nothing. ¶The American finds his enjoyment in his work, not after it. ¶The American is proud of making his own money, and is a little bit ashamed if he is living on money that someone else has made. ¶An American could not be contented with the content of the Orient. He has born in him a divine discontent, urging him to achievement. This discontent may make him in a measure uncomfortable. But it would make him infinitely more uncomfortable if he did not have it. ¶The future war of ideals in the world will be between these three contestants, Enjoyment, Contentment and Achievement. ¶It will be interesting to see which will win.



# Two Bouquets of Clover

*⌘ This demonstration  
surprised everybody*

**T**WO bouquets of clover solved a problem in fertility, but it took three years, a county agent, a soils and crops specialist, two farmers in trouble and a sack of potash to produce the bouquets.

We don't usually speak of bouquets of clover, but in this particular case it is grammatically, theoretically and scientifically correct. To introduce the characters, we must look to the farmers in trouble first. It often requires trouble to get us down to the place

where we will think, plan and finally work things out.

In 1919 many of the farmers of Whatcom county, Washington, began to lay siege on the office of Harry B. Carroll, Jr., county agent, asking why they couldn't secure a second year's growth of clover. This was not a new question to the farmers but, as year after year passed, it became a more serious problem.

Whatcom county is one of the leading dairy sections of the state,



*Clover and timothy without potash. Grass approximately 12 inches high (first cutting). Clover very scarce.*



# Solve a Problem

By Lincoln R. Lounsbury

Washington State College Agricultural Extension Service

and clover constitutes an important feed for the cows. If the farmers were to continue in the dairying business, they had to get two year's stand of clover. Now all problems have queer turns, and there was a kink in this hay stack.

On some of the farms of the county good clover could be secured for two years, while on others, not far away, the farmer would wait for his second crop to develop and find he had none. Like all good stories we have to introduce our

third character, the soils and crops specialist.

A CONFERENCE took place between the county agent, the troubled farmer, D. Vander Griend of Lynden and Leonard Hegnauer, extension specialist of the State College of Washington. Unlike a good many so-called "conferences" this one produced results. Potash was taken into consideration and the four main principals of our story were set to work. (*turn to page 57*)



Clover and timothy on which 100 per cent of potash was applied per acre. First cutting—30 inches tall on average. Field exceptionally uniform and clover abundant.



(The second (and concluding) installment of the perils encountered by employees of the Department of Agriculture.

# Dangerous Agriculture

## PART TWO

By C. E. G a p e n

with U. S. Department of Agriculture

THERE are persons who are firmly convinced that the scientists who fuss with insects take the biggest chances. But the entomologist gets into this story only because I wish to explode a popular fallacy. According to Dr. L. O. Howard, chief of the Bureau of Entomology and one of the best known entomologists of the world, there are no deadly insects in this country, if we exclude those which sometimes carry dangerous diseases. With the elimination of yellow fever the mosquito which carried this deadly disease is no longer a menace. Department men have braved the dangers of many insects of this type as they did in the West some years ago when they helped in the study of spotted fever, a disease carried by ticks which live on ground squirrels. A State man in Montana and a doctor in the U. S. Public Health Service lost their lives through the bites of these little insects.

But scorpions, tarantulas, centipedes? Pooh! Their reputation is worse, much worse, than their execution. They produce pain and sometimes make their victims very sick, but the entomologist does not consider them dangerous. How-

ever, he watches them as he would a horse with flattened ears. They are not agreeable companions.

What is the most dangerous insect, not counting the disease carriers? It is a little spider with names which might be applied to a golf ball—the "black widow" or the "red dot." It is found mostly in the southern States and its bite on a thin membrane, such as on the lip or between the fingers, may put a man on his back for several days. Many of the stories of death-dealing insects are exaggerations. A few years ago it was flashed over the world that a famous French entomologist working in Algeria had been eaten by grasshoppers, only a few bones and a remnant of a red necktie being left of him. Long after his obituary had been read before a scientific society he was eating snails and frogs in Paris. The grasshopper sometimes looms large, but there are no authentic cases of his having become a man-eater.

THE plant explorers are, perhaps, the greatest adventurers among the agricultural workers employed by Uncle Sam. They



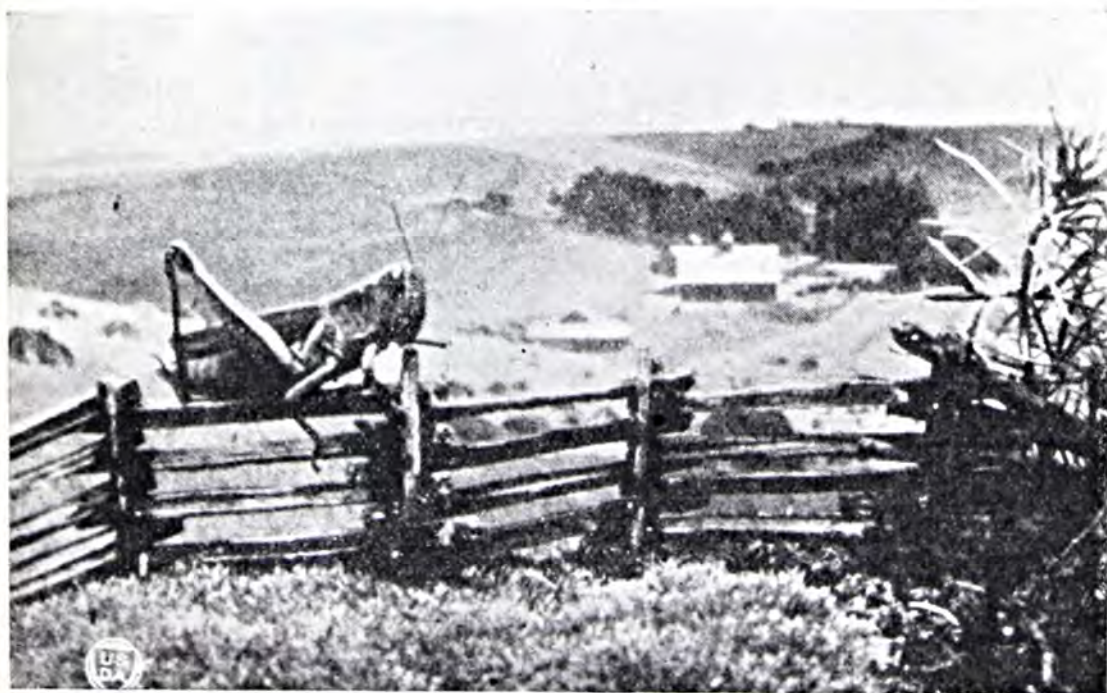
comb out-of-the-way corners of the world for new and valuable plants they may add to our comfort or pleasure and they take life as it happens to be in the jungle or on the desert. In the last 25 years 25 of these hunters of vegetables, fruits, nuts and flowers have been in the employ of the Department, and now there are three on the job, one of them searching the jungles of south-eastern Asia. One of his reports contains an account of his cooperation with the natives of a Burmese village in trapping a man-eating tiger. In his travels through these dangerous areas he is accompanied by soldiers whose wages he pays. Another plant explorer years before was badly beaten by Chinese bandits and later lost his life in a river of China.

One of the men engaged in the foreign seed and plant introduction work has spent much time in Central and South America. To see him in his quiet office at the Department of Agriculture you would never guess that his job had brought him many times the average man's measure of ad-

venture. But this explorer, Wilson Popenoe, has been shot at from ambush several times by unduly suspicious natives; he has been robbed four or five times in lonely roads, and he has been arrested and jailed seven times on various trumped up charges, including those of being a spy, a robber, and a revolutionist. In one town where he lived for a time the natives were dying of yellow fever; he came nearly going to the bottom of the Caribbean when a banana boat was caught in a bad storm.

Sickness and bad food are the greatest dangers encountered by these explorers; fleas, lice, flies and mosquitoes welcome the foreign scientists. One man reported 159 flea bites on his forearms after a night spent in a hammock in a Guatemalan country house. It may well be imagined that the plant explorer in such regions must have plenty of physical hardihood as well as an instinct for recognizing plants giving promise of usefulness.

Government hunters of predatory animals in the West get rather small pay, but they get (*turn to page 49*)



*The grasshopper looks this large to farmers in some localities, but he is no maneater!*



# A MODERN DOLL That Really Works

*(An important discovery now  
made known to the public*

By *Albert A. Hansen*

Purdue University Agricultural Experiment Station

**I**F you were a banker or a business man, would you take a single unnecessary chance with something worth nearly two billions of dollars? If you had sense enough to guide the destinies of so large a sum you probably wouldn't, but that is exactly what the American farmer does when he plants seed corn from untested ears.

It used to be that about all the farmer could do to insure good seed corn was to test it for germination, but recent improvements have changed all this. Nowadays it is possible to get advance information regarding your seed corn on three important factors—germination, vitality and freedom from disease. This has been made possible by the development of the modified rag doll, a product of the corn disease investigations that are being carried on at the Purdue University Agricultural Experiment Station in partnership with the Office of Cereal Investigations, Washington, D. C.

Both the theory and the practice are quite simple. No matter how choice an ear of seed corn may appear to the naked eye, any kernel

on the ear may harbor root rot and other ruinous diseases that sap the vitality of the offspring and may cut down yields materially. Not only that, but even sturdy appearing ears may develop puny plants in spite of the fact that no disease may be apparent. In other words, the parent ear must have both vitality and a clean bill of health in order to produce vigorous offspring, something that cannot be discerned by merely looking at the seed. The modified rag doll, however, points the way for progressive farmers to learn something about what the harvest will be.

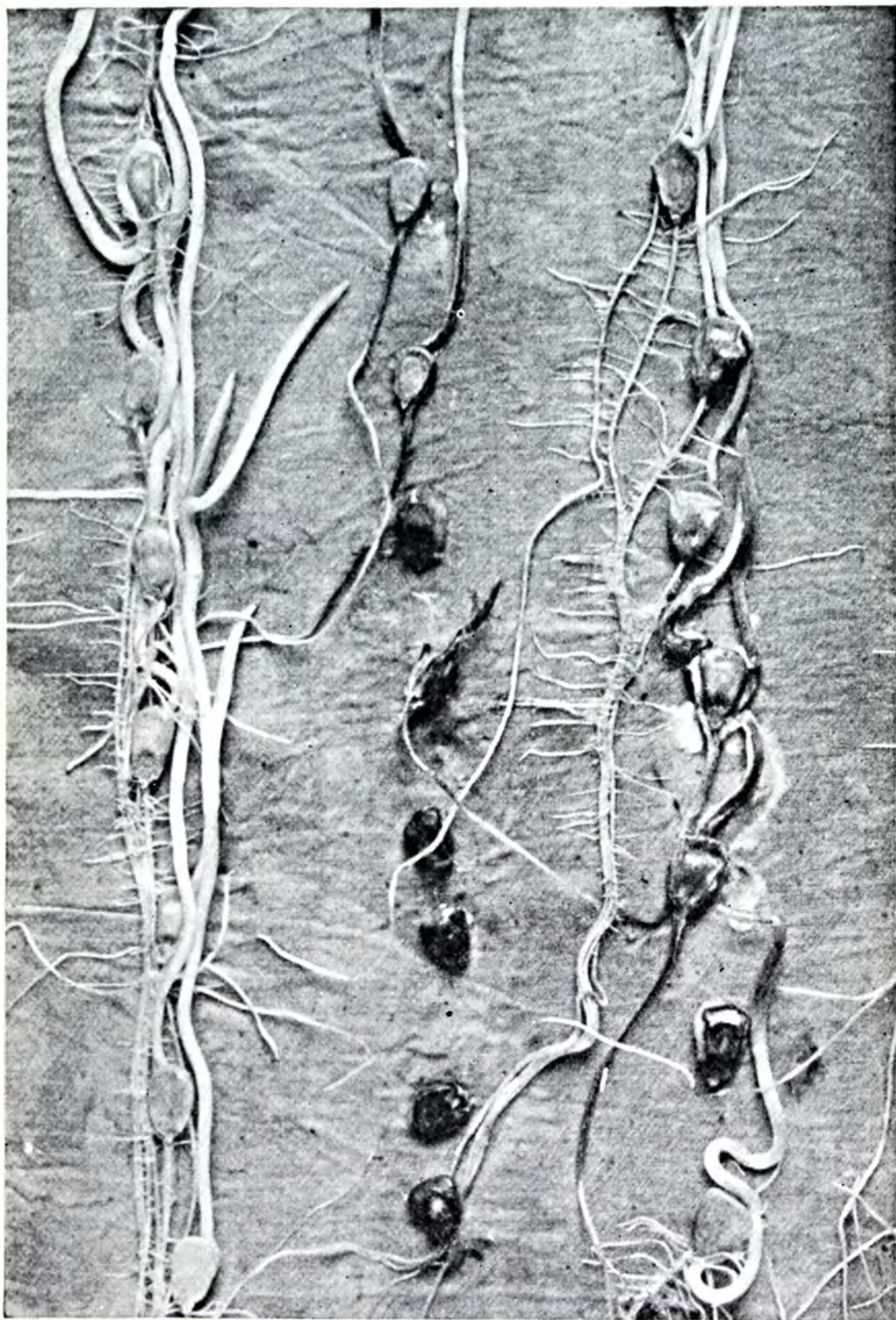
**H**ERE is how the process works. The seed corn is selected in the field and stored on racks. A few kernels from each ear are then placed on the rag side of a specially constructed doll made up of a piece of cloth and a sheet of glazed paper of similar size and shape. The doll is then rolled, placed in a germinator box for a few days and unrolled. The germinated seeds tell the story, because the seeds from some ears will usually produce



weak or diseased sprouts in contrast to the vigorous, healthy offspring of good ears. The detection of diseased ears is not possible with the old type rag doll where a single infected kernel may contaminate

the entire doll. All this is prevented by the heavy glazed fibre paper used by the Purdue investigators.

Perhaps all this sounds a bit theoretical. Very well, let's see how the scheme (*turn to page 44*)



The story told by the modified rag doll. To the left is the progeny of a good ear while the other two rows represent weak and diseased ears. Only the ear from which the kernels to the left were taken should be used for seed.



## Jeffisms

Many securities nowadays are *guilt*-edged.



The world owes you a living—but you must write your own collection letters.



When you say a man is light-fingered you should explain whether he is a pianist or a pick-pocket.



A horseshoe is an emblem of luck for but one man—the smith who forges it with his good right arm, sells it, and totes the proceeds home to his family.



No pruning; no prunes; no cultivating, no cabbages, no back-ache, no bank account.



Men seldom act through intelligence—they act, then seek an intelligent reason to justify their actions.



Duty is less interesting than either Rights or Privileges.

Jeff

## Rate of Yield Decides Your Profit

Most farmers figure their production on an acre basis, that is, so many bushels of corn or potatoes, so many tons of hay, so many bales of cotton, per acre. Some are apt to lose sight of the fact however, that in selling the crop, that basis doesn't actually hold good. Corn is not sold by the acre; neither is hay. They are sold by the bushel and ton. So it is that often a man figures his costs on the acre basis when as a matter of fact the acre cost may have little or nothing to do with the profit on the crop. Let us explain, first,—

With an instance provided by Mr. John Shutt and his son, of Garrett, Indiana, who grew potatoes on adjoining land last summer. The father used ordinary seed, 17 loads of manure and no fertilizer. The son used certified seed, green-sprouted, the same amount of manure and 475 pounds of a 4-8-6 fertilizer. Mr. Shutt got 75 bushels of potatoes per acre at a cost of about \$1.13 a bushel. John got 227.6 bushels at a cost of 36c a bushel. Suppose the market had been one dollar. The father would have had to lose 13c on each bushel, while his son was making 64c on each of his bushels.

Another instance, also with potatoes, is furnished with the record established by J. S. Wile, Souder-ton, Penna., who has recently been accorded the championship among potato growers of that State. Mr. Wile produced 2,630 bushels on 5.9 acres, an average of 445.8 bushels per acre. On his best acre, he grew 532.4 bushels. His average cost of production on the 5.9 acres was 27.2 cents a bushel, while on his best acre, the cost was 22.8 cents per bushel. Thus after attaining a rather abnormal rate of yield—445.8 bushels per acre—Mr. Wile, still further increasing the rate by 86.6 bushels,—reduced his production costs by 4.4 per bushel.

Thus, the difficulties connected with figuring costs in an acre basis seem apparent especially when it is remembered that the crop must be sold on a bushel (turn to page 38)



# North Carolina's *Agricultural Progress*

By F. H. Jeter

North Carolina Agricultural Extension Service

**I**RVIN COBB said in Hearst's International Magazine for November, I believe, that all North Carolina needed was a press agent—she had everything else. Now, I don't like to be known as a press agent nor would it be good taste in one among the ranks to attempt that role but some folks in the South have been good enough to point to my adopted State as one worthy of emulation.

North Carolina has progressed. When the State voted \$50,000,000 of money for building a system of good roads from county seat to county seat, and followed this with another appropriation for \$15,000,000 at the next meeting of the legislature, the surrounding coun-

try began to sit up and take notice. Then, when price declines hit the farmer in the fall of 1921 and cotton crops failed to pay for the fertilizer used under them, North Carolina by virtue of being a diversified state and because this \$50,000,000 was being spent freely over all parts of the State, was not hurt so badly, this passing notice changed to admiration.

**L**AST year, North Carolina produced 1,020,000 bales of cotton with a value of about \$159,548,400 basing the price on 33 cents per pound which was the prevailing average for the greater part of December. This makes North



*Picking cotton in Cleveland County, North Carolina.*



Carolina for the first time in her history, second in both production and value of cotton with only Texas first. Not with cotton alone have the farmers made money, however. Tobacco has been a good money crop this year and so have peanuts and in the belts where these three crops have been grown, the farmers have enjoyed a great agricultural year.

**H**OW has this come about? Is North Carolina going through a boom condition? Emphatically, no! Point, if you will, to the fact that the State is increasing its appropriations to its University and State College, that it is supporting

For about a quarter of a century, North Carolina has had a definite agricultural program. The State has seven experimental stations located on the main soil types and sections of the State, in addition to the large central farm at the State College. The investigational work has been combined with the extension work under one director, so that *in fact* the extension workers have had the opportunity of carrying to the people the findings determined by the investigating scientists.

**I**T is well known that North Carolina is blest by having a varied soil and climate extending as it



Two up-and-coming North Carolina County Agents inspecting livestock. County Agent W. G. Yeager of Rowan County at extreme left; County Agent R. D. Goodman of Cabarrus County is third from left.

liberally its Board of Health, its Department of Public Welfare, that it recognizes the negroes as an important part of its citizenship and provides for them educationally and otherwise, that it is enlarging and expanding all of its public institutions to take care of the demands being made on them and that business feels the new impetus in North Carolina and is carrying on courageously. I say, point to these if you will as an indication of boom conditions and still must I say that there is no boom. What then? Back of it all, the farmer.

does from the highest point in the Appalachian highlands to the low areas of the coast. Therefore the agricultural workers have taken advantage of this condition and have for years preached better farming and showed the wisdom of a diversified agriculture adapted to these conditions. I believe the Census would show that this State now has a more diversified agriculture than any other State in the South. Just a brief statement would suffice to show that this is true. In the mountains there are buckwheat, sugar (turn to page 48)



Here is a suggestion you  
may find very valuable.

# CORN Responds to Potash Fertilizers

By H. R. Smalley

Soil Improvement Committee, National Fertilizer Association  
formerly of Indiana Agricultural Experiment Station

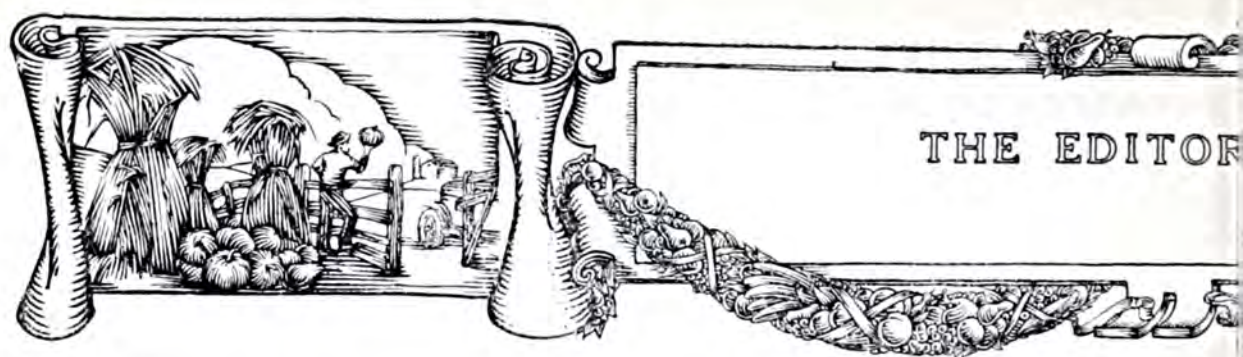
WITH potash again plentiful and at pre-war prices the farmer may well consider carefully the amount of potash that he can profitably use in his fertilizer and the crops to which it can most effectively be applied.

THE war-time shortage of potash did much to convince farmers of its effectiveness in increasing the yield and improving the quality of crops. Besides, experiments conducted in the past few years have shown that potash is needed on many silt loam or so-called "clay" soils, whereas formerly most soil specialists were of the opinion that only peat or muck and sandy soils were deficient in potash. In fact, a careful study of a large number of experiments on the heavier types of soil show that there is little, if any, relation between the amount of total potash in such soils and their need for available potash. In addition to experimental evidence the actual experience of farmers is becoming more and more valuable in establishing correct fertilizer usage.

During the past few years the practice of recommending acid

phosphate for corn and complete fertilizer for wheat or other cash crops has become rather common with those who are in a position to advise the farmer in regard to the use of fertilizer. This has no doubt been due in part to the high prices of potash during the late war and also to the fact that manure is so generally used on corn. The weakness of such a recommendation is two fold. In the first place there is considerable evidence to show that corn responds to potash to a more marked degree than does wheat, and secondly, the total quantity of manure produced is sufficient to permit a reasonable application to *only* one-fourth to one-third of the 100 million acres of corn grown. In this connection it should be stated that there is good reason to believe that the effectiveness of manure in increasing the yield of corn is (turn to page 38)



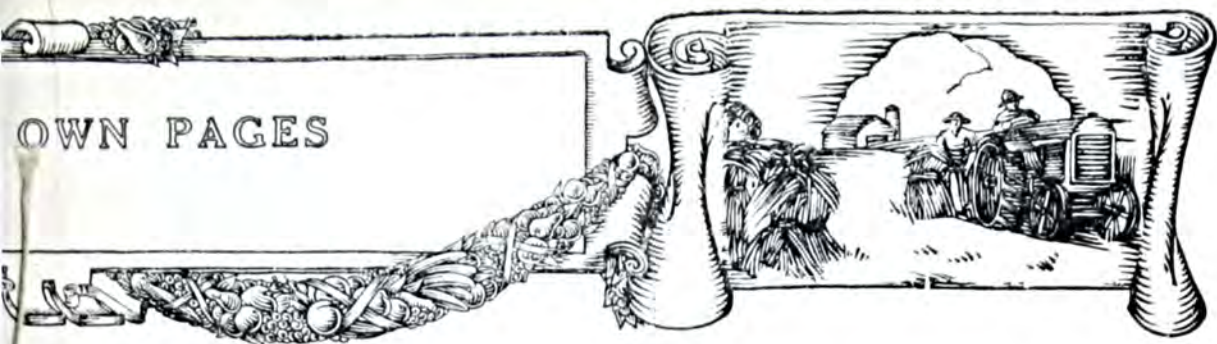


**TOBACCO FIGURES** Where is the statistician who can tell us how many times around the earth the 66,000,000,000 cigarettes smoked last year will stretch? The production of cigarettes in 1923 was four times that of 1913, yet tobacco growers, in spite of last year's heavy crop, are able to maintain a uniformly high price. Good red leaf Burley sold at \$28 a hundred in Louisville in February. I don't envy anyone the job of conducting an anti-tobacco campaign in the tobacco districts!

**MORE BOOKS FOR THE FARMER** From a 1923 summary in *Publishers' Weekly* we learn that 225 more books were published in 1923 than in 1922. Of this gain, the largest number, 73 titles, was books on agriculture. This is an encouraging sign. Books alone will not teach farming, but farmers can learn a lot from the right kind of books. Practice and theory are the fore and hind legs of the same animal. A knowledge of sound theory will prove useful to any farmer. It will help to show the way to profits. Let us do all we can to encourage the reading of good books on agriculture.

**FARM POWER** Governor Pinchot's plan for centralizing the power resources of the state of Pennsylvania has a great deal of merit. Through his "Giant Power Survey" it may become possible for every farmer in the state to receive cheap electric light and power to operate and light his farm. Mr. Harry Cooke, the estimable gentleman in whose





capable hands Governor Pinchoth has placed the direction of this work, believes that the farmer is entitled to all of the conveniences and comforts of the city; and he proposes to prove that his plan is economically sound. Every farming state should study Mr. Cooke's work and seek to emulate the excellent progress already being made in Pennsylvania.

**PLANTING SEASON** Soon comes the season when spring plowing and planting will take up all of our time. The buds will come, the scent of freshly stirred earth will spring like incense to appreciative nostrils, and afar down the road will be heard the muffled bark of the County Agent's flivver on the wing for the other side of the county! Spring!

**COOPERATE** In my feature article on page five this month I've had my say on the subject of "Cooperation." Too many of them have lost sight of the human side of the subject. Human beings are the only animals with sufficient intelligence to cooperate through love of their fellows; animals cooperate only through fear, as the mules form a circle with heads in and hind feet out when the wolves approach. Cooperate is a fine verb; but it doesn't mean anything unless the love-corpuscles vibrate. Merely material and commercial cooperation lacks the spark that kindles success.

Yours to a cinder,

*Jeff McQuinn*



# Corn Responds to Potash

(From page 35)

undoubtedly due in many cases to the relatively large amount of potash that it furnishes.

The writer has made a careful study of a large number of experiments that have been conducted on the heavier types of soil, that is, the silt loams or "clay," in the Northern States, in which corn and wheat are grown in the same rotation and phosphate alone is compared with phosphate and potash. In many experiments manure is used in such a way that these particular comparisons cannot be made but there are nine experiments in Ohio, ten in Illinois and ten in Missouri that furnish the comparison and in which the response to potash fertilizers is definitely established. These experiments are for the most part located in Eastern or Southern Ohio, Southern Illinois and Southern Missouri.

**I**N these 29 tests phosphate alone increased the corn yield by 3.4 bushels but potash in addition to the phosphate gave a further increase of 6.2 bushels, so that the total increase for the phosphate-potash fertilizer was 9.6 bushels per acre. The yield of wheat in the same experiments was increased 6.1 bushels by phosphate alone and by 2.4 the addition of potash. Since these experiments averaged 12 years in duration the above data may be regarded as rather conclusive evidence of the fact that many of the heavier soils will respond profitably to applications of potash, and also that corn gives a more pronounced response to potash than wheat.

The fact should be mentioned

that in most of the Ohio and in all of the Missouri tests the amounts of potash used were small while in the Illinois tests considerably larger amounts were used. Rock phosphate was used in the Illinois experiments while acid phosphate was the source of phosphorus in Ohio and either acid phosphate or bonemeal in Missouri.

Some of the most successful corn growers have learned the value of potash by experience. For example, Wm. Gilmore, of Ohio who produced 133 bushels of corn to the acre in 1922, used an 0-10-10 fertilizer, and Peter Lux of Indiana, twice winner of the Grand Championship on corn at the International Grain and Hay Show and a member of the Hundred Bushel Corn Club says, that he has found a high potash fertilizer very valuable in producing quality seed and show corn. Both of these men are excellent farmers, they grow clover, keep plenty of livestock and save the manure. Besides they are both farming what the average farmer would call "clay" soil.



## Rate of Yield

(From page 32)

basis. It is often true that the expenditure of a little more money per acre will produce enough additional crop units to materially reduce the cost of each, and thereby insure profits even in unfavorable markets.

If potatoes or any other crop is going to be grown, enough thought, enough time, enough labor, enough money, should be spent to insure that when harvested, there will be enough bushels to share the total cost and provide a profit. That is a simple business proposition.





## He Has the Right Idea

Dear Jeff:

I have never had the pleasure of meeting you face to face, but after reading a few copies of **BETTER CROPS**, I feel just like I have had a face to face talk with the Editor.

I am going to give you some of my experience on last year's crops. I am just a small farmer and have just started out in the farming business. I had a half acre measured in turnips last year, and I marketed all of them in here our little town. I sold from this half acre \$369.65 in turnips, besides which I harvested a spring crop of Irish potatoes from it before I planted the turnips.

I planted my turnips on August 28th and just four weeks later I began selling the young tender plants for salads, and by the time they got roots on them large enough to market, I had them thinned to a stand. I never did hoe them and only plowed them one time, so you see the cultivation was not very expensive. Where my success was in the crop was in the right preparation of the soil before I planted them, and in the fertilizer I used, which was high in potash.

I think that is one thing we are lacking here in our soil—potash. The most of us here know but very little about fertilizers only acid phosphate. We need diversification not only in crops but in fertilizers,

farm machines and labor. We have had the negroes here with us all the time and they like cotton better than any crop, and can raise it more successful than any other crop, so we have just about drawn all the available plant food from our soils with cotton. Now we have got to put something back to draw from. We have the legume plant and barn yard fertilizer to furnish the nitrogen, but we have nothing to furnish the potash, and we will have to furnish that from other sources. What we need now in my judgment is a fertilizer high in potash.

I am going to experiment this year with several different truck crops, also corn and cotton. I believe we can raise cotton successfully under boll weevil conditions, if we will go at it in the right way and use the right methods. I will let you hear from me later with my experiments.

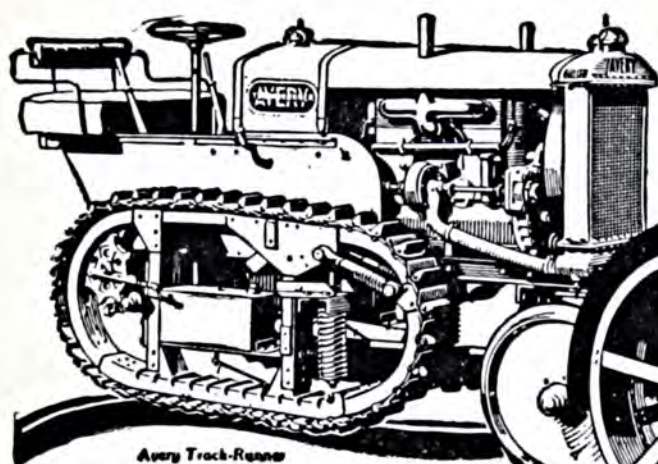
We want to make this poor hill county the garden spot of the south, and I believe we can do it if we will get up and hustle. I want to say right here that it takes hustling to accomplish any thing. We can not be lazy and successful.

Wishing you and **BETTER CROPS** much success, I am

Very truly yours,

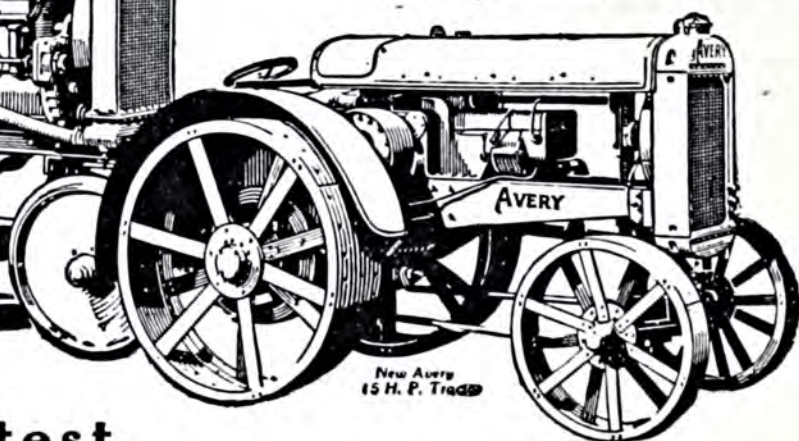
*R. E. Jernigan, Louisville, Miss.*





Avery Track-Runner

## The New and Improved Avery Line

New Avery  
15 H. P. Tractor

### The Greatest Achievement in Tractor History

**N**EW models, many new improvements and refinements, greater power, more economy and lower prices—the New Improved Avery Line is really a sensation.

Never in tractor history have so many new improvements and desirable features been developed in one line. Avery machines now give better and more economical service and sell at lower prices.

The Avery Line for 1923 includes the Improved Avery Track-Runner that runs on a roller-bearing track; the NEW Avery 15 H. P. enclosed gear, 3-plow wheel tractor, with two bearing belt transmission and two gear contact drawbar transmission; the Improved "Road-Razer" for shaving unpaved roads and streets smooth in summer and removing snow in winter; the Improved Avery Tractors for farming, threshing and road-building in the 20-35, 25-50 and 45-65 H. P. sizes; also grain-saving threshers in all sizes, motor cultivators, tractor plows, tillage tools and other drawbar and belt machinery.

Get the latest prices on Avery Tractors which now give you more horse-power per dollar than ever before offered.

*"It pays to Avery-ize"*

## Avery Co.

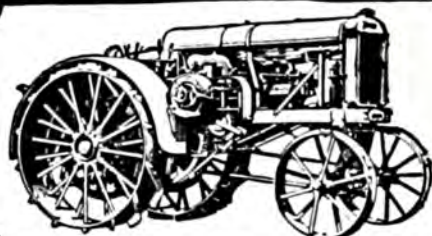
Factory and Main Office Peoria, Ill.

Branch Houses, Distributors  
and Service Stations covering  
every State in the Union.

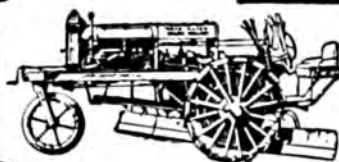
# AVERY

Tractors, Trucks, Motor Cultivators  
Threshers, Plows, etc.

Improved  
Avery 20-  
35 H. P.  
Tractor.  
Also built  
in 25-50  
and 45-65  
H. P.  
sizes



Improved Avery 25-50  
H. P. 10-Ton Road-  
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Avery  
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Avery Grain-Saver  
Thresher. Built in "Yellow-  
Baby," "Yellow-  
Kid" and "Yellow-Fel-  
low" sizes.

Avery Header Thresher.  
Harvests and threshes  
the grain in one opera-  
tion.







## By Ted Butler

BETTER CROPS' Washington Correspondent

If the farmer can be legislated out of some of his trouble, Congress has plenty of raw material on hand with which to work. The last roll call shows that some 500 odd bills have been tossed into the Congressional hopper *which directly or indirectly affect the welfare of the American farmer.* And some of them are "odd" indeed.

Six of the more important measures call for capitalization or appropriation of an even \$1,775,000,000. If all of the bills now before Congress were enacted into law the farmer would have plenty of the "long green" on hand, at least for the present moment. No one has attempted to compile the total appropriations proposed in all agricultural measures, but it would be safe to place it far in the billions.

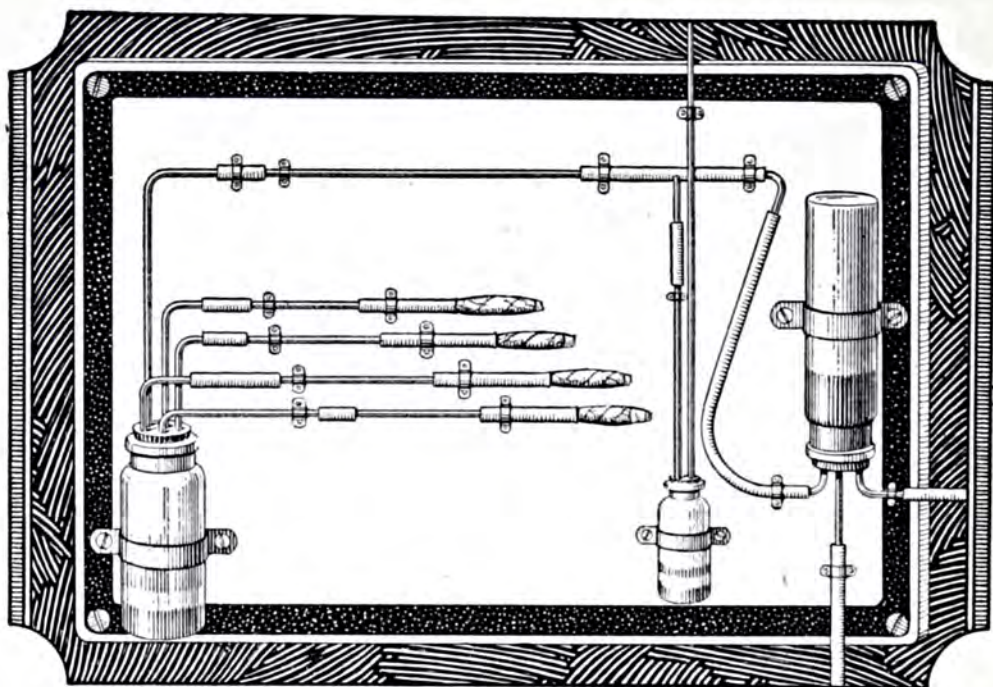
What are some of these measures which have been framed with the hope of getting the farmer out of the mire? Well, the bill which has caused the greatest excitement and which has taken up most of the time of the two agricultural committees, would establish an export corporation with the power to buy up the surplus in the home market in order that the domestic supply would rise under tariff protection to a price equal to that of things which the farmer must buy. The exportable surplus purchased by the government agency would be

sold on the world markets and the farmer would be billed for the expected loss incurred in order that increasing prices would not stimulate over-production. The corporation would be capitalized for \$200,000,000. This bill has a lot of friends, particularly from the Northwest, and a host of enemies who contend that it plays havoc with economic laws.

President Coolidge has placed his approval on a bill which as amended would provide a sum of \$75,000,000 to be loaned farmers, especially those who have been hard pressed in the spring wheat regions, in order that they might get away from one crop farming and practice diversification. It would be loaned only to farmers who are unable to get money elsewhere. As it stands to date this bill has a good chance of being passed. At any rate it is in a more advantageous position than its brethern, for the reason that it has the blessings of the President.

A Kansas Representative is author of a bill which would authorize the Secretary of Agriculture to pay not to exceed \$1.25 a bushel for wheat. An Idaho Senator has gone him one better and has introduced a bill which would establish a corporation capitalized at \$300,000,000 with the power to pay \$1.50 (*turn to page 52*)





*Drawing from photo furnished by Bureau of Plant Industry, U.S.A.*

## Cigars now smoked ~ by machinery

**N**EVER before has science possessed so exact an instrument as this smoking machine for comparing the burning qualities of the various leaves by a common standard.

What makes "good burning" tobacco? That question has been accurately answered now by chemists, cigar manufacturers and planters—in extensive tests. We know now definitely that "good burning" cigars are due to the chemical properties inherent in tobacco leaf.

If you are interested in to-

bacco culture, it will pay you to read "Better Tobacco" a booklet explaining these recent discoveries.

It shows you exactly how to get better crops, scientifically and economically. *Record-profit crops!*

Tear off the coupon and mail it to us now for "Better Tobacco."



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AMERICA

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### TEAR OUT THIS COUPON

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Dept. BC 81 Fulton Street, New York

Gentlemen: I am interested in growing tobacco of a better burning quality. Please send me your free booklet "Better Tobacco."

Name .....

Address .....

City..... State.....





(NOTE: Name given is of county unless otherwise noted.)

Farmers are adding lime to soil to correct acidity. Potash and acid phosphate are being used with wonderful results. Sixty-six dollars worth of Sedan grass seed has been realized per acre off over two hundred acres.—*L. C. McIntosh, Benton, Ind.*

Our Motto for Northeast Oklahoma for 1924:

1. A home orchard and garden on every farm.
2. Only high producing cows and hens on the farms.
3. Terracing rolling lands.
4. Grow legumes on every farm.
5. Lime acid soils.
6. Several sources of income on every farm.—*A. F. Houston, District Agent, Stillwater, Okla.*

Just finished re-organizing the Whatcom County Cow Test Association, 155 members owning 1,785 cows—one tester handles this Association. Accredited Hatchery & Breeders Association just completed—50 members, 32,000 hens. No pullet breeders used. Cockerels only from 225 egg dams used in breeding pens.—*H. B. Carroll, Jr., Whatcom, Wash.*

Weather mild. Plenty of rains. Crops all harvested. More fertilizer being ordered for 1924 than was used in 1923. Farmers generally in good spirits and will make a determined effort to make a good crop in 1924. Probably small increase in cotton acreage. No surplus labor but apparently enough.—*E. P. Scott, Green, Ala.*

An intensive tomato improvement campaign is being put on in Virginia in the counties of Essex, Northumberland and Westmoreland for the benefit of tomato growers in the canning sections. The object is to increase acre yields and to

improve the quality of the fruit. County Agents Crosby, Hubbard and Chase are handling the work with some assistance from the State Vegetable Specialists.—*A. G. Smith, Jr., Montgomery, Va.*

The results of our Poultry Marketing Ass'n. have been very satisfactory this year. This is the second year for it. Last year we shipped a car load of dressed turkeys to Los Angeles for the first time. This year we are sending two car loads to the New York market. Poultry has increased 200% the past 18 months and promises well for the future.—*G. F. Holmstead, Sevier, Utah.*

Redwood County is just starting off a purebred sire Campaign in co-operation with the Minn. Holstein-Friesian Breeders Assn. A sales force of five experienced salesmen, mostly local breeders will do the work. Requests are already in for 30 sires, mostly from farmers now using scrub grade sire. Two breeders and bankers' banquets have been held and meetings in the local communities are being held over the entire county. My part in the campaign is better feeding.—*Lynn Sheldon, Redwood Falls, Minn.*

Franklin County Kanota Growers have pooled about 7,000 bushels so they can be properly cleaned and graded for seed. These are certified by the Kansas Crop Improvement Ass'n. We have a larger number of growers, a larger acreage and a larger number of bushels for sale than any other Kansas County. We sold them last year from Youngstown, Ohio to Amirillo, Tex. Soy bean acreage will be increased in 1924 and we will have to buy seed of Morse, Virginia and Midwest.—*F. J. Robbins, Franklin, Kans.*



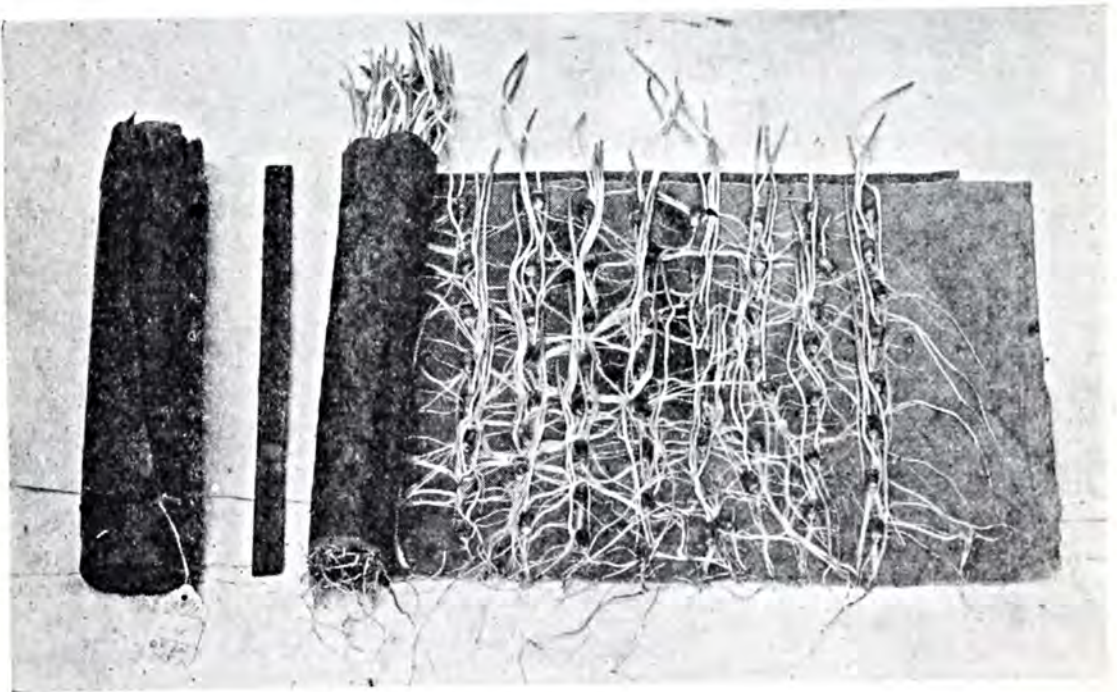
## A Modern Doll

(From page 31)

works in practice. It is hardly worth while for the individual farmer to purchase racks, germinator box and other necessary equipment, so the proposition was first tried on a community basis three years ago, by the vocational students of the Shelbyville, Indiana, High School, under the supervision of County Agent Russell East and Vocational Teacher E. L. Austin. A large number of Shelby County farmers brought their seed ears to be tested. On 22 farms accurate records were kept with the remarkable result that the tested seed gave increased yields averaging over 11 per cent as compared with the yields from the seed of untested ears. Looking at the situation from another angle, if the entire corn crop of the United States is planted with tested seed this year the increased yields at the same rate would mean a tidy sum of about \$20,000,000 in the pocket of the

American farmer. Further experience in Indiana has demonstrated that an average increased yield of at least 10 per cent may reasonably be expected from the use of properly tested seed corn.

The Shelbyville demonstration was an eye-opener to Indiana farmers who were quick to see the value of tested seed. The work spread over the Hoosier state like oil on water until 50 counties did community testing during 1923. Practically every county in the state has planned to test seed corn on a community basis during 1924 and the work has been taken up by canning factories, seed firms and others interested in the production of good corn. Most community testers are operated by individuals or vocational classes and a charge ranging from one to two cents per ear is made for the work. It is interesting to note that testing at the rate of two cents per ear has

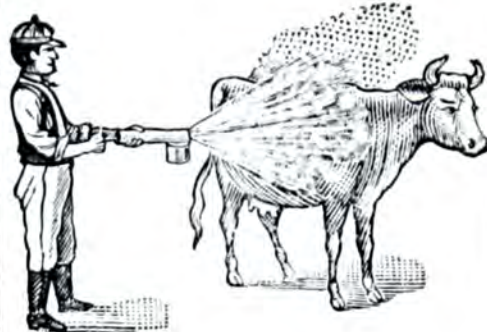


The modified rag doll showing the glazed paper that insulates each row of kernels against infection from its neighboring rows.



paid for all the testing equipment installed at the Shelbyville High School and left a surplus during 1922 sufficient to cover the expenses of an educational trip to Purdue taken by the entire class. Mention of the necessary equipment brings to mind the fact that the Purdue Experiment Station has designed a highly efficient home-made germinator box with a capacity of 2240 ears for which blue prints may be had for the asking.

The story of community testing to eliminate weak and diseased seed corn is an interesting page in the agricultural history of the Hoosier state. The pioneer work in Indiana has blazed a trail that is already being followed by other corn-producing states and that will in all probability soon wend its lucrative way into the majority of the corn-belt states.



## HAMMOND'S Cattle Comfort

**Keeps flies off.  
Makes cows more  
comfortable — they  
give more milk.**

*Write for Information*

**HAMMOND'S PAINT &  
SLUG SHOTWORKS**

**Beacon, N. Y.**

# Hammond's Slug Shot

*Used from Ocean to Ocean*



**A** light, composite, fine powder, easily distributed either by duster, bellows, or in water by spraying. Thoroughly reliable in killing Currant Worms, Potato Bugs, Cabbage Worms, Lice Slugs, Sow Bugs, etc., and it is also strongly impregnated with fungicides. Put up in Popular Packages at Popular Prices.

**Sold by Seed Dealers and Merchants.**

*Send for Pamphlet Worth Having*  
**HAMMOND'S PAINT & SLUG SHOTWORKS**  
**Beacon, N. Y.**



# Cooperative Marketing and the American Bankers Association

(From page 24)

more stable prices, less speculation and less violent fluctuations of bank deposits.

4. Much good has already been accomplished by many of the cooperative associations in getting better financial results for the producer through more efficient distribution, better merchandizing and systematic grading and standardizing of the farmers' products.

5. Cooperative associations will undoubtedly market considerably more farm products this year than they did last year. New associations are being formed and old ones enlarged.

6. The greatest danger which cooperative associations have to avoid is the temptation to hold commodities for speculative purposes, and to attempt to unduly increase the price by artificially withholding the products from the market when actually needed, instead of disposing of them in an orderly way as the demand for them justifies.

7. There is one further step which cooperative associations should take in order to permanently establish their credit. They should retain out of each year's operations a certain percentage to be set aside as a surplus or reserve fund to be used in case of need. The action of the Staple Cotton Growers Association of Mississippi furnishes one of the very best examples of this principle. In each of the three years in which it has operated that association has set aside in a so-called advance fund approximately \$400,000, with the result that it now has what practically amounts to a capital of over a million dollars, and is therefore prepared for any emergencies which may arise. Naturally the bankers in their section are more anxious to do business with them than they are with any similar organization, because they feel that they are amply protected in their dealings, and the

Association consequently enjoys the very highest credit and has not the slightest difficulty in getting whatever accommodations it needs.

8. As a result of the campaign of education conducted during the past year, there has been a great improvement in the credit facilities available for the cooperatives. Many commercial banks who heretofore stood aloof have now been induced to participate in some of the loans made to the Association, and there is no doubt that very large sums of money are now available by commercial banks at current rates for properly conducted cooperative associations.

**I** cannot forbear telling what is to me a very interesting story, the story of the conversion of one of my friends, a wide-awake, conservative banker, to the idea of cooperative marketing. The banker in the story is C. S. McCain, Vice-President of the Bankers Trust Company of Little Rock, Arkansas.

It seems that a couple of years ago when the matter of organizing a cooperative marketing body was considered in Little Rock, the matter was talked over by McCain and other leading bankers and they decided it would be better to remain neutral awhile and wait developments before giving the movement their moral and financial support. Just about that time, McCain tells, the cashier of his bank came to him one afternoon and said, "We have a bank customer here who owes the bank fifty dollars, and he brought a bale of cotton into town this morning at eight o'clock. He has been here all day and the best offer he has been able to get on the cotton is six cents a pound." Cotton at that time, in July, was not in particular demand, but was selling around eight and nine cents a pound if a buyer could be found.

McCain asked if there was anything the matter with the cotton



and the cashier replied that he didn't think there was and that the owner had gone out of the bank to see if he couldn't get someone to endorse his note so that he wouldn't have to sell it at such a sacrifice.

**M**CCAIN directed that the farmer be hunted up and brought back to his office. This was done and the farmer declared to McCain that he thought his bale was good cotton. He brought in a sample of the cotton which gave every evidence of being a good white grade, properly ginned.

McCain arranged for one of the bank employees to take the man and introduce him to another of the bank's customers, a buyer and exporter of cotton. The buyer asked the owner what he wanted for his cotton and the reply was, "Just an honest price which you can pay and still make some money." The buyer examined the cotton carefully as an expert purchaser will and finally said, "I'll give you fourteen cents a pound." The owner could hardly believe his ears. "However, you'll have to haul it to the compress which is about fifteen blocks down the river."

"Hell—I'll haul it anywhere for fourteen cents," replied the man.

Now the difference between that man getting six cents for his bale of cotton, amounting to thirty dollars total, which would leave twenty dollars still due on his note, and his getting fourteen cents a pound, or seventy dollars for the bale, which would enable him to pay his note and have a margin of twenty dollars, is considerable. McCain says that he saw the buyer the next day and inquired whether the latter had extended the cotton owner a particular favor in buying that cotton. The buyer said, "I will tell you this—I hate to tell you this—but that is the best bale of cotton I have bought this year. It was inch and an eighth strict middling white cotton. I have been trying to fill an order that I have

had for some time of one hundred bales of that cotton. I completed it this morning and am shipping out that one hundred bales of cotton of which this bale is one, through your bank this afternoon at thirty-two cents a pound."

Well, McCain said he called a meeting of the Clearing House the following day and told them that he was sold on the cooperative marketing idea. He maintained that whenever a farmer could come into Little Rock and offer for sale to all the cotton firms in town a bale of cotton and not know what he has, not know the grade and staple of it, be offered six cents for it and afterwards get fourteen and the same day have that same cotton shipped out of town at thirty-two cents a pound, that was a question that every banker in Little Rock and every banker in the State of Arkansas ought to be interested in, because they were interested in the farmer's getting all the money he could out of his cotton.

The Cooperative Marketing association was organized and the bankers of Little Rock insisted upon only one requirement, that they should operate under a good business administration and on the first election of directors should submit to the bankers of the Clearing House Association the names, so that the bankers could counsel with them.

**T**HAT Association today, McCain says, has a board of directors that would be competent to operate a large business concern in any State in the United States. He claims there is no stronger body of business men in his State or in the entire South. They have made a great success of their organization and they have the confidence of the bankers of the section. One of the leading Southern banks has offered them a loan of a million dollars and McCain's own bank has loaned them large amounts, believing that it is the biggest thing that has ever come to the cotton farmers in the State of Arkansas.



# North Carolina's Progress

(From page 34)

maples, beef cattle and cheese factories. Late summer vegetables and tourists add additional income. Along the eastern slope is one of the most magnificent apple sections in the world. There, one finds the region of the Thermal Belts, or "no frost." Coming east are the old tobacco belt, the wheat fields and clover fields of the upper Piedmont. Then come cotton and corn and more clover. In the sandhills are the dew berries, tobacco and peaches. East of here are the strawberries and early truck. Just north are the new bright tobacco belt and a great cotton country. Still northward towards the Virginia line is the peanut and soybean section. Over it all is an equable climate, a good rainfall, a comparatively well wooded area and favorable conditions for growing livestock.

**F**OR years the farmers have been building solidly a sound agricultural practice. They have been fortunate in the type of leadership which has encouraged this farming program. Realizing that where there is a fertile soil, the farmers are prosperous, the agricultural workers have not hesitated to give this first place. Upon this foundation has been built the more extended use of fertilizers, the use of better varieties of the common crops, pastures and those other things which help the North Carolina farmer to live at home.

Take the case of fertilizers for instance. North Carolina probably has more data about the use of fertilizers in improving crop yields than any other State in the South. Nor have the workers hesitated to recommend fertilizers where they have felt that such use would pay returns. They have been specific in the kinds and amounts of materials that should be used and have based these recommendations on actual results secured on the different branch station farms.

In like manner, they found it was not more hogs that North Carolina needed but a better feeding and marketing of those on hand. The animal industry workers, therefore, have said just the kind of rations that these hogs should get and have proved their recommendations by actual demonstrations conducted by farm agents with the growers. The result is that they have proved their case and hog feeding is receiving more attention in North Carolina today.

For about twenty-five years the agricultural workers have been slowly but surely helping to make North Carolina a great agricultural State. The farmers have had confidence in these leaders and their confidence has not been betrayed. By some means, Dr. B. W. Kilgore, Director of the Agricultural Experiment Station and Extension Service and newly elected Dean of the School of Agriculture at the State College, has found funds for carrying on the various lines of work which are under the joint direction of the College and Department. He has rightly been called the "Little big man" of the State. He was recently declared one of the "Big Four" in the administration of State affairs and quietly without much ado he has encouraged the workers under him to go forward with their plans looking always to a big self-supporting agriculture where each farmer under his own vine and fig tree might enjoy the fruits of his labors.

**J**UST this morning a grey haired farmer from one of the lower mountain counties called at my office. "How are things in Polk County?" I asked. "Fine! Fine," he replied, "and getting better all the time."

Old and his hair a hoary white, yet young in spirit and in thought. How like North Carolina today, I thought.



## Dangerous Agriculture

(From page 29)

thrills to make up for the lack to some extent. The grizzly provides the most excitement for the effort of the man who goes out to stop his marauding. A few weeks ago hunter Peterson in Colorado, with the assistance of his dogs, trailed a 1,000-pound grizzly for several miles and finally got him by a shot in the neck as the big bear was charging him. The records of the Biological Survey contain many businesslike reports of such hand-to-claw encounters.

Some adventures of the hunters are more novel. Perhaps you have heard of the dangerous hydrophobic skunks and have secretly taken a few grains of salt. Prepare to revise your conclusion. A Department man was once badly bitten by a rabid skunk as he lay in his tent and had to be rushed to a hospital for the Pasteur treatment. Sometimes there is an outbreak of rabies among the coyotes on the ranges, a danger to man and beast, and last year the Government called for men from various parts of the West to stamp out an outbreak in one locality.

The men in the laboratories seem to get along with few misfortunes, not because there is no dangerous work to be done, but because they are prepared. Men who examine dogs and other animals for rabies occasionally prick themselves with an infected needle or cut their hands, but proper treatment saves them. Glanders and Malta fever cause most of the accidental deaths in animal disease laboratories, the latter is supposed to have caused the death of a scientist who was bringing over some goats from Italy. The disease is not found in this country, but the goats while in quarantine were found to have the deadly fever.

Uncle Sam tries to make his jobs as safe as possible, but many of his workers are searching in new fields or in distant lands and they know they are taking chances. Still I never heard one of them complain about his dangerous occupation. The probability is they wouldn't trade jobs with anybody, no matter how safe his occupation.



A U. S. predatory animal hunter and his dogs.



## Making a More Prosperous Community

(From page 21)

of the soils of communities. Does not this then, unmistakably point to the fact that one of the greatest and most fundamental necessities of our farming is that of securing and applying information that will aid in the economic building up of the productiveness of the soils? No community, state or nation dependent upon its agriculture (and most of them are) can prosper when its soils are not productive. History will bear out this observation.

Since farming, in a general way, cannot be profitable unless good acreage yields are secured and at economic costs per unit, the social and educational advancement of the farm home cannot be most rapid without reasonably good returns from the farming operations. No amount of temporizing along other lines in a broad way can bring prosperity to the masses of our people on the farm. Year in and year out, where farmers do not get good yields, it is not possible to secure large returns for labor and expenses put into their production, it matters not how favorable prices may ordinarily be.

**I**T is evident, therefore, from the foregoing that farmers must have more productive soils so that larger acre-yields may be secured. For the average farmer, one of the most economical means to aid in building up soil fertility is by the adoption of suitable crop rotations on every farm in which legumes enter, and to utilize the legumes after growth in such a way that they will aid in

building up the organic matter and nitrogen supplies of the soil. On the general farm, it should be the rule that at least a portion of the legumes after growth go back into the soil direct. No one can, or has ever been able to remove them from the land, and have their growth benefit that field in a substantial and permanent way. It cannot be done.

**H**AND in hand with a careful observance of this policy, it is necessary to give crops an adequate supply in the soil of materials carrying available phosphoric acid, potash and nitrogen from commercial sources in sufficient amounts and in the right proportions to produce good crop yields, when all other factors essential to crop growth have been looked after. Commercial fertilizers wisely purchased and used will generally pay handsome returns with most of our crops grown on average soils. Although it is not possible to depend solely upon them in building up a permanent producing power of the soil yet their wise use is generally an essential factor for the purpose with most southern soils. The manure from crops fed on the farm should be carefully saved and go back on the farm with a minimum loss.

Again, after surplus crops have been produced, steps must be taken by farmers to see that the very best returns are secured for them. When fairly good profits are secured, then and not until then, will it be possible for farmers to do what they ought and want to do, under wise guidance, for the betterment of the farm home and the enrichment of country life.





## Mock Trial of Soil Robber

One of the most effective ways of bringing home an important idea is to dramatize it. To put over the idea of permanent soil fertility, Mr. H. W. Warner, Soils Specialist of the Iowa State College of Agriculture, has prepared a very clever mock trial of a prominent farmer for Robbing the Soil. In cooperation with the Rural Organization Section Extension Service of the college several mock trials have been held by township farm bureaus in Iowa, which have aroused considerable interest in this important subject.

Mr. Warner's plan includes a diagram of the stage setting, cast of characters, order of court procedure and suggestions for witnesses. Under this last head he outlines the arguments that can be used by both prosecution and defense which summarizes both sides of the case. With a few rehearsals and a little coaching this could undoubtedly be made very amusing and effective. *Mock Trial for Robbing the Soil.*—H. W. Warner, Iowa State College of Agriculture, Ames, Iowa.

## Planning and Analyzing the Farm Business

Seldom have we come across a more interesting and worthwhile pamphlet than the one with this title written by F. L. Taylor and published by the University of Nebraska Agricultural College Extension Service.

First of all it is extremely readable which fact alone makes it noteworthy. It is told in the form of a story. The Jones family decide to keep accounts of their farm and at the end of the year they sit down and summarize and analyze where the money came

from, where it was spent, how much profit was made and how they can make more next year.

Included in the text are actual reproductions of the account books of the Jones family so that the reader can work out for himself just how the farm was managed. If the lesson of the pamphlet could be instilled into the farmers of the country, it would be one of the most salutary things ever done.—*Extension Circular 800, February, 1924, University of Nebraska Agricultural College Extension Service, Lincoln, Nebraska.*

## Electrical Treatment of Crops

Methods for increasing the yield of crops through the use of atmospheric or artificially generated electricity have received the attention of investigators over a long period of years. These methods usually involve considerable equipment and expense and so far have not become popular in growing general farm crops. The shortage of food, particularly wheat, caused by the World War undoubtedly aided in popularizing a method which, if found to be beneficial in results as measured by increased yields, would be of practical value in farming. This treatment consisted in subjecting the seeds of crops, the small grains especially, to an electric current passing through a conducting solution in which the seed is immersed. This process was patented and brought into use in England in 1917 by De Wolf and Fry, under the trade name "Wolfryn Electrochemical Process." The Process was well advertised in England, and later in Canada, the United States, and Australia.

An interesting little circular has just been issued by the U. S. D. A.,



Department Circular No. 305, February, 1924. C. E. Leighty, Agronomist in charge of Eastern Wheat Investigations, and J. W. Taylor, Assistant Agronomist, Office of Cereal Investigations, Bureau of Plant Industry, report their researches on electrochemical treatment of seed wheat as conducted at Arlington Experiment Farm in 1921 and 1922.

The treatment of wheat seed described in Department Circular No. 305 consisted of passing a current of electricity through a solution of common salt (other compounds have also been suggested) in which the seed was immersed, has been claimed to result in largely increased yields. Experiments made in several countries do not bear out these claims.

Data obtained from replicated plats of winter wheat harvested at the Arlington Experiment Farm in 1921 and 1922 showed no benefit or profit resulting from treating the seed electrochemically by the so-called "Wolfryn" process. Grain yields from all plats sown with electrochemically treated seed averaged 1.1 bushels per acre less than yields from all plats sown with untreated seed. No effect of the treatment on plant growth or disease infection could be observed.

*U. S. D. A. Department Circular No. 305, February, 1924.*



## The Legislative Grist Mill

(From page 41)

a bushel of wheat and would forbid the importation of wheat except under certain conditions. But first place goes to a North Dakota Representative who has framed a measure calling for an appropriation of \$1,000,000,000 with which to fix minimum prices for wheat, corn, cotton and wool. Under this bill the price of wheat would be fixed

at \$2.00 for Chicago and \$1.96 at Minneapolis.

Still another measure would put the government in the business of building warehouses in cooperation with the states to the tune of \$100,000,000. Another bill along this line proposes to establish a national marketing organization on a county basis while another would establish a Federal cooperative marketing system. Sort of an over-head machine for all cooperative marketing associations under government supervision.

And so ad infinitum. Several relief measures looking to relief of famine conditions in Germany through the purchase of foodstuffs have found their way into the bill file. And if Henry Ford is to get Muscle Shoals, somebody has got to kill or "talk to death" several other measures which have a different purpose in mind.



## Noted Scientist Dies

Recent advices from Germany report the death of Dr. Arthur F. W. Felber, who served the German Potash Industry for almost a quarter of a century.

Dr. Felber's reputation as an agricultural scientist and chemist is well established within and outside of the geographical boundaries of his homeland. He is the author of numerous scientific papers; and agricultural research everywhere mourns in his death the loss of an honest, sincere, and eminently capable worker.

## World Consumption of Cotton

During the five years preceding the world war the average world's consumption of cotton was 20,968,000 bales of 478 lbs. net weight, Europe consumed an average of 55 per cent; the United States, 24 per cent; and other countries, 21 per cent of this total. During the four seasons 1919-20 to 1922-23 the average annual world's consumption reached 19,320,000 bales, of which Europe use 40 per cent; the United States 30 per cent and other countries 30 per cent.



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International Agricultural Corp.  
F. S. Royster Guano Co.  
Virginia-Carolina Chemical Co.

## ARKANSAS

Little Rock—  
Arkansas Fertilizer Co.

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Azusa—  
Geo. W. Fuhr  
Covina—  
Sun Fertilizer Co.  
Glendora—  
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Agricultural Chemical Works  
American Agricultural Chem. Co.  
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Gulf Fertilizer Co.  
Daytona—  
Cornelius Christiancy Co.  
Eustis—  
Gulf Fertilizer Co.  
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Nitrate Agencies Co.  
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Athens—  
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Hodgson Cotton Co.  
Atlanta—  
A. D. Adair & McCarthy Bros.  
Co.  
American Agricultural Chem. Co.  
Armour Fert. Wks. (So. Hdqrs.)  
International Agricultural Corp.  
F. S. Royster Guano Co.  
Swift & Company  
Virginia-Carolina Chemical Co.  
Augusta—  
Southern State Phosphate & Fer-  
tilizer Co.  
Virginia-Carolina Chemical Co.  
Baxley—  
R. L. Lewis Co.  
Columbus—  
International Agricultural Corp.  
Cordele—  
Read Phosphate Co.  
Macon—  
F. S. Royster Guano Co.  
Pelham—  
Pelham Phosphate Co.  
Savannah—  
American Agricultural Chem. Co.  
G. Ober & Sons Co.  
Mutual Fertilizer Co.  
Read Phosphate Co.  
Reliance Fertilizer Co.  
Savannah Guano Co.  
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Toccoa—  
Swift & Company  
Valdosta—  
Georgia Fertilizer & Oil Co.  
Vidalia—  
Vidalia Chemical Co.

## ILLINOIS

Chicago—  
Armour Fertilizer Works  
Darling & Company  
Swift & Company  
National Stock Yards,  
St. Clair County—  
Swift & Company

## INDIANA

Hammond—  
Swift & Company



Indianapolis—  
Rauh & Sons Fertilizer Co.  
Smith Agricultural Co.

New Albany—  
Calumet Fertilizer Co.  
Read Phosphate Co.

#### KENTUCKY

Louisville—  
Armour Fertilizer Works  
Federal Chemical Co.

#### LOUISIANA

La Grange—  
Swift & Company

New Orleans—  
Armour Fertilizer Works  
Nitrate Agencies Co.  
Swift & Company

Shreveport—  
Swift & Company  
Virginia-Carolina Chemical Co.

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Houlton—  
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Presque Isle—  
Armour Fertilizer Works

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American Agricultural Chem. Co.  
Armour Fertilizer Works  
Baugh & Sons Co.  
Griffith & Boyd Co.  
Miller Fertilizer Co.  
Nitrate Agencies Co.  
G. Ober & Sons Co.  
Piedmont Mt. Airy Guano Co.  
F. S. Royster Guano Co.  
Swift & Company  
Virginia-Carolina Chemical Co.

Salisbury—  
W. B. Tilghman Company, Inc.

#### MASSACHUSETTS

Boston—  
American Agricultural Chem. Co.

#### MICHIGAN

Detroit—  
American Agricultural Chem. Co.

#### MISSISSIPPI

Jackson—  
Virginia-Carolina Chemical Co.  
Meridian—  
Meridian Fertilizer Factory  
Tupelo—  
Tupelo Fertilizer Factory

#### MISSOURI

St. Louis—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
Swift & Company

#### NEW JERSEY

Bound Brook—  
Nitrate Agencies Co.

#### NEW YORK

Buffalo—  
American Agricultural Chem. Co.  
International Agricultural Corp.  
New York—  
American Agricultural Chem. Co.  
Armour Fert. Wks. (East. Hdqrs.)

International Agricultural Corp.  
Mutual Fertilizer Co.  
National Aniline & Chemical Co.  
Nitrate Agencies Co.  
Virginia-Carolina Chemical Co.  
Zaldo & Martines Exchange Co.

#### NORTH CAROLINA

Charlotte—  
International Agricultural Corp.  
F. S. Royster Guano Co.  
Swift & Company  
Durham—  
Virginia-Carolina Chemical Co.  
Greensboro—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
Swift & Company  
Henderson—  
American Agricultural Chem. Co.  
Lillington—  
Farmers Cotton Oil Co.  
Harnett Oil & Fertilizer Co.  
New Bern—  
G. Ober & Sons Co.  
Raleigh—  
F. S. Royster Guano Co.  
Tarboro—  
F. S. Royster Guano Co.  
Washington—  
Pamlico Chemical Co.  
Wilmington—  
Acme Manufacturing Co.  
Nitrate Agencies Co.  
Swift & Company  
Virginia-Carolina Chemical Co.  
Wilson—  
Farmers Cotton Oil Co.  
Winston-Salem—  
Virginia-Carolina Chemical Co.

#### OHIO

Cincinnati—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
International Agricultural Corp.  
Virginia-Carolina Chemical Co.  
Cleveland—  
Swift & Company  
Columbus  
Smith Agricultural Chemical Co.  
Dayton—  
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I. P. Thomas & Son  
Tunnel & Company  
Reading—  
Keystone Bone Fertilizer Co.  
Wadsworth—  
Ohio Match Co.  
York—  
York Chemical Works



**SOUTH CAROLINA**

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Anderson Phosphate & Oil Co.

Charleston—  
Amer. Agricultural Chem. Co.  
Etiwan Fertilizer Co.  
Maybank Fertilizer Co.  
Planters Fert. & Phosphate Co.  
Read Phosphate Co.  
Virginia-Carolina Chemical Co.

Chester—  
Swift & Company

Columbia—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
Darlington Guano Co.  
F. S. Royster Guano Co.  
Swift & Company  
Virginia-Carolina Chemical Co.

Greenwood—  
T. M. Miller Co.

North—  
J. E. Culler Co.

Spartanburg—  
American Agricultural Chem. Co.

**TENNESSEE**

Memphis—  
Virginia-Carolina Chemical Co.

Nashville—  
Armour Fertilizer Works  
Read Phosphate Co.  
Virginia-Carolina Chemical Co.

**VIRGINIA**

Alexandria—  
American Agricultural Chem. Co.

Danville—  
G. Ober & Sons Co.

Lynchburg—  
Pocahontas Guano Co.

Norfolk—  
American Agricultural Chem. Co.  
Baugh & Sons Co.  
Farmers Guano Co.  
International Agricultural Corp.  
Priddy & Co.  
Robertson Chemical Co.  
F. S. Royster Guano Co.  
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**F**OR the best essay submitted on the subject "Potash Pays" we will give \$50 in gold.

Read over the conditions as outlined below. By arrangement with the editors of BETTER CROPS, the prize-winning essay and such other manuscripts as are suitable for publication will appear in the magazine.

The following men have agreed to act as judges, insuring a fair consideration of every manuscript submitted:

Mr. W. R. HURD  
Director, Soil Improvement Committee,  
National Fertilizer Association.

Mr. V. E. PRATT  
Publisher, BETTER CROPS

Mr. C. C. SMITH  
Potash Importing Corporation

## CONDITIONS of the CONTEST!

**Persons Eligible**—All readers of BETTER CROPS, excepting employees of the Potash Importing Corporation.

**Subject**—The subject must be "Potash Pays" and the subject matter should offer definite proof of this statement.

**Length**—Manuscripts of over 2,000 words will not be considered. However, essays of a few hundred words have equal chance with longer articles.

**Manuscript**—It is desirable that essays submitted be typewritten on one side of white paper, preferably regular letter size, 8½ x 11 in., but the judges will give equal consideration to any essay not so written.

**Contest Closes**—The contest is now open. It will close at midnight, May 1, 1924. All manuscript in envelopes bearing a post mark later than this date will not be eligible.

**Basis of Award**—In judging the essays the judges will rate them on the following basis: Facts 50%; Photos or illustrations 25%; Presentation 25%. There will be one prize of \$50 in gold. In the event of a tie, the writers of each of the winning manuscripts will receive \$50 in gold.

**Method of Payment**—As the contest closes at midnight, May 1, 1924, the prize winner will be announced in the June, 1924, issue of BETTER CROPS and the prize mailed to the winner by May 25, 1924.

**Right to Publish**—The Potash Importing Corporation of America reserves the right to publish and copyright each and every manuscript submitted in this contest either before or after the closing of the contest. It is understood that any manuscripts so published and copyrighted which do not win the prize shall be paid for at the rate of 1c a word and \$3 per photo, according to the number of words and photographs actually published. No manuscripts will be returned.

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*Contest Editor*

POTASH IMPORTING CORPORATION OF AMERICA  
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## Two Bouquets of Clover

(From page 27)

It was found that a difference existed between the soils on which clover grew for two years and those which refused to produce a second year's crop. The main difference seemed to be the texture of the soil, which in the case of failure was a peat or clay muck soil. As a considerable portion of the dairy section of the county was located on such a clay muck and peat soil, the problem became apparent.

A day was set and the county agent proceeded in his inevitable flivver to the Vander Griend arm, armed with scales, water bucket and a sack of potash.

One-tenth acre demonstration plots were laid out and potash applied to the soil at the rate of 100 pounds per acre on some plots and a check plot left on others. The elements interfered, the insects got busy and the first year ended with no results.

Not discouraged with their first trial, the men tackled the problem again using a high grade potash applied at the rate of 100 pounds per acre to new seeding of clover. With each of the demonstration plots this time, they left a check plot and then put in one with an application of  $1\frac{1}{2}$  tons of barnyard manure to the acre.

Plots were increased and F. M. White, another dairy farmer taken into the plan, whose soil was a reddish sandy loam.

The second season closed with better results, for it was found that the stand of clover was promising on the potash plots. In fact it was better with potash than on the barnyard manure plots, yielding an increased production of about one-half ton more per acre. That was fine for the first year's growth, but what of the next year. It was the second season's growth that constituted the problem to be solved.

With considerable interest and more or less anxiety they awaited results. Spring came and the clover showed good growth and, as summer opened, they knew they had found the solution to the peat and muck soils of the county.

The first crop from the potash plots averaged two tons per acre and

the second cutting in August was 21 inches tall. Upon the plots on which the barnyard manure was applied in 1920, the clover was only six inches tall and the first cutting made only a ton per acre, with most of that wild grasses and timothy. The clover had just about run out. As to the unfer-



*There is no question what this farmer thinks about using potash on oats. Left hand side oats without potash; right hand side, 100 pounds applied to acre.*



tilized plot there was no clover to be found.

We have used the word "demonstration plot" throughout this story, and this is where the demonstration part came in. A small tour was organized by Mr. Carroll and farmers with the same trouble visited the Vander Griend farm and saw with their own eyes a fine stand of second year clover. Seeing is oftentimes believing, and in this case it was, for the visitors cooperated and ordered 10 tons of potash for next spring delivery.

And now the two bouquets of

He went into the field and from the same sized place, cut a bouquet of clover from the second cutting of the second year's crop, and found that where the ground had received 100 pounds of potash per acre at the time of sowing the clover two years before the clover was 18 inches tall. From the plot which had received ten tons of manure two years before the bouquet was only six inches tall. But from the plot which had received no treatment, there was not enough clover to make a button-hole flower. The problem was



Results covering a period of two years' work showing the value of potash vs. cow manure (1920-1921).

Right—Clover cut from potash plot, 18 inches tall (second cutting of second year's crop). Potash applied to muck soil at the rate of 100 lbs. per acre.

Left—Clover cut from manured plot, 6 inches tall (second cutting of second year's crop). Manure applied at rate of 10 tons per acre.

clover (the result of three years of work by a county agent, soils specialist, two farmers and a sack of potash) must be introduced. Whatcom county boasts of the finest county fair in the state, and it is no idle boast. Seeking the advantage of placing before all the farmers of the county the results on the muck and peat lands, Harry Carroll made an exhibit at the fair of two bouquets of clover taken from the different treated plots.

solved. The dairy farmers were out of trouble and the extension service of the State College which employed the county agent and soils specialist had rendered a real service.

But as one good turn deserves another, the application of potash produced other results. In the sowing of the clover, oats are sown at the same time in the general farm practice, for a cash or cereal silage crop the first year. The





*Field of oats without potash.*

second good turn of the potash applied to the clover was that it increased the stand of oats.

On the demonstration plots oats had not been planted for the only problem considered was the second year's growth of clover. However, when the ten tons of potash had been applied by the farmers who had seen the fair exhibit and been on the tour, it was found that potash on oats resulted in the grain standing up 'straight and strong

and that it could be cut with a binder without loss.

Where no potash had been used, the grain lodged severely and the yield was considerably lessened. Throughout the county on an average there was an increase of 25 percent due to the use of potash on oats alone, which made an increase of 15 bushel per acre.

"During my seventeen years of farming a piece of pet land" stated one of the farmers to (*turn to page 67*)



*Showing the use of potash on oats, 100 lbs. per acre  
Note the strength and height of straw*





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**THE CLEVELAND TRACTOR COMPANY**  
CLEVELAND, OHIO





The Randolph County Farmers Co-operative Association composed of Randolph County Farm Bureau members, has purchased three lots of Elkins and completed a plan to form a stock company of farmers and erect a brick and tile building 48 x 140 and to handle feed, fertilizer, lime, seeds and a complete line of tillage implements. The plan provides for a stock company with \$25,000 capital stock, shares to be with \$25.00 each and no person to own more than 20 shares. The plan to pay a dividend on the stock owned and a so-called patronage dividend on the volume of business transacted by each member-stockholder during the year. Like BETTER CROPS very much. —*Earnest Caplinger, Randolph, W. Va.*

Three cars "Sodatol" saved farmers over \$7,500. These pooled orders—saved sum equal to county cost of agricultural agent for three years. Putting over pure-bred sire campaign replacing 200 scrub sires. Test shown that lime and sulphur make alfalfa almost sure crop. Not much raised at present here.—*Paul C. Adams, Columbia, Ore.*

Franklin County Farm Bureau increased its membership from 450 to 850 last year. 1922 this county sold 1,111 bales cotton through Farm Bureau Cotton Ass'n. In '23 she shipped 1,800 bales. Last season they bought 1,150 tons fertilizer materials cooperatively and home mixed same at a great saving in price. Membership will use more fertilizer per acre on cotton

this year. Will not increase acreage of cotton but will sow more hay. Will increase membership 300 this year.—*J. D. Wood, Franklin, Ala.*

Rhode Island State Federation has been lying dormant for two years. Reorganization just been completed. Prof. Harry R. Lewis, formerly of New Jersey Poultry Dept., and now a poultry farmer in Rhode Island elected President. Prospect looks good for a real live federation.—*Sumner D. Hollis, Newport, R. I.*

The plan to establish a Tri-State Executive office for Massachusetts, Connecticut and Rhode Island was approved by the Massachusetts Federation Annual Meeting at Worcester on Jan. 15th and at the Connecticut Federation Annual meeting at Hartford Jan. 17th. It will be presented at the Annual Meeting in Rhode Island in February.—*Walter C. Wood, New Canaan, Conn.*

Cooperative canning of tomatoes is a great success. It is netting the growers above 10c per basket above the contract prices. Also cooperative buying of feed is saving the feeders from \$2 to \$16 per ton. We pooled a very large order.—*W. V. Cosoen, Kent, Del.*

Our farmers bought cooperatively something over 500 tons fertilizer materials last year and home mixed them at a saving of from \$4 to \$14 per ton and they hope to move cooperatively this year and we have secured low prices for this year.—*R. L. Blackwell, Gordon, Ga.*



# The Cooperative Idea

(From page 16)

hampered by legal restrictions, unfair competition, and public and private repression of every kind, has grown into the enormous consumers' cooperative movement of today.

**B**Y 1880, the 28 members had grown to 10,613. The 28 pounds of available capital had increased to 326,255, or about \$1,500,000.

In 1864, the cooperatives went into the wholesale business. Also, by this year the total volume of trade had risen to about \$15,000,000. In 1913, there were no less than 1,500 cooperative societies, with over 3,000,000 members transacting between six and seven hundred million dollars a year.

In London wherever one turns are found stores of the Civil Service Supply Association, one of the great chains of cooperative stores similarly with other cities and other chains.

Briefly, and ignoring many points of some importance, the great success of the Rochdale enterprise was due (1) to doing business strictly for cash; (2) to efficient, honest, conscientious management, with constant attention to accounting and cost records; (3) to the paying of patronage dividends which brought customers; (4) to furnishing good products at an ultimate net saving compared with shops run for private profit; and (5) to educational work among members and the public as to the high ideals of human service that led to the starting of the enterprise.

Conversely, it may be said that nine-tenths of the cooperative failures everywhere and at all times

have been due to a failure to observe the above principles. Control of the cooperative societies was very democratic; each man had one vote, and share capital received a definite and limited interest.

In 1919 the combined number of cooperative societies in the United Kingdom was 1,467, with 4,182,000 members, a share and loan capital of \$494,000,000, a surplus of \$109,000,000, and total sales of \$1,623,905,000.

While Germany ranks high in cooperation as to all types of enterprises, her greatest contribution was the institution of cooperative rural credit, just as England's was the development of consumers' retail distributive cooperation, and the United States' is the marketing of farm products.

The first rural credit bank, so far as known, was founded in Silesia in 1769 by order of Frederick the Great. Slowly others were established. They were known as "Landschaften" provincial land banks, and were created primarily to help the impoverished land-holding nobility of the time. Successful as these proved to be, they operated for eighty years before they were undertaken in other countries.

**I**N 1852 France started the institution that later became the great Credit Foncier, one of the outstanding rural credit agencies of the world to this day. In an article on land banks, published in Paris in 1900, a French economist and statistician, E. Besson, said of the German land banks:

"The Landschaften, free from the desire (*turn to page 64*)



## The Chinese Burbank

(From page 9)

California. Its ability to resist the whims of Jack Frost and its productivity make it one of the champion citrus fruits.

Lue Gim Gong—he is now 68 years old and crippled so that he cannot perform much active work in his grove—is a self-tutored plant breeder. Experts say that he knows more about citrus fruit polonization than any other living grower. Lue is the son of a horticultural family. Over in China where intensive agriculture is a highly developed art, Lue began to master the complexities of plant breeding at an age when most youngsters are wrestling with the one cylinder words of the first primer. When

and was educated like the ordinary American boy. Learning of Lue's skill in plant propagation, his benefactors gave the youngster every opportunity to add to his scientific knowledge and to investigate the riddles of modern horticulture. One of the fruits of this experimentation is a tomato plant now grown commercially in New England which climbs to a height of fifteen feet above the ground and bears luxuriantly. Another takes the form of a succulent early apple which ripens in late June in the latitude of central Massachusetts. A third is a peach which will mature under glass in the vicinity of Boston in November. The cherry currant—a cross of the



*Lue's dearest friend is an old mare who follows him about like a dog.*

Lue was six years old, he could polonize cabbage, lettuce, radishes and rice as adeptly as could his father. The boy spent all his spare moments amidst the growing plants, trying out breeding tests of his own conception.

**W**HEN he was twelve years of age, Lue came to America where he was adopted by an American family

grape and cherry—is another horticultural monument to the scientific skill of Lue Gim Gong.

Thirty-seven years ago, the Chinese Burbank settled in Florida as manager of an orange grove which his adopted parents purchased there. Immediately, he began to delve into the citrus conundrums of the Alligator State. Night after night, the lights in his little improvised laboratory burned un-



til after midnight. Before undertaking and field experimentation, Lue would read up about all phases of the problem. He would then initiate his orange grove tests. Despite his advanced age, the decrepit Chinaman still continues his technical explorations of the advantages and weaknesses of citrus fruits. The American orange and grapefruit industries have increased their annual incomes by millions of dollars as a result of the studies and investigations of Lue Gim Gong who has done much to take the "ifs" and "buts" out of commercial citrus culture.

**D**ESPITE his oriental origins Lue has influential friends by the thousand scattered here and there and everywhere over America. The faith of citrus growers who appreciate the assistance of the aged Chinaman took the form of financial aid which latterly has rescued Lue's grove from the auction block. Like many another genius, Lue Gim Gong was a poor business man. He gave all his notable discoveries to American agriculture. He asked neither royalty nor commission. His citrus farm has always been more of an experimental project than a commercial enterprise. For years, Lue has spent his principal in research investigation. Old age found him practically poverty-stricken. He mortgaged his land and then could not even pay the interest on his debts. Florida friends heard of his straits, raised a large purse and rescued his little farm from the moneylenders. They have guaranteed to care for Lue Gim Gong as long as he lives. Lue says he will repay their kindness with one of the most epochal discoveries made during the history of the citrus industry—a piece of research that has been his hobby for years which he soon hopes to complete and present to mankind.



## The Cooperative Idea

(From page 62)

for profits and devoted to the consolidation of their reserves, are in a position to offer peculiarly favorable conditions

to their clients. From this point of view we may truly consider the German institution as the one which best expresses the ideas of solidarity and mutual assistance towards which the institutions of our time are aiming more and more."

About 1860 joint stock mortgage banks came in and gradually state land and land improvement banks.

In 1849, Raiffeisen, the true father of long time credit for the small farmer, started his first co-operative credit society. He was the burgomaster of his native village of Flammersfeld, near Coblenz, in the Rhine Province. A poor man, he was moved by the misery of his peasant neighbors to try to save them from the exorbitant interest rates of the private money lenders. His first cooperative was a bakery, formed in 1848. It brought the price of bread down 50 per cent. His second was a cooperative cattle buying society, also formed in 1849.

Almost immediately thereafter, in 1850, Schulze, of Delitzsch, started his first short time personal credit society.

Both movements progressed slowly, and with difficulty, as was the case with the Rochdale pioneers in England. Later, through better public understanding, the efficient performance of their functions, and encouragement from the state, their increase became rapid. The same was true of other cooperative societies and as long ago as 1912 there were 20,435 of all kinds in Germany. They were combined in 41 unions or federations comprising the following:

Central cooperative societies and business institutions.....	77
Credit societies.....	13,606
Supply and sales societies.....	2,241
Dairy societies.....	2,193
Societies of miscellaneous kinds.....	2,318
Total.....	20,435

(In the next issue of BETTER CROPS Mr. Brand will conclude this article by discussing the development of cooperation in the United States and the most significant phases of its present status.



# Cotton Rust

(From page 11)

In 1918 the trouble was reported as causing the most serious losses in the Coastal Plain regions of South Carolina, North Carolina, Georgia, and Alabama, and also locally in Mississippi and Louisiana and on the 'buckshot' lands of Arkansas."

"The losses range from slight to as much as 50 or 60 per cent, with an estimated average for the entire cotton belt of 4 to 5 per cent."

## "How to Recognize Rust"

"Cotton fields affected by the common rust do not usually produce

turn yellow. They later take on a reddish brown color, curl up, and drop off, leaving the stalk bare. The top bolls of such plants either fail to set or mature imperfectly, so that the lint produced is short and of inferior quality."

"The trouble is usually noted in definite spots or irregular areas in affected fields, and unless remedial measures are applied may recur year after year in the same places."

"This disease is liable to be confused with certain other cotton troubles, especially with the true



Cotton Rust Experiment by E. Mickelson, Neeses, S. C.

Incomplete Fertilizer (without potash).  
Yield: 650 lbs. seed cotton per acre.

Complete Fertilizer (containing  
400 lbs. Kainit per acre).  
Yield: 920 lbs. seed cotton per acre.

normal growth. The plants are small and lack a healthy green color. The leaves first begin to show a yellowish mottled appearance about the middle of the season, the parts near the veins remaining green longest, while the tissues between the veins, and hence farthest from the food supply,

rust caused by a fungus attacking the leaves and with injury caused by red-spider attacks. Red-spider injury is also referred to as red-rust. These mites attack and cause a reddening of a part or all of the leaf. In extreme cases defoliation of affected plants results. The mature red-spiders or the yellowish younger



Cotton Rust Experiment by E. L. Jenkins, Midland, Ga.



No Fertilizer  
Yield: 480 lbs. seed cotton per acre.



Complete Fertilizer (containing 200 lbs. Kainit per acre).  
Yield: 868 lbs. seed cotton per acre.



Complete Fertilizer (containing 400 lbs. Kainit per acre).  
Yield: 912 lbs. seed cotton per acre.



ones, together with their fine webs, can usually be found on the under side of the discolored leaves, and thus the trouble can be distinguished from rust."

### *"Control of Rust"*

"Cotton fields which show general and severe rusting are usually in need of rotation with other crops in order to build up the humus supply which has been exhausted by continuous cotton cropping. The plowing under of green-manure crops, such as rye, cowpeas and velvet beans, or the addition of a liberal application of stable manure will do much to improve soil conditions and prevent rust."

"Supply vegetable matter to the soil. Use fertilizers containing potash. Drain the wet fields.

"The use of kainit at the rate of 200 pounds per acre or of 50 pounds per acre of muriate of potash, or the application of other potash-containing fertilizers will also help reduce rust damage."

### *"Cause of Rust"*

"Rust is a reaction of the cotton plant to soil conditions unfavorable to normal growth and development. It is not due to the attack of any disease-producing organism or to injury by insects."

"The most common causes for rust are lack of humus or vegetable matter in the soil, lack of potash, and lack of drainage. Many fields with naturally light or poor soils are planted to cotton year after year with little or no attention to keeping up the supply of vegetable matter which is essential to vigorous growth. The result is an increasing occurrence of rust the longer the practice is maintained. Such soils are also usually deficient in potash, and if it is not supplied in sufficient amounts in the fertilizers

rust will develop when the supply furnished is used up by the plant. Rust, or potash hunger has been more general and serious the past few years, owing to the difficulty of securing the normal supply of potash on account of the war."

"Rust often develops in poorly drained fields or in low spots, while higher parts are free from it. Likewise, some fields may develop rust as a result of heavy and continuous rains in the latter part of the season."



## *Two Bouquets of Clover*

*(From page 59)*

Mr. Carroll, "I have never received greater value out of an expenditure of \$55.00 than I did out of the amount spent for a ton of potash this year."

It was in the fall of 1921 when the two bouquets of clover were exhibited at the Whatcom county fair. Two years later (1923), in speaking of the results, Mr. Carroll said: "Thirty-two farmers co-operated this year in securing a shipment of 100 tons of potash and super-phosphate. The super-phosphate for the high lands and the potash for the peat and muck lands. This shipment of 100 tons was used on 1,460 acres of hay at an average increase above cost of fertilizer of \$10 per acre, or \$14,600, and 260 acres of oats at an average increase above cost of fertilizer of 21 bushels per acre, or \$110, making a total saving due to fertilizers of \$14,710."

"I base the saving on an increase made by using potash at 1 3/4 tons of clover hay per acre and six tons of cereal silage per acre. Twenty-one bushels of oats per acre and two tons clover hay per acre was the increase made with phosphate on the upper lands.

"From ten pounds used as a trial to 200,000 pounds shipped in and being used this year, is our record. We will do better this year (1924). for a large shipment of potash and phosphate is expected as 40 tons have already been ordered."



## How One Community Solved a Problem

(From page 7)

hundred trees and consisted of two units, each operating a power sprayer. The original plan was to purchase one sprayer but the organization committee soon found that the number that wanted to join was too much for one sprayer, hence the second unit. Unit number one consists of sixteen hundred trees and is taken care of by a Hayes sprayer, two hundred gallon capacity with eight gallon per minute delivery. Unit number two has twelve hundred trees and a Meyers one hundred gallon tank sprayer.

The organization has for its officers, a president, a treasurer and a secretary in each unit. These men, together with the County Agent, compose an executive committee which is responsible for the management of the spray ring during the year. The executive committee purchased the sprayer, employs the operator, works out the routes and is responsible for the sprayers.

The initial cost of the sprayer was made on a round assessment on the per tree basis and cost twenty-one cents per tree in unit number one and twenty-four cents per tree in unit number two. The constitution of the spray ring provides that should any member drop out, if some one could not be found to replace him, he would be paid off and the cost reassessed among the other members. This has not occurred so far. The greatest difficulty has been to have to refuse the few neighbors who were skeptical at first and who now, having seen one year's work of the spray ring, are clamoring to come in.

An operator was employed by

the executive committees for each unit, and did the spraying for the entire season. Each member provides a team or a tractor to pull the sprayer and a helper to drive. He delivers the sprayer to the next one on the route and pays for the operator's time, figured on the beginning of his operation until the sprayer is delivered to the next member. The route is reversed for each trip so as to give each member priority of the sprayer. A spray record card is filled out in duplicate after each spray operation and one given to the member and the other to the Secretary of the unit. The spray record card tells what time the operator started, what time he finished, amount of material used, fuel, etc. The secretary records this in a book, so that we have a complete summary of materials, costs, etc., for each member.

The average time of spraying varied with each member, according to the size of the trees, proximity of water, lay of the orchard, etc., but the general average was around three hours to get over a hundred tree orchard. Many of the delays experienced last year will be overcome this year by better planning and also by the use of a motor tank filler.

The average fuel cost for the season was 1.9 cents per tree and the operators expense 6.4 cents per tree. Cost of repairs was assessed the members at the end of the season and amounts to a quarter of a cent per tree.

As most of the members had purchased their spray materials, no effort was made to purchase this cooperatively, which accounts for the wide variation in costs of spray



material per tree, which averaged all the way from five to seventeen cents. This will be overcome this year, as the records will show the exact amount of materials used and thus permit these to be bought wholesale at the beginning of the season.

The satisfaction of the members after one year's trial and the quality of fruit produced at Pfeiffer's Corner is sufficient evidence to enable us to call the spray ring a success. Not all of the members kept account of their sales but it is sufficient to say that all are highly satisfied and at a recent meeting of the local each member exhibited a sample of sprayed fruit. The result was that two other communities have expressed a desire for cooperative sprayers, so that this year we expect to have over 5,000 trees, heretofore unsprayed, receive a full spray schedule.

Not only this, but the spray ring has been one thing which has brought the community together. The Pfeiffer's Corner Farm Bureau Local points with pride to their

spray ring as an evidence of their cooperative spirit and they are proud of its record. There is no doubt that the cooperative sprayer is the solution of their small orchard problem and the plan can be used successfully elsewhere, providing care is taken in organizing it and the right men are selected as leaders.



## Foot-and-Mouth Disease in California

Foot-and-mouth disease, from which this country has been free since 1916, has just made its appearance in California, according to an announcement made to-day by the United States Department of Agriculture. The Secretary of Agriculture has declared a quarantine on the counties of Alameda, Contra Costa, and Solano, and the Bureau of Animal Industry, in cooperation with the livestock sanitary authorities of California, is taking steps to prevent the spread of the disease and to stamp out the infection.



*Scouting for forest fires over a National forest in an airplane*



## Cooperate—can you do it?

(From page 6)

woven through with a common warp of a sort. If bridges are to be built, roads made, factories established, agriculture forwarded, marketing simplified and education brought to perfection, men must work together and not against one another. No bee can run a hive—it takes a swarm working enthusiastically and happily together upon a participating plan.

The shoulder-to-shoulder idea is not a new one, nor do I project it here as new. I am leading, this time, from the general to the specific in order to get my thought before you; whereas it is usually my plan to work from the specific to the general. Variety is the spice of life.

You know there are two kinds of cooperation—the conscious and the subconscious. When you buy a ticket to Chicago you do not get a whole train to yourself—you ride with several hundred other good folks, all of whom happen to be going your way and whose interests are, for the time at least, identical with your own. You are unconsciously cooperating with those other folks on that trip. You go for a few dollars, whereas if you hired a train all to yourself it would cost you a young fortune. That is unconscious cooperation, the kind that goes on about you every day, and the fruits of which are so obvious that a discussion of the economics would be valueless.

**B**UT the conscious kind of cooperation is the type that requires an effort; oftentimes it requires an heroic subjugation of self that some men cannot stand.

What I am actually getting at is this, "Can you cooperate?" I

know that your instinctive answer will be, "Of course!" but I am taking a prerogative that only "Old Jeff" can take with his readers and ask that you think deeply before you make me such a cock-sure answer. Think a moment, brother. Do you cooperate with others whose interests are or should be identical with your own?

**D**O you *consciously* cooperate with others? Even when this "heroic subjugation of self" comes up for decision? If you can always answer boldly, "Yes," then here is my hand, partner; you are one of a small but powerful minority. There *are* men, you know, who would rather bust up the whole works than to lose their point—they must have their way even though it means the end of things. And there are still others who believe that they have done their share when they join a cooperative body of one sort or another and have placed themselves in a position to authoritatively criticize the management!

Even though you do not like the way the other fellow wears his tie, cooperate with him if his interests and yours are the same. Letters cooperate and make words, words cooperate and make sentences, sentences cooperate and make paragraphs. Individuals like you and me are the instruments of a Big Plan—each fitted for the most exacting work. But you should and must cooperate with other individuals if harmony is to result.

No man is in competition with others—he is for the most part in competition with his own mistakes and errors of judgment. Each of



us harms himself a precious lot more than it is in the power of anyone else in the world to harm us. How foolish, knowing this, to refuse to work in unison with other folks.

In all this wave of cooperative effort that is now swelling o'er the land, and in which you, my friend, are undoubtedly called upon for a brave part, let "Old Jeff" ask but this one thing: that whenever the word is mentioned you think of the mental side of the question, and ask yourself, "How can I help the other fellow on his own job?" That is *real* cooperation.



### *Give Them an Early Start*

*(From page 14)*

admirable example for some of us older folks. They are made to see the advantage of improved breeding of livestock and latest accepted methods of farming through actual competition lessons which will enable them to undertake farming in later years with a keen sense of how best to do things."

The familiar statement that oftentimes the "boy's pig becomes the father's hog" met the reaction of Mr. Gore. "Don't let the pig leave the boy's hands," he commented. "Promote and foster the club that enables the boy to raise a pig to marketable age. Let him see and enjoy the results of proper breeding, feeding and care, not only of the pig but of the hog.

"In the different contests only a limited number can win but you cannot take from the boy or girl who has undertaken this work the benefits of sustained effort along a given line. The value of friendship, contact and knack of meeting difficult situations, acquired by the boy or girl while members of these clubs give them a tremendous advantage over other boys and girls when they are called upon in the years to come to take charge of this great agricultural machine of ours. Prizes are delightful to possess but friendship, love of work, loyalty, and other by-products of club work are the things upon which the fabric of society is based."

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# Captain Kidder

comments on this  
month's issue

It has always seemed to me that the boys' and girls' club work is worth every ounce of energy and attention that can be given it. That is one reason why I was so delighted to see that Jeff had got Mr. Gore to talk on this subject. I think the photographs that Mr. Gore so courteously supplied are unusually fine and there is a big story connected with each one. "More articles on this same subject" is my cry. What say you?



Much as I like to kid my friend, Jeff, I have to hand it to him for his article on cooperation. "That's the best thing you've written yet" I said to him after I'd read it. I think you will agree with me and I hope you'll give it a wide circulation. Every last one of us can profit by his message.



In writing about Lue Gim Gong, I noted that Mr. Dacy made no mention of one aspect of Lue's character that I have always admired. Lue is extremely religious and in a very sincere and admirable way. After he has shown visitors through his orchard it is his custom to take them to a table in the center of the orchard and ask them to read a chapter of the Bible. This simple and beautiful ceremony makes a deep impression on most visitors and I mention it because it seems to me no estimate of Lue Gong is complete that does not include this side of his character.



This number seems to be largely devoted to the Carroll family. I understand that Mr. J. S. Carroll who contributed the article on

"Cotton Rust" is a Southerner while Mr. Harry J. Carroll, Jr., who is mentioned in Mr. Lounsbury's article and who, himself, contributes an item to the "News from County Agents" is apparently a live wire Westerner. So far as I know they're not related but they have at least one common interest—better crops.



I notice the make-up editor has made some typographical improvements in this issue. Perhaps he wanted to celebrate the beginning of the second volume by giving us a new dress—or maybe it was the approach of spring that stirred him. Anyway, I like the appearance of the magazine which has always been one of its distinctive features and will, I hope, continue to be so.



Professor Hansen made a special effort to get the story about the Modern Doll in the present issue because he felt it would be of value to our readers who are concerned with raising corn. Many thanks, Professor! We hope to see some more of your poison plant articles before long.



My one real kick on this issue is that it hasn't enough stories about people. I like to read about the struggles and experiences of county agents, extension workers and all the others who are fighting the battle for better crops of one kind or another. Perhaps Jeff is waiting to hear from you.

# Captain Kidder



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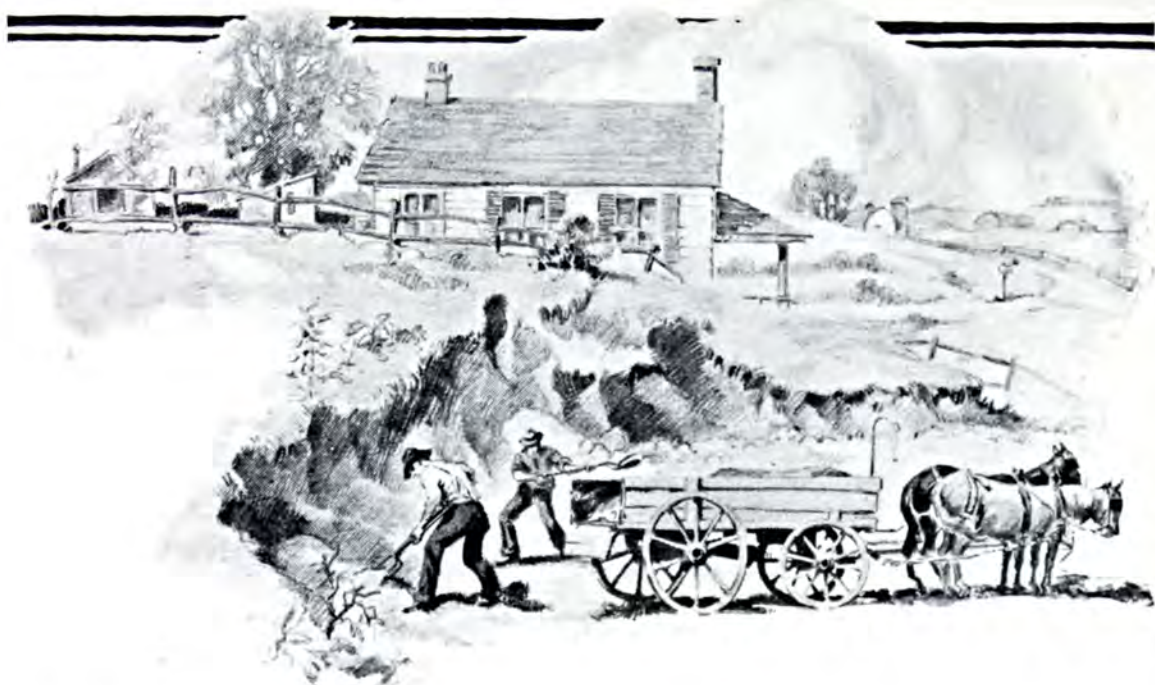
The Pocket Book of Agriculture

April 1924



In this issue — Dean Stewart — C. T. Gregory — Albert Hansen — Dr. Frank Crane — J. A. Brock — Jeff McDermid





# He discovered gravel—

**H**E made money as long as the gravel lasted—faster than he could have made it by farming.

But when the gravel was gone his farm was gone too. Nothing left but huge holes in the ground. For immediate profit this man sacrificed almost the entire earning power of his land.

Yet when, year after year, farmers remove from their soil the valuable plant foods it contains they are nearly as improvident as the man who sold his gravel. They believe they are making immediate profit—that because they do not spend money for fertilizer they are just that much ahead.

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They are losing. They are both sacrificing the chances for larger and better crops this season, and are "mining" from their soil the very plant foods that make it valuable.

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# A GLANCE AHEAD

HERE is just a foretaste of what the May issue of BETTER CROPS will contain.

## THE EXPERIMENT STATIONS AND AGRICULTURAL EXTENSION WORK

by *Dr. E. W. Allen*

Chief, Office of Experiment Stations, U. S. Department of Agriculture

Any utterance of Dr. Allen's would be bound to interest the readers of BETTER CROPS. This is a particularly interesting article because it discusses the relation of the investigator, the extension worker and the county agent to each other.



## HIGH YIELDS MAKE LOW COSTS

by *Herbert C. Brewer*

National Soil Improvement Committee

No subject is of more vital interest to agriculturists today than the question of how to make farming profitable. The answer, of course, cannot be found in any one formula, but Mr. Brewer has collected a wealth of facts and illustrations on one important aspect of this problem. Watch out for this!



## "LET US SPRAY"

by *F. J. Schneiderhan*

Virginia Experiment Station

An article that presents the results of recent investigations in a lively and readable form.



There will also be articles by some of our old friends and several new ones will be introduced to BETTER CROPS readers. And, of course, you can always count on

Yours truly,



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# Better Crops

## The Pocket Book of Agriculture

VOLUME II

NUMBER TWO

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### Who's Who of BETTER CROPS

EDITOR	JEFF McDERMID
PUBLISHER and SECRETARY	VERNEUR EDMUND PRATT
PRESIDENT	E. K. HOWE
VICE-PRESIDENT and TREASURER	H. A. FORBES
BUSINESS MANAGER	MORTON. HIDDEN

Business Offices: 81 Fulton Street, New York  
Editorial Offices: 461 Eighth Avenue, New York





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Ready for the Spring's work—"One day's work of man and team" is changed to "woman and team" at the School of Horticulture at Ambler, Pennsylvania, where one of the pupils is seen starting for the field with her team.





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VOL. II

NEW YORK, APRIL, 1924

No. 2

# BOYS *and* GIRLS

*An essay on inquisitiveness  
and its relation to the Boys  
and Girls Club Movement.*

By *Jeff McDermid*

CURIOSITY started in the Garden of Eden. Inquisitiveness came later; for inquisitiveness, you know, is but curiosity with a college education.

Idle curiosity is the selfish curse of meandering gossips. Observing inquisitiveness is the lens through which science peeps into the secrets of Nature—the subtle chemical, which, sprinkled upon the parchment, colors her written laws to readable form and evolves the steam kettle of Watt, the electric key of Franklin and the telegraph of Morse.

THE engineer and scientist doubt everything that cannot be proved; and the best engineer or scientist is he who has not lost a certain child-like inquisitiveness, an ability to ask himself questions the answers to which are not known,

linked to a stick-to-it-iveness which knows no defeat until the answers are found. The trouble with inquisitiveness is that, like love, when it become professional it loses its potency and charm. Love, to be good and sweet and fresh must be



amateur. And so it is with inquisitiveness. It must be the product of a virgin mind.

Inquisitive men and curious children are souls in tune—the secrets of the world are opened to them. I have a deep regard for children, and for those men-children whose minds are still like sharp pointed sticks, poking, everlastingly poking into the knowledge heaps of the universe, hoping that some bright jewel of revelation will be unearthed.

Children are the naturally curious—if we can but harness this fresh, virgin inquisitiveness before experience deadens the impression-sense, who knows but that secrets to us hidden since the inception of the planets may be startlingly revealed? If this why-stuff can only be bred and cross-bred with constructive and industrious interest, what a leap forward this old world will make.

I say "If," when, as a matter of fact, the thing is almost done. Men, all of whom were once boys, are beginning to take an interest in children—a professional interest which until now has been exclusively lavished upon Holstein heifers, chow pups and Plymouth Rocks. The boy and girl are *here* and—be patient—who knows but that just around the corner may be The Day when more attention will be paid to the boy-soul and girl-soul than is now squandered on cows, sows, and hens.

That boys and girls are the men and women of tomorrow is a simple statement the truth of which will not be denied. How I would like to look forward and see the young man, now soberly and industriously poring over a book in some little wayside school adown a country lane, who two decades hence will be addressed as Mr. President! What would I not give to tear aside the veil and see my daughter of today proudly reigning on her chosen platform!

The Boy and Girl Movement,

unless I am misinformed, has its source in a desire to teach and habituate—a yearning to train the tender vine upon the stick in the way which custom has ordained a vine shall grow. This, I contend, is a weakness of the Movement.

That boys and girls need training; that a certain sum of learning is already existent, the truth of which has been proven; that this learning should be assimilated by the boys and girls; that squelching of the barbaric tendencies and ascension of the human qualities, is profoundly necessary; all of this I admit.

But my contention is that there is more to be learned in this world than *we have* learned—that we have barely scratched the surface of things; that what discoveries we have made have been made by child-minds, and that to child-minds must we look for future revelations. The leader of the Boys and Girls Clubs who takes upon himself the majestic mantle of Teacher, without weaving through it the silver strands of Student is not only missing half his opportunity, but is cheating the world of potentialities. The teacher should always learn, the leader follow and the master obey; for a teacher that cannot learn is but a bale of compressed, musty knowledge at which the young may nibble and get sour stomachs; and the leader who cannot at times descend into the multitude and follow has lost that great humanity which made him a leader; while the master who cannot obey is not himself fit to give orders.

To teach is to learn; to learn to teach. And more can be learned from children than can be taught them. Nature, with her marvellous foresight has so arranged that in the bosom of the normal family there grows up a child-mind with a brilliant crimson question mark on its forehead—symbolic of the Eternal Query. Father and mother, whose minds have (*turn to page 62*)



# He Took Up FARMING

—because he found out how to make it profitable.

By Albert E. Wilkinson

Vegetable Specialist, Connecticut Agricultural College

*There's a big thought  
in this short article.*

THE most important project in vegetable extension work is not that of growing or selling a particular crop but in saving a boy or man to the particular industry. An excellent example of how it has proved to save a boy has just been completed in Danbury, Connecticut.

A farmer using a dairy as his main source of income had his 18 year old son state to him that unless "dad" showed him that farming contained more profit he would not stay on the farm. As this request had come to the father before, from an older son and the son had left to enter the automobile work, the father reasoned that it was high time to discover what the boys meant. On questioning the boy he found that he desired to grow a cash crop of high income return. The question was finally settled and the boy selected cauliflower as the crop. The county agent immediately entered the field and through him the vegetable specialist. A detailed statement or plan was given to the boy in which selection of soil, liming, selecting of seed, kinds and amount of fertilizer, planting dates, transplanting dates, distances apart, cultivation, insect control, when and how and with what, tying, harvesting, grading, packing and marketing were in-

cluded. Every item was carried out following these specific directions and on time. The results for the first year have been most excellent. The boy has renewed his interest in the farm and the father has put on new life. The reason for this increased interest and activity is that the profits above cost were \$270.55 in hard money.

In detail the cost of growing an acre of cauliflower has been as follows:

Seed.....	\$4.50
Plowing, 2 days.....	16.00
Harrowing, 2 days.....	16.00
Lime, 4 tons, carting incl.	15.00
Fertilizer, ½ ton, freight included.....	29.50
Marketing, 2 hours.....	4.00
Setting plants:	
July 1.....	8.40
July 2.. ..	6.20
July 3.....	6.00
Hoeing, 4 times.....	40.00
Spraying, 2 times.....	10.00
Cutting and carting.....	196.00
Crates.....	10.00
Twine.....	4.50
Tying.....	15.00
	<hr/> \$381.10

The results from the crop in cash were:

RECEIVED FOR CROP....	\$651.65
EXPENSES, including labor	381.10
PROFIT ABOVE COSTS...	<hr/> \$270.55

(turn to page 40)





*Oranges and lemons are picked with great care so that a maximum amount of good fruit can be secured.*

# MARKETING *a*

*What cooperative enterprise can do when the right plan is followed.*

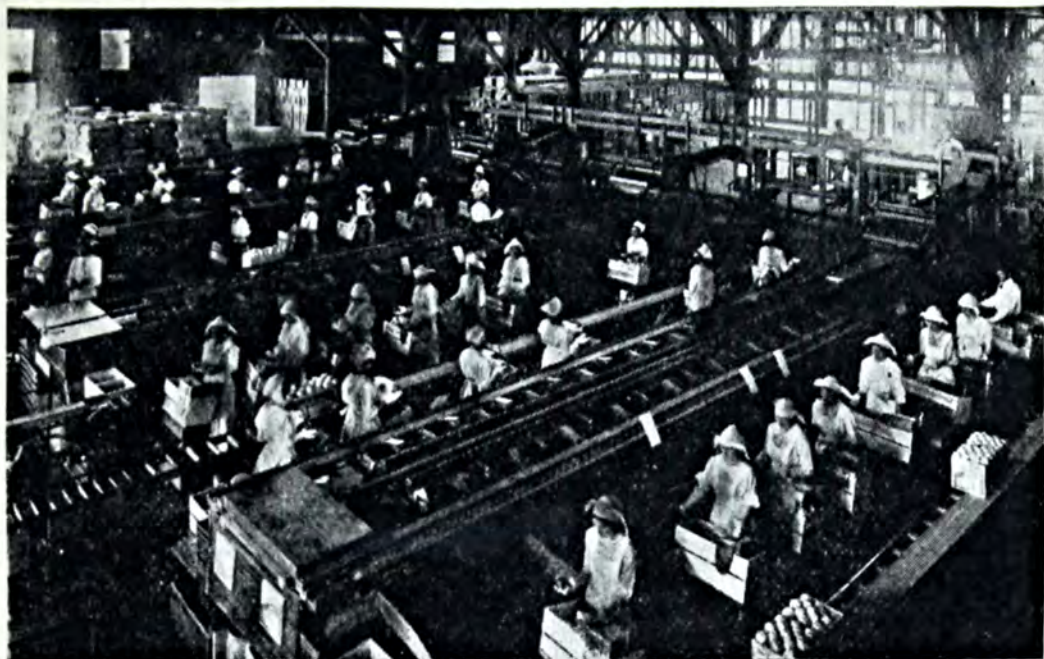
**M**ARKETING the citrus crops of its 11,000 grower-members upon a cooperative, non-profit basis, the California Fruit Growers Exchange has continuously and consistently grown in size and scope of activity during its thirty years of existence, because it has proven the theories of cooperative marketing to be practical under varying business conditions.

Like most successful cooperative marketing groups this organization was born of the necessity for a service that would take a grower's product and market it successfully, returning the full value of the products to the producer and handling its operations on a cost basis.

The citrus industry of California, which from the commercial standpoint is less than fifty years old, represents an investment of between two hundred and three hundred million dollars today. The annual shipments of oranges and lemons in a normal year from this state have now reached the total of between 50,000 and 60,000 carloads, with a valuation in California which varies from \$40,000,000 to \$60,000,000.

So successful has been the Exchange in developing and perfecting the cooperative principle in marketing an agricultural product that it has become world famous and has been used as a model for many similar marketing





A typical California packing house. Some of these packers pack as many as 75 boxes a day.

# \$100,000,000 Crop

By W. B. Geissinger

Assistant Advertising Manager, California Fruit Growers' Exchange

organizations in various sections of this and other countries.

Perhaps there has been no other one factor which has had a greater stabilizing influence upon the fruit and vegetable industry of this country than the existence of the California Fruit Growers Exchange with its national system of distribution and advertising.

Through years of systematic distribution and intensive advertising on oranges and lemons the Exchange has established a ready market for its products.

Latest statistics on bearing and non-bearing citrus acreage in the so called "Golden State" show that there are 257,903 acres of land planted to citrus orchards.

The citrus fruit season ended October 31, 1923, showed the largest total supply in the markets of the United States and Canada in their history. A total of approximately 100,000 carloads of oranges and grapefruit and 13,000 carloads of lemons was consumed during the year. This included imports from Porto Rico, Japan, and Italy, as well as the production of these fruits in other parts of the United States. Of this total more than fifty per cent, or 50,966 carloads of oranges and grapefruit and 8,741 cars of lemons were grown, packed and shipped in California.

There were shipped through the Exchange during the year 36,999 cars of oranges and grapefruit,



8,259 cars of lemons, or 72.5 per cent of California's orange and grapefruit production and 94.8 per cent of the lemons grown.

**T**HE returns to Exchange members f.o.b. cars California for the year, were \$55,223,450, with a delivered value to the wholesale trade of \$81,258,169. Based on Exchange returns, the state of California received \$71,007,705 for the total crop, the delivered value which equaled \$105,486,506, the latter including \$34,478,800 for freight and refrigeration.

Organized under the Civil Code of California, which permits growers engaged in the production, packing and marketing of a horticultural product to form a non-profit, co-operative body, the California Fruit Growers Exchange was incorporated on March 27, 1905, and on September 1st of that year succeeded to the business of the Southern California Fruit Exchange which was its predecessor.

The Exchange today is composed of 200 separate associations or shippers handling the fruit of its 11,000 grower members through 21 sub-exchanges which in turn "clear" their shipments and collections

through the Central Exchange located in Los Angeles.

In 60 of the largest markets of this country and Canada the Exchange has its own salaried representatives on the ground to handle the sale and proper distribution of the shippers' fruit. They sell in approximately 1,000 established carlot markets handling the famous Sunkist and Red Ball brands of Exchange fruit. Through the hands of 3,500 jobbers the fruit passes to the 400,000 retailers handling fresh fruits and vegetables, and ultimately finds its way to the tables of the 118,000,000 consumers of these two countries.

While the central Exchange located in Los Angeles is known as a non-capital stock corporation, the 200 local associations which pick, pack and ship the fruit of their members are organized either upon the basis of a capital stock corporation or without stock, upon a mutual benefit arrangement.

The Central Exchange accumulates no profits and declares no dividends on the business transacted—its business all being conducted on a cooperative plan at absolute cost. Every citrus grower receives all the (*turn to page 57*)



Once each year orange groves are covered with canvas and fumigated to kill scale insects. Under sunlight the gas injures the tree 'so fumigating is done at night.



Here is an interesting article on a crop that is becoming more important every year.

# More Profits from Sugar Beets

By J. Arthur Brock

Specialist in Sugar Beet Culture

Agricultural Editor—FACTS ABOUT SUGAR

ONE of the big problems confronting sugar beet growers at the present time is the matter of proper fertilization. Especially is this true in Michigan, Ohio, Indiana, Illinois, Wisconsin, Minnesota and Iowa, where the immediate need for fertilizer is more pronounced than in the irrigated sections of the West.

This problem has become so important that, with a few exceptions, every beet sugar company has, during the past few years, engaged trained agriculturists for the purpose of giving the matter special study and to conduct fertilizer experiments and demonstrations.

Unfortunately only a few of the Agricultural Colleges and State Experiment Stations have undertaken to study this phase of sugar beet culture and hence very little data on the subject has been made available. In addition to this the fact that sugar beet culture has not been taught except in a very few colleges has resulted in there not being sufficient trained men to conduct the experimental work of the various sugar companies. It might be of interest to note that during

the past month two beet sugar companies have been forced to send to Europe for trained sugar beet agriculturists.

The use of commercial fertilizers in connection with sugar beet culture has only been practiced in the United States for a comparatively short time and, while thousands of tons of commercial fertilizer are applied annually by sugar beet growers, statistics show that the application of commercial fertilizer has not yet become general.

SEVERAL factors have operated towards retarding the use of commercial fertilizer in sugar beet culture: (1) the lack of authentic data; (2) the lack of knowledge on the part of the beet sugar companies' fieldmen relative to the use of fertilizers and (3) the seemingly high cost of the article. As has been stated very little authentic data on sugar beet fertilization has been published with the result that when the beet sugar companies first realized the necessity for applying commercial fertilizer they had no accurate data to serve as a guide



in either the selection of a desirable formula or in the matter of application. This, together with the fact that until very recently the fieldmen employed by beet sugar companies were not technically trained, resulted in the adoption of a number of undesirable practices. For example, many of the fieldmen advocated the use of such fertilizer formulas as 1-8-1 and 1-9-1 while others advised that applications of acid phosphate alone should be made.

When the technically trained agriculturists entered the beet sugar industry and advocated the use of high grade complete fertilizers at the rate of from three hundred to five hundred pounds per acre it was generally predicted that "it can't be done."

Fortunately this prediction has been proven to be unwarranted and today the beet sugar company fieldmen encounter no difficulty in inducing the farmers to purchase high grade complete fertilizers at costs ranging from \$35 to \$45 per ton nor in having them apply from three hundred to six hundred pounds of the article per acre.

In brief, the American sugar beet growers have been "sold" on the idea of applying liberal amounts of high grade complete fertilizers.

The big problem now is to determine "what is the proper fertilizer."

In undertaking to solve this vital problem the agriculturist must ever keep in mind the fact that the purpose of sugar beet growing is to produce "sugar per acre." In other words he cannot advocate a fertilizer formula which will produce a large yield of low test sugar beets nor can he advocate the use of a formula which will increase the sugar content at the expense of the yield per acre. Rather the proper fertilizer for sugar beets must be one which will produce a large yield of high testing sugar beets having a high purity.

When the old style of contract was in force whereby the grower was paid on a tonnage basis the matter of sugar content or purity did not interest the grower. All he was interested in was the matter of producing tons of beets per acre. While it is true that the beet sugar company was interested in tonnage the principal interest was that of sugar per ton of beets. With the present form of contract whereby the farmer is paid for his crop on the basis of both tonnage and sugar per acre the different interests were made mutual and since both the grower and the sugar company have identical interests (*turn to page 53*)



*How can sugar beet fields be made more profitable? Read Mr. Brock's article.*



# How We Solved Our Publicity Problem

By W. C. Sterrett

County Agent, Clearfield, Pennsylvania

*Bankers, the Farm Bureau, the local papers and the County Agent worked together and achieved notable results*

THE greatest problem of our County Farm Bureau two years ago, was to get the results of our work before the people of the county. There were two angles to this problem, namely, lack of finances and poor cooperation with local and county papers. Both of these difficulties were overcome by the cooperation of the banks of the county.

Our method of procedure in brief was as follows: We explained the difficulty to the president of the leading bank in the county, who seemed very much enthused and offered to finance the whole proposition through his bank. We felt, however, that it would be better if we could make it a county wide proposition, taking in all of the banks in the county and after explaining our viewpoint, the president of this bank conceded to our opinion and offered his hearty cooperation and assistance in working out a solution to the problem. The next step was to organize the banks of the county into a county organization. This was done at an early date, at which time the majority of the sixteen banks in the county signified their willingness to cooperate. An Executive Committee was appointed to work out a system of finances and also a

program of work. This committee reported at the next meeting one month later and suggested that \$1,000 be appropriated to the Farm Bureau for publicity work along the lines of Livestock Improvement, since they felt that this project was the most important in the county. The suggestion of the committee was unanimously adopted by the eight banks present and the Secretary instructed to invite the remaining eight banks to join the association, explaining the work as outlined, as a result of which every bank in the county responded.

THE method of raising the \$1,000 was an assessment on the capital stock and resources of the bank. This method placed the greatest burden on the large town and city banks, which were able to stand the assessment better than the country banks, many of which had little surplus and a low capital stock, consequently a comparatively small assessment, which worked out to the satisfaction of all in both cases.

The Executive Committee of the Bankers' Association in cooperation with the Farm Bureau next took up the question of how to spend the



\$1,000 to the greatest advantage in the way of publicity. The first thought was to edit a small paper and send it out to all of the farmers in the county once each month, but after considerable thought and consideration a different plan was decided upon. We discussed the subject further and discovered that one of the local daily papers would be willing to cooperate in this matter and we decided to run a full page of Livestock news through this paper, the Farm Bureau to furnish the news material, the local paper to edit the same once each month and to mail each farmer in the county a copy of the paper, the banks of the county to pay the bill out of the \$1,000 appropriated. The cost of the page averaged \$65 per issue, which seemed quite an amount upon first thought. However the result has been that the Farm Bureau received much more than one page for publicity work. While the Livestock page is used exclusively for Livestock news, we are privileged to use as much space as we desire each month for publicity along other lines of work outside of livestock. This makes it possible to get before the people of the county the results of every line of activity.

When and how do the banks get returns for their money, you ask? That can be answered in a single word, "Advertisement." On the top of each edition of the Livestock page a space four and one half by six inches is devoted to the following advertisement. "Livestock Page published monthly and sent to all of the Farmers in the County by the Livestock Auxiliary Association, composed of" (Each individual bank with address listed below).

The banks further feel that they must of necessity do a certain amount of advertising and that this method is as good as any. They appreciate the fact that in certain counties of Pennsylvania where the main industry is coal and other in-

dustries outside of farming that the time must come when Agriculture will be the only thing left and the rock upon which they must eventually stand. The more prosperity they can create among the farmers of the county the greater will be their returns.

As a result of the publicity either directly or indirectly, the Farm Bureau during the past year was able to bring into the county two car loads of Pure Bred Livestock which was also financed by the Bankers' Association.

The cooperation of the one paper had the desired effect of bringing all of the other papers of the county into line and in order to prevent jealousy upon the part of the rest and to assure cooperation in the future, a greater part of the news items along Livestock as well as other Farm Bureau articles published in the Livestock Edition are sent to the other papers of the county, with the privilege of using as much of the material as they desired. The result is in practically every case the other papers are willing to cooperate to the fullest extent in writing up Farm Bureau news as well as to advertise any meetings that will be held in that territory covered by that particular paper.

After two years experience the paper cooperating has found that the circulation among the farmers has been greatly increased and through its wide monthly circulation it has been able to secure several more pages of advertisement from the merchants of the county. While the editor claims it is of slight financial benefit to them, yet we believe if the banks decided to discontinue the page that we would have little difficulty in getting a group of local merchants to finance the page for the sake of the advertisement medium that it furnishes.

The work and responsibility of getting the material for this page falls largely upon the County Agent. However, an effort (*turn to page 55*)



# Putting Cabbage Back in the Home Garden

By C. T. Gregory

Purdue University Agricultural Extension Department

*A little story that will be helpful to all cabbage growers.*

**F**OR several years cabbages in Indiana have been suffering from the yellow plague. Many gardeners have given up raising this valuable vegetable simply because they knew it was useless to try. This statement is made on the authority of the gardeners themselves. Everywhere you could hear the same story. "During the past four or five years I have tried to raise cabbage in my garden and every year it has turned yellow and died. Sometimes it would almost form heads and other times it dies a few weeks after being set out."

It did not take long to find out that this disease is the yellows which is the most common and destructive cabbage disease in Indiana. Experiments had already shown that there is no use trying to get rid of it by any ordinary means such as by fertilizing or by seed treatment. The only thing to do was to introduce the yellows resistant varieties of cabbage and find out if they were any good in Indiana. We secured seed of the Wisconsin Hollander, Wisconsin All-Seasons and Wisconsin Succession and had the plants grown in land where cabbage had failed repeatedly. These varieties immediately proved their worth; they produced a good crop where ordinary cabbage could not survive.

Not being completely satisfied with this we tried these same varieties again in different places in the state. The results were the same. There was no doubt that yellows resistant cabbage would solve our problem. The next thing was to let the gardeners know about it and that is where "it pays to advertise." We advertised by newspaper stories about what these farmers had done and by exhibits of diseased and resistant cabbage. Our problem at this time was two-fold because we first had to show the gardeners that they had yellows and then that this new cabbage was what they needed.

The success of this cabbage is attested by the fact that it is being used by commercial gardeners and home gardeners in over half the counties of the state. In Lake County the majority of the growers know that they must use these varieties to get a crop. One seed dealer has on his book this year several orders for cabbage seed which stipulate that the yellows resistant varieties must be furnished, else the order is cancelled.

The gardeners at Indianapolis have had this disease in their soil for fifteen years. To be sure it was not serious at first, but in recent years it has been taking fifty per cent or more of (turn to page 47)



# Selling Ideas to the Farmer

By Laurence W. Taylor

Assistant Farm Advisor, Bakersfield, California

*Here's good dope that's  
worth your thinking over.*

WHEN the County Agent, after thought and study, consultation and intuition finally hits on a project that will undoubtedly result in much good, and which should go big with the farmers, he has only just begun. His big job is to sell his idea to the farmer.

The County Agent jumps in his flivver and rides out to the prospect's farm. He walks across the plowed field, through the stubble to the hay stack where he finds his man hard at work. The obliging farmer leaves the crew short handed while he listens to the proposal. As the County Agent explains the details the farmer checks over in his mind the several mower parts, the piece of rope and small monkey wrench that his wife must get in town the next day and at the end compliments the whole thing and suggests that he is too busy to take part in it, but Mr. Brown would be a good man on the committee because he has retired from actual farming and has lots of time. This is in spite of the fact that Jim Brown has served on nearly every committee since the Farm Bureau was organized and has been continuously over-worked.

It is difficult to sell ideas to the farmer when he is head over heels in hard work. It is difficult to sell

ideas to the farmer at all, largely because he is so occupied with the ever present details of his business that he finds it difficult to raise his head and survey the situation in general. He is so busy keeping his flivver moving along on life's highway that he has no time to figure out where the highway is taking him.

The idea cannot be considered sold until it is translated into action. It is not sold until he reads the sign at the crossroads and changes his course accordingly.

Any semi-orator can give a talk on better bulls, soil fertilizers, long system pruning or the value of spraying and get a large part of his audience to agree with him. But only when the man buys the bull, spreads the fertilizer, changes his system of pruning, or sprays his orchard has the idea been sold.

There are four legitimate means of selling ideas; they may be sold by means of information, rivalry, pressure and service.

THE man who listens to the County Agent lecture on the value of the silo and then goes home and builds one has been sold by means of information. In the same class are those who put (turn to page 61)





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**D**r. E. D. Ball, Director of Scientific work for the Department of Agriculture. He was formerly entomologist at Iowa State College.





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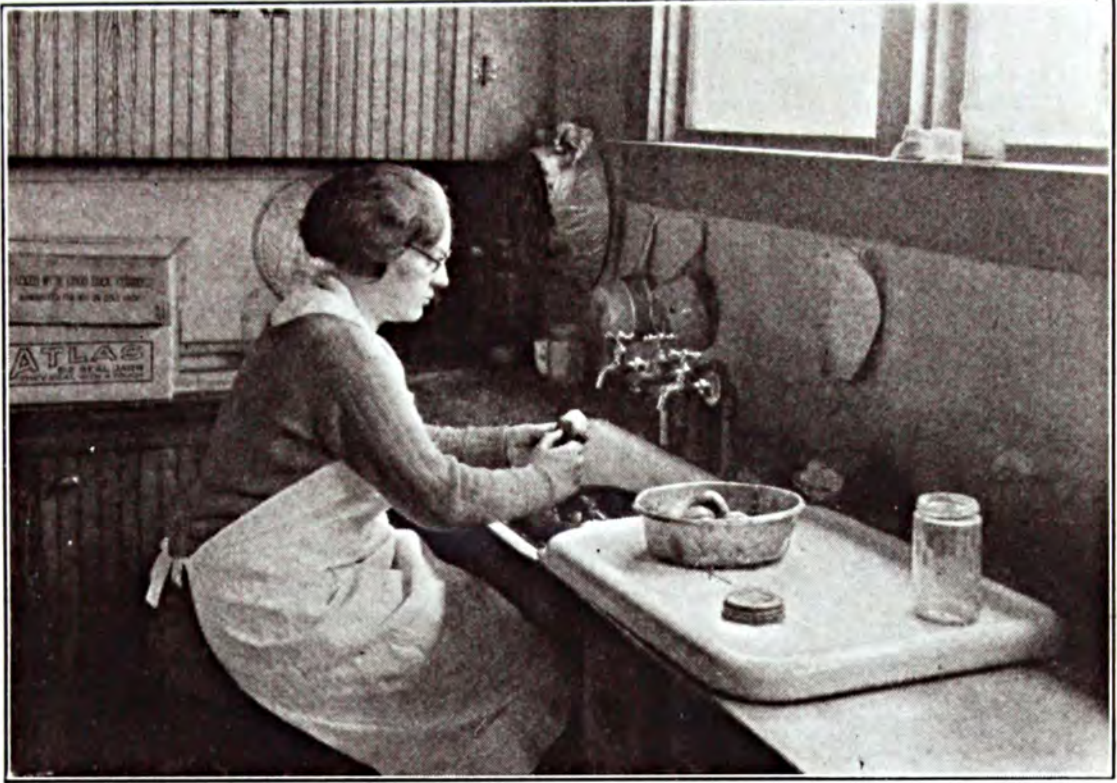
**S**eventeen years ago John Rugowski of St. Francis, Wis., turned from lathing to farming. Today he is famous as "Wisconsin's Burbank" and has almost 2,000 distinct originations of flowers and vegetables to back up the title.

**O**n the job! County Agent J. W. Hendricks of Catawba County, North Carolina, is figuring with a cooperating farmer about the gains those hogs are making.



**"G**ood morning, how do you like us?" writes County Agent L. E. McDaniels of Basin, Wyo., who contributed this picture.



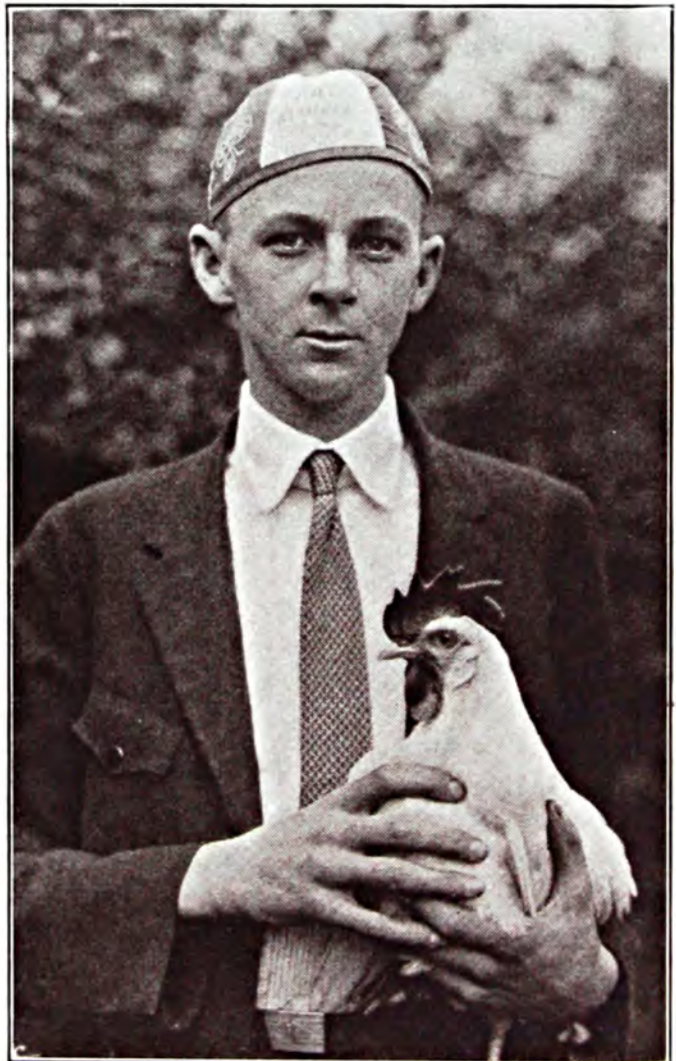


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**E**lla Holmes, 17-year-old club member of Huron County, Ohio, has won the county championship for excellence in demonstrating the best known methods for preparation and preservation of foods each of the four years she has been in club work and was state champion in 1922. Her canning record would make any housewife envious.



**T**his young poultryman, William Marvel of Kent County, Delaware, won prizes at the Kent-Sussex Fair, the Delaware State Fair, and Fruitland Grange Show. He was a member for the judging and demonstration team from his club in 1922 and 1923 which won first place in county and state fairs.



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**D**r. Robert Stewart, Dean of the College of Agriculture University of Nevada, Reno, Nevada. Dean Stewart is the author of numerous bulletins and articles on semi-arid agriculture and soil fertility. He was formerly with the Utah and Illinois Stations.



• Dean Stewart discusses some interesting experiments that point towards greater economy in feeding livestock.

# Food from Sunflowers

By Robert Stewart

College of Agriculture, University of Nevada

**F**ORAGE crops are necessary for the production of feed for domestic animals which are essential as a source of meat, milk, and butter for human consumption. Forage crops are preserved for use during the winter either as dry hay or as succulent silage.

Silage is the product of the fermentation of green fodder in a silo from which the excess of air has been excluded. In some farms this process of preservation of feed has been employed for over a century so the idea is not a new one. Some of the crops used for silage are corn, soybean, sugar cane, vetches and oats. Quite recently sunflowers have been used for silage with very promising results.

Silage is more palatable than dry fodder, and animals will eat a larger quantity and produce a greater gain in meat or milk than when fed on dry fodder alone. Silage furnishes a succulent feed during the winter when the green feed of the pasture is not available.

The premier forage crop for silage is corn. Unfortunately, corn is not well adapted to many sections of the country where the nights are cool and the growing season short, such as those found in the high northern latitudes of the western part of North America. Most of the legumes such as alfalfa and

sweet clover which thrive luxuriantly in this region are not suited for silage production as they produce an evil smelling silage, due, no doubt, to their high protein and low sugar content. Fortunately, the common sunflower "*Helianthus Annuus*" is native to this region where the wild form often occupies extensive areas. Under cultivation numerous varieties have been developed of which the agriculturally valuable sorts are those which produce a single large head.

Sunflowers are grown extensively in Russia for the seed, which is used both for poultry feed and for oil production. In America their culture has not been large; they have been sometimes grown thickly and cut for fodder, but the woody nature of the plants makes them undesirable for this purpose. In 1910 there were only 4,731 acres of sunflowers produced in the United States which yielded 63,677 bushels of seed. Illinois produced most of the crops with 3,979 acres, with 49,064 bushels of seed.

Cultivated sunflowers which are not suitable for forage either as the green crop or as dry fodder are admirably adapted for silage production. The first recorded use of sunflowers for silage is that of the Canadian Experimental Farms. Professor James W. Robertson of



the Canadian Experimental Farms in 1893 used the sunflower heads in corn silage and found that the amount of grain fed to dairy cows could be very materially reduced at a considerable saving of the feed cost. The following silage mixture was used: Soybeans from one-half acre; corn from one acre and sunflower heads from one-fourth acre. The sunflower silage mixture thus used produced a highly colored and rich milk, although no increase in the actual production of milk was observed. The practice of using sunflower heads in this way was never introduced to any extent into the United States.

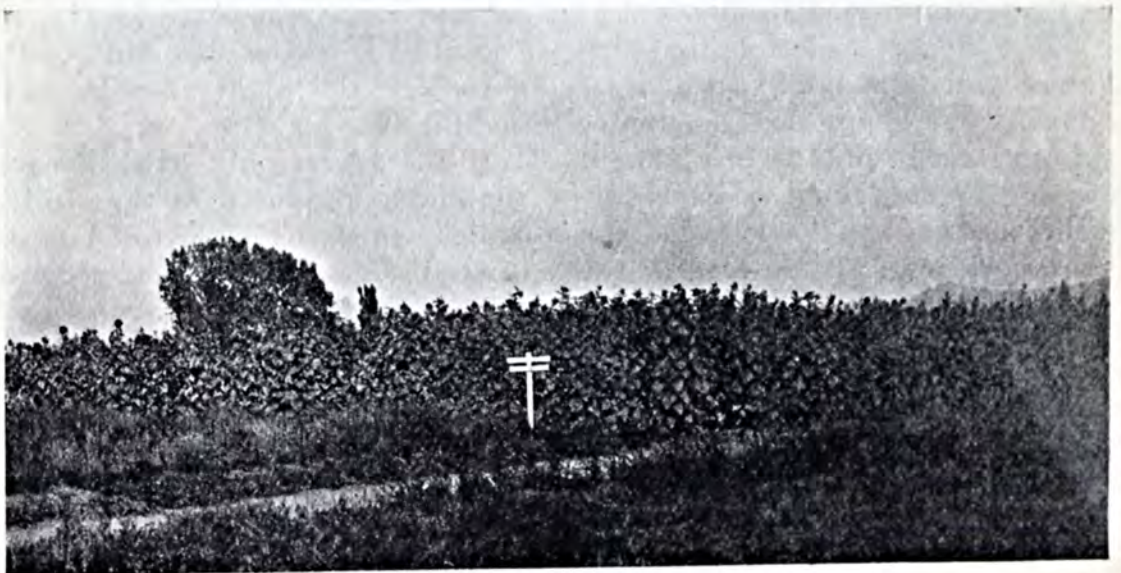
In the United States the Montana Experimental Station created interest anew in the use of sunflowers for food production by using sunflower silage for feed for dairy cows. The silage used was made from the entire plant, including the stock and head. Since that time various experiment stations have reported the results of the use of sunflowers as a silage crop, sometimes with very favorable results and occasionally with luke warm recommendations.

The Russian sunflower was found to be especially well adapted to the climatic and soil conditions of the high altitude of western Nevada where the growing season

is short and the nights are cool. The sunflower is planted any time from the middle of May to the first of June and is ready for harvest by the first of September, when it is cut green and placed in the silo before any injury is caused by a killing frost. It was found to be superior to corn in this respect as corn for ensilage was sometimes seriously injured by a killing frost before it reached a stage of development suitable for silage.

A number of farmers of Metropolis, Nevada, have grown the crop with excellent results. They obtained a yield of approximately twelve tons per acre on irrigated land and about five tons under *dry farming conditions*. They all agree that the crop is well adapted to their soil and climatic conditions as sunflowers will grow and produce well under conditions where corn would freeze. Some of the silos were not filled until October and yet the sunflower crop was not frozen.

The sunflower silage was fed to dairy cows with excellent results. W. D. Hill of Metropolis, reported that he actually secured a better flow of milk while he was feeding sunflower silage than while he was feeding corn silage. Excellent alfalfa hay in Metropolis was selling for \$8.00 a ton (turn to page 45)



A field of sunflowers raised for silage.



# LEAVE IT to the BOYS!

*These youngsters surprised their  
elders and helped to educate them.*

By Thomas E. Hand

County Agent, Hinds County, Mississippi

THREE years ago the use of commercial fertilizers in Hinds County, Mississippi on any crop other than an intensively cultivated vegetable crop was looked upon as purely experimental and not to be indulged in except by wealthy city agriculturalists, who had an undue amount of curiosity and no less money, or an experimental station, which had the unlimited financial backing of the Federal Government, and was supposed to throw away money on new fads in order to attract attention.

But when an eleven year old youngster makes twice as much cotton and ten times as much money on one acre of land as his 47 year old father does on his whole farm of nine acres; when a 15 year old schoolboy working during his spare time makes fifteen times as many pounds of seed cotton on one acre as the average per acre yield for his county will be this year, and when every single one of 150 schoolboys (from all kinds of homes scattered throughout every community of a county) who carried out instructions made good money, in spite of the most unfavorable year in the history of the county, folks naturally begin

to open their eyes and ask how it was done.

When the inquirers find to their surprise that the new process involved no laborious manure hauling; no tedious and pain-taking plantings of clover with nurse crops and turning under and, in fact, no doing of the dozen and two other things to which we have been brought up to believe in religiously but never practice; they get another jolt. This jolt is not hard enough, however, to make them lose consciousness long enough to forget to borrow tax money from 13 year old James, the baby boy, who cooperated with the Farm Bureau. When they find the secret to be so easily executed as to require nothing more than an order to the County Agent to give the hired man a sack of that white lightning that makes cotton in spite of rains and boll weevil they fall into the game; expressly without intention, but they get in just the same.

THEY got in this year to the tune of \$100,000 worth and indications are that this amount will be trebled in fertilizer purchases in





*The boys had regular club meetings at the school house with their club leader.*

Hinds County during the present planting season.

An extract from the minute book of the Hinds County Farm Bureau tells the story of how it was done:

"The Board of Directors of the Hinds County Farm Bureau in official session this the 9th of March, 1923, hereby endorsed the plan for Cotton Demonstrations to be carried out with 150 Club Boys of Hinds County during 1923, as outlined by the County Agent.

"We also hereby endorse the budget for financing this project as per copy attached to these minutes, and hereby pledge the resources of the Hinds County Farm Bureau to protect the Merchants Bank and Trust Company against loss in lending \$14.25 to each of 150 boys to be selected by the County Agent, in carrying out above said Cotton Club project to the extent of the attached summary budget.

"We appreciate the cooperation of the Merchants Bank and Trust Company in this project which we believe will be valuable to cotton farmers generally throughout the entire county, to the respective communities where organized Agricultural Clubs exist and the 150 individual Cotton Club Members in particular; and to save the Mer-

chants Bank and Trust Company the expense and trouble of handling each of these small accounts individually, we the Directors hereby agree to endorse a note covering the entire budget as herewith attached and to have the individual accounts with the respective boys handled by the Secretary of the Hinds County Farm Bureau.

"It is agreed that the individual notes of the 150 boys for \$14.25 each will be attached to this note and deposited at the Merchants Bank and Trust Company as added security for this loan; that these individual notes shall be collected by the Hinds County Farm Bureau from the sale of the individuals cotton and cotton seed, as outlined to us by the County Agent, and that the aggregate amount of the budget covered by our summary note will be paid over to the Merchants Bank and Trust Company upon maturity of our note, after the products of the Cotton Club Member have been sold and their individual notes collected.

"Our aggregate note shall bear eight per cent interest but this interest will be absorbed by the funds of the Hinds County Farm Bureau and no interest will be charged the indi- (turn to page 49)



# BOOKS

## that have helped me

By F. C. Smith

County Agent,  
Essex, N. Y.

SO much of the County Agents' time is spent in executive work,—in handling people, that early in my experience as a county agent I decided to study courses dealing with psychology, salesmanship, etc.

One of my first ventures was Dr. Blackford's course in character analysis. We study types of cattle and learn to note slight differences. In handling people we must follow similar methods. All big business men, successful men of affairs are shrewd, keen students of human nature. Anything which will help one to accurately "size a man up" at a glance is worth studying.

Other books along the same lines are: "Practical Lessons in Applied Psychology" by Napoleon Hill, published by G. B. Williams & Co., 149 W. Ohio St., Chicago, Ill.

Another very good book on psychology for a public speaker is, "The Crowd, a Study of the Popular Mind" by LeBon, published by T. Fisher Unwin, London.

"Vocational Psychology" by Hollingworth, published by D. P. Appleton & Co., New York—shows the value of and how to use psychology in employment.

"Psychology in Education," by Roank, published by the American Book Co., is a general course of psychology treating of fundamentals.

"Educational Resources of Village and Rural Communities" by Hart, Macmillan publishers, discusses rural problems fairly well.

(turn to page 40)

## Jeffisms

If I were asked to name the greatest thing in life, it would not be love, nor riches, nor power—but *sincerity*.



I know a guy so stingy he won't open his mouth for fear the wind will wear out the gold in his teeth.



The difference between success and failure is simply the difference between do and delay.



Until someone begins to charge real money for Pure Air, Sunshine and Good Water men will continue to buy substitutes in the form of medicine. We value a thing at what it costs.



Don't be disappointed to find a spider in the bunch of grapes. They're still grapes; and the spider can be removed.



The only one thing you can sell without actually giving it up: your experience.

Jeff



# ROBITIN

## —a Potent Plant Poison

*(This deadly poison is found in a common variety of tree.)*

By. *Albert A. Hansen*

Purdue University Agricultural Experiment Station

**E**ARLY last Spring a farmer in Huntington county, Indiana, hitched his team of horses to a black locust tree during the noon hour. The same team had been hitched to the same tree a number of times before without bad results but for some unexplainable reason the animals on this particular occasion took a notion to chew the bark. A few hours later both horses acted as though they were suffering from exaggerated cases of colic, and Dr. H. W. Demsey, the local veterinarian, was consulted. Paralysis set in and the animals died. Dr. Demsey diagnosed the trouble as black locust poisoning.

Dr. C. M. Mix, a well known Delaware County, Indiana, physician, operates one of the best farms in the county near Selma and he has stocked the place with high-grade cattle. A year ago two of his cows became extremely ill, the most prominent symptoms being paralysis of the hindquarters. Last summer, July 1 to be exact, one of his best cows developed trouble, exhibiting similar symptoms and died ten days later. A short time after this a heifer went down and

Dr. Mix was convinced that something was poisoning his animals. A survey of the farm for poisonous plants revealed the presence of a small grove of black locusts made up principally of large sprouts that had developed from a number of trees that were cut two years ago. The sprouts showed unmistakable evidence of having been grazed. The little locust grove was carefully fenced off and no more trouble has since developed.

I can cite numerous additional examples of locust poisoning in Indiana—the case of Glen Sheline, of Columbia City, for instance, who lost three cows after they had grazed heavily on young locust sprouts. Then there is Fred Reasoner, another Delaware County farmer, who lost a cow, the only animal in the herd that had access to black locust sprouts. She died after exhibiting symptoms similar to those that characterized the sick animals on Dr. Mix's place.

**A** PROMINENT Hoosier veterinarian, Dr. D. K. Buzzard, reports the loss of four horses and four cattle in his locality from locust

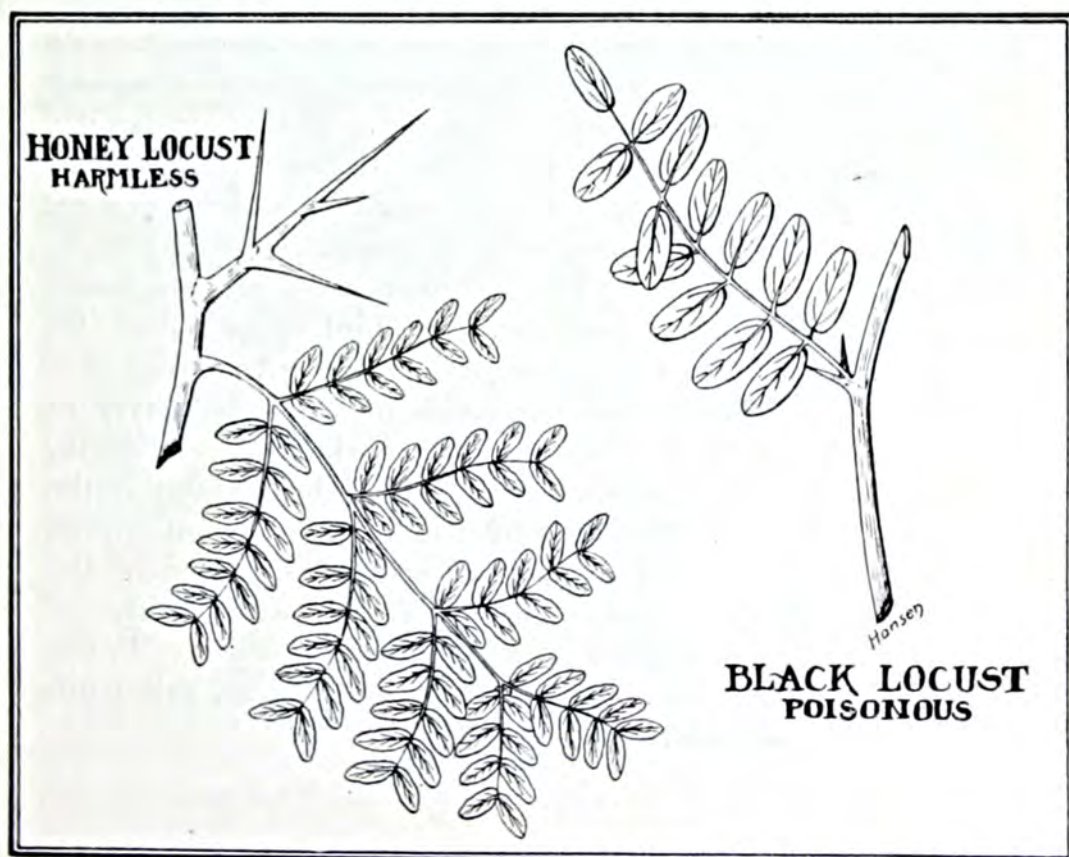


poisoning. As a result of his experience, Dr. Buzzard has given us the following symptoms. "The symptoms in horses are colicky pains with irregular pulse and purging, followed later by inaction of the bowels, nervous depression and collapse." He further stated that the symptoms in cattle are "colicky pains, constipation, purging followed by irregular pulse, nervous excitement and vertigo bordering on mania.

"There is no certain symptom or series of symptoms," continued Dr. Buzzard, "since locust poisoning may easily be mistaken for other types of poisoning, hence in diagnosis we must rely largely on the history of the case."

The exact conditions under which black locust poisoning may take place are not known. It is reasonable to suppose that there is considerable variation in the poisonous properties of locust, other-

wise the poisonous reputation of this common native tree would have been thoroughly established many years ago. I have also heard of cases where animals have grazed on black locust without harm. Some light is shed on the subject by the investigations of Tasaki and Tanaka, two Japanese scientists. They succeeded in isolating a powerful poison called robitin from the fresh bark of black locust. Horses were found to be far more susceptible to the poison than cattle since a toxic reaction was secured in a horse by the injection of 0.0015 of a gram of robitin while a cow required 0.02 of a gram before symptoms of poisoning were exhibited. Robitin must be mighty powerful stuff since the quantities noted are extremely minute. Since fresh bark contains approximately one per cent robitin, it isn't to be wondered at that the black locust is an unhealthful (turn to page 44)



(Note the huge, branched spines and small leaflets of the harmless honey locust in contrast with the small spines and larger leaflets of the poisonous black or common locust.



# Four Roads To Unity

By Dr. Frank Crane



VENTUALLY the clash between the laborer and the employer and even the clash between rival nations will be settled by the simple human process of getting acquainted. ¶The one cure for War, which is always a struggle between artificial divisions of mankind, whether these divisions are political, or social, is the realization of our common humanity. ¶Anybody acquainted with history knows very well that no great issue wherein vast numbers of men were engaged upon opposite sides has ever been settled by one side gaining an entire victory over the other. Permanent settlement has always come by the two sides reaching an understanding one with the other. ¶The means of getting acquainted and getting together are simple. It is not a complex problem. It is just a plain human problem which requires heart and purpose. There are four great means of getting together. ¶First, eating. This is the essence of holy communion. It means recognition of the humanities. There are hundreds of business concerns where the workers do not even know the name and face of the chairman of the company or anyone higher than the works manager. This is a calamity. Non-acquaintance always makes trouble. ¶Directors, presidents and other high bosses ought to eat regularly with their men. Nothing we can do is so humanizing as eating. ¶Second, work. Work together. Cut out all this talk of employer and employee. Emphasize the word "co-worker." ¶Third, play. Play together. Find some sort of amusement in which the laugh of a Judge Gary can mingle with the laugh of the coal heaver in his steel mills, even if it is only at a movie show. ¶Fourth, patriotism. March together. Keep step. Our country is the one unifying appeal. We may differ about our religious creeds and political parties but we are all common children of the Fatherland. Don't neglect to celebrate the national fetes in some way that shall emphasize our common humanity. We are brothers under the skin. And it is only in making this truth prominent that we shall solve our problems.



# The FARMER Is Finding His Way Out

By Arthur P. Chew

of U. S. Department of Agriculture

*Here are some encouraging facts for all who have faith in the farmer's ability to come back.*

IT might be supposed, from the noise made about various current plans for helping the farmer by legislation, that he has given up trying to help himself. Nothing could be more untrue. Though farmers do feel pretty generally that the causes of their present difficulties entitle them to some consideration by the government, they are not folding their hands and waiting for Congress or the Department of Agriculture or any other public agency to dig them out of the hole into which they have fallen as a result of the price-slump and the market shake-up of the last few years. They are digging themselves out.

They are achieving this result by altering their crop and livestock programs to suit changed marketing conditions, by broadening their enterprises so as to get a better seasonal distribution of labor and a fuller use of material resources, and by giving more atten-

tion to details of farm management. The trouble with American agriculture is that its different branches are out of proportion to one another. There is too much wheat and not enough flax, cotton, sugar, wool, mutton, and dairy cattle. Correcting this maladjustment is essentially the work of the farmers themselves, and they are going at the job with intelligence and energy.

EVIDENCE to back up this statement will be given you in a moment. Let us first see just how the readjustment problem presents itself to the farmer. Some people who should know better recommend mixed farming as a cure-all for the difficulties of agriculture. They imagine that when any crop ceases to show a profit, the farmers should immediately quit it, and spread themselves all over the agricultural map in their chase after the vanishing dollar. Practical



farmers know better. Mixed farming is not suited to all localities. Men have gone broke trying it out where the conditions demand specialization. The truth is that, while agriculture must be reorganized when it is not paying, the work cannot be done in a wholesale fashion, by hard and fast rules capable of being applied in all places in the same way.

**M**IXED farming is not always and everywhere the right thing, for the reason that the types of agriculture which prevail in this country have been developed by a natural process of adaptation to local conditions," says Dr. W. J. Spillman, a crop expert in the U. S. Department of Agriculture. "Where mixed farming is practised, it is probably adapted to local conditions. Where it is not practised, the chances are that conditions are not specially favorable to it.

"In many states crops are grown today in the same proportions as those that prevailed many decades ago. What does this mean? It clearly means that those crops, by experimentation and experience, have been found better fitted than any other crops for the localities in which they are grown. Take wheat in the Northwest, for example, or cotton in parts of the cotton belt. Although wheat, as a result of low prices, and cotton from the ravages of the boll weevil, may yield but a poor return for the labor and capital expended on their production, the farmers have to keep on growing them because there are no alternative major crops to which they can turn."

But while types of farming are fixed in the main by permanent conditions of soil, climate, and markets, they are not absolutely

rigid. Minor changes are always going on due to alterations in crops prices, in freight and labor costs, and in markets. Here lies the opportunity of the American farmer in the present situation. Conditions affecting agriculture have undergone more changes in the last few years than in any previous like period in our history. There is consequently a greater need than ever before for changes in types of farming. Wide-awake farmers fully realize this fact. They are studying the position and altering their plans to suit the circumstances, with the result that they are cutting losses and getting their farms back on a paying basis.

And now, to be specific, precisely what are the farmers doing? Well, in the first place they are cutting their wheat acreage prodigiously. There is a popular impression to the contrary, based on publicity given reports about the wheat surplus and on the fact that our wheat acreage in 1923 was still 24 per cent greater than before the war. As a matter of fact our wheat acreage from 1919 to 1923 was cut from 75,000,000 to 58,000,000 acres, and it will be cut more this year. It is being readjusted to meet the realities of the world situation with extraordinary speed.

**E**VEN in the spring wheat country, where crop readjustment is more difficult than anywhere else, wheat farmers are experimenting with other crops and are building up livestock enterprises. In the semi-arid regions of western North Dakota and eastern Montana, farmers have found that they can successfully grow corn on land which they have been accustomed to summer-fallow. As a result, they are growing (*turn to page 41*)





Corn on plot growing corn continuously



Corn on a five year rotation plot

¶These pictures, taken on the same farm show what can be done to improve a major crop by following a sound rotation plan.



# One Farmer's Experience with Muck Soil

By C. I. Lewis

*“This farmer discovered how to raise potatoes profitably.”*

CHARLES MATSON is a successful farmer. His farm is located near Hales Corners, Wis. He is a typical, modern farmer, determined and progressive, who believes there is a cause for every condition; and when that cause is located, the condition can be regulated and adjusted as may be required.

That's why the muck soil of Mr. Matson's farm was converted into highly fertile land producing excellent, marketable potatoes.

Mr. Matson did not have the false impression which has handicapped so many farmers in the past. He knew that marsh lands did not contain all the necessary plantfoods. This fact he convincingly established by actual tests and demonstrations.

The dark, mellow appearance of muck soils is deceiving and one can scarcely believe that these soils are in need of any further ingredient to add to their richness and fertility. The generally discouraging and disappointing results in quantity and quality of crops, however, force the acknowledgment that muck soil lacks some essential element in its plantfood. This was the serious problem confronting Mr. Matson when he planned to grow potatoes on a 30 acre field of muck soil.

Mr. Matson knew that the rather wasteful practice of using manure

on muck soils had not been found satisfactory. Manure does not contain a sufficient amount of potash and much of the nitrogen and phosphoric acid in the manure is not required by the plants, therefore, it is wasted. Since there is also a considerable amount of organic matter naturally in muck soil, the humus which the manure adds is likewise wasted.

The most prosperous farmers, Mr. Matson learned, apply the manure on the poorer up-land soils which really need the nitrogen, phosphoric acid and humus. The deficiency of potash, which is characteristic of all muck lands, is best supplied in a direct and economical way by the use of Sulfate of Potash or Muriate of Potash.

As the following description of the test which Mr. Matson undertook proves, muck land has greater possibilities when properly cultivated than almost any other kind of land.

NOW, although Mr. Matson was fairly certain that potash was the necessary element which would convert the muck soil into highly productive potato land, he did not accept what he had read and heard. Characteristic of the progressive farmer, he demanded actual demonstration of the value of potash be-



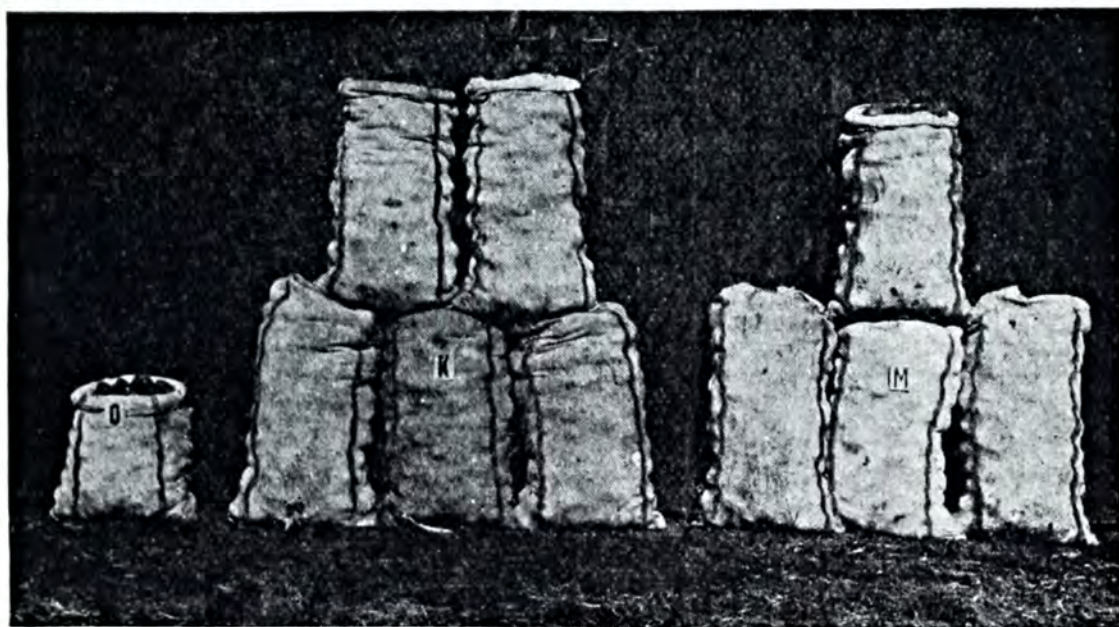
fore he would accept it as one of his farming practices. And this is how he did it:

He divided a part of his field which was uniform in soil and drainage into three equal-sized plats. These plats were laid off side by side, 175 feet long and 62 feet wide. All conditions were provided to make possible a fair and accurate comparison. With the same variety of potatoes, planted on the same day, and all plats receiving the same kind and amount of cultivation, this test was a fair, impartial and convincing demonstration.

Knowing that "raw" soil of this type was not favorable to growing

The effect of potash in improving the quality and yield was very marked in this potato test. The potatoes and the culls grown on the potash plat were all clean, healthy and free from scab. They were high-grade, well developed, floury in color, mealy and of exceptional cooking quality. The potatoes on Plat No. 3, where manure was applied, were sadly lacking in these qualities—they were watery, dark in color, tasteless and scabby. The scabbiness can usually be expected when stable manure is used on a potato field.

When Mr. Matson contrasted the results of his experiment he had no further doubt of the advantage



Comparative yields on Mr. Matson's farm

No Fertilizer	200 lbs. Sulfate of Potash	8 tons Fresh Manure
20 bus. Culls	160 bus. Marketable Potatoes	132 bus. Marketable Potatoes

potatoes, and that the use of manure generally resulted in inferior quality crops, although increasing the yield, the following test was made on the three plats:

No fertilizer was applied to Plat No. 1.

Fifty pounds of Sulfate of Potash was used on Plat No. 2. This is at the rate of 200 pounds per acre.

Fresh stable manure, about eight tons per acre, was spread on Plat No. 3. The contrast in effect on Plats No. 2 and No. 3 could thus be closely watched and compared.

which the use of potash gained in increase of yield and better quality.

Two hundred pounds of Sulfate of Potash per acre, costing only \$5.40, including freight, was directly responsible for a yield of 160 bushels of marketable potatoes and 52 bushels of culls. This yield was produced despite an extremely dry season. The latter part of August was hot and dry, and there was not sufficient moisture to mature the tubers. The accompanying table shows in detail the (turn to page 39)



# The Cooperative Idea

## PART TWO

By Charles J. Brand

Consulting Specialist in Marketing, U. S. Department of Agriculture

*In the first part of this article published last month Mr. Brand told of the birth and growth of the cooperative idea in Europe. In this concluding installment he discusses the development of this idea in the United States.*

THE Civil War, like the World War, left a train of ills in agriculture that produced deep suffering and discontent. This expressed itself in the so-called "Granger" movement. The National Grange or Patrons of Husbandry, still one of the greatest constructive forces in American agriculture, was established by Oliver Kelly of Georgetown, D. C., in 1867. In five years the organization had 500,000 members. It staked almost its all on the promotion of agricultural cooperation, particularly in the country we now call the "Middle West." It engaged in business operations on a wide scale, marketing farm products and buying groceries, lumber, coal, farm machinery, and many other things. Its growth was so sudden that leadership and managerial timber did not develop apace.

Ere long the cooperative structure it built up broke down and by 1885 it was scarcely more than a memory. Not more than a dozen enterprises are left today of the thousands that flourished briefly around 1872. Since that time the Grange has made for itself a secure

place in American farm life and is wisely fostering community cooperation along sound business lines.

Some of the recent experiences of the American Farm Bureau Federation suggest a thoughtful consideration of the Grange's early experience. The hard times of 1889 to 1895 in the Middle West brought to life the Farmers' Cooperative Grain Elevators movement, and since that period cooperative marketing has grown apace.

COOPERATIVE associations in the United States are now doing an annual business of probably \$1,500,000,000. In the last two years there has been a steady, and in some states, a spectacular increase in the number and scope of farmers' cooperative enterprises. Every state contains farms that sell more or less produce cooperatively. Reports to the U. S. Department of Agriculture indicate there are considerably more than 14,000 farmers' cooperative organizations in the country, which market from 10 to 15 per cent of the total produce sold by farmers.



It is conservative to estimate the total annual business of these farmers' buying and selling organizations at \$1,500,000,000. The billion dollar mark had been passed in 1919, according to the fourteenth census, and since then there has been a prodigious development of the cooperative movement. In 1919, according to the census figures, the farm value of commodities marketed and supplies purchased cooperatively was \$806,599,308. This total left out of account the value added by the operations of the cooperative, in assembling, grading, processing and packing. Even at the most modest reckoning, this added value would carry the shipping point value over the billion dollar mark. A census taken now would have to include many large organizations that were not in existence in 1919, such as the large cotton and tobacco cooperatives of the southern states whose membership totals exceed all previous records. It would have to include many new organizations dealing in fruit, peanuts, rice, eggs, poultry, and dairy products. Although exact figures are not available as to the amount of business done by these new organizations, it undoubtedly runs into the hundreds of millions.

**T**HE first state-wide cotton cooperative association was organized in Oklahoma in 1921. In two years it has grown to be one of the largest business organizations in the state. State-wide associations have since been formed in Mississippi, Texas, Arizona, North Carolina, Georgia, South Carolina, and Alabama. These, with the exception of Mississippi, combined in a national organization known as the American Cotton Growers' Exchange, with headquarters at Dallas, Tex., and with the general sales office at Atlanta, Ga. They have an aggregate membership of more than 175,000 cotton farmers,

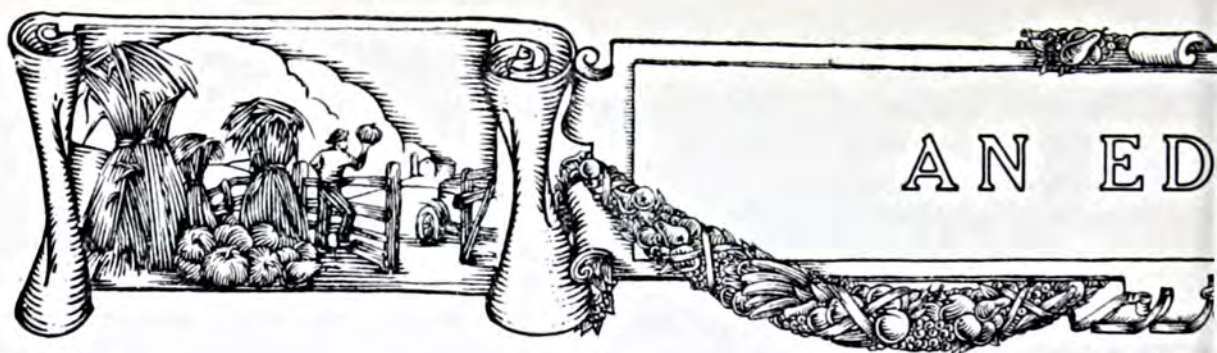
and in normal years should control a production of more than 2,500,000 bales.

**A**NOTHER big cooperative organization which has sprung into existence in the last two years is the Burley Tobacco Growers' Cooperative Association. This was formed in the fall of 1921 on a non-stock non-profit basis under the cooperative law of Kentucky. It has more than 70,000 members, and controls about 85 per cent of the burley tobacco grown in Kentucky, Indiana, Ohio, Tennessee, and West Virginia. From January 1 to May 1, 1922, it received about 120,000,000 pounds of tobacco, and sold about 70,000,000 pounds. Market conditions were favorable during this period and the Association was able to secure prices nearly double those received by the growers in 1921. Other associations recently organized to market tobacco cooperatively are: The Dark Tobacco Growers, Hopkinsville, Ky.; The Tobacco Growers' Cooperative Association, Raleigh, North Carolina; The Connecticut Valley Tobacco Association, Hartford, Conn.; and the Northern Wisconsin Cooperative Tobacco Pool.

It is noteworthy that the recent cooperative movement in the south has given rise to a number of associations whose membership exceeds the record formerly held by the California Fruit Growers' Exchange. This organization has a membership of around 10,500, compared with 70,000 in the Burley Tobacco Growers' Association and more than 60,000 each in the two other tobacco associations. The state cotton associations have memberships running well into five figures. That of Oklahoma was 34,000 in its first year, and has since been increased.

Studies of the cooperative movement have been made for the last ten years by the (*turn to page 44*)





**THE HIGH COST OF POLITICS** BETTER CROPS is not a forum for politics. Its pages are devoted to the useful and constructive purpose of supplying a medium to agricultural workers for an exchange of their ideas and experiences to the end that our farms may produce bigger and better crops. Therefore, it has no room for politics.

While politics may serve some useful aim, unfortunately out of a sea of talk, there arises the reef of "no action" to bar the way. The ship of progress is overwhelmed in this sea of talk, and the much needed relief arrives too late or never comes at all.

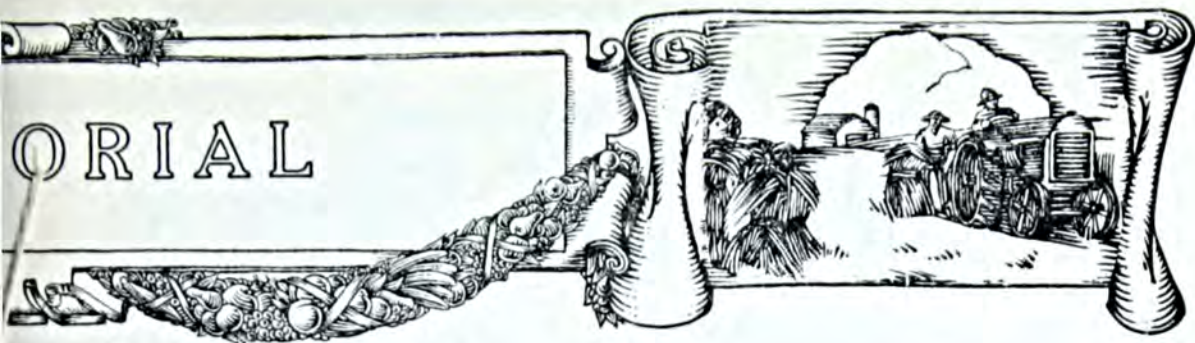
As this lack of action on agricultural problems and the tendency to play politics on the tax question adversely affect the farmer and his prospects for better crops, it is well within the province of BETTER CROPS to consider the question of the wasting of the funds of the public treasury, its resultant increase of taxes, the disinclination of politicians to inaugurate old fashioned economy and the possible and much needed relief in the form of tax reduction.

This is a non-political question, although it has been conducted as if it were of no concern to the tax payer except so far as it can be used as a piece of buncombe with which to catch his vote.

But, strange as it may appear to the so-called master minds controlling our destiny, it has more than an academic interest to the farmer and his prospects for better crops, and it has an interest beyond that of the mere figure on his income tax return. In these days of scientific cost accounting, there is forged into every plow share a certain per cent of an alloy called taxes; into the fabric that goes to make up his clothes there is woven the unpaid tax of some unnecessary tax exempt bonds of which the farmer never heard; every ton of high analysis fertilizer that he spreads upon his fields contains a certain number of pounds of the invisible filler called taxes and so these invisible items of tax directly increase costs, and tend to restrict the purchasing power of the farmer's dollar.

But all this has been told elsewhere, much better told, with figures to show "whither we are drifting." "Give us relief" is the cry. From those in a position to afford the relief, comes the promise of tax reduction, but the promise is fulfilled with catch-wordy speeches and further proposals





to spend the public's money through bills favoring some special interest at the expense of all others. Both speeches and proposals are dictated by the desire for re-election and nothing else. And from this high cost of vote-getting comes the high cost of living.

The readers of BETTER CROPS having come patiently thus far along this too well known path will ask the question "where do we go from here?" This is the question for which I have been waiting in order to offer the following suggestion.

Look up the record of every man or woman in your district who is or has ever made a bid for office and especially of those now holding office. Classify them under one or two headings, Savers—Spenders. In one column place those who consistently prevented the squandering of public funds, the creation of unnecessary offices and the passing of appropriations for special interests or doubtful necessities. In the other column, those who did just the opposite. Pay no attention to what was *said* by those in either column. Judge them only by what they *did*. If you find they loudly proclaimed the necessity of having all income taxed and no securities tax exempted, consider their talk as being sound, but find out if they made any active move toward subjecting themselves to taxation by removing from the statute the clause exempting officials from income tax. If you find any of them against special appropriations of public funds for the benefit of interests that do not give them votes, find out whether they have assisted in passing appropriations for other special interests which *can* or *did* give them votes. Just remember that whether it is for your special benefit or for the benefit of interests far away, *you pay the bill*. It is *your* money they are spending; it is *your tax bill* they are increasing.

When Mr. Office Seeker comes around in the old flivver to line you up for the next election, never mind the fine talk. Consult your form sheet and see if he is in the column marked "Savers." With this chart before you, do the obvious; eliminate the weeds for a better crop of men.

By reducing the high cost of politics, you can buy everything required to produce better crops generally. Reduce the high cost of public looting and the high cost of living will take care of itself.

President, Better Crops Publishing Co.



# OLIVER

## BETTER PREPARATION — BETTER CROPS

One acre of ground properly prepared for seeding is worth two acres that is deficient in available plant food and that is full of clods and air spaces.

Preparation of the ideal seed bed involves an application of the proper fertilizer, if the soil is deficient in any of the available plant foods, and in properly discing, plowing and firming the soil until it is uniform from surface to subsoil.

Before plowing use the disc on

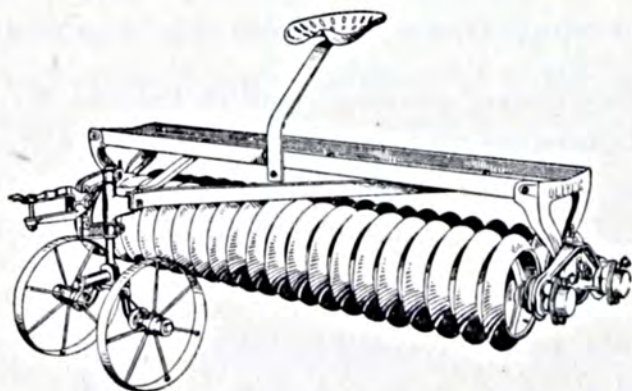
the surface, cutting all trash and mixing it with the surface soil. This will eliminate clods and air pockets. Next plow the land, using a combined rolling coultter and jointer, so that all weed seeds and eggs and larvae of insects may be laid on the bottom of the furrow. Then, as a final preparation, use disc and pulverizer in pulverizing and firming the soil.

The result will be a seed bed that will be the greatest asset to the farm and to the farmer.

OLIVER MANUFACTURES THE CORRECT  
IMPLEMENT FOR EACH PHASE OF  
SEED BED PREPARATION

## OLIVER CHILLED PLOW WORKS

*Plowmakers for the World*  
South Bend, Indiana







## The Probable Trend of Farm Prices

The usual discussion of this subject is a mass of glittering generalities and unsupported assertions. It is refreshing, therefore, to have an economist of Dr. Warren's ability and equipment sweep aside the superficialities and deal directly with the realities of the problem.

After a brief discussion of some of the more important factors affecting the price of farm products, Dr. Warren gives his opinion that "the general tendency of prices for the next ten to fifteen years will be downward and that prices will closely approach or possibly go below the pre-war basis."

"If this should be correct," continues Dr. Warren, "the status of agriculture can be forecast with a high degree of accuracy." He then proceeds to summarize nineteen of the more important results that would follow. Space does not permit us to quote this entire section which is extremely interesting but we present some of the salient points which should be of especial interest to the readers of BETTER CROPS.

"Great care will need to be exercised in buying anything that is much above pre-war prices unless it will pay for itself quickly."

"Those who are engaged in personal industries such as farming will work harder and increase the output per worker because no matter how low the prices, the more the individual has to sell the more he gets. The farmer is a 'piece worker.'"

"Prices paid to farmers will be

low relative to retail prices. These differences will probably not average so extreme as at present. The advantages of raising home food and feed will be greater than normal, as will the advantages for those farmers who can cut around some of the channels of trade by retailing, reaching wholesale dealers and the like."

"Cooperative associations will be subjected to severe strain both because of business conditions and because of general farm discontent. They should be careful about reserves."

*An Attempt to Forecast the Future Trend of Farm Prices by G. F. Warren, Cornell University, Ithaca, New York. Reprinted from the Journal of Farm Economics, January, 1924.*

B. H. P.

## How Bankers Are Aiding Farmers

In *Our World*<sup>1</sup> for March, 1924, Walter W. Head, President of the American Bankers' Association, gives an excellent analysis of the situation from the standpoint of the financier: he indicates ultimate remedies and, moreover, shows that they are believed to remedy the disease,—not merely to relieve symptoms, and asserts that they will also tend to prevent a return of the trouble. Speaking of the Agricultural Commission of the Association—under the chairmanship of Burton Smith of Wisconsin, he says:

"This commission has twelve federal reserve districts.

"The commission is conducting a series of conferences throughout



the country, at which bankers, farmers and representatives of the Agricultural Colleges are being brought together, to the end that definite programs for specific co-operation may be developed. The Commission is studying and analyzing economic problems pertaining to the farm for joint benefit of farmers and bankers and, at the present time, it is lending its support to legislation pending in the Federal Congress for increased appropriations for agricultural experiment stations. . . . Agriculture, as I have said, is fundamental. Agriculture is a business subject to the same forces, subject to the same principles as any other business . . . we act accordingly, agriculture will be placed upon a foundation sufficiently firm and strong to endure all adversity."

<sup>1</sup>*Our World, 9 East 37th Street, New York City. Single Copy, \$0.25.*

A. L. M.

## Better Flaxseed Production

An excellent bulletin on this crop has recently been issued by the North Dakota Experiment Station. It discusses the importance of using good flaxseed, varieties resistant to wilt, where best to grow flax and flaxseed production and consumption. It is brief, well-written and well illustrated. The increasing importance of this crop and the fact that, for the past two years, it was one of the few grain crops that was generally profitable, give this bulletin more than usual interest and significance.—*Better Flaxseed Production by T. F. Stoa, North Dakota Agricultural College, Circular 23, February, 1924.*

B. H. P.

## Making Sure with Fertilizer

Maurice Lux, of the well-known corn-growing family of that name,

living at Shelbyville, Indiana, was awarded the junior championship at the 1923 International Hay and Grain Show, for his exhibit of 10 ears of corn grown and selected by himself.

Commenting on his methods, he made this statement, "As I was in school, I had nothing to do with preparing the seedbed, but the ground was clover sod. This is a mighty good place to grow corn, because of the fertility; but I further made sure of a good yield by using 75 pounds of commercial fertilizer. This tested 6 per cent potash and 12 per cent phosphoric acid."

Maurice grew 101.5 bushels of corn on his contest acre, at a cost of 36 cents a bushel.



## Increasing Fertilizer Applications

According to Dean R. L. Watts, Pennsylvania State College, there is a distinct tendency among the most successful market gardeners to increase their applications of fertilizer to the various crops. This is even true of tomatoes.

There can, of course, be only one reason for this. The growers feel that by stepping up their fertilizer applications, they can produce sufficient crop increases to cover the extra expenditure and to provide additional profits.

There is, doubtless, a point beyond which, it will not pay to increase the fertilizer charge for any crop. Just where that point lies may best be determined perhaps, by the growers themselves. Increased attention to all details connected with the growing of the crop will have much to do with insuring a proper return for extra money laid out for fertilizer.





(NOTE: Name given is of county unless otherwise noted.)

*I thought our readers would be interested in seeing the projects of County Agents for the coming spring and summer, so I invited them to outline their plans. Here is the first batch of answers. It's mighty interesting, too.*

Purebred sire campaign; clean-up campaign against Tuberculosis in cattle. Forage crops demonstrations; soy bean projects both as a legume and as a hay and grain crop. Fertilizer demonstrations with corn, alfalfa and wheat. Home project for farm women (Sewing). One hundred and fifty boys and girls in club and at club camp. Educational campaign on cooperative marketing.—*J. R. Meeks, Parke, Ind.*

We are planning to do considerable work with poultrymen this year. Our program calls for the construction of at least five new poultry houses (semi-monitor type recommended by the extension service for Nevada conditions); establish five accredited flocks, five culling and feeding demonstrations. We are starting seed certification work this year. Beef cattle grading demonstrations, potato improvement, cereal and forage variety tests and silage crop tests are other projects we will work on.—*Thomas Buckman, Washoe, Nev.*

Have organized a 40 acre corn contest. Have organized a Holstein Breeders Association with all members testing. Have for slogan "Sweet Clover or Alfalfa on every farm in Adams County." To have at least four sources of income on every farm. (Grain, cash crop) (Cows, poultry and garden, living crop) (Hogs and corn, mortgage lifting crop) (Forage for man and beast, saving crop).—*P. J. Gwyther, Adams, N. D.*

Orchard spraying demonstrations. Soil acidity testing and liming. Baby Beef Calf Club. Pure Bred Gilt Club. Five months Clothing Training Schools. Three day millinery training school. Hog Cholera Vaccination School. Poultry Culling and Selection Dem. Cooperative Wool Marketing.—*F. C. Kingman, Taylor, Iowa.*

Organize our fourth C. T. A. and add two additional blocks to the Bull Ass'n. Excavate 1,000 yds. of Marl to be ready for use in spring of 1925. Have 50 acres of certified seed corn. One check acre of alfalfa to illustrate the value of good seed and show the results of imported seed. Five stone blasting demonstrations using the war salvage explosive "Sodatol." Two pruning demonstrations.—*C. L. Bolander, Livingston, Mich.*

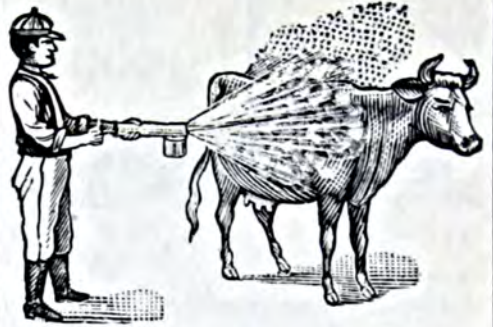
Work like —.—*R. F. Freeman, Ramsey, Minn.*

Replace as large a per cent as possible of the oat crop with soybeans for hay, plant a large per cent of our corn acreage with improved seed, use acid phosphate with corn as a demonstration, feed balanced rations on many farms to produce a ton of pork in 180 days, from one sow. We are in the clover and prosperity contest to win and get a rational proportion of our cultivated lands in legume crops. Boys and girls feeding 24 calves for the Northwest district show. We won last year on Herefords.—*Ross Nichols, Plattsburg, Mo.*



Trying to improve the crops by the livestock method. Commercial fertilizers haven't found their way in this part of the state to date, but with the decrease in soil fertility they are sure to come. Dairying seems to be the biggest item with our farmers. The south half of the county is going in for Holsteins. Have a bull association with four of the best bulls in Kansas. Just lined up a cow testing association with twenty-eight members. Always assisting the dairy men with feeding and breeding problems.—*John V. Hepler, Washington, Kansas.*

Double our acreage of Soy Beans. Double our acreage of Alfalfa. Triple our acreage of Sweet Clover. Organize a Dairy Calf Club. Form at least one Cooperative Bull Association. Increase our milk cow population.—*Roy E. Gwin, Cherokee, Kansas.*



## HAMMOND'S Cattle Comfort

**Keeps flies off.  
Makes cows more  
comfortable — they  
give more milk.**

*Write for Information*

**HAMMOND'S PAINT &  
SLUG SHOTWORKS**

**Beacon, N. Y.**

# Hammond's Slug Shot

*Used from Ocean to Ocean*



**A** light, composite, fine powder, easily distributed either by duster, bellows, or in water by spraying. Thoroughly reliable in killing Currant Worms, Potato Bugs, Cabbage Worms, Lice Slugs, Sow Bugs, etc., and it is also strongly impregnated with fungicides. Put up in Popular Packages at Popular Prices.

**Sold by Seed Dealers and Merchants.**

*Send for Pamphlet Worth Having*  
**HAMMOND'S PAINT & SLUG SHOTWORKS**  
**Beacon, N. Y.**



# One Farmer's Experience with Muck Soil

(From page 29)

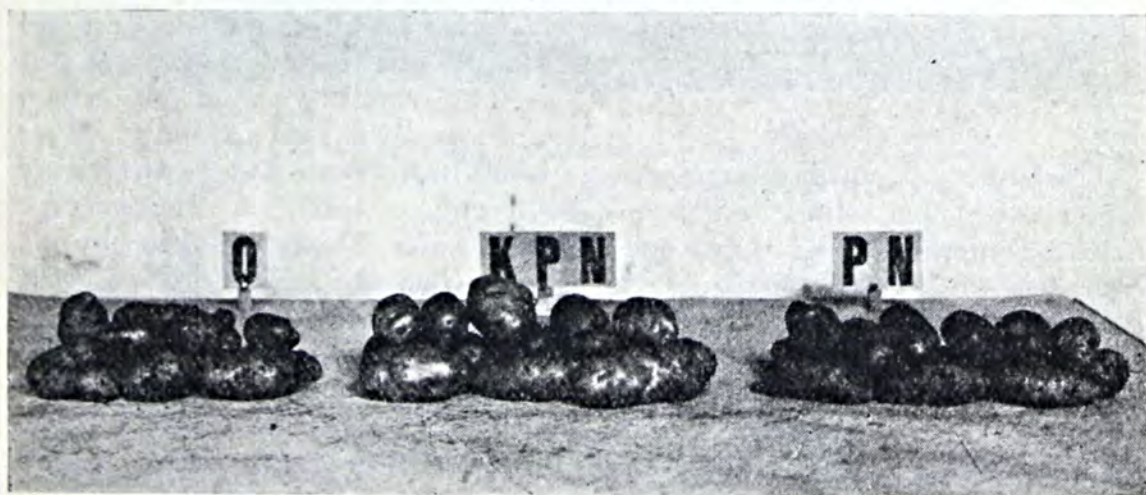
## FINANCIAL STATEMENT

Fertilizers Applied and Rate Per Acre	Yield Per Acre in Bushels and the Gross Value of Crop				Value of Increased Yield over that of Unfertilized Plat for Total Crop	Value of Fertilizer Per Acre at Rate Applied	Net Returns from Crop after Deducting Value of Fertilizer	Net Return for Each Dollar Spent for Fertilizing
	Marketable		Culls					
	Yield in Bushels	Value at 50c Per Bushel	Yield in Bushels	Value at 15c Per Bushel				
Plat 1. No Fertilizer.....	0	\$ .00	24	\$3.60	.....	.....	.....	.....
Plat 2. 200 pounds Sulfate of Potash...	160	\$80.00	52	\$7.80	\$84.20	\$5.40	\$78.80	\$14.59
Plat 3. Fresh Stable Manure, 8 tons....	132	\$66.00	40	\$6.00	\$68.40	\$17.44*	\$50.96	\$2.92

\*NOTE.—Chemical analysis shows that a ton of average fresh stable manure contains approximately 10 pounds of Nitrogen, 5 pounds Phosphoric Acid, and 10 pounds of Potash. Conservative commercial estimates of the value of such manure based on the plantfood elements alone gives a total value of \$2.18 per ton. This valuation, however, does not represent the full agricultural value of the manure when applied to soils that are deficient in humus.

results of the test and leaves no doubt as to the proper, economical treatment of muck soil for potatoes. A study of the yields in both quantity and quality of the tubers from the three separate plats very plainly answered the question of soil treatment for Mr. Matson.

When Mr. Matson compared Plat No. 1 where no fertilizer had been used, and Plat No. 2 where potash was applied, he saw where a decided loss on one plat had been turned into a handsome profit on the other. Twenty-four bushels of inferior quality culls, which did not



No Fertilizer

Complete Fertilizer  
Including Potash

Incomplete Fertilizer  
Without Potash

Note how sulfate of potash improved the size and quality of these potatoes raised on muck soil in Pawpaw, Michigan.



even justify the digging resulted from Plat No. 1, in comparison with a net profit of \$78.80 from Plat No. 2 on which \$5.40 worth of potash was used. The business man who can make \$14.59 from each dollar he invests, has a profitable investment in his possession. Mr. Matson made profits out of his much land by the use of potash.

Mr. Matson's theories in favor of potash were further strengthened when Plats No. 2 and 3 were contrasted, which revealed the comparative value of potash and of stable manure upon muck soil. Eight tons per acre of manure were used on Plat No. 3. The estimated value of this manure is \$17.44. (The foot-note on the table explains how this estimate is made.) This application of manure naturally showed up favorably in contrast with the unfertilized part of the field, designated as Plat No. 1, but it quickly loses its standing when compared with Plat No. 2. This latter plat, for each dollar of potash applied, gave a net return of \$14.59, while each dollar's worth of manure applied gave a net return of only \$2.92.

After studying the results of this demonstration, one can well understand Mr. Matson's enthusiasm when he talks of and strongly advocates the use of potash on muck soils where potatoes are to be grown.



### *Books That Have Helped Me*

*(From page 21)*

The County Agent is a busy man. He must learn short cuts,—efficiency methods,—a very good course is the "Purinton Course in Personal Efficiency" by the Independent Corporation, New York.

But with all the multitudinous duties a County Agent needs to look to the future and refresh his mind. "The Farm Bureau Movement" by Kile—Macmillan Co., the "Community Leadership" by L. W. Wilson, and the new book by Burritt, "The County Agent and

the Farm Bureau," give him a grasp of the fundamentals on which the Farm Bureau rests.

Undoubtedly marketing, transportation and credit will occupy an important place in the agriculture of tomorrow. The new book by Steen, "Cooperative Marketing" published by the A. F. B. F. is the best. Ivan Wright has an excellent new book discussing the credit problem very thoroly, "Bank Credit and Agriculture," Lightner Publishing Corp., Chicago.

The question of business takes considerable time, but one's mind will be fresher from reading books that give an inspiration, a new zest to life. Douglas Fairbanks, "Laugh and Live" is such a one. Roosevelt's Autobiography is another. "The Making of an American" by Riis, "The Religion of Main Street" by Dr. Grant are also good.

These books have helped me during the past three or more years in getting a clear grasp of the present agricultural problems; in preventing me from becoming a grind; and in helping me to be a better Agent and a happier man.



### *He Took Up Farming*

*(From page 7)*

At the same time not all of the cauliflower that could have been harvested was harvested. This is entirely due to the fact that the son was new to the work and a streak of hot weather came on which developed the heads rapidly. Over 1,000 heads were lost as they were not cut on time. As the average price was \$3 per dozen heads, approximately \$250 additional were lost.

The foliage from the field was fed to cows. No records were kept of the value of this foliage but the boy stated frankly that he would place the value at not less than \$50. This should be added to profits above cost.

Show the boy a "profit in farming and he will stick."



# The Farmer Is Finding His Way Out

(Continued from page 26)

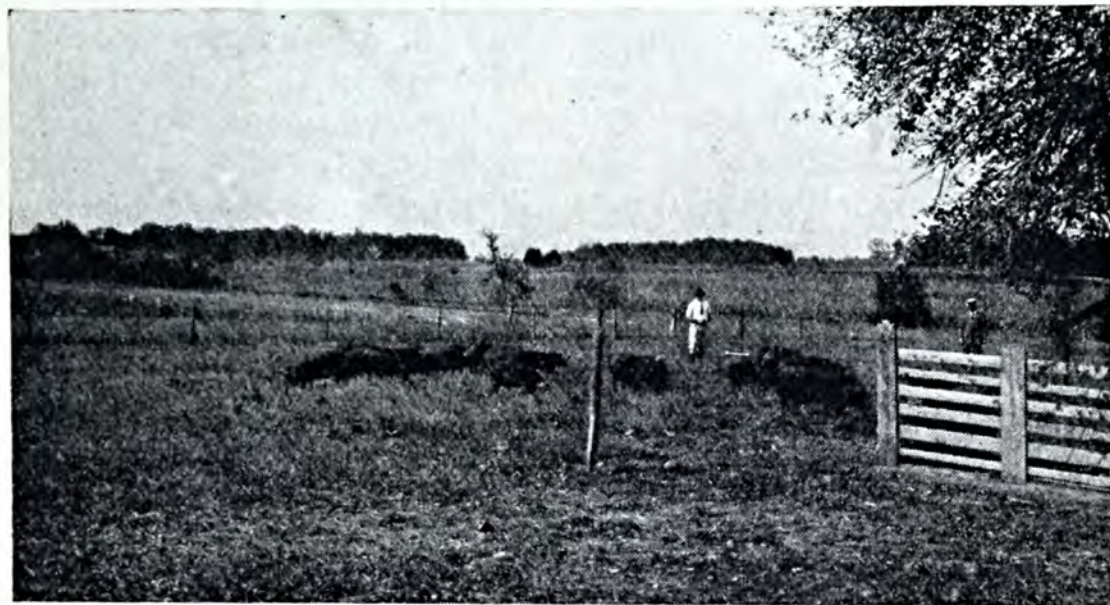
feed and raising hogs and cattle, instead of sticking to a one-crop system.

In North Dakota there is a well marked trend toward diversification. No state in the union is more misunderstood than North Dakota. Its farmers are supposed to be obstinately committed to one-crop farming—to mining the land for wheat. True, there is no major crop which could be sown in place of wheat in North Dakota. But the state can raise livestock and the farmers know it.

Statistical proof is available. A movement away from exclusive wheat growing had started in North

resumed. Wheat acreage is once more declining, corn acreage is increased, and there is a steady gain in the number of hogs and cattle on the farms.

Thousands of farmers in North Dakota and in the other spring wheat states are turning part of their wheat acreage into flax. At present prices, flax is a highly attractive substitute crop. High cash returns from flax in 1922, contrasted with low wheat returns showed farmers they had been overlooking an opportunity, and as a result the flax acreage in 1923 was 2,300,000 acres compared with



*A scene in North Carolina which indicates that a diversified programme of farming is gaining in popularity. The hogs are grazing a pasture of soy beans grown with corn.*

Dakota before the war. Wheat growing was declining and livestock raising was on the up-grade. Farmers were growing feed and forage crops more than formerly. The war temporarily stopped this process. From 1917 to 1919 beef cattle and hogs in the state decreased, milk cows just held their own, and corn acreage decreased. But the movement has now been

1,300,000 acres in the previous year. Yet the increased flax production did not hurt the flax market. Flax rose from \$1.88 a bushel in 1922 to \$2.12 in 1923. It is possible to increase the flax acreage still more without danger of breaking the price, because we import half our flax, and there is a duty on it of 40 cents a bushel.

Sheep raising is helping thou-



sands of farmers to make a profitable readjustment of their enterprises. Two thirds of our sheep are still raised on the range, but the farm proportion is rapidly growing owing to several factors. One, of course, is the high price of sheep and wool. Sheep rose last year from \$4.80 to \$7.50 a head in average farm price for the entire country; wool rose from 29 cents to 38 cents at the farm. Another thing that is helping the farmer who raises sheep in the middlewest and the eastern states is his proximity to markets. Since lamb and mutton came to take a dominating place in the sheep industry, quick transportation to consuming markets has given the farmer-sheep man an advantage over the range operator.

All the crop readjustments farmers are making cannot be mentioned in a short article. It is possible to cite only a few. In prosperous New England, where farmers have specialized in dairying and 70 per cent of the land is in hay, there is a drift toward raising garden truck, poultry, and feed grains. A generation ago New England was driven out of small grain production by the competition of the west. But high freight rates and land values are now weakening the competitive positions of the western feed-raiser. It is once more profitable for the eastern farmer at least to grow feed for his stock, and he is beginning to do so.

In some parts of the cotton belt, there has been over-specialization in cotton. Farmers are breaking away from this system, at least to the extent of growing fruits and vegetables for their own use. On the other hand, along the northern edge of the cotton belt agriculture has been too much

diversified. Farmers there have a choice of so many enterprises that some of them have tried to grow corn, wheat, hay, cotton and tobacco at the same time. They are tending now to concentrate on one or two crops. In the tobacco districts there is a tendency to grow some cotton, since tobacco production is possibly overdone. In the south, where climatic conditions make the fight against the boll weevil exceptionally hard, farmers are turning to the production of farm maintenance crops, velvet beans, peanuts, other forage crops, and pasture.

The peanut crop is coming to be the basis of an important livestock industry. Moreover, peanut oil can be substituted for cocoanut oil in all of its uses. As we import large quantities of cocoanut oil, soy-bean oil, peanut oil and other vegetable oils, the peanut growers, in regions where cotton will no longer thrive, have an opportunity to serve industry as well as agriculture. In the corn belt the soy-bean crop is coming into favor at a rapid rate. In the same territory wheat acreage is being put into corn, because corn at last year's prices was worth just about twice as much per acre as wheat.

This does not by any means exhaust the list of the changes farmers are making in their production plans to conform with the altered market situation brought about by the war and its consequences. They suffice to show, however, that the agricultural situation is undergoing steady and thoroughgoing readjustment, not by spectacular methods involving big changes in major crops, but in a thousand minor ways whose aggregate effect, in the long run, is bound to be enormous.





## Good Work!

Dear Jeff:

Marshall County is the Home of the Jersey Cow in Tennessee, in other words the "Jersey Isles of the South." The government found only 23 tubercular cattle in an area test covering the county and all these were found on one farm, having contracted the disease from a purchased bull. Since that time Marshall County has had almost constantly buyers from other states within its borders. In one week last year eight cars of Dairy cattle were shipped out to other states.

The county now has two co-operative creameries, one of which has been running about ten years and is now making about 250,000 lbs. of butter annually and of a quality that sells in the most discriminating markets of the United States grading better than 92 per cent. Last year we succeeded in getting another Cooperative Creamery which cost around \$17,000 and in seven and a half months time manufactured 240,000 lbs. of butter and paid off \$5,000.00 of the cost in addition to satisfying its customers with the price received for butterfat. This second creamery has just installed a cooperative feed grinder which crushes as high as 15 wagon loads of corn per day for the patrons as well as loads of bean hay and other rough feeds.

This year we have organized a Farm Bureau with 160 members paying \$10.00 per year per member for a period of five years and expect this organization to reach at least 200 members during the year. Through the Farm Bureau we have pooled orders and bought 1,220

bushels of Soy Bean seed and 110 tons of fertilizer and we expect to increase these orders materially as spring approaches.

Last year we introduced cotton as a cash crop in the county getting 1,200 acres of the crop. This acreage will probably be doubled this year and ginning facilities for the crop will be installed. This year we are pushing soy beans as a hay and cash crop. We are introducing the Laredo soy bean in the county and will have about 600 acres of the crop grown, but will have to write our Laredo bean story for another issue.

We have just started cooperative shipping of eggs through one of our creameries.

We will hold cooperative lamb and wool pools. We expect to carry practically all our demonstration work on in eight organized community centers where monthly meetings are held to discuss these demonstrations and other community plans. Only last week one of these community centers had 300 present at a social program at which an Old Fiddlers Contest was held. Fifteen fiddlers competed. There were also banjo pickers, guitar, harmonica and ukulele players on the job. These Community Organizations plan the demonstration work which they desire to have carried on in their communities.

Finally we might add we are growing by cooperation and that our plans are embraced in that word.

*W. A. Haynes, County Agent*  
Mar. 17, 1924. *Lewisburg, Tenn.*



## The Cooperative Idea

(From page 31)

Department of Agriculture. It is now engaged in a survey which is expected to make these studies more valuable. It is preparing a list of all the cooperative associations concerning which particulars can be obtained, and is classifying them according to whether they are capital stock or non-stock organizations; whether all members are producers; whether stock or patronage dividends are paid; and whether they are buying or selling organizations. The data are as yet incomplete, but some of the leading facts of the situation may be given.

There are, it appears, about 5,000 cooperative grain elevators in the country, with more than 600,000 members. Most of them are in the north central grain-growing states. Grain growers in Idaho, Montana, North Dakota, Oklahoma, Texas, and Washington have formed state-wide marketing associations. Attempts to federate them are being made. One of the most successful of these agencies is the Northwest Wheat Growers Associated, of Portland, Oregon, which in 1921 marketed 15,000,000 bushels of wheat for farmers in Washington, Oregon, Idaho, and Montana. There are said to be more than 4,000 livestock shipping associations in the United States, with about 1,000,000 members. Cooperative marketing of dairy products is well established in Minnesota, Wisconsin, New York, Pennsylvania, Ohio, Illinois, California, and Maine. Minnesota leads in cooperative marketing of dairy products. In Wisconsin a single cooperative association receives cheese from 200 factories, and does an annual business of more than \$4,000,000.

Rapid progress is being made in the cooperative marketing of fruit. In this branch of cooperation, the Pacific Coast states lead. One of

the largest fruit shipping association in the country is the California Fruit Growers' Exchange, of Los Angeles. Its receipts for fruit shipments in the last twenty years have been approximately \$550,000,000. In 1920 it handled 73 per cent of the citrus fruit crop of the state. The success of the Pacific Coast cooperatives had led to the formation of fruit cooperative marketing organizations in Florida, Georgia, Illinois, Michigan, Missouri, and New York.



## Robitin

(from page 23)

diet for cattle and horses. By the way, the reaction secured by the injection of the robitin was similar to that produced by eating the fresh bark.

The chances are that the sprouts and new growth are the dangerous parts of black locust. The bark of mature trees is pretty tough and is not only difficult for animals to strip off but probably contains less of the dangerous glucoside.

Black locust is also poisonous to the human animal. The classic example of this happened a number of years ago when thirty-two boys from the Brooklyn Orphan Asylum took a hike through the country, chewed locust bark and the whole outfit became seriously ill, although all recovered. The outstanding symptoms were dilated pupils, feeble pulse, severe vomiting and death-like palor.

Black locust, the dangerous plant, should not be confused with honey locust, a harmless species. Honey locust, in spite of its alluring name, is equipped with huge, vicious-looking spines while the common black locust has smaller spines and larger leaflets.



## Food from Sunflowers

(From page 18)

in 1921 while sunflower silage commanded \$5.00 per ton.

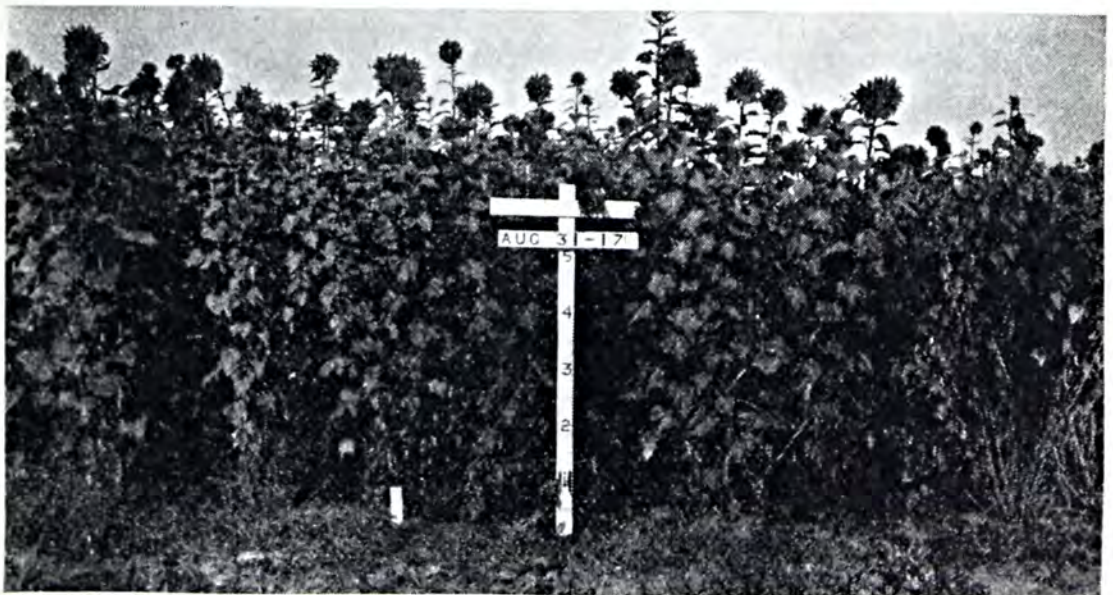
Just across the Nevada line in Lassen County, California, under similar climatic and soil conditions excellent results have been obtained with sunflowers. A. F. Babcock in Big Valley, at an altitude of 4,000 feet, secured a yield of fifty-four tons of sunflower silage in 1922. Another portion of the field yielded forty tons of silage per acre which is certainly an enormous yield and makes it by far the cheapest dairy feed which can be grown in the locality although alfalfa also grows here luxuriantly.

The Washington Experiment Station in 1919 obtained a yield of thirty-six tons of sunflowers for the silage as compared with fifteen tons of corn. At Sand Point, Idaho, where the altitude is too high for successful corn production, yields of twenty tons of sunflower silage per acre have been obtained by farmers of that region.

In Wyoming, Marion P. Wheeler grew the Mammoth White Sunflower in 1918 and 1919 and tried to feed them in the dry condition to stock but with very little success.

In 1920, 1921 and 1922 he raised sunflowers for silage purposes. The sunflowers were mixed in the silo with silage corn in about equal parts. The sunflowers were cut just as the seeds were ripe enough to begin falling. The ensilage produced was fed to dairy cows and they ate it clean. He reported that the sunflowers yielded twice as much per acre as corn and when properly put in the silo the stock ate it readily and clean. When the cows were fed too much, some of the ensilage mixture was left but it was always the corn leaves which were left and not the sunflower leaves. He believes it to be a more profitable feed to raise for ensilage than corn under his conditions in Wyoming. The Experimental farms in Wyoming have fed straight sunflower silage and straight corn silage and found that the dairy cows do one or two per cent better on corn silage than they did on straight sunflower silage.

In Alberta, Canada, in 1922 it has been estimated that over one thousand farmers grew sunflowers for silage purposes and over ten thousand acres of sunflowers were grown.



*This gives some idea of the large yields that can be secured from sunflowers.*



The harvesting of the sunflower is carried on in the same manner as corn harvesting for silage. The stalks are cut either by hand or by a row binder and then bound. The best time to harvest is when sixty per cent of the heads are in bloom, as the flow of juice from the ensilage plant is less at that time.

The sunflower ensilage is dark brown in color, and when properly harvested resembles corn silage in texture. The odor is resinous and sour which is its chief objection. Some experiments whereby the silage has been treated with sour buttermilk are reported as producing a sweet smelling silage. This practice, however, is probably not of much practical value as the palatability is not improved in the least. Some reports indicate that sunflower silage is not at first relished by cows as readily as corn silage, further, that more cows "go off feed" when kept on a ration of sunflower silage. Other reports indicate that it is equally as palatable as corn silage. The results practically all agree that the best results are obtained when corn and sunflower silage are mixed. In Canada excellent results have been obtained when oat straw is added to the silo with the sunflowers in the ratio of one-fourth oat straw to three-fourths of sunflowers. All reports agree that corn silage alone is slightly better than sunflower silage alone.

Chemical tests have shown that sunflower silage contains a slightly higher per cent of fat and protein than corn silage but a lower carbohydrate content. The digestibility of the sunflower silage is not so good as that of corn silage.

The Washington Station found that sunflower silage contained 12.6 pounds of total digestible nutrients per hundred pounds, while the Montana Station found 12.2 pounds per hundred pounds. Well matured corn silage should contain about 17.7 pounds of total digestible nutrients per hundred pounds. The

Montana Station also reported that from 283 to 375 pounds of sunflower silage was equal to one hundred pounds of alfalfa hay. On the same basis it is probable that 320 pounds of corn silage would equal one hundred pounds of alfalfa hay.

There is thus considerable discrepancy in the opinions of experimentors regarding the feeding value of sunflower silage. This is undoubtedly due in a large measure to varying results which have been obtained in getting a palatable silage from sunflowers. This was decidedly the case at the Washington, Nevada, West Virginia and Wisconsin Colleges. The Pennsylvania and Michigan stations also reported that sunflower silage was less valuable than good corn silage. The results so far reported indicate that sunflower silage is probably ninety per cent as valuable as corn silage. In regions where corn does not properly mature for silage this is an important consideration.

It is quite evident that the sunflowers will produce big yields under soil and climatic conditions where corn is not well adapted. Sunflowers as a silage crop probably will never replace corn as a silage crop where climatic conditions are suited for corn production, but there are large areas in high altitudes and northern latitudes where corn will not thrive and where sunflowers will produce abundantly. The excellent yields under these conditions more than offset the slight inferiority of the sunflower silage. The future may also show that the admixture of the sunflowers with other material such as oat straw will eliminate this slight inferiority in the ensilage from sunflowers. Sunflower silage is destined to furnish the farmer in the future with an excellent source of cheap, succulent feed for the production of milk, butter and beef, and thus increase the production of human food at a greater profit to the producer.



# Putting Cabbage Back in the Garden

(From page 15)



Here is the disease—cabbage yellows—whose eradication is explained in this article.

their cabbage crops. During this time one of their number, Jacob Goepper, has developed a yellows resistant variety of his own. While the other gardeners have been struggling to get a crop he has been raising good cabbage every year. His neighbors soon came to realize that there was something different about Goepper's cabbage and have used it whenever they could get the seed, which was not very often. The vegetable growers association at Indianapolis has taken hold of the matter and have arranged for a

considerable quantity of this seed to be raised.

The county agents like this project because the results are certain and the interest in cabbage is very general. It gives them a chance to be of service not only to farmers but also to the city gardeners as well. It does not require any elaborate preparation nor does it entail any change in common practices of the grower. He simply has to get some of the true yellows resistant seed.

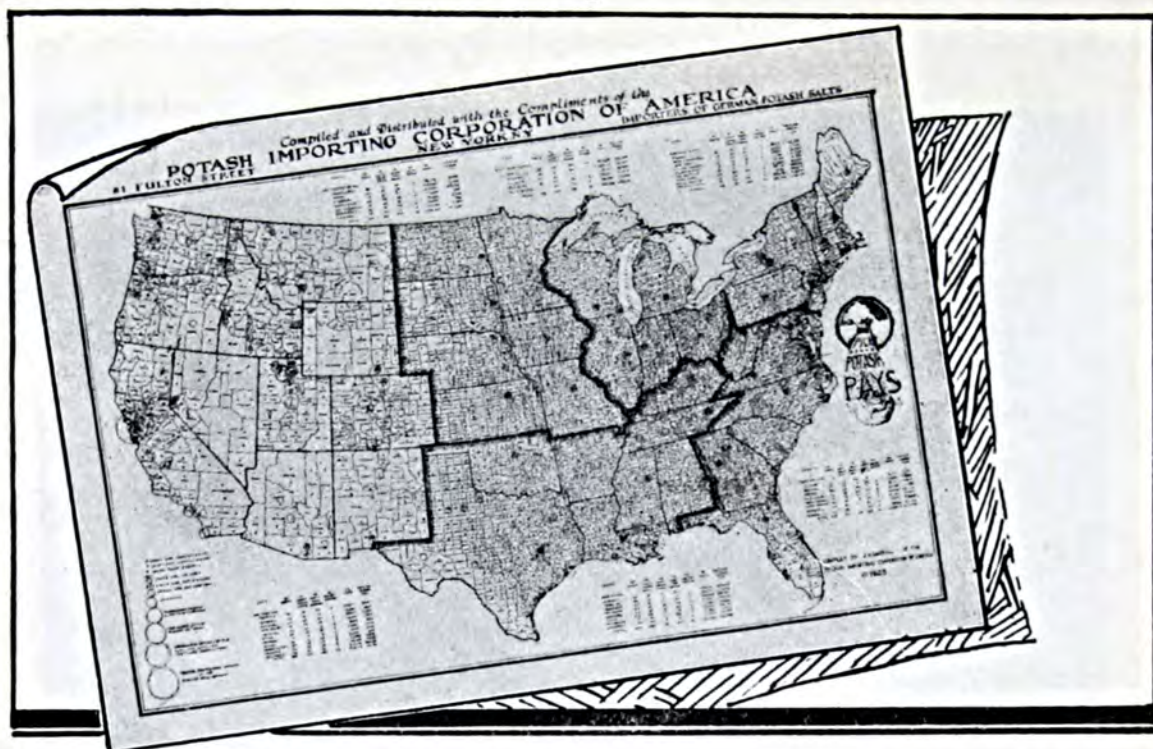
## Potash Makes Muck Land Profitable

One may safely say that crops cannot be grown profitably on muck or peat lands until potash has been supplied to them in generous quantities. These lands are of vegetable origin, most of them containing possibly ten times as much ammonia as phosphoric acid or potash. The seriousness of such a condition in relation to plant growth is understood when it is remembered that plants usually require these three materials in practically the reverse proportions.

Thus we find muck-land farmers

in increasing numbers using fertilizers relatively high in phosphoric acid and potash. For example, the Ohio Station is recommending a 2-8-8 fertilizer for onions and celery on muck land, while New York suggests an 0-10-10 for onions and a 4-8-10 for celery. Indiana recommends an 0-12-12 fertilizer for cereals and general crops in case the soils are acid, while on non-acid soils, 0-8-24 or straight potash is advocated.—*Soil Improvement Committee.*





**This Map Shows Location of every county agent, farm bureau and experiment station.**

**Free**

**W**E have just reprinted an edition of this map which shows in colors the location of every County, State and Federal Bureau to whom the farmer can refer his problems.

Write your name and address at the bottom of this page, tear it out and mail it to us and we will send you a free copy of this large map, carefully wrapped in a mailing tube.

We are always glad to cooperate with County Agents, Agricultural Stations and Colleges in scientific experimentation.

Consult us when you need assistance or guidance on soil or crop problems.

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81 Fulton Street, New York City

Potash Importing Corporation of  
America, 81 Fulton Street,  
New York City

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International Agricultural Corp.  
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Virginia-Carolina Chemical Co.

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Arkansas Fertilizer Co.

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Covina—  
Sun Fertilizer Co.  
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Spreckles Bros. Comm. Co.  
Western Meat Co.  
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Dept.  
Pacific Bone, Coal & Fert. Co.  
Pacific Guano & Fertilizer Co.  
Potash Importing Corporation  
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## CONNECTICUT

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New Haven—  
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Clearwater—  
Gulf Fertilizer Co.  
Daytona—  
Cornelius Christiancy Co.  
Eustis—  
Gulf Fertilizer Co.  
Fernandina—  
Nitrate Agencies Co.  
Frostproof—  
Gulf Fertilizer Co.  
Jacksonville—  
American Agricultural Chem. Co.  
Armour Fertilizer Work  
International Agricultural Corp.  
Nitrate Agencies Co.  
Virginia-Carolina Chemical Co.  
Wilson Toomer Fertilizer Co.

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Gulf Fertilizer Co.  
Tampa—  
Gulf Fertilizer Co.  
Terra Ceia—  
Gulf Fertilizer Co.  
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Albany  
Armour Fertilizer Works  
Swift & Company  
Virginia-Carolina Chemical Co.  
Athens—  
Empire State Chemical Co.  
Georgia Phosphate Co.  
Hodgson Cotton Co.  
Atlanta—  
A. D. Adair & McCarthy Bros.  
Co.  
American Agricultural Chem. Co.  
Armour Fert. Wks. (So. Hdqrs.)  
International Agricultural Corp.  
F. S. Royster Guano Co.  
Swift & Company  
Virginia-Carolina Chemical Co.  
Augusta—  
Southern State Phosphate & Fer-  
tilizer Co.  
Virginia-Carolina Chemical Co.  
Baxley—  
R. L. Lewis Co.  
Columbus—  
International Agricultural Corp.  
Cordele—  
Read Phosphate Co.  
Macon—  
F. S. Royster Guano Co.  
Pelham—  
Pelham Phosphate Co.  
Savannah—  
American Agricultural Chem. Co.  
G. Ober & Sons Co.  
Mutual Fertilizer Co.  
Read Phosphate Co.  
Reliance Fertilizer Co.  
Savannah Guano Co.  
Southern Fertilizer Co.  
Swift & Company  
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Toccoa—  
Swift & Company  
Valdosta—  
Georgia Fertilizer & Oil Co.  
Vidalia—  
Vidalia Chemical Co.

## ILLINOIS

Chicago—  
Armour Fertilizer Works  
Darling & Company  
Swift & Company  
National Stock Yards,  
St. Clair County—  
Swift & Company

## INDIANA

Hammond—  
Swift & Company



Indianapolis—  
Rauh & Sons Fertilizer Co.  
Smith Agricultural Co.  
New Albany—  
Calumet Fertilizer Co.  
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La Grange—  
Swift & Company  
New Orleans—  
Armour Fertilizer Works  
Nitrate Agencies Co.  
Swift & Company  
Shreveport—  
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Virginia-Carolina Chemical Co.

#### MAINE

Houlton—  
International Agricultural Corp.  
Presque Isle—  
Armour Fertilizer Works

#### MARYLAND

Baltimore—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
Baugh & Sons Co.  
Griffith & Boyd Co.  
Miller Fertilizer Co.  
Nitrate Agencies Co.  
G. Ober & Sons Co.  
Piedmont Mt. Airy Guano Co.  
F. S. Royster Guano Co.  
Swift & Company  
Virginia-Carolina Chemical Co.

Salisbury—  
W. B. Tilghman Company, Inc.

#### MASSACHUSETTS

Boston—  
American Agricultural Chem. Co.

#### MICHIGAN

Detroit—  
American Agricultural Chem. Co.

#### MISSISSIPPI

Jackson—  
Virginia-Carolina Chemical Co.  
Meridian—  
Meridian Fertilizer Factory  
Tupelo—  
Tupelo Fertilizer Factory

#### MISSOURI

St. Louis—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
Swift & Company

#### NEW JERSEY

Bound Brook—  
Nitrate Agencies Co.

#### NEW YORK

Buffalo—  
American Agricultural Chem. Co.  
International Agricultural Corp.  
New York—  
American Agricultural Chem. Co.  
Armour Fert. Wks. (East Hdqrs.)

International Agricultural Corp.  
Mutual Fertilizer Co.  
National Aniline & Chemical Co.  
Nitrate Agencies Co.  
Virginia-Carolina Chemical Co.  
Zaldo & Martines Exchange Co.

#### NORTH CAROLINA

Charlotte—  
International Agricultural Corp.  
F. S. Royster Guano Co.  
Swift & Company  
Durham—  
Virginia-Carolina Chemical Co.  
Greensboro—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
Swift & Company  
Henderson—  
American Agricultural Chem. Co.  
Lillington—  
Farmers Cotton Oil Co.  
Harnett Oil & Fertilizer Co.  
New Bern—  
G. Ober & Sons Co.  
Raleigh—  
F. S. Royster Guano Co.  
Tarboro—  
F. S. Royster Guano Co.  
Washington—  
Pamlico Chemical Co.  
Wilmington—  
Acme Manufacturing Co.  
Nitrate Agencies Co.  
Swift & Company  
Virginia-Carolina Chemical Co.  
Wilson—  
Farmers Cotton Oil Co.  
Winston-Salem—  
Virginia-Carolina Chemical Co.

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American Agricultural Chem. Co.  
Armour Fertilizer Works  
International Agricultural Corp.  
Virginia-Carolina Chemical Co.  
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American Agricultural Chem. Co.  
Armour Fertilizer Works  
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Virginia-Carolina Chemical Co.  
Greenwood—  
T. M. Miller Co.  
North—  
J. E. Culler Co.  
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**TENNESSEE**

Memphis—  
Virginia-Carolina Chemical Co.  
Nashville—  
Armour Fertilizer Works  
Read Phosphate Co.  
Virginia-Carolina Chemical Co.

**VIRGINIA**

Alexandria—  
American Agricultural Chem. Co.  
Danville—  
G. Ober & Sons Co.  
Lynchburg—  
Pocahontas Guano Co.  
Norfolk—  
American Agricultural Chem. Co.  
Baugh & Sons Co.  
Farmers Guano Co.  
International Agricultural Corp.  
Priddy & Co.  
Robertson Chemical Co.  
F. S. Royster Guano Co.  
Swift & Company  
Virginia-Carolina Chemical Co.  
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**The Potash Importing Corporation  
of America**

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# Your Last Chance!

## for This Prize

**F**OR the best essay submitted on the subject "Potash Pays" we will give \$50 in gold.

Read over the conditions as outlined below. By arrangement with the editors of BETTER CROPS, the prize-winning essay and such other manuscripts as are suitable for publication will appear in the magazine.

The following men have agreed to act as judges, insuring a fair consideration of every manuscript submitted:

Mr. W. R. HURD  
Director, Soil Improvement Committee,  
National Fertilizer Association.

Mr. V. E. PRATT  
Publisher, BETTER CROPS

Mr. C. C. SMITH  
Potash Importing Corporation

### CONDITIONS of the CONTEST!

**Persons Eligible**—All readers of BETTER CROPS, excepting employees of the Potash Importing Corporation.

**Subject**—The subject must be "Potash Pays" and the subject matter should offer definite proof of this statement.

**Length**—Manuscripts of over 2,000 words will not be considered. However, essays of a few hundred words have equal chance with longer articles.

**Manuscript**—It is desirable that essays submitted be typewritten on one side of white paper, preferably regular letter size, 8½ x 11 in., but the judges will give equal consideration to any essay not so written.

**Contest Closes**—The contest is now open. It will close at midnight, May 1, 1924. All manuscript in envelopes bearing a post mark later than this date will not be eligible.

**Basis of Award**—In judging the essays the judges will rate them on the following basis: Facts 50%; Photos or illustrations 25%; Presentation 25%. There will be one prize of \$50 in gold. In the event of a tie, the writers of each of the winning manuscripts will receive \$50 in gold.

**Method of Payment**—As the contest closes at midnight, May 1, 1924, the prize winner will be announced in the June, 1924, issue of BETTER CROPS and the prize mailed to the winner by May 25, 1924.

**Right to Publish**—The Potash Importing Corporation of America reserves the right to publish and copyright each and every manuscript submitted in this contest, either before or after the closing of the contest. It is understood that any manuscripts so published and copyrighted which do not win the prize shall be paid for at the rate of 1c a word and \$3 per photo, according to the number of words and photographs actually published. No manuscripts will be returned.

ADDRESS ALL MANUSCRIPTS TO

Contest Editor

POTASH IMPORTING CORPORATION OF AMERICA  
81 Fulton Street New York City



## Leave It to the Boys!

(From page 20)

vidual Club Boys; this being our contribution as the County Farm Bureau to the Club Boys of the County.

"We hereby authorize the County Agent to purchase the seed, and fertilizer as provided in the budget, to pay for same from the Hinds County Farm Bureau Club Boys Fund, provided by our note; to distribute same as provided by the budget; to get the necessary notes from the individual boys and from the margin fund to use \$1.50 per boy in getting a suitable sign made for each individual to be used by him in advertising the educational features of his project."

Of the 154 boys enrolled, 101 shipped their cotton to the County Farm Bureau at Jackson where it was ginned on one gin and the seed kept pure. The net amount of money paid to these 101 boys, after paying all freight charges, all ginning and handling charges and all fertilizer, seed and sign board bills was \$3,560.60 or an average clear profit per boy of \$35.25. This would not have been considered an unusual profit for a normal year on an acre of cotton given special attention but is an elegant average profit on 101 different acres scat-

tered throughout the county in what is generally recognized in Mississippi as the most unfavorable cotton year this section has ever had. The highest net profit on an acre was made by Sibbie McRae of Clinton whose net profit check was \$132.62. The lowest net profit check was 97 cents made by a youngster at Terry whose crop was largely drowned.

A number of the club members did not pool their cotton for one reason or another and some of the highest yields made in the county do not figure in the above average. For example the above average does not include W. H. Canterbury. Jackson, Rural No. 3, who made 1,120 pounds seed cotton, ginned a 410 pound bale and stood third in the county in yield, having made nearly twice as much cotton on his one acre as his father made on nine acres. Neither does it include John Lake Gibbs of Learned, a ten year old brown-eyed youngster, who outstripped all other members of the Learned Club and gained a nice bale of cotton on his father's own gin. Numerous other individual records could be mentioned if space permitted.

The signboards attracted the



*Jim made as much on his acre as his father made on seven acres.*





A group of boys at Learned, Mississippi, displaying their signboards. They were not stingy with their secret but passed it along to other Hinds County farmers.

attention of everybody who passed, for one condition was that the patch must be planted near a public road where it could be seen. The boys and their fathers learned many lessons in addition to the judicious use of fertilizers. For example in the vicinity of Edwards a negro boy and a white boy, both cooperators, had their cotton side by side. The land was the same, and the preparation fertilizer and cultivation were the same except that the negro boy saved back 100 pounds of his Nitrate of Soda and made a side application when the cotton was about knee high. He made 150 pounds more seed cotton than his white neighbor made. This may not always work out this way but it made the white farmers in that neighborhood think and when folks think they can take care of themselves.

A few of the boys poisoned. Some got negative results and some got marked increases in yield over their neighbors who did not. But a study of the poisoning results has no place in this article.

On a whole it may be conservatively said that this project has turned the attention of every farmer in Hinds County to the intelligent use of commercial fertilizers as nothing else would have done and has convinced them that

the liberal and intelligent use of commercial fertilizers together with the proper system of rotation and rapid, thorough cultivation during the growing season are essential factors in profitable cotton production under boll weevil conditions.



## Missiles and Mignonettes

Your publication BETTER CROPS is certainly the Peacock's Nail File. Too many so-called agricultural publications are merely so many reviewing institutions that are in a prosy rut—and don't forget that a rut is only a coffin with two ends knocked out. All of us enjoy snap and spice to embellish cold facts; that is why Heinz sells so much "Ketchup."—*F. J. Schnedierhan, Asst. Plant Pathologist, Winchester, Va.*

I like your BETTER CROPS very much, indeed, and feel sure it must do a lot of good.—*J. H. Stewart, Commissioner of Agriculture, Charleston, W. Va.*

BETTER CROPS is very instructive and interesting.—*Marcel B. Bonnier, Agronomist, Ste. Thirise Blainville, Quebec, Canada.*

Am glad to read BETTER CROPS. It's "high-protein" feed.—*F. B. Bomberger, College Park, Md.*

I have been receiving your BETTER CROPS magazine and get a lot of help from it.—*E. M. Brodway, County Agent, Plymouth, Mass.*

Am enjoying BETTER CROPS immensely—keep the good work up.—*Hazel E. Wickwire, Sec'y Treasurer, Schoolcraft, Mich.*

We think that BETTER CROPS is more than fine. Let the good work continue, I'm with you.—*W. A. Haynes, Lewisburg, Tenn.*





## By Ted Butler

BETTER CROPS' Washington Correspondent

If we are of the opinion that anything along legislative lines should be passed and would bring permanent relief to American agriculture, then things don't look so rosy in Congress at this writing, notwithstanding the fact that the legislators are giving a lot of time to the agricultural measures. The first major bill to come up for final vote in the Senate went down to defeat by a vote of 41 to 32. It was the bill originally drafted to appropriate \$50,000,000 for the making of direct loans to farmers in the four states, North and South Dakota, Montana and Minnesota, for the purpose of buying livestock as a means of promoting diversification.

Before the livestock loan measure got out of the Senate Agricultural Committee an additional \$25,000,000 was tacked on to it with the proviso that it should apply to all farmers who were in need of such loans. Then when it got on the floor of the Senate amendments were offered thick and fast. For awhile there was every reason to believe that it would become an "omnibus bill." When an amendment was offered which would put the government into the fertilizer business it was straightwith pointed out that the country had a sufficient supply of fertilizers and there was no possibility of high prices. Whereupon the amendment was speedily killed. And so were all amendments for that matter.

It was quite generally believed

that the livestock loan bill would be passed for it was looked upon as the "favorite son" and carried the endorsement of President Coolidge who, by the way, is giving a lot of sympathetic thought and attention to the problems of the farm. Defeat of the many amendments lost some votes for the bill when it came up for the final verdict and it was evident that a few Senators preferred the bill which would set up an agricultural export corporation, so did not give the loan measure their hearty support.

Undoubtedly it will be sometime after the April issue of BETTER CROPS goes to its subscribers before a deciding vote is taken on the export corporation bill, the second big measure to come to bat. Although Congress is in a receptive mood and casting about for some sort of an agreeable piece of legislation, it is very doubtful whether the export corporation will be sanctioned by both branches of Congress. Some say it may get through the Senate but not the House. Renewed opposition has sprung up against it, coming from those who say that it is price-fixing in character and casts economic laws of supply and demand to the four winds. Some of this opposition comes from farmers although many of the larger farm organizations are giving it their vigorous support.

Not all farmers coming and writing to Washington agree that legislation will really and effectively help the farmer. Those who take



this viewpoint contend that farmers, through their own efforts and personal sacrifices, have withstood the worst period of depression since 1920 that this country has ever known—and without the assistance of legislation. And if agriculture has been able to weather the storm by a “pull on its own bootstrap,” there is nothing which can permanently shake the fundamental strength of farming regions. “Give us an equal chance and we will pull ourselves out of the hole without the assistance of legislation,” they say.

But that is beside the point. My assignment from Jeff is to review briefly what is going on within the legislative grist mill. Well, to date something in the neighborhood of 600 individual bills affecting agriculture have been “introduced and ordered to be printed.” Of course, a lot of these bills are minor in character and some of them will never find their way out of the committees to which they are referred, no matter how sympathetic Congress may be. It would be a physical impossibility to consider all of them.

Numerous agricultural college and experiment station people have been in Washington of late testifying on behalf of the bill which would give additional Federal appropriations to state experiment stations. Each station would receive \$15,000 additional for the fiscal year, 1922, \$25,000 for 1923, \$35,000 for 1924, \$45,000 for 1925, \$55,000 for 1926, \$65,000 for 1927, \$75,000 for 1928, \$85,000 1929, and \$85,000 for each fiscal year thereafter. These funds would be used for investigations or experiments bearing directly on the production, manufacture, use, distribution and marketing of agricultural products.

Interstate marketing would be given a boost in a bill introduced by an Oklahoma Senator. It proposes

to establish a national marketing organization on a county basis, supervised by a board in Washington. The object of the organization would be to buy, sell or store articles produced or required on the farm. An appropriation of \$24,000,000 would be credited to the Department of Agriculture to start the organization off with.

Seventy-five per cent of every congressional appropriation for extension and demonstration work in agriculture and home economics would be spent for salaries and expenses of county farm and home demonstration agents and their assistants if a bill introduced by a Representative from Louisiana becomes a law. This arrangement would not apply to the initial \$10,000 appropriated to each state under the Smith-Lever Act. It would not prevent state authorities from applying supplementary appropriations for specialists or investigations, etc.

Once again the truth-in-fabric bill has found its way into legislative mill. It would require that all fabrics and garments purporting to contain wool carry a specific statement of the percentages of virgin wool, shoddy, cotton and silk going into them. This is about the third time that such a measure has been introduced in Congress. Wool farmers and representatives of farm organizations are lined up back of the measure.

Those who would “corner” the market of any necessity of life would be the recipient of severe penalties under a bill only recently introduced. Another measure along this line would prohibit speculation in grain and food products.

These are only samples. Every phase of agriculture is included in the many bills still pending. What will finally come out of the “Pandora’s box” remains to be seen.



## More Profits from Sugar Beets

(From page 12)

it is obvious that there is a mutual desire to select a fertilizer formula which will result in the production of large yields of sugar beets having a high sugar content and high purity.

While it is impossible at this time to state a formula which might be termed "the proper formula for sugar beet fertilizer" it might be well to point out a few facts relative to the sugar beets' requirements. Sugar beets are heavy potash consumers. The average yield of ten tons of sugar beets contain 71 pounds of potash; 15 pounds of phosphoric acid and 30 pounds of nitrogen. Thus it is evident that sufficient available potash must be present to meet the plants requirements. While it is true that some writers contend that the proper fertilizer for sugar beets should contain a larger proportion of phosphoric acid than of potash the writer's experience during over ten years of careful study and experiments leads to the conclusion that, with few exceptions, the potash content of the mixture should be the highest.

Since it is true that sugar formation is not perfected until the sugar beet reaches the stage of

maturity it is essential that the fertilizers used should be such as will force the early growth of the plant. It has been demonstrated that phosphoric acid plays an important part in forcing early maturity and hence the amount of the article applied should be in larger proportion than is indicated by the composition of the sugar beet.

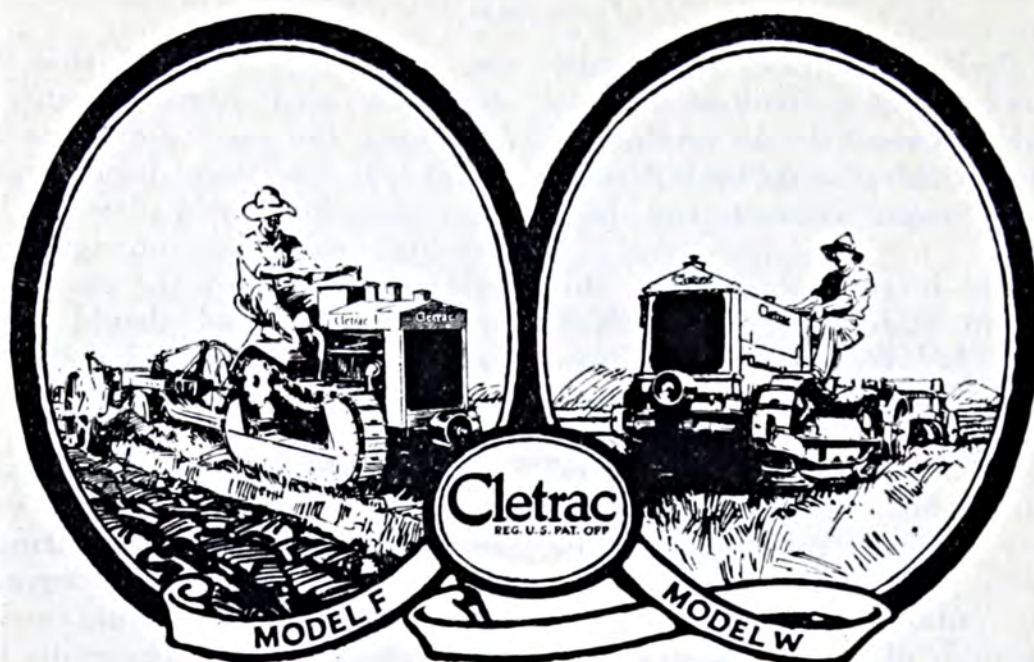
In order to stimulate the desirable early growth nitrogen is also very essential. In selecting the nitrogen carrier the writer is of the opinion that organic and slow acting carriers should be avoided. The writer has obtained the best results by using sodium nitrate but has found that where liberal amounts of sodium nitrate are used a liberal amount of potash should also be applied for the effect the latter has upon the structure of the leaves.

Space would not permit the presentation of all the theories which are set forth relative to the function of potash in sugar beets. It has been demonstrated that the availability and the amount of potash in the soil has a direct bearing upon the structure of the sugar beet and the sugar content of said beet. It has also been found that when



*Blocking and thinning sugar beets*





Plowing at the rate of 6 to 10 acres a day, Cletracs make quick work of the biggest fields

## Bigger Profits for the Farmer

Not only do Cletracs enable farmers to plow many acres in a day, but they also make every acre turned over produce more, and greater yields mean bigger profits to the farmer.

## A Better Seed Bed Insures a Bigger Crop

But Cletracs do more than simply a good job of plowing. They are admirably suited for ground fitting because of their crawler construction. The broad tracks carry Cletracs along over the plowed land without slip at full speed, mellowing the ground into a fine seed bed, but do not pack it down. A well-preserved seed bed is the farmer's best assurance of a bigger yield and a better crop.

A big modern factory with upwards of five acres of floor space under roof and thirty thousand Cletracs in use in the United States, Canada and seventy foreign countries are time-tested evidences of Cletrac's successful operation.

---

**THE CLEVELAND TRACTOR COMPANY**  
CLEVELAND, OHIO



sugar beets have a liberal supply of available potash they are less subject to rootlet and leaf diseases.

Various methods have been advocated in the matter of fertilizer application. The method followed by the writer follows: From 300 to 500 pounds of high grade commercial fertilizer per acre are applied in fractional dressings of from 100 to 150 pounds per acre per dressing.

The applications are made broadcast and the fertilizer is worked into the soil. During the early part of the growing season an application of 100 pounds of sodium nitrate is made. In instances where the grower will not use more than 125 pounds of fertilizer the article is drilled in with the seed.

In conclusion it may be said that there is great need for continued experimentation in this field but facts that have thus far been ascertained indicate that the use of high grade complete fertilizers is one means of increasing the growers' profits.



## How We Solved Our Publicity Problem

*(From page 14)*

is made to get the leading farmers of the county to write articles on Livestock subjects dealing with their own experience along those lines. We have found it rather hard to get very many farmers from our county to write articles and in the majority of cases when they do, it is necessary to touch them up more or less before they are published. In every case we reserve the right to reject an article if it is destructive in nature. On the other hand if we invite criticism and helpful suggestions. The time consumed in getting the material together for the page at first required at least one day a month, but during the last year the greater portion of the material is prepared during the

month at different times when the results of the project or event are clearly in mind. One drawer of the desk is used entirely for material of this nature, so that at the end of the month two or three hours is usually enough time to get the material in shape for the editor. The task is not nearly as difficult as it appeared at first and at no time during the past two years has there been any difficulty in getting material for the page, in fact, the majority of the time two pages of material are available.

We feel that the method outlined has been a good one for our particular case, while we do not claim it is infallible or one that can be adopted in every county in the state, yet it has been a means of getting the desired results in our county. We have been able through this method to reach every farmer in the county once each month and to get before him all of the information that we desire without any cost whatsoever to the Farm Bureau. In the second place we now have the cooperation of every paper published in the county and last but not least the cooperation of the banks. Each one of them, we feel, has a different attitude toward the farmer than before and is willing to cooperate along any other line that we suggest providing it is sound and feasible. The cooperation of the banks we feel is our greatest asset in Farm Bureau work in our county.



## NOTICE TO READERS

*Copies of the first volume of BETTER CROPS (September, 1923-February, 1924) bound in black buckram or leather and stamped in gold are now available.*

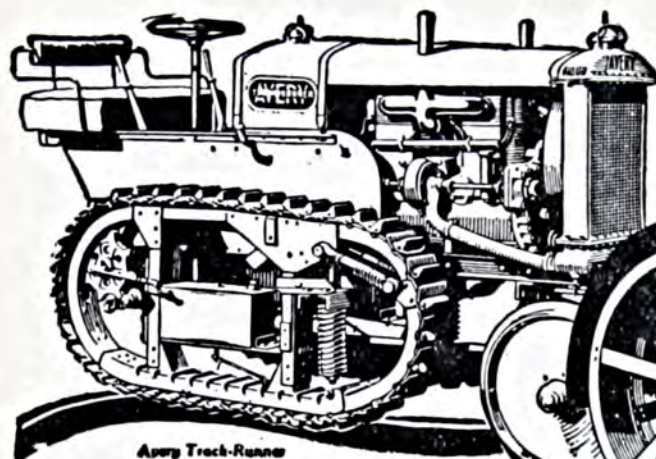
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*M. E. Hidden,*

BETTER CROPS

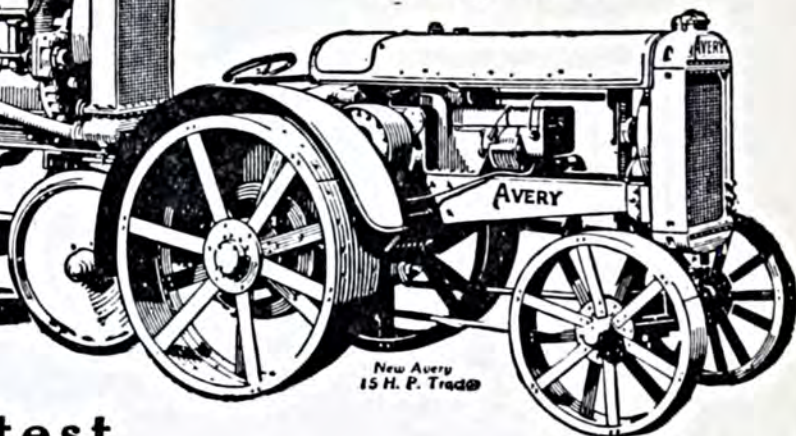
*Better Crops Publishing Corp.  
461 Eighth Ave. New York City*





Avery Track-Runner

## The New and Improved Avery Line

New Avery  
15 H. P. Tractor

## The Greatest Achievement in Tractor History

**N**EW models, many new improvements and refinements, greater power, more economy and lower prices—the New Improved Avery Line is really a sensation.

Never in tractor history have so many new improvements and desirable features been developed in one line. Avery machines now give better and more economical service and sell at lower prices.

The Avery Line for 1923 includes the Improved Avery Track-Runner that runs on a roller-bearing track; the NEW Avery 15 H. P. enclosed gear, 3-plow wheel tractor, with two bearing belt transmission and two gear contact drawbar transmission; the Improved "Road-Razer" for shaving unpaved roads and streets smooth in summer and removing snow in winter; the Improved Avery Tractors for farming, threshing and road-building in the 20-35, 25-50 and 45-65 H. P. sizes; also grain-saving threshers in all sizes, motor cultivators, tractor plows, tillage tools and other drawbar and belt machinery.

Get the latest prices on Avery Tractors which now give you more horse-power per dollar than ever before offered.

*"It pays to Avery-ize"*

# Avery Co.

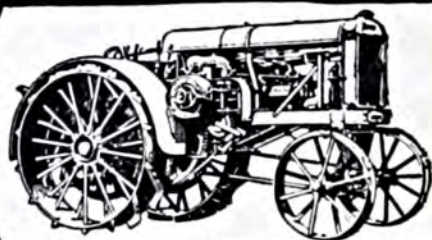
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every State in the Union.

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Avery 20-  
35 H. P.  
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Also built  
in 25-50  
and 45-65  
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sizes



Improved Avery 25-50  
H. P. 10-Ton Road-  
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built in 45-65 H. P. size

Avery  
"Road-Razer"Avery  
Motor Truck

Avery Grain-Saver  
Thresher. Built in "Yellow-  
Kid", "Yellow-Fellow" and "Yellow-Fellow"  
sizes.

Avery Header Thresher.  
Harvests and threshes  
the grain in one opera-  
tion.





## Marketing a \$100,000,000 Crop

(From page 10)

money his fruit brings, less only the actual cost of selling, which is annually fixed by a per box assessment on each box of fruit shipped.

Shipments and collections for fruit of these local associations is handled through the Central Exchange by the 21 District or Sub-exchanges, as they are called, which centralize the activities and interests of a group of associations in a particular locality.

Through the sales department of the Central Exchange, each Sub-exchange and local association is kept in daily touch with the markets in which his fruit is being sold by the salaried representatives of the main organization, by wire and long distance telephone.

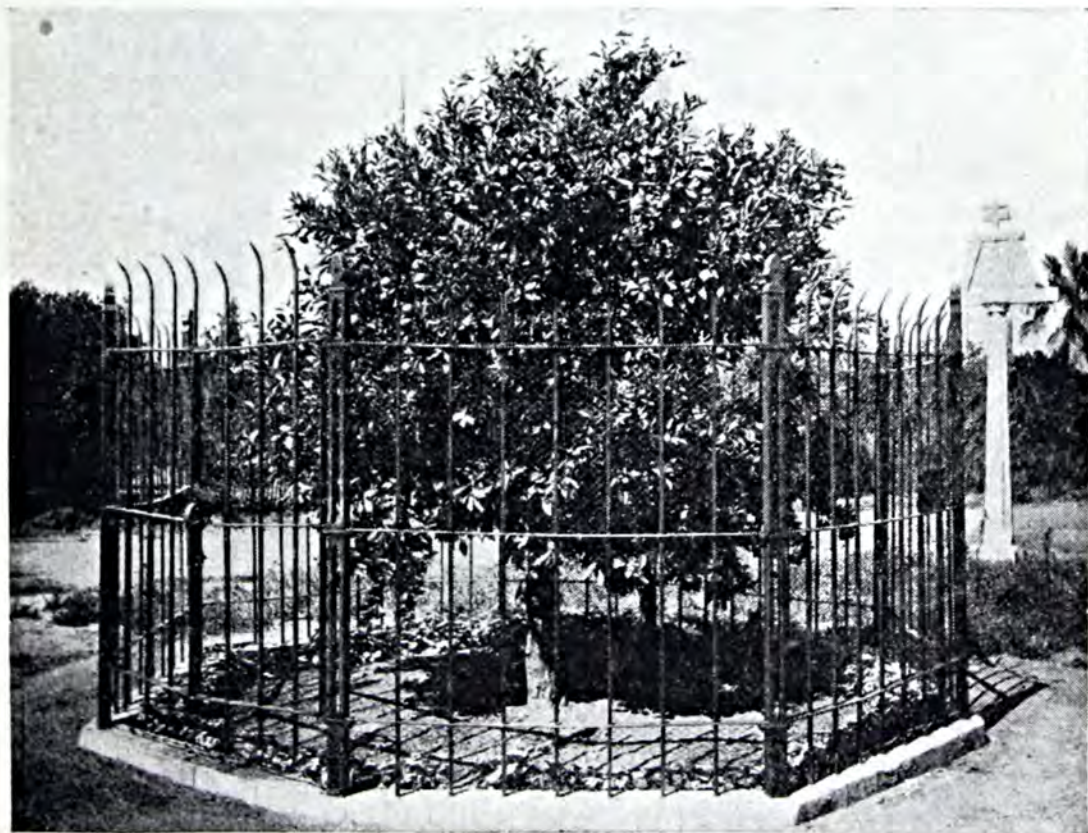
The well known law of supply and demand plays an important part in the daily sales of citrus fruits in both auction and private sale markets. Practically 40 per cent of California's citrus crop is

now sold at auction. The prices being paid in the auction markets of the country very largely determine the prices for oranges and lemons in the private sale, or carlot markets.

However, varying factors in certain localities such as weather conditions, shortage or over-supply may raise or lower the quotations in that particular market as the case may be.

If the prices in a certain market on a particular day do not appeal to the shipper who has a car of fruit in that city, he can divert that car on to another market where conditions and prices are better.

Thus through the Exchange sales organization with salaried representatives in the larger and more important markets of this country and Canada the shipper is at all hours of the day in constant touch with conditions as they exist in that market, and can dictate as to the



One of the parent navel orange trees brought to Southern California by Mrs. Eliza Tibbets nearly 50 years ago—still producing good fruit.



**W**E solicit your inquiries when in the market for Potash Salts in any quantity or for fertilizer material of every description, direct or through our nearest branch office; these are maintained for your service.

## H. J. BAKER & BRO.

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*Sales Agents for*  
POTASH IMPORTING  
CORPORATION OF AMERICA  
United States distributors  
of

Potash Salts, all grades, of the  
GERMAN POTASH SYNDIKAT

*Sole Agents*  
United States and Canada  
ANTONY GIBBS & COMPANY  
Inc.  
Nitrate of Soda

*Importers and dealers in Sulphate  
Ammonia, Blood, Tankage Phos-  
phate and all fertilizer materials*



sale of his fruit, accept or refuse offers.

The exchange has two advertised brands under which the fruit grown and shipped by its members is sold. The most widely advertised and nationally famous brand is SUNKIST.

This brand has been advertised for the past 16 years, and has now become synonymous throughout the world with the well known slogan "Uniformly Good Oranges and Lemons." Approximately 60 per cent of the fruit shipped by this organization comes up to the standards required to be shipped under this brand.

Another brand name which is now being advertised in the newspapers and street cars of the Southern states is the Red Ball brand, which includes the choice or second grades of citrus fruits. There is about 25 per cent of the Exchange crop in a normal year that comes under this brand. The remainder of the crop is shipped to the markets under the private non-advertised brands of the various associations.

Since the first advertising campaign in 1907 the per capita consumption of oranges and lemons has been more than doubled. And this has been accomplished in the face of greatly increased production of all fresh fruit crops in this country.

Consumers of the United States and Canada will now easily consume 22,000,000 boxes of oranges where formerly 8,000,000 or 10,000,000 boxes staggered growers with the fear of over production.

The advertising appropriation of this organization which now totals nearly a million dollars in a normal year, is raised by a  $4\frac{1}{2}$  cent per box assessment on oranges and a 7 cent levy on each box of lemons shipped. Approximately 25 per cent of the advertising appropriation raised in this manner is used in dealer service work with the wholesale and retail trade, promoting displays of the

fruit and encouraging more intelligent handling of these fruits by the trade.

Based upon the shipments of the 1922-23 season the entire cost of Exchange sales and service, including advertising, was 2.49 per cent of the delivered value of the fruit, or less than the marketing cost alone of any other perishable food product marketed nationally, it is believed.

In addition to the primary objects of production and distribution, the Exchange has many supporting factors and branches of activity which go to make this organization one of the most successful co-operative marketing organizations in the world.

There is the Fruit Growers Supply Company, which is a subsidiary organization handling supplies and making necessary orchard purchases for the 11,000 growers of the Exchange.

Last year alone this organization purchased for its members nearly \$6,000,000 worth of packing house supplies and \$2,500,000 worth of orchard supplies. The production of this company's two lumber plants located at Hilt and Susanville, California, which make many of the boxes in which the grower's fruit is shipped, was valued at \$4,000,000 last season.

There are the Exchange Lemon Products Company and the Exchange Orange Products Company, which are developing and marketing citrus by-products for the cull fruit of the growers.

There is the Sunkist Fruit Juice Extractor plant in Chicago, which is manufacturing and selling an electrical device for the extraction of orange and lemon juice at the soda fountains of the country. It is estimated that the 12,000 of these machines now in operation afford an outlet for 1,500 carloads of fruit annually that otherwise did not exist for those extremely large or small oranges and lemons which



Distributes Close to Ground



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## The Greater Harvest Getter FERTILIZER SOWER

**W**ILL successfully distribute Lime and Fertilizers in any quantity desired from 100 to 6,000 lbs. under all circumstances, damp or dry. No Clogging; Light Draft; for two ordinary horses. Other machines of equal capacity are heavy draft for four horses.

The use of fertilizer has become a necessity to modern agriculture. Farmers of the Eastern States have realized for years the profit to be made from the use of fertilizers, and now the Western farmer is rapidly learning to look upon fertilizer as an "investment" rather than an "expense."

The American farmer is learning that by taking everything from his soil and returning nothing, he is headed straight for agricultural bankruptcy, and that every dollar spent on good fertilization is better invested than a dollar in the savings bank.

But fertilizer, to be most efficient, must be mixed with brains. It must be properly applied.

For many fields and many crops, a broadcast distributor offers the best solution of the problem of how to make the application.

There is no distributor on the market that can equal the New Peoria. It took years of actual experimenting in the field to finally produce this high-grade distributor. It bears little resemblance to the makeshift box-wheels-and-axle contrivances commonly found on the market.

We also manufacture Fertilizer Drills in all sizes.

*For Catalog and Prices Address*

**Peoria Drill and Feeder Co.**

Peoria, Illinois, U. S. A.



are not so easily sold to the consumer.

These are but a few of the accessory tools with which the citrus grower is attempting to meet and solve the ever increasing problem of intelligent distribution to the markets of this country and Canada.

Every orange and lemon grown in California must find consumption in one form or another if prosperity is to be the citrus grower's reward. And it is with this in view that every effort is bent to find an outlet for every orange and lemon produced, regardless of grade or quality.



## *Selling Ideas to the Farmer*

*(From page 16)*

into practice the ideas they get from bulletins and agricultural papers. These are few and far between.

The man who is sold by means of pressure is a doubtful convert. In some instances he benefits from the enforced new ideas in spite of himself, but often this is not true. Some bankers have gone so far as to say to their cow milking clients that if they did not join a cow testing association they would not be considered good risks by the banks. A less forceful pressure is exerted when the neighbors and friends of the backward member place a mild boycott around him until he falls into line.

By far the most effective method of selling ideas is to sell service with them. The County Agent may spend all his time talking about better bulls to dairy farmers. He may absolutely convince the dairyman of the value to him of such an animal. However, because there is no breeder within walking distance with the exact bull that he wants, no bull is bought. In this case the proper procedure is for the County Agent to gather together pictures,

pedigrees and records of all available purebred bulls within easy shipping distance and then sell the bull to the dairyman along with the idea. A little cooperative arranging for handling the shipments and the idea sale is complete with the bull in his new quarters.

Silo talk is not complete when the value of silage as feed has been demonstrated. It is not complete until the names of many builders of various types have been secured and a basis of competitive bidding established. When the contract has been let to the lowest bidder on the best type; when the silo has been built and filled; then, the project is ready for the first progress report.

There is one other means of selling ideas which should not go without mention. It would never sell any ideas to farmers by itself, but along with the other means, it is very potent factor. It is the means of popularity of vogue. If a certain percentage of people do any one thing, a certain smaller percentage will automatically follow suit. If pure bred bulls are a proven asset and if they are easy to obtain and if *everybody is buying them*, then it would be the style to have a purebred bull and many dairymen would seriously consider purchasing a bull who would be hard to persuade to go it alone. This is the justification for a certain amount of tactful publicity and display advertising in any good movement. The things that go over big are the popular things and the farmers are no different from other purchasers when they are buying ideas.

The Extension Service is a sales agency for ideas. There is no reason why it should not use any legitimate business means to make a sale and particularly the means of selling service with the idea. Demonstrating the value of better practices is not in itself sufficient. Only when the better practice has been put into actual use has the idea been sold.



Did you ever  
figure what  
it costs you  
NOT to use  
fertilizer ?

¶ The only complete fertilizer plant in the state. It is open for your inspection at all times. We shall welcome the opportunity to show you where

**"WHITE  
DIAMOND"  
FERTILIZERS**

are made, and why they are better.

**ARKANSAS  
FERTILIZER  
COMPANY**

Little Rock, Arkansas

Send for booklet—*"How  
Arkansas Farmers Have  
Increased Their Bank  
Accounts"*

## Boys and Girls

(From page 6)

become stale and fruitless through too much or, more likely, too little thought, begin to answer questions, and in answering, learn. He who writes a book or makes a speech gets more out of it than he who reads or listens. Doing the thing clarifies the vision, and crystallizes the thought.

Edison says that the radio is making us a race of electrical engineers, and it is true that many of the more important refinements have come from boys and girls who had nothing to unlearn and who, accordingly brought to their work happy, unleashed, inquisitive minds—fresh and virgin.

All that we know we drink in through our eyes and ears; when we open our mouths we cease to learn—we merely tell others what we know, and where is the profit in that? Children, it is said, are all eyes and ears. They drink deep of all lessons, and with natural inquisitiveness use their mouths, not to *tell*, but to *ask*. The big job, as leaders of the Boys and Girls, is to answer questions, not first to suggest the question and then follow through with a ready-cut, free-from-knots answer. Let the questions be natural ones, childish questions that spring from the Eternal Query, and the job will be hard enough, probably too hard, if answers be found to half that can be asked.

Stale minds become freshened; blase and cynical outlooks become panoramas of faith; life loses its jaundiced atmosphere in the company of an inquiring mind. "Except ye become as little children ye shall in no wise enter the Kingdom."

It is only just to give tribute here to the thousands of men and women who have devoted so much of their time and thought to Boys and Girls Clubs. They have sown seed in fertile places and already we are reaping the harvest in thousands



of young men and women who are taking up agricultural pursuits with a broader knowledge and better training for their work than were available to previous generations.

Experience has taught us much. We have learned that boys and girls must be allowed to feel the pride of ownership and to enjoy the results of their work. In thus acknowledging the child's right to what he produces, the Boys' and Girls' Club movement has taken a big step forward. It has linked itself with a great human motive—the desire to own something—and has led to almost unbelievable achievements on the part of young people.

For what has been accomplished and particularly for those men and women who have helped to bring it about, I have only the deepest admiration. What I wish to suggest here are further developments and possibilities that seem to me desirable, and the most important of these is the attitude we take towards the Clubs. If we regard them simply as the chocolate coating for an educational pill, we shall lose out on the great possibilities that they now hold.

Let the leader of the Boys and Girls Clubs but realize that he is dealing in soul-stuff—in soul-potentialities; that in his charge are thirsty minds that have not as yet become sealed to outside impressions; that constructive inquisitiveness is delightful, a thing to be encouraged and guided, not a thing to be petulantly lashed into tame submission—and you have a leader who will develop the child-minds in his care along lines the potencies of which stagger the imagination.

So this, then is my contention: There are many kinds of movements, forward, backward, up, down. If the Boy and Girl movement is to be a progress onward and upward, there should be less of teaching and more of gently guiding the inquisitive young minds into fertile fields of endeavor.

## *Special Fertilizers*

to meet special soil conditions are a step in advance in the

## *Fertilizer Industry*

☞ “Sunrise Brand”  
Fertilizers are used by the most exacting trade with the knowledge that only the best materials go into the manufacture of our fertilizer.

LONG ISLAND  
PRODUCE &  
FERTILIZER  
C O M P A N Y

RIVERHEAD, N. Y.

*Manufacturers of*  
“Sunrise Brand”  
*Fertilizers*



# Spring Is Here!

**F**ILL me with sassafras, nurse,  
 And juniper juice!  
 Let me see if I'm still any use!  
 For I want to be young and sing again  
 Sing again, sing again!  
 Middle age is a curse!

*It is Spring again, Spring again,  
 Spring again!  
 And the big bull oyster comes out of his cave  
 At the flood of the tides  
 And bellows his love to his mate where she rides  
 On the crest of the wave!*

*The crimson pylorus is singing his song  
 And the scarlet scialicas flame in the grass,  
 The snail is abroad with his periscope song—  
 Fill me with sassafras!  
 I want to be one  
 With the joy of the earth under the sun,  
 For the purple convolvus convolves and volutes  
 And the arbutus ups and arbutes—  
 Fill me with sassafras  
 And cohosh and buchu and juniper juice  
 And then turn me loose!*

*Out of the prison of Winter  
 The earth and its creatures emerge,  
 And the woodlouse sits on a splinter  
 And flirts with the cosmic urge.  
 Steep me in camomile tea,  
 Or give me a shot with a needle!  
 For I want to be young again—Me!  
 And woo with a lyrical wheedle!  
 Go page Amaryllis,  
 And tell her Spring's here with a heluva moon—*

*Oh, Chloe, come hither!  
 Here's a bald-headed Strephon that's willing to spoon!  
 He brings to the business a lyre and a zither  
 And a heart that's been chewed by the romance bacillus—  
 Nurse, the juniper juice,  
 And the sassafras, nurse, and then turn me loose,  
 Let me see if I'm still any use!*

—DON MARQUIS in the *New York Tribune*.

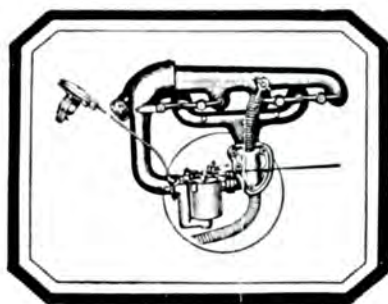


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Equip your Ford now—put on the new 1924 STROMBERG Model. Stop wasting gas—get more real enjoyment out of driving your Ford than you ever thought was possible.

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Passenger Car  
and Truck  
Manufacturers  
use Stromberg  
as standard  
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**The Stromberg  
Motor Devices  
Co.**

64 East 25th Street  
Chicago, Ill.  
Dept. B. C.

**New**

# **STROMBERG CARBURETOR**

**Does it!**



## POTASH - AN ESSENTIAL PLANT FOOD



Test on Sugar Beets by William Emory, Caro, Michigan

*Sandy Loam Soil*

No Fertilizer	Complete Fertilizer Containing 10% Potash	Incomplete Fertilizer Without Potash
Yield; 6,400 lbs. per acre	Yield: 13,140 lbs. per acre	Yield: 10,320 lbs. per acre

## Potash Pays on Sugar Beets

**I**N this experiment \$1.25 worth of sulfate of potash per acre increased the value of the crop \$9.03 per acre. Potash helps to increase the yield, to improve the sugar content and to secure a full stand.

See that plenty of Genuine German Sulfate of Potash is used to secure best results. A mixed fertilizer should contain at least 10% sulfate of potash.

An illustrated booklet "Sugar Beet Culture" will be sent upon receipt of your request. Send a post card today for your copy.



Address Dept. B. C.

POTASH IMPORTING  
CORPORATION OF AMERICA

81 Fulton Street  
NEW YORK CITY



# Better Crops

The Pocket Book of Agriculture

May 1924



In this issue—Dr. E. W. Allen—H. C. Brewer—  
Albert Hansen—Jeff McDermid—W. A. Ostrander





# What is in your seed this year?

**Y**OU have picked the best seed you can buy, of course. It is the right variety, and a germination test shows very high.

But what is actually in the seed?

What is there in the seed that determines whether the yield will be 10 or 90 bushels per acre?

The one important factor that determines the yield is the supply of plant food in the soil! In the seed is only a germ of life that will send out roots. If the roots stretch out but to encounter a thin, weak diet the corn suffers and the yield is light.

There is only one way to be sure that lack of

enough potash is not holding back crops—try it *one year*. At a very small cost you can try potash; sow a check strip if you wish, or make any other test. But try it. See with your own eyes that it increases the yield.

Buy mixed fertilizer and insist on a formula that is high in potash.

Your dealer has Genuine German Potash in stock, either in the form of mixed fertilizer or in 200-pound sacks. It is plentiful now. Should he be temporarily out of it, write us and we will tell you how and where to get it in the grade you wish.



## Potash Importing Corporation of America

81 FULTON STREET

NEW YORK

**Genuine German**  
**POTASH**



# USE THE POST CARD

**S**OMETHING is wrong with agriculture.

I don't think it necessary to debate the point—there are too many facts at hand to prove it.

What you and I and the other readers of *BETTER CROPS* are interested in is: what can we do to help matters?

In other words, I am trying to formulate in *BETTER CROPS* a definite, constructive program for agriculture. I want this program to represent not merely my own personal opinions, but the sentiment of thinking agriculturists all over the country.

As one who works for the general advancement of agriculture and who is called upon to advise the farmers of the country, I feel that you have unusual opportunities to put your finger on the weak spots in our agricultural structure and to suggest constructive remedies.

If it were possible, I would like to sit down and talk it over with you personally. Unfortunately I can't, so I have to ask you to let me know your ideas on the subject.

I am enclosing a postal card with this issue which provides you with an opportunity to express briefly your suggestions for a constructive program. If you want to write a letter, so much the better.

Just one word of advice—leave out all political and religious issues. It seems to me there are other fields—economic and social—where our energies can be more usefully expended.

What does agriculture need? Yes, I know it's a big question but I hope you'll take a crack at it. I want to publish some of the best answers in our next issue, so get out the old pen or pencil and dash off some of your pet ideas.

Let's go!

Yours to a cinder,

*Jeff McIvermid*





## Learn the truth about Fertilizer

Commercial fertilizer is not magic. It is no substitute for work, or for farming brains. It will not make a successful farmer out of a shiftless, ignorant failure. Fertilizer varies in quality like corn or tobacco or cotton, and some brands are worth more than others. Good fertilizers, like Royster's reliable old mixtures, are a godsend to good farmers who learn how to best use them to make money

Nearly forty years experience enters into the making of the Royster mixtures, and hundreds of thousands of the country's best farmers pin their faith to this famous old brand.

For advice about the use of fertilizer, write to Farm Service Department.

F. S. ROYSTER GUANO CO.

Norfolk, Va

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Toledo, Ohio

# ROYSTER

*Field Tested Fertilizers*



# Better Crops

## The Pocket Book of Agriculture

VOLUME II

NUMBER THREE

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MANAGING EDITOR	BASIL PILLARD
PUBLISHER and SECRETARY	VERNEUR EDMUND PRATT
PRESIDENT	E. K. HOWE
VICE-PRESIDENT and TREASURER	H. A. FORBES
BUSINESS MANAGER	MORTON HIDDEN

Business Offices: 81 Fulton Street, New York  
 Editorial Offices: 461 Eighth Avenue, New York





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Out to the Great Open Spaces where Pigs is Pigs. These hogs from one of the largest hog farms in the Northwest are being turned out to pasture for the summer.





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VOL. II

NEW YORK, MAY, 1924

No. 3

# On the Art of GIVING ADVICE

By *Jeff McIlernid*

THE antagonism of the receiver for the giver of advice is a theme around which brilliant intellects for years have revolved in a vain endeavor to discover the genuine source of the animus.

I use "revolve" here advisedly, for "revolve" means to go 'round and 'round without getting any place; and those who weave such cleverly cynical quips as "*men give away nothing so liberally as their advice*" have surely not helped us a bit in understanding the other fellow's antagonism to the aforementioned advice. We are where we started and have but a painful dizziness to remind us that we have been revolving with them around the theme.

There are two kinds of knowledge; that which is stored away in your own brain, and that which you can lay your hands on when you want it. And of the two the first is to the latter as a single grain of wheat to the wheat of the world—

there never will be a monopoly of knowledge. What you know, you know, but what you do not know is no handicap if you know the gink who knows what you *don't* know!

The world is as full of knowledge as a week old fly-paper in a restau-



rant window is full of flies. The trouble is: life is short, and the period in which our brains have sufficient suction to blot up the facts that are spilled before us is still shorter.

THE result is that we become specialists. Knowing that none of us will have time while living to absorb the whole loaf of knowledge, we each corral a crumb according to our tastes and inherent abilities—you to your crumb and I to mine. You learn to shoe horses and I master the trick of grinding valves. When the valves of the "quiver" need fixing you come to me; and when ol' Nell casts a left hind shoe I bring her in to your shoe-foundry. And so, having become specialists, we are each countless hundreds of times placed in positions where we need advice.

You can certainly tack a nasty shoe on ol' Nell but, when she emits throaty palpitations, I put in a hurry call for Doc Neavers, the veterinary; and his advice as to whether it's the heaves or hiccoughs means a lot to me—and incidentally to ol' Nell—for he is a hoss specialist. His particular crumb is horse-flesh, while yours is horse shoes and mine is hearse-valves. Doc's time is valuable and his fees are high, but ol' Nell is worth a lot of money to me, and I am helpless. All day long, when I am not working upon my own little crumb of a specialty, I am at the mercy of outside advisors who must come in and show me how the thing should be done, or do it.

And so we come to the subject of "giviing advice."

The trouble with this phrase lies not in the word "advice." No. The fault lies in the verb "give." Change this to read "sell" and the trouble is over. That which is given you is worth just what it cost—we value things at their price, and treat them accordingly.

Advice is usually given by a

buttinsky-plus whose counsel is anathema. Advice is sold by wise men who part with it only for a good reason,—generally mazuma, coin, dollendii.

But gratuitous advice is not sour in itself—what pains us is the fact that such advice is offered wholesale and marked "no charge," when no order was ever issued for the stuff! The ball that blacks the eye is the ball that is thrown without request—the hands are not prepared to catch it; but if I say "throw the ball" and you do so, I catch it, save my eye, and am pleased.

To shove advice at a farmer just because we think he ought to have it is to invite his resentment and enmity. To make the farmer want advice and seek it from us is to open the door to lasting friendship and real service.

"Admitted," you cry, "but how can we make the farmer want advice?" Of course, there isn't any pat answer to that question, but from my observation I have found that the most successful agricultural advisors are those who in a modest and unpretending way teach by example as much as by advice.

Good advice is priceless, and when linked with good example is worth just twice this much. But good advice and bad example smack of "do as I say and not as I do," and are not only unheeded but resented.

THOSE of us whose business it is to scatter advice should study our profession. We should master the psychology of salesmanship, read Le Bon, learn the gentle business of mob-mind, and the rest is easy. The antagonism toward free advice is often not antagonism toward the advice itself, but to the setting in which it is offered. The resentment is against the patronizing air of the vendor. Let the advisor learn to *sell* his ideas, even though his pay comes from remote quarters and not from the man to whom the advice is given. (turn to page 53)



“You’ve had a lot of articles about County Agents,” said the Missus the other day, “why don’t you give some credit to their wives? They do a lot of good work, too.” “Right as usual” I chirped, so I selected this fine appreciation of the silent (sometimes) and indispensable (always) partner. Shall I print some more?

# How My Wife Helps in My Work

By a County Agent

OF course this will have to be quite a personal interest story but, after about eleven years of time spent working for the public, and all that time having a wife who was interested not only in *my* undertakings but interested in the *work* because she wanted it to be worthwhile, I feel that perhaps what I may say will be of some interest, especially to some of the young fellows who have not yet had the courage or the nerve to assume the responsibilities of providing for two.

Getting back to the beginning I believe there are a lot of young fellows today who wait too long to assume these responsibilities, thinking they must have several thousand dollars laid up in the bank and a modern house with all conveniences at least partly paid for before joining hands with a life partner.

In my own case, for the encouragement of some of these folks, I will say that we had just two hundred dollars when we were married and we joined hands and struck out together. We have had a good many ups and downs but really they have been mostly “ups” for these years have been spent in trying to do something for our fellow farmers who had not had the opportunities that we have had in the way of experience, education, etc. In fact, after about eight years

of actual county agent work, I do not see how a County Agent can do his best work unless he has a wife who is at least interested in what he is doing. My wife was a “farm raised” girl and consequently has the farmers’ viewpoint so that when talking to a farm woman over the telephone or at community meetings or elsewhere she knows just how that woman feels and the problems she is facing for solution.

NOW to come right down to the subject of just how she helps in the work I will suggest a few ways. Of course the answering of the telephone at the residence late in the evening and early in the morning is a part of her work, and when she has to answer calls over the phone in the day time when her husband is out in the county some place she is often called upon to give what information she knows to be correct, having heard it stated over and over. In the spring of the year when the young chickens are being hatched and the crops are being put out there are more phone calls than at any other time. She is very often able to give some simple directions to the person who is having trouble with chickens or to some farmer who calls up to know where he may obtain some good (turn to page 59)



# HIGH YIELDS MAKE LOW COSTS

## PART ONE

By H. C. Brewer

Soil Improvement Committee  
National Fertilizer Association

*¶ This article and the accompanying illustrations have been courteously furnished by the Soil Improvement Committee for exclusive publication in BETTER CROPS.  
¶ There is a big punch in this message that I hope will get across to every one of our readers.*

**E**XPERIENCE has shown that the most successful growers are those who produce at the lowest cost per unit. Their yields are usually above the average, often far above it. Proof of that fact is to be found in the records kept by thousands of farmers. Low yields and low costs are seldom found together in the same field.

Professor J. I. Falconer, Agricultural Economist, Ohio State University, makes this statement:—

“Inefficiency in production is no cure for low prices. Experience and research have shown that farmers with high yields make greater profits than their neighbors with low yields. On high-priced land high yields are more economical to produce than low yields. If a reduction in output of a particular crop seems desirable, it would be better to reduce the acreage or, for individual farmers to abandon the crop entirely than to reduce the yields.”

The progress in efficiency made by the farmers of Ohio during the last 10 years is sufficient proof of the accuracy of such a statement. Take, for example, the records of

two counties in the State. During the period, 1900 to 1910, the grain growers in one of these counties averaged 64 bushels per grower and in the other 154 bushels. During the next ten years these growers raised their output to 249 and 264 bushels per grower, respectively.

**T**HE significance of such progress in personal efficiency is greatest when labor is costly or when the prices of farm products are relatively low, as during the course of the 1923-24 wheat market. During that time, when most wheat farmers claimed not to have made their cost of production, many Ohio farmers, according to the college authorities, made more money on wheat than



### This is an Interesting Story

John Shutt and his father, of Garrett, Indiana, had a contest to see who could grow the most, the best, and the cheapest potatoes. The father's crop is shown at the left, the son's at the right. Mr. Shutt used ordinary seed, 17 loads of manure,



no fertilizer; his yield was 75 bushels per acre and cost about \$1.13 to produce. John used certified seed, the same amount of manure, and 475 pounds of a 4-8-6 fertilizer. His yield was 227.6 bushels and cost about 36 cents a bushel.

in the preceding year. Records kept by 20 representative Greene County farmers were made public and showed that the high rate of yield reduced the cost of production to 83c a bushel, 11c below the average selling price from August to October. Lower yields on the same farms in 1922 were responsible for production costs averaging 99c a bushel, compared to an average selling price of one dollar.

A Chester County, Pennsylvania, survey made in 1911 shows that when the crop yields were 84 per cent or less of the average, the labor income was only 49 per cent, of the average; but when the crop yields were from 115 to 139 per cent of the average the labor income rose to 153 per cent of the average.

**I**N Sussex County, New Jersey, the results indicated that the farmers with crop yields 30 per cent or more below the average made labor incomes averaging only \$268, while those with yields rang-

ing from 16 to 30 per cent above average made incomes of \$687.

The results of a five-year survey in Washington County, Ohio, made under the direction of H. W. Hawthorne of the Bureau of Agricultural Economics, U. S. D. A., have been summarized by Mr. Hawthorne in so far as crop yields are concerned, as follows:—

“The group of farms that had both poor crops and poor stock had an average labor income of \$4 per year. The group with no better stock but with good crops had an average labor income of \$134, while the group with no better crops but with good stock had an average labor income of \$216.

“The group of farms with medium crop yields and medium stock had an average labor income of \$108. The group with no better stock but with good crop yields had an average labor income of \$212, while the group with no better crops but with good stock had an average labor income of \$302.



"The farms with both good crops, and good stock had the highest average labor income—\$397."

In a Minnesota survey the group of farms which averaged 31 per cent below the average in crop yields made labor incomes averaging only \$37 while those of the highest yield group with yields 33 per cent above average made labor incomes of \$504. Thus with yields not quite doubled the net earnings of the most efficient farmers were almost 14 times as large as those whose yields were lowest.

**P**ROFESSOR E. L. Nixon, Pennsylvania State College, discussing the work of the "400-Bushel Potato" Club of that State, in 1923, says, "The winners in the '400-Bushel Potato' Club grew the cheapest potatoes that were grown in Pennsylvania last year and have demonstrated conclusively that the higher the yield per acre, the lower the cost per bushel will be."

Jacob S. Wile, who produced the largest yield of potatoes in the State last year, 532.4 bushels on one acre, averaged 445.8 bushels on a piece, 5.9 acres in size. His total cost was \$717.50,—\$121.60 per acre or 27.2 cents a bushel. On his best acre, the cost dropped to 22.8 cents a bushel, one of the lowest figures on record. It is of interest to note in passing that Mr. Wile used Michigan russets for seed on a good clover sod, well manured the previous fall. He applied 1,200 pounds of fertilizer per acre, plowed and disced thoroughly, cultivated three times before, and four times after the crop was up. He sprayed nine times.

Considerable authoritative information is available, much of which is drawn from actual farm experience, showing the unfailing effect of high rates of yield upon unit production costs. Apparently it may safely be said that within

certain limits, not even approached in the general run of our present system of farming, the higher the rate of production on each acre, the lower will be the cost of producing each unit of the product. Any reasonable expenditures, over and above the amount required for average production,—for more careful preparation, better seed, more adequate fertilization, more thorough cultivation, spraying, etc.,—will be returned in the profits from the extra units of product.

## CORN

A number of Illinois farmers have been keeping careful records of their corn growing costs, under the supervision of the State College of Agriculture. These records show that when the yield was 30 bushels an acre, corn had to bring 70c to pay a fair interest on the investment, taxes, depreciation; and give the grower, ordinary farm wages. That is, it cost \$21 an acre to grow a 30-bushel crop. The records show further that a 40-bushel crop cost \$21.70 and a 50-bushel crop \$22.40. The farmers in the 40-bushel group paid all expenses and had a nine bushel profit that the 30-bushel group did not have. The 50-bushel group paid expenses and had an 18-bushel profit.

**T**HE corn-growing contests that have been carried on in several States during recent years offer convincing evidences. Professor R. S. Thomas, Chairman of the Indiana, "Five-Acre Contest" Committee, remarks, "Increased yields and more economical production were demonstrated in several counties from applications of fertilizers, use of legumes in the rotations, field selection, and testing of seed corn, rate of planting, etc."

The U. S. Department of Agriculture has given out figures which show clearly why it is that low rates of yield (turn to page 51)



### From Low Cost to High Cost in Hay

The Cornell (N. Y.) Station recently made tests to determine the effect of various fertilizer treatments on hay. These photographs show the results.



The stack on the left had no fertilizer and represents a rate of yield that is considerably more expensive than the one on the right.



### Seven Years Results on Soybeans

It costs nearly the same to make a high or low rate of yield, even with soybeans. This test has been running over seven years at the Delaware Experiment Station. Without ferti-



lizer, the beans at the left have averaged 14.6 bushels per acre. Those at the right with 325 pounds of a potash-phosphate fertilizer have averaged 24.4 bushels. That is at least an eight or nine bushel profit.



Here is good proof that an article can be sound science and good reading at the same time. You said a mouthful, Brother Schneiderhan, when you said—

# “Let Us Spray”

By F. J. Schneiderhan

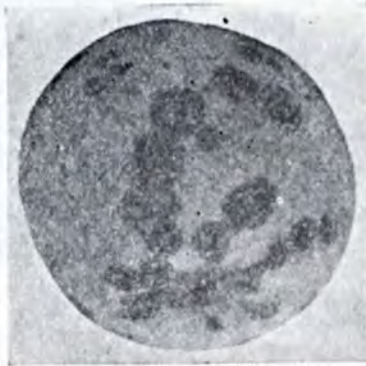
Virginia Experiment Station

THIS is a plant pathologist who rises to remark that the phonetics of “Let us Pray” and “Let us Spray” are nearly identical but for the orchardist, the latter has much more of a kick to it. It represents faith with the good works. You know, a man may have unbounded faith in his dollar watch, but eventually he will discover that faith without the good works is nothing. The religious perusal of the old fashioned almanac with an occasional squint at the shape, color and tilt of the moon used to be the farmers’ great indoor sport of the spring season. This procedure was hot stuff for apple growers in King Tut’s day or in the good old days when Moses wore knee pants, but today, the experiment station spray calendar has taken its place. There is no mysticism or voodooism connected with proper control of fungous and insect pests of the apple. It is easy, that’s why we are going to tell how it is

done. All that is necessary is a common sense insight into the habits and development of these pests, after which the necessary sprays can be applied that will knock them for a row of marble mausoleums. Do not forget, Mr. Apple Grower, that there is no race suicide in the fungous and insect pest ranks and that unless you control them they will keep you just a few hops and skip ahead of the sheriff. Therefore, let us spray.

Have you ever met the apple grower who claims he can spray seventy-five acres of bearing orchard with one 200-gallon spray rig and properly control scab and codling moth in a scabby and wormy orchard? We meet him frequently in our work but remember, “It can’t be done.” With such a ratio of equipment to acreage he might as well try

to shear wool from a hydraulic ram as to try to produce a high percentage of clean apples in a section seriously bothered by such



Apple Scab, a fungous disease, which has caused 30% of all culls in certain wet seasons in Virginia.





*Probably the largest pile of apples ever collected. One million pounds of cull apples at National Food Products plant, Winchester, Va. Approximately 65% of the causes of these culls are preventable through good spraying. The author of this article is shown at the left.*

pests as scab, cloud, bitter rot, black rot, codling moth, curculio, aphid and scale. Forty acres for one good 200-gallon rig should be the maximum.

The Cumberland Valley, extending from Gettysburg, Pa. to Roanoke, Va., possesses such advantages of climate, soil and proximity to excellent markets that it promises to become one of the greatest apple producing sections on the face of the globe. But, and this but should be written BUT, the average apple grower in this section does not produce a sufficiently high percentage of apples that are fit to be barreled. He raises too many culls. Unless he raises a higher percentage of barreled apples he is never going to realize his full measure of profits, because raising cull apples that sell for forty cents per hundred-weight has never been and never will be profitable. It costs just a little bit more to produce a barrel of good apples than a barrel of culls and the returns are six times as great.

The best data available shows that the average grower in this and in certain other section of the United States fails to put more than

sixty per cent of his total tree crop into barrels. With proper management he ought to barrel 80 per cent of his crop. The main reasons for this failure are: insufficient spraying equipment, improper and poorly timed spraying, and an insufficient number of spray applications.

THERE are probably no two orchards exactly alike. The apple grower must become the investigator of his own orchard and know such facts as susceptibility of varieties to particular pests, the importance of certain pests in his orchard, and the correct time to apply sprays that will effectively control these pests. The State Experiment Stations of Pennsylvania, Maryland, West Virginia, and Virginia have studied the apple pest situation thoroughly and consequently have prepared spray calendars recommending the proper spray materials, correct proportions, and through their spray services, they inform the growers of the proper time to apply these sprays. The grower who follows these spray recommendations cannot go wrong if he carries (turn to page 57)



# The Experiment Stations and Agricultural Extension Work

By Dr. E. W. Allen

Chief, Office of Experiment Stations,  
U. S. Department of Agriculture

YOU ask what the experiment stations are doing to help county agent work. I should like, if I may, to broaden your question to include what the extension people can do for those engaged in investigation—what the two groups can do for each other, for that may bring out more clearly the true nature of their relationship. That relationship is by no means a one-sided one, but ought in the largest sense to be reciprocal.

IT will be recalled that the slogan on which the Smith-Lever Act was passed was that of putting to work the information we already had. It was contended that in very many respects practical farming was far behind the present stage of information as developed by research and experimentation, and that to put this practical information into more general operation an intimate and continuous contact with the men and women, the boys and girls, of the farm was needed. The idea was so convincing that the people consented to tax themselves for it all along the line, from the general Government down through the State and county units, to the individual farmer in many cases.

And so this great system of agricultural extension with its county agents all over the land developed ostensibly upon the basis supplied by years of research. The

war gave it an unforeseen impetus by the unusual demands upon American agriculture; and while it grew, as scarcely an agricultural movement had ever grown before, the experiment stations practically stood still. They did not cease their efforts but their appropriations failed to show any increase, even in the face of mounting costs. Hence few of them were able to maintain themselves on their former basis, and the system as a whole suffered a severe setback from which it is only recently recovering.

But this interval gave extension a chance to catch up, to put into wider effect much of the accumulated information; and as this went on new questions arose, as was to be expected, because a new army of workers in every-day contact with the individual farmer were bringing their skilled observation to bear on his problems and the means of



*It is certainly a pleasure to welcome Dr. Allen to our pages. His subject is of great importance and his discussion of it most illuminating. See if you don't agree with me that this is one of the best articles we've run in BETTER CROPS.*

*Jeff*

helping him. Some of these questions could not be answered, or only partially so. There was thus brought forcefully home the large reliance of extension work on the activities of the experiment stations, the necessity of maintaining the supply of information, stocking up before it is exhausted, and to an extent keeping in advance of the immediate demand.

Obviously no one can teach or prescribe or give expert advice until he has sound information. If he undertakes to do so on his own notions we call him a quack. Everybody knows there has been quackery in agriculture in the past as well as honest misinterpretation of experience, but the present effort to get away from such sources of error is one of the striking and recent developments in this ancient industry.

SO, in the process of teaching and improvement, research logically comes first. In that sense it is fundamental, not necessarily because in the long run it is more important, but because the other steps are based upon it. It will be recalled that the experiment stations were at work twenty-five years before extension teaching was organized

on a broad scale, and the efforts of the stations to carry their work out to the people was the beginning of the extension movement. The taking over of this line of activity by the new extension agency was a natural division of labor.

THE prime object and the justification of research at public expense is the use to which it may be put, either in the practical walks of life, for the enjoyment and well-being of the people, or in providing an insight which will help in developing deeper problems. The experiment station worker, therefore, bears a responsibility to the extension worker, through whom his results so largely reach fruition by being put to work, and beyond this he relies upon him in a variety of ways.

The extension worker is a middle-man in science, if we may use a term in some disfavor at the present time. He takes the product of others and distributes it to those who need it, combining his practical judgment and his knowledge of how best to make it effective. Like the investigator, he is dealing with scientific matters, and hence needs to have an understanding of science and an appreciation of what a scientific



fact is. It will show him how dangerous half-truths may be.

THE county agent is far from being a routine worker. His job is very different from that of the teacher of arithmetic or geography of history. The school teacher deals with things that are fixed and are just as true in Maine as in California. The extension man, on the other hand, is dealing all the time with variables—human, biological, physical, and economic. Frequently he will have to adapt the suggestions which come to him to local conditions or systems in vogue. And to give him skill and judgment in making these local applications or accounting for differences in results, the investigator ought to work out for him the conditions of success, the limitations surrounding the fact, the influences which may modify it in practice. For we recognize that most knowledge is more or less relative in its approach to the exact truth; little of that relating to agriculture is absolute and complete. But we demand that the facts and principles worked out for the farmers be as nearly accurate as it is feasible to make them at the present stage, and we want them to be reduced to a practical basis before their use is advised.

On the other hand, the investigator ought to know of the difficulties that may be experienced in putting his results and recommendations into practice. He ought, through the organization of the two agencies, to be in sufficiently close contact with these teachers in the field so that he may have constantly the advantage of their experience and their view, and may receive from them suggestions of special topics upon which information is needed. To a considerable extent the county agent may be the eyes and ears of the station worker, for he is close to the practical situation on a far larger scale than the investigator can be. And be-

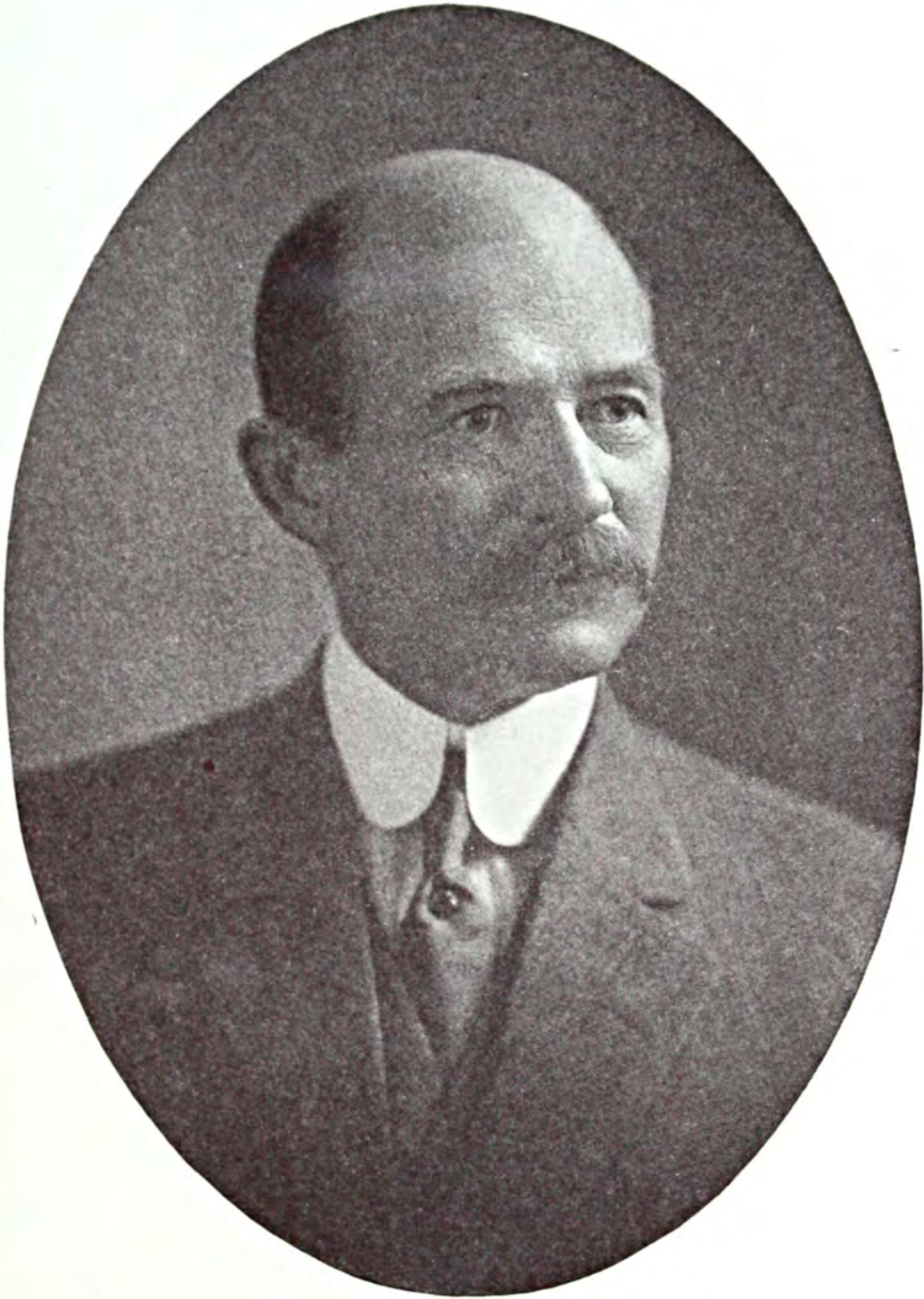
yond this he may make better understood the value of the station work and the reasons why its methods sometimes seem slow.

Extension work won its way with the general public much faster than investigation. Probably it always will, because it is closer to that public and the immediate value of what it is doing is demonstrated in a thousand ways. Practically everything it does is of that immediately helpful nature. On the other hand, relatively little of the day by day work of the investigator ever reaches the public. This may be a surprising confession, but it is due to the process by which new facts are worked out, or applications confirmed.

The steps by which the investigator proceeds may lead to a great deal of work which never reaches the public and which, if it did leak out, would be likely to be misunderstood and unappreciated. It is only the final results in their practical aspects which reach the general public, provided the work leads to something of practical value, and in the meantime the worker may find little encouragement outside of his institution and his coworkers. No one was interested in radio, except possibly as a big curiosity, while it was in the stage of physical study of sound waves, vibrations, and electrical impulses. It was only when these studies had enabled something to be produced which was so simple it became applicable to every day life that real interest was aroused.

BY understanding the investigator and his method, by recognizing him as indispensable to his success, the extension man can help him to be understood, and the need for his support to be appreciated. If a farmer says that the experiment station is not doing anything for him, that the county agent is meeting all his needs, it will not hurt the (*turn to page 55*)





Dr. E. W. Allen, Chief, Office of Experiment Stations, U. S. Department of Agriculture, Washington, D. C.





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Ⓐ little missionary work! County Agent R. W. Graeber of Iredell County, North Carolina, is telling this farmer about the use of Lespezda for soil improvement and pasturage. Looks like he was putting it across.

Ⓐ This is not shaving but unhairing. One of the laboratories of the Department of Agriculture is working hard on the problems connected with tanning and treating leather. Their work ranges from the preparation of the raw hides to the use of dyes and different kinds of shoe polish.



© F. Dickie

Ⓐ Wild deer feed from the hand of this remarkable man who maintains a reservation for them on Hardy Island, B. C.



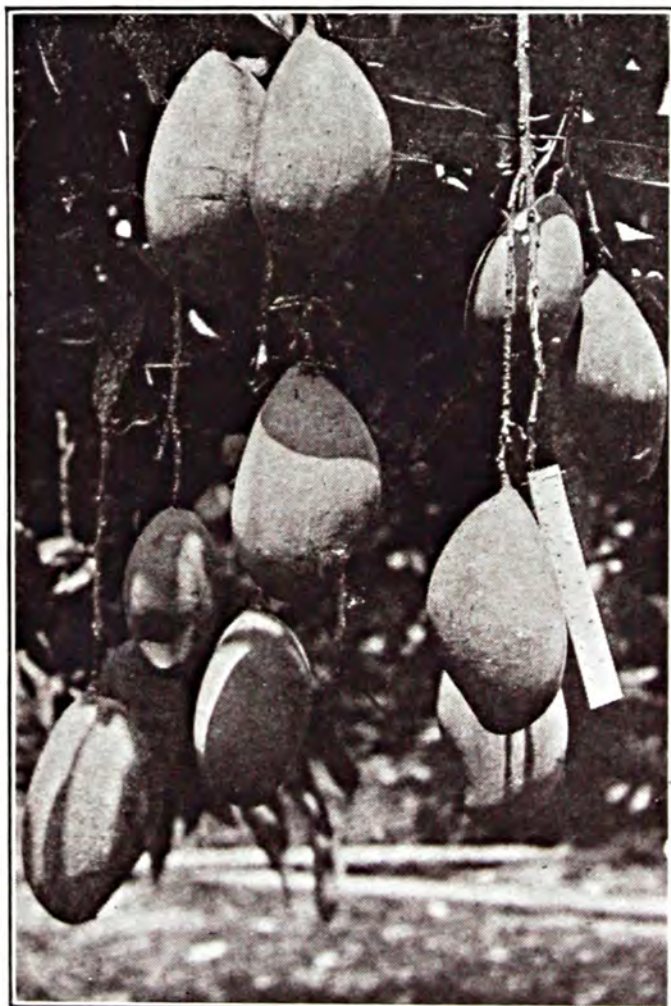


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¶ In the year and a half she has been a member of the girls club directed by the county agent, Esther Rolfs of Lawton, Woodbury County, Iowa, has refinished the furniture in her room, made curtains, bed spreads, hat box, rugs and other furnishings for her own room as well as a number of articles for other parts of the home at very little expense. She has recently organized a girls' canning club in a nearby town and has trained a team of club girls to demonstrate improved methods of canning at their State Fair.



¶ You might think these were punching bags in an outdoor sporting goods store but in reality they are Sandersha mangoes introduced by the Department of Agriculture from Bangalore, India, and now established in Florida.



© U.S.D.A.





¶An agricultural leader of the Middle West, George I. Christie, Director of the Agricultural Experiment Station and the Agricultural Extension Department of Purdue University, Lafayette, Indiana. He was chosen in 1906 to direct the first extension work of the University. His success is evidenced by the fact that this department now numbers 250 members and is the biggest force for improvement in Indiana agriculture. ¶In 1920 he was appointed director of the Agricultural Experiment Station, combining the important research and extension activities in Indiana.



# He Found *the* Road to PROFIT

By W. A. Ostrander

Purdue University Agricultural Experiment Station

*“This man took the guess out of corn raising. His example is worth following.”*

**N**O one horse can work any farm. Neither can manure, legumes, limestone nor fertilizer alone produce bumper crops year after year. Fertilizers are one of the horses in a profitable team for intensive or extensive farming on any acreage. Here is the history of one man's efforts in Porter County, Indiana.

**W**HEN Mr. Warren purchased this land it was considered of poor quality. However, it was black sandy loam. It needed drainage, and it was sour and needed limestone. The first year, his corn yielded 34 bushels per acre. This was the best he could do.

The next year, after liming, draining and manuring his ground, he was able to get up to 55 bushels per acre on five acres. In 1918, by applying five tons of manure to the acre and nearly 300 pounds of a 1-12-1, he raised his yield to 76.6 bushels per acre on his five acres. He had plowed under a fair clover sod. The next year he plowed under an alfalfa sod that had been down for several years, added eight loads of manure and 220 pounds of a 1-12-2 fertilizer per acre, and planted his corn a little thicker, and made 85.5 bushels. This was a distinct advancement and showed the value of more potash in his fertilizer, and the alfalfa sod.

Because a hundred bushel yield was his next goal, he made up his mind that if there was any possible way to make the ground yield it, and still leave a profit, he was going

to do it. He was unfortunate, however, in not being able to get just the fertilizer he wanted, so he plowed up a 12-acre field of alfalfa that was running out, applied eight loads of manure and 400 pounds of a  $\frac{1}{2}$ -11-5 fertilizer to the acre, putting the fertilizer on broadcast with a wheat drill. This year he changed his corn type, getting one that was bred a little better, free from barren stalks and disease, and planted it a little thicker because he had the plant food to carry it, and the result was that he raised 127.2 bushels per acre. This certainly goes to show that a combination of legumes, manure, and fertilizer applied in the right manner, with the right kind of corn, will produce big yields. It showed him clearly that potash was an element that he needed, and gave him big returns on the money invested. In spite of this steady climb due to the application of good farm practices and the use of commercial fertilizer, his neighbor right across the fence would not change, and in checking his yield found it was 29 bushels per acre. Again a wire fence made a difference of 98 bushels of corn per acre.



In 1921, on the same field, using eight loads of manure to the acre, but increasing his fertilizer application to 400 pounds of an 0-10-10 applied broadcast with a wheat drill and then drilling 100 pounds of a 4-10-0 in the row with the same variety of corn at the same thickness, he produced 114.5 bushels per acre. This was a very dry year and the stalks were not half as high, but it showed that with high plant food content in the soil high yields could be produced. This was a thirty-acre field.

Last year, in 1922, with no rain from the time the corn was about a foot high until late August, he produced 94 bushels of corn to the acre, using eight loads of manure on an alfalfa sod with 600 pounds of an 0-12-14 drilled broadcast, and applying eighty pounds of sodium nitrate per acre when the corn was between six and eight inches high, showing consistently that even though his neighbors produced practically no corn because of the hot dry weather, he still could keep right around the hundred bushel mark. By repeating practically the same performance this year, he raised 107.7 bushels of five acres.

**H**E has found the combination of fertilizer best suited for his ground

for high corn yields, and even though climatic conditions are adverse, he is taking the guess out of corn raising for profitable yields. Because of high plant food content and the right kind in his soil, he can produce high yields. These are official measured and weighed yields, and go to show what a man can do who consistently studies his problem, changes his method of applying commercial plant-food to meet the needs of his plant and his soil and forms the proper combination of good farm practices that are always sure to go a long way toward making agriculture a paying business.

**T**HIS demonstration, extending over seven years, is one of the best recommendations to farmers of Indiana that have similar soil as to what to do to make corn growing profitable. It has been proven that it takes a well drained soil that will grow a legume, the application of manure to help hold moisture and supply a good physical condition, and a good supply of plant-food which is very important to carry the thick stand of corn to a firm, ripened condition of high marketable corn that is always the final test of a profitable crop. Other men in Indiana are going to do likewise.



*Forest officers of the Forest Service, U. S. Department of Agriculture going with their tools to fight a fire in one of the National forests.*



# How I Developed CLUBWORK

By Mark S. Womack

County Agent,  
Coffee County, Tenn.

THE appropriation for the work of County Agricultural Agent was made in Coffee County, Tenn. at the July term of the County Court 1922. It was Sept. 1st, however before the work was taken up. Among the first attempts to get something started was club work. It appears that this is the most practical way in which to reach a satisfactory number of people, and make known to them the plans by which efforts will be made to serve them.

I visited as many of the schools as I possibly could during the time I had before the roads were impassable. At the schools, I endeavored to explain to the boys and the girls, and the teachers as well the importance of each one taking an active part in the Agricultural Club Program, and that each boy and girl would be given an opportunity to earn, and learn.

Along with this I was trying to teach the people, where they lived, something about the crops that were being produced on their farms. When I had finished a visit campaign, I found there were 258 boys and girls who desired to follow the course of instruction offered through the Office of the County Agent.

To keep up interest among this large number of members required some real work. It was realized that something of a practical nature was necessary in order to make this a live issue in our County and to acquire a result that would be pleasing. The following plan was at once put into effect. Each boy and girl was given (*turn to page 45*)

## Jeffisms

The hand of help is better than the voice of advice.



Courtesy is the ribbon on the box of duty.



Lose yourself in your work and the world will find you.



A tenant rushes in where farmers fear to tread.



Lost — While talking and teaching, a chance to listen and learn.



There are two sides to every question: your side, his side, and the right side.



The most wonderful feeling in the world comes from the knowledge that someone needs you.



Cut the advice; set the example.



If you can walk, talk, think and read you have a chance.

Jeff



# Finding Out *with Squashes*

By H. Young

*☞The story of a Michigan grower  
who learned a valuable lesson.*

WHAT one farmer has done another can do, providing he knows how. This "knowing how" is really the whole secret of success on the farm. The man who does not know how to farm will never get rich in the country. Nor, for the matter of that, will every man who *does* know how, but he will come a great deal nearer to it through the application of practical farm knowledge. Life is altogether too short to attempt to learn everything by personal experience. It is much easier, and far more profitable, to benefit by the experience of others. What one farmer has discovered can be passed on with advantage to the great mass of other farmers who have similar problems to meet. Of course, the same methods will not work out in the same way under all conditions, but the fundamental principles involved are of universal importance. It simply becomes a question of common-sense adaptability, which each individual can work out for himself. Nowhere is this more clearly demonstrated than in the growing of market garden crops.

To make the most of any crop, intensive cultivation is a prime requisite. Maximum crop production requires intimate knowledge

not only of the crop itself, but of its individual needs in the way of soil preparation, fertilization, cultivation, etc. Large yields and good quality are of paramount importance. Once these are assured, successful marketing becomes a matter of minor concern, for quality goes a long way in selling products at a profit.

Opportunities for producing cash crops on the farm were never better than now. Market demands are increasing daily. The supply is not keeping pace with these demands. This is especially true of vegetables. Expensive meats are popularizing the use of all garden crops. Squashes are coming in for their share of attention from both the market and production standpoint. They are easily grown, are very productive and respond most readily to intensive cultural methods. As a cash crop for market, garden and farm, squashes present attractive advantages. The experience of a Michigan grower, Mr. W. A. Wortley, of Blissfield, offers a valuable lesson of how the yield and quality of this crop can be enhanced by the addition of available plant food in the use of commercial fertilizers.

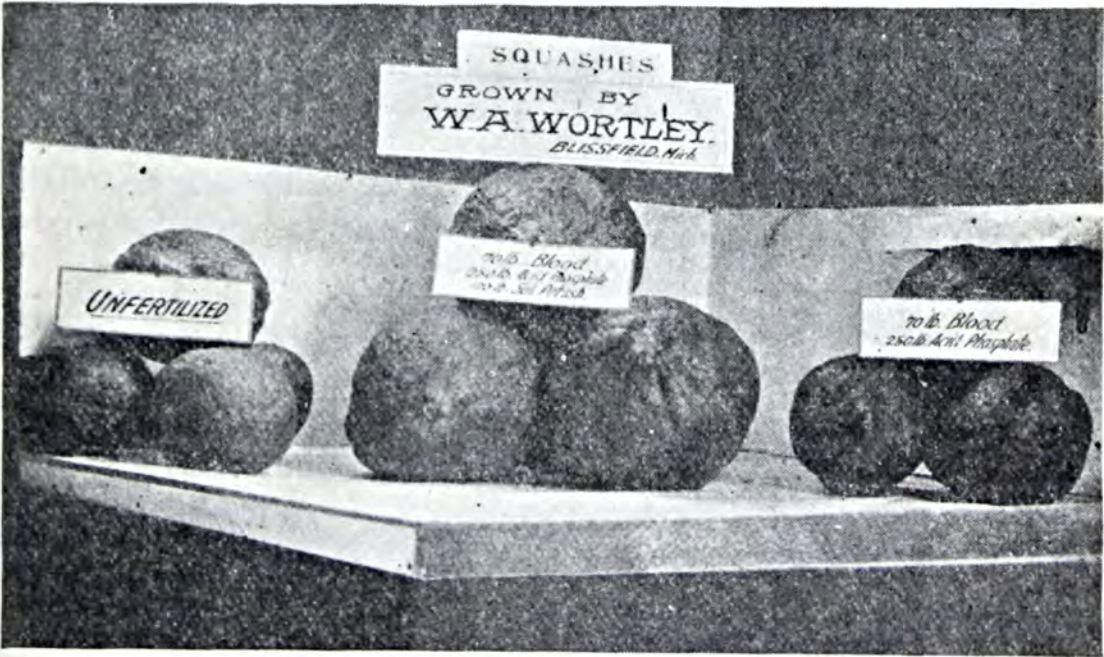


Fertilizer Per Acre in Pounds	Yield Per Acre in Tons	Increase Over Unfertilized in Tons
No Fertilizer.....	3.99	
70 Pounds Dried Blood..... 250 Pounds Acid Phosphate..... 100 Pounds Sulfate of Potash.....	6.05	2.06
70 Pounds Dried Blood..... 250 Pounds Acid Phosphate.....	5.58	1.59

As with all vegetable crops, rapid growth is very desirable. The soil needs plenty of plant food—food that can be made use of at once. Squash plants are quite tender and do best in a well-drained, warm, rich soil. Mr. Wortley has a sandy-clay loam, with a gravelly and blue clay subsoil. Manure has been liberally used in a cropping system, including wheat, timothy and potatoes. His results have been fairly satisfactory with these preceding crops but a desire to try out more intensive fertilization prompted a test with commercial plant-food. Somewhere he had heard that manure is an unbalanced ration, richer in nitrogen than in the mineral elements and that its use alone would tend toward more vine than fruit. Accordingly his squash field was given different treatments. The preliminary preparation of the

soil was the same. Two days before the squashes were planted the following fertilizers were broadcasted on separate portions of the field: On one 70 pounds dried blood, 250 pounds acid phosphate and 100 pounds sulfate of potash; while on the other 70 pounds dried blood and 250 pounds acid phosphate only were used. Still another portion, of equal area, was left untreated. The planting was all done the same day, and the subsequent management of the crop was the same over the entire field. The season was not the best, being somewhat dry at a critical period in the crop's development. Bugs and blight were also the cause of some damage to the crop.

The plants in the fertilized plots made a quicker start, pushed ahead of those on the untreated ground, and remained (turn to page 40)



These are samples of the results secured by Mr. Wortley of Blissfield, Michigan, from the experiment described in this article.



¶Beyond a doubt the subject that most interests our readers is how to surmount the economic difficulties with which the farmer is faced. But before we can improve the present agricultural situation we must first understand it. ¶No article I have seen in recent months so clearly analyzes present conditions as Dr. Warren's contribution to *The Quarterly Journal of Economics* (February, 1924). ¶The following extracts from this article are reprinted through the courtesy of Dr. Warren and *The Quarterly Journal of Economics*. They will repay a very careful reading on your part whether you accept his conclusions or not.

# The Agricultural Depression\*

By G. F. Warren

Cornell University

**A**LTHOUGH we have had the most serious agricultural panic ever experienced in the United States, and are still in a period of severe depression, the situation is so little understood that there is some doubt whether a real depression exists. If one goes to enough farms in different parts of the country and learns of the private settlements with creditors by means of which great numbers of young men have lost their entire savings; learns also of the greater number whose debts are larger than their resources, but who are struggling along hoping for a way out—one will have no doubt concerning the grim reality of the situation. Since most persons must form their conclusions from the readily available statistics, and since it requires many years for the statistics to be collected and fully analyzed, it is not surprising that a long time is

necessary before agreement is reached concerning the facts.

\* \* \*

## Effect of a Declining Price Level on Agricultural Prosperity

If all the farmer's money were used for the purchase of general commodities, he would be concerned with the price paid to producers for farm products and the price that he has to pay for retail purchases for living and for his business. But some farmers hire labor and are, therefore, concerned with the wages of farm labor and the quantity and quality of labor available. All farmers hire other labor, such as carpenters, blacksmiths, and the like, so that they are concerned with the amount of farm products necessary to hire these persons. One of the most important considerations is the

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payment of interest and taxes. Farmers, therefore, are concerned with the quantity of farm products necessary to make such payments. In so far as the money goes for these purposes, it is the money price of farm products and not their purchasing power that is important. For the farmers who bought farms in recent years and who are not out of debt, these items are the dominant ones. In a large measure they can stop buying clothing, farm equipment, and can greatly reduce expenses for food; but there is no way to escape taxes, interest, and payments on debts. The portion of the farming population that is in comfortable circumstances is most concerned with the comparative prices of what they sell and what they buy, but the portion of the population now in financial difficulty is concerned with the quantity of farm produce required to pay interest, taxes, and debts.

The taxes per acre paid by farmers in the United States for the year 1913-14 averaged \$0.314 and in 1921-22 averaged \$0.709 or an increase of 126 per cent. For the area as reported by the Census of 1920, this would call for an annual payment of \$678,000,000. Since that time, taxes have continued to rise. What such an amount means is better understood when compared with the sales of wheat. For the last three years, the sales of wheat from American farms would about pay the land tax bill.

ON farms in Ohio, Indiana, and Wisconsin, the business receipts less all farm business expenses except taxes, in 1913, averaged \$1147 per farm. Taxes averaged \$112 per farm; that is, taxes amounted to 9.8 per cent of the net income before taxes were deducted. Prices rose faster than taxes: in 1918 taxes represented only 6.7 per cent of net income. But when taxes rose and prices fell, the reverse was emphatic,

for in 1921 the income above business expenses other than taxes dropped to \$771 per farm, while taxes rose to \$253, so that taxes required 33 per cent of the income. Expressed in another way, it required over twice as many hogs or beef cattle, two and a half times as much corn, or a half more than the pre-war amount of butter to pay the taxes.

SINCE much of the tax money goes for payment on bonds and much for payment of teachers' wages, there is little hope for a large reduction of taxes in the near future. Teachers' wages lagged behind prices when going up and when coming down, just as they did following the Civil War.

Normally, when a young man buys a farm, he assumes a debt that will require most of his life-time for payment. This is recognized by the Land Bank System, which allows as high as 33 years for payment. Interest and payment of principal will go on for years. Some of these obligations have been escaped by foreclosures, bankruptcy, or private settlement; but the major portion of the indebtedness will continue and be a fixed charge in dollars independent of future price levels. A long period of depression will reduce this item by transfers of property to new owners at lower prices; but this is a slow process, and is often disastrous to the seller.

The Census does not report mortgage debt for farms operated by tenants, nor is any personal indebtedness reported. But of the farms operated by owners 41.3 per cent were reported mortgaged. The average debt per farm was \$3,356 and the average rate of interest 6.1 per cent. The farms averaged 148.2 acres. This would call for an interest payment of \$205 per year. Personal indebtedness on many New York farms averaged about one fourth of the



mortgage debt. In the cotton country, personal indebtedness is larger. If personal indebtedness for the United States averages one fourth of the mortgage debt, the average total interest payment per farm would be about \$256. If taxes on mortgaged farms are at the average rate per farm, they would amount to \$105 per farm. The total payment of interest and taxes on these mortgaged farms would call for \$361 per year. In 1922 the total probably came nearer to \$400, as both indebtedness and taxes probably had risen. This amount may not seem large; but when it is realized that the total value of all crops produced on American farms in 1921 averaged only \$1,075 per farm, and that the total sales of all products per farm are considerably less than this amount, the figures become more significant. If the averages are as given, it follows, of course, that large numbers have more than the average debt and are worse off than average figures indicate. Since the total number of owners whose farms were mortgaged was nearly a million and a half, the number who are not able to meet their interest payments is large.

**A**GRICULTURE is a very slow industry. If one raises a dairy cow, she is a constant source of expense for over two years. Production does not reach its maximum for several more years. The farmer hopes that the cow will pay for the investment in raising her by the time she is perhaps eight years old. If he raises a colt, it is a ten-to-fifteen-year investment. Tile drains are a fifty-year investment. A good farm barn is expected to pay for itself in about fifty years. Orchards in New York take fifty-four years to reach their prime. For such reasons, capital investment in agriculture is very high in proportion to receipts. The rate of turnover varies with the

type of farming. For the entire United States, it probably requires an average of about eight years to make sales equivalent to the total capital invested. A decline in the general price level makes the period much longer. A business that has a turnover three times a year has as good a chance to get adjusted to deflation in a year as does agriculture in many years.

\* \* \*

**I**T follows that agriculture is injured much more than is the usual type of city business by a period of declining prices. It is no accident that farmers are the one who become most critical when the purchasing power of the dollar is suddenly raised. Agriculture cannot prosper with a continuously declining price level.

### **How Declining Prices Are Met in Agriculture and in Industry**

When prices of farm products drop very low, less hired help is kept, farmers work longer hours and omit all unnecessary things, and members of the family do more farm work. The lower the price goes, the more units of the product the farmer must have to meet his fixed expenses. It is true that the status of all farmers might be better if production were reduced, but the farmer is primarily concerned with his own individual status.

When an industry that depends on large numbers of hired workers cannot sell its products for enough to pay wages, it usually ceases operation until the supply of the product is so reduced that employment can begin. It usually begins with a wage-rate somewhere near to previous rates. In a period of rapidly declining prices, the supply of farm products is therefore likely to be kept high for a time, and the supply of manufactured goods kept at a premium. (turn to page 61)



# The Seed

By Dr. Frank Crane



THE Seven Wonders of the World were by no means the most wonderful things in the world. ¶The wonders of life are thickest among the familiar, every-day matters. ¶Perhaps the most amazing, baffling, mysterious thing in all the universe is a seed. ¶Look at an apple-tree. All of its trunk form, the law of its branches, its leaves and their veins, its delicate blossoms, and its red fruit, were contained in a little, brown, hard seed. Open the seed and you see nothing but a whitish filling; yet that substance has powers as strange as mind, it has a plan that implies wood, flowers, and apples. ¶Out of my window in the morning I hear roosters giving their hoarse, peculiar call. They all sing practically the same tune. Once it was in the egg. Think of that yolk and white in the egg holding in itself the potentiality of a certain cry. And cocks crow now doubtless just as they crew in the Garden of Eden. ¶Take two particles of vital fluid; the microscopist can hardly determine a difference between them; yet from one comes a lion, with all his complicated organism of hair, nails, blood-vessels, viscera, nerve-threads, mental tendencies, characteristics; and from the other a man with a body as complex as that of the lion, and with a brain containing the thoughts, fancies, and spiritual functions of an intelligent being. ¶It seems uncanny when we consider a talking-machine and observe how the tones of a voice, or a piano, or a violin, or the full music of an orchestra, pass through the point of a needle. It seems impossible, a miracle. ¶And yet it is not so astounding as to note how a living being, a duck, a dog, an oak-tree, a rose-bush, concentrates all of its marvellous organism into an egg or seed, from which a similar organism is produced. ¶Not any of the sights of earth are comparable to the seed. The falls of Niagara, the cathedral of Saint Peter at Rome, the pyramids of Egypt, the peaks of the Himalayas, none of them is so overwhelming to a thoughtful mind as a little grain of wheat. ¶The miracle of miracles is life. And the seed is life's most miraculous manifestation. ¶The wonders of electricity, of radioactivity, of hypnotism, clairvoyance, and dreams, of the starry heavens with their stupendous masses and distances, of chemical affinity and the strange appetencies of molecules, of art and of invention, cannot, to me, compare with the seed, where there is condensed into a single, small, not very highly organized substance "all the physical, moral, and intellectual past and future of thousands of creatures." ¶If I were going to be a heathen man, and seek in nature some object to worship as God, some object embodying the infinite mystery of life, I should worship a seed.



# Prussic Acid Poisoning in Livestock —a Real Problem

By Albert A. Hansen

Purdue University Agricultural Experiment Station

*Here's another of Prof. Hansen's articles on poison plants without which no issue of BETTER CROPS is complete.*

**D**URING mid-September of the past year, three horses died suddenly in the pasture of John Berberich, a farmer of Cromwell, Noble County, Indiana. A neighbor who witnessed the death of one of the animals stated that it "tore around in a crazy sort of fashion, keeled over, kicked a few times and passed out." From the symptoms described, cherry poisoning was suspected and sure enough, investigation revealed a fallen cherry tree that had toppled over during a storm that had raged just about the time the animals died. An examination of the fallen tree revealed unmistakable evidence that the leaves had been grazed.

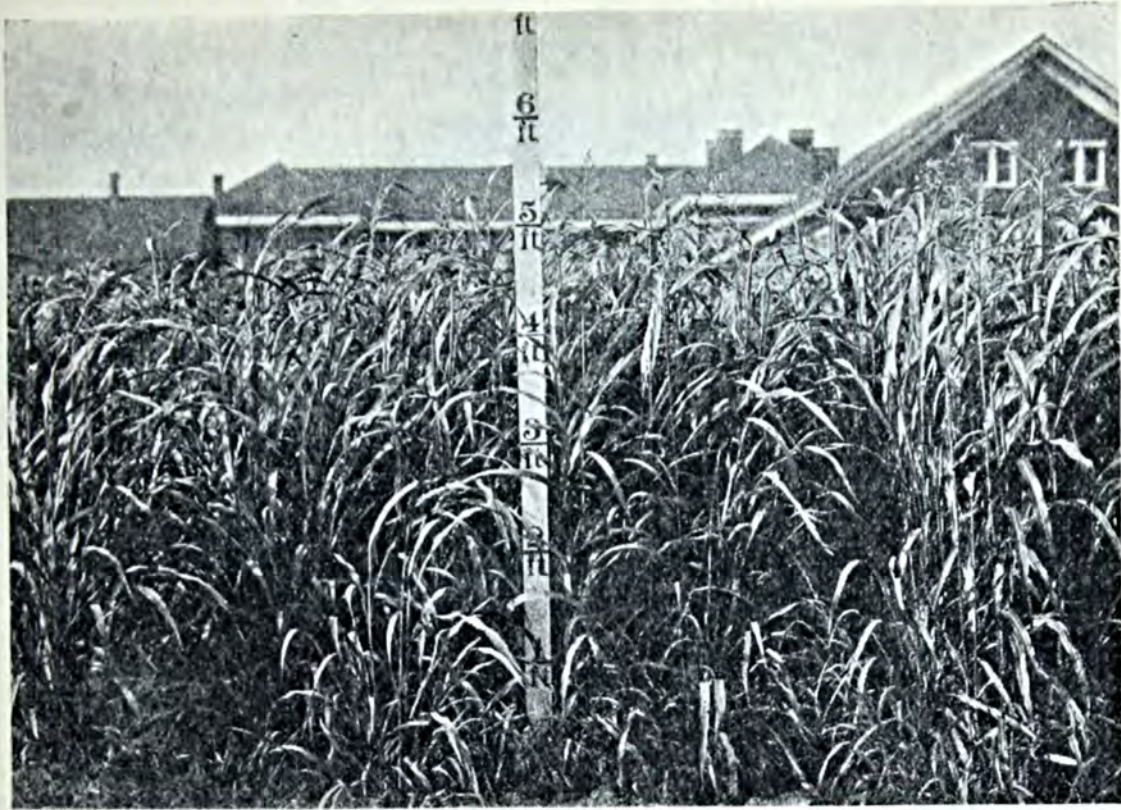
Almost the same description can be given of a similar incident on the farm of John Dellinger of Jeffersonville, Clark County, Indiana, except in this case the victim was a prize cow. She died under similar circumstances during June, 1923, in a pasture in which no animals had previously been lost. However, a storm had passed over the farm about the time the animal died and an examination a few days later was rewarded by the finding of a large limb of a wild black cherry that had fallen to the ground and

showed evidence of having been grazed. On both of these farms it was clear that the trouble was due to prussic acid poisoning.

Experimental work has disclosed the interesting fact that, when the leaves of wild cherry (particularly wild black cherry) wilt, dangerous quantities of prussic acid are formed. Prussic acid is known to chemists as hydrocyanic acid and it is one of the most rapidly-acting plant poisons known. The fresh leaves may contain this dangerous acid in small quantities—in fact some folks acquire severe headaches simply from smelling the flowers of wild cherry, which contain a trace of prussic acid—but the greatest danger is from wilted leaves. In other words, it is dangerous to break off cherry branches or mow cherry sprouts and allow them to wilt in places accessible to grazing animals. This is a little-known bit of information that should be part of the stock of knowledge of every farmer and particularly of agricultural extension workers.

**T**HERE is one other class of plants in which prussic acid forms—the sorghums—and here again the





Sudan grass, a member of the sorghum tribe. Whenever sorghum or its relatives are wilted by frost or otherwise, the plants become poisonous to livestock.

danger lies in wilted plants, particularly in the second growth that has been wilted by frost. Ernest Trimble, a good farmer of Paoli, in southern Indiana, found this out last fall to his sorrow, and the knowledge cost him four of his best cows. Dr. Paul Lindley, the local veterinarian, attended the animals and he gave me an excellent account of the symptoms. "The animals were at first a bit drowsy; they became weak and staggered a great deal, just like an intoxicated person. The breathing became difficult and excited, the muscles twitched nervously, the saliva flowed freely and finally the animals fell in spasms and died in a short time. Death seemed to be due to inability to breathe properly." In searching for the cause of the trouble the partly grazed and frost-wilted second growth sorghum was found. The same trouble has been experienced recently in Martin County, Indiana, and a number of horses died from the same cause in the vicinity of Norman Station in Jackson County. Prussic acid sorghum poisoning

seems to be more or less common throughout Indiana wherever grazing animals are allowed access to the frosted second growth.

Technically, the trouble is due to the action of one of those mysterious things called enzymes on an equally mysterious glucoside. The main point in which the farmer is interested is that the formation of the dangerous prussic acid may take place whenever green sorghum is wilted (as during drought), and especially in the frosted or otherwise stunted second growth. Very little of such vegetation is necessary to cause fatal results, and death takes place so rapidly that it is practically useless to call a veterinarian. As in many other things, an ounce of prevention is worth a ton of cure. With the necessary information at his disposal, the farmer can guard against losses of this character. It is not always necessary to destroy sorghum thought to be dangerous since the prussic acid is highly volatile and disappears when the (turn to page 38)





# STRAWBERRIES

## *and their Fertilization*

THE strawberry has the widest range of climate and soil adaptability of any fruit now grown in America. It is being successfully produced both commercially and in the home garden, from Alaska to Southern California, and from Maine to Florida. Through careful breeding, varieties have been produced which are adapted to growth on each of the different soil types. The strawberry can, therefore, logically claim the title, "Most Cosmopolitan of All Cultivated Fruits."

It is not difficult to raise strawberries under ordinary conditions. The plants may be successfully grown in the limited area of a home garden, or on an extensive

scale embracing the cultivation and marketing of several acres. Among the many desirable characteristics which commend the strawberry favorably to land owners who would grow the fruit for either home use or for market, are the following: the facility with which the plant adapts itself to different types of soils and varied conditions of climate; the limited care and small cost attending planting and cultivation; the bountiful yields secured from well selected soils properly managed; the comparative freedom of the plants from insect pests and fungus diseases; the early maturity of the fruit and the regularity with which well established plantings return profits, greatly in excess of the cost



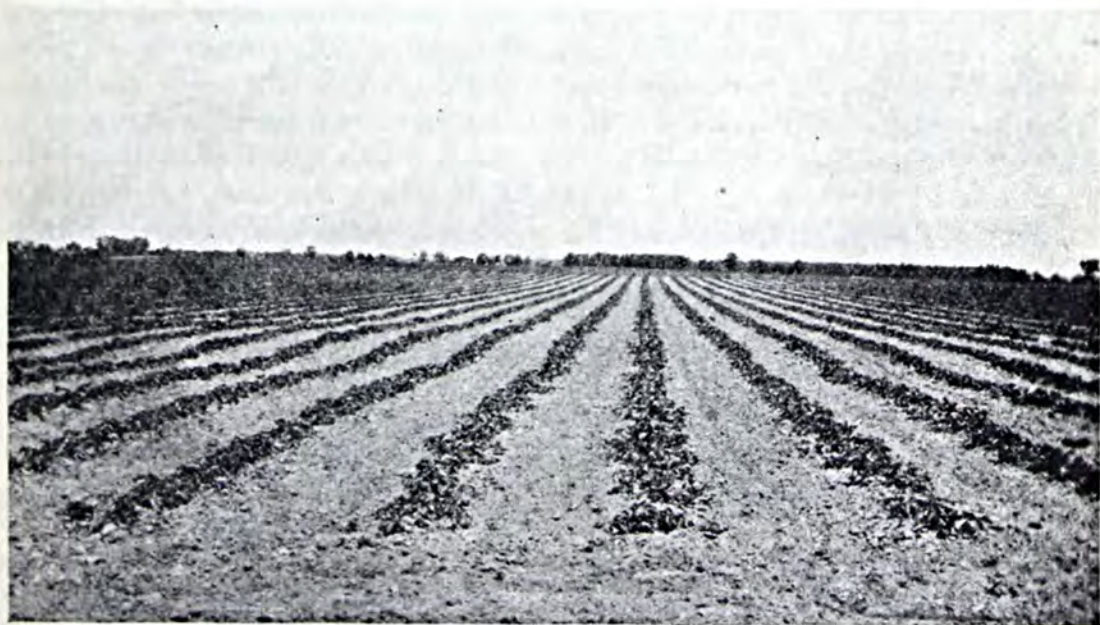
of production. Strawberries are one of the best paying crops that can be grown among the young trees until a new orchard comes into bearing.

**I**N its native home the strawberry delights in a rich, rather moist soil and cool season. The wide adaptability of different varieties, however, makes possible its growth on many types of soils. Any soil which is suited to the growth of ordinary farm crops can be readily utilized for strawberry production. Since earliness of maturity is a desirable characteristic, loam soils or those containing a considerable amount of sand are regarded with favor by most growers. Commercial plantings are usually located on mellow and "quick" soils of a sandy or sandy loam type. On account of their desirable physical characteristics, such soils are preferred to heavier types of greater potential fertility. Soils, deficient in plant food but in good physical condition, are easily and quickly brought to a high state of fertility under a system of management which includes the judicious use of manures and fertilizers.

While the use of manures and green crops is highly to be com-

mended, one should not forget that the strawberry, like all other fruit crops, draws freely on the potash and phosphoric acid supply of the soil; nor should one overlook the fact that yard manure is not a well-balanced plant food, being deficient so far as the strawberry is concerned, in available supplies of both potash and phosphoric acid. Growers who resort to the use of green crops should bear in mind that, in a sense, they only turn over the mineral plant food supply of the soil, but do not add anything to the store of the mineral elements—potash and phosphoric acid.

**C**ONSERVATIVE estimates indicate that two good crops of strawberries, including the production of the vine and the fruit, will remove, during the three years of growth of the crop at least 223 pounds of nitrogen, 375 pounds of potash and 83 pounds of phosphoric acid per acre. Since the crop is generally planted on soils of a rather light character, they will, in most instances, not be naturally as well supplied with potash and phosphoric acid as soils of a heavier type which contain more clay. In fact, the experience of practical growers shows that the use of these elements in con- (turn to page 44)



*A well cultivated new strawberry field at Three Rivers, Michigan.*





*The original method of hot water treatment in Indiana.*

# KILLING *the* Loose

By C. T. Gregory

Purdue Agricultural Extension Department

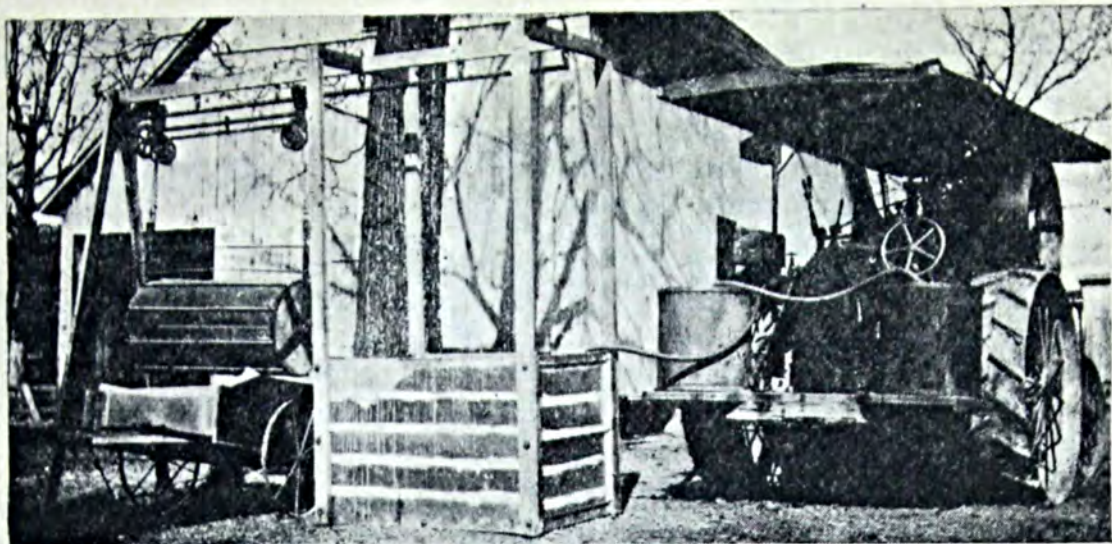
IN the Spring of 1917 the farmers of Shelby county, Indiana, were forcibly reminded that the black heads or loose smut was taking an undue share of their wheat. That year they had as much as thirty-five percent of their crop destroyed by the disease. The situation was alarming and they called on the Purdue Agricultural Experiment Station to know what could be done to rid their fields of the disease. The extension specialist told them about the peculiar nature of the disease and advised them that the only way out of their troubles was by the hot water route, the Jensen's hot water treatment. These Shelby county farmers were game to try anything.

In the fall of 1917 a few of the hardier souls let these extension men "scald" their wheat. They certainly thought that the wheat

was cooked when they saw it being rolled around in water so hot that they could hardly bear their hands in it. Some of this treated wheat did not come up very well that Fall and in some cases the county agent, Russell East, almost had to beg with tears in his eyes to prevent the farmers from plowing it up. In one or two cases even these tears failed but the men who left the wheat had a nice surprise in store for them. This supposedly dead wheat produced a crop that was entirely free from the smut, and had three to five bushels more per acre than the untreated wheat.

From this rather inauspicious start the hot water treatment has spread till hundreds of farmers in about fifty counties of the state are using it and there are thousands of bushels of smut-free seed. But, how has Indiana made practical this





*Bill Shrode's portable treating tank used in Posey County, Indiana. He takes out five bolts and the whole tank and the A shaped 2 x 4's come down. He puts it all in a trailer and drags the two-wheeled cart behind.*

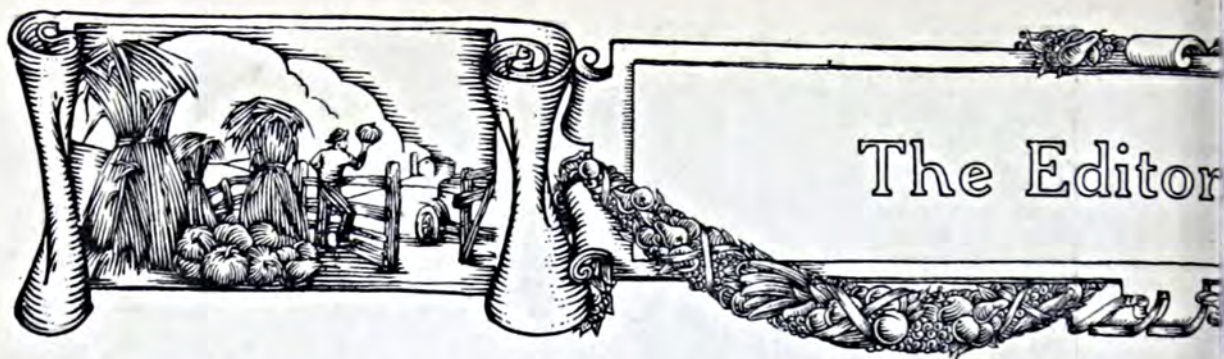
# SMUT of Wheat

more or less theoretical laboratory practice? It has all come about by slow experience and hard knocks. At first the men dropped the bags of soaked wheat in the hot water, rolling them around as best they could before snatching their hands away. They decided that this slow parboiling of the hands would never do, and devised the scheme of tying loops of binder twine at each end of the bags. This permitted them to agitate the wheat without getting their hands in the water. Of course it is necessary to presoak the wheat at least four hours before treating it, and during this time the seed will swell to about twice its usual size. A good many bags were burst because the farmers did not realize this and put too much dry wheat in the sack. We recommend now that only a half bushel be put in a sack and, moreover, that only a burlap

sack be used. A tightly woven grain sack will not permit the free circulation of the hot water.

IN Shelby county the demands for wheat treatment piled up till county agent East was swamped. Six hundred or more bushels of wheat cannot be treated in a short time by the slow methods then in vogue. East put on his thinking cap and with suggestions from F. J. Pipal, the Purdue specialist, he devised the tank and drum which did take care of all the wheat the farmers could bring in. The drum is made of heavy iron screen and is capable of treating five bushels at a time. The tank is large enough so that the drum can fit snugly in it and the water is heated by steam. This method went (*turn to page 41*)





## THE FUTURE OF FARM PRICES

What will be the trend of prices for farm products in the next few years? Will they go up or down? These questions, I believe, are giving more concern to agriculturists than any others. I know that the readers of *BETTER CROPS* are thinking about them very seriously. In future issues I hope to have the subject discussed from various angles.

In this month's issue, you will find some excerpts from an article by Dr. G. T. Warren, of Cornell University, on this subject. Dr. Warren's conclusion is that the general tendency of prices for farm products will be downward for some time to come, and on the basis of this assumption, he predicts some of the results that would follow.

It is always difficult to look facts squarely in the face, particularly when they are the reverse of what we would like. *BETTER CROPS* and its readers, however, would be shirking their responsibilities if they refused to consider frankly what further depression of farm prices may mean.

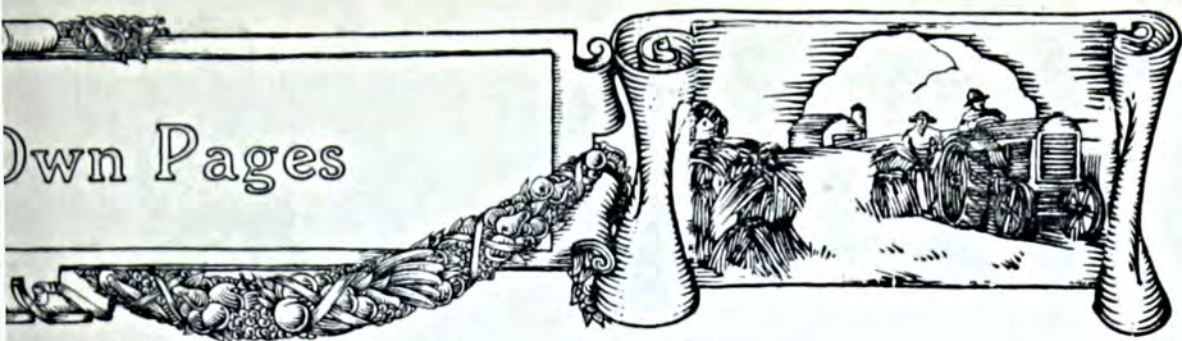
At first we are likely to feel discouraged, but to accept the facts is not necessarily to abandon all hope and effort. Rather should it summon everyone of us to straighter thinking, better planning and harder work than ever before.

Let us always keep in mind this great fact—that every human being is dependent upon agriculture for his very existence and that, unless it prospers, nothing else can prosper for long.

There will, of course, be those who will counsel the farmer to reduce his crops, to abandon all progressive enterprises and simply sit tight. That to my mind is unsound advice. I believe that any farmer who follows such advice will soon find himself among the "unfit"—the down-and-outers.

The big thought I got out of Dr. Warren's article was this: whatever the future trend of prices, the soundest policy is to concentrate on increased efficiency. This may sound simple,





but, in fact, it is an extremely complicated problem. The industrial manufacturer in the interests of efficiency can change his plans and his equipment almost over night; the farmer must plan for years ahead and, once started on, a plan, it is generally impossible to change.

Since the farmer is a "piece worker" it is out of the question for him to stop producing. Increased efficiency means that he must get more from his investment, more from his land, and more from his workers than heretofore. As Dr. Warren himself points out in a bulletin which we reviewed last month, the importance of saving labor will be greater than ever and for some men this means tractors, trucks, milking machines, better barn arrangement, driving more horses per man, always remembering to exercise great care in buying anything that is much above pre-war prices unless it will pay for itself quickly.

In the matter of crops this means that, in preference to increasing acreage, the farmer should endeavor to increase the yield and quality of his present acreage. It means greater attention to permanent soil fertility. The farmer who can make two ears of corn grow where only one grew before will have more of an advantage than ever. Farms with large yields of high quality will have a greater advantage than ever over those with low yields and ordinary quality.

Pray, reader, meditate upon this point. Whatever your relation to the farmer, if you can show him how to get better and bigger crops by more efficient methods, not only will you render him a great service but society itself will be in your debt.

It was with this very definite ideal in mind that we named this magazine BETTER CROPS.

Yours to a cinder,

*Jeff Mc Dermid*





<sup>1</sup>  
RISES EARLY, FINDING NOTE  
ANNOUNCING DAUGHTER'S  
FLIGHT WITH CITY CUR.



<sup>2</sup>  
POLISHES SHOT GUN FOR HALF  
AN HOUR.



<sup>3</sup>  
DISCOVERS HIRED MAN HAS  
SET FIRE TO BARN.



<sup>4</sup>  
OPENS LETTER ANNOUNCING  
FORECLOSURE AT 2 P. M.



<sup>5</sup>  
MA PLEADS WITH HIM NOT TO  
LOSE FAITH



<sup>6</sup>  
DISCOVERS SON HAS FLED, TAK-  
ING LAST LIBERTY BOND FROM  
CLOCK.



<sup>7</sup>  
DISINHERITS SON AND PUTS LAMP  
IN WINDOW TO GUIDE HIM  
HOME.



<sup>8</sup>  
FINDS DROUGHT HAS DESTROYED  
TURNIP CROP, LEAVING HIM  
PENNYLESS.



<sup>9</sup>  
FEELS THE ODDS ARE AGAINST  
HIM AND SEEKS COMFORT.

The American Farmer May Think He Has It Hard—





10  
UNSEASONABLE SNOW STORM  
BRINGS BACK DAUGHTER AND  
HER LITTLE CHILD, EFFIE.



11  
SHERIFF'S MEN START TAKING  
FURNITURE OUT OF THE OLD  
HOME.



12  
BUT LITTLE EFFIE HAS TOUCHED  
HEART OF THE OLD MISER, WHO  
TEARS UP MORTGAGE.



13  
CHEERFULLY CARRIES ALL THE  
FURNITURE BACK INTO HOUSE.



14  
JUST AS HE SITS DOWN TO SUPPER  
HEARS PITIFUL CRY FROM OUT  
OF THE NIGHT.



15  
PLUNGES INTO SUCH A STORM AS  
FEW MEN CAN REMEMBER.



16  
AND IN IT FINDS HIS SON, WHO  
HAS REPENTED AND MADE HIS  
FORTUNE IN THE CITY



17  
WEAKENED BY EXPOSURE BATTLES  
WITH THE GRIM REAPER FOR AN  
HOUR OR MORE.



18  
THEN GOES TO BED SO AS TO BE  
READY FOR HARD DAY TO-  
MORROW.

—from Life.

But He Has a Cinch Compared with the Movie Farmer





## A Few Corrections

Dear Mr. McDermid:

In BETTER CROPS for March, 1924, you have an article entitled—The Chinese Burbank of Florida's Citrus Industry—in which several ridiculous and extravagant statements are made. On page nine is this statement concerning the perfumed grapefruit—"The perfumed grapefruit is the progeny of a cross of the pomegranate on the ordinary grapefruit with much oriental magic injected into the union." Perhaps Mr. Dacy does not know that the grapefruit and pomegranate belong to entirely different botanical families, and that a cross between two groups as widely separated as these are is impossible. According to Bailey's "Manual of Cultivated Plants" the grapefruit is *Citrus maximea* and belongs to the family Rutaceae, whereas the pomegranate, *Punica granatum*, belongs to the pomegranate family. There are no instances in record of family crosses and there probably never will be. Also I would appreciate a statement as to how this oriental magic was injected into the union. With a silly statement of this nature Mr. Dacy is trying to make a mystery out of a simple matter. The whole operation was simply a matter of placing the proper pollen on the stigma of the flower, saving the seeds from the resulting fruit, planting this seed and selecting the best tree from the seedlings. Any good citrus grower could make the cross and should have very little difficulty in picking the best seedling from the lot. Certainly there is

no opportunity for a display of oriental magic. A knowledge of citrus varieties and a little common sense would go much farther in practical plant breeding. If the truth were told in a simple manner, others might be encouraged to try their hand at plant breeding, resulting in more improved varieties. As the statement was made it would certainly discourage anyone except a Chinese magician from citrus breeding and improvement.

On page 63 in the same article mention is made of an early apple maturing in late June in latitude of Central Massachusetts. This seems an impossibility as apples do not bloom in that latitude until after the middle of May and the earliest varieties do not ripen until the very end of July or early August. I would certainly appreciate information as to where I may obtain propagating wood of this remarkable variety.

On the same page the writer mentions the cherry currant as having been originated by Lue Gim Gong as a cross of the grape and the cherry. Such a statement may be interpreted in several ways and none are correct. To say that the currant—*Ribes* is produced by crossing the grape—*Vitis* with the cherry—*Prunus*, is to make the most ridiculous statement I have ever seen in print. Yet, apparently that is what Mr. Dacy meant and it certainly requires no stretch of the imagination to give the statement that interpretation. If it is meant that the variety of currant known



as Cherry was produced by crossing the variety Grape and the variety Cherry this may also be disproved. The variety of currant known as Cherry is thought to have originated in Italy, it was known in France in 1840 and was introduced into America in 1846. Lue Gim Gong must have been an old timer to have produced this variety. Again it is very difficult, almost impossible to grow currants successfully as far south as Florida and a man of Lue Gim Gong's horticultural ability certainly would not waste his time with that fruit.

I would suggest that if you wish to have your publication—BETTER CROPS—taken seriously, that you discontinue such fiction as appeared in the article by Mr. Dacy. I am very curious to know why such ridiculously silly and untrue statements were ever published in a magazine which supposedly circulates among agricultural readers.

Very truly yours,

(Sgd.) GEORGE L. SLATE.

Several other letters have been received expressing substantially the same criticism as Mr. Slate. Mr. Slate's letter was referred to Mr. Dacy. We quote from his reply:

"I reported that story as accurately as I possibly could. The interview was had at Lue Gim Gong's grove down here in Florida. I spent about six hours with Lue during which he told me the experiences of his life.

"He made a very mysterious matter of the perfumed grapefruit and it was not until I had asked him repeatedly that he finally gave me the information covered in the story. For a number of years, Lue lived in Massachusetts with his foster mother, Miss Burlingame. It was there that he successfully performed the experimentation with the early apple and the cherry-currant. . . . I am very sorry if any of the statements in the article were misleading. . . . I took any infor-

mation which Lue Gim Gong gave me as wholly accurate, and I am positive despite what this scientific critic says that Lue has performed grapefruit and cherry-currant experiments. . . . If there is anything that I can do to aid you in rectifying any false impressions created by what this critic calls 'ridiculous and extravagant statements' in the Lue Gim Gong story, you may be assured of my cooperation."

I sent a copy of Mr. Dacy's reply to Mr. Slate and asked his permission to publish his original letter. He replied.

"I have no objections to your publishing my letter with any comments you or Mr. Dacy care to make. I hope I have not given the impression that I was trying to belittle the work of Lue Gim Gong. My criticism was meant entirely for the writeup of his work which contained several rather ridiculous and extravagant statements. It is my knowledge that reputable horticulturists think highly of the Lue Gim Gong variety of oranges. I hope that I did not offend by the sarcastic tone of my previous letter. . . . I can easily see how one not familiar with plant breeding might allow such inaccuracies to creep in.

"Trusting that this matter is settled to your satisfaction, I am

Very truly yours,

(Sgd.) GEORGE L. SLATE."

Our aim is naturally to publish only accurate and truthful statements, but like every human enterprise we are liable to let mistakes creep in. However, we welcome corrections or the expression of different points of view and will endeavor to present them to our readers for their own judgment.

Jeff McIlernid

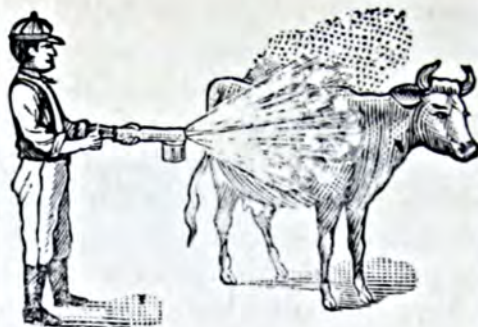


## Prussic Acid Poisoning

(From page 27)

wilted plants are allowed to recover or else are cut, dried and utilized as hay.

We have two other plants in Indiana that form prussic acid in dangerous quantities when wilting, and they are Johnson grass and Sudan grass. We have warned our farmers not to pasture animals on the young wilted plants of either of these two species, and we have not learned of any losses from this source. Our greatest trouble has been from wilted wild cherry and frosted second growth sorghum. Since the odor of prussic acid is very characteristic—it is the same odor so noticable in almonds and peach kernels—some folks say one can always detect its presence by the sense of smell, but we prefer to use our common sense by not running any risks whatever.



## HAMMOND'S Cattle Comfort

**Keeps flies off.  
Makes cows more  
comfortable — they  
give more milk.**

*Write for Information*

**HAMMOND'S PAINT &  
SLUG SHOTWORKS**

**Beacon, N. Y.**

# Hammond's Slug Shot

*Used from Ocean to Ocean*



**A** light, composite, fine powder, easily distributed either by duster, bellows, or in water by spraying. Thoroughly reliable in killing Currant Worms, Potato Bugs, Cabbage Worms, Lice Slugs, Sow Bugs, etc., and it is also strongly impregnated with fungicides. Put up in Popular Packages at Popular Prices.

**Sold by Seed Dealers and Merchants.**

*Send for Pamphlet Worth Having*

**HAMMOND'S PAINT & SLUG SHOTWORKS**  
**Beacon, N. Y.**





## Producing Potatoes

*Costs and Farm Practices in Producing Potatoes* by W. C. Funk, Assistant Farm Economist, Bureau of Agricultural Economics. U. S. D. A. Department Bulletin No. 1188, April, 1924. 10c a copy.

As a contribution to greater efficiency in potato production, this bulletin takes a high place. How to raise and market potatoes at a profit is a subject of keen interest to every potato grower. While this bulletin does not offer any direct answer to that question, it presents facts that should materially help potato growers in the business management of their farms.

The bulletin is based on a survey of nine-surplus-producing areas in Maine, New York, Michigan, Wisconsin and Minnesota. It presents data on costs and farm practices; the relation of production in these areas to the production of the entire country; and the trends of production, prices and costs for the past quarter century. Excellent maps and charts serve to illustrate the main points. An unusually sound piece of work, recommended to all who are interested in potato production.

B. H. P.

## For Bird Lovers

*Birds of West Virginia—Their Economic Value and Aesthetic Beauty* by I. H. Johnston, State Ornithologist. Compiled and published by State Department of Agriculture, Charleston, West Virginia, 1923.

Although this is not a new publication, it deserves mention as a

splendid example of educational and social service. Its hundred and thirty-eight pages are devoted to fine color reproductions of the birds most frequently found in the state. Each species is fully described, and Mr. Johnston adds the results of his personal observations and experiences in a style that makes fascinating reading. B. H. P.

## All About Alfalfa

*Guide Posts Along the Alfalfa Trail* by H. L. Walster, North Dakota Agricultural Experiment Station, Circular 59, February, 1924.

This is another example (may they grow and multiply) of a splendid piece of practical extension work. It is timely, interesting and thorough, covering almost every phase of alfalfa production. Back of it all is much scientific research and experimentation, but the results of this work are not put down in dry, musty form. Mr. Walster has contrived to make his bulletin readable and attractive to the eye. While he is writing with the farmers of North Dakota particularly in mind, his work covers the subject so well that it should be of value to anyone interested in growing alfalfa.

B. H. P.

## Noteworthy Publications

*Control of Potato Tuber Diseases.* U. S. D. A. Farmers' Bulletin 1367.

*Utilization of Pima Cotton.* U. S. D. A. Department Bulletin 1184.

*Marketing Southern Grown Sweet Potatoes.* U. S. D. A. Department Bulletin 1206.



*Directions for Spraying Fruits in Illinois.* University of Illinois Experiment Station, Urbana, Illinois. February, 1924. Circular No. 277.

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*A Plan for the Farm Garden.* University of Illinois Experiment Station, Urbana, Illinois. February, 1924. Circular No. 278.

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*Cotton Growing in Illinois.* University of Illinois Experiment Station, Urbana, Illinois. March, 1924. Circular No. 279.

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*Nitrogen — Carrying Fertilizers and Bearing Habits of Mature Apple Trees.* Agricultural Experiment Station, Michigan Agricultural College, East Lansing, Michigan. January, 1924. Special Bulletin No. 127.

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*An Analysis of the Peach Variety Question in Michigan.* Agricultural Experiment Station, Michigan Agricultural College, East Lansing, Michigan. January, 1924. Special Bulletin No. 126.

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*Soybeans—Their Use and Culture in Southern Minnesota.* The University of Minnesota, Agricultural Extension Division, University Farm, St. Paul, Minnesota. February, 1924. Special Bulletin No. 82.

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*Onion Growing in North Dakota.* Agricultural Experiment Station, North Dakota Agricultural College, Agricultural College, N. D. February, 1924. Bulletin 173.

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*Culling Seed Corn.* Agricultural Extension Division, North Dakota Agricultural College, Agricultural College, N. D. March, 1924. Circular 60.

## Finding Out with Squashes

(From page 21)

ahead all summer. In harvesting the crop careful records were kept of the production of squashes on each plot. The yields are shown by the accompanying table. It will be noticed that the complete fertilizer gave considerably better results, amounting to an increase of more than two tons per acre over the unfertilized crop, and about one-half ton increase over the crop where no potash was included in the mixture.

The yield results, however, do not tell the whole story. The use of the fertilizers also made a big difference in the quality of the crop. This result was fully as striking, if not more so, than the difference in the yield. The photograph clearly shows the greatly improved quality of the completely fertilized crop over that of the other two plots. As a market crop, the value of properly fertilizing squashes should not be underestimated. The experience of this Michigan farmer is worthy of thoughtful consideration. He has proved to his own satisfaction that it pays to feed crops well. What he has found out, by actual field experiment under normal farm conditions, should be of universal use to farmers. Squashes will make money for any one who will provide them with a well-prepared soil in which to live, and see that they are properly and plentifully fed during growth.



*What does the future hold for American farmers? Is prosperity in sight—and when? Read the masterly discussion of this subject, "Looking Ahead," by A. B. Ginung, Economist, U. S. Department of Agriculture, in the June BETTER CROPS.*



## Killing the Loose Smut of Wheat

(From page 31)

merrily. East could handle any where up to a thousand bushels a season.

W. E. Shrode in Posey county, and W. J. Piggott in Knox county decided that they could do more by moving the treating apparatus around to the different communities. They devised a movable type of treating tank that was just like that used by East, but which could be taken apart, piled on a truck or a Ford trailer and moved wherever they desired. They usually had a threshing engine to supply the steam, but sometimes the apparatus was placed at an elevator or a creamery where steam could be obtained.

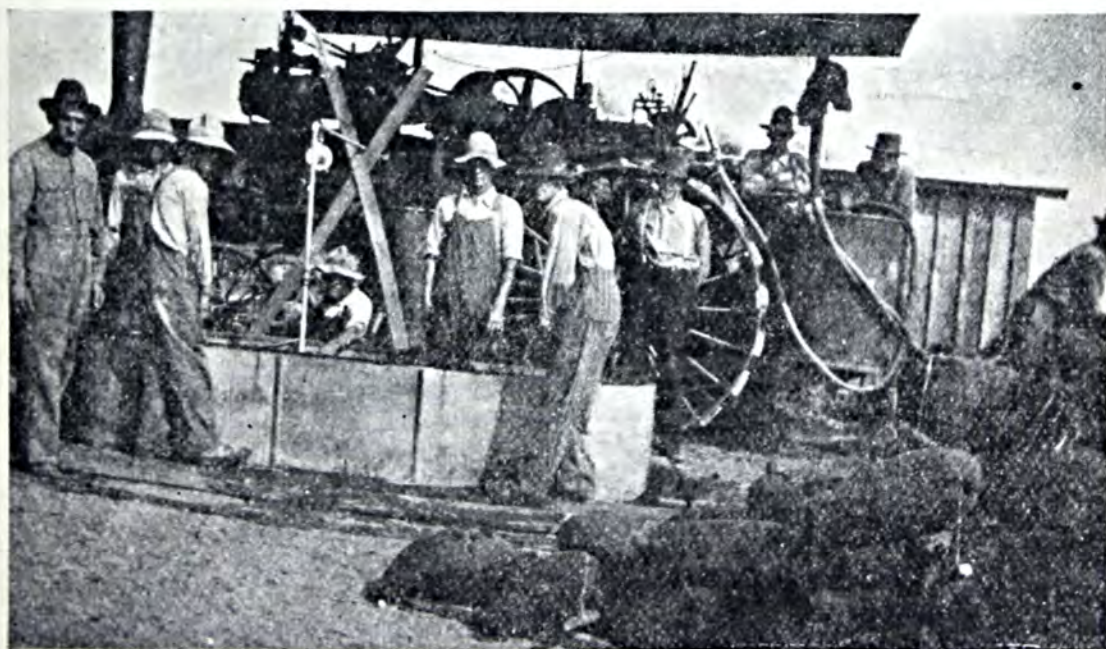
In recent years it has become necessary to establish stations in many communities and at a much smaller cost. We use any large tank like a horse trough or a large galvanized iron tank and run a threshing engine along side of it to supply the steam. Each farmer treats his own wheat by the sack method, and since five or six men can stand around the tank it is easy to treat twenty or more bushels an hour. It is customary to treat enough seed

to plant one field from which the seed for the following year is taken. Incidentally some of the neighbors may get their seed from that field also. Last year Indiana had over 50,000 bushels of such seed and that is not counting the wheat that was two or three years from treatment.

The Shelby county farmers still have some loose smut because it is not possible to get rid of any disease completely in a whole county, but they no longer as "What shall we do?" They know that the hot water treatment will get rid of it. We claim that Indiana has shown that the hot water treatment is not a laboratory plaything. The farmers can use it and are doing so.



*You can't get away from the nemas—because they're everywhere. So you'd better learn about them from C. E. Gapen's article "The Nema—Friend and Enemy" in June BETTER CROPS.*



A group of Clinton County farmers who treated about a hundred bushels of their wheat.



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# OLIVER

## BETTER PREPARATION — BETTER CROPS

One acre of ground properly prepared for seeding is worth two acres that is deficient in available plant food and that is full of clods and air spaces.

Preparation of the ideal seed bed involves an application of the proper fertilizer, if the soil is deficient in any of the available plant foods, and in properly discing, plowing and firming the soil until it is uniform from surface to subsoil.

Before plowing use the disc on

the surface, cutting all trash and mixing it with the surface soil. This will eliminate clods and air pockets. Next plow the land, using a combined rolling coulter and jointer, so that all weed seeds and eggs and larvae of insects may be laid on the bottom of the furrow. Then, as a final preparation, use disc and pulverizer in pulverizing and firming the soil.

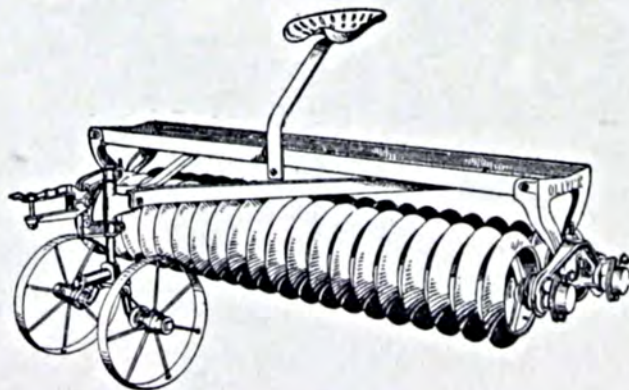
The result will be a seed bed that will be the greatest asset to the farm and to the farmer.

OLIVER MANUFACTURES THE CORRECT  
IMPLEMENT FOR EACH PHASE OF  
SEED BED PREPARATION

## OLIVER CHILLED PLOW WORKS

*Plowmakers for the World*

South Bend, Indiana





# How I Developed Clubwork

(From page 19)

an opportunity to grow a pig into a hog. I sent a letter out to each of them to ascertain just how many would care to have one or more hogs ready for a cooperative sale by the 15th of March.

As a result of this I received official notice from 100 boys and girls to the effect that they thought much of the plan and they were desirous of taking a part. Most of them had pigs with which to start and arrangements were made with their parents for both pigs and the feed. During the feeding period I visited as many of them as I could. On the 9th of March, we had the first sale. It was conducted on a cooperative basis. Local and other buyers were invited to submit a bid. There were three bidders present for the first sale, and the price received was within 60 cents of the Louisville market. We held two other sales in marketing these hogs. The average price was 60 cents within the market, and it appeared that every one interested was entirely satisfied with the project.

In summing up the results of this project for the first year, I find a number of interesting features, and much encouragement for the work the coming season. In the first place it has shown the people the importance of marketing all farm products in a cooperative manner, the practical advantage of every farmer working in perfect harmony with his neighbor. This feature has surely stimulated interest. Later we had a small wool pool in which the growers realized 58 cents per pound for their product. It also taught the boys and girls many lessons about feeds and feeding. There was at once set up a stronger desire among the boys and girls to conduct a similar project again the coming season.

It has also demonstrated a

practical method of selling feeds which our farms are capable of producing. For many years our people have undertaken to sell raw material from the farm. This is gradually being eliminated from the common farm practices here and I firmly believe this demonstration has had much to do with doing away with this impractical method of farm practice. These boys and girls have also learned many lessons of thrift. Many of them at once purchased pure-bred pigs to be shown in the coming Fairs. This was an important feature of the project, as we are learning with a great deal of rapidity that we must rid our farms of every scrub animal if we are to realize a *greater profit* from the farms. Others deposited money in banks. It has also taught economy in producing feeds at a less cost, which means that hogs may be fed more cheaply, producing more profit. It has given our club work a more prominent place in the minds of our boys and girls and I am anticipating that greater results will be realized year after year, and that our work will be given its proper place among the people of this County.



## Missiles and Mignonettes

I am very much interested in BETTER CROPS.—C. M. Yerrington, Custer, Montana.

BETTER CROPS for March is fine. Keep it coming.—O. M. Olson, Clay, Minn.

More power to you.—Mrs. Mary E. Brooks, Quitman, Miss.

Enjoy your magazine.—J. R. Neale, Campbell, Wyo.

BETTER CROPS is going across big with the County Agents and college staff. You are giving us some good stuff in a very readable way.—H. W. Warner, Soils Specialist, Iowa State College of Agriculture, Ames, Iowa.



## Strawberries

(From page 29)

siderable quantities has been most helpful in improving the quality of the berries for shipping purposes. In other words, when potash and phosphoric acid are not supplied in sufficient quantities, either from the soil or from artificial sources, the berries do not stand up well, and many a grower has been disappointed at the market returns from his crop until he found out that he could improve the shipping quality of his berries through the judicious use of potash.

From the foregoing, it appears that in a majority of instances, the use of a complete fertilizer will be found desirable. The year the plants are to be set out, however, the chances are that comparatively little nitrogen need be used in the fertilizer formula. According to the figures presented above, through the three years which normally constitute the life of a strawberry bed it will require no less than 500 pounds of acid phosphate, 16% available, and 750 pounds of muriate or sulfate of potash to supply the mineral requirements of the crop. Such being the case, there should be applied to each acre, before the plants are set out, at least 300 pounds of sulfate or muriate of potash and 300 pounds of acid phosphate. On sandy, thin lands these amounts should be increased to 500 pounds in each instance, and there should be applied in addition, 100 pounds of dried blood and 100 pounds of sulfate of ammonia, or their equivalent of other nitrogenous materials. The fertilizer may be broadcasted or placed in a shallow furrow made by the turning plow directly in the line of the row where the plants are to be set. The furrows should then be drawn together and the plants set over the line of fertilizer but not directly in contact therewith.

In the spring of the first produc-

ing year, scatter uniformly over the rows about 400 pounds of a mixture made up of

400 pounds Muriate or sulfate of potash,  
1,200 pounds Acid phosphate,  
14%, and  
300 pounds Dried blood, 13%.

The ingredients should be thoroughly mixed together, and when scattered on top of the mulch, will work their way down and will become sufficiently mixed with the soil through the cultivation of the crop to answer every purpose. During the second producing year the same treatment is advisable. The experience of practical growers indicates that even on the best soils, as much as 1,000 pounds of a mixture similar to the above, can be used, and on thin soils as much as 2,000 pounds in the course of the three-year period under discussion.

Some may prefer to apply the fertilizer on the basis of a formula containing definite percentages of plant food. In that event a mixture containing

Potash	- - - -	9 to 10%
Phosphoric acid	- - - -	6 to 8%
Nitrogen	- - - -	2 to 3%

is advised, the rate of application per acre being the same. The higher percentages should be used on thin or sandy lands, and the lower percentages on the heavier and loamier soils. Those who desire to use sulfate of ammonia as a source of nitrogen, will probably find it well to lime their lands at the rate of one ton per acre, using the raw ground rock for this purpose. The lime should, of course, be put on some time in advance of applying the fertilizer. The farmer who depends on yard manure or a green crop, plowed under, as the sole source of his fertilizer, will be disappointed in the yield obtained from his strawberry bed, for even if he apply as



much as ten tons per acre of manure which has not been exposed to the weather, he will only furnish the soil about 100 pounds of nitrogen, 70 pounds of phosphoric acid and 100 pounds of potash. Compare this with the estimated amount of plant food removed by a crop in a period of three years and see how totally inadequate it is to supply its plant food needs.

Some will argue that the soil will yield up a large quantity of the mineral elements needed. While this depends much on its natural fertility, not over .25% of the total potash supply and 1% of the phosphoric acid contained to a depth of 18 to 24 inches will, according to the best authorities, become available to the growing crop, and this will only take place under the most favorable conditions of culture and management. Supposing a soil, therefore, contains as much as 100,000 pounds of potash, 250 pounds of this element might possibly become available in addition to that furnished by the manure. This would only supply

350 pounds per acre, where a conservative estimate says 375 pounds would be required. All authorities agree that not over 70% to 80% of the elements supplied to the soil in commercial form are assimilated, and it is likewise known that there is a considerable loss of plant-food from all soils of a loose, mechanical character through leaching. These facts are presented to convince the doubtful planter that the idea of supplying mineral commercial fertilizer in adequate quantity to his strawberry patch is not based on theory alone, but on the discoveries of man through a study of the relation of plants and soils to each other and to the economical production of crops.

That fertilizers can be used with profit for strawberry growing is demonstrated by the data presented in the following table which illustrates the benefits which may be expected from the intelligent use of fertilizers. The figures are taken from an experiment conducted by Mr. C. F. Smith, of Cheboygan, Mich.

Plat	Fertilizer per Acre in Pounds	Yield per Acre—Quarts	Increase over no Fertilizer—Quarts
1	No Fertilizer	980	
2	100 lbs. Blood 310 lbs. Acid Phosphate 130 lbs. Sulfate of Potash	1340	360
3	100 lbs. Blood 310 lbs. Acid Phosphate	1140	160



*Complete Fertilizer with Potash.*

*Incomplete Fertilizer without Potash.*



Three plats of one-tenth acre each were used in this test. The first received no fertilizer; the second, a ration of 100 pounds of blood, 310 pounds of acid phosphate and 130 pounds of sulfate of potash; the third, a ration of 100 pounds of blood and 310 pounds of acid phosphate. The increase over no fertilizer on Plat 3 was at the rate of 160 quarts per acre. At ten cents a quart this would pay a handsome profit per acre on the fertilizer. Where the complete ration, with potash, was applied there was an increase of 360 quarts per acre, which, at ten cents a quart, would be equivalent to \$36.00. Notice that when sulfate of potash was added at the rate of 130 pounds per acre,

there was an increased yield of 200 quarts, equivalent, at ten cents a quart, to \$20.00 per acre. This would indicate that the statement made with reference to the use of potash on soils devoted to the cultivation of strawberries were fully justified. These results were obtained in an extremely dry season when the yield of berries was much below the normal. From two to three times the increase indicated may be expected in an average season.

The results of another demonstration which was conducted, however, in the South by Mr. Sargent Pitcher, Hammond, La., are also interesting and can best be presented in tabulated form.

Plat	Fertilizer per Acre in Pounds	YIELD, PER ACRE		Cost of Fertilizer \$	Value of Crop Less Cost of Fertilizer \$
		Cases	Crop Value \$		
1	800 lbs. fertilizer generally used by growers analyzing: 8% Phosphoric Acid 2% Ammonia equal to 1.6% Nitrogen 2% Potash	158- $\frac{1}{8}$	158.33	8.00	150.33
2	190 lbs. Dried blood 16% 665 lbs. Acid Phosphate 16% 265 lbs. Muriate of Potash	245- $\frac{5}{8}$	245.62	16.03	229.59
3	190 lbs. Dried Blood 16% 665 lbs. Acid Phosphate 16%	130	130.00	10.07	119.93

Increase in value of crop per acre, by using a well balanced complete fertilizer, over that generally used . . . . .	\$ 79.26 (2 over 1)
Net profit due to Potash alone . . . . .	109.66 (2 over 3)

The fertilizer applied to Plat 2 was at the rate of 1,200 pounds per acre, and analyzed 2½% nitrogen, 9% available phosphoric acid and 11% of potash. The fertilizer on Plat 3 contained no potash whatever. The results show conclusively that the fertilizer generally used by the growers does not give the best

results. It contains too little nitrogen and much too little potash. In this test the fertilizer was applied on each side of the rows after the plants had been allowed a month's growth. The plants on Plat 2, which received a well-balanced ration, in addition to yielding the largest crop, looked superior throughout the season.





Here are the plans of some of the County Agents for the coming season

Work on Soil Improvement, by terracing, liming, livestock and leguming. Raising more food and feed crops; push the cow, sow, hen idea in our livestock part of food (and cash crops) part of our program; and legumes, especially in our feed part of program. Cotton clubs for men, three acres—boys, one acre. Each member to plant registered seed,—prizes about \$500 in all. Junior work, besides the cotton club to further specialize on pig club. We have over 50 pig club members, who each are to give the choice gilt out of first and second litters to other club members, who are to do likewise—this through County Agent.—*R. L. Blackwell, Gordon, Ga.*

Put on T. B. eradication campaign. Push soys and sweet clover. Boost club work and more economical production of farm crops and livestock.—*C. M. East, Gibson, Ind.*

T. B. testing of cattle. Pushing alfalfa and sweet clover and starting several soybean variety tests. Five acre corn contest. Liming acid soils. Introducing new variety of wheat. Using certified seed potatoes. Pooling wool and demonstration on wool grading. Pig, lamb, corn and potato club work for boys and girls.—*"Hank" Schroeder, Grant, Ind.*

Multiply last year's soy bean acreage at least four times. Keep four hundred boys and girls interested in Club work. Clean county of T. B. livestock. Put out a large corn acreage. Control the Chuck bug. Improve the orchard conditions. Raise more and better

livestock.—*L. C. McIntosh, Benton, Ind.*

Enroll more boys and girls in club work than any other county in Kansas. Triple our acreage of sweet clover, soy beans and alfalfa. Conduct a Livestock Tour. Increase the acreage of the varieties of corn best adapted to our section of Kansas. Fish in every stream within 25 miles of Emporia. And read BETTER CROPS.—*Cecil L. McFadden, Lyon, Kansas.*

Boys and girls club project—emphasis on baking, garment making, poultry, dairy, calf, dairy judging, ton litter and sheep. Development of poultry program improved housing, culling-breeding, feeding and marketing organization. Lime and fertilizer demonstrations.—*K. A. Kirkpatrick, Hennepin, Minn.*

Clean up T. B. in all herds. Organize for Cooperative Marketing of eggs and poultry. Enroll 300 boys and girls in junior club work. Establish six soil demonstration fields. Establish three sugar beet demonstrations. Inspect Trumbull wheat for fall sowings. Give six demonstrations on treating hogs for worms with capsules.—*R. A. Cane, Fulton, Ohio.*

Put across the work of three newly organized cow testing associations under the circle plan. Testing at one place. Hold numerous tours and demonstrations on the adapting of vetch to this county for hay. Showing under what method of cultivation, fertilization and inoculation it will prosper.—*J. R. Beck, Lincoln, Ore.*





Have planned two corn variety tests, one oats variety test, a county judging contest, four boys' and girls' clubs, an extensive legume campaign, T. B. eradication work, and a bunch of demonstrations, as pruning, culling, caponizing, bee-keeping, etc. Spring work well under way and farmers are very busy, which keeps me busy too.—*H. O. Wilcox, Huntingdon, Pa.*

Organize a bull association among a community of farmers located in the Black Hills National Forest. Start the growing of field peas and oats mixed as a forage crop for milk cows in the high elevations of the National Forest. Re-organize the old county fair into a livestock as started last year based principally on the livestock shown by the boys and girls, who will be the foundation of this show. The first one in 1923 was successful.—*Evan W. Hall, Lawrence, S. D.*

A soil survey covering need of lime using the "SoilTex" test. We expect to use junior club and school workers to gather samples. This is part of a longtime campaign for more efficient crop production based on use of lime, acid phosphate as a supplement to manure, better handling of manure, and use of more legumes.—*E. H. Loveland, Chittenden, Vt.*

Organize a pure bred Holstein Calf Club of 60 members. Have a good County Fair—Use certified seed—Grade our truck crop better. Establish canning factory—Develop a better Dairy Association—Advertise milk as a drink.—*W. L. Kirby, Henrico, Va.*

Organize a group of farmers in a "Potato Ring" such as was carried out by the farmers of Summers County. Put across two potato demonstrations on the farms of W. C. Warner, Beckwitz and R. E. Smith, Wristen. Put about 29 boys' and girls' clubs with an enrollment of 490 through this summer with an 80% record.—*T. H. Howes, Fayette, W. Va.*

1. Get the farmers in each community into the habit of holding regular meetings to make a careful study of the most important problems pertaining to their business of farming. 2. Help organize local cooperation association. 3. Get the local associations into central cooperative marketing associations.—*J. F. Larson, Secy., Fond Du Lac, Wis.*

County Agent work here is new—began Dec. 1, 1923, community organization is our big problem this year. The securing of good seed corn is keeping us busy right now. A recent survey of the county indicates that corn, hogs, dairy cows, and poultry are of most interest to our farmers. 250,000 acres of land to be cleared of Prairie Dogs this summer. 75,000 heads of cattle to be dipped for Scabies.—*J. R. Neale, Campbell, Wyo.*

Increase bean, clover seed and corn production 100%. Ship 20 cars of dressed turkeys. This section produces the finest quality of turkey in America, and last fall we received the highest price paid at loading point for dressed birds—in car lots.—*L. E. McDaniels, Big Horn County, Wyoming.*



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Little Rock—  
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Azusa—  
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Agricultural Chemical Works  
American Agricultural Chem. Co.  
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## CONNECTICUT

Bridgeport—  
Berkshire Fertilizer Co.  
Hartford—  
Olds & Whipple, Inc.  
Middletown—  
Rogers & Hubbard Co.  
New Haven—  
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## FLORIDA

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Gulf Fertilizer Co.  
Clearwater—  
Gulf Fertilizer Co.  
Daytona—  
Cornelius Christiancy Co.  
Eustis—  
Gulf Fertilizer Co.  
Fernandina—  
Nitrate Agencies Co.  
Frostproof—  
Gulf Fertilizer Co.  
Jacksonville—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
International Agricultural Corp.  
Nitrate Agencies Co.  
Virginia-Carolina Chemical Co.  
Wilson Toomer Fertilizer Co.

Lake Hamilton—  
Gulf Fertilizer Co.  
Orlando—  
Gulf Fertilizer Co.  
Tampa—  
Gulf Fertilizer Co.  
Terra Ceia—  
Gulf Fertilizer Co.  
Winter Haven—  
Gulf Fertilizer Co.

## GEORGIA

Albany—  
Armour Fertilizer Works  
Swift & Company  
Virginia-Carolina Chemical Co.  
Athens—  
Empire State Chemical Co.  
Georgia Phosphate Co.  
Hodgson Cotton Co.  
Atlanta—  
A. D. Adair & McCarthy Bros.  
Co.  
American Agricultural Chem. Co.  
Armour Fert. Wks. (So. Hdqrs.)  
International Agricultural Corp.  
F. S. Royster Guano Co.  
Swift & Company  
Virginia-Carolina Chemical Co.  
Augusta—  
Southern State Phosphate & Fer-  
tilizer Co.  
Virginia-Carolina Chemical Co.  
Baxley—  
R. L. Lewis Co.  
Columbus—  
International Agricultural Corp.  
Cordele—  
Read Phosphate Co.  
Macon—  
F. S. Royster Guano Co.  
Pelham—  
Pelham Phosphate Co.  
Savannah—  
American Agricultural Chem. Co.  
G. Ober & Sons Co.  
Mutual Fertilizer Co.  
Read Phosphate Co.  
Reliance Fertilizer Co.  
Savannah Guano Co.  
Southern Fertilizer Co.  
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Virginia-Carolina Chemical Co.  
Toccoa—  
Swift & Company  
Valdosta—  
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Vidalia—  
Vidalia Chemical Co.

## ILLINOIS

Chicago—  
Armour Fertilizer Works  
Darling & Company  
Swift & Company  
National Stock Yards,  
St. Clair County—  
Swift & Company

## INDIANA

Hammond—  
Swift & Company



Indianapolis—  
Rauh & Sons Fertilizer Co.  
Smith Agricultural Co.  
New Albany—  
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# KENTUCKY

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# LOUISIANA

La Grange—  
Swift & Company  
New Orleans—  
Armour Fertilizer Works  
Nitrate Agencies Co.  
Swift & Company  
Shreveport—  
Swift & Company  
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# MAINE

Houlton—  
International Agricultural Corp.  
Presque Isle—  
Armour Fertilizer Works

# MARYLAND

Baltimore—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
Baugh & Sons Co.  
Griffith & Boyd Co.  
Miller Fertilizer Co.  
Nitrate Agencies Co.  
G. Ober & Sons Co.  
Piedmont Mt. Airy Guano Co.  
F. S. Royster Guano Co.  
Swift & Company  
Virginia-Carolina Chemical Co.

Salisbury—  
W. B. Tilghman Company, Inc.

# MASSACHUSETTS

Boston—  
American Agricultural Chem. Co.

# MICHIGAN

Detroit—  
American Agricultural Chem. Co.

# MISSISSIPPI

Jackson—  
Virginia-Carolina Chemical Co.  
Meridian—  
Meridian Fertilizer Factory  
Tupelo—  
Tupelo Fertilizer Factory

# MISSOURI

St. Louis—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
Swift & Company

# NEW JERSEY

Bound Brook—  
Nitrate Agencies Co.

# NEW YORK

Buffalo—  
American Agricultural Chem. Co.  
International Agricultural Corp.  
New York—  
American Agricultural Chem. Co.  
Armour Fert. Wks. (East.Hdqs.)

International Agricultural Corp.  
Mutual Fertilizer Co.  
National Aniline & Chemical Co.  
Nitrate Agencies Co.  
Virginia-Carolina Chemical Co.  
Zaldo & Martines Exchange Co.

# NORTH CAROLINA

Charlotte—  
International Agricultural Corp.  
F. S. Royster Guano Co.  
Swift & Company  
Durham—  
Virginia-Carolina Chemical Co.  
Greensboro—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
Swift & Company  
Henderson—  
American Agricultural Chem. Co.  
Lillington—  
Farmers Cotton Oil Co.  
Harnett Oil & Fertilizer Co.  
New Bern—  
G. Ober & Sons Co.  
Raleigh—  
F. S. Royster Guano Co.  
Tarboro—  
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Washington—  
Pamlico Chemical Co.  
Wilmington—  
Acme Manufacturing Co.  
Nitrate Agencies Co.  
Swift & Company  
Virginia-Carolina Chemical Co.  
Wilson—  
Farmers Cotton Oil Co.  
Winston-Salem—  
Virginia-Carolina Chemical Co.

# OHIO

Cincinnati—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
International Agricultural Corp.  
Virginia-Carolina Chemical Co.  
Cleveland—  
Swift & Company  
Columbus—  
Smith Agricultural Chemical Co.  
Dayton—  
Wuichet Fertilizer Co.  
Sandusky—  
Armour Fertilizer Works  
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Ohio Match Co.  
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# **SOUTH CAROLINA**

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Anderson Phosphate & Oil Co.  
Charleston—  
American Agricultural Chem. Co.  
Etiwan Fertilizer Co.  
Maybank Fertilizer Co.  
Planters Fert. & Phosphate Co.  
Read Phosphate Co.  
Virginia-Carolina Chemical Co.  
Chester—  
Swift & Company  
Columbia—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
Darlington Guano Co.  
F. S. Royster Guano Co.  
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Virginia-Carolina Chemical Co.  
Greenwood—  
T. M. Miller Co.  
North—  
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Armour Fertilizer Works  
Read Phosphate Co.  
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American Agricultural Chem. Co.  
Danville—  
G. Ober & Sons Co.  
Lynchburg—  
Pocahontas Guano Co.  
Norfolk—  
American Agricultural Chem. Co.  
Baugh & Sons Co.  
Farmers Guano Co.  
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Priddy & Co.  
Robertson Chemical Co.  
F. S. Royster Guano Co.  
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St. John—  
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Wilson, Patterson & Gifford  
St. Stephen—  
Dominion Fertilizer Co.  
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Wolfeville—  
T. L. Harvey Co.  
Ontario  
Chatham—  
National Fertilizers, Ltd.  
Hamilton—  
National Fertilizers, Ltd.  
Ingersoll—  
National Fertilizers, Ltd.  
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Swift & Company  
Wilson, Patterson & Gifford  
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## By Ted Butlar

BETTER CROPS' Washington Correspondent

After considering the agricultural export measure for several weeks and listening to the testimony of hundreds of witnesses telling them why the bill should or should not be endorsed, the House agricultural committee reported it out on April 24 by a vote of 14 to 6. By the time BETTER CROPS makes its May visit to you plans will have been completed to discuss the export plan on the floor of both branches of Congress with indications of an early vote. The bill was favorably reported sometime ago by the Senate committee but debate on the floor of the Senate was delayed until the House committee had issued its findings.

Although the Senate committee reported the export measure "as is," it was delayed by the House committee during a revamping process in which it was changed in certain particulars to meet some of the opposition. Briefly stated this bill is designed to set up an export corporation capitalized at \$200,000,000, with full powers to go on the home market when a price emergency exists in any particular crop and to buy up what amounts to the exportable surplus until the price is on a par with the price of things the farmer must buy. This surplus would be sold on the world markets for the best price obtainable with the feeling that the domestic price would rise under tariff protection. As originally drawn the bill provided that the expected loss on sales abroad would be charged back to the producer by

issuing "scrip" to cover a portion of the purchase price. On March 17 the House agricultural committee passed an amendment eliminating the "scrip" provision giving power to the Corporation to estimate in advance the probable losses on export sales and assess the farmers a sufficient amount to cover them.

It is impossible to even hazard a guess at this time as to whether or not the export bill will ever be enacted into law. Its prospects in the Senate appear to be reasonably bright but initial action will be taken by the House. Strong opposition to the bill in the lower branch of Congress is such that its passage is problematical. One thing is certain, though. The export bill will be the only major measure to be considered by Congress at its present session out of the several which have been introduced and placed on file.

A great deal of attention in the form of several bills to promote and encourage cooperative marketing by farmers, is being evidenced by Congress. A recent bill along this line was recently introduced by a Kansas Senator. It would create an interstate farm marketing association with a revolving fund of \$100,000,000. General objects of the corporation, as stated in the bill, are to promote an orderly flow of farm products in commerce; to remove direct burdens and undue restrictions on such commerce; and to provide for processing, preparation for market, handling, pooling, storing, and marketing of agricultural com-



modities through cooperative associations. Authority is given the corporation to consolidate the marketing operations of the affiliated state associations.

Definite action on the many bills reposing in committee files is becoming evident. A resolution directing the Interstate Commerce Commission to reduce freight rates on agricultural products has received a favorable report at the hands of the Senate committee on interstate commerce. A bill to establish a separate dairy bureau in the U. S. Department of Agriculture has been passed by the House and now awaits consideration by the Senate. One of the first bills to receive a favorable report from the House agricultural committee is one that would expand and strengthen the foreign work of the Department of Agriculture.

Authority would be given the Secretary of Agriculture to establish standards and requirements of seeds in a bill introduced by a Kansas Senator. It provides for the registration of specific lots of seed which come up to requirements although registration is not compulsory. Heavy penalties would be meted out to any person attempting to sell registered seed which had not been so designated.

A resolution offered by a North Dakota Representative provides for the creation of a joint commission of three Senators and five Representatives to investigate the subject of general crop insurance with a view of determining the advisability of creating a Crop Insurance Bureau or other agency.

A Georgia Senator is the author of a bill asking the Postmaster General to operate no more than fifty rural routes for one year in the transportation of food products directly from producers to consumers or vendors. Another postal bill of interest to farmers would make the rate on farm products one

half the regular rate. Rural carriers would be allowed a commission on such packages in addition to their salary.

Sometime before adjournment Congress must dispose of a host of proposed amendments to the Federal Loan Act. One of these would abolish the tax exemption privileges now possessed by joint stock land banks operating under the act. Another bill would prevent the organization of new joint stock land banks and those now in operation would be prohibited from increasing their capital stock. Still another would amend the Federal act so that farmers could borrow money to repay indebtedness incurred for other than agricultural purposes.

Expenses of the Farm Loan Board and its employees would be paid by the Federal land banks and the joint stock land banks rather than by the U. S. Treasury as the act stands today, if a bill introduced in the Senate ever becomes a law. Under another recently introduced bill the Federal Farm Loan Act and the Agricultural Credits Act of 1923 would be amended to place the Federal Farm Loan Board, the supervising agency, under the Secretary of the Treasury. Salaries of members of the board would be reduced from \$10,000 to \$8,500 and that sum would be made the maximum for salaries in the future.

Complexion of the War Finance Corporation would be changed in certain particulars if proposed legislation is enacted. An amendment has been offered to give borrowers from the War Finance Corporation another year in which to repay loans. The limit would be extended from three to four years. Already during the present session a bill has been passed which extends the life of the War Finance Corporation from February 29, 1924 to November 30, 1924.



## High Yields Make Low Costs

(From page 10)

make profits practically impossible. Taking the corn crop as an illustration, from 66 to 80 per cent of the total cost of the crop is chargeable to man and horse labor, and land rental. If seed, machinery and sundries be added the total fixed charges will constitute from 85 to 95 per cent of the total, whether a high or low rate of yield is maintained. It is obvious that in case of a low rate of yield, the grower will have to contend with a high bushel cost, whereas, by adding perhaps 10 per cent of the total cost, say for extra fertilizer, the condition may be entirely changed, a sufficient increase in yield being produced to bring about a significant decrease in the cost per bushel.

THE results of five years' tests at Ohio State University, show that a 40-bushel crop of corn gave only a 2.2 bushel or  $5\frac{1}{2}$  per cent profit. A 65-bushel crop gave an 18-bushel or  $27\frac{3}{4}$  per cent profit. Records of the Ohio 10-acre corn contest in

which growers are required to raise 100 or more bushels of corn on each of 10-acres, show, according to the college specialists, that the growing of 100-bushels per acre is excellent business. "High yields cut down overhead and reduce cost per bushel," they declare. W. H. Gilmore, who broke all known records last summer by averaging 134 bushels to the acre on 10-acres proved it. He cleared nearly 50c a bushel.

Mr Gilmore, by the way, has averaged over 100-bushels per acre for three years, and his record-breaking production came only as the result of special effort. He plowed under a clover sod, part of which had been heavily manured, and applied 18 per cent acid phosphate at the rate of 500 pounds per acre. The five-acres without manure each had 500 pounds of an 0-10-10 fertilizer. Generous feeding played an important part in the tremendous yield.

The Ohio Extension Service open the books of 28 Scioto County farmers for five years, to show that "yields-to-the-acre and the quantity

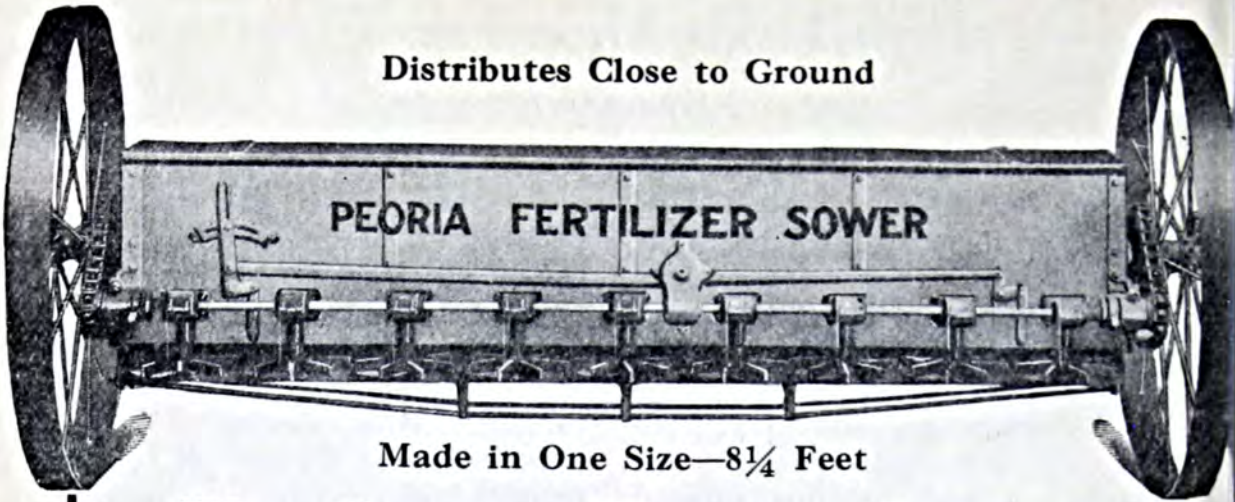


### Which Will Pay the Best?

These photographs, taken at the Russellville, Kentucky, Experiment Field, show two different rates of corn production,—at the left 32 bushels per acre; at the right, 41.2 bushels per acre. The difference was produced at small cost by the application of manure limestone, potash and acid phosphate.



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**W**ILL successfully distribute Lime and Fertilizers in any quantity desired from 100 to 6,000 lbs. under all circumstances, damp or dry. No Clogging; Light Draft; for two ordinary horses. Other machines of equal capacity are heavy draft for four horses.

The use of fertilizer has become a necessity to modern agriculture. Farmers of the Eastern States have realized for years the profit to be made from the use of fertilizers, and now the Western farmer is rapidly learning to look upon fertilizer as an "investment" rather than an "expense."

The American farmer is learning that by taking everything from his soil and returning nothing, he is headed straight for agricultural bankruptcy, and that every dollar spent on good fertilization is better invested than a dollar in the savings bank.

But fertilizer, to be most efficient, must be mixed with brains. It must be properly applied.

For many fields and many crops, a broadcast distributor offers the best solution of the problem of how to make the application.

There is no distributor on the market that can equal the New Peoria. It took years of actual experimenting in the field to finally produce this high-grade distributor. It bears little resemblance to the makeshift box-wheels-and-axle contrivances commonly found on the market.

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### Increasing Profits on an Iowa Rotation

Middle West farmers are learning that it pays to spend money to increase their rates of yields. These two photographs taken at the Calamus, Iowa, Experiment Field show why. A simple, inexpensive fertilizer treatment which has produced 15 bushels more corn per acre, 12 bushels more oats, and one ton more hay, caused the marked difference in these two plots of corn.

and kind of live stock kept had more to do with profit and loss than any other factors."

The five best paying farms averaged for the five years period, five bushels of corn, three bushels of wheat, and 600 pounds of hay per acre more than the other 23 farms. Whatever was grown on the farm, it paid and paid well to feed properly and liberally.

"Not greater total production but greater production to the acre, or the cow, or the hen,

was what made profits. It cost about as much to feed a poor cow, or hen, or to work a poor acre, and the per unit cost of the product in this case often ran so high as to exclude profit at present prices."

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Next month you will have the conclusion of this interesting article in which Mr. Brewer shows the relation of yields to costs for wheat, potatoes, tobacco and other crops.

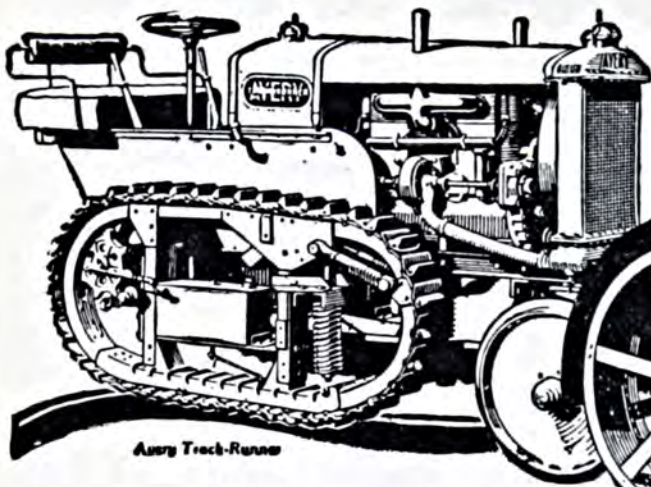


### Special Soil Types Require Special Treatments

This corn was grown on muck land in DeKalb County, Illinois. A special treatment—the application of potash, and acid phosphate—met the requirements and produced a much more profitable yield.

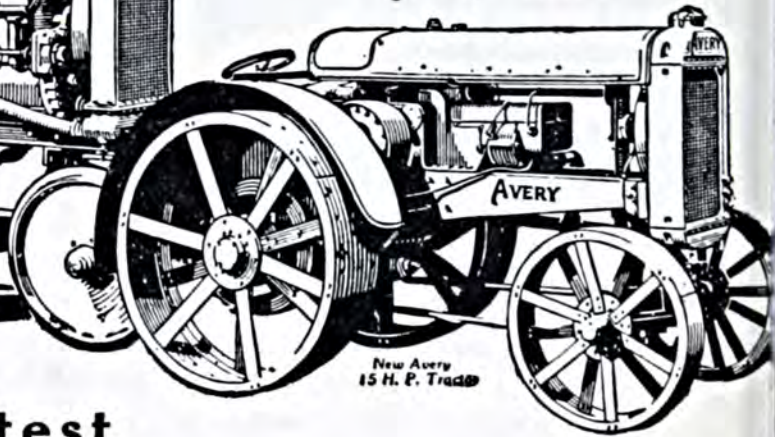






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Get the latest prices on Avery Tractors which now give you more horse-power per dollar than ever before offered.

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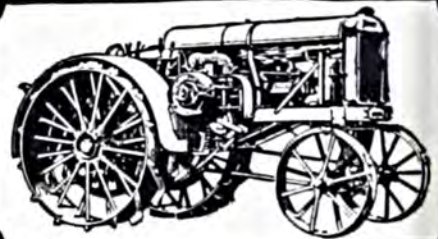
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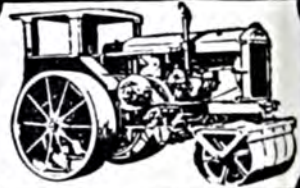
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Kid" and "Yellow-Fl-  
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Harvests and threshes  
the grain in one opera-  
tion.



## The Experiment Stations

(From page 16)

prestige of the latter a bit if he explains the source of his strength, that it is not his job to work out scientific problems, and that if he is to continue to be helpful to the community as an advisor and expounder of new things it will be by reason of what investigation develops and makes available for practical use.

Agriculture is a continual contest or warfare between the forces for good and the powers of evil. Someone inquired in a recent hearing on appropriations whether the necessity of experimenting and investigating wouldn't come to an end. Clearly it will not so long as population and congestion grow and the demands upon the soil increase. Even with the efficient county agent system to help spread the practice of better farming and attain the highest efficiency for every farm, the growing needs of the population for food could not be met indefinitely, probably not very long. It is only necessary to think back some thirty years to realize how little was known about dairying, for example, and how the knowledge gained since then makes that industry so highly efficient as a source of food at present. It is doubtful whether, without such changes as have come through investigation, the present need for dairy products could be met, certainly not without danger to health and a far lower grade of quality.

Science has been the great basis of progress in civilization. There is no more striking example of this fact than in agriculture. During the life of the agricultural colleges there has been more progress in matters relating to farming than in all the centuries that went before. It is still possible to compare it in its advanced state with its exceedingly primitive form in

countries where scientific investigation has not penetrated. The crooked stick and the crude mattock are not yet obsolete in those countries.

Together the experiment station workers and the extension workers make a wonderfully strong combination. The effectiveness of this combination in a given case depends, of course, upon the attitude of the two agencies towards each other, the confidence they feel in one another and the spirit of wholehearted cooperation. A feeling of self-sufficiency, or lack of sympathetic interest on the part of either group will go a long way towards destroying the benefits which should flow from their relationship.

THAT these things are realized by the experiment stations hardly needs to be said. Everywhere they welcome the cooperation of the forces in the field, the suggestions which come out of their daily contact with practical affairs, the opportunity to bring their work into wide use through the agencies of extension. They are giving much attention to making their results readily available to that class of workers. This is not only done through publications, but when opportunity offers they recognize the advantage of presenting special features of the station work to the extension forces, so as to give them first-hand information on what is being done and the object and meaning of it.

This is important for the extension worker, for he can never afford to stop growing and he will recognize the means to that end. As an educated man trained to think and to reason his interest can not cease with the bald fact or the empirical rule. He will cultivate an inquiring mind which will ask why and how, looking confidently to the time when these can be explained.



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phate and all fertilizer materials*



# "Let Us Spray"

(From page 13)



A first class 300-gallon spray outfit like this will control apple pests in an average 50 acre orchard.

them out with special reference to his particular orchard.

Keeping in mind that the average grower in the Cumberland Valley and particularly the Valley of Virginia, puts into barrels approximately 60 per cent of his total tree crop let us see what results can be obtained under a proper system of spray management. The following data are the result of investigations conducted by the writer at Winchester, Va., in the heart of the section mentioned above.

*Table No. 1.—Showing the percentages of pest injury in plats of Winesap\* on which the full program of sprays was applied compared to plats in which no sprays were applied. Winchester, Va. 1922.*

Disease or Insect Pest	Full Program	Un-sprayed Trees
Scab.....	7.5%	97.2%
Black Rot.....	.52	5.1
Cloud.....	none	9.6
Codling Moth.....	.22	6.1
Curculio.....	1.2	2.3
Aphis.....	.66	31.1
Scale.....	.27	2.0
Leaf Roller.....	.22	8.0
Percentage of Blemish—Free Fruit.....	87.5%	1.3%

\*Winesap is the scabbiest variety in Virginia.

In the case of Stayman the percentage of blemish-free fruit in the properly sprayed plats was 90 per cent compared to 3 per cent in the unsprayed plats. In the Rome Beauty orchard the properly sprayed plats produced 85 per cent of blemish-free fruit compared to one per cent in the unsprayed plats. The number of sprays applied in this case was seven, as follows:

*Outline No. 1.—Showing spray program recommended for the Valley of Virginia. It produces 80 to 90% of barreled apples.*

(1) *Delayed Dormant:* applied when buds are showing silvery tips. Lime sulfur one to eight strength and  $\frac{3}{4}$  pint of nicotine sulfate per 100 gallons of spray mixture.

(2) *Pink Spray:* applied when buds begin to show pink. Lime sulfur, five quarts of standard strength concentrate to 50 gallons of water.

(3) *Calyx Spray:* applied when 415 of petals have fallen from the blossoms. Same materials as in No. 2 except the addition of  $1\frac{1}{2}$  pounds powdered lead arsenate for each 50 gallons of spray material.



(4) *Two-weeks Spray*: applied approximately 10-14 days after Calyx spray. Same materials as in Spray No. 2.

(5) *Five-weeks Spray*: applied approximately five weeks after the Calyx spray. Use 3-5-50 Bordeaux Mixture. Add 1½ pounds powdered lead arsenate for every 50 gallons of mixture.

(6) *Ten-weeks Spray*: applied approximately 10 weeks after the Calyx spray. Use same materials as in Spray No. five.

(7) *August Spray*: applied after second week in August. Use six pounds powdered lead arsenate for each 100 gallons of water. Add 20 pounds of lime to each 100 gallons of the mixture.

The average grower does not apply more than four or five sprays and as a result he produces only 60 per cent of barreled apples. The inspection of fruit in the work mentioned above was far more critical than in ordinary orchard practice and the percentages of barreled fruit would be slightly higher than the percentages of blemish-free fruit. The fact brought out is, that it is possible to produce a much higher percentage of barreled apples than the average grower

is producing today. With sufficient spraying equipment to enable him to do timely and proper spraying, every apple grower in the Cumberland Valley section should put into barrels not less than 80 per cent of his total tree crop.

The cider vinegar factories at Winchester, Va. and Martinsburg, W. Va., ground up approximately 75 million pounds of cull apples in the fall of 1923. We have analyzed the causes that send apples to the cull pile by inspecting thousands of apples. Our analysis shows that approximately 65 per cent of all causes of culls are preventable by proper spraying. We venture to say that this situation is typical of many other fruit sections in the United States.

This is the little messages we have asked "Jeff" to broadcast to his readers. Like the words of the marriage vows—they are few but they go a long ways. We have tried to say that the average apple grower, everywhere, does not do enough of timely and proper spraying. If, as we have proven, he can increase his percentage of barreled apples from the present average of 60 per cent to the higher average of 80 per cent or more, his slogan at the beginning of the 1924 spray season should be—"Let us Spray."



*The very fine mist drifting through the trees is an essential feature of good spraying.*



## How My Wife Helps

(From page 7)

soybean seed or what the lime-stone will cost for his alfalfa field or just how the innoculating material is applied to some legume seed. Then there is the use of spray materials and insecticides. She usually has some of the principal formulas at the end of her tongue ready to be given out.

We have never had a home demonstration agent in the two counties where I have spent my time as County Agent and yet there has been a good deal of work done with groups of women in the county by using specialists from the College of Agriculture and Home Economics. My wife has attended a great number of these meetings of all kinds and consequently has learned to be what would be called a "local leader" or local demonstrator. Of course, she does not have much time to go out and really put on demonstrations because we are raising two children of our own and she considers her home as always first and most important, yet there have been many times in the past ten years when she has been of some real help to a group of women interested in something like a dress form demonstration or a cold pack canning demonstration or something of that nature. Very often the women call her up from all over the county and ask her for the principal directions in regard to cold pack canning of vegetables or corn or something of that nature. Of course she is able to give better information along this line than is the male member of the household as her information is based largely upon experience.

**T**WICE in my experience as County Agent it has fallen to my lot to undertake to prepare an exhibit of everything grown in the county and take this to our State Fair. I

am very sure if it had not been for the wife who stood by me in these strenuous times of getting this material together and putting it up at the State Fair grounds, the work would have been very poorly finished indeed. I will never forget the first exhibit that we took to the Fair several years ago. We had hired a truck to haul the material and when it was dumped out a conglomerate mess at the State Fair grounds, we had very little idea in regard to just how we were going to put this up and arrange it. We did the best we could to straighten out this material and worked until nine o'clock that evening. Then we decided the only thing we could do was to go to bed, and get up early and make a fresh start in the morning. We went to our room but not to sleep very long for we got up at three o'clock and both together worked out the entire scheme for arranging this display. It proved to be so good that we won enough premium money to practically pay all expenses. After we got safely home from this undertaking we swore that we were never going to get ourselves into a thing like that again. But last summer our committee in the county where I am located decided that we must have an exhibit at the State Fair, so, as we had forgotten the worries of the past undertaking, we jumped into it again, and when I told my wife I would need her at Sedalia she demurred at first but seeing such a blank forsaken look coming over my face she relented and changed her mind and gave just as loyal help as it was possible for any person to do, putting in three full days in the Fair grounds.

Now I never thought I was a very good mixer when it comes to getting around among strangers and I have always considered my wife had me beaten on this score. I would



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certainly say that she is a great help in various kinds of country community meeting, farm picnics, basket dinners, tours, etc. I have known a few County Agents who would not want their wives to go with them to meetings of this kind. I do not know whether they were ashamed of their wives or whether they thought they were so bright and charming they would outshine their husbands but, be that as it may, I am very sure it has always helped my work to have my wife attend meetings of this kind and mingle with the folks and get their confidence and friendship.

Oh, yes, I would say there are thousands of ways that a County Agents' wife may help him to do better work and not only help *him* but she really does a good deal of the work herself although very often no credit is given her.

To all the unmarried county agents who might happen to read this, I can only suggest that you hasten to find the right kind of a woman who will be a real partner with you in this life work and who will bolster you up when you are blue, will offer kindly criticism when your work is not the best, who will call you down when you need it and hold back when you become too enthusiastic over some project and push you forward when you show timidity in undertaking a hard piece of work, always acting as a balance wheel to keep you from losing your head or getting out of the straight and narrow way.



*“He Applied Business Methods to Farming — and was Successful.” This is the title of an article in our June issue, in which Dean Stewart tells the absorbing story of how one farmer won out.*

*If you are trying to make farming more efficient and business-like, you will want to read this true story and show it to your friends.*



## The Agricultural Depression

(From page 24)

This does not mean that farmers have no way of making adjustment. They have a very drastic way, but an exceedingly slow one. That is, they dismiss the hired men; the sons go to the cities; and from regions where farming is ordinarily close to the margin the farmers themselves go to the cities and leave the farms idle. Differences between farm and city conditions have to be very great before men are willing to change their occupations, abandon their homes, and go elsewhere. Such an adjustment takes years, and when once made, it takes years to overcome it.

Many more children are raised on farms than are needed as farmers, hence nearly half of the farm children normally go to cities. The number on farms in 1920 was altogether too high for the world demand for farm products, so that a large movement to cities was necessary. When so large a movement occurs, it often goes too far.

The effect of the panic on agriculture as an industry is not so serious as the effect on individuals. When a man loses his savings as a result of deflation, the property passes to another individual, who may continue to use it reasonably well. The disrepute into which the industry falls is serious and checks development and improvement. For example, the Advanced Registry Testing of dairy cows has been looked upon as the most important means of finding the best animals and developing better cattle. The amount of such testing in 1923 was about half as much as formerly. Breeders of purebred cattle, hogs and horses have suffered severely. The laying of tile drains and the liming of soils had been rapidly increasing. This increase was checked. The period from 1900 to 1914 was one of exceedingly rapid introduction of scientific methods in agriculture,

and it was a period in which thousands of very able young men prepared for farming by taking thorough courses of study. This development has been checked and agriculture will suffer accordingly. The results are serious, but are distributed over a long series of years and are not noticeable at once. The immediate result is a great decrease in the number of agricultural workers, but there is so much increase in the output per worker that production is checked very slowly. The striking immediate effect is on individuals. Thousands of thrifty persons lost their life-time savings through no fault of their own, and other thousands acquired ownership of the property. A great redistribution of wealth is taking place. In a considerable measure it is a movement of wealth, as well as of men, to cities.

The major method of adjustment in agriculture is by the falling off in the number of young men entering the industry. These men are not much missed at first because the persons remaining work harder. After becoming established in cities, they are not likely to return to farms. Conversely, a shortage of farmers is largely made up by keeping a greater percentage of the farm boys on the farms. In each case the process is slow. There seems to be a tendency to a 25-year cycle in agriculture. If agricultural depression continues for many more years—as it is certain to do if deflation continues—it is to be expected that when the tide turns it will be followed by a long period in which the high cost of living will be the burning issue. This will be due in part to too small an effort in agriculture, and in part to the adjustment of the city standard of living to abnormally cheap food supply which will have continued long enough to be looked upon as normal



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The writer's guess is that the tendency of the general price level will be downward for some years, and that the pre-war level will be approximately reached in about a decade. If this is correct, agricultural depression will continue until prices rise, or until they have been stable for a number of years, so that capital investments are on a basis no higher than the price level at which the produce is sold. This does not mean that every year will be unfavorable. Some farm products even now are in a very good position. It means that the bad years will be more numerous than the good ones.

If the general price level turns upward and remains high, agricultural prices will be adjusted, and the depression will be over in a few years. For real prosperity on farms three things are necessary:

1. A price level as high as the general range of prices at which the bulk of the indebtedness was incurred.
2. Adjustment between farm prices and prices of other commodities.
3. Reasonable stability of the general price level. (A moderate increase in prices such as occurred from 1897 to 1914 stimulates agricultural development.)



*Watch for the June Better Crops! It will contain maps showing where fertilizer experiments are being conducted in North Carolina and South Carolina. These are the first two of a series of such maps covering the Southern States, prepared by David A. Long of the Soil Improvement Committee of the Southern Fertilizer Association. You will want to save them!*



## Giving Advice

(From page 6)

Let him *sell* his thoughts—not merely pass them fatherly out.

Advice is sometimes advanced, when only facts are requested. I ask you for data on seed corn and you are not satisfied to hand me the facts and bulletins, but you must throw in *your* opinion as to what to plant. You haven't even the good judgment to wait until I ask for your opinion—the advice flows out, gratis, thus proving to me that you are unwilling to trust my own judgment in the matter; and your smirk of satisfaction as you peddle out your pet policies, while leaning down from the high seat of your superior intelligence, fires me with anger. I see red—and the red is on the end of your nose!

Hundreds of thousands of men—lawyers, advertising specialists, agronomists, chemists, electrical engineers, consulting engineers, dye experts and others—make their livelihood through giving advice. It's a business. And usually these men are solid, substantial citizens who are looked up to and respected in their communities—to whom, for their wisdom and experience, their clients doff their mental hats.

And you can take it from me, Lester, that when a man—a professional advisor—complains of the stupidity of his advisees, and frets at the antagonism that evidences itself toward him on every hand, there is either something radically wrong with that man personally, his advice is festered with maggots, he lacks experience, he hasn't mastered the science of selling himself and his ideas—or he is merely deficient in the simple art of getting along with folks.

Advice, then, should be given only by a competent specialist, upon his own specialty, when called upon—preferably for pay—any other kind of advice, given in any other way is ruinous to the dispositions of advisors and advisee.

---

# About Ourselves

**B**ETTER CROPS is a monthly magazine edited primarily for all those who act in an advisory capacity to the farmer.

PUBLISHED by the Better Crops Publishing Corporation, 81 Fulton St., N. Y. C.

SUBSCRIPTION PRICE—\$1 per year. Single copies 10c each.

CHANGE IN ADDRESS—Readers should always give old as well as new address and allow at least three weeks for the change.

MANUSCRIPTS should be brief and preferably typewritten. They will be returned only when proper postage is enclosed.

THE PUBLICATION of an article over an author's name, pen name or initials does not necessarily imply that we endorse the opinions expressed therein. We print articles for their interest and merit regardless of whether they accord with our own opinions.

ADVERTISING RATES may be secured upon application.

ADVERTISING—BETTER CROPS accepts only such advertisements as it has investigated and believes to be thoroughly honest. Readers are requested to say "I saw your ad in BETTER CROPS" when ordering.

MERCHANDISING SERVICE—We are glad to supply all the information that we can secure regarding agricultural supplies or equipment to any reader who will address the Editor stating his problems and furnishing necessary details. Your name will not be disclosed unless you desire it. There is no charge for this service.

---

**BETTER CROPS  
PUBLISHING CORP.**

81 Fulton Street

New York

---





## Exposed At Last!

Dear Jeff:—

For the love of mike, Jeff, why didn't you let us know you were in New York an editor of an agricultural publication? You have caused me no end of trouble, and Bud and I have been looking thru' all the Sunday papers for you. We sent your name to the lost and found department of several local papers and sent your picture (the one taken with me at Atlantic City) to the leading detective agencies with a large reward for information about you. We would be looking yet, if your friend, my wife, hadn't found out where you were thru' a friend of hers who knows a county agent.

You always were independent and running away like this, but you are not going to forget me, are you Jeff? You won't forget all those nice things I have done for you, the

swell feeds you have had at my house, and the times I've carried you home after a night out with the boys? Remember the time I slipped you two aces during that little game?

I've always stood by you, Jeff, shielding you from public criticism and pushing you to the front, even sacrificing myself that you might be famous. Didn't I lend you money when you were broke, and send you flowers after my wife put you in the hospital? Now you leave me without a word and go to New York.

The last time I saw you, I was in front of a brick and you were behind it, but I haven't much recollection of what happened after that. You must have left immediately. Let's get together again Jeff, and square accounts. I'm still your pal and you need me. Use discretion.

As ever,

MUTT.



## A Modern "Agriculturist"

By Will Gallup

'Tware jest th' other day, I vum, I met old Sy Van Buss.

A right smart He dirt farmer, an' a calculatin' cuss.  
Nobody's goin' ter git ahead of Simon, no siree,

Unless they's edjucated more 'n most folks uster be.

Old Sy has bin here, wal lets see, I cum in '94

An' he'd bin a farmin' here fer most five years before.

His place was not so turrible, most th' barns war in good shape

An' the house was built so long ago, folks called it "up-to-date."

But Sy was never satisfied, Lord knows he wud abin,

If he'd stopped ter count his money 'stead of always figurin'

How ter farm more scientific, some say as how that's bosh,

But th' critters Sy had on his place war *registered*, by gosh.

He'd read them publications sent out by Uncle Sam—

New fangled ways of milkin' er how ter shear a ram.

Then Sy wud set there thinkin'—mebbe mumble to the air,

If I cud live a hundred years, I'd be a millionaire."

Wal, I jest saw him yesterday as I driv by his place,

An' I guess Sy's wish 'as bin granted, from th' strange look on his face.

I didn't stop ter question him (I wisht that I'd awaited)

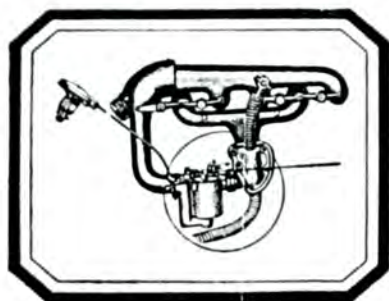
High-falutin' ways is gettin' Sy. He's bin *REJUVENATED*.



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Peter Jansen, of Griffith, Indiana, only raised 8½ tons of cabbage when no fertilizer was used, his crop selling for \$152.10. Then he added some fertilizer without potash. His yield jumped to nearly 13 tons which sold for \$230.40. But when he added 160 pounds of Genuine German Potash he increased his tonnage of cabbage to nearly 18 tons, for which he received \$311.40. In

other words the 160 pounds of potash brought Mr. Jansen a net increase of \$81.00.

Potash pays on onions, too. The Orange County Onion Company of New Hampton, N. Y., reports that the addition of 250 pounds of Sulphate of Potash increased their return per acre \$124.00. With no fertilizer the yield was 198.5 bushels; with no-potash fertilizer the yield was 240 bushels, and 250 pounds of potash increased the crop to 320 bushels per acre.

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# Better Crops

The Pocket Book of Agriculture

June 1924

10 Cents.



In this issue—A. B. Genung—C. E. Gapen—  
C. E. Baker—Jeff McDermid—Robert Stewart





# If you owned Niagara

**N**IAGARA goes on forever. If you owned it you would have endless water power forever at command.

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"PLEASURE divided" says a Hindu proverb, "is pleasure doubled."

After you have read this copy of BETTER CROPS, pass it on to your friends and let them enjoy it too.

Yes, I know a lot of you are doing that already, but are you sure the people you give it to also pass it on. Each copy should have at least five readers.

There ought to be something in every issue that you will want your neighbors to read. If there isn't, send me your suggestions, and I'll try to make good.

BETTER CROPS is not a farm journal. It is edited for the people who work with farmers. That doesn't mean, however, that farmers won't find it interesting. On the contrary, we find that progressive, thinking farmers all over the country are getting benefit from its pages.

Well, it's *your* magazine. Why not make it work for you?

Just to show you that I'm ready to help, I will send a copy of this issue to half a dozen of your friends if you will send me their names and addresses. Your name will not be mentioned unless you authorize us to do so.

I'm waiting.

Yours to a cinder,

Jeff McDermid





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# Better Crops

## The Pocket Book of Agriculture

VOLUME II

NUMBER FOUR

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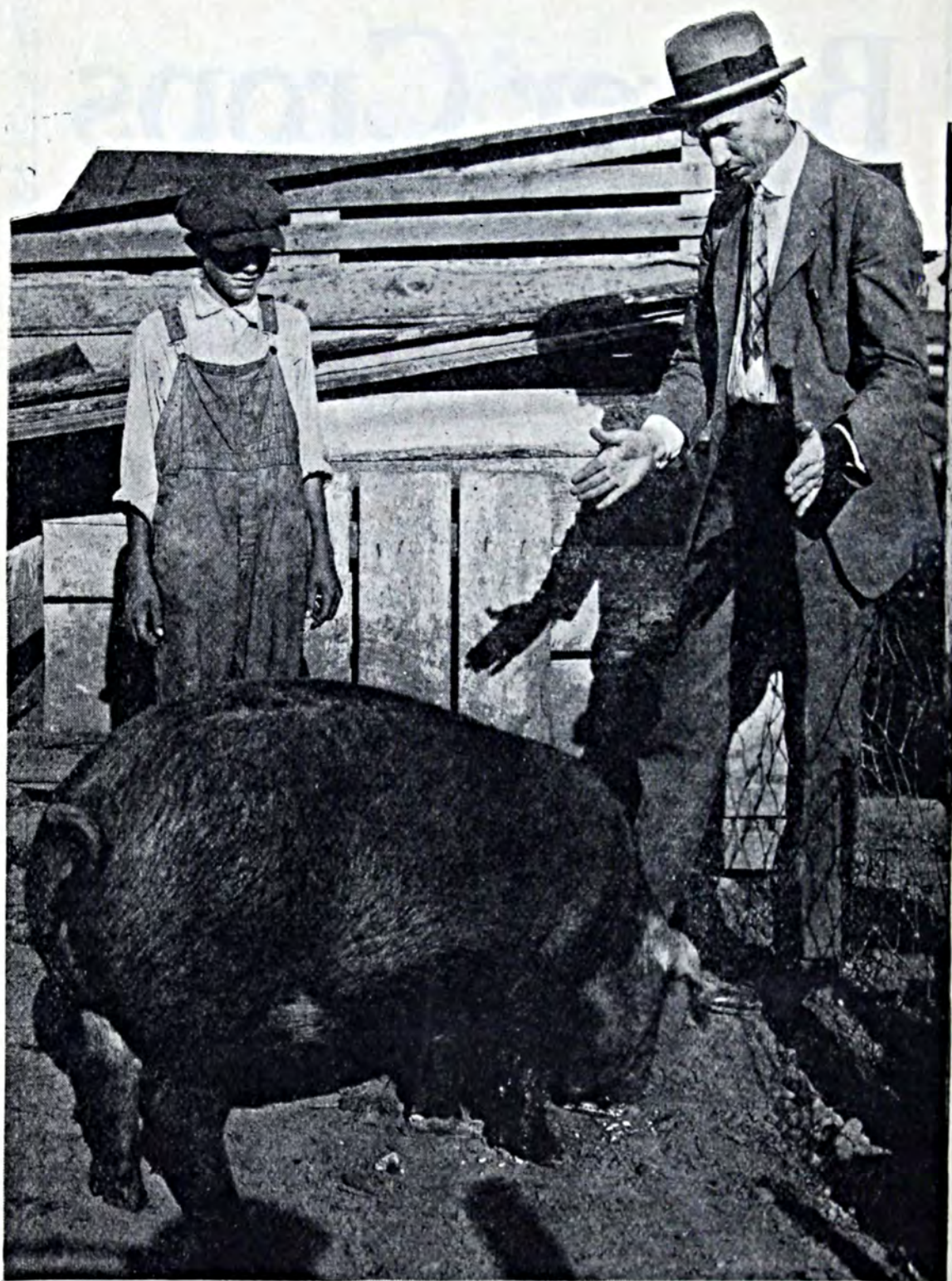
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PUBLISHER and SECRETARY	VERNEUR EDMUND PRATT
PRESIDENT	E. K. HOWE
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BUSINESS MANAGER	MORTON HIDDEN

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County Agent, E. Carnes, of Spartanburg County, South Carolina, discussing strong and weak points of a pig club member's Duroc hog.





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VOL. II

NEW YORK, JUNE, 1924

No. 4

# Be Patient *with Ignorance*

By *Jeff McIlernid*

*"Patient endurance is Godlike"*

*Longfellow*

**I**NTO the life of each leader of men creeps the period when his endurance under the stresses of life reaches the breaking point; when the ignorance and stupidity of his fellows stings him into exasperated frenzy—the world seems full of muddle-headed dumbbells who can neither follow out clear instructions, now originate plans of their own and carry them through to fruition.

To the world's supply of epigrams on the subject of patience, I would like to add this: Be impatient with thyself, but patient with others. Some months ago I wrote, in these pages, I believe, that "dissatisfaction is the father of progress," but I neglected to add that the dissatisfaction must be with one's self—not with the world and its men and women. Be dissatisfied with your own achievements—that way lies progress; but be extremely patient with the failings of others, for that

way lies human sympathy, and a man devoid of human sympathy is less a man than a beast or a machine.

**I**HAVE had some experience with men. I classify them into three groups: first, those who do the things, and do it right without being told; second, those who will do what they are told to do, and do it right; and lastly that large, worthless group who will neither do anything without being instructed



nor do it well even when explicit, detailed instructions are issued.

It is well to remember as we consider the need for patience that the Declaration of Independence contained one glaring fallacy, which, unexplained, has been the root and source of much misunderstanding. I refer to that clause which states unequivocally that "all men are created equal." All men are *not* created equal, except that all men deserve equal treatment in the eyes of the law. All men are *not* created mentally, physically, morally nor financially equal, and I doubt whether they ever will be so created. Neither are all men created free—many are born slaves to ignorances, prejudices and passions impressed upon them by heredity—patterns woven into their souls which all of the decades of a human life can never erase. Only to future generations can we look for improvement of sufficient importance and significance to warrant our attention.

If this is so, and I believe it is, then how necessary is patience! The man who first said, "If you want a thing well done, do it yourself," was an impatient man, gnawing viciously at the cords which bound him to other less efficient men. He lived at a time when men could go through life as individuals, not dependent upon the efforts of others. He knew naught of modern existence, nothing of present day organization. He lived and died in a period before the railroads, telegraphs, radios, newspapers, and modern commerce brought us all closely together and demanded that we learn to get along with each other. The man who today believes that to get a thing well done he must do it himself will never be a leader nor a teacher of men. And he will not accomplish much, for no one man can accomplish much—it takes a group of men working sincerely together with a common purpose and aim to create significantly.

"Patience," said Disraeli, "is a

necessary ingredient of genius," and Franklin adds that "he that can have patience can have what he will!"

**B**ECAUSE all men were not born equal, there is much stupidity in this world. We bump up against it every day. It is exasperating, to say the least. And when we find stupidity combined with conceit—a common mixture—we then have the ultimate in bitter mixtures—it is a dose hard to swallow.

I remember going down to South Chicago with a famous horticulturist one day a few summers ago—a man whose name means a great deal to scientists of this and other countries, and whose books are text books in most of the agricultural colleges. We had to take a South Halsted Street car, and as we both were upon foreign ground, we asked the conductor to let us know when we reached Delta Street. We had no idea how far Delta Street was from the point where we boarded the car, and were dependent upon the conductor for aid. His announcements of the streets were upon a par with most such attempts at the English language as are indulged in by street car conductors, and as we bored on and on into the wilds of South Chicago it occurred to me that it might be a good plan to remind the man that he had promised to let us know when we came to Delta.

I timidly inquired, "We haven't reached Delta Street, have we, conductor?" He looked at me with a sneer and spat out, "Oh! we haven't, eh! Well, Delta Street is only three miles back, young feller! Only about thirty fi' blocks! Why'n't you watch whatcher doin'?' Don't you know enough t' get off where y' want t' go?"

My timidity vanished in a flash and my ire, inherited from an ire-ish ancestor, started to mount and soar. I was about to give the conductor a piece of my (turn to page 62)



I got several good chuckles out of this article which David Jay wrote in answer to a suggestion of mine. You'll like it, too.

# Why I Use a Car

By David Jay

County Agent, Chariton County, Missouri

WELL! Well! I'll bet you were never a County Agent or you would never have asked the question—"Why Does a County Agent Use a Car in Making His Rounds?"

Why not just as well ask "Why does a cat use its claws in catching a mouse?" or "Why does a man take a pail with him when he goes to milk?"

Pshaw! I often tell folks my car is just as essential and important to me as a pair of shoes. I always keep it handy and "wear" it every place I go.—Why? Well, the main reason is—I want to get there and get back, and not be very long about it.

I'll admit there may be a few good County Agents who can stay in the office most of the time and get the "local leaders" to do the work, but when a County Agent gets to be this good he is usually asked to qui—, I mean resign—or he does quit and seeks a job some place else.

When I first lit on the job here in one of our corn belt states one fine spring day after a period of prolonged rain I cast my eye out over the land—I mean water-scape and wondered if the designer of the popular universal American car had had in mind any such roads (?) to be traveled or cruised, or

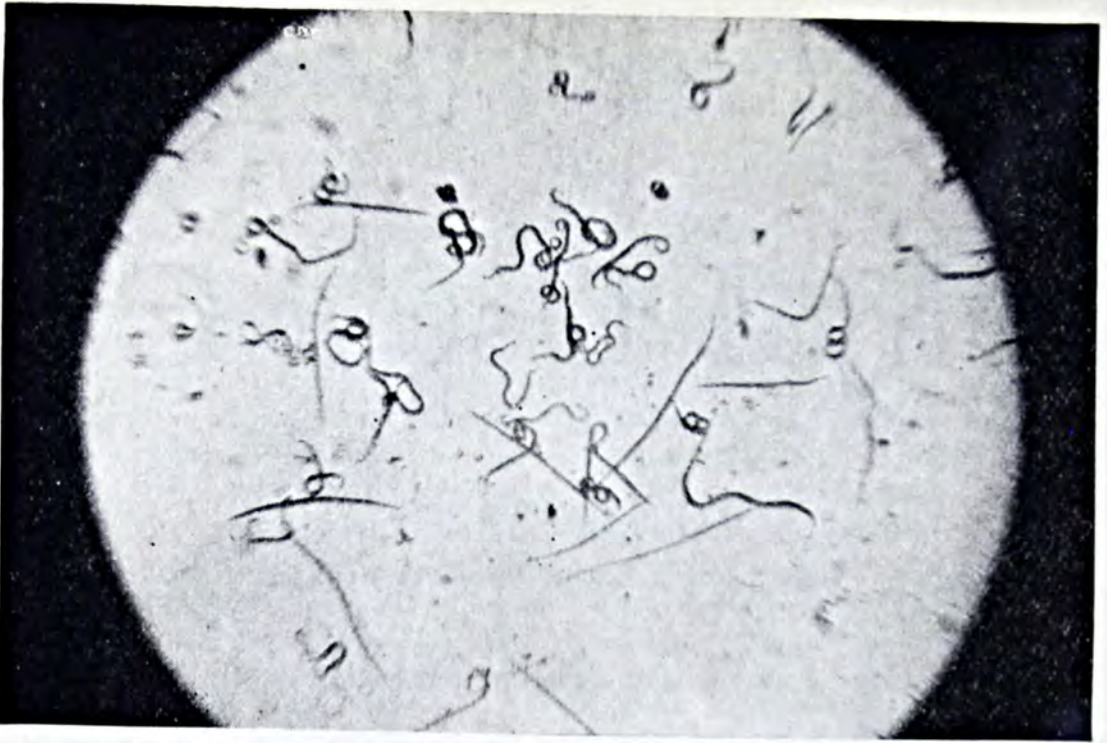
whatever it is when you are transported from place to place in your county.

Well, I soon found out that the above-mentioned designer had "builded better than he knew" for with one of his tin Lizzies I have never failed to get back when I started any place,—although I will have to admit that sometimes it was in the wee small hours of the morning after several hours of clawing out mud with my fingers so a chain could be adjusted or maybe I had to tear a piece off or out of some roadside fence to use in prying out of a mud hole.

Oh yes, in these ten years of experience I don't see how there could be any conceivable condition of road I have not practiced on with my flivver,—wide roads, narrow roads, slick roads and rough roads, ruts up to the axles,—sometimes just plain ruts and other times corrugated ruts—and, by the way—I believe the corrugated rut takes the cake when you really want to shake up a torpid liver. And then there is the deep snow, drifted and crusted.

And s-a-y, boy! Did you ever try to negotiate a north sloping hillside road in March when the top layer was thawed out and the icy ground was (turn to page 41)





A much enlarged photomicrograph of a group of nematodes which attack the stems and leaves of clover and produce crown rot. It is a typical threadlike nema.

# THE NEMA—

By C. E. Gape

U. S. Department of Agriculture

THE nematode does not hop, skip, nor jump. He is not that kind of a "toad." He differs, at least in some of his species, in another important way from the dignified *Bufo Americanus*, the common garden toad, in that he is really able to produce warts, whereas *Bufo*, in spite of the popular notion, is unable to do so. A nema of a certain kind produces galls or knots, similar to warts, on the roots and tubers of many field, garden, and orchard plants. It is probable that all farmers and gardeners have seen the effects of these pests on roots, for the gall nema attacks probably five hundred different kinds of plants, including field crops, truck crops, ornamentals, orchard trees, and weeds. Other kinds attack

other plants, insects, fishes, animals, and man. Only a few days ago one of Uncle Sam's investigators discovered that there are some nemas parasitic inside of others; in this case the one attacked by the parasite belonged to a predatory species which devours "bad" nemas and is a friend of the farmer.

But before going farther, let us find out what a nema really is. This organism has been known for a long time, and one man in the United States Department of Agriculture has been studying them for nearly forty years, but it is hard to describe it with exactness in a few words. The tendency is to speak of them as "worms" because they are of the same general shape as worms; and those infesting crops, potatoes





Cowpea plants with roots injured by the gall nema. Note how these swellings or knots differ from the ordinary nodules produced by beneficial bacteria.

# Friend and Enemy

*¶The Nema is small but he's mighty important. You will find some interesting and surprising facts about him in this article.*

for instance, are often called eel-worms. The word "nema" comes from a Greek word meaning thread. So the nema, which has been given this convenient short name in recent years, is a threadlike organism. It is highly organized, having eye spots, organs of hearing, mouth parts, smelling organs, a nervous system, but no circulatory system. It has a tube running through its entire length as worms have, but it is not divided into sections or segments as are worms. Some of them lay eggs and some give birth to living young.

Most of the nemas, and their name is legion, are so very small as to be practically invisible to the naked eye, but they range in size from a two-hundredth of an inch in

length to about six feet, and from the diameter of a very fine hair to that of an ordinary lead pencil. According to Dr. N. A. Cobb of the Bureau of Plant Industry, one of the leading nematologists of the country, it is probable that the world is thoroughly sprinkled with these organisms. They are to be found in great numbers in the soil and in the streams, lakes, and oceans, particularly in the hot and temperate regions, in plants, in insects, and in practically all animals. Many of them are of great economic importance to farmers, and medical men and veterinarians have found numbers of them which are factors in causing very serious diseases, for examples, the hookworm disease, trichinosis, and the horrible de-



formities of elephantiasis are the result of nema infection of a peculiar kind.

The abundance and wide distribution of the nemas are shown by a fanciful picture of the world with only these organisms visible, which is one of Dr. Cobb's methods for helping the uninitiated see the importance of this little-known class of living things. They are so numerous, he says, that if all other matter were transparent the familiar forms of many things would be indicated by clouds of visible nemas. There are so many in the soil that the blanket of productive earth would be made apparent by the billions which live in each acre of land. The plains, hills, and mountains could be discerned. They would make the rivers, lakes, and all bodies of water in the warm and temperate regions visible. The infested parts of thousands of kinds of vegetation would show up, as would insects, animals, and many humans. Clouds of slowly wriggling nemas would mark out the soil and the living world upon it in much the same way as pictures are reproduced in magazines by means of many fine

dots. Investigators believe that a large fraction of insects and animals have at least one species of the parasite upon them. Some have the misfortune to be harrassed by a score or more.

In this knowledge of the presence of such a horde of invisible or hidden enemies there is something to inspire terror. If certain of them should multiply greatly we might suddenly be wiped off the earth or slowly starved to death as a result of crop failures. But, fortunately, there are some species which are decidedly beneficial. It seems hardly possible that any of these little animated threads could be classed as predatory animals, yet there are some which are decidedly bloodthirsty. They prey upon different species of their own race and in that way help to keep down the numbers of some that attack crops. One predatory nema, under continued observation, was seen to suck the life fluid from eighty victims in one day in much the same way as a weasel would go through a hen house. It is unfortunate that this bloodthirsty benefactor of the farmer should be (turn to page 49)



*A test of resistant varieties of cowpeas. The center row was of a variety not resistant to the gall nema.*



¶After careful consideration of a number of excellent manuscripts submitted in the prize essay contest conducted by the Potash Importing Corporation among the readers of BETTER CROPS, the judges announced a tie. Accordingly an award of \$50 in gold was made to each of the winners, Prof. A. L. Patrick of Pennsylvania State College and Dean Robert Stewart of the College of Agriculture, University of Nevada. ¶As we had reserved space in this issue of BETTER CROPS for only one essay, it was necessary to decide by lot which should be printed first. The two names were placed in a hat and the first one drawn was Prof. Patrick's so we present his article to you now. Dean Stewart's essay will appear next month.

# POTASH PAYS!

By Austin L. Patrick

Pennsylvania State College

THE effect of potash fertilizer on general farm crops where no manure is applied is brought out very clearly by a study of the results of America's oldest continuous fertilizer experiment. This experiment was begun in 1881 and has continued ever since.

The soil for the most part is the Hagerstown silt loam and owes its origin to the weathering of limestone. It is very similar to much of the soil in the Blue Grass Region of Kentucky, the Central Basin of Tennessee, and the Lancaster Valley in Pennsylvania. Chemical analysis show that this soil is high in potash containing approximately fifty thou-

sand pounds per acre to plow depth. If this potash were available it would supply plants with all of this constituent needed for hundreds of years.

The crops in this experiment are grown in a four-year rotation of corn, oats, wheat, and hay (clover and timothy). The corn and wheat crops receive the fertilizer and any increase of hay or oats is due to the residual effect of the fertilizer.

THE following table taken from the Pennsylvania Experiment Station Bulletin No. 175 shows the average annual yield per acre of



## Pictures of the Old Pennsylvania Fertilizer Experiment



© Penn State College

*Yield of hay on no treatment plot.*



© Penn State College

*Yield of hay on plot seven showing the result of Phosphorus and Potash treatment.*



Plot Numbers	Treatment	Corn Ears Bus.	Corn Stover Lbs.	Oats Grain Bus.	Oat Straw Lbs.	Wheat Grain Bus.	Wheat Straw Lbs.	Hay Lbs.
1, 8, 14, 24, 36	Nothing	35.7	1,793	31.3	1,239	12.8	1,178	2,351
3	Phosphorous only	43.6	2,034	37.1	1,442	15.9	1,454	2,899
7, 15, 25, 29	Phos. as No. 3 plus Potash	52.1	2,767	42.3	1,788	19.1	1,805	3,990

each crop covering a period of forty years.

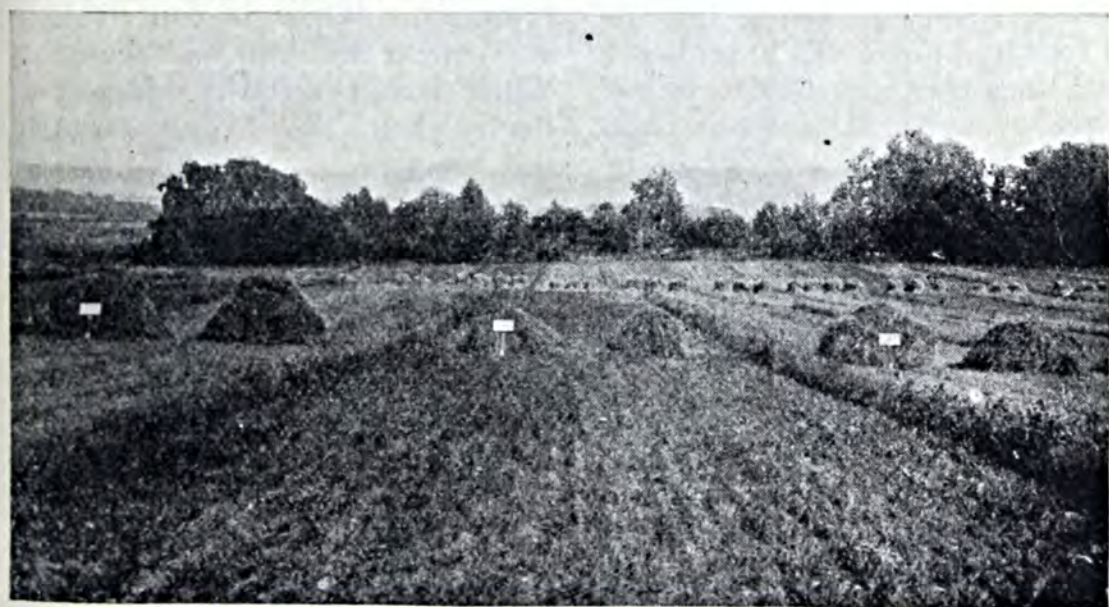
A study of the above table shows plainly that where potash was applied in addition to phosphorus fertilizer the potash has increased the acre yields as follows: corn 8.5 bushels, corn stover 733 pounds, oats 5.2 bushels, oat straw 346 pounds, wheat 3.2 bushels, wheat straw 351 pounds, and hay 1,091 pounds.

Figuring the increases in dollars and cents it is found that after deducting the cost of the fertilizer the sum of the annual acre value for all crops (four acres) amounted to \$20.40 more than did the crops on the untreated plots. If we further deduct the value of the increase due to the phosphorus fertilizer alone from this we still have an increased value of \$10.13 which must be

attributed directly to the potash and these figures are obtained after deducting the cost of the potash fertilizer.

There are numerous other experiments that are being conducted by the Pennsylvania and other stations that show far greater returns from the use of potash fertilizer than do the "Old Pennsylvania Plots." These plots were chosen to illustrate the importance of potash fertilizer because they have been running for so many years that the results can not be questioned. They show beyond a shadow of a doubt that potash fertilizer pays under the described conditions in spite of the fact that abnormally large acre applications were made.\*

\*NOTE:—Where phosphorus was used 48 pounds of phosphoric acid was applied per acre and 100 pounds of potash is the amount of that constituent added per acre.



© Penn State College

A view of the Old Fertilizer Plots at the Pennsylvania Experiment Station. Yields of hay are shown in front tier while wheat is shown in the back tier. The left plot—No. 7—received the phosphorous and potash treatment, the center—No. 8—no treatment.



¶Like a fresh breeze in a stuffy room—that's the way Mr. Genung's manuscript struck me when I first read it. ¶Here is an article that looks unflinchingly at both sides of the present agricultural situation. It will appeal to everyone who respects sound thinking and plain speaking.

# LOOKING AHEAD

By A. B. Genung

Economist, U. S. Department of Agriculture

**S**HORTLY after the great San Francisco fire, one of that city's substantial business men landed in New York on his way home from Europe. He was met by a bunch of staggering telegrams. His factory and his home had been wiped out. It meant loss of half a lifetime's work.

Reporters who visited the old gentleman at his New York hotel, on the evening of his landing, found him in shirt-sleeves, busy with both telephone and telegraph.

"Yes, it means heavy loss to me," he told them. "I haven't got much tangible property left on top of the ground. It sets me back pretty near to the early days of struggle. But I've learned this afternoon that the insurance will come through O. K. and that I still have good lines of credit. I've just wired my son to start immediate negotiations for materials and construction contracts. One year from today we'll have a better plant than ever, right where those ruins are smoking now.

"Will I rebuild my home? I should say I will! Stone for stone!

"Game loser, you say? No more so than every one of our people. This is a terrible calamity. But no calamity known to man can shake our faith in the future of San

Francisco. When do you think a man ought to show his courage? When things are the blackest—that's when! We'll pull through this business and we'll be stronger than ever. You watch!"

Out in the Corn Belt I heard a middle-aged farmer say about the same sort of thing one day last year.

He was in debt. His equity had been pretty well wiped out—not by fire, but by the withering, shriveling blast of the deflation period, with collapsed prices and land values.

"Yes," he admitted quietly, "I'm hit and hit hard. Most of the neighborhood is in the same fix. Our work for three years—my wife and boy and myself—has not brought in enough to pay our taxes.



and interest. And we've worked all right, early and late.

"But I don't need to tell you how things are, you see it all over the country.

"Am I going to stick on the farm? Yes.

"I'm not fitted to work in town. We're country-minded people and this is a good farm. These are hard times, discouraging times. I'm glad the boy isn't old enough to go away to work yet, for he'd certainly want to, in the face of conditions now.

"The reason I'm going to stick to my guns is because I believe the tide will turn by and by. It don't stand to reason that things will go on this way many years. I can swing the thing, with good luck, and some day that boy will be mighty glad to be the owner of this place. I've seen hard times before. They don't last forever. If a man ever ought to have his backbone with him, it's now. That's one of the few things I still have left—my nerve, and if it ever weakens a little sometimes, my wife is on hand with a brand that don't weaken.

"We'll stick. You come back here ten years from now and you'll say we were wise."

THIS sort of spirit turns the calendar back almost to the day of indomitable pioneers, who conquered the land and then held it in spite of everything. Agriculture has, indeed, been through the fire, and the end is not yet. It is going through times that try the temper, not only of individuals but of whole regions. The surviving men and methods will inherit a new era of prosperity that lies somewhere out there ahead of us, just as surely as to-morrow's daylight follows night.

What is it that has happened, anyhow? What is back of the agricultural depression? Where do we stand now? What is ahead?

The whole situation is primarily a wartime product—a statement actually less trite than it sounds.

Its roots go down into the maladjustment of national and international production occasioned by four years of war. Its fruit is manifest in the wild gyrations, inflation, and later precipitate fall of prices.

Relative prices are the immediate lever which move men into or out of farming, and which prompt farmers to produce the particular things they do. The price level underlies and constantly reshapes the whole economic situation.

The period from about 1897 to 1914 had been one of gradually rising prices. It was a period of general prosperity and healthy expansion, in both agriculture and industry.

In 1914, came the war. The war period inevitably developed into one of climbing prices. It is not necessary here to go into the complex causes thereof. From 1915 to 1918, prices of commodities in general doubled.

Then, following the Armistice, came the real orgy of inflation. Spurred by a flood of emergency orders from Europe, all lines of business expanded. Men borrowed all the money they could lay hands on to build factories, to buy materials, to buy land, etc. Credit was inflated until the supply of phantom "dollars" seemed unlimited. Prices automatically rose higher and higher.

The spring of 1920 saw the peak. Suddenly the brakes came on. Deflation began. Like a ball tossed up the slope of a roof, prices paused and then began the downward plunge. Within a few months, agriculture was flat on its back. Nor was industry in much better shape for a time.

The urban community had an ace in the hole, however. While industry had been devoted solely to making war materials, the Nation had run behind in supply of houses, railway equipment, automobiles, textiles, etc. Wartime shortages of such basic equipment made themselves felt presently; urban in-



dustry felt the stimulus; wheels began to turn, labor became busy, industrial wages rose. So the cities swung into a business boom which has lasted two years and has not waned yet.

Meanwhile, agriculture, which had expanded to meet European war needs, suddenly found its foreign market lifeless. In the fall of 1920, prices of farm products collapsed. Deflation hit agriculture first and hardest. Nor did the farmers' market have domestic shortages to take up the slack, except in the case of cotton and wool. Demand for the fibre did revive to a considerable extent as cotton and wool prices have reflected.

So things have bumped along since the war, like a wheel out of balance. Prosperity in the cities, depression on the farms. Industrial wages high, workers moving away from farms to town; prices of farm products at a persistent disparity with urban prices and charges; hardship and discouragement in the open country.

Where do we stand now? About where farmers stood in 1870, following the Civil War. We have gone through the same sort of wartime expansion, inflation, skyrocketed prices; and later through the same post-war slump, marked by sharp disparity between agriculture and urban industry and by general distress throughout the former. Of course, things differ in many respects now from the Civil War period, but there is enough similarity to make the comparison highly significant.

What is ahead?

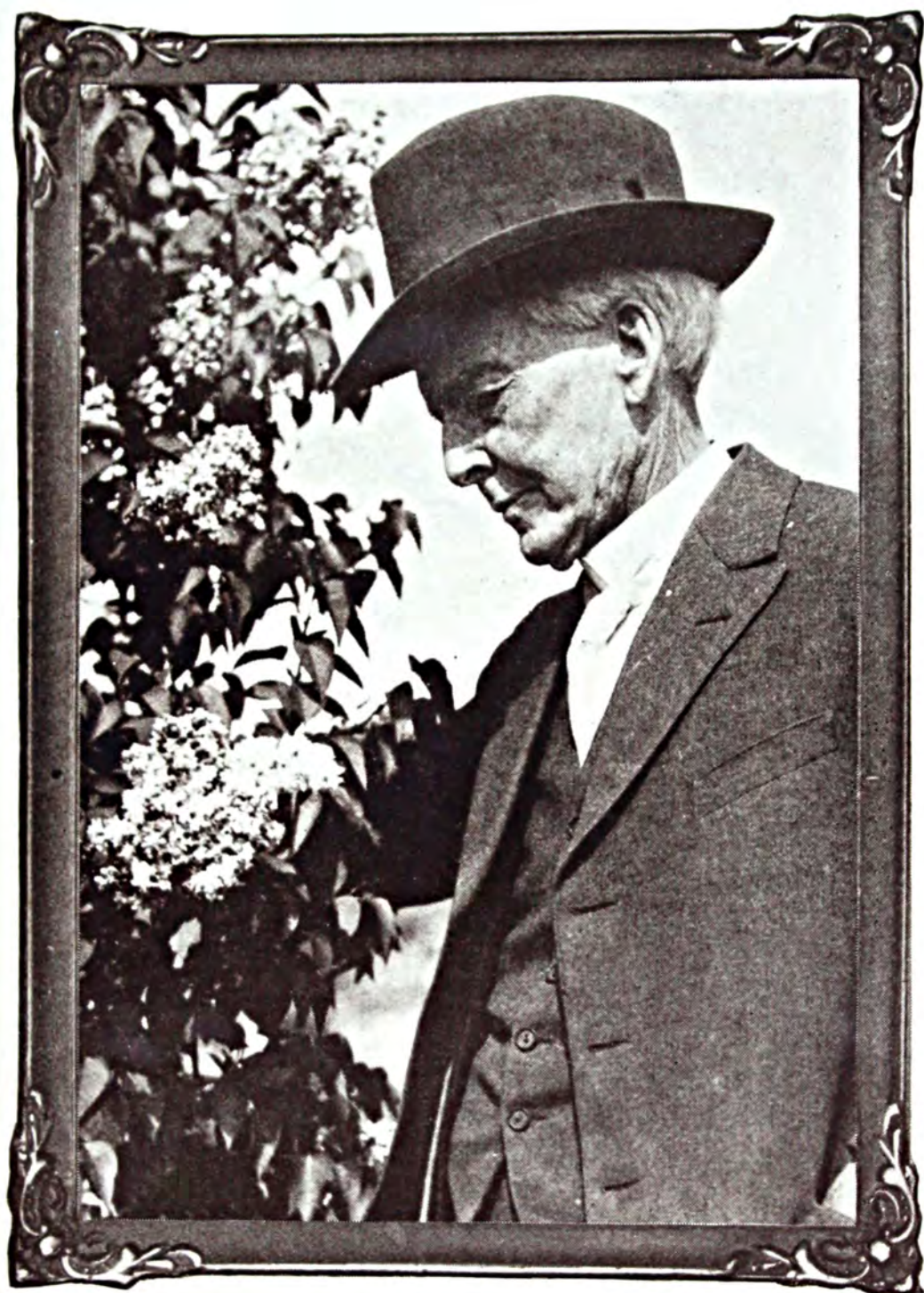
That is, of course, anybody's guess. About the most one can do is to weigh the apparently favorable factors against the apparently unfavorable ones, then call the turn as he sees fit.

**L**ET us get the dark part of the picture out first where we can have a look at it.

Prices of several major farm products are, and have been for three years, below the point of profits. Farmers are up against a high wage level; up against high prices and charges on the manufactured things they have to buy; up against increasing taxes and other unavoidable cash expenses. The whole agricultural industry has been brought into low favor, accompanied by a shift of farm population to town, and a disposition of capital likewise to seek urban fields. Values of all classes of farm property have shrunk; a heavy burden of farmer indebtedness has been built up which is a dragging anchor on the whole situation. In a very few words, that is the dark side, and let nobody doubt that it has been, and in many regions still is, genuinely dark. "Dark" is not really the word—black is the word.

Ahead, furthermore, is always this question of the trend of prices. The history of the post-Civil War period was a story of falling prices for fourteen years, and a generally declining price level way into the late nineties. Prices of farm products were much of the time at an unfavorable disparity with other things, though that was quite largely explainable by the impetus given to production by the opening of the West and development of modern farm machinery. However, a falling price level is unfavorable to an industry having so slow a turnover as farming and weighted so far into the future with financial obligation. A man may buy a farm and assume a debt that he expects to pay off ten or fifteen years hence. The debt must be paid in dollars. If meanwhile, prices fall, it becomes much more difficult to acquire the number of dollars necessary to pay the debt. He is constantly ridden by the pressure of falling values, while all his fixed expenses such as taxes, interest, and debt payment have to be met in dollars (*turn to page 55*)





© International

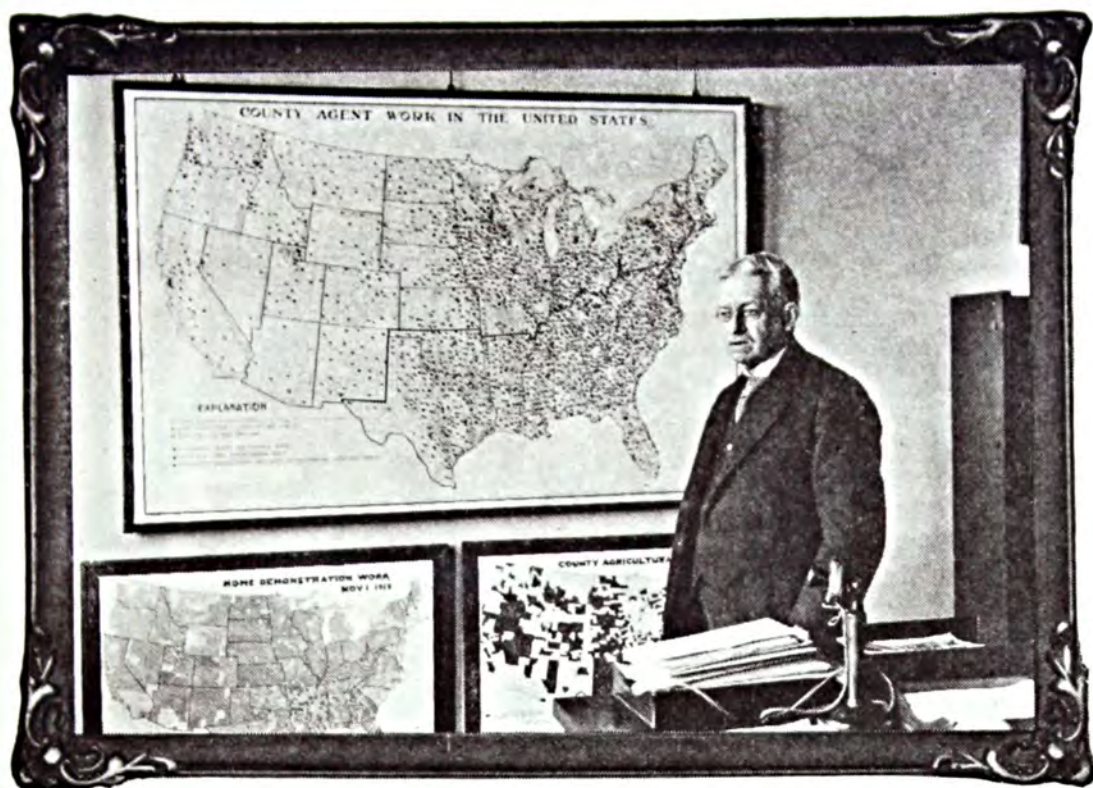
☞The Plant Wizard of California. Above is an exceptionally fine photograph of Luther Burbank, the world famous horticulturist and plant wizard. He is pictured here at his Santa Rosa home, with his newest development of the flower world—a new Lilac, the flower of romance. Mr. Burbank recently recovered from severe illness and in March observed his 75th birthday.





¶ Heads fighting forces against plant pests—Dr. C. L. Marbatt, Chairman of the Federal Horticultural Board, U. S. D. A., directs administration of plant quarantine laws designed to keep out destructive plant insects and diseases.





“Veteran of Federal Extension Work—Dr. A. C. True, former Director of States Relations Service, U. S. D. A., and still a valued advisor to the Extension Service.



“This young chap doesn’t fear black sheep for pals.  
He looks as if he were enjoying their company.





¶The Department of Agriculture is working steadily at the job of surveying and sampling all of the agricultural soils of the United States. This picture shows how samples are taken. Already the total area covered by detailed surveys amounts to more than 400,000,000 acres and the area covered by the reconnaissance or preliminary surveys is more than 350,000,000 acres.



# Changing the Shape of Sweet Potatoes

By Lyman G. Schermerhorn

New Jersey Agricultural Experiment Station

*(This article is reprinted by permission of Prof. Schermerhorn and New Jersey Agriculture in which it first appeared. It has attracted considerable attention and has been reprinted in The Literary Digest and several other publications.)*

THE great variation in the fertilizer and manuring practices in the sweet potato sections of New Jersey and requests from the Ocean County and Atlantic County Boards of Agriculture in 1921 led the vegetable departments of the New Jersey Agricultural Experiment Station to start extensive plantfood studies. These have been continued over a period of three years.

The objects of these experiments have been to study and determine (1) the best sources of nitrogen, (2) the influence of potash, (3) the best combination of fertilizer ingredients, and (4) some of the factors that influence the shape of the sweet potato. The investigations were conducted on the farms of G. L. Purzner of Germania, N. J., and George Newman of Toms River, N. J.

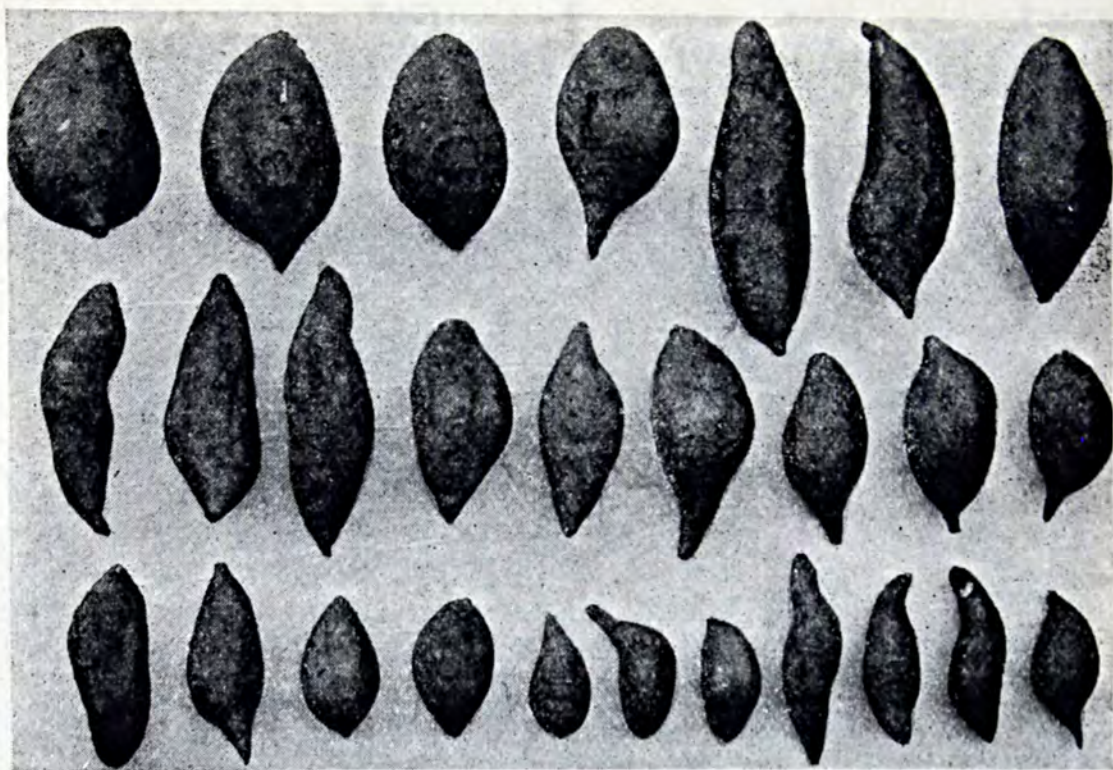
It will be the aim in this discussion to show only the influence of potash on sweet potato production in New Jersey. The complete results will be published by the experiment station in bulletin form in the near future.

DR. E. B. VOORHEES calculated that 200 bushels of sweet potatoes, not including the vines,

remove from the soil an average of 30 pounds of nitrogen, 10 pounds of phosphoric acid and 45 pounds of potash. T. E. Keitt, of Clemson College, S. C., has shown in several analyses that the yellow Nausemond, which is accepted as the Yellow Jersey, removed on the basis of a 214-bushel yield per acre, .213 per cent of nitrogen, .0519 per cent phosphoric acid, and .39 per cent of potash. From these figures it is apparent that the sweet potato removes more potash than nitrogen and more nitrogen than phosphoric acid. Experimental results secured by the writer during the past three years bear out the relative importance of each ingredient as shown in the above analyses.

In this experiment twenty-one balanced plant-food combinations were compared. In the analysis of each combination the total plant-food amounted to 16 per cent. The three fertilizer ingredients, nitrogen, phosphoric acid, and potash, were each actually used in amounts varying from 2 to 12 per cent. Each mixture was applied at the rate of 1,000 pounds per acre, 600 pounds being applied under the rows about ten days before planting and the balance about three weeks after the plants were set in the field.



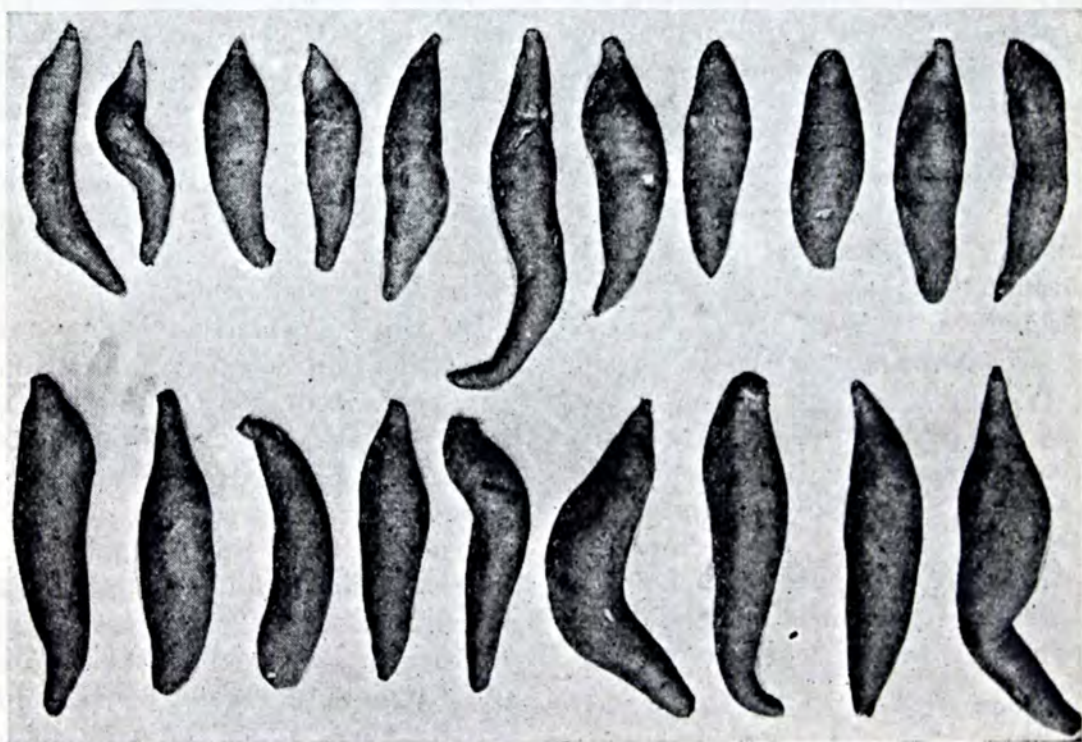


*Desirable chunky potatoes produced by 1400 pounds of 3-8-8 per acre. Average size 5.4 by 2.19 inches. Yield per acre 152.6 bushels of firsts and 50.9 bushels of seconds.*

The yields and average analyses on the seven high, seven medium, and seven low-yielding plots are shown in table (1).

In the results shown in table (1) it

should be noted that as the potash decreased, the yield of marketable tubers decreased, and as the potash is increased up to 8 per cent, there is a decided increase (*turn to page 61*)



*Undesirable lengthy potatoes produced by 1400 pounds of 3-8-0 (no potash) per acre. Average size 6.98 by 1.66 inches. Yield per acre 73.1 bushels of firsts and 67.7 bushels of seconds.*



# Consider Others

By Dr. Frank Crane



IN some people ambition is merely another name for selfishness. They are ambitious as a hog is ambitious. ¶It is all right to want to get on, but not if it implies stepping on somebody else. ¶"I Want What I Want When I Want It," is funny as a song on the vaudeville stage. It is pretty coarse stuff when you hear it at home. ¶Wants are essential to getting on, but if they are not accompanied by discipline and self-control they are but wild winds and unchecked fires. ¶There are those who are as full of wants as a vacuum is full of nothing. They shove others aside, step on their feet, hurt their feelings and bowl them over. They want their own way regardless of the comfort of others. ¶Among the ignorant this appears as brutality: among the educated and clever it is called by more respectable names, but it is just as bad. ¶The tyrant king, the arbitrary employer, the intolerant fanatic, the insolent political boss, the domineering parent, the overbearing husband, the martinet school teacher, all of these by and by accumulate hate and ill-will enough to demonstrate that their efficiency is a form of suicide. ¶Real Success means gaining the cooperation of others. ¶To sow gratitude and loyalty and affection brings a crop of able assistants. You can never tell when they will do you a good turn. ¶No man of sense needlessly creates ill-will. Even a wounded rat will bite and a crushed bee will sting. ¶The best part of any man's business achievement is the kindly feelings he has created in others. Pushing and goading and jolting is not efficiency. It is plain rudeness. It is stupid. ¶The first and greatest rule in business is: Consider Others. ¶Most of the joy of life comes from the way others treat you and from their feelings toward you. And as with anything else, if you want that, you must pay for it. Pay for it in courtesy, thoughtfulness, generosity, toleration, charity and love. ¶This sort of coin is good, not only in Sunday School but in the workshop and the store. ¶You get what you give in this world. Reaction is equal to action. ¶Consider others and they will consider you. ¶Brush by, knock 'em down, crowd ahead, kick, gouge and elbow your way to the front, and somebody will be there to hand you a few choice knocks that will take the joy out of life. ¶It is a good thing to count the cost, to estimate not only how much money and fame you are going to make, but how much hate you are going to acquire, how many enemies you are going to raise up, and how many of your fellowmen will be glad when you are dead. ¶Print it in large letters and hang it up on your wall: ¶CONSIDER OTHERS.



# He Applied Business

By Robert Stewart

Dean, College of Agriculture, University of Nevada

IT is the general opinion that farming is in a bad way throughout the nation. What shall we do to save American Agriculture? This question seems to be the paramount one in the minds of many of our leading men of affairs including the President and his advisors. Certain types of farmers and certain types of farming are in a bad way, but more frequently reports are made of cases where certain individuals are making a pronounced success of farming even during the worst periods of agricultural depression by the application of hard work and business principles to farming.

So H. WELLS of Logandale, Nevada, is such a farmer. Logan-dale is a small farming village located in the Moapa Valley lying on a branch of the Union Pacific Railroad connecting with the main line between Salt Lake City and Los Angeles.

Wells is a blacksmith by trade and a farmer by profession who became interested in the wonderful possibilities of the Moapa Valley in 1904 at the time of the establishment of the Union Pacific from Salt Lake City to Los Angeles.

It appeared to him that the valley with its mild climate and its location mid-way between two large cities offered excellent opportunities for the growth and marketing of such products as asparagus, nuts, figs, pomegranates, alfalfa, grain and dairy products.

He located there and assisted in the organization of the Moapa Improvement Company. In 1905 as superintendent of that organization he shipped the first two carloads of cantaloupes out of the valley to Utah points.

The Moapa Improvement Com-

pany successfully continued to handle the fruit, vegetables and cantaloupes produced in the valley until 1908. In that year two other companies were organized, the Moapa Fruit Land Company and the Moapa Investment Company and were planting a heavy acreage of cantaloupes. It was then decided in order to eliminate competition that the individual farmers should incorporate and as the Moapa Valley Farmer's Association join with the other three companies in organizing the Utah Moapa Distributing Company. Under such an organization things moved along very satisfactorily and financially successfully to the farmers for several years.

The acreage in cantaloupes increased rapidly until 1914 and 1915 when between four hundred and five hundred carloads were shipped out annually. The growth and development of the industry seemed to be destined to parallel the growth and development of the cantaloupe industry of the Imperial Valley of California which had commenced to develop at the same time and



# Methods to Farming

—and won SUCCESS

has now reached a shipment of over eleven thousand cars annually.

By 1915, however, the profits of the marketing had become so large that it attracted the attention of a group of business men in Salt Lake City who bought the controlling interest in the Utah Moapa Distributing Company and it was then run like any other commission house which is interested only in the profits from the marketing end of the game.

Japs and Koreans were brought in by the "business men," land was leased and they commenced to raise cantaloupes by such methods. The white farmers became discouraged and careless and the reputation for Moapa cantaloupes was destroyed, the market disappeared and the cantaloupe industry in the Moapa Valley achieved its death blow.

In 1917 an effort was made to revive interest in the cantaloupe industry by getting the farmers together in a new organization to be known as the Moapa Valley Farmers Association, but the growers would not unite and support the movement so it failed.

In 1919, Mr. Wells decided to let the rest of the valley work out its own salvation and to build up his own business under his own name. In this he has been extremely successful, especially considering the past three years of prevailing agricultural depression. In 1918, for example, he shipped out six hundred and thirty crates of asparagus through the commission company, as usual, for which he received \$800.00. In 1919 he shipped six hundred and twenty-six crates under his own label for

which he received \$2,079.00 and his market has improved ever since even during 1920, 1921 and 1922!

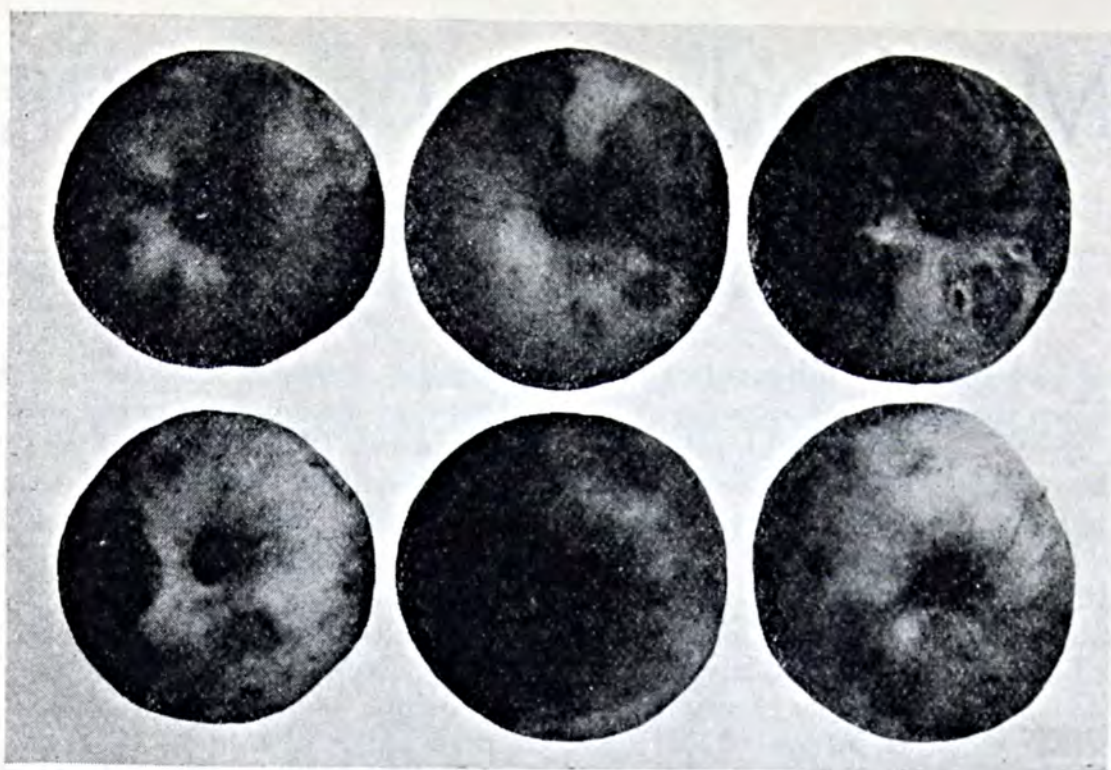
The asparagus is harvested in March and April. It is marketed under his own trade mark in Salt Lake City, Utah, Pocatello, Idaho, Great Falls, Montana, Lincoln and Omaha, Nebraska and St. Paul and Minneapolis, Minnesota. It is practically all sold F. O. B. his own station. The returns in 1923 were \$325.00 per acre.

Wells has a farm of one hundred and ten acres devoted to a very diversified system of farming. He has fifteen acres of asparagus, thirty acres of alfalfa, thirty acres of small grain, twenty acres of corn, ten acres of Bermuda grass pasture and five acres devoted to fruit, garden, etc.

The alfalfa grows luxuriantly and is cut five times each year. The yield is about eight tons per acre of cured hay. He feeds most of it to registered Guernsey cattle. The rest is baled and sold locally at from \$15.00 to \$20.00 a ton. The cream from the dairy herd is shipped to Salt Lake City and San Bernadino, California. The returns from the dairy herd are used to cover family living expenses. His Bermuda pasture takes care of three head of cattle per acre per season from March to October.

HE also raises full blooded Duroc hogs. The sows farrow twice each year, in March and September. The pigs weigh from one hundred and seventy-five to two hundred pounds when marketed at the age of six months. (turn to page 45)





*Scalded Grimes from the untreated series. Such apples are unattractive and their market value is greatly reduced by the disease.*

# APPLE SCALD

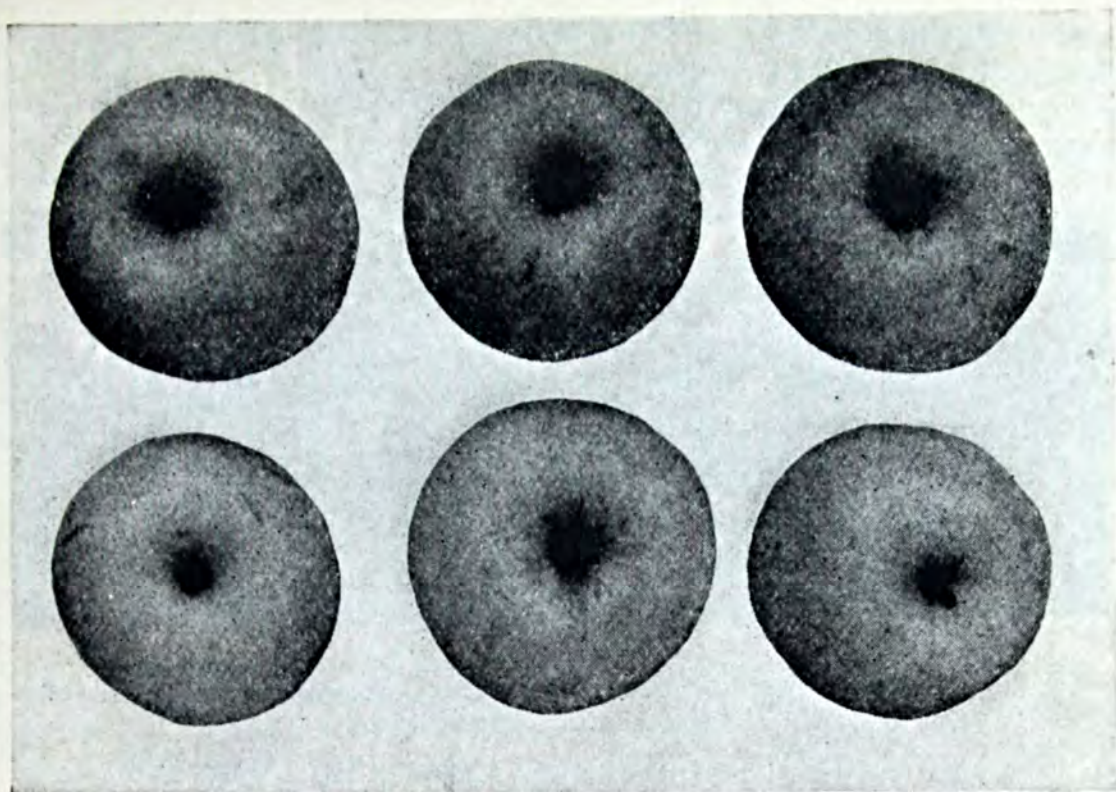
*You can prevent this disease if you follow these directions carefully.*

**A**PPLE scald is the most serious disease of apples during storage, causing greater annual losses than all other storage disease combined. Nearly everyone is familiar with the brown discoloration found on many varieties, such as: Grimes, York Imperial, Rome Beauty, Rhode Island Greening and Baldwin, from mid-winter on. This is often thought to be the beginning of a rot. Upon examining the fruit more closely, however, it will be found that this browning is only skin deep. The person who has this class of fruit for sale will argue that the fruit is still in first class condition beneath the skin. This is true, to a certain extent,

but the disease continues to advance, soon involving the surface of the entire apple, rots enter and the fruit becomes worthless.

The disease is exceedingly treacherous. In cold storage it may not show at all upon the fruit at the time it is removed. In a few days after being placed in a warm temperature it may be badly scalded and its salability greatly destroyed by the presence of the disease. Due to this behavior the disease is usually attributed to the warming of the apples after their removal from storage but this is not the case. In the farm storage the disease usually appears any time after early November. It is





*Typical Grimes apples from the series protected by treatment described in this article. The apple remains bright and free from scald throughout the storage season.*

# *and its Prevention*

By C. E. Baker

Purdue University Agricultural Experiment Station

often most severe on the top portion of fruit packed in bulk.

Dr. Charles Brooks of the United States Department of Agriculture, together with his associates, has studied this disease for several years, and has given us the cause and the remedy for the trouble.

When the apple is harvested it is a living organism and decidedly immature. An apple as it comes from the tree, is hard, sour and unpalatable. But as it is still living it is capable of further development and like other living organisms it carries on the process of respiration. In other words it breathes. Oxygen is absorbed and carbon dioxide, together with

various other organic compounds, is given off. As these processes take place the apple becomes more mature or "ripens." The acid gradually disappears, the starches are changed to sugars and the apple becomes soft and edible. Storage is resorted to to check these processes and to prolong the life of the apple but even at storage temperatures these life processes go on slowly.

Among these waste gases given off by the apple are the fruit esters; the organic compounds that give the aroma to the fruit. It is an accumulation of these products about the fruit that cause it to scald by poisoning (*turn to page 47*)





*The Crop Reporting Board in session—William A. Schoenfeld, chairman of the Board is at the extreme left.*

# Behind the Scenes with *the* CROP BOARD

By *Frank George*

U. S. Department of Agriculture

“G<sub>O</sub>!”

Half a dozen men sprang across the line in the center of the room and raced to the telegraph and telephone instruments that lined the walls.

“Wheat 782,000,000 bushels; corn 3,021,000,000 bushels; cotton 10,081,000 bales; oats —,” and so on down the long list of commodities reported as to size of crop by Uncle Sam’s Crop Reporting Board.

The figures are being dispatched to newspaper offices all over the country; to commodity exchanges and boards of trade in the leading market centers. By radio the message is flashed from the Govern-

ment station at Arlington, picked up by scores of broadcasting stations, and relayed to every section of the country by radio-telephone.

Twice a month during the growing season this scene is enacted at Washington headquarters of the United States Department of Agriculture. The day and hour of the release of the various reports are fixed months in advance. On the designated days the Crop Board meets behind locked and guarded doors, in a room in which telephones are disconnected and even the windows are locked and glazed to prevent anyone outside from obtain-



ing advance information of the Board's findings. A system of tabulating the reports has been so ingeniously arranged that even the members of the Board do not know the composite result of the Board's report until a few minutes before the release of the figures to the newspaper and other representatives in an adjoining room.

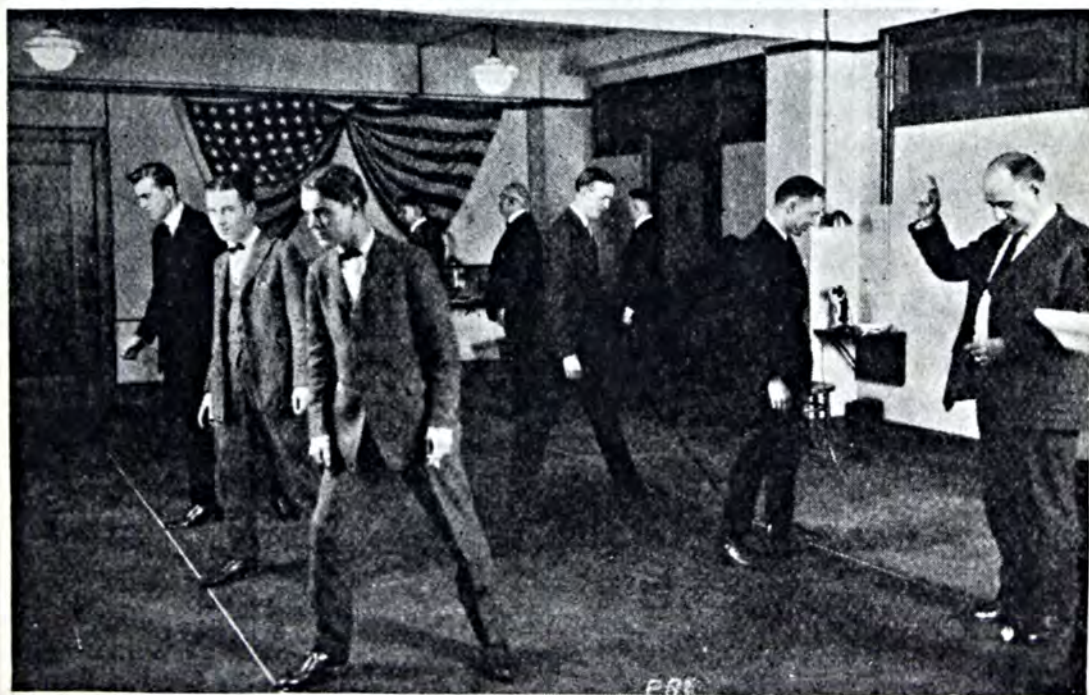
Back of the stage, unseen, more than 215,000 crop reporters all over the country play the leading part in this semi-monthly drama. It is upon their individual reports that the findings of the central body at Washington are based. Their reports regularly mailed to the Secretary of Agriculture are tabulated piecemeal and kept sealed in a safe in the Secretary's office until crop reporting day when they are delivered to the Board in closed session and further tabulated by a staff of expert computators also locked up with the Board members.

The majority of the reporters are farmers who report for their own farms. Other reporters including farmers, local merchants, bankers, and other business men report for entire communities. Every township and district in the

country is covered by a representative of the crop reporting organization so that a most comprehensive report on the various crops is made available. Similarly, reporters are assigned to cover entire counties, and in turn State statisticians, the only paid field representatives of the organization, report for an entire state. The reports of the State stations are dispatched by telegraph in code to the Board after it has assembled.

In tabulating the reports a system of checks and counter-checks is followed, the various reports for the same territory being weighed one against another to form a true picture of the crop free from personal bias. More recently, mechanical means of measuring acreage and counting crops have been devised as additional checks. Airplane photography, for example, was experimentally employed for the first time last year, and gave promise as a reliable method of measuring acreage.

A so-called crop-meter is to be used by the State statisticians this year to measure the linear distances of fields bordering on country roads. The device is a (*turn to page 56*)



Press representatives fifteen seconds before release of cotton report at 2 P. M., December 12.



# Dutchman's-breeches

—a recent addition to the Poison Plants

By Albert A. Hansen

Purdue University Agricultural Experiment Station

*(This is the sixth of Professor Hansen's series of articles on poisonous plants. He is one of the leading authorities on the subject in this country.)*

**B**ERT SCOTT owns a farm among the beautiful hills near Madison in southern Indiana, a section bordering on the Ohio River and famous throughout the middle west for the beauty of its scenery. Whenever Mr. Scott allowed cattle to graze among the hills during early spring, his animals became ill and occasionally one of them died. His suspicions centered upon a handsome little plant known as Dutchman's-breeches that grew profusely on the death-dealing hills, particularly on northern exposures and in shady places, but no one could tell him whether or not the plant was dangerous. He noted that the trouble apparently ceased about mid-May when the last of the white blossoms had faded and gone.

Mr. Scott's experience was similar to that of a number of other southern Indiana farmers, but neither the Agricultural Experiment Station nor the United States Department of Agriculture could help him because there was no data available regarding the poisonous properties of the plant in question. The experience of Indiana farmers was repeated in the highland sections of Virginia, where

so many animals died in the mountain pastures that Prof. H. S. Stahl of the Virginia Polytechnic Institute decided to find out what was the source of the trouble. He entered the mountains and found that about four or five species of spring-flowering plants were suspected by the natives of being the cause of the trouble. The heavy hand of suspicion pointed most persistently at a species known locally as little staggerweed, so Prof. Stahl gathered specimens and sent them to Washington, where they were identified as common Dutchman's-breeches.

The Department of Agriculture became interested in the situation and decided to conduct some feeding experiments in cooperation with the Virginia Agricultural Experiment Station. The result of these experiments proved conclusively that Dutchman's-breeches is poisonous to cattle. An alkaloid of a highly toxic nature that is apparently new to science was discovered in the tops and bulbs of the plant and the poisonous constituent was named cucullarine. The recent announcement of the results of the feeding experiments solved a mystery that has been a



serious puzzle to several generations of farmers in the highland sections of Virginia and Indiana.

Dutchman's-breeches, sometimes called white hearts and ear-drops, is a familiar wild flower in rich, rocky or hilly woods from North Carolina to southern Canada and westward as far as Minnesota. The delicate foliage and oddly shaped but strikingly beautiful blossoms have made the species a favorite in wild flower gardens. The common name refers to the peculiar form of the pendulous blossoms, which much resemble in shape the picturesque pantaloons that are so much in vogue in the Netherlands. A characteristic feature is the granular-scaly bulb that separates into a number of tiny bulblets, each capable of reproducing the plant. Dutchman's-breeches is frequently confused with squirrel corn, a close relative found in similar situations. The flowers of squirrel corn, however, are not two-spurred, hence do not resemble the breeches of a Hol-

lander, and the bulbs are rounded, yellow grains the appearance of which is responsible for the common name. Experiments have demonstrated that although squirrel corn contains the dangerous cucullarine, the plant is but mildly poisonous as compared with its relative, Dutchman's-breeches.

The experience of farmers in Virginia and Indiana indicates that the danger is greatest during early spring and little trouble need be expected after the middle of May. This is probably due to the fact that the stored-up food in the bulbs gives the plant an early start. In the absence of other green vegetation during the early spring, grazing animals are almost forced to eat the Dutchman's-breeches in well-infested pastures, although the experiments demonstrated that the plant is unpalatable and is not ordinarily consumed in sufficient quantity to cause trouble if other feed is available. This suggests that the best way to handle the problem is either to (*turn to page 41*)



A patch of Dutchman's-breeches. The plant is commonly found on rich soil in shady situations.



# HIGH YIELDS MAKE LOW COSTS

## PART TWO

By H. C. Brewer

Soil Improvement Committee  
National Fertilizer Association

**I**N the first installment of this article Mr. Brewer presented the proposition that "the most successful growers are those who produce at the lowest cost per unit. Their yields are usually above the average, often far above it." He then proceeded to show from a number of surveys how this principle works in general and as applied to a specific crop, such as corn. In this concluding installment he discusses its further applications.

### WHEAT

That these facts apply equally to all crops as well as to corn and, therefore, must be considered as constituting a fundamental principle of profitable agriculture is demonstrated by the information at hand.

A "Forty-Bushel Wheat" Club was organized in Ohio last year, memberships in which will be awarded to farmers who succeed in producing 40-bushels or more of wheat on each acre in a 10-acre piece. Such a yield, declare the specialists in charge, should make wheat growing profitable even with prices at the 1923-24 levels. "High yields mean lower costs per acre."

Experiments at the Worthington, Indiana, Field, showed, according to Professor A. T. Wiancko, of the Experiment Station, that "an expenditure of \$6.78 per rotation at present prices has produced crop

increases averaging 5.3 bushels of corn, 7.1 bushels of wheat, and 1,115 pounds of hay. The expenditure of a moderate additional amount of money produced increased yields that materially reduced the cost of production per unit of product.

Professor Rex E. Willard, of North Dakota Agricultural College, makes the following statement based on observations and records of growers made in the State.

"Yield per acre is the biggest factor that determines the cost per bushel. While the cost of producing a small crop is less per acre than of a large crop, the reduction in cost is nothing like as great as the yield.

"The following figures show approximately the average cost per acre and per bushel for yields ranging from 2.5 to 19 bushels per acre.



Yield Per Acre	Cost Per Acre	Cost Per Bushel
2.5 Bushel.....	\$ 8.33	\$3.33
7.0 " .....	11.46	1.64
10.0 " .....	12.52	1.25
13.0 " .....	14.12	1.09
19.0 " .....	16.96	.89

The urgent economic necessity of high yield rates is emphasized in the advice given Ohio farmers last fall by Director C. G. Williams, who said:—

"If a farmer's soil and climate conditions are not such that he can count upon some 15 to 20 bushels per acre as a 10-year average, with yields of 30 to 40 bushels per acre such years as the present, it will be in order to seriously consider reducing his acreage of wheat, or cutting it out altogether."

Then questioning the existence of an adequate reason for low yields, at least in Ohio, he says:—

"Given a climate and soil fairly well suited to wheat growing, and wheat is not as particular as some crops in regard to soil; a proper preparation of the seed bed; seeding at the right time; a good variety and liberal fertilization of the right sort, there is little excuse for the low yields many wheat growers are getting."

## POTATOES

Garrett, Indiana, was the scene last year of an interesting contest between a boy, John

Shutt, and his father to see who could grow the most potatoes per acre, and the cheapest per bushel. They grew their crops on adjoining pieces of land and for the most part handled them in about the same manner. There were, however, two important differences. Where the father used common seed, John used certified seed. Where Mr. Shutt used no fertilizer, his son used 475 pounds of a 4-8-6 fertilizer. When the crops were dug, Mr. Shutt had 75-bushels per acre at a cost of about \$1.13 per bushel, while John had 227.6 bushels at a cost of 36c a bushel. Apparently John's expenditures for better seed and fertilizer reduced his bushel cost by 77c and gave him 152 extra bushels.

The New Jersey Experiment Station has published the results of investigations to determine the effect of varying amounts of fertilizer upon the rate of yield, as follows:—

Application	Bushels Per Acre
No fertilizer.....	166
800 lbs. 4-8-3.....	214
1200 lbs. 4-8-3.....	238
1600 lbs. 4-8-3.....	247
2000 lbs. 4-8-3.....	259
2400 lbs. 4-8-3.....	274

This wheat at the Miami County, Ohio, Experiment Farm, has given a 100 per cent. increase in yield over a



period of years through proper fertilization. That is practically cutting every dollar of expense in two.



### A Two Way Profit in Cabbage

These photographs show two plots of cabbage at the Washington County, Ohio, Experiment Farm. That at the left had no fertilizer; that at the right had 600 pounds of a 5-10-4 fertilizer and 16 tons of manure. The yields, for seven years have averaged respectively,



14,165 and 23,397 pounds per acre. Ninety per cent of the fertilized crop had been harvested by July 6 last year, compared to only 31 per cent of the unfertilized crop. This is only one instance of the fact that a higher rate of yield usually brings about higher quality, and earlier maturity.



### High Yields in the Orchard

It is just as necessary to produce maximum yields in the orchard as elsewhere. These photographs of



work done by the Michigan Experiment Station show the effect of proper fertilization upon the yield of apples.



While a decision as to the most profitable application would necessarily have to be made with due regard to prevailing conditions, there can be little question regarding the efficacy of proper fertilization in reducing the cost of production per bushel, by producing large yield increases.

G. W. Handy, West Hartford, Vermont has made tests in conjunction with the Windsor County Farm Bureau to ascertain the effect of high yield upon production costs. Two different applications of two different fertilizer analyses were used, 1,200 and 2,000 pounds respectively of a 3-10-6 and a 4-8-10 fertilizer being employed. The extra 800 pounds of the 3-10-6 increased the net profit by \$27.32. The extra 800 pounds of 4-8-10 increased the net profit \$25.14. In this case it was an additional expenditure for fertilizer that increased the yields, reduced the cost of growing each bushel, and produced an important increase in the profits on the crop.

The New York Experiment Station made a study of the factors influencing the yield of potatoes on 330 Long Island farms. Where the expenditure for manure and fertilizer was less than \$30, the yields averaged 159-bushels per acre. Where the expenditure was from \$30 to \$40, the yield was 180-bushels, and when over \$40 was expended, the average yield was 198-bushels per acre. The statement accompanying publication of these figures pointed out that "of the factors studied, the amount of seed used and the value of manure and fertilizers used per acre were the most influential in relation to yield."

### TOBACCO

A survey of 241 Kentucky burley tobacco farms, showed that the average acre yield was 1,079 pounds, the average acre cost being \$169. The lowest yield, 452 pounds per acre, though produced at a cost of

only \$148 per acre, was grown at the highest cost per pound, 32.8 cents. The highest yield 1,339 pounds cost only 10.9 cts. per pound.

The results of a five year experiment on bright tobacco at Chatham, Virginia, are equally striking. The five year average yield of unfertilized tobacco was 190 pounds per acre, the proceeds, \$12.59. The average yield of tobacco receiving 800 pounds per acre of a 3-8-3 fertilizer was 670 pounds; the proceeds, \$94.27. The yield with 1,400 pounds of the fertilizer was 934 pounds per acre, the proceeds being \$135.58. Professor T. B. Hutcheson, Virginia Experiment Station commenting on the fertilizer practice of the State, says, "Experiments show that no other one factor influences the economy of production of tobacco more than the fertilizer used."

### PEAS AND TOMATOES

The Cornell (N. Y.) Experiment Station has published the results of investigations made of the canning pea and tomato industries of that State.

It was found that 81 growers averaging 1,392 pounds of peas per acre, made a net return of 31c per hour of man labor; 101 growers averaging 2,138 pounds made a net return of 83c per hour; and 80 growers averaging 2,988 pounds per acre, made a net return of \$1.59 per hour, an increase of over 500 per cent in rate of labor income over that of the group producing at a rate approximately half as large.

Much the same was true of the tomato growers. Thus, 47 farmers averaging less than eight tons to the acre, made a labor income of 20c an hour; 47 growers averaging from eight to eleven tons, had a return of 62c an hour; and 31 growers averaging over 11 tons per acre, made a return of 91c an hour, an increase of 450 per cent in the rate of return.

All of the foregoing evidence of the influence of (turn to page 43)





## WHERE ARE THE PROFITS?

In one of our recent issues, there was a review of a bulletin issued by the University of Nebraska Extension Service on "Planning and Analyzing the Farm Business." It showed how one farmer kept accounts of his farm and was able at the end of a year to analyze the weak and strong points of his business. We ought to have emphasis laid on this sort of work. Farming is a business. Farmers want to show profits like any business man. How is it possible to plan intelligently unless you have accurate records of profit and loss? What would the business world say of the man who carried his accounts in his head? It would call him slovenly and inefficient and eventually a bankrupt. The same terms apply to the farmer who thinks he hasn't got time to be bothered with bookkeeping.

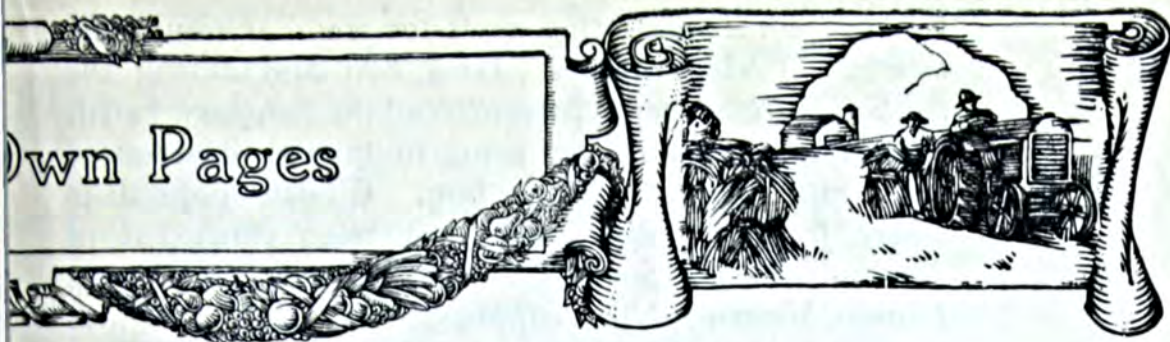
When a man hasn't got the habit of keeping records, it is no cinch to get him started. However, the U. S. Bureau of Agricultural Economics reports that some 16,000 farmers are keeping books and as a result 7,000 of them have changed their farm operating plans.

Drive ahead to get the farmers in your county to keep accurate and uniform records of their business. Figures speak more powerfully than all the demonstrations, bulletins and meetings in the world. Encourage the farmer to find out for himself on his own farm what is profitable and what is not. Thus we shall be one step nearer the goal of putting farming on a competitive basis with other successful business efforts.

## SOME BOUQUETS FOR OUR READERS

Say, friends, have you been reading the plans of the county agents that we have been running in BETTER CROPS for the past three months? To me it's mighty inspiring to see that so many of the boys have got a definite





and a practical plan laid out. A good plan, you know, is half the battle. What pleased me even more is to see how many of the county agents are putting emphasis on boys and girls club work.

There is a crop worth cultivating. We won't reap it this year nor the next but in another five or ten years, we shall be amply repaid for this work.

If anybody wants to know what use county agents are, I suggest you show him these plans and ask him who else would undertake this vital work.

#### A GOOD DEFINITION

Just recently the United States Chamber of Commerce had a Convention. They undertook a new definition of the word "business." It is a fine definition. Remember that farming, too, is a business, and see if you don't think this is an inspiring thought.

"The function of business is to provide for the material needs of mankind and to increase the wealth of the world and the value and happiness of human life."

#### PICTURES TELL THE STORY

Everyone of you is working to raise better crops. Why not send us the pictures of your results so that we can show them to the rest of the family? Particularly where you are conducting experiments. I would like to have good photographs of the results obtained from various methods used. Just give me a brief outline of the plan and results. We will pay for all photographs accepted, and return those we do not use if accompanied by sufficient postage. The results you can show may be of great help to the other fellow.

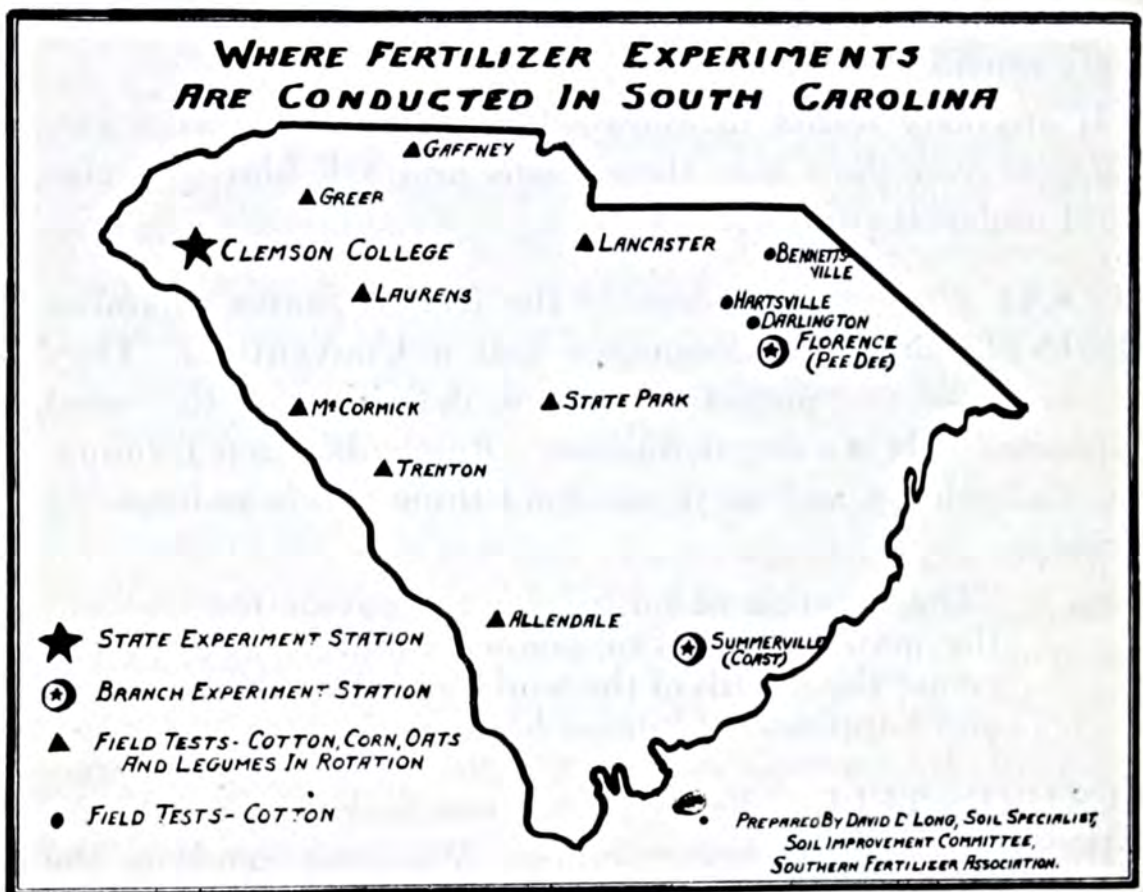
Yours to a cinder,

*Jeff McIlernid*



Here's some interesting news for you. Through the courtesy of Mr. David W. Long, Soil Specialist of the the Soil Improvement Committee of the Southern Fertilizer Association, we are going to publish a series of maps especially prepared by him. These maps show where fertilizer experiments are being conducted in North Carolina, South Carolina, Georgia, Alabama, Florida, Virginia, Mississippi and Tennessee. The first two are published in this issue and the others will follow in succeeding months. In each case the map has been approved by the director of the state experiment station or one of his associates.

Jeff



## SOUTH CAROLINA

### State Experiment—Station Clemson College.

Chiefly kind and quantity of fertilizers on cotton.

### Pee Dee Branch Experiment Station—Florence.

Kind and quantity of fertilizers on cotton, corn, oats, legumes and tobacco.

### Coast Experiment Station — Summerville.

Kind of fertilizers on corn, cotton and legumes. Time

of applying fertilizers on cotton.

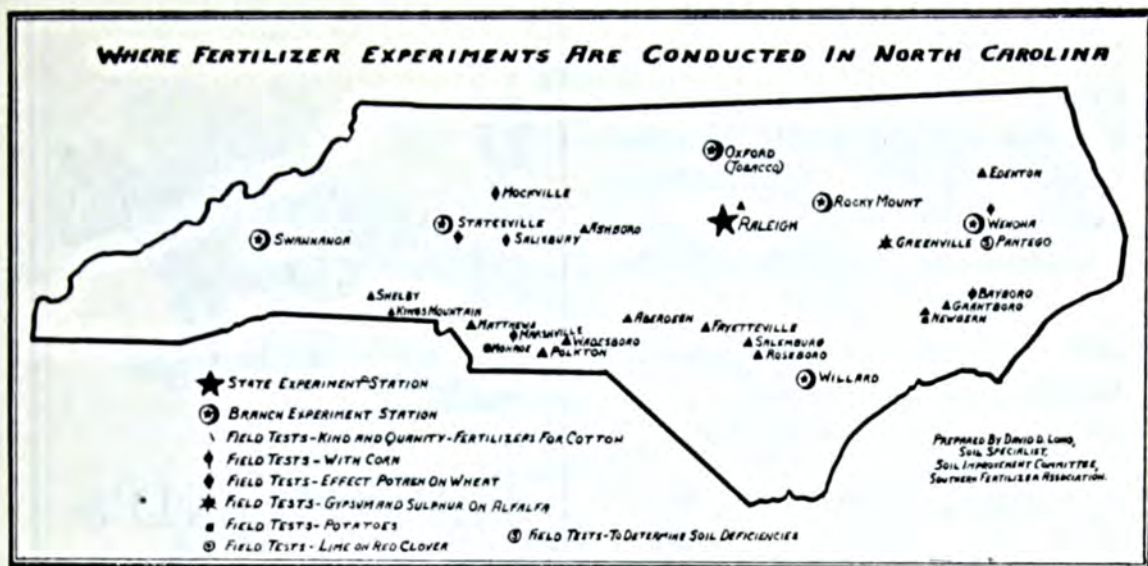
### Field Tests — Greer, Gaffney, Lancaster, McCormick, Tren- ton, State Park, Allendale, and Laurens.

Kind and quantities of fertilizers on cotton, corn, oats in rotation with legumes.

### Field Tests — Bennettsville, Hartsville and Darlington.

Kind and quantities of fertilizers for cotton.





## NORTH CAROLINA

### State Experiment Station — Raleigh.

Most economical fertilizers for cotton and corn in a three year rotation with legumes.

Liming effects in rotation with legumes, supplemented with acid phosphate.

Acid phosphate vs. rock phosphate for corn with legumes turned under.

### Mountain Branch Station — Swannanoa.

Quantities of fertilizer for corn, wheat and red clover grown in rotation.

Comparison of sources of phosphoric acid.

Determination fertilizers formulas for Irish potatoes, corn, wheat in rotation with red clover.

Fertilizer for apples.

### Piedmont Branch Station — Statesville.

Kinds and quantities of fertilizers for cotton, corn, wheat in rotation with legumes.

Sources of phosphoric acid.

Sources of nitrogen.

Effect of potash on wheat.

Fertilizers for peaches and apples.

### Edgecombe Branch Station — Rocky Mount.

Kinds and quantities of fertilizers for cotton, corn, oats and vetch in a three year rotation.

Sources of phosphoric acid.

Plant food deficiencies of regional soils.

Effects of varying amounts of phosphoric acid, nitrogen and potash for cotton under boll weevil conditions.

Fertilizers for sweet potatoes.

### Coastal Plain Branch Station — Willard.

Kind and quantities of fertilizers for cotton, corn, oats, and vetch when grown in a three year rotation.

Plant food deficiencies of regional soils.

Sources of phosphoric acid.

Fertilizers for muscadine grapes.

### Blackland Station—Wenona.

Kind and quantity of fertilizers for corn, oats, and Irish potatoes.

Lime tests.

*(turn to next page)*



**Field Tests—Mathews, Ashboro, Wadesboro, Polkton, Aberdeen, Raleigh, Salemburg, Roseboro, Fayetteville, Marshville, Newbern, Grantsboro and Edenton.**

Kind and quantity of fertilizers for cotton.

**Field Tests — Marshville Wenona and Baysboro.**

Effect of potash on corn.

#### NORTH CAROLINA

**Field Tests — Mocksville and Salisbury.**

Effect of potash on wheat.

**Field Tests—Greenville.**

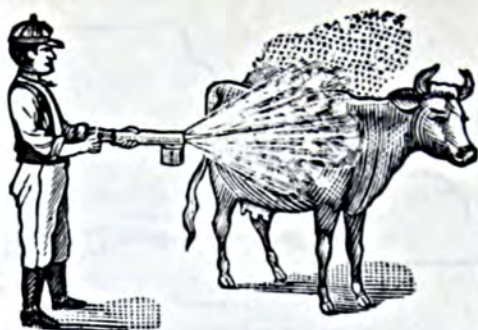
Effect of gypsum and sulphur on alfalfa.

**Field Tests—Pantego.**

Determination of plant-food deficiencies.

**Field Tests—Monroe.**

Effect of lime on red clover.



## HAMMOND'S Cattle Comfort

**Keeps flies off.  
Makes cows more comfortable — they give more milk.**

*Write for Information*

**HAMMOND'S PAINT & SLUG SHOTWORKS**

**Beacon, N. Y.**

# Hammond's Slug Shot

*Used from Ocean to Ocean*



**A** light, composite, fine powder, easily distributed either by duster, bellows, or in water by spraying. Thoroughly reliable in killing Currant Worms, Potato Bugs, Cabbage Worms, Lice Slugs, Sow Bugs, etc., and it is also strongly impregnated with fungicides. Put up in Popular Packages at Popular Prices.

**Sold by Seed Dealers and Merchants.**

*Send for Pamphlet Worth Having*

**HAMMOND'S PAINT & SLUG SHOTWORKS**

**Beacon, N. Y.**





## Mineral Feeding

Dear Jeff:

I have been receiving your BETTER CROPS with very much interest. There is a problem that is confronting the raising of live stock in some sections. It is an established fact that cattle can be moved from a poor soil to a strong soil and make astonishing improvements, and this will also be reversed. Cattle moved from a soil, strong, that is, in mineral matter will be able to grow vegetable matter quickly and make a decided loss when moved to a soil of weaker available mineral matter.

It is also a proven factor that cattle will make better gains on some roughages than on others. This seems to be due more or less to the compactness of unavailable food material in the woody parts of the plant, in which the food material has changed to an insoluble state and is not available to the animal. Animals are able to graze green grass and make good gains while this same grass, dried in the form of a roughage, will not give as much a gain, because the plant has changed its physical state and some of the plant elements have become unavailable.

It is also a noted fact that some plants have larger mineral contents than others and the same plant will vary in mineral content when grown on different soil types. Nitrogen is the element in soils, as we know, that produces or stimulates a rapid development; thus making a quick plant growth, which is not as compact as a slowly matured plant, the stems being

usually more porous. Plants also seem to contain more nitrogen that is available to the animal, in proportion to the nitrogen factor, but as yet this is not a proven fact. The most satisfactory roughage, as we will concede, is a nitrogen bearing roughage or legume. Legumes, as we know, vary in their mineral content as well as in relation to the soil they are grown in; also, it seems as though there probably is a nitrogen ratio somewhere that might be a factor. This nitrogen ratio may be handicapped by the physical nature of the soil, as to compactness or undesirable mineral content.

It appears to me that here is some food for thought in regard to the available nitrogen factor of the different soils to the growth and development of live stock on feed grown on these soil plots. I am intensely interested along this line and am sure it is of economic importance to the care and feeding of live stock; the transportation of live stock from one place to another in order to get satisfactory gains. I have my own opinion, but this opinion needs to be backed up by experimental facts and data.

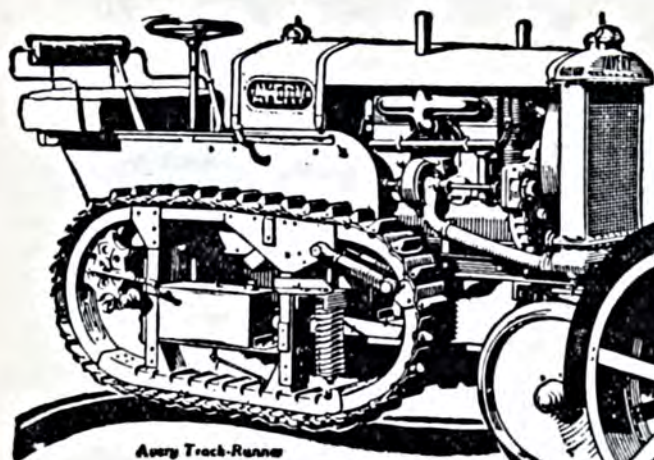
Perhaps there is some data available along this line in which potash may be the determining factor to stimulate the available nitrogen content of the soil.

Very respectfully yours,

DR. K. U. JONES,

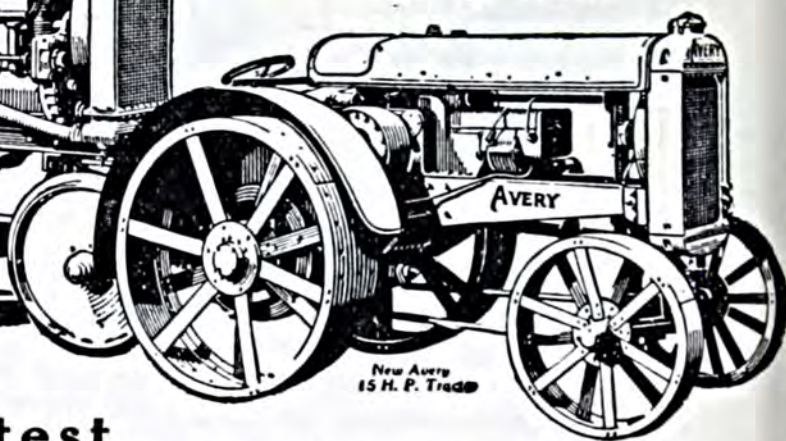
*State Veterinarian,  
A. & M. College, Mississippi.*





Avery Track-Runner

## The New and Improved Avery Line

New Avery  
15 H. P. Tractor

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**N**EW models, many new improvements and refinements, greater power, more economy and lower prices—the New Improved Avery Line is really a sensation.

Never in tractor history have so many new improvements and desirable features been developed in one line. Avery machines now give better and more economical service and sell at lower prices.

The Avery Line for 1923 includes the Improved Avery Track-Runner that runs on a roller-bearing track; the NEW Avery 15 H. P. enclosed gear, 3-plow wheel tractor, with two bearing belt transmission and two gear contact drawbar transmission; the Improved "Road-Razer" for shaving unpaved roads and streets smooth in summer and removing snow in winter; the Improved Avery Tractors for farming, threshing and road-building in the 20-35, 25-50 and 45-65 H. P. sizes; also grain-saving threshers in all sizes, motor cultivators, tractor plows, tillage tools and other drawbar and belt machinery.

Get the latest prices on Avery Tractors which now give you more horse-power per dollar than ever before offered.

*"It pays to Avery-ize"*

# Avery Co.

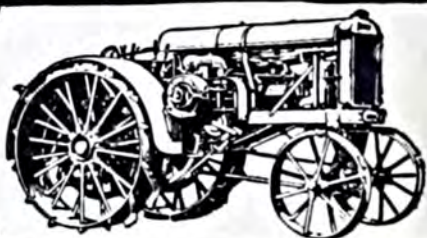
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Branch Houses, Distributors  
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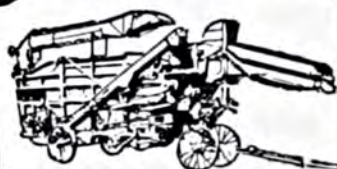
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Improved  
Avery 20-  
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Avery Header Thresher.  
Harvests and threshes  
the grain in one opera-  
tion.







## Practical Literature on Vegetable Growing

Through the courtesy of Prof. Schermerhorn of the New Jersey Agricultural Experiment Station, we are publishing this month a list of books and bulletins on vegetable growing. It was compiled for the use of New Jersey growers but we believe will be of value to vegetable growers everywhere.

### BOOKS

1. *Garden Farming*, by L. C. Corbett, published by Ginn & Co., New York City. Price \$3.20 postpaid.

A book treating of the methods used in various parts of the United States which is very good for New Jersey conditions.

2. *Vegetable Gardening*, by R. L. Watts, published by Orange Judd Co., New York City. Price \$2.50 postpaid.

This explains principles clearly, but takes up crops from the viewpoint of the market gardener.

3. *Vegetable Forcing*, by R. L. Watts, published by Orange Judd Co., New York City. Price \$2.50 postpaid.

The best book on the culture of vegetables under glass.

4. *Vegetable Crops*, by H. C. Thompson, published by McGraw Hill Co., New York City. Price \$12.50 postpaid.

This book contains digests of Experiment Station work and latest methods used throughout the United States.

### CIRCULARS AND BULLETINS

*Asparagus*—Farmers Bulletin 829—U. S. D. A.

*Asparagus Growing in New Jersey*—Circular 99—New Jersey Experiment Station.

*Common Diseases of Beans*—Circular 50—New Jersey Experiment Station.

*Cabbage Maggot Control*—Circular 138—New Jersey Experiment Station.

*Celery Growing*—Farmers Bulletin 1269—U. S. D. A.

*Diseases of Celery*—Circular 112—New Jersey Experiment Station.

*Common Diseases of Cucumbers and Melons*—Circular 68—New Jersey Experiment Station.

*The Striped Cucumber Beetle and How to Control It*—Farmers Bulletin 1322—U. S. D. A.

*The Handling and Precooling of Florida Lettuce and Celery*—Department Bulletin 601—U. S. D. A.

*Onion Culture*—Farmers Bulletin 354—U. S. D. A.

*The Pepper Maggot*—Bulletin 373—New Jersey Experiment Station.

*Handling Spinach for Long Distance Shipment*—Farmers Bulletin 1189—U. S. D. A.

*Lettuce Growing in New Jersey*—Circular 155—New Jersey Experiment Station.



*Spinach Studies in Passaic County and Cultural Notes*—Bulletin 385—New Jersey Experiment Station.

*Sweet Potato Culture and Storage*—Circular 114—New Jersey Experiment Station.

*Sweet Potato Diseases in New Jersey*—Circular 141—New Jersey Experiment Station.

*Control of Three Important Diseases of Sweet Potatoes*—Bulletin 365—New Jersey Experiment Station.

*Early Tomato Growing in New Jersey*—Circular 103—New Jersey Experiment Station.

*Home Selection and Saving of Tomato Seed*—Extension Circular 13—New Jersey Experiment Station.

*Common Diseases of Garden Vegetables and Truck Crops*—Circular 89—New Jersey Experiment Station.

*Nicotine Dust for Control of Truck Crop Insects*—Farmers Bulletin 1282—U. S. D. A.

*Saving Seed for Home and Market Garden*—Farmers Bulletin 884—U. S. D. A.

### HOW TO GET THIS LITERATURE

The books may be obtained by addressing Book Department BETTER CROPS, enclosing remittance. Make checks or money orders payable to Better Crops Publishing Company.

The Circulars and bulletins by the New Jersey Experiment Station may be obtained free by writing to the New Jersey Agricultural Experiment Station, New Brunswick, N. J. The bulletins marked U. S. D. A. may be obtained by writing to the Editor in Chief, Division of Publications, Department of Agriculture, Washington, D. C.

## High-Analysis Fertilizer Popular

Writing under that heading in the January issue of *The Agricultural Student*, W. A. Harper, Ohio State University, '25, presents the following table, showing the surprisingly rapid progress being made away from low analysis fer-

of ammonia and potash sold," the increase in the case of ammonia, being about 28 per cent, and in that of potash, nearly 46 per cent. The same is true of the phosphate carriers, applied alone. While there was a decrease of nearly 20,000

	1922	1923 (In Tons)	Gain or Loss
TOTAL FERTILIZER USED.....	310,885	303,120	—7,765
TOTAL ACID PHOSPHATE.....	192,645	171,954	—20,691
TOTAL MIXED FERTILIZER.....	109,030	119,497	+10,467
MIXED FERTILIZERS IN "OHIO STANDARD DOZEN" LIST.....	16,630	45,090	+28,460
MIXED FERTILIZER ABOVE 14 PER CENT TOTAL PLANT FOOD.....	44,430	74,954	+30,524
MIXED FERTILIZERS BELOW 13 PER CENT TOTAL PLANT FOOD.....	34,380	16,941	—17,439

tilizers, and particularly, toward the 12 selected analyses included in the "Ohio Standard Dozen."

Discussing the decrease in the total sales in 1923, Mr. Harper points out that "there were considerable increases in the amounts

tons in 1923, there was a falling off of only 2½ per cent in the total phosphoric acid sold. These facts undoubtedly indicate a pronounced response by farmers to the efforts made to interest them in the advantages of using high-analysis fertilizers.



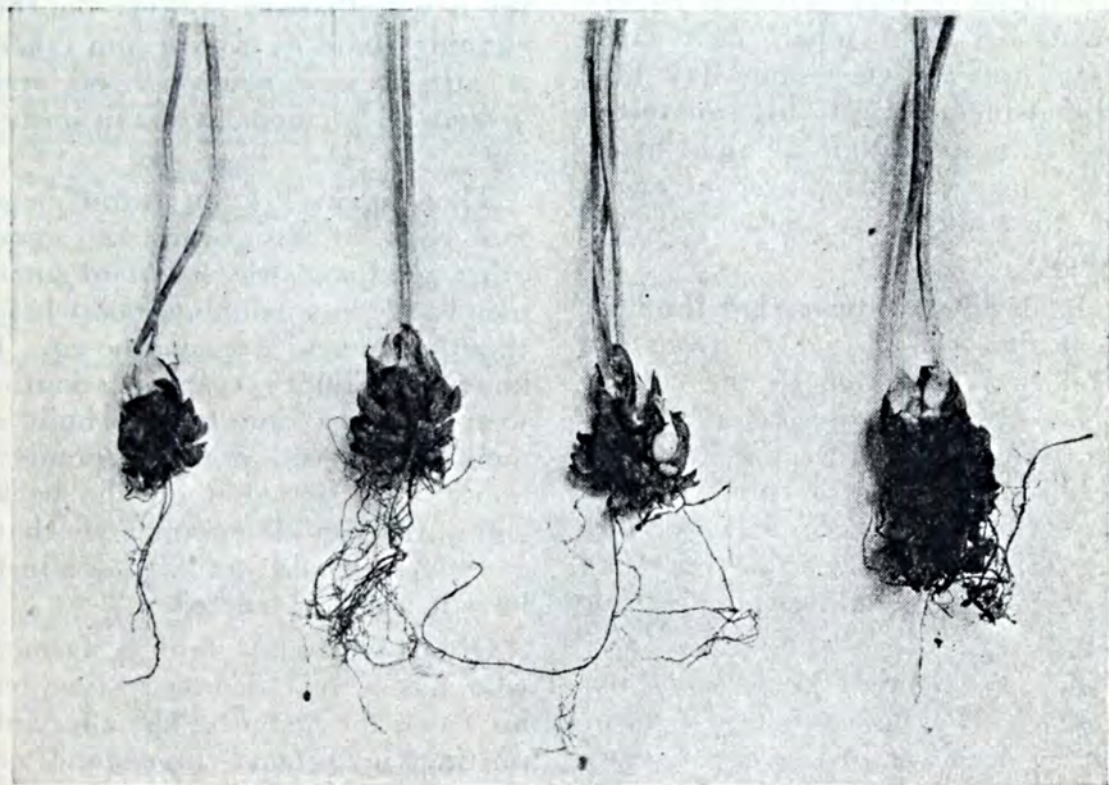
## Dutchman's-breeches

(From page 27)

keep grazing animals off the dangerous pastures until mid-May, or else supply hay or other feed in addition to the pasturage. It is said that the danger is greatest following rain when the bulbs are readily pulled out of the ground to be consumed together with the foliage, and the animals thus get a double dose of the poison.

Animals poisoned during the course of the feeding experiments first trembled and paced about nervously with the head held high. As the trembling increased in intensity there was frothing at the

mouth and finally convulsions set in. The poisoned animals fell, the legs became rigid, the head was thrown back, the eyes became glassy and the victims moaned as though suffering terrible agony. The first symptoms appeared on the second day after feeding commenced, after about five pounds of the plant had been consumed. The indications are that if poisoned animals are removed from the infested pasture as soon as the symptoms are first noted, they will recover if not allowed to partake further of the dangerous plant.



The peculiar scaly bulbs of Dutchman's-breeches, characteristic of this plant. They are dangerously poisonous.



## Why I Use a Car

(From page 7)

underneath? Well, just take my word for it and don't attempt it. Yes, I got up the ones I tried but it was with the combined help of a team of horses and three husky men

pushing and the motor spinning like it would break its little heart.

Now seriously friends—"Why do I use a Car?" Well really it is serious because I have to do enough



work to earn some silvery shekels so I can buy the simple necessities for a growing family. In the old days I used to know a County Agent who used a horse and buggy. I've heard him tell, how he would start out on Monday morning and travel around his county all week and would probably get back to his office by Friday night and be ready to do up his office work on Saturday. Nowadays that system would not work, because folks have found out the County Agent is in a county to be used and a lot of folks write letters to him nearly every day in the week and his Executive Board says he must keep up his correspondence *every day*, so he won't lose any supporters and some dear old lady away over in the Northeast corner of the county wants her hens culled "next Tuesday," and the very same day Jake Niffenstocker wants his soil tested and it happens that a "night meeting" has previously been arranged in the southwest corner of the county.

It also may happen that the very next day a "Specialist" from the College is expected in the county for a series of soy bean demonstration meetings arranged so as to reach all parts of the county in two days time. This trip will probably cover at least fifty to seventy-five miles a day including three or four stops.

So, my friends I know *why* I use a car. It's because my present salary does not justify expenditure for a flying machine:—but say,—if they get 'em so they'll start and stop easy, stand without hitchin' and go whenever you crank 'em up I believe the County Agent will take to them like a duck takes to water.

Now I would like to know how a County Agent can get along *without* a car in this present generation. If there is such a one let him speak up. I am sure his experience would be at least enlightening.

Now to really come down to brass tacks on this subject, I often tell folks that as a County Agent I have had to do everything except preach a funeral or perform a marriage ceremony. So it is with my car: it is called upon to do a little of everything.

If I rode a horse or used a motorcycle I know I could not perform many little services that I do now. For instance, in initiating a new co-operator into the mysteries of spraying his fruit trees for the first time I have found that it was very helpful for me to put a ten gallon can of lime sulphur and a few pounds of arsenate of lead in the back part of my car and go out prepared to actually get the man started right. I have sometimes set a wheelbarrow sprayer on the running board of my car and taken it into a new neighborhood and given a real demonstration in spraying.

Then again I often throw in a few bags of soy beans or some other good seed which I want some men to try in a neighborhood where these legumes are unknown. I know one County Agent in a Southwest Missouri County who built a model of a good practical poultry house and carried it on the back end of his car all summer so that everybody could actually see just how it was constructed.

Often you may find a farmer who has a real demonstration on his farm, for instance, the effect of putting in ground lime-stone or fertilizer on a field and you can load in two or three "doubting Thomases" in your old car and take them over to this field and convince and convert them right on the spot.

Oh I don't see how we could get along without the FO—excuse me—without a car in making our rounds so we can do up our office work every day, put in a day out in the county and attend a night meeting in some community at night.



# High Yields Make Low Costs

(From page 31)

high and low rates of yield upon production costs is but a beginning what might be set forth. It is sufficient however, to establish two facts:

1. The farmer producing at a low rate of yield cannot make fair returns except possibly under the most favorable circumstances.
2. The farmer producing at a higher - than - average rate of yield practically always make a fair income, even under most unfavorable circumstances.

## THE INFLUENCE OF QUALITY UPON COSTS

Usually high quality accompanies high rate of yield. That is to say, a farmer planning to raise his rate of yield, has the right to expect an increment in the value of his crop, in addition to the value of the extra quantity, because of the higher quality. The instances following will suffice to illustrate.

The average of 10 year's results at the Delaware Experiment Station, showed that fertilized

wheat weighed six pounds per bushel more than unfertilized wheat. The difference was as high as 13 pounds in the poorest yield. In 1919, the kernels from the unfertilized plots were so small and shriveled that it required 1,456 of them to weigh an ounce, compared to only 800 kernels from the fertilized plot.

Bringing out more clearly the relation between yield and quality, the Ohio Station quotes the case of unfertilized wheat which yielded at the rate of 8.45 bushels per acre, and of fertilized wheat yielding 34.15 bushels. Of the former, 49 per cent consisted of shriveled kernels while, the high yield tested 94 per cent plump kernels.

The significance of quality in relation to costs is found in a report made by the Kansas City office of the Federal Grain supervision, to the effect that of the 7,669 carloads of hard red winter wheat inspected during 1919, 1920 and 1921, almost 68 per cent was marked down one

### Truck Crop Yields Important

Sixteen hundred pounds of a high-analysis, complete fertilizer applied to spinach in this test conducted at Richfield, N. J., by the N. J.



Experiment Station, increased the rate of yield from 198 crates to 507 crates per acre. It is not difficult to figure from that the most profitable system.





### High Quality Accompanies High Yield

These photographs are a striking illustration of the apparent effect of fertilizers, not only upon the rate of yield, but also upon quality. The wheat at the left was unfertilized and yielded 2.7 bushels per acre. Note its shriveled condition. The plump wheat at the right was fertilized and yielded 19.4 bushels.

grade or more on account of low weight per bushel. One grade difference in test weight reduces the price at least two cents a bushel.

H. J. Waters, formerly President of the Kansas State Agricultural College, now editor of the *Weekly Kansas City Star*, has stated the case for high rates of yield as concisely and effectively, perhaps as it can be put. He says:—

“It is a mistaken notion that, when prices are low because of overproduction, the remedy is to take less pains and let the yields of our acres and animals run down. Such practice leads to but one end—bankruptcy. The truth is, the

lower the price of the product, the greater the need for high efficiency in producing it. When prices are high, even mediocre yields are profitable, but such yields are always unprofitable when the prices are low. No agriculture can be prosperous in the face of declining yields and rising production costs. The surest way to cut production costs is by increasing the yields of our acres and our animals. Twenty years hence, the farmer who has systematically produced high yields through periods of low prices and high prices will be out of debt and be the leading man of his community.”

### One of Aroostook's Famous Fields

It belongs to the W. R. Christie Co., of Presque Isle, Maine, who had about 1,000 acres in potatoes last year. Their average yield was about 410 bushels per acre, although on the 40 acre piece pictured here, it ran slightly over 550 bushels. Fertilizers are generously employed by Maine growers, a ton to the acre being perhaps the most common practice. The high rates of yield and the low bushel costs resulting are evidence of the wisdom of their methods.





# He Applied Business Methods to Farming

(From page 21)

The grain feeds one crop of hogs and the corn produced feeds the other. The hogs are always sold F. O. B. and the price received in 1923 was eight and nine cents per pound.

Wheat and barley are grown and yield about forty bushels per acre, and are fed to the hogs and the dairy cows. The corn is used for silage and grain. The yield of silage is about fifteen tons per acre and the grain about fifty bushels. He fills a seventy ton silo with part of the corn and the remainder is hogged down.

The remaining five acres include the barnyard, house, garden, orchard and vineyard. In the orchard he has four varieties of apples, four of peaches, two of pears, two of plums, apricots, figs, pomegranates, pecan nuts, and English walnuts. In the vineyard he has six hundred and forty vines and six varieties of grapes, also blackberries, and Loganberries. Around the house he has ten varieties of roses, also fan palms, date palms, oranges and olives.

In the opinion of Mr. Wells, permanent prosperity will come to the farming class only through organization and cooperation rather than through legislative enactment. But cooperation in marketing cannot be expected to solve all the farmer's problems by any means. His observations locally are that farmers are suffering more from lack of business methods in farming and lack of capacity than from bad commission men or bad markets. The farm must be put on a commercial basis. A farmer must be a good business man. *Capacity is just as essential to the farmer as to the dairy cow.* If he produces only what he consumes he hasn't anything to sell. There is no one so far from market as those who have nothing to sell, especially of the

kind the public wants. It is pretty hard to help that class of farmers through organization or cooperative marketing. The farmer must also produce the things the public wants to buy. Mr. Wells is firmly of the opinion that the farmer of the future must be educated for his business as much as is the doctor or lawyer. The old idea that any one can farm is a mistake and is largely responsible for bringing farming to its present level.

"Agriculture," says Mr. Wells, "is the greatest science of all, and when the brainy boys of the country are educated for that profession farming will come into its own."

Wells has achieved success during the prevailing agricultural depression by practicing a system of diversified farming with an appreciation of good business methods, close supervision and personal attention to all the work of the farm. Everything shipped from his farm is a finished product put up in an attractive form ready for consumption. The market price of corn, wheat or barley has no interest to him for he has none of this raw material for sale. The question of freight rates also has been largely solved for he ships only the higher priced concentrated finished product on which the higher rates can be paid. The raw bulky material is entirely consumed on the farm.

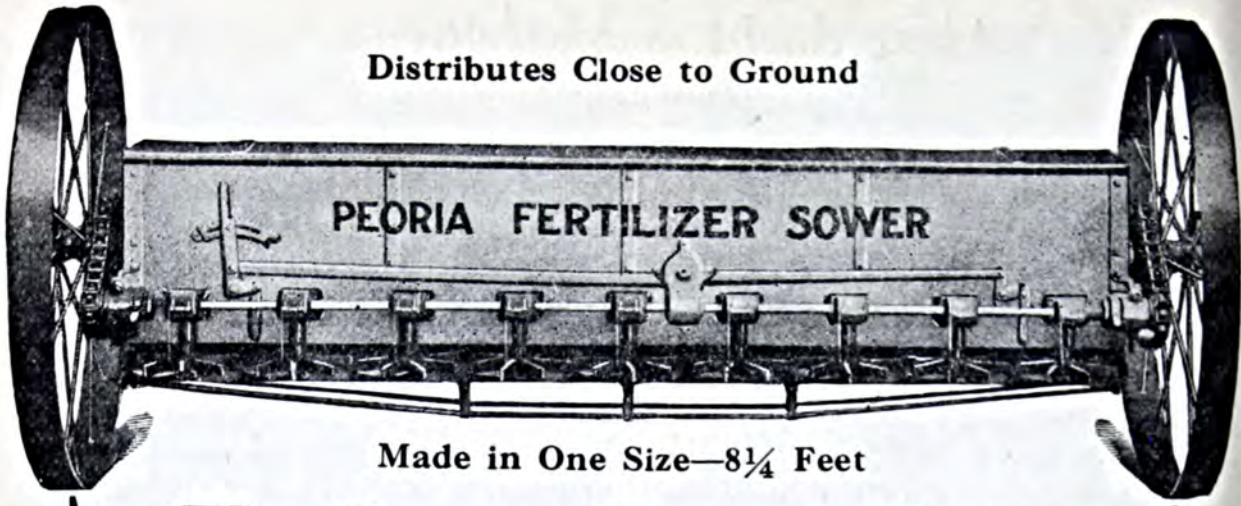
The farmer of today who is making money is of his type. That is, the man who is actually living on his family size farm, closely supervising all farm work, and not attempting to farm from a town office.



*Our readers have come across in wonderful style in response to our request for a sound agricultural program. Watch for the July BETTER CROPS which will contain some of the best suggestions received.*



Distributes Close to Ground



Made in One Size—8¼ Feet

## The Greater Harvest Getter FERTILIZER SOWER

**W**ILL successfully distribute Lime and Fertilizers in any quantity desired from 100 to 6,000 lbs. under all circumstances, damp or dry. No Clogging; Light Draft; for two ordinary horses. Other machines of equal capacity are heavy draft for four horses.

The use of fertilizer has become a necessity to modern agriculture. Farmers of the Eastern States have realized for years the profit to be made from the use of fertilizers, and now the Western farmer is rapidly learning to look upon fertilizer as an "investment" rather than an "expense."

The American farmer is learning that by taking everything from his soil and returning nothing, he is headed straight for agricultural bankruptcy, and that every dollar spent on good fertilization is better invested than a dollar in the savings bank.

But fertilizer, to be most efficient, must be mixed with brains. It must be properly applied.

For many fields and many crops, a broadcast distributor offers the best solution of the problem of how to make the application.

There is no distributor on the market that can equal the New Peoria. It took years of actual experimenting in the field to finally produce this high-grade distributor. It bears little resemblance to the makeshift box-wheels-and-axle contrivances commonly found on the market.

We also manufacture Fertilizer Drills in all sizes.

*For Catalog and Prices Address*

**Peoria Drill and Feeder Co.**

Peoria, Illinois, U. S. A.



## Apple Scald and its Prevention

(From page 23)

the tissues, as it were. If the fruit could be thoroughly ventilated these poisonous gases could be removed but in tight packages this is impossible. It was found, however, that these gases could be absorbed in fats and oils and thus prevent injury to the fruit. As ordinary animal or vegetable oils soon become rancid and injure the quality and flavor of the fruit they cannot be used, but an odorless, tasteless mineral oil has been prepared that will not injure the fruit. When the apples are wrapped in paper containing this oil scald is largely prevented. To be efficient the wraps should have an oil content of 15%-20% by weight as smaller amounts will not control scald. Untreated paper or paraffin wraps are of little value in scald prevention.

Due to the numerous inquiries regarding scald and its prevention, the Experiment Station of Purdue University instigated a series of investigations to demonstrate methods of scald control. Experiments are being conducted in both a commercial cold storage plant and in a farm cool storage cellar, using various varieties most subject to scald. The results reported herein deal wholly with Grimes under farm storage conditions.

There are three main factors in scald prevention in the farm storage: ventilation, maturity of the fruit and oiled paper protection.

**D**URING the present season complaints have been received from operators of farm cool storage houses where the fruit was stored in bulk regarding scalding of apples, especially near the roof of the storage or in the upper layers of fruit. Investigations usually determined that the ventilators had been closed for some time due to the cold weather. Such lack of

ventilation helps to bring about the condition most favorable for scald development. It should be remembered in this connection that during the coldest weather it may be necessary to ventilate the storage house in the warmest part of the day, being governed entirely by the temperature. Thorough ventilation is the first essential.

**T**HE maturity of the fruit is another important consideration. Immature fruit is more susceptible to scald than properly matured fruit. In our experiments, fruit picked one week before it was "tree ripe" and not wrapped was practically worthless by late November due to scald injury. By January the rots which follow scald had entirely ruined the fruit.

Oiled paper protection, however is the greatest factor in scald prevention. Three lots of Grimes were picked early in September about the time they were being picked commercially. One lot was packed without protection, another lot wrapped individually in commercial oiled wraps and the third lot packed with shredded oiled paper, scattering it through the package among the apples. By the middle of November the untreated apples were badly scalded and by January they were very severely scalded and rots were beginning to develop. The wrapped apples remained free from scald to the end of their storage period, being as bright and smooth as the day they were picked. The lot packed in shredded oiled paper remained in practically as good condition as did the wrapped lot.

This is perhaps the most interesting feature of our farm storage investigations. The use of the oiled wrap in scald control is an established fact but the use of the



## Jeffisms

The greatest cynic I know is a man who makes his living by writing messages of cheer.



Epitaph for a great man: he tried to do too much—and did it.



For all our acts there are two reasons—a good reason and the real reason.



Every real accomplishment is the result of three processes: Imagination, desire, creation.



The man who honestly seeks to follow Truth is bound to appear inconsistent.



Efficiency is persistence plus politeness.

Jeff

shredded oiled paper is a new development. The purpose of the farm storage generally is to hold the inferior quality of apples until the better fruit is off the market and dispose of them throughout the winter months. The value of such apples will not justify the cost of wrapping. If, however, the shredded oiled paper may be used as successfully as our results indicate, insurance for these inferior grades of fruit may be provided at a cost of only a few cents per bushel. When the difference in value between clean and scalded fruit is taken into consideration the expenditure is an excellent investment. If the fruit is stored in barrels, paper lining for the inside of the package may also be used.

Scald is no longer a necessary evil. It can be prevented. We spray and fertilize our trees, harvest a fine crop of fruit and then often risk great losses from scald in storage. Why not go one step farther and protect our fruit from this universal storage trouble by using oiled paper? Growers in the Pacific Northwest have learned the value of the oiled wrap. They consider it the cheapest insurance against the disease. It works like magic for them. Let's give it a chance to work for us.

Picking the fruit a little more mature, storing it as soon as possible, at the coolest temperature that can be secured in the farm storage, and continuous thorough ventilation throughout the season, are contributing factors of great value in the prevention of storage scald.



*Next month we have a real treat in store for you in the form of a report on cooperative marketing by County Agent D. B. Morris who was chosen to make a survey of this subject on the west coast. A keen analysis of the subject by a careful observer.*



# Genuine German Potash Salts

can be secured from any of the following distributors:

## ALABAMA

Birmingham—  
Grasselli Chemical Co.  
Virginia-Carolina Chemical Co.  
Montgomery—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
Capital Fertilizer Co.  
International Agricultural Corp.  
F. S. Royster Guano Co.  
Virginia-Carolina Chemical Co.

## ARKANSAS

Little Rock—  
Arkansas Fertilizer Co.

## CALIFORNIA

Azusa—  
Geo. W. Fuhr  
Covina—  
Sun Fertilizer Co.  
Glendora—  
Frahm & Manning  
Los Angeles—  
Agricultural Chemical Works  
American Agricultural Chem. Co.  
Hauser Packing Co.  
Mutual Orange Distributors  
Pacific Guano & Fertilizer Co.  
Southern California Fertilizer Co.  
Spreckles Bros. Comm. Co.  
Western Meat Co.  
San Francisco—  
A. M. Blumer Co.  
California Fertilizer Works  
Growers' Fertilizer Co.  
Meyer Wilson & Co.  
Pacific Bone, Coal & Fert. Co.  
Pacific Guano & Fertilizer Co.  
Potash Importing Corporation  
Western Meat Co.

## CONNECTICUT

Bridgeport—  
Berkshire Fertilizer Co.  
Hartford—  
Olds & Whipple, Inc.  
Middletown—  
Rogers & Hubbard Co.  
New Haven—  
American Agricultural Chem. Co.

## FLORIDA

Bradentown—  
Gulf Fertilizer Co.  
Clearwater—  
Gulf Fertilizer Co.  
Daytona—  
Cornelius Christiancy Co.  
Eustis—  
Gulf Fertilizer Co.  
Fernandina—  
Nitrate Agencies Co.  
Frostproof—  
Gulf Fertilizer Co.  
Jacksonville—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
International Agricultural Corp.  
Nitrate Agencies Co.  
Virginia-Carolina Chemical Co.  
Wilson Toomer Fertilizer Co.

Lake Hamilton—  
Gulf Fertilizer Co.  
Orlando—  
Gulf Fertilizer Co.  
Tampa—  
Gulf Fertilizer Co.  
Terra Ceia—  
Gulf Fertilizer Co.  
Winter Haven—  
Gulf Fertilizer Co.

## GEORGIA

Albany—  
Armour Fertilizer Works  
Swift & Company  
Virginia-Carolina Chemical Co.  
Athens—  
Empire State Chemical Co.  
Georgia Phosphate Co.  
Hodgson Cotton Co.  
Atlanta—  
A. D. Adair & McCarthy Bros.  
Co.  
American Agricultural Chem. Co.  
Armour Fert. Wks. (So. Hdqrs.)  
International Agricultural Corp.  
F. S. Royster Guano Co.  
Swift & Company  
Virginia-Carolina Chemical Co.  
Augusta—  
Southern State Phosphate & Fer-  
tilizer Co.  
Virginia-Carolina Chemical Co.  
Baxley—  
R. L. Lewis Co.  
Columbus—  
International Agricultural Corp.  
Cordele—  
Read Phosphate Co.  
La Grange—  
Swift & Company  
Macon—  
F. S. Royster Guano Co.  
Pelham—  
Pelham Phosphate Co.  
Savannah—  
American Agricultural Chem. Co.  
G. Ober & Sons Co.  
Mutual Fertilizer Co.  
Read Phosphate Co.  
Reliance Fertilizer Co.  
Savannah Guano Co.  
Southern Fertilizer Co.  
Swift & Company  
Virginia-Carolina Chemical Co.  
Toccoa—  
Swift & Company  
Valdosta—  
Georgia Fertilizer & Oil Co.  
Vidalia—  
Vidalia Chemical Co.

## ILLINOIS

Chicago—  
Armour Fertilizer Works  
Darling & Company  
Swift & Company  
National Stock Yards,  
St. Clair County—  
Swift & Company

## INDIANA

Hammond—  
Swift & Company



Indianapolis—  
Rauh & Sons Fertilizer Co.  
Smith Agricultural Co.  
New Albany—  
Calumet Fertilizer Co.  
Read Phosphate Co.

#### KENTUCKY

Louisville—  
Armour Fertilizer Works  
Federal Chemical Co.

#### LOUISIANA

New Orleans—  
Armour Fertilizer Works  
Nitrate Agencies Co.  
Swift & Company  
Shreveport—  
Swift & Company  
Virginia-Carolina Chemical Co.

#### MAINE

Houlton—  
International Agricultural Corp.  
Presque Isle—  
Armour Fertilizer Works

#### MARYLAND

Baltimore—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
Baugh & Sons Co.  
Griffith & Boyd Co.  
Miller Fertilizer Co.  
Nitrate Agencies Co.  
G. Ober & Sons Co.  
Piedmont Mt. Airy Guano Co.  
F. S. Royster Guano Co.  
Swift & Company  
Virginia-Carolina Chemical Co.  
Salisbury—  
W. B. Tilghman Company, Inc.

#### MASSACHUSETTS

Boston—  
American Agricultural Chem. Co.  
The Lowell Fertilizer Co.

#### MICHIGAN

Detroit—  
American Agricultural Chem. Co.

#### MISSISSIPPI

Jackson—  
Virginia-Carolina Chemical Co.  
Meridian—  
Meridian Fertilizer Factory  
Tupelo—  
Tupelo Fertilizer Factory

#### MISSOURI

St. Louis—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
Swift & Company

#### NEW JERSEY

Bound Brook—  
Nitrate Agencies Co.

#### NEW YORK

Buffalo—  
American Agricultural Chem. Co.  
International Agricultural Corp.  
New York—  
American Agricultural Chem. Co.  
Armour Fert. Wks. (East.Hdqsrs.)

International Agricultural Corp.  
Mutual Fertilizer Co.  
National Aniline & Chemical Co.  
Nitrate Agencies Co.  
Virginia-Carolina Chemical Co.  
Zaldo & Martines Exchange Co.

#### NORTH CAROLINA

Charlotte—  
International Agricultural Corp.  
F. S. Royster Guano Co.  
Swift & Company  
Durham—  
Virginia-Carolina Chemical Co.  
Greensboro—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
Swift & Company  
Henderson—  
American Agricultural Chem. Co.  
Lillington—  
Farmers Cotton Oil Co.  
Harnett Oil & Fertilizer Co.  
New Bern—  
G. Ober & Sons Co.  
Raleigh—  
F. S. Royster Guano Co.  
Tarboro—  
F. S. Royster Guano Co.  
Washington—  
Pamlico Chemical Co.  
Wilmington—  
Acme Manufacturing Co.  
Nitrate Agencies Co.  
Swift & Company  
Virginia-Carolina Chemical Co.  
Wilson—  
Farmers Cotton Oil Co.  
Winston-Salem—  
Virginia-Carolina Chemical Co.

#### OHIO

Cincinnati—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
International Agricultural Corp.  
Virginia-Carolina Chemical Co.  
Cleveland—  
Swift & Company  
Columbus—  
Smith Agricultural Chemical Co.  
Dayton—  
Wuichet Fertilizer Co.  
Sandusky—  
Armour Fertilizer Works  
Toledo—  
F. S. Royster Guano Co.

#### OREGON

No. Portland—  
Swift & Co.  
Portland—  
Portland Seed Co.

#### PENNSYLVANIA

Philadelphia—  
Baugh & Son  
I. P. Thomas & Son  
Tunnel & Company  
Reading—  
Keystone Bone Fertilizer Co.  
Wadsworth—  
Ohio Match Co.  
York—  
York Chemical Works



## SOUTH CAROLINA

Anderson—  
Anderson Phosphate & Oil Co.  
Charleston—  
American Agricultural Chem. Co.  
Etiwan Fertilizer Co.  
Maybank Fertilizer Co.  
Planters Fert. & Phosphate Co.  
Read Phosphate Co.  
Virginia-Carolina Chemical Co.  
Chester—  
Swift & Company  
Columbia—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
Darlington Guano Co.  
F. S. Royster Guano Co.  
Swift & Company  
Virginia-Carolina Chemical Co.  
Greenwood—  
T. M. Miller Co.  
North—  
J. E. Culler Co.  
Spartanburg—  
American Agricultural Chem. Co.

## TENNESSEE

Memphis—  
Virginia-Carolina Chemical Co.  
Nashville—  
Armour Fertilizer Works  
Read Phosphate Co.  
Virginia-Carolina Chemical Co.

## VIRGINIA

Alexandria—  
American Agricultural Chem. Co.  
Danville—  
G. Ober & Sons Co.  
Lynchburg—  
Pocahontas Guano Co.  
Norfolk—  
American Agricultural Chem. Co.  
Baugh & Sons Co.  
Farmers Guano Co.  
International Agricultural Corp.  
Priddy & Co.  
Robertson Chemical Co.  
F. S. Royster Guano Co.  
Swift & Company  
Virginia-Carolina Chemical Co.  
Portsmouth—  
G. Ober & Sons Co.

Richmond—  
Old Buck Guano Co.  
Virginia-Carolina Chemical Co.  
WASHINGTON

Seattle—  
Chas. H. Lilly Co.  
Tacoma—  
Stock & Plant Food Co.  
Marine Products Co.  
CANADA

## British Columbia

New Westminster—  
Triangle Chemical Co., Ltd.  
Vancouver—  
Canadian Explosives, Ltd.  
Victoria Chemical Co., Ltd.  
Quebec

Montreal—  
Arthur Lavigne, Ltd.  
Wilson, Patterson & Gifford  
Quebec—  
George Tanquay, Ltd.  
New Brunswick

Bath—  
C. E. Gallagher Co.  
Hartland—  
Hatfield & Co., Ltd.  
Home Mixed Fertilizers, Ltd.  
St. John—  
Gunns, Ltd.  
Wilson, Patterson & Gifford  
St. Stephen—  
Dominion Fertilizer Co.

## Nova Scotia

Wolfeville—  
T. L. Harvey Co.

## Ontario

Chatham—  
National Fertilizers, Ltd.  
Hamilton—  
National Fertilizers, Ltd.  
Ingersoll—  
National Fertilizers, Ltd.  
Toronto—  
Swift & Company  
Wilson, Patterson & Gifford  
West Toronto—  
Gunns, Ltd.  
National Fertilizers, Ltd.  
Wingham—  
Gunns, Ltd.  
Prince Edward Island  
Montague—  
Poole & Thompson, Ltd.

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of America**

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**New York**

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Better Cotton

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## THE NEMA—Friend and Enemy

(From page 10)

the nema which has another nema parasitic within it.

**P**ERHAPS the nema which is of the most immediate concern to agriculture is the gall nema, the one which produces root-knot of a great number of important plants, and on more than five hundred plants when all are totaled up, including the weeds. It is probable that there are many more. The effects produced on the roots of some plants are startlingly like those produced in humans affected with elephantiasis. The roots become clublike, bulbous, or very badly knotted. This trouble is particularly bad in the South where the temperature is favorable, and in greenhouses in all parts of the country. The infection spreads most readily in sandy and loamy soils which are light and easily penetrated by the slowly undulating threads. In this type of soil it is also easier for water to carry them from place to place as it moves through the openings between the soil grains. Where irrigation is practiced in the Northwest and in California, nemas have often become very bad because so easily spread. Heavy clay soils have such fine pores that the nemas are greatly impeded and they may not spread to any great extent in very close soils, unless other conditions are particularly favorable.

It must not be concluded that the gall nema is found only in the South and in greenhouses. It does damage in all except the most northern States and in seasons specially favorable it has been known to do damage as far north as Idaho. However, it is most abundant in the sandy lands of the Atlantic and Gulf Coastal Plain regions from Maryland to eastern Texas, and in the lighter irrigated soils of California. But it is found here and

there to a serious extent in other parts of the South and West where soil conditions are particularly favorable and even in heavier soils with much organic matter and on which susceptible crops have been grown year after year.

The crop losses from this cause in some cases have run as high as 80 per cent, according to investigation by G. H. Godfrey of the Department of Agriculture. On all the sandy lands in one county in South Carolina the loss of cotton one year was estimated at 4.4 per cent. In one year the cotton root-knot loss was estimated at 4.1 per cent. On this basis the loss to the cotton crop in one year in the cotton areas known to be infested was figured to be about 200,000 bales and 100,000 tons of seed. Losses on truck crops have been shown to be even greater. Root-knot has become a limiting factor in melon production in some parts of southern California. In some places potato growing is menaced. Nurseries, including principally those growing figs, peaches, grapes and walnuts, are meeting heavy losses owing to restriction placed on all stock infested with the gall nema.

**A** LARGE list of plants is now known to be susceptible to this organism. Among the field crops are alfalfa, clover, cotton, cowpea (except the resistant varieties, Iron, Brabham, Monetta, and Victor), field pea, flax, pumpkin, soy bean (except Laredo), sugar beet, sugar cane, sweet potato, tobacco, and vetch. Potatoes, tomatoes, melons, beans, beets, strawberries, cucumbers, and a dozen more truck crops are susceptible. In the list of ornamentals are begonias, clematis, coleus, hollyhock, dahlia, rose, peony, violet, sweet pea, and several others. Trees which are damaged



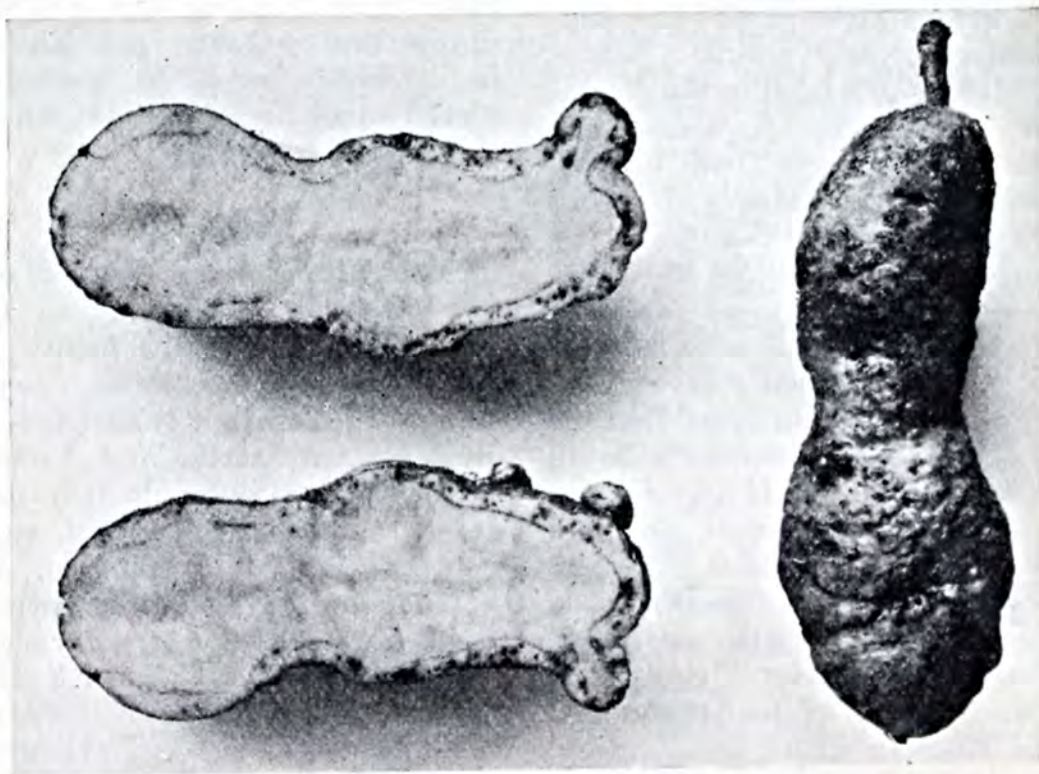
by the nemas are almond, catalpa, cherry, European elm, fig, mulberry, peach, pecan, Persian walnut, and weeping willow. The old world grapevine is also subject to attack. The plants mentioned are the highly susceptible ones which should not be grown on infested fields or transplanted from soil that may contain the parasite.

Weeds are usually an indication of poor farming, but they are an added source of danger to crops when it is known that in addition to sapping the soil of valuable fertilizing elements and water, they may increase the number of nemas in the soil, even though growing in fence rows. Most of the common weeds are attacked, some of them severely.

The farmer's misfortune is alleviated to some extent by the fact that some important crops are not on the nema's bill-of-fare. Nearly all the grasses, corn, barley, wheat, rye, winter oats, milo, kafir, sorghum, and some other crops of less importance are in this class. The existence of these plants gives the farmer a loophole to use in his

fight against the enemy. By growing one or more of them for a year or several years he can cut down the infestation, for when there are not suitable plants easily accessible the nemas will starve to death. But at the same time these crops are grown care must be taken to keep down weeds, otherwise they will provide colonies of the pests with which the land will be seeded the following season. These little colonies throughout a field or around it, will soon repopulate it when a susceptible crop is grown, for the females lay eggs at a rate suggestive of the corn planter.

In addition to rotation with these free crops, it is possible for the farmer to make headway in other ways in spite of some degree of infestation with nemas. By judicious use of fertilizer plants can be given additional vigor which will enable them to overcome some of the drain. It is also possible in some cases to develop resistant varieties, an important method. In previous paragraphs mention has been made of varieties of cowpeas and soy beans which are not



*In the potato the gall nema works in an area near the surface. Such infested potatoes should never be used for seed.*



attacked by the parasite. The spread of the disease often may be prevented by taking care that plants are not transplanted from infested soil, by not using implements that have come from nematode-infested fields. Sometimes the pest is brought into fields in garbage, manure or in refuse of diseased plants. Florists and nurserymen have in many cases been responsible for its spread by sending out plants with root-knot.

It is not possible to cure plants once infested. The plan should be to get the organisms out of the soil or at least to keep down their numbers. The methods have already been suggested. In the case of seed beds and green-houses steam sterilization is effective. The Department of Agriculture has a bulletin which gives detailed advice on the control of root-knot. To keep gardens free—and this applies particularly to the southern vegetable garden—one of the best plans is the use of a grain-chicken yard-garden rotation. The grain is not subject to the attack, and during the time the chickens are on the land they keep down all plant growth. The chicken yard also should be spaded up, as a result the nematodes are starved out.

The root-knot nematode is the worst one from the farmer's standpoint, but there are others of importance, and some of them in extremely interesting ways. There is one which attacks the grasshopper and which is thought to be a great factor in keeping this insect from getting beyond control and becoming a dangerous menace to our food supply. This particular nematode makes the "hopper" sterile. It sometimes reaches a length of twenty inches or more and is the thickness of a heavy thread. Now Dr. Cobb and his assistants are working on the problem of infesting grasshoppers in regions where they appear to be free of the parasite. Other insects which have their own particular nematodes are also being studied.

Among them is the cucumber beetle. One cockroach was found to have a dozen different kinds. There is reason to believe it possible to fight pests with these parasitic nematodes just as they are now being fought in many instances by the use of insect parasites. And we must not forget the predatory ones which prey on those of their kind that are damaging crops.

New discoveries are being made at frequent intervals, and it is to be hoped that within a few years the scientists will be able to provide practical means for controlling many of the destructive sort and for enlisting the help of the friendly ones.



## Progress of High Analysis in Indiana

"Less tonnage but more plant food" seems to be the slogan of Indiana farmers according to a statement recently made by Mr. E. G. Proulx, State Chemist and Seed Commissioner.

Mr. Proulx writes "It is interesting to note that in 1920, Indiana used 230,184 tons of fertilizer and that this fertilizer contained 37,565,127 lbs. of actual plant food, while, in 1923 Indiana used 195,702 tons of fertilizer, which contained 39,803,825 lbs. of actual plant-food. So, you can see that we are actually buying more plant-food today than we did in 1920 although the tonnage has materially decreased. This certainly shows the advancement we are making in high grade fertilizers.

"The average of all fertilizers sold in Indiana last year would figure a formula of 1.1% nitrogen, 4.2% potash and 12.3% available phosphoric acid. I really do not believe that any state can beat us on these figures. I was much surprised to see how potash has continued to increase. Part of this is due to the fact that many of the home mixers mix a half ton of potash salt with a half ton of acid phosphate."



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# OLIVER

## BETTER PREPARATION — BETTER CROPS

One acre of ground properly prepared for seeding is worth two acres that is deficient in available plant food and that is full of clods and air spaces.

Preparation of the ideal seed bed involves an application of the proper fertilizer, if the soil is deficient in any of the available plant foods, and in properly discing, plowing and firming the soil until it is uniform from surface to subsoil.

Before plowing use the disc on

the surface, cutting all trash and mixing it with the surface soil. This will eliminate clods and air pockets. Next plow the land, using a combined rolling coultter and jointer, so that all weed seeds and eggs and larvae of insects may be laid on the bottom of the furrow. Then, as a final preparation, use disc and pulverizer in pulverizing and firming the soil.

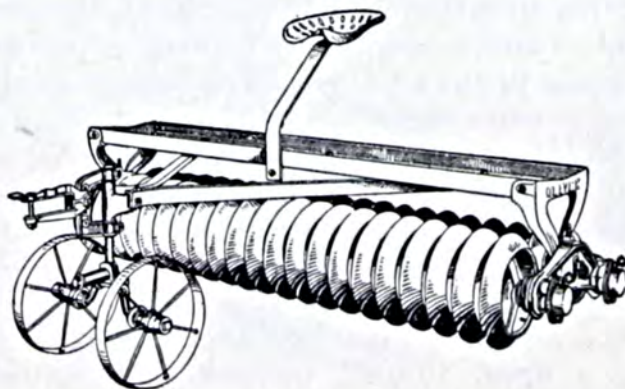
The result will be a seed bed that will be the greatest asset to the farm and to the farmer.

OLIVER MANUFACTURES THE CORRECT  
IMPLEMENT FOR EACH PHASE OF  
SEED BED PREPARATION

## OLIVER CHILLED PLOW WORKS

*Plowmakers for the World*

South Bend, Indiana







## By Ted Butler

BETTER CROPS' Washington Correspondent

Although at this writing plans have been made to adjourn Congress early in June, it is quite apparent it will be a physical impossibility to give final consideration to but a fraction of the bills introduced with the idea of bringing some sort of relief to agriculture. The only major bill upon which a final vote is assured is the agricultural export corporation measure, and this was only made possible by reaching an agreement on May 20 limiting debate on the bill to 15 hours.

Scores of agricultural bills were scheduled to get caught in the legislative jam during the closing days. Even though the number of bills drafted to bring relief to the farmer mounted to well above the 500 mark several weeks before the close of Congress, new ones were being introduced right up until the last moment. Night sessions held by the agricultural committees of both branches of Congress made it possible to consider but a small number of the total and many of those reported out by committees will never see the light of day on the floor.

During the closing days of Congress considerable time and attention was given over to the subject of cooperation among farmers, and numerous bills were introduced with the idea of fostering the cooperative effort. Although none of these bills came up for final vote they have paved the way for furthering consideration at a later

date. It appears quite certain that one of the leading ideas to receive the attention of Congress at the next session will hinge on the proposition of enacting into law some measure looking to the formation of a Federal cooperative bureau.

One of the recent bills introduced provided for the establishment in the Department of Agriculture of a bureau of interstate cooperative association. A commissioner appointed by the President would administer the bureau, and rules were laid down whereby cooperative associations organized on a non-profit basis could be affiliated. Associations incorporated under the bill would be assessed a percentage of their surplus savings for the purpose of establishing a creditor's guarantee fund for the purpose of refunding and reestablishing failing associations. Another bill of the same water would set up an interstate farm marketing association to act more or less as a Federal over-head organization for individual cooperative associations.

One of the first and only agricultural measures to receive the signature of the President after being passed by the Senate and House was the resolution appropriating \$1,000,000 for the relief of drought stricken farmers in New Mexico. No sooner had this resolution been signed than officials of the Department of Agriculture completed plans for early administration of the fund. Liberal provisions are incorporated in the bill for the re-



payment of funds by New Mexico farmers.

After word had been received that the dreaded foot-and-mouth disease of livestock had broken out in California after being brought into this country from abroad, Congress immediately passed an emergency appropriation act giving the Federal Bureau of Animal Industry \$1,000,000 with which to combat the livestock scourge and keep it from spreading to other sections of the country. When it became evident that further funds were necessary an additional fund of \$1,500,000 was made available. Late reports received in Washington are to the effect that the prompt action of Federal and state authorities was instrumental in confining the disease to a few quarantined areas with hopes of early eradication. The last outbreak of the foot-and-mouth disease occurred in 1914, when it spread to several markets in the middle west and caused losses running into the millions of dollars.

A resolution directing the Interstate Commerce Commission to make freight rate changes which will assist the movement of agricultural products passed the Senate. A similar resolution got the approval from the House committee on interstate and foreign commerce, but had to await its turn on the calendar before being voted upon.

Development of agricultural resources in one of our insular possessions, the Virgin Islands, is provided for in a bill which got under the wire shortly before the scheduled adjournment. Of the proposed commission of three members to study this proposed development one would be an expert in trade, manufacturing, shipping, and transportation; one would be an expert in agriculture, including fruit growing, stock raising and marketing; and one would be qualified to advise on matters affecting labor, housing conditions, and home economics.

## Alfalfa Successfully Grown in Connecticut

Some new and valuable data concerning the growth of alfalfa in New England have just been released in Bulletin 115 of the Storrs (Conn.) Experiment Station.

A few years ago there was great doubt as to whether this crop could be grown successfully in New England. Now the above-named Station says: "That alfalfa can be grown and will produce good yields in Connecticut has been demonstrated repeatedly."

The Connecticut Station began work on this crop in 1914 by securing and testing twenty-five strains of alfalfa seed which seemed best suited to northeastern conditions, and included studies of soil treatments, methods of seeding, liming, and the use of fertilizers.

Summarizing the data which are related to these factors, the following results have been obtained.

"Grimm has proved the hardiest of the several strains tested. Northern-grown seed had given the best results."

"Reponse to very large applications of lime have been obtained."

Alfalfa in Connecticut needs both phosphorus and potassium.

Mixtures of acid phosphate and muriate of potash produced the crop most cheaply.

"Muriate of potash used alone or in combination with acid phosphate has resulted in less winter killing and much larger yields."

Manure has produced good crops of alfalfa but not so cheaply as the above combination. "Grasses and weeds were more in evidence on the manured plots."

"Much less seed was required when drilled than when broadcast by hand."

"The mixing of grass seed with alfalfa gave much smaller yields than the pure alfalfa seedings but insures against complete crop failure."



## Looking Ahead

(From page 16)

which require increasing labor in the accumulation. It is conceivable that we might have ten years yet of declining price level.

**N**OW what about the lighter portion of the picture?

In the first place, according to the 1920 census, about one-third (2,117,000) of the country's farms are operated by full owners free from mortgage. Another third of the farms are worked by tenants and the presumption is that the bulk of these places are out of debt. These millions of unmortgaged farms represent a backlog of reserve resources in agriculture. They are what steady the ship and carry it through storms under reefed sail. The farmer out of debt is in better shape to withstand bad times than any other member of the productive community.

In the next place, even a period of generally falling prices does not mean that every year is a bad one nor that every product is unprofitable. Amidst the general distress of 1923, some farmers did well; some sheep men, some corn growers, some truck growers and in the Southwest many cotton growers had a good year. People still have to eat and wear clothing. Even Europe must still have some of our cotton and pork, and occasionally quite a little wheat and tobacco.

But the really big factor, coming along steadily, inevitably, like a rising tide, is the increase in our population. This increase amounts to about 1,400,000 people each year. The equivalent of a new Nevada annexed every twenty days, year in and year out! In about nine years this will be a nation of 125,000,000 people, presumably with over 70,000,000 actual urban dwellers and fully 90,000,000 non-farming population.

This rapidly increasing population is the ballast that will eventually right the ship. It will swing the pendulum of prices back in favor of the farmer as certainly as day follows night.

**O**LDTIMERS remember well the agricultural depression that culminated in the early nineties. They remember how the West several times used its corn for fuel.

The severity of that depression and liquidation was like a scorching flame. It burned out the mass of "marginal" production, the overhead of obsolete equipment, and finally thousands of low-standard individuals who had flocked West and taken up land in the homestead rushes. It was a harsh process. But after the smoke had blown away the men who survived gradually saw spread out before them a marvelous world market for cotton, pork, and grain, plus machinery of transportation and trade such as no group of producers had ever enjoyed before. The story of agricultural prosperity from about 1897 to 1913 is perhaps the best chapter of that kind in our history.

We are going through another severe depression. The general process of liquidations may continue for several years. But by and by the turning point is bound to be reached. The pendulum will swing back. The men who are running the farms in that day will gradually find spread out before them the most marvelous consuming market ever known outside pre-war Europe. No national group of farmers has ever enjoyed a domestic market of such purchasing power as this will be. The difference between this coming era and the nineties will be that it will concern primarily a domestic market, with



all the advantages of free trade, shorter hauls, controllable competition and diversified demands.

This prospect on the demand side is likely to coincide with tried-by-fire conditions on the production end. These lean years will eliminate much unproductive land and many unproductive operators. What will be left will be a relatively strong, efficient body of producers. They will be possessed of great economic leverage.

The men who will be here when the smoke blows away will be of the same stuff as those hardy spirits who rebuilt San Francisco overnight; the same stuff as that Corn Belt farmer who has kept his courage through three years of bankruptcy prices, all the time thinking ahead for his son.



## Behind the Scenes with the Crop Board

(From page 25)

combination of twelve separate meters, one for each crop, and is operated by the speedometer gearing of an automobile. When the driver comes to a field of wheat, for example, he pushes the wheat button on the crop-meter and the linear length of the field is recorded; the next field may be hay,—he pushes the hay button, the wheat meter is automatically disengaged, and the length of the hay field is recorded.

At the end of a run of 2,000 miles or more within each State where the device is used the meter for each crop shows the total number of feet of each crop passed. These records kept for identical routes year after year will be a valuable guide in helping to determine relative changes in crop acreages. A similar device for use of reporters

on railroad trains but operated by hand records the total number of fields planted to various crops.

The crop reporting system developed by the Department of Agriculture is acclaimed the most efficient method of crop reporting in the world. A group of prominent statisticians and economists recently invited by Secretary Wallace to examine the system heartily endorsed the methods and personnel of the Board, and declared that with the safeguards erected so-called "leaks" of the Board's reports were extremely unlikely.

As regards the efficiency of the system a comparison of the Board's forecasts on cotton with the actual cotton crop as disclosed several months later in reports of ginnings shows a remarkable degree of closeness. In the past nine years the Department's December estimates on only one occasion have shown a variance of more than three per cent as compared with the ginnings report the following March. A November estimate was published for the first time last year, and was within one per cent of the March, 1924, ginnings report.

Naturally, as the growing season progresses and unusual weather factors cannot intervene, a closer degree of efficiency in forecasting the crop is achieved. The Crop Board is continually seeking to improve its methods, although it is obvious that the 100 per cent efficiency aimed at in forecasting crops affected by a multitude of conditions including weather, insects and plant diseases, is humanly impossible.



*"Have the Farmers Met to Death?" asks David Long and proceeds to answer the question in a lively article in July BETTER CROPS. There's food for thought in it.*





Here are the plans of some of the County Agents for the coming season

Have 220,000 acres range land in County. Native pastures here as in most other places poorer than when grazing was started. Grass the greatest of all crops, the most neglected of all! Have just begun deferred grazing demonstrations which will allow the grasses to reseed. Our growing season is our fall, winter and spring—summers dry. Stock are taken off pasture by March 15, grasses then grow and seed. Stock put back in summer and fall, harvesting mature grasses and tramping in seed. Pasture rotated.—*M. B. Boissevain, Marin, Calif.*

Had a real community meeting, (attendance 2010) in every township of the county in April; dealing with problems of each particular locality. Boys' and girls' club work in every township, will double the soybean acreage—will study the "Farmer's Cow." *Everybody co-operate!*—*Alfred Hester, Fountain, Ind.*

Production projects:—Four litter clubs, soybean feeding, corn contesting—five acre corn contests for men—1 acre contest for boys. Community welfare work—Boys' and girls' clubs, county picnic and Products Show.—*H. D. Van Matu, Rush, Ind.*

Emphasize boys' and girls' club work with stress on dairy, calf, sow and litter, sewing and corn. Also seed selection and variety tests on corn. Millinery work, bindweed eradication, fair, etc.—*E. Bruce Brunson, Cheyenne, Kan.*

1. Organize ten communities and build a program of work for each. 2. Junior club membership campaign in April. 3. Put on 40 poultry culling demonstrations and one two-day poultry school with banquet on closing night. 4. Junior club camp at Bena with 150 in attendance. 5. County Agricultural Fair. 6. Introduce 40 pure bred bucks and 100 pure bred Jerseys.—*Robt. F. Spence, Rockcastle, Ky.*

Hold a Dairy Alfalfa Campaign with 55 meetings, Organize three cow testing associations. Hold a dairy, a poultry, a horticultural and a muck men's tour. Demonstrations of land clearing, reforestation, sand blow control. Marl excavating. Arrange for 25 poultry demonstration farms. Promote growing crops and livestock which removes the least plant food from the soil, liming of soil, growing more legumes.—*C. P. Milham, Ottawa, Michigan.*

Just starting a new Cow Testing Association with 44 herds and 401 cows. It will stretch from Pleasant Valley in the east part of Carlton County to Wright in the west end of the county. These farmers who live among the stumps are progressive and will get there yet.—*S. A. Aldrich, Carlton, Minn.*

Test all cattle in county for T. B.—work to begin April 28—30 veterinarians will test 45,000 heads in two weeks. Complete organization of three Cow Testing Associations, two of which are ready to hire



testers. Assist 300 boys and girls in getting started with their club work projects. Distribute 10,000 lbs. Certified Grimm Alfalfa-seed. Use phosphate on 50 experimental plots of alfalfa and clover.—*A. G. Mereness, Murray, Minn.*

Our interests are equally divided between the home and farm. Crops and A. H. work is principal part of adult work. We have 150 boys and girls in various clubs. I will have 75 or 100 in my work. A. H. clubs lead by large majority—I have 22 boys and girls in dairy club work.—*E. L. Garrett, Lafayette, Mo.*

Establish six or eight adult cotton demonstrations. Organize 10 cotton clubs with membership of 100. Hold two schools on millinery. Hold three demonstrations on pruning and spraying. Conduct farm tour. Get 36 farmers to keep cost account records.—*M. D. Amburgey, Pemiscol, Mo.*

Continue T. B. eradication campaign and potato seed treatment campaign. Organize a poultry culling campaign. Organize potato and cabbage industry. Find good seed corn. Carry on organized spray service for 500 growers.—*E. D. Merrill, Monroe, N. Y.*

17 farmers are going to improve one acre of their pasture by applying two tons of lime and 400 lbs. 16% acid phosphate. By August 1st we will have all cattle in county tested for tuberculosis.—*I. S. Hodinott, Belmont, Ohio.*

Get a car of certified northern potatoes, Petosky Russet. 1500 acres more trumbull wheat next fall. More protein per crop acre; more nitrogen per soil acre—our farm crops-soil program.—*J. P. Schmidt, Seneca, Ohio.*

Three corn variety tests testing five varieties over three year period.

Fifteen oats variety tests, testing Miami against local varieties in ten townships. Thirty-six corn fertilizer tests, demonstrating value of fertilizing corn. All townships entered. Sweet clover broadcasted for soil improvement purposes.—*C. G. Fieldner, Williams, Ohio.*

Carry out a "live at home and feed the livestock policy" by first emphasizing cow—sow—hen—gardens with plenty of feed. As Dr. Bradford Krapp says this is our "insurance policy" plus several cash crops.—*C. C. Porter, Washington, Okla.*

Organize potato growers and purchase first car of certified seed potatoes. Demonstration work—sunflower, field peas, copper carbonate and pasture mixtures. Pest, rodent and predatory animal control. Increasing dairy cattle and production. Disease control—T. B.—abortion—Prevent entry of hoof and mouth disease. List all land in county available for land settlement. Organization work.—*C. A. Henderson, Klamath, Ore.*

A series of real live poultry meetings during the month of April. Gathering our spring crop of maple syrup, last year we had to our credit about 30,000 gals. County wide campaign for the eradication of tuberculosis. Oats variety demonstrations, etc.—*G. P. Miller, Susquehanna, Pa.*

T. B. eradication in several townships. Pasture improvement drive. Organization of purebred sire clubs.—*W. H. Wayne, Pa.*

We expect to look after our "Ton Litter" contestants and thereby hold our present title of World's Champion. Our prospects are only fair at present but I think that we will better it in the near future.—*E. R. Endsly, McLennan, Texas.*



Offering \$1,000 in prizes to farmers who produce the greatest number of pounds of lint cotton, and greatest number of pounds corn on not less than three acres of land in 1924.—*J. B. Snider, Titus, Texas.*

Bud from five to ten thousand pecan trees, encourage the planting of grafted trees on farms and city yards. There will be over a thousand trees set out. Establish Standard Bred Poultry on every farm through the medium of boys' and girls' poultry clubs. Hold at least one regular Club Fair. Establish better system of diversified farming.—*N. E. Scudder, Uvalde, Texas.*

Test cows in and around town for T. B. Organize a County Board of Agriculture which will assist in working out a long time agricultural program.—*J. W. Rogers, Greenville, Va.*

Calf club—250 members. 400 farmers put in alfalfa—seven last year. Enlarge our branch of Wisconsin Cheese Federation. Complete area T. B. test in County.—*H. M. Knipfel, Clark, Wis.*

Lime and increase alfalfa acreage. Projects: orchard, eradicate bovine T. B., work among poultry.—*J. M. Coyner, Jefferson, Wis.*

Mange and lice control in cattle—improved corn—more of it.—*B. S. Tedmon, Jr., Platte, Wyo.*

Have secured seed for 25 new plots of alfalfa. About 1300 lbs. Encouraging growing of clover and soys. I hope to complete the organization of one new cow testing association. Promoting boys' and girls' pig, calf, clothing and food clubs. Planning to hold girls' club camp June 16, 17, 18, 19. Expect 80 girls to attend.—*C. W. Dack, Winneshiek, Iowa.*

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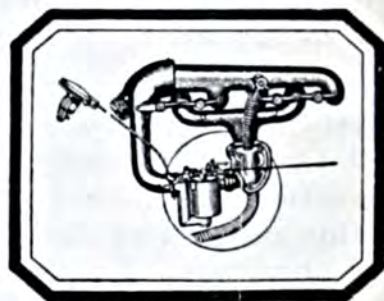
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# Changing the Shape of Sweet Potatoes

(From page 18)

TABLE 1

*Yields of Sweet Potatoes Resulting from Various Fertilizer Mixtures*

Source of Results	Analyses of Fertilizers	Yield per acre 2-year average	
		Firsts	Sec'd
	per cent.	bus.	bus.
7 High - Yielding Plots...	3.4-5.2-7.1	171	99.3
7 Medium - Yielding Plots.....	5.2-4.9-4.7	138.2	101.2
7 Low - Yielding Plots..	6.9-5.5-3.4	96.6	102.4

in yield. It is also recorded that as the nitrogen is increased above 3 or 4 per cent there is a decrease in yield of firsts.

THE influence of potash may be further shown by the results secured in other fertilizer comparisons conducted in 1922 and 1923. Table (2) shows that the formula carrying 8 per cent of potash gave an increase in yield of 99.5 bushels of marketable tubers over the one carrying no potash and an increase of 34.5 bushels of marketable tubers over the one carrying 4 per cent of potash. The average increase would have been much greater if the season of 1923 had not been so dry. In that year all yields were very materially reduced.

Another series of fertilizer com-

TABLE 2

Amount Fertilizer	Analyses	Yield per Acre (2-year average)	
		Firsts	Seconds
lbs.		bus.	bus.
None.....		16.8	26.0
1200.....	2- 8-10	53.7	36.7
1200.....	2-10- 4	118.1	65.2
1400.....	3- 8- 8	152.6	50.9
1200.....	2- 8- 0	101.5	51.6

parisons conducted in 1923 in Ocean and Atlantic counties gives some more very marked evidence of the importance of potash in sweet

potato production in New Jersey. The results are shown in table (3).

The results in table (3) are taken from one year records. In Ocean County the increase in yield of the 3-8-8 formula over 3-8-0 was 88 bushels of marketable tubers, and in Atlantic County 128.5 bushels. The mixture used in Atlantic County carrying 4 per cent of potash shows an increase of 76.7 bushels of marketable tubers, and the one carrying 6 per cent an increase of 90.6 bushels of marketable tubers per acre over 3-8-0.

The results indicate that 8 per cent is the most economical proportion of potash under the conditions of these experiments.

TABLE 3

Amount Fertilizer	Analyses	Yield per Acre	
		Firsts	Seconds
lbs.		bus.	bus.
None.....		8.7	14.7
1400.....	3-8-0	73.1	67.7
1400.....	3-8-8	129.3	70.4
1400.....	3-8-0	24.1	32.0
1400.....	3-8-4	100.7	60.7
1400.....	3-8-6	114.7	52.5
1400.....	3-8-8	152.6	50.9

In 1921, when digging the sweet potatoes on the fertilizer triangle, it was noticed that there was apparently a difference in the shape of the tubers produced under the different treatments. In order to make a study of this factor, ten average hills from each plot were selected by the author and taken to New Brunswick, where they were graded into firsts, seconds, and "pigs." The lengths and diameters in each grade were then measured. When the other plots were dug in Atlantic County samples were taken in the same manner as before and graded and measured.

From the measurements it appears that the shape of the sweet potato tuber is apparently influenced by the kinds and amounts of fertilizer ingredients used. This



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discovery is significant when it is remembered that the quality of the sweet potato in northern markets is measured by shape as well as by size and results in cooking. The potato that usually sells best is a “chunk.” and its proportions are 4.5 by 2.5 inches. The potatoes should be medium in size, round rather than oblong, and dry and mealy when cooked. These characteristics are greatly influenced by the soil and sources of plant-food used in growing the crop. Table (4) shows the influence of potash on the form of the tubers. The results are based on the average proportions of the tubers from the plots receiving 0, 4, 6, and 8 per cent of potash. The illustrations make the contrast more striking.

TABLE 4

Fertilizer Analyses	Length	Diameter
	inches	inches
3-8-0.....	6.98	1.66
3-8-4.....	5.6	2.06
3-8-6.....	5.39	2.24
3-8-8.....	5.4	2.19



## *Be Patient with Ignorance*

(From page 6)

inflamed mind, when my friend, the horticulturist, spoke up and in a patient, calm, passionless voice said, “My dear fellow, we asked you to let us know where to get off, as we are strangers in your City. Of course we are ignorant. If we were as brainy and intelligent as you, we too might be running a street car!” and we stepped off. It took a few moments for the delightful sarcasm to sink into the dull, grey mud of the conductor’s mental equipment, then his mouth opened, his jaw dropped to his chest, his face started to flush and he began to cast about in a limited vocabulary for words of sufficient sting to voice his retort. But by that time he and his South



Halsted Street car were nearly out of sight, and we crossed over to get the next car back.

**S**TUPIDITY mixed with conceit! A bitter mixture, and one calling for all the composure, forbearance and patience that one has—more, in fact than most of us can muster together at the moment we meet it.

And yet "patience is a virtue." In fact it is more than just a virtue—it is a necessity, if we are to get along. Those of us who instruct others, who carry messages to folks who need our aid, must have forbearance when faced with not only their ignorance, but with their conceit. All men are not equal mentally. All do not act alike, think alike, nor reason alike. We must be ready to make allowances for the stupidity which every day confronts us; and when the other fellow makes a fool mistake after we have taken the pains to give the clearest instructions of which we are capable, we must have patience and not resort to biting sarcasm.

And *I* must write no more—I remember that Henry Ward Beecher said, "There is no such thing as preaching patience into people unless the sermon is so long that they have to practice it while they hear. No man can learn patience except by going out into the hurly-burly world and taking life just as it blows. Patience is but lying to, and riding out the gale!"



*The radio means more to the farmer than to any other class of people. It is not only a source of pleasure but it is an aid in making money. Read "Picking Dollars out of the Air," by F. M. Russell of the U. S. Department of Agriculture in the July BETTER CROPS.*

## About Ourselves

**B**ETTER CROPS is a monthly magazine edited primarily for all those who act in an advisory capacity to the farmer.

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## RUNNING TRAINS ON MILK

By H. I. PHILLIPS, in the *New York Sun*

Milk has been used to run a railroad train. In an experiment conducted on the Rock Island Railroad 1,000 pounds of "hard milk" was used instead of coal and the engine ran perfectly. The "Soft Drink Special" drew five coaches and 200 passengers.

It was the first time in the history of railroading, and in the history of milking for that matter, that a railroad locomotive was put on a milk diet and expected to continue obeying orders. The locomotive seemed to like it. In fact, the railroad company thinks it may have a hard time weaning it.

The Rock Island experiment will be read of with anticipation throughout the country. Passengers will welcome a chance to get whipped cream instead of cinders. Anybody would rather get a lump of hard milk in his eye than a lump of hard coal.

Milk diets for locomotives may revolutionize railroading. It will no longer be a question which lines have the best rolling stock, but which have the largest herds of blooded milch cows.

Railroad systems will have to draw their executives from the agricultural colleges and create new offices such as "Vice-President in Charge of Milking" and "Assistant

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*k*—Stops at Chicago for change of engines and milkmen.

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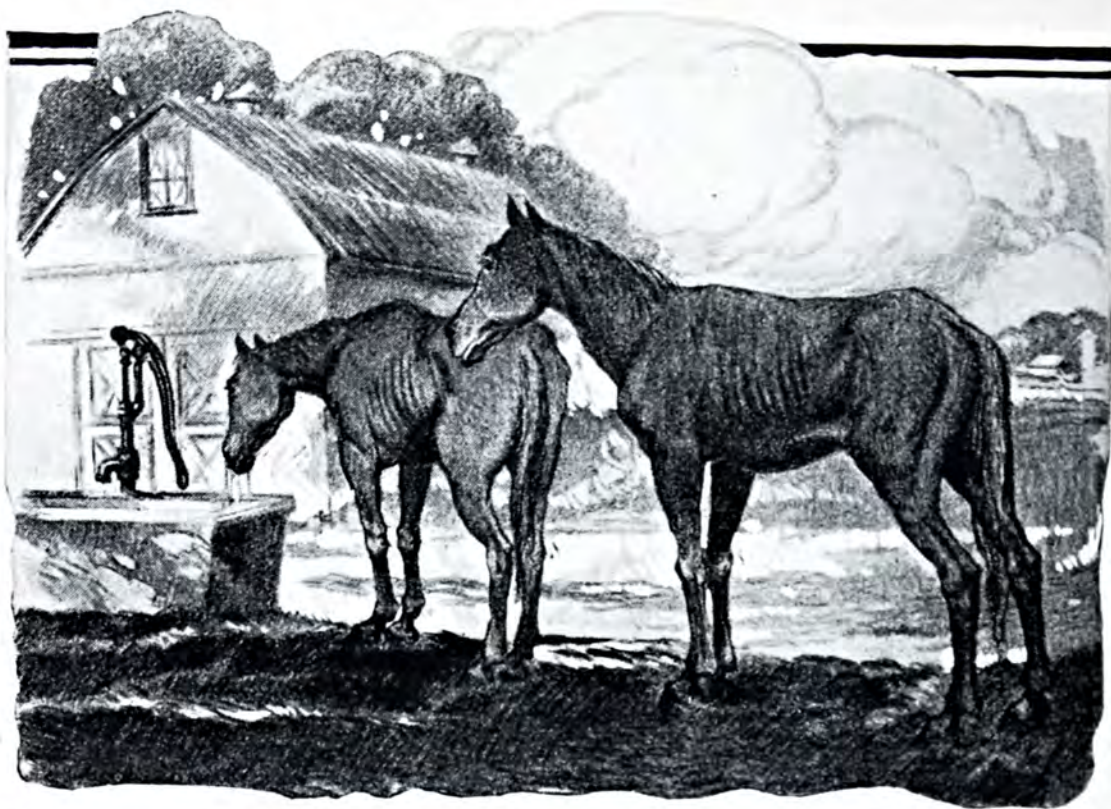
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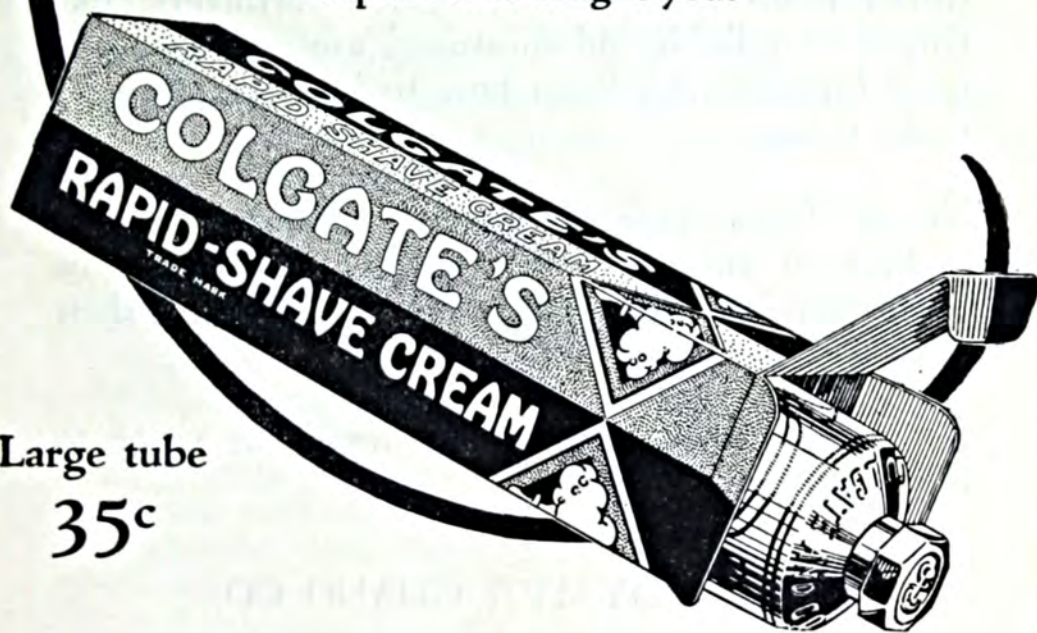
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# Better Crops

## The Pocket Book of Agriculture

VOLUME II

NUMBER FIVE

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NEW YORK, JULY, 1924

No. 5

*Being a little treatise on the most important subject in the whole world—an article on*

# TIME

By *Jeff Mc Dermid*

**T**HIS, brother, is a dissertation on Time—but it is not “on time”—it is four days late; thus if this issue is delayed in reaching you it is because I put off until the last moment writing this page.

I mention the fact at this point to prove that I do not “take myself too damn serious,” as the late Elbert Hubbard used to say.

Time is money; but unlike money it cannot be accumulated. That which we do not use today is not ours to spend tomorrow. If, like money, we could pass on to those who need it badly the time we do not use, there might be an excuse for not utilizing every waking moment. But a moment unused is gone forever. That sounds trite. Perhaps it is; but I would like to have you spend the next hour with

me, thinking about this thing we call “time.”

Perhaps in thinking and writing about it we can learn something we have always known but did not know we knew.

**T**IME has always been here; it always will be here. My imagination cannot conceive of a situation where there shall be no time, even



with the passing of this world. Time is here now. The moment just passed is *nowhere*; another moment is *now here*! And the moment to come may never come—that is why I dare not waste this moment I now call my own. When my allowance will be cut off I do not know; but the thought of it makes me think thoughts.

Everybody wastes time, scatters the precious moments and permits the golden minutes to dribble sillily through his fingers—I do, and so do you. What *is* wasting time? Yesterday I spent on a trout stream in the Catskill Mountains. Were the moments wasted? In a sense, yes; in a larger sense, no; for by spending those moments yesterday in a wastrel mood I am able today to do for myself what time and eternity could never do for me—make two moments grow where but one grew before. And this is the way I do it: I do two minutes' work in one! Selah!

Wasted moments are those in which no advancement is made—in which time passes, the clock ticks, the sand drops, the world whirls and we stand idle, the moments pelting down upon our thoughtless heads only to spatter like raindrops on the ground, sinking forever out of sight — forgotten, and — pity! — unmourned.

**M**EN are not created equal in any way. I think you will agree with me on this. The proposition seems sound and in accord with the experience I have had with men. But men are nearest equal in the allotment of hours; at least we each have twenty four hours a day. And if Henry Ford uses his twenty-four hours to greater advantage than I do that is my fault, not his!

Wasted moments are a crime.

There is no doubt of this, for every writer, thinker and philosopher of consequence has left a heritage of homilies on the subject. Open your Book of Familiar Quota-

tions and see what writer, if any, forgot to leave his impress on this thought of time wasting.

The subject is threadbare, yet, because the thing we call time is the most important thing in the world, more precious than gold, radium, sunlight, insulin, love, Fords, clean baths or cigars, I could not resist adding my thoughts. Time is the essence of my contract with eternity—time enfolds everything—time *is* everything.

**N**OW, lookie here, let's get down to business on this thing called time. If you were notified that an unknown person had died and left you \$613,200.00 you would (after you had recovered!) begin to lay plans for properly investing your heritage. Many hours would be spent in delightful anticipation. You might plan to indulge yourself in world travel, to buy the books you had always wanted. You would give to charity. The little lame boy with the pleading face, down beyond the corner, there, now you can give *him* a little. Little enough, but see his face light up! You would budget your fund, so much for this, so much for that. A certain tidy sum should be safely laid away for your old age. Around this sum safeguards are thrown—protections against your own improvidence. You fix it so you cannot draw this principal even if you crawl to the bank on your belly and beg. There: that's done. Hours, hours, hours, spent in planning what to do with this stupendous number of dollars.

And yet, properly handled, an hour is a dollar. And Someone died and left you a golden heritage of 613,200 hours!

What about your 613,200 hours on this earth? They are yours—a trust fund from which you may draw a minute at a time—never more. You can have two dollars at a time, but never two moments—

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# Putting Over a POULTRY CLUB

By C. M. Kelehan

County Agent, Otter Tail County, Minnesota

*You'll like this because it's red meat. Brother Kelehan writes modestly of his achievements but they speak volumes for his fine spirit and untiring energy.*

COUNTY AGENTS are expected to disseminate all kinds of agricultural information to the several communities wherein they are employed. They may give information on the various phases of production of crops, livestock and even marketing. To get the information across so that the majority of the people should accept and use it is the stumbling block. Many people are not willing to accept and put in practice information that is given by anyone. While information can be given out freely through the press and even by word of mouth at large meetings, a very small per cent of the people ever use it, the majority make fun and ridicule it. To overcome this attitude and increase the efficiency of the County Agent's work it is necessary to approach the people in a different way.

In one particular community in this County a large per cent of the farmers were of this attitude. It was next to impossible to get them out to meetings. Preceding County Agents organized Farmers' Clubs but they failed. Cooperative Live Stock Shipping Associations were not supported and even the Creamery had a hard time to hold the patrons in line. We made the

thorough acquaintance of the pastor for this particular community who happened to be quite a poultry man on a small scale. At an informal gathering last winter we suggested that we organize a poultry club for adults and that we hold regular meetings once a month for a period of one year to see what could be accomplished. At our first organization meeting there was a fairly good attendance, but not so very many who seemed interested enough to agree to attend a school once a month for the year. After considerable urging by the pastor and a few of the very interested ones, we enrolled a class of nineteen adult members. We started out by getting them to keep a complete egg record for their poultry flock. We furnished the cards which they filled out regularly and returned to the office.

TWELVE lesson plans were worked, not all in advance, so there would be something definite to take up at each lesson. We started our first lesson after organizing by studying breeds and varieties. Enough Farmers' Bulletins, Nos. 898, 806, 1251, 1221 and 1052 were  
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# Picking DOLLARS Out of the Air

By F. M. Russell

In Charge Press Service  
U. S. Department of Agriculture

*Have you ever realized the value of radio to the farmer? Tune in on this article and get some new ideas.*

**N**OT long since a farmer living 20 miles out of Cleveland, Ohio, reached up in the air and grabbed an extra profit of 25 cents a bushel on a shipment of some 1,500 bushels of Bartlett pears.

To make the statement a few years ago that the time would come when a farmer could literally pick a cold \$375 in cash out of the free ozone above him would have been styled the highest type of pure hokum. But today this is just an incident in the life of many farmers.

It happened that this particular Ohio farmer, like many of his neighbors, reached that season of the year when his pear crop was ready for the eager city consumer. The local buyer offered him 50 cents a bushel. The producer well knew that this price was a long way to the rear of the price the ultimate consumer would have to pay before he got pears for his table, but he was too well acquainted with the heavy and intricate marketing and distributing machine which has grown up in this country to doubt that 50 cents was about all he could expect to get.

Before closing the deal he called at his country bank. There he learned that the market reports for fruit at Cleveland were expected

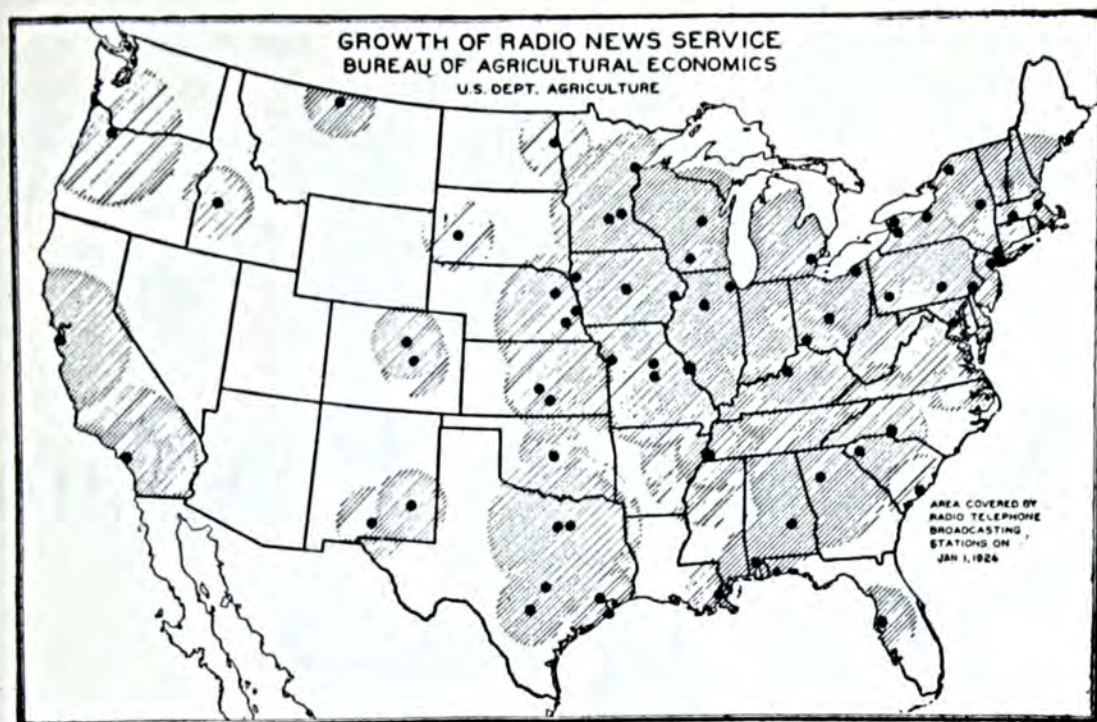
momentarily over the small radio receiving set installed by the bank for the accommodation of its patrons.

Shortly the reports started coming in and they brought the information that buyers in the city were offering from 95 cents to \$1.25 a bushel for the variety of fruit he had on the farm. He called one of the reliable dealers on the phone, sold his pears for 75 cents a bushel on the farm, and chalked up radio for an extra profit of 25 cents.

**H**ERE'S another case. A southern Illinois farmer had a carload of cattle ready for the market. He had the choice of selling to a local buyer or shipping to a market at East St. Louis which had made a reputation of going up and down with each day's receipt. Naturally, violent fluctuations in the market did not appeal to him. The local buyer offered him \$10.50 a hundred for the steers, which included freight and the other necessary expenses. The unsteadiness of the market had about convinced him that the best bet was to take the local offer.

Something persuaded this Illinois farmer to get in touch with the local





"It covers the world." This map shows points from which market reports are issued by the U. S. D. A. These and other stations also send out weather forecasts and agricultural news.

radio operator. He now says it was the proverbial radio "bug" which had gotten under his hat for the first time. At any rate he learned from the radio reports that good cattle on the central market were showing a healthy advance in price and receipts were light. Whereupon, he shipped his steers the short distance to St. Louis, saw them sold to the packers at near the top price for the day and over \$1 a hundred more than he was offered by the local dealer. He, too, was converted and credited the radio with a generous margin of cash.

These are not unusual incidents and this is not propaganda for radio. Scores of other cases could be cited to show conclusively that radio is listed as one of the farmer's most valuable business assets, and has been a vital means of connecting him up definitely with the affairs of the world.

For years the farmer has been told that his big problems were turning from those of how to produce to the more intricate economic questions of how and when to market. "If you are to farm efficiently you must watch market

receipts, prices, movement of products, and demand," he was told on every hand. Yes, but how? Quite true, the printed word in a variety of ways early carried such economic reports but there was certain information upon which the mails could not fully be depended upon to fill the bill. The vital thing was Speed! Speed! Speed!

**I**N this day of concentration, specialization and competition speed is most essential. It is indispensable. The law of supply and demand and all that goes with it constitutes a delicate instrument which fluctuates from day to day; from hour to hour, in fact. Today's market reports received a day or a week later did not wholly suffice.

Then along came the radio. At the very moment that market receipts and prices are determined they are thrown upon the ether and travel to all parts of the country and into the ears of every farmer who wears earphones at a rate of speed difficult to measure. It is the first device by which he has been

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*Here is a cross section view of the opinions of agriculturists all over the country on some of the leading questions of the moment.*

# Some Suggestions for an Agricultural Program

By *Jeff McIlernid*

and the Readers of BETTER CROPS

AS I sit here at my desk and look over the great heap of replies that I received in answer to my request for suggestions for a constructive agricultural program, I feel like the man who prayed for an heir and got triplets.

At the time I made the request, I confess I had some misgivings. It was frankly an experiment. Did the readers of BETTER CROPS approve of the idea of a magazine edited, so to speak, cooperatively? Would they do their part towards contributing to its platform and policies?

It was, I felt, a departure from the usual paths of journalism, maybe a step too far forward. But the answer to both my questions has been "Yes!" and a careful study of the hundreds of replies that came in has been an education in itself.

At first I thought to print them all, but that speedily became out of the question.

Eventually the only course left was to attempt a digest or summary of the answers. Naturally there was a great diversity of suggestions and opinions offered. In a few instances it was apparent that the writer was looking at the subject from a rather personal angle as when a plant specialist wrote that

the eradication of plant diseases would solve all our problems.

THERE were several more or less humorous suggestions. This is one that made me grin:

"Get married—produce 40 kids per acre which will solve the labor problem on the farm. Home made labor is much more reliable than transient. Everybody works but father. Get the idea?"

But the outstanding feature of these contributions was their sanity and good sense. Nobody could hope to write a complete agricultural program covering all phases of the subject on a postcard but, like most of those who replied, one



could indicate some of the leading issues.

As anyone acquainted with the present agricultural situation might expect, the chief interest lay in economic problems, in more efficient production and marketing with the idea of securing for the farmer a higher return for his investment. These suggestions from County Agent C. C. Madison of Indiana are typical of many others received.

"Put agriculture on a business basis: 1, by producing economically; 2, by producing what the market demands; 3, by producing a quality product; 4, by placing agricultural produce on the market in a desirable manner as to containers, etc. Co-operative marketing may help in some cases in the above program."

The sentiment expressed in this reply was expressed in a variety of ways of which the following are a good indication:

"I wish I might be the one to suggest a constructive program, for everlasting fame awaits him who does. When farming finally comes into its own, and it will, it will be a business enterprise in which individual farmers will not market their own products. Farming can never become organized otherwise for the human element will prevent it. I believe that this method is developing and while progress is slow, it is making headway. My suggestion is, keep continually at work on an effort to develop business methods in selling farm products and success must follow.—*H. F. Wilson, College of Agric., U. of Wis.*"

"Maintain soil fertility. Use good seeds. Practice good farm management. Proper crop rotation. The economical production of crops and livestock is the one fundamental principle to keep in mind at all times. We must learn to produce more economically by the application of business principles in farming.—*J. E. Johnson, Farm Bureau Work, Champaign, Ill.*"

"1. Eliminate the inefficient, marginal producer. 2. More cost

account records, more business methods on farms owned and mortgaged. 3. More general use of efficient, and labor saving machinery. 4. More mutual action and confidence on the part of leaders of farm organizations. 5. More efficient and orderly marketing by grading and standardizing farm products.—*R. G. Waltz, County Agent, Norristown, Pa.*"

"Every enterprise constantly improving in quality. Every community as nearly self-supporting as practicable. Surplus production should be in harmony with consumers needs.—*T. A. Coleman, Asst. Dis. Ag. Ext., Lafayette, Ind.*"

"1. How to grow and market quality products. 2. Coordinate the relation between cooperative marketing and quality products in the mind of every farmer. 3. Make the necessity of keeping cost production records paramount. 4. Develop the sociological side of the farmer, weaving in the necessity of understanding collectively the political problems of today.—*S. B. Love, County Agent, Saginaw, Mich.*"

"1. Diversification. 2. Better method of production—heavier fertilization, better cultivation, insect control, etc. 3. Better methods of marketing—through cooperative associations where possible. 4. Organizations to study needs of communities, better social conditions, etc. These organizations buy supplies and sell products when practicable.—*County Agent C. L. Doughty, Chattanooga, Tenn.*"

"The program has already been set up by many workers. May I sum it up? Stop cropping marginal lands; diversify, but not too widely; raise a standard product; keep the cost of raising it down; market it cooperatively; long-term financing. Don't try to set aside economic law with farmer-relief laws. In short, use the head more and the hands less.—*C. R. Anderson, Asso. Prof. Forestry Ext., State College, Pa.*"

"Fertilization—intensification—diversification—cooperation.—*N. F. Jacks, Farmer, Brookhaven, Miss.*"

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Last month we printed one of the prize winning articles of the contest conducted by the Potash Importing Corporation of America for essays on the subject "Potash Pays." This month we are happy to present the other prize winner by Robert Stewart of the College of Agriculture, University of Nevada.

# POTASH PAYS!

By Robert Stewart

**P**OTASSIUM is one of the ten elements of plant food which is necessary for the growth and well-being of the plant. It is necessary for the process of assimilation in the plant. Whenever potash is deficient in the soil the manufacture of carbohydrates in the plant is reduced as demonstrated by the fact that starch grains are not found in algae which are grown in a solution free from potash. The grains of cereals also are small and undeveloped when the crop is produced on soils deficient in potash. On certain types of soils such as peats and gray silt, and for certain crops such as mangolds and legumes, potash produces markedly increased yields.

Potash is utilized in comparatively large quantities by many crops as indicated below.

Kind	Amount of Crop	Pounds of potash consumed
Corn.....	100 bus.	85
Wheat.....	50 bus.	70
Clover hay.....	4 tons	144
Sugar beets.....	20 tons	188

These results certainly demonstrate the importance of potash in the production of maximum crops.

There are numerous results available from the experimental fields of Europe and America which indicate the importance of potash in the production of crops. Some important results, showing the influence of potash in increasing the yield of certain crops, have been obtained from the Rothamsted Experiment Station at Harpenden and from the Woburn Experiment Farm at Aspley Guise, Beds, England.

Perhaps the most pronounced effect is that obtained in the production of mangolds as indicated below:

Effect of potash on yield of mangolds at Rothamsted Experiment Station.

Plot No.	Treatment	Yield as tons	
		Crop	Sugar
5A	Nitrogen, phosphorus	12.00	0.797
4A	Nitrogen, phosphorus, potash.....	28.95	2.223
	Increase yield due to potash.....	16.95	1.426

The addition of 200 pounds of potassium sulfate increased the yield of mangolds by 16.95 tons or 140%. The yield of sugar was increased by 1.426 tons or nearly 200%.



Wheat has been grown at Rothamsted for 80 years with various kinds of treatment. The effect of potash on the production of wheat is indicated below:

approximately 31 bushels per acre. These results were obtained by the addition of 200 pounds of potassium sulfate per year.

The 200 pounds of potassium

*Wheat at Rothamsted Experiment Station.*

Plot No.	Treatment	55 years ave.	1st 30 years	2nd 25 years
11	Amm. salts, acid phosphate.....	23.5	26.0	20.6
13	Amm. salts, acid phosphate, potassium sulfate.....	31.3	31.5	31.1
	Increase due to the potash.....	7.8	4.5	10.5

These results indicate clearly the necessity for some provision being made for the maintenance of potash in the soil for the production of such a common farm crop as wheat. It is very significant that where only nitrogen and phosphoric acid were added on plot 11, the second 25 year record is noticeably lower than is the first 30 year yield. However, when potash has also been added the yield has been maintained throughout the entire period at

sulfate contain five units of potash, having a value of \$3.40. The Liverpool price of wheat in December 1923 was \$1.20 per bushel. That is, the English farmer could expend \$3.40 for the purchase of 200 pounds of potassium sulfate and increase his yield of wheat by 10.5 bushels which has a value of \$12.60. Potash pays for wheat production in England under existing conditions of prices.

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Center pile from unfertilized row; two outside rows fertilized with high percentage of potash.



*(The author of this article was chosen by the extension service of the North Dakota Agricultural College to make a survey of cooperative marketing on the West Coast. This article embodies the results of his observations and is mighty interesting reading.)*

# The Cooperative Marketing Situation on the West Coast

By D. B. Morris

County Agent, Grand Forks, North Dakota

EVERY movement that is a departure from the established order of affairs is apt to be branded as radical, theoretical and impractical, at least by many, and well we may analyze the cooperative movement before endorsing it, and then let it speak for itself. I believe that we are agreed that there is but one fair way to judge it and that is by what it has done and what it now is doing as well as what it proposes to do.

In order to learn the real facts concerning cooperative marketing and to verify the statements of those either antagonistic toward or in sympathy with the movement, an investigational trip was made through the states of Washington, Oregon and California where this form of marketing has been practiced for many years.

I made this investigation with an "open mind" and not prejudiced either for or against cooperative marketing. This investigation covered a period of less than three weeks, and the information contained herein was secured largely

from county agents and extension officials, farmers, general managers and directors of cooperative associations. The subject was approached from as many different angles as possible. To make a detailed investigation of cooperative marketing in the states mentioned above would require several months, but the writer was not interested in the details of each association but rather in a general perspective of the cooperative marketing situation, as to the success attained by various cooperatives, the reason for failures with many, the farmers' attitude toward cooperative marketing associations and the part that county agents have played in the formation of cooperatives.

The first question one would ask is: Is the cooperative movement generally successful? From my observations I would conclude that *it is*, despite the fact that there have been a number of failures due chiefly to poor management, and despite the fact that even the most successful organizations have experienced reversals and have had



to contend with serious problems and handicaps, calling for the exercise of the most careful judgment, practical business procedure and above all, grit of almost unparalleled character.

**P**ERHAPS no factor has contributed as greatly to the success of cooperatives in the western states as better merchandising methods. Any number of examples could be cited to verify this point. Take, for instance, methods employed by the Washington Cooperative Egg and Poultry Association, which insists on catering to the elite trade of the east with a carefully graded egg while the middle states for the larger part still send to market barnyard mixed. The eggs from this association have commanded a reputation for themselves; New York wants them and is willing to pay an average premium of 14½ cents per dozen to obtain them. Washington cooperatives also send to market a carefully graded apple which competed successfully with the orchard run barreled apples of New York state. In the California Walnut Growers Association, also, standardization and grading have largely been responsible for the success of the organization.

Orderly distribution has been a contributing factor to the success of most of the cooperatives. The law of supply and demand must always have its bullish and bearish effect which causes fluctuation in market values; however, when the over supply is taken off the market at the period of flush production and placed under proper storage and offered to the trade at the periods of low production, much of the speculation of manipulators is taken out of the produce and the gambler is not so able to depress the market when the supply is large and pyramid the prices in times of scarcity. The cooperative is enjoined with the responsibility of

keeping the channels of trade open by avoiding gluts through a wide distribution of its commodity and offering its surplus in the time of scarcity to prevent the market skyrocketing and cutting off, or nearly so, the consumptive demand.

Frequently a declining market has been hastened to a chaotic condition by the increased dumping of farmers in an effort to sell before the market reaches bottom. Farm marketing has been strewn with these experiences and about the only one who has ever profited by them is the speculator. Cooperation prevents this in a very large part, because it is the function of that agency to market the produce in an orderly fashion and as the market can handle it.

**T**HE essence of the Sun-Maid Raisin Growers' sales policy is that the entire trade in the United States and Canada, should have on hand every day in the year sufficient stocks for continuous movement into consumption, not merely to take care of prevailing demand, but to enable them to supply enlarging demand as well. While more or less future selling is done, based on the opening prices determined by the Company, the fundamental effort, as far as it may be practicably carried out, is to sell only to the trade in such quantities as according to the records and experiences of the Company are ample to take care of the buyer's trade within a reasonable period after delivery, and which will yield to the trade a fair profit, and not result in any loss whatever either to the jobber or the retailer. Furthermore, the Company aims to sell the trade in such quantities and at such frequent intervals as will insure the product being at all times in strictly first-class condition—rather than hazard its deterioration on the trade's hand, jobber or retailer, and result in financial loss to either or reach



the final consumer in an unwholesome condition.

**S**UCCESSFUL cooperatives are built around the efficiency and business integrity of their management and have been careful to secure the best market experts obtainable. No cooperative association can succeed unless it has the services of a manager, who is competent to handle the unique duties that are incident to that position and to surround himself with able associates.

I was told while in Los Angeles that wise and efficient conduct of affairs of the California Walnut Growers Association resulted in returning to members a price at least a cent per pound higher than would have been returned through only ordinary management and organization. The loss of a cent a pound on the 1922 season crop (40,000,000 pounds) would have meant an aggregate loss to members of \$400,000, yet the total salaries of the association for the year 1922 amounted to less than one quarter of this sum.

Another factor that has contributed very materially to the success of some of the cooperatives at least, has been national advertising; mention might be made of the Citrus Exchange, Raisin Growers and Walnut Growers in this connection. The production of oranges and grapefruit has trebled the last twenty years, while the population of the United States and Canada has increased only about one-third. Through improved handling methods, broader distribution and intensive educational work with the consumers, the demand for citrus fruits has been kept in pace with the increased production; they are available every day in the year and have become staples with the trade and part of the daily diet of the public.

A few words might also be mentioned concerning the intensive

effort to nationalize the use of Sun-Maid Raisins. The fact that this product is to be found today in practically every market, small or large, in the United States and Canada is ample evidence that the sales efforts have been eminently successful. In 1921 the Sun-Maid Growers Association spent \$1,500,000 in advertising, and no one will dispute the intelligent and forceful nature of the advertising carried in the great magazines of the country and through innumerable other sources. The Sun-Maid Raisin Growers Association sold four hundred million 5-cent packages of these raisins, the net weight of the contents being upwards of 18,000 tons. For that and similar reasons the Raisin Growers and scores of other cooperatives, likewise, believe that "it pays to advertise."

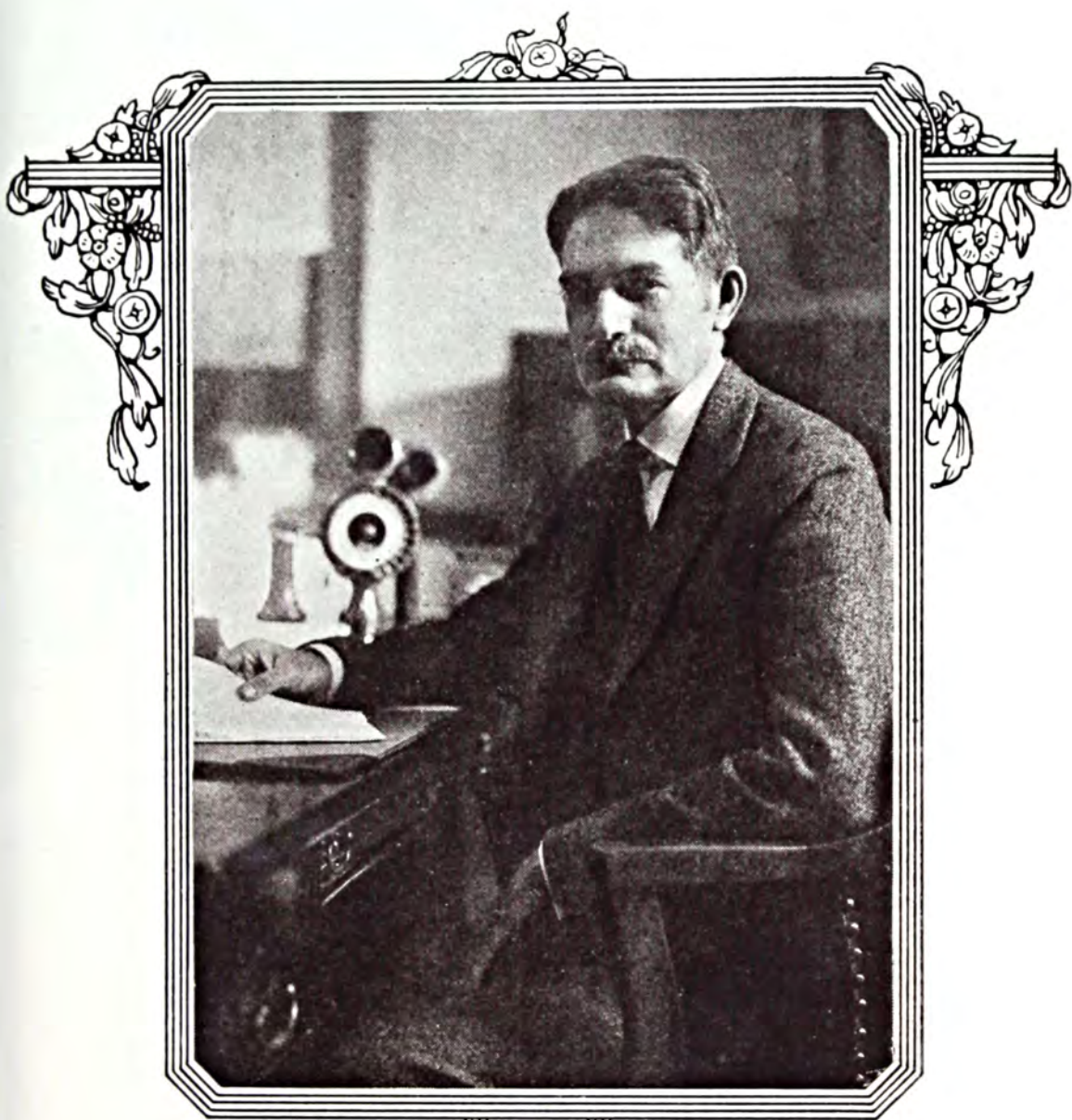
In the case of the California Walnut Growers Association, its sales and other expenses for marketing the 1922 crop were  $5\frac{1}{2}$  per cent of the f. o. b. value of the product,  $2\frac{1}{4}$  per cent for advertising. Approximately  $\frac{1}{2}$  cent per pound on the estimated tonnage to be shipped for the season is set aside for the advertising appropriation.

**A**S I have stated before in this article, all successful cooperatives have had their ups and downs and in their earlier stages some have practically disbanded, and in a few cases they have actually done so and later reorganized on a stronger basis. The cooperatives in the west have had the same problems to contend with as any community in North Dakota or elsewhere. They learned through experiences that they had to perform some vital service in order to maintain their strength and to live in the face of competition to which they were instantly subjected. In the west the farmer is as strong an individualist as there is in this country. Generally speaking, he is not a

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# *Better Crops'* ART GALLERY *of the month*



Herbert W. Mumford, dean of the College of Agriculture, University of Illinois, is a prominent livestock authority in this country and chief executive of one of the foremost agricultural colleges in the United States.





County Agent R. O. Bausman of New Castle County, Delaware, explaining methods being used by the farmer building the demonstration silo



Mark Twain was wrong—they are doing something about the weather and the authority is no other than C. F. Marain, Chief of the Weather Bureau.





Business farmers of tomorrow—members of the agricultural club in Madison County, Alabama, standing in front of their headquarters in company with their teachers.



Dr. W. A. Taylor, Chief of Bureau of Plant Industry, U.S.D.A., finds pleasure in inspecting green house experiments carried on under his supervision.





This Watonwan County, Minnesota, Club girl is one of the 46,000 canning club members who last year preserved some 2,900,000 quarts of fruits and vegetables as a part of their home making activities.



# Ten Years of Extension Work

By C. W. Warburton

Director of Extension Work,  
U. S. Department of Agriculture

**A**T the conclusion of the tenth year of cooperation between the Federal Government and the States in the conduct of extension work it seems fitting to review briefly what has been accomplished and to think for a moment of the future.

Although demonstration work had been under way for some 10 years in the South under the leadership of Dr. Seaman A. Knapp, and although various phases of extension work had developed in the different sections of the country, it was not until 1914 that the movement took on a united cooperative national character. The movement was given impetus by the report of President Roosevelt's Country Life Commission in 1909 and soon thereafter bills providing for Federal aid to extension work were introduced by Senator Dolliver of Iowa, and Representative McLaughlin of Michigan. Other bills along similar lines were introduced from time to time but all of these failed of passage until 1914, when under the leadership of Hon. Hoke Smith of Georgia, Chairman of the Senate Committee on Agriculture and Forestry, and Hon. A. F. Lever of South Carolina, Chairman of the House Committee on Agriculture, the Smith-Lever Act was finally passed.

The act is unique in Federal legislation. It was the first of a series of Federal acts which provides definitely for cooperation between the Federal and State governments

in carrying on a common enterprise and permitting participation by counties, local governments, associations, and individuals.

At the time of the passage of the Smith-Lever Act there were more than 500 men agents and 200 women agents engaged in demonstration work in the South. More than 200 county agricultural agents also were at work in several of the Northern States. In the 10 years that have passed, the number of men agents in the United States has increased to 2,239. There are now 921 women agents, and 126 boys' and girls' club agents.

**A**S the work progressed the needs of the county extension workers for expert assistance in various lines, such as dairying, crop production, animal husbandry, nutrition, and home management, became apparent. There has now grown up a staff of about 800 extension specialists in the States, who aid the county workers in formulating their programs of work, give special assistance in the problems in their particular fields, and otherwise supplement the extension system. The county workers, specialists and the administrative and supervisory forces make altogether nearly 4,500 people who are engaged in carrying the gospel of better and more profitable farming, and healthier and happier homes to



the people of the United States.

The original appropriation under the Smith-Lever Act was \$480,000, with provisions for annual increases for eight years until the total reached the sum of \$4,580,000. In addition to this amount, \$1,300,000 is now appropriated by Congress on the same basis as the Smith-Lever funds, and a further appropriation of about \$1,300,000 is made for farmers' cooperative demonstration work. This makes the total Federal appropriation \$7,180,000, to which the States and local agencies have added approximately \$11,000,000, so that now between \$18,000,000 and \$19,000,000 are annually devoted to extension activities.

ONE of the greatest tributes to the success of the movement is the fact that during the past three years of agricultural depression, while extension funds have not been materially increased, they have been maintained, and the losses in extension workers due to discontinuance of the work in certain counties have been more than made up by gains elsewhere.

With this large development the movement is still far from complete and there is much to which to look forward. There are still several hundred agricultural counties which

have no men agents, and around 2,000 counties which have no women agents. These counties are not now receiving the full benefits of extension work, although something is being done in practically every county in the United States. Many of the more important agricultural counties have need for more than two agents. Much greater development of boys' and girls' clubs is needed, for in many respects this is the most effective extension field. The home demonstration work also needs much expansion.

The building up of the extension force to double or more than double its present proportions must necessarily be a long time job, but it is one toward which we should be looking and striving. One of the most hopeful signs of the times is the recent very large increases in local leaders of extension projects. The development of these local leaders is certain to result in not only better farming and more satisfactory home life, but a more intelligent and responsible citizenship.

I think we can look back on these ten years of cooperative extension work with much satisfaction and with the knowledge that real progress has been made, and I feel that we can look forward confidently to bigger and better things during the years to come.



*Mr. Warburton at his desk.*



# The Sources of Power

By Dr. Frank Crane



THE earliest source of power was the human being. Man did the lifting, pulling and hauling. Then came the beasts, as the horse, the ass and the ox. But these forms of power are imperfect, expensive and wasteful. Civilization advances as man learns to use the forces of Nature. The expansive force of steam now does the work of billions of human hands and horses' shoulders. The power of electricity, that once cavorted like a wild colt through the sky, has been broken to service, and has substituted for a billion more hands. Little by little the common human laborer that has nothing to offer but his muscle is being thrown out of a job. Human labor, in the sense of physical force, is being gradually pushed off the earth. More and more the human mind is calling in the tireless genii of Nature's energies to do its required tasks. We have hardly begun as yet to master the world we live in. We have barely scratched the surface of Nature's efficiency. There is the sun's heat, billions of power volts wasted every day, power that we have not been clever enough yet to utilize. There is the force in the rising and falling of the tides, which properly converted and stored might turn every power wheel upon our coast. There are vast uncharted fields in electricity we have not yet explored. It is not beyond the bounds of probability that electricity generated at Niagara Falls may be sent electrically by wireless and furnish all the mechanical power needed in New York City. There is the boundless energy of water power that we have hardly begun to utilize and that some day may oust the use of dirty, cumbersome and expensive coal as motive power. Experiments have been made in Italy in the utilization of volcanic heat, converting it into motive power. And similar experiments are being made in Japan where there is a considerable constant volcanic activity. An enormous amount of vegetation goes to waste every year, fields of weeds and sea grass. All this may possibly be converted into power. For whatever will rot will make alcohol, and it is only a question of time alcohol shall supercede petroleum products in the internal combustion engine. Then there is the power to be loosed by the breaking up of the atom, a field presenting perhaps the greatest of all possibilities, a region into which the scientists have just begun to peep. It is not entirely extravagant to prophesy that the time shall come when man shall be removed from the necessity of almost all physical labor, at least for the purpose of supplying his food, shelter and transportation. Men can then use all of their energies toward cutting one another's throats, and the great, noble and character building business of war.

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*"An ounce of prevention is worth several tons of cure" in the case that Professor Gregory describes here.*

# A Child Shall Lead Them

—Perhaps Into Trouble

By C. T. Gregory

Purdue University Agricultural Extension Department

ONE day early in May I was in County Agent Benson's office at Vincennes, Indiana, when a lady and a ten year old boy came in and sat down. The boy, Frank Rogers, seemed to be laboring under some poorly repressed excitement, as he wriggled on his chair. Benson was out at that time so I played the host and after a few polite inquiries told them that the county agent would be back immediately. But the little fellow could not contain himself, he had to tell his news, and he came forward with a berry basket in which reposed five smooth ripe tomatoes. His eyes shone with pride as he said, "These are the first ripe tomatoes grown here at Vincennes this year. The grocery-man told me I had beaten all the gardeners around here by two or three weeks."

He was proud of his achievement, but no more so than his mother. Together they told how last fall he had transplanted several small tomato plants to candy buckets. At that time he did not have much faith in his ability to grow tomatoes, but he carried the plants into his father's greenhouse and gave them special care during the winter. His reward is ripe tomatoes weeks

sooner than other greenhouse gardeners, his father included. Frank said that next year he is going to plant more tomatoes this way and get a better crop because he knows more about raising tomatoes now.

You know it is awful to be a kill-joy, but, fine as Frank's ambitions are, he is starting a dangerous practice. Unless he knows exactly what sort of plants to avoid he might be the unwitting cause of serious damage in his father's greenhouse. It is not very pleasant to tell an enthusiastic youngster such a discouraging story, especially when he feels that he has the world by the tail.

But why is an apparently innocent practice of transplanting tomatoes from out of doors into the greenhouse, a dangerous practice? The answer to this question is, "Mosaic or Winter blight." During the past few years we have heard much of the mosaic diseases in various crops like potatoes, cucumbers and tomatoes. This mosaic is a peculiar kind of an infectious disease which occurs in the sap of plants and produces various types of stunting and distortion. In the tomato the leaves are peculiarly blotched with definite



yellow and green spots. The shape is often strangely distorted, sometimes producing fern-like leaves. The plants are always greatly dwarfed and the yield is also dwarfed.

In the field this disease is often a very serious menace, doubly so because it does not kill the plants, but does greatly reduce the crop. The grower may not be impressed with any sense of danger to his crop because the plants are alive and apparently growing in good shape. Sometimes, however, the county agent may receive a call of distress as R. M. Roop did while he was at Columbia City. One of the city merchants had a small home garden containing about two dozen tomato plants. They all looked good when he planted them, but suddenly every tomato plant in the garden seemed to stop growing and produced short bunched stems. Since the county agent knows everything about all kinds of crops, Roop was asked to examine these plants and tell the merchant-gardener what to do. It turned out that somehow this man had brought in one mosaiced tomato and in pruning the vines he had spread the diseased sap to every other tomato plant in the garden. Unfortunately there was not a thing that could be done to help this gardener.

Under the fine growing conditions of a greenhouse this mosaic disease seems to become doubly virulent. The constant care and pruning given the plants serve as an excellent means of spreading the sap, provided one diseased plant is introduced in some way. Two years ago a crop was ruined in an Indianapolis greenhouse by mosaic. The trouble started from a single old plant that the gardener had allowed to grow in one house since the previous summer. The plant had made a good growth and bade fair to yield some very early tomatoes. Since it was growing at one side of the house and was not interfering with his lettuce crop, the

gardener left it alone. Perhaps if he had continued to leave it severely alone and had not pruned it, everything would have been all right, but he did not. He trimmed it along with his other plants and as a result every plant in two houses developed severe cases of winter blight. I do not know exactly how much he lost, but it was enough so that he cleans out all tomato plants now. He has no sentimental feeling for harmless looking old plants.



*No! This tomato is not tattooed. It is afflicted with mosaic. The light green streaks never ripen.*

Last year in another greenhouse in the State the gardeners tried to raise an early winter crop. They started the plants in fall before the cold weather had killed everything out of doors. Again the winter blight came in and they did not harvest enough from a large house to pay for the picking. This time it seems as if insects, like plant lice, carried the diseased sap from diseased tomato plants or weeds that were still alive in the field. A peculiar thing about this disease is that two weeds, the ground cherry and horse nettle, also carry the infected sap. These weeds are perennials and once they become infected the new plants each year will be diseased. This is a very convenient way for the mosaic-sap to maintain itself from year to year.



# Have the Farmers Met to Death?

By David D. Long

Soil Specialist  
Soil Improvement Committee, Atlanta, Georgia

*A good many people seem to think so but you should read this article before you answer.*

THE county agent was notified by the extension service that there would be a farmers' meeting in his county and accordingly he announced the meeting, giving the time and place, in the local papers and also sending two hundred letters to the leading farmers of the county.

The day of the meeting, the speakers, and the time of the meeting arrived but no farmers had made their appearance. The county agent went to the porch of the court house and called the meeting announcing that the speakers were present and that the meeting was about to open. It was then that a farmer stopped from his work on his Ford long enough to ask, "What are they going to talk about and who is going to talk?"

This farmer voiced the sentiment of farmers generally. First of all, they wish to know what the meeting is about and who is going to speak. This information serves as a starting point to decide whether or not the meeting is of interest to them.

Agriculture being a broad subject, offers many opportunities to talk on subjects which do not directly nor indirectly concern a large number of farmers. The farmer has learned this from attending many meetings. Consequently the simple announcement of a farmers' meeting

does not any longer attract attention or create any interest.

Many county agents work valiantly to hold interesting meetings for the farmers but without success. Discouragement follows and the county agent dreads the notice from headquarters of a meeting to be held in his county. He feels as if "the farmers have met to death."

"The farmers have met to death," is only evidence of improper methods of announcement, or of continued disappointment in the message delivered; or of subjects discussed with no local application; or of impractical suggestions; or any number of causes which do not serve the farmer in his effort to make money or to better his condition. That the farmers have not met to death can be realized through an understanding of the mind of the farmer and of a few simple principles of advertising.

IF "the farmers have met to death," something in their meetings has dealt the death blow.

An analysis will generally reveal that a hungry mind eager for vital information has not been properly fed or that food for thought has not been sufficiently balanced. When the infant feels



the sense of hunger, instinctively it reaches for the bottle which has satisfied that hunger. When the bottle is not placed within the tiny hands the child realizes and makes known its disappointment. The mind of the people acts much in the same manner and the farmer is no exception.

It is worth while to study the mind of the farmer and how to appeal to him for his own benefit.

The farmer's mind is a rushing torrent of thoughts pertaining to the business of managing his farm or, in other words, of making money. In the routine of his daily life the farmer faces problems which involve the details surrounding any big business and problems of a scientific nature which are rooted in every branch of natural science.

There is an eagerness on the farmer's part to learn new facts concerning his business. There are always problems in his mind about which he desires information. Therefore, the farmers' meeting must, first of all, be built around what he wishes to know and not an idea or theory or program one might wish to force upon him in an honest effort to serve him.

A large number of successful and largely attended meetings is positive proof that farmers will meet as often as they are convinced that they can better their conditions by coming out. This fact has been proven by arranging meetings at points where the farmers have been supposed to have met to death. In the majority of cases the meetings were the largest ever held by the farmers of those counties.

Announcing the farmer's meetings is of first importance. Despite the almost heroic efforts of the conscientious county agent to get the farmers out to meetings, the farmers do not come chiefly because the meetings are not properly announced.

Before calling the meeting the vital problem of the locality should be determined. If the problem is of

sufficient seriousness to warrant a farmers' meeting then that problem, and that problem alone, should be discussed. In some cases it may be practical to discuss two closely allied subjects. Broad gauged discussions covering vitamins to statistics generally do not appeal with direct force to the farmer and have killed many a farmers' meeting.

Should there be no interest in the subject then there is no excuse for holding the meeting. One must distinguish, however, between apparent and latent interest. There are very few cases where there is a real problem that interest cannot be aroused.

The announcement of the meeting should embody the idea of the purpose of the meeting, the subject to be discussed and the benefit one could expect from attending.

In the case of a "Boll Weevil Meeting" an idea is at once injected into the mind of the farmer. He knows the losses, privations and damages which this insect causes. But yet the full idea is not conveyed for there are many angles to this question. "Boll Weevil Control" removes the last vestige of doubt in the farmer's mind as to what will be discussed. "Successful Boll Weevil Control" creates further interest in the question as to how success is to be attained.

The loss to the farmers through an incomplete announcement may amount to sizable figures. A farmers' meeting in a certain county was announced throughout the county but the attendance comprised a dozen court house idlers who, out of ennui of whittling and talking politics, went into the courthouse to hear the message. The message was timely and filled with vital information on a subject which directly applied to a local problem.

After the speakers had finished their talks one party in the audience said, "You fellers said what would interest some of our big farmers— Now just wait until I go get them

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# How One Community Increased Its Cotton Production

Winterville, Georgia, organized the first community Pure Seed Association in the state—and possibly the first in the South.

By Paul W. Chapman

THE one sure way to get up an argument in most any rural community in the South is to step up to a group of farmers and casually, in the course of the conversation, ask what is the best variety of cotton to grow in that community.

More than likely there will be as many different varieties suggested as there are farmers in the group. And this in spite of the fact that all

the colleges and experiment stations have been conducting variety tests for years, and are constantly making recommendations.

It is this unwillingness, on the part of the farmer, to accept the experimental results obtained by his state and government that has developed the cotton-seed grafter. Any Tom, Dick or Harry can name a few stalks of cotton, make wonderful claims for the variety, and set



This is F. C. Chandler with a \$1,500 shipment of pure bred cotton seed. To him goes much of the credit for starting Winterville on the right road. He is now sales manager for the seed association.



up a booth at a county fair and begin taking orders.

For corn in the Middle West the variety may be of little importance but not so for cotton. The variety is one of the important limiting factors in the production of a crop of cotton.

Then in the second place after a farmer in the cotton belt selects a variety usually little or no effort is made to keep the variety up to the standard of quality and production that is possible; in spite of the fact that cotton as a plant reverts to the original unimproved type so rapidly that it has to be rogued in the test plats. The importance of seed selection in cotton production was pointed out in the December issue of *BETTER CROPS* by Herbert Martin of Texas. In his article he makes the following significant statement: "In view of the fact that competent authorities agree that the increased yield as a result of better seed selection is from 25 to 50 per cent, it is unfortunate that the efforts to arouse the cotton growers of the South have been so futile."

There is one community in Georgia that is such a marked exception to all of the above generalities that it has attracted attention wherever cotton is grown.

That place is Winterville, a small community of possibly two or three hundred people, and is located in Clarke County, just six miles from the State College of Agriculture, at Athens.

While there are but comparatively few people in the "town" itself, it is surrounded by prosperous farmers, in good circumstances, and men and women for the most part who have had a college education, but who are what we have come to speak of as "dirt" farmers.

Winterville is located in that part of the Piedmont region that has long been famous for the staple and quality of its cotton. Foreign buyers bought and sold Georgia

Piedmont cotton on reputation—instead of grade. The soil is of that red clay type that has made famous in song and story "the old red hills of Georgia." But in even this unusual community old Mr. Boll Weevil, "the billion dollar bandit," got in his dirty work and the reputation of yesteryears was soon a pleasant memory. The buyers left the territory for states in the West; and what was formerly the best cotton country of the state became, as we say, almost the "sorriest."

But Winterville has come back, and is pointing the way to other Georgia communities, and the success is not based on thirty cent cotton either.

They have done four things of importance: first, they have all agreed upon the one variety of cotton that is best adapted to their conditions; second, they have come to appreciate the necessity for selection of seed, and they have not only selected seed but they have—for the past two years—held night classes at the school house on the scientific principles in seed improvement; they have made a thorough study of growing cotton under boll weevil conditions; third, they organized the Winterville Pure Seed Association, which was the first association of its kind in the state; and fourth, they have advertised Winterville to the cotton producing world, and have built up, as a result of their efforts, a community spirit that is making for happiness and prosperity.

Five years ago this community—like most others in the South—showed a total indifference to scientific agricultural information. A survey revealed that 22 different varieties of cotton were being grown and that most of them were not adapted to the community, or that they were of inferior quality.

Through the teacher of vocational agriculture in the high school, together with his class of boys, a

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# Training Leaders

by

## means of Four H Clubs

By Russell H. Gist

County Agent, Clarksburg, W. Va.

A FEW weeks ago the writer witnessed an exhibition of driving six-horse teams. It was in the arena of the International Live Stock Show and Exposition at Chicago. The driver sat in his high seat on the wagon and displayed wonderful control of the beautiful horses as they trotted and galloped around the ring. Finally he drew them up to a halt and then by manipulation of the reins the lead horse was brought around until his nose was very close to the driver. At this point he reached down and gave his lead horses a lump of sugar without getting off of the seat. The people applauded generously but the driver knew that his success was due to his trained leaders.

The matter of getting real, honest-to-goodness leaders for boys and girls Four H clubs has become quite a problem in many counties and states. Since 1914 the membership in these agricultural clubs has grown from 23,000 to 700,000. This has severely taxed the workers and it is necessary to expand the number of leaders to take care of present needs. This has necessitated "selling" the Four H idea to many older people so that they may be able to carry on the club in their neighborhood.

Projects carried by club members vary from keeping a registered calf to hemming a towel in first-year sewing. The project circulars outline what is to be done but the need

of group action and the making of club exhibits must be supervised by some older person. The necessity of local leaders may readily be seen in such a place as Harrison county, West Virginia, where we had in 1923 more than fifty clubs with 1,245 members scattered over four hundred square miles of territory.

Two classes of club leaders are considered. First, teachers in the local schools and second, older club members. Since much of the work is carried on through the schools an effort was made in the fall of 1923 to place the boys and girls club work before the teachers as a group. Lewis and Harrison counties combined in this effort and invited all rural teachers and others interested to attend a week's institute at the State Four H Camp at Jacksons Mill. This was a regular teachers institute but Four H plans and ideas were stressed. About two hundred came.

It started off in a melancholy way but before the week was over they had all caught the spirit of the camp and the instructors said that they had never seen such a lively, wide-awake corps of teachers. Before they left all of them knew what Four H club work was and most of them have established a club where they are teaching or are taking care of the one which was already there. Nine-tenths of this supervision is not costing anything as they are doing it because they



love the work. Such a spirit is making real leaders of these teachers.

The older club members are given special training as soon as they once see that there is more to Four H club work than merely feeding some chickens or a calf or canning some beans or making an apron. When they have once caught the vision of leadership it is no trouble to get them to do some real service for their home club.

IN the little mountain state of West Virginia we had about forty county camps last year for club members. The outstanding boys and girls at these camps are invited to attend either the boys or girls state camp at Jackson's Mill next summer. If you want to see a real live bunch of future leaders just drop in for a day at one of these camps. Most of those attending have already caught the vision of service and are anxious to do their part. Latent talent is brought out by the wholesale. It is an inspiring sight to see them work. Each evening at sunset they hold vesper services in the open. The program is their own. Boys and girls who never thought of offering prayer at home may be seen leading in prayer

at these vespers. Visitors are always present and it is at these services that many older people renew their faith in the youth of today and go away feeling that all girls are not flappers and all boys are not renegades.

After ten days or two weeks of this intensive training the boys and girls go home with a new vision of life and a desire to be of service. During the next year when it is necessary for something to be done in their home neighborhoods for the school or church or club you will find these young leaders doing it. In this way future leaders are being trained.

IT is felt that if every boy or girl could have the proper development of the Head, Hand, Heart and Health, which constitute the four H's, there would be no cause to worry about the future of our nation. The West Virginia State Four H Camp is located at the boyhood home of the illustrious general Stonewall Jackson, and it may be that some of the traditions of the historic place help to inspire the boys and girls who are fortunate enough to attend one of these camps. Stonewall was a deeply religious  
(turn to page 56)



Boys and girls at the Weston, W. Va., Four H Fair with their registered calves



¶Everybody knows this critter—most of us to our sorrow. Professor Hansen offers some sensible suggestions for dealing with it.

# DON'T TRIFLE *with* RHUS DERMATITIS

By Albert A. Hansen

Purdue University, Agricultural Experiment Station

THE other day I received a letter from William J. McFarland, a farmer of Vermilion, Illinois, in which he stated positively that the poison contained in poison ivy had entered cow's milk and not only poisoned him but caused serious illness to his mother and was also suspicioned as the cause of the death of his father a few years ago.

Although he gave good evidence to substantiate his views, we doubt whether ivy poison can enter the milk. But we do not doubt that the poison could have adhered to the cow's teats and udder and was transferred by this means. As a matter of fact, second-hand infection by touching objects that have been in contact with poison ivy is a common mode of contracting the disease and accounts for many mysterious stories often heard about the wind carrying the poison and similar yarns. I discovered this from personal and painful experience when I carelessly handled a pair of gauntlets that had been used a year previously in pulling poison ivy. A short time after handling the contaminated gloves I developed a beautiful case of genuine ivy poisoning.

Ivy poisoning is a subject about which we get little or no information in college classrooms but which is a live question nevertheless. Definite

information concerning ivy poisoning should be part and parcel of the stock of information of every agricultural extension worker. For instance, how many of us know the cause of the trouble, how to prevent it, the best treatment and methods of eradicating the dangerous weed?

Ivy poisoning is caused by a non-volatile oil that exists in all parts of the plant with the possible exception of the ripe fruits. Being non-volatile, the oil can poison only when the skin comes in contact with the plant. There is one exception to this statement—the poison is evidently carried in smoke so when you burn poison ivy plants, keep to the windward and dodge the smoke as you would the plague or you may wake up next morning with badly smarting eyes and a mighty sore throat. Another point—the poison remains even after the plant is dead or dry, so don't be foolish enough to handle poison ivy during the winter without proper precautions.

WE all know that some folks are far more susceptible to ivy poisoning than are others. That degrees of susceptibility exist there can be no doubt but there is evidence that under certain conditions immunity does not exist. For this reason, persons who consider themselves to



be immune should not expose themselves needlessly nor thoughtlessly. Speaking about immunity, don't put any faith in the theory sometimes heard that chewing a bit of poison ivy leaf in the spring will make you immune for the remainder of the season. It is more apt to put you in bed than to make you immune.

Just a word regarding the common names poison ivy and poison oak. There are two species, both equally dangerous, one of which has leaves suggestive of oak leaves. In the northeastern United States, however, where the true poison oak is rarely found, both names are applied indiscriminately to common poison ivy. By the way, poison ivy is frequently confused with the harmless Virginia creeper or woodbine, but since the poisonous species has white berries and the leaves are grouped in three's whereas woodbine has dark blue berries and leaves in five's, they are readily told apart. School children give us an aid to memory when they chant "Leaflets three, let it be, berries white, dread the sight."

**W**HEN we talk about remedies we are stepping on pretty thin ice, so

to speak, because most folks have a favorite sure cure (over two hundred so-called remedies have been listed) when, as a matter of fact, it is very doubtful if a genuine remedy exists. If left alone ivy poisoning will usually run its course, dry up and disappear. The victim who has used the various "remedies" suggested by his sympathetic friends, will usually place full confidence in the one he happened to have applied at the time the infection naturally disappeared, and we have one more convert to a favorite remedy with apparently good evidence to back up his opinion.

But let us hasten to talk about treatment before our space is all used up. At the outset, I cannot over-emphasize that prevention is better than cure. In case contact with poison ivy is suspected, wash the skin repeatedly with any soap that has an excess of alkali, such as cheap laundry soap. Use running water, lots of soap, don't use fancy toilet soap, and don't rub the poison in with a scrubbing brush. Even after infection begins to show up, much trouble can be avoided by diligent washing. I am fully aware that at least one authority denies the value of soap as a preventive but

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**HARMLESS**



**HARMFUL**

A leaf of the harmless five-leaved ivy or woodbine to the left and a leaf of the dangerous poison ivy to the right. Note the irregular notches on the edges of the poison ivy leaf.



Although this article was written with Wisconsin conditions in mind, it contains helpful information for other sections of the country.

The

# Use of Fertilizers in Wisconsin

By H. W. Ullsperger

Wisconsin College of Agriculture.

WISCONSIN is a dairy state in which 80% of the products sold are livestock products. This form of farming means that the Wisconsin farmer returns more fertility to the soil than our grain farmer in the adjoining western states. In fact the Wisconsin farmer makes a special effort to return as much fertility to the soil as possible. Statistics show that between four and five hundred thousand tons of commercial feeding stuffs are purchased yearly in this state. Only about fifteen thousand tons of commercial fertilizer are purchased during the same period. These purchases, however, do not return or offset the losses occasioned through the sale of farm products, or losses of fertility through leaching from the soil, and the Wisconsin farmer will either have to change his method of farming by growing more legumes to supply humus and nitrogen, or purchase more fertilizers, or grow legumes and purchase fertilizers in order to maintain the fertility of the soil.

Farmers in Wisconsin originally grew wheat extensively. Later when wheat failed, other grain crops and clover were grown. Later livestock farming was advocated and

followed. In following livestock farming more fertility was added and crop yields temporarily increased, but this increase was only temporary, and to-day they are going into the next stage of being compelled to add some form of fertilizer to our Wisconsin soils. Most farmers realize to-day that they cannot maintain fertility by adding manure alone. There are some losses even on the best soils; losses of nitrogen, phosphorus, and even some potash. Only 7% of our cultivated lands are in legume crops. This 7% returns nitrogen valued at approximately \$5,000.00, but we still have a \$20,000.00 loss of nitrogen yearly. If this method of farming continues indefinitely we can readily see that nitrogen will be exhausted at some time in the near future, and many of our light soils are now so low in nitrogen that every crop is limited in size because of this deficiency.

THE first step in the improvement of soils in Wisconsin is the application of lime. At least 80% of Wisconsin soils need lime. Some land on nearly every farm would be benefited by an application of lime.



Lime should be used principally to grow legume crops. Legume crops, after proper inoculation will supply nitrogen and humus, both of which are essential to successful crop production. On some of our soils, such as the sandy and marsh soils, we will have to add in addition to lime, phosphate and potash fertilizer. Good farm practice calls for the following method of procedure:

Every farmer should first have his soil tested for acidity with the Truog Acidity Test. After making this test and determining the amount of lime needed, this lime should be applied with manure. By using this combination of lime and manure the farmer can get a good crop of clover and alfalfa. Manure will supply some nitrogen, a small amount of phosphorus, and the necessary amount of potash to start these crops. Manure, if available, should be applied during the following year on alfalfa and clover. If not available, an application of two to three hundred pounds of acid phosphate and 150 to 200 pounds of muriate of potash per acre should be made to supply these much needed elements of plant food. In fact, to get a real large crop of alfalfa this fertilizer should be

applied in addition to manure, and the farmer would find that he would secure a considerable increase in crop by the use of these fertilizers. Most Wisconsin farmers have a limited supply of manure and by using these fertilizers on legume crops during the second year they can possibly use their manure more economically, and to better advantage, on potatoes, corn, or other cultivated crops, especially on the lighter soils.

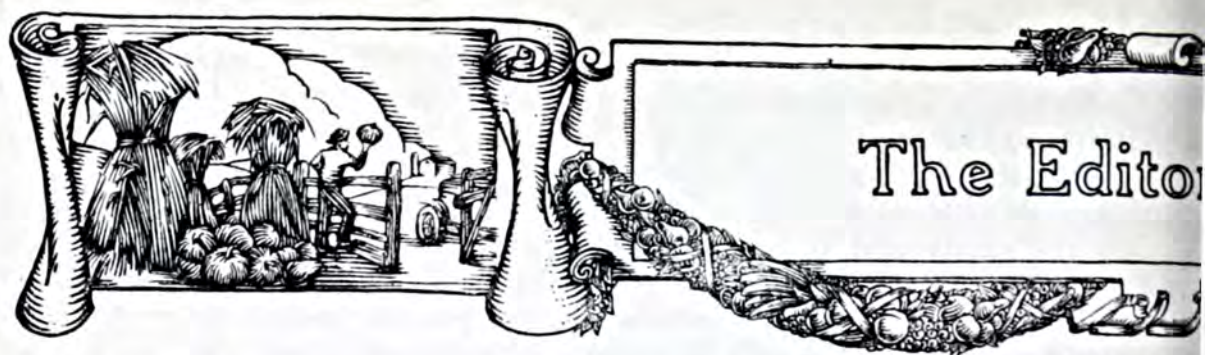
The next step in this rotation is to plant corn or potatoes, as desired by the individual farmer. Here again the farmer must determine for himself whether he will use commercial fertilizer or manure. The supply of manure is limited on most farms, therefore, if a good rotation has been followed, we again can recommend the use of a mixed high grade fertilizer, to be applied either on the row, or broadcast, or both. For potatoes, we would recommend either a 4-8-6 or 3-8-5 fertilizer, on the average clay loam or sandy soil, being careful to apply this fertilizer with a fertilizer attachment that will place the fertilizer either below or a little to one side of the potato seed. Fertilizer placed on top of

*(turn to page 47)*



A fine field of potatoes near Ogdensburg, Wisconsin. Without fertilizer, the yields averaged 169 bushels per acre. With fertilizer, the yield was 242 bushels, nearly doubling the net profit.





## FOR THE FORGOTTEN MAN

While disagreeing with many of the statements in Mr. Collin's letter which is reprinted on another page of this issue, I think there is some grain of truth in his assertion that the farmers have been subjected to a lot of goldbrick advice.

Just as everybody has his favorite remedy for a cold or his own ideas about bringing up children, so everyone has his pet plan for "saving agriculture."

It would be a pity, however, if our distaste for these cure-alls led us to turn a deaf ear to all suggestions for agricultural improvement. If there is anything worse than the "jitney messiah," it is the man with the you-can't-tell-me-anything attitude.

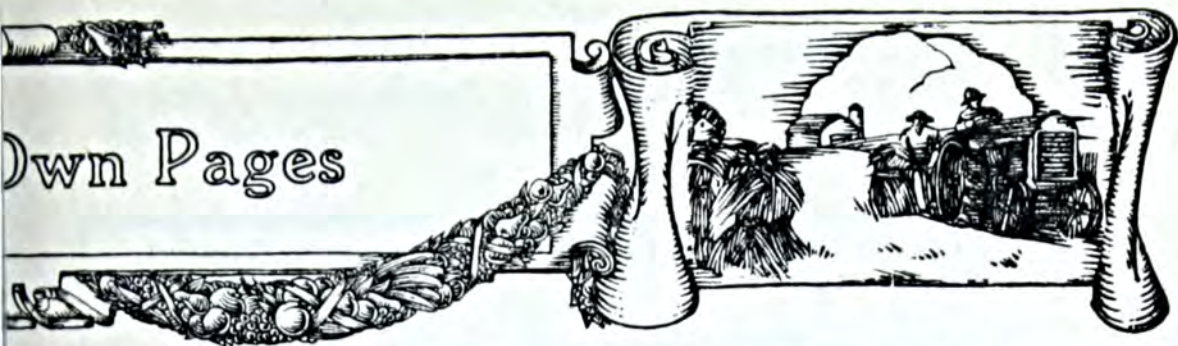
People who belong to one or the other of these extremes, possess an astonishing faculty for making themselves conspicuous. They are always making speeches or proposing bills or writing articles or letters. Thus it often seems to the casual observer as though the only choice was between the man who has prosperity in his pocket ready to hand out on demand and the man who resents every attempt at improvement. The world seems to be divided into hare-brained idealists and sour cynics.

But, as Professor Sumner pointed out in a notable essay, there is always the "forgotten man"—the great body of citizens who seldom make themselves heard but who far outnumber the two classes which I have mentioned. Perhaps it might be well to make it clear that BETTER CROPS is edited largely in the interest of the "forgotten man" in agriculture—the average sensible agriculturist who says little and saws wood.

By that I mean that we are going to try to avoid both the extremes I have already described. BETTER CROPS was not founded to "save" agriculture. We have no simple solution for agricultural problems. I do not consider my pronouncements infallible nor do I expect them to be accepted as anything other than the opinions of an exceedingly human being who is liable to all the prejudices and failings of *homo sapiens*.



## Down Pages



It's hard to sit in an editor's chair for long without getting the delusion that you are the "voice of the peepul" without writing as if you had just come from a confidential interview with the Almighty, where you had learned how everything ought to be done.

Whenever I fall into this error I depend upon you, gentle reader, to provide the necessary corrective. I assume that you have an open mind and critical faculties, that you want news, information and entertainment—not editorial thunder. So, if you have been expecting me to show the way into the Promised Land, you had better try some one who feels more confident about it than I do.

I have faith in agriculture. I'm not a pessimist by a long shot. But progress comes slowly—by education and the sweat of the brow. We are constantly tempted to try to find short cuts—substitutes—and it is in chasing these will-o-the-wisps that we lose ground. To consider all available means, to choose the one that is best suited to your needs and then to roll up the old shirt sleeves and work—that is the only recipe I know for success.

We are trying an experiment with BETTER CROPS—an experiment full of fascinating possibilities. We propose to make BETTER CROPS a forum, a discussion place, for the agriculturists of the country. Our pages are open to all shades of convictions on all subjects of interest to our readers.

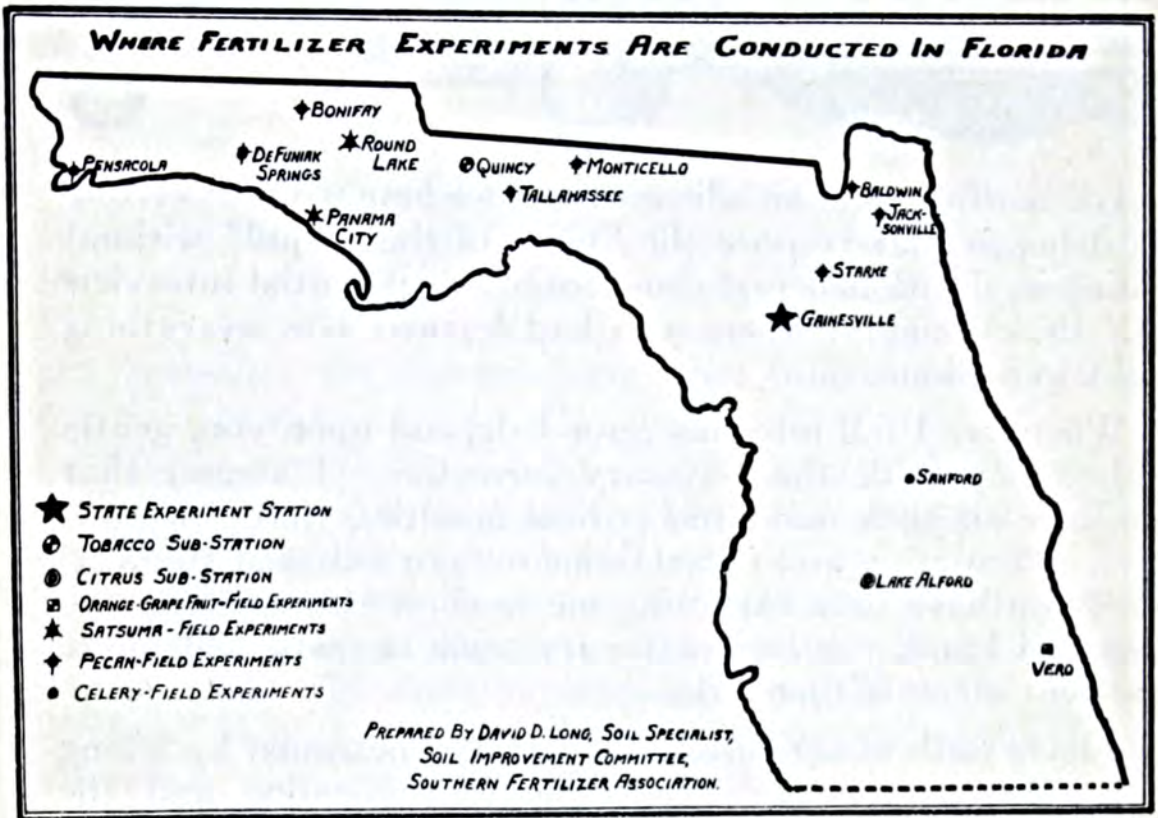
I hope we can get expressions of opinion on all sides of the important social and economic problems confronting agriculture. In these editorial pages I'm going to have my say, too. Looking at a subject from many angles, we are apt to form a better judgment than when only one side is presented.

This briefly is our policy. It depends very largely upon our readers' interest and cooperation. It is for them—for *you* as one of them—to say whether it shall succeed.

Jeff McIlernid



¶ This month we present the second series of maps prepared by David D. Long of the Southern Soil Improvement Committee. Next month there will be two more.



## FLORIDA

### State Experiment Station—Gainesville.

Sources of phosphoric acid, ammonia and potash for sweet potatoes and residual effect on peanuts.

New fertilizing materials as non-acid and bacteriological plant food.

### Tobacco Sub-Station—Quincy.

Fertilizers for tobacco.

Carbonate vs. sulphate as source of potash.

Forms of phosphoric acid. Complete fertilizers and manure vs. complete fertilizer.

### Citrus Sub-Station—Lake Alford.

Fertilizers for oranges and grape fruit.

Sources of phosphoric acid. Sources of ammonia.

Amounts of potash for quality.

### Field Experiment—Vero.

Comparisons of sources of materials for oranges and grapefruit.

### Field Experiments—Round Lake and Panama City.

Amounts of ammonia and time of application of fertilizers for Satsuma oranges.

### Field Experiments—Pensacola, Bonifay, Tallahassee, Baldwin, Jacksonville, Monticello, DeFuniak Springs and Starke.

Fertilizers for pecans.

Sources and effect of potash. Sources of ammonia.

Amounts of complete fertilizer.

### Field Experiments—Sanford.

Fertilizers for Celery.





## GEORGIA

### State College of Agriculture — Athens.

Kind of fertilizers on general farm crop with lime and in rotation.

### State Experiment Station — Griffin.

Kind and quantity of fertilizers on cotton, grain and horticultural crops.

### South Georgia Experiment Station — Tifton.

Kind and quantity of fertilizers on cotton, corn, oats, tobacco and truck crops, singly and in rotation.

### Field Tests — Cartersville, Barnesville, Albany, Monroe and Clarksville.

Rates of application of standard fertilizers for cotton, corn and oats in rotation.

### Field Tests—Waycross, Lyons, Springfield and Madison.

Kind and quantity of standard fertilizers for cotton, corn and oats in rotation.

### Field Tests — Rome, Royston and Hawkinsville.

Kinds and quantities of standard fertilizers for cotton continuously with a winter legume cover crop.  
(turn to next page)



**Field Tests—Edison.**

Effects of abundance of one element with a sufficiency of the other two, for cotton under boll weevil conditions.

**Field Tests—Cornelia.**

Kind, quantity and time of application of fertilizers for apples.

**Field Tests—Cornelia, Montezuma, Marshalville, Forsyth and Monticello.**

Kind and quantity of fertilizers for peaches.

**Field Tests—Albany, Putney, Cairo, Montezuma and De Witt.**

Kind and quantity of fertilizers for pecans.

**Field Tests—Brooklet.**

Fertilizers for watermelons.



## Don't Trifle with *Rhus Dermatitis*

(From page 29)

considerable experience, personal and otherwise, backs this recommendation.

**A**FTER the infection develops and the pustules open, *don't use sugar of lead*, a favorite home remedy, because there seems to be some danger of lead poisoning of the blood. If the inflammation is severe, better consult a good physician, because ivy poisoning is a dangerous disease that should not be tampered with. Several human deaths from ivy poisoning are on record. A treatment that has been used with success by several of our county agents here in Indiana, is repeated bathing with fluid extract of *Grindelia* (obtainable at all drug stores) diluted with ten parts of water. After the inflammation has been checked, zinc oxide may be used as an ointment.

From the foregoing, one can readily surmise that the best way to deal with poison ivy is to destroy the plant. Where but few plants exist, about the simplest way is to put on heavy gauntleted gloves and an old suit of overalls and pull the plants out, creeping roots and all, following rain when the ground is soft. Don't work so hard that you perspire freely because there is evidence that the skin is most susceptible when the pores are open. If you don't care to take a chance and cannot find a person not readily susceptible to do the work, pour sulphuric acid into the roots at the bases of the stems. The work can best be done in the fall, when the poison is least virulent. Large areas should be plowed out and the plants raked and burned. But keep away from the smoke!

**P**OISON sumac is a close relative of poison ivy that is found in wet places only. The treatment is similar since the same poisonous oil exists in this species, except in this case the oil is of a more virulent character. Mr. Dillingham, owner of the Wahab Lake resort, one of the beauty spots of Porter County, Indiana, told me last summer about a chap who used a fishing pole cut from poison sumac growing in a swamp near the lake and nearly lost his life as a result. He was in bed for several weeks with an exaggerated case of rhus dermatitis (that's what doctors call ivy poisoning) and he suffered as terribly as the name suggests.

I want to leave at least one thought with you. Ivy poisoning is a serious disease that should not be regarded lightly since in extreme cases it may prove fatal. It is particularly important that the plant be eradicated on farms where there are youngsters and near schools, churches, picnic grounds and other places where children congregate.





I have just received the June issue of BETTER CROPS and notice in the column headed, "Plans of the County Agents" that you have seen fit to announce an outline of what we are attempting to do in Uvalde County, Texas.

I am glad to say at this writing that our plans are practically realized. The Pecan Budding work has been better than we anticipated and we have exceeded the goal as set forth in the plans. The Poultry project, so far, is also very satisfactory and I expect to report later that we have also reached our goal along this line.—*M. E. Scudder, Uvalde, Texas.*

Here is what Noble County, Indiana, has done in the past twelve months: Perfected farm organizations—850 men, 625 women, and 300 club members; set out on a definite plan of work; organized a Cow Testing Association; started T. B. Testing; Increased Alfalfa acreage 3,000 acres; tested 27,991 ears of seed corn in community; finished third in Ton Littler Club and first in the Gold Dairy Medal Sheep Club; secured for the County the State Dairy show; conducted the largest Home Tour ever held in Indiana and reached 600 farm homes in Nutrition work.—*J. B. Cunningham, Noble, Ind.*



## Plans for the Summer

Will make two reels of motion pictures on cotton production, county fair agricultural excursions.—*M. J. Thomson, Ashley, Ark.*

Have 40 boys and girls feeding 60 calves in Baby Beef Club—25 boys in Gilt Club. Are organizing the women for extension work.—*W. A. Posey, Sac, Iowa.*

Reorganize our three cow testing associations into six. Organize dairy calf and pig clubs. Start two corn variety test plots. Get four to six carloads of lime on alfalfa patches. Begin cream scoring at three creameries. Put on membership drive. Hog cholera vaccination school. Start several more poultry record flocks.—*B. W. Lodwick, Worth, Iowa.*

We have boys and girls clubs, have a limestone pulverizer for supplying agricultural limestone, and hope to have an extension bull club.—*C. D. Thompson, Neosho, Kansas.*

Improvement in farm crops is our major project in 1924. Sweet clover, soybeans and alfalfa, the legumes we are pushing. Adopted varieties of corn are being improved.—*Joe M. Goodwin, Atchison, Kansas.*

Put over area test for T. B. Triple our Alfalfa acreage. Have every farm boy or girl in some sort of club work.—*C. B. Drewry, Marinette, Wis.*

A more legume campaign is a major farm bureau project in Portage County, Ohio.—*C. R. Shumway, Portage, Ohio.*





## Out in the Great Open Spaces

By H. T. WEBSTER

(Reproduced by courtesy of the New York World)





## A Lively Protest

Dear Jeff:—

I have just been reading your editorial in the May number of *Better Farming*. If your ideas about how to succeed in agriculture are correct, the thirty-five years that I have spent on a farm and ranch and studying the problems of the farmer and western rancher have all been thrown away. Really, some times when I read some of the things that are being handed out by College Professors and editors of some of the farm papers I feel as though there should be a law against it. You speak of Dr. Warren's article saying prices of farm products will continue to go lower for some time. I think the Doctor is correct if the farmers follow the advice of some of the professors and City editors in their advice about efficient farming, as efficient farming can mean nothing except greater production and greater production of the principal farm product means lower prices and lower prices mean the destruction of agriculture.

I see a short time ago the *Wall Street Journal* said that with efficient farming Iowa could just as well be raising an average of 80 bushels of corn to the acre as 40. That would mean Iowa would raise 800,000,000 bushels of corn instead of 400,000,000 bushels. He might have carried that a little further and said the United States had just as well grow six billion bushels of corn as well as three billion bushels. He did not go on to say what we would do with that extra three billion bushels. Everybody admits now that we are growing too much wheat and some of our people have had

sense enough to advocate a reduction in wheat acreage.

I am engaged in the cattle production on rather a large scale, I run about 2,000 breeding cows. The cattle business is suffering from the effect of too many cattle for the last five years.

Liquidation and foreclosure of mortgages has cut the cattle supply down now to where it begins to look as though those of us that may be able to remain in the business will be able to at least make expense for the next few years. If the hog producers don't cut down the supply of hogs or in other words if they keep right on with the efficient methods they have of producing hogs at full capacity, hogs in a few years won't be worth a dollar a head.

I have heard so much talk about efficient farming and that this and that was economical and fundamentally unsound that it gives me a pain. If the farmers and cattle men could be permitted to settle their own problems without all these city farmers butting in and telling them what to do I am sure the farmer's troubles would soon all be over. Yours truly,

CHAS. E. COLLINS,

*Kil Carson, Colorado.*

P.S. After reading this letter over it sounds a little crude, but if you was living out here and selling your calves for 15% less than you received ten years ago and was paying 50 to 100% more for every thing you buy and 300% more taxes, I am sure you would feel just like I do.—C. E. C.



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Please send me full information regarding the new Corona Four, together with the address of the nearest Corona dealer.

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# How Community Increased Cotton Production

(From page 25)

study of the situation was made, a variety selected, but very little was said about it to the farmers themselves.

The variety selected was College No. 1.

Ten boys in the class decided to grow an acre of it as their "home project" in connection with their agricultural instruction. This was done on the home farms of the boys under the direction of their teacher.

At the end of the season the yields were calculated, and in the due course of events, were brought to the attention of the fathers of the boys. They had already come to the conclusion that the variety the boys were growing was superior to their own, and so the next year the boys increased their acreage of College No. 1 and the fathers of those boys planted 60 acres to the same variety.

This same thing has been going on in this community for five years. Last year there were 1,700 acres planted to this one variety and next year not another variety of cotton will be planted in the entire community.

In the meantime, however, other important things in addition to the increased plantings of this variety have happened.

For example the average yield per acre has increased from 95 pounds of lint to 250 pounds.

The organization through which this improvement has been made is the Winterville Pure Seed Association.

This is an organization of farmers—incorporated under the laws of the state—for the purpose of selling pure farm seeds of all kinds, and for the purpose of studying those things that will contribute to the success of the farming of the community, especially those things relating to the improvement of the common farm crops. The sale of seed under the organization is the thing that has attracted the man who gives but little thought to underlying principles.

During the past year the association sold \$3,746.00 worth of College No. 1 cotton seed at a cost of only \$295; which netted the farmer members \$120.66 a ton for their seed, while the oil mill price, where they



This picture shows one of the results of Winterville's good work.



had formerly sold, was \$47.50. They also sold some corn, and some Laredo Soy Beans.

Their seed was sold in attractive bags with the association trade mark, and the slogan—"Pure Seed Produces Prosperity"—printed on each sack.

This seed was sold under the positive guarantee that it was pure College No. 1, one year from the source, and that it had been inspected in the field for purity by experts from the State College of Agriculture, and had been approved by the Georgia Seed Breeder's Association.

The demand for this seed was a hundred times in excess of the supply. For example, after all the seed had been sold—and it was all disposed of in a few days—one order came from South Carolina for three car loads. One county in Georgia placed an order for 5,000 bushels.

The selling of seed is the spectacular part of the business, but the most important is the increased interest in scientific agricultural information.

Dr. John R. Fain, head of the Farm Crops Department of the Georgia State College of Agriculture has taken a great interest in this community development and has given them all the help possible. Last year in cooperation with the teacher of agriculture in the local high school, he gave an evening course in seed selection. About fifty farmers in the community came into the school at night for two or three months to attend these classes.

They became so much interested in them that this year again when the slack season came around they asked for a night class. It was conducted on much the same basis as before and the interest has been so great that there is little doubt but that this will become one of the regular winter features of the association.

Several times each year the

association has a meeting to which a number of distinguished visitors, interested in such work, are invited. On such occasions they serve a banquet at the school that is prepared by the girls in the Home Economics Classes. They have come to appreciate the work of the girls so much they have voted to cooperate with the vocational classes of the school by paying them 2½ cents on every bushel of seed they sell.

The association at Winterville has had the support of the entire community and none of the members have been more active than Mr. John T. Pittard, a banker and also a farmer of extensive interests. He has studied the seed business so thoroughly as a result of his interest in the local association that as a recognition of his knowledge and ability he was elected President of the Georgia Seed Breeder's Association at their summer meeting. Just now he expects to bring to the attention of the legislature at their next session the necessity for more drastic seed laws for the protection of Georgia farmers who don't know any better than to buy from fly-by-night seed concerns that infest states that do not have rigid laws.

Already in Georgia the idea is beginning to bear fruit. Not long after the Winterville Association was organized a similar one was formed at Reed Creek in Hart County. Soon two or three more sprang into existence under the direction of local teachers of agriculture, and all have been universally successful.

In such communities there is no possibility of getting an argument on rudimentary problems such as the best variety for all the farmers believe in the adopted ones just as in Winterville today you ask a man what is the best variety of cotton and most likely he will say:

"Well, there may be several very good varieties, but I reckon for us that College No. 1 about fills the bill."



# You write this page!

BETTER CROPS PUBLISHING CO.,  
461 Eighth Avenue  
NEW YORK, N. Y.

Dear Jeff:

Below are the names and addresses of some people who might be interested in BETTER CROPS. I suggest you send them a complimentary copy of this issue. You may (may not) use my name.

My name .....

Name .....

P. O. ....

State .....

Name .....

P. O. ....

State .....

Name .....

P. O. ....

State .....

Name .....

P. O. ....

State .....

Name .....

P. O. ....

State .....

Tear this page out and mail it to me today.

Jeff





By Ted Butlar

BETTER CROPS' Washington Correspondent

In passing from the "legislative grist," now that Congress has adjourned, to the "grist" of what Washington is doing and saying about agriculture, a word should be said about the ebbing hours of the two legislative bodies. It is history now that the agricultural export bill was killed by the House on June 3, by a vote of 224 to 154. The Middle West and the Northwest heavily supported the measure but were outvoted by the East and the South. As predicted in the May and June issues of BETTER CROPS this was the only major agricultural bill considered, even though a last minute attempt was made to get something through designed to alleviate the agricultural depression.

The U. S. D. A. fared well in the agricultural appropriation act for the fiscal year, 1925, approved shortly before the last day of Congress. It carried a total appropriation of \$58,575,274 of which \$38,273,102 is for the regular work of the Department. This was an increase of \$1,036,449 over the 1924 bill. Among the principal items of increase in the 1925 measure was \$400,000 added for tuberculosis eradication work. This will give able assistance to this important line of work. According to reports up to June 30, a total of over 500,000 herds, containing over 5,000,000 cattle, had been tested once for tuberculosis and nearly 1,000,000 cattle had been accredited as free of the disease. In the opinion of Dr. J. A. Kiernan, in charge of eradication activities, bovine tuber-

culosis is giving way to scientific methods of eradication and there is every reason to believe that the time is not far distant when it will be reduced to a minimum, if not entirely.

Another increase of \$350,000 was given the U. S. D. A. for the purchase of additional forest land, to speed up its efforts to see that the future timber needs of this country are cared for by means of sensible and efficient reforestation and forest protection. The importance of this work can be seen in the fact that right today the United States is using its stand of timber about four times as fast as it is being grown. The practice of mining timber, like coal is mined, is frowned upon by government forestry officials. This additional appropriation insures a real forestry policy for the country.

Here is bad news for plant pests. Besides the regular appropriations to carry on the organized fight against the many insect and disease pests of American farm crops, the Department received an additional fund of \$75,000 to intensify the war on the white pine blister; an increase of \$114,710 to make life more unbearable for the Japanese beetle, one of the worst pests ever brought into this country; and \$40,000 additional to prevent the spread of moths.

Congress appropriated a total of \$6,000,000 to fight the outbreak of the foot-and-mouth disease in California. Due to immediate action on the part of Federal and State livestock authorities, Dr. J. R. Mohler, chief of the Bureau of



Animal Industry, says that the disease is under control and it should not be long before it is entirely eradicated.

**N**OW for a few bits of Washington news as it affects agriculture. Crop experts say that the composite condition of all growing crops on June 1 was lower than on any corresponding date in more than twelve years. It was all due to the heavy rains in May. With the exception of some fruits and vegetables, no crops were up to the usual average for that time of year. An optimistic note is sounded, however, in the statement that in some years when the spring has been late, yields have been unexpectedly good. So it is too late to make a sure prediction as to the crop outcome.

Interest in pure-bred livestock continues on the increase. Exactly 34 counties in the United States have the distinction of containing 100 or more farms where pure-bred sires of all kinds are used exclusively. Eight of them have more than 200 pure-bred users. County agent E. C. Grigsby of Pulaski county, Virginia, has been embedded in first place so long that there appears little chance of getting him out. Recent reports show that he has enrolled 589 of his farmers in the campaign. He is far ahead of C. W. Wampler, county agent of Rockingham county, Virginia, who stands second with 384 farmers on the list of those using nothing but pure-bred sires. Third place goes to F. S. Prince of Green county, Ohio, with 359 farmers, and fourth to S. C. Brewer, county agent of Union county, Kentucky, with 347.

So much is being said about agricultural depression these days that we have given no attention to the increased efficiency of the farmer. George K. Holmes, expert in the U. S. D. A., is credited with the statement that farm labor

became 18 per cent more effective in crop production from 1910 to 1920. Although the number of farm workers decreased over four per cent in that period, the mass of crop production increased about 13 per cent. More and better farm machinery is largely credited for this remarkable increase in production efficiency, although the fact that farmers have been putting in some mighty long and effective hours should not be lost sight of. Some of these days the farmers will get good returns from his increased efficiency.



## CANOPUS

By Bert Leston Taylor

When quacks with pills political would dope us,  
When politics absorbs the livelong day,  
I like to think about the star Canopus,  
So far, so far away.

Greatest of visioned suns, they say who list 'em;  
To weigh it science always must despair.  
Its shell would hold our whole dinged solar system,  
Nor ever know 'twas there.

When Temporary Chairmen utter speeches,  
And frenzied henchmen howl their battle hymns,  
My thoughts float out across the cosmic reaches  
To where Canopus swims.

When men are calling names and making faces,  
And all the world's a jangle and a jar,  
I meditate on interstellar spaces  
And smoke a mild seegar.

For after one has had about a week of  
The arguments of friends as well as foes,  
A star that has no parallax to speak of  
Conduces to repose.



*"How Can We Grow Winter Wheat Profitably?" That is the question I asked the leading authorities of the big winter wheat states. Their answers will appear in next month's BETTER CROPS. They will include contributions from Director Christie of Indiana, Professor Call of Kansas, Professor Bear of Ohio, Professor Etheridge of Missouri, Professor Kiesselback of Nebraska and Professor Warner of Iowa.*



## Fertilizers in Wisconsin

(From page 31)

the seed potato may injure the tender sprout as it develops, and thus reduce the size of the crop. Wisconsin farmers should hardly ever apply more than 500 pounds of these fertilizers to the acre, especially on the lighter soil. We have had some very injurious effects by heavy applications of fertilizer during dry seasons. Remember also, when fertilizers are applied in this way they should be used in a rotation where alfalfa, clover, or some grain crop has been turned under during the previous year.

These are only general recommendations, and may be changed for individual farms. In fact, every farmer has a somewhat different problem, and should make a careful study of his individual fertilizer requirements.

**W**ISCONSIN farmers should depend very largely on legume crops and feeds purchased to supply the nitrogen requirements of his soil. There are special crops, however, such as, fruit trees, vegetables, and potatoes or beets that may be benefited by additional applications of nitrogen. The common practice in Door County, where fruit is grown extensively, is to use sulfate of ammonia at two to five hundred pounds per acre to supply quickly available plant food for the growing trees. Vegetable crops which grow rapidly may be benefited in the same way, by an application of either nitrate of soda or sulfate of ammonia.

**N**EARLY all soils in Wisconsin respond to phosphorus treatment. There are only two ways of supplying phosphorus, that is, by buying

feeds high in phosphorus, or by means of commercial fertilizers. Feeds are expensive, high priced, and the amount purchased is limited. Therefore, it is absolutely essential that the farmers buy considerable phosphorus fertilizer.

Experiments in Wisconsin have definitely proven that phosphorus fertilizer will give increases varying in amount from 25 to 100%, the average being approximately a 30% increase. Almost all soils without exception will respond to phosphorus treatment. There are a few farmers in this state, however, that are buying bran and oil meal in large quantities, and really supply more phosphorus than is lost through their farming operations. Phosphorus ought to be supplied either in the form of rock phosphate or in the more available forms, such as acid phosphate, or treble super phosphate. If farm conditions and the price of farm crops were such as to enable the Wisconsin farmer to buy phosphates as needed, we would recommend that either five to six hundred pounds of rock phosphate or two to three hundred pounds of acid phosphate be added per acre to all manure applied. This is a standard recommendation, suitable for use on most farms.

**W**E have in Wisconsin about three million acres of marsh soils and about two million acres of sandy soils, which would be benefited by applications of potash fertilizers. We are securing exceptionally large increases in yield on our marsh soils in both central and southern Wisconsin, by the application of two hundred pounds of either muriate or sulfate of potash. Potatoes in some cases have been doubled yields. Corn yields have been in-



creased. If alfalfa is grown on this type of soil, potash is absolutely essential to success. In fact, potash appears to be the limiting factor on these types of soils, and those who have not used potash were often forced to leave the farm.

While it is true that manure supplies potash, yet the amount of potash supplied by manure is smaller than the amount originally taken from the soil by the plants. Therefore, it is absolutely impossible to maintain or increase the potash supply without the use of commercial fertilizer. Alfalfa and clover, particularly, and all other legume crops are heavy feeders on potash, and in order to grow these crops successfully, potash must be supplied. Potato yields on light soils also are benefited by potash.

In order to verify statements regarding the beneficial effect of fertilizers the following data is given. The figures of increases are the results of experiments carried on in various sections of Wisconsin and tend to show in a general way the needs of many soils. We must always bear in mind that one or two results are never conclusive. More valuable information can be secured from data covering a long period of years.

Bulletin No. 341 of the Wisconsin Experiment Station cites eight tests with phosphates with increases valued at \$5.00 produced with fertilizer costing \$1.50 or a return of 300% on the investment. Also eleven other trials, increase valued at \$3.50, cost of fertilizer, \$2.00; or a 75% increase on the investment.

Griffith Richards of the Soils Department, Wisconsin Experiment Station, reports results with acid phosphate as follows on silt loam soils:

Number of trials	Crops	Increase in yield
26	Oats.....	8.6 bushels
12	Barley.....	5.6 bushels
7	Alfalfa.....	873 pounds
7	Clover.....	636 pounds
4	Corn.....	17.8 bushels

The phosphate was applied only once during the rotation, which means that there was a substantial increase on three crops by one fertilizer application.

Experiments on muck soil at Coddington, Wisconsin, in charge of A. R. Albert, with 150 pounds of muriate of potash per acre produced increases as follows:

Number of crops	Crop	Percentage increase
4	Silage Corn....	52%
4	Oats.....	42%
2	Rye.....	90%
1	Hay.....	38%

On fields not fertilized some yields were quite low.

Tests at Sparta, Wisconsin, were conducted over a number of years. Potash in the form of muriate and sulfate of potassium was needed to grow all crops successfully. Results of experiments at Hancock on sandy soils are indicating a similar need for potash.

The upland silt loam soils of Wisconsin do not respond to potash fertilizers at present. Experiments at the Marshfield Station in charge of Prof. Musbach show over a period of years, that every \$6.00 invested in potash fertilizer returned only \$2.45. Potash does not pay on these soils. The lowland dark colored silt loam soils often do produce large increases in yield by the application of potash in some form.

Some sections of Wisconsin grow truck crops extensively. On muck lowland, or sandy soils these truck farmers must use potash in some form. Such crops as tobacco, cabbage, onions, beets, potatoes, celery, and so forth, need a liberal supply of potash. These plants cannot grow without this element of plant food. Large quantities of available potash must be supplied by means of either manure, commercial or home-mixed fertilizers.



# Genuine German Potash Salts

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## ARKANSAS

Little Rock—  
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## CALIFORNIA

Azusa—  
Geo. W. Fuhr  
Covina  
Sun Fertilizer Co.  
Glendora—  
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American Agricultural Chem. Co.  
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Spreckles Bros. Comm. Co.  
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California Fertilizer Works  
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Meyer Wilson & Co.  
Pacific Bone, Coal & Fert. Co.  
Pacific Guano & Fertilizer Co.  
Potash Importing Corporation  
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## CONNECTICUT

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Eustis—  
Gulf Fertilizer Co.  
Fernandina—  
Nitrate Agencies Co.  
Frostproof—  
Gulf Fertilizer Co.  
Jacksonville—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
International Agricultural Corp.  
Nitrate Agencies Co.  
Virginia-Carolina Chemical Co.  
Wilson Toomer Fertilizer Co.

Lake Hamilton—  
Gulf Fertilizer Co.  
Orlando—  
Gulf Fertilizer Co.  
Tampa—  
Gulf Fertilizer Co.  
Terra Ceia—  
Gulf Fertilizer Co.  
Winter Haven—  
Gulf Fertilizer Co.

## GEORGIA

Albany—  
Armour Fertilizer Works  
Swift & Company  
Virginia-Carolina Chemical Co.  
Athens—  
Empire State Chemical Co.  
Georgia Phosphate Co.  
Hodgson Cotton Co.  
Atlanta—  
A. D. Adair & McCarthy Bros.  
Co.  
American Agricultural Chem. Co.  
Armour Fert. Wks. (So. Hdqrs.)  
International Agricultural Corp.  
F. S. Royster Guano Co.  
Swift & Company  
Virginia-Carolina Chemical Co.  
Augusta—  
Southern State Phosphate & Fer-  
tilizer Co.  
Virginia-Carolina Chemical Co.  
Baxley—  
R. L. Lewis Co.  
Columbus—  
International Agricultural Corp.  
Cordele—  
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Savannah Guano Co.  
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Virginia-Carolina Chemical Co.  
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Swift & Company  
Valdosta—  
Georgia Fertilizer & Oil Co.  
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Vidalia Chemical Co.

## ILLINOIS

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Armour Fertilizer Works  
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## INDIANA

Hammond—  
Swift & Company



Indianapolis—  
Rauh & Sons Fertilizer Co.  
Smith Agricultural Co.  
New Albany—  
Calumet Fertilizer Co.  
Read Phosphate Co.

#### KENTUCKY

Louisville—  
Armour Fertilizer Works  
Federal Chemical Co.

#### LOUISIANA

New Orleans—  
Armour Fertilizer Works  
Nitrate Agencies Co.  
Swift & Company  
Shreveport—  
Swift & Company  
Virginia-Carolina Chemical Co.

#### MAINE

Houlton—  
International Agricultural Corp.  
Presque Isle—  
Armour Fertilizer Works

#### MARYLAND

Baltimore—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
Baugh & Sons Co.  
Griffith & Boyd Co.  
Miller Fertilizer Co.  
Nitrate Agencies Co.  
G. Ober & Sons Co.  
Piedmont Mt. Airy Guano Co.  
F. S. Royster Guano Co.  
Swift & Company  
Virginia-Carolina Chemical Co.  
Salisbury—  
W. B. Tilghman Company, Inc.

#### MASSACHUSETTS

Boston—  
American Agricultural Chem. Co.  
The Lowell Fertilizer Co.

#### MICHIGAN

Detroit—  
American Agricultural Chem. Co.

#### MISSISSIPPI

Jackson—  
Virginia-Carolina Chemical Co.  
Meridian—  
Meridian Fertilizer Factory  
Tupelo—  
Tupelo Fertilizer Factory

#### MISSOURI

St. Louis—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
Swift & Company

#### NEW JERSEY

Bound Brook—  
Nitrate Agencies Co.

#### NEW YORK

Buffalo—  
American Agricultural Chem. Co.  
International Agricultural Corp.  
New York—  
American Agricultural Chem. Co.  
Armour Fert. Wks. (East.Hdqs.)

International Agricultural Corp.  
Mutual Fertilizer Co.  
National Aniline & Chemical Co.  
Nitrate Agencies Co.  
Virginia-Carolina Chemical Co.  
Zaldo & Martines Exchange Co.

#### NORTH CAROLINA

Charlotte—  
International Agricultural Corp.  
F. S. Royster Guano Co.  
Swift & Company  
Durham—  
Virginia-Carolina Chemical Co.  
Greensboro—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
Swift & Company  
Henderson—  
American Agricultural Chem. Co.  
Lillington—  
Farmers Cotton Oil Co.  
Harnett Oil & Fertilizer Co.  
New Bern—  
G. Ober & Sons Co.  
Raleigh—  
F. S. Royster Guano Co.  
Tarboro—  
F. S. Royster Guano Co.  
Washington—  
Pamlico Chemical Co.  
Wilmington—  
Acme Manufacturing Co.  
Nitrate Agencies Co.  
Swift & Company  
Virginia-Carolina Chemical Co.  
Wilson—  
Farmers Cotton Oil Co.  
Winston-Salem—  
Virginia-Carolina Chemical Co.

#### OHIO

Cincinnati—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
International Agricultural Corp.  
Virginia-Carolina Chemical Co.  
Cleveland—  
Swift & Company  
Columbus—  
Smith Agricultural Chemical Co.  
Dayton—  
Wuichet Fertilizer Co.  
Sandusky—  
Armour Fertilizer Works  
Toledo—  
F. S. Royster Guano Co.

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Portland—  
Portland Seed Co.

#### PENNSYLVANIA

Philadelphia—  
Baugh & Son  
I. P. Thomas & Son  
Tunnel & Company  
Reading—  
Keystone Bone Fertilizer Co.  
Wadsworth—  
Ohio Match Co.  
York—  
York Chemical Works



## SOUTH CAROLINA

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Anderson Phosphate & Oil Co.  
Charleston—

American Agricultural Chem. Co.  
Etiwan Fertilizer Co.  
Maybank Fertilizer Co.  
Planters Fert. & Phosphate Co.  
Read Phosphate Co.  
Virginia-Carolina Chemical Co.

Chester—  
Swift & Company

Columbia—  
American Agricultural Chem. Co.  
Armour Fertilizer Works  
Darlington Guano Co.  
F. S. Royster Guano Co.  
Swift & Company  
Virginia-Carolina Chemical Co.

Greenwood—  
T. M. Miller Co.

North—  
J. E. Culler Co.

Spartanburg—  
American Agricultural Chem. Co.

## TENNESSEE

Memphis—  
Virginia-Carolina Chemical Co.

Nashville—  
Armour Fertilizer Works  
Read Phosphate Co.  
Virginia-Carolina Chemical Co.

## VIRGINIA

Alexandria—  
American Agricultural Chem. Co.

Danville—  
G. Ober & Sons Co.

Lynchburg—  
Pocahontas Guano Co.

Norfolk—  
American Agricultural Chem. Co.  
Baugh & Sons Co.  
Farmers Guano Co.  
International Agricultural Corp.  
Priddy & Co.  
Robertson Chemical Co.  
F. S. Royster Guano Co.  
Swift & Company  
Virginia-Carolina Chemical Co.

Portsmouth—  
G. Ober & Sons Co.

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C. E. Gallagher Co.  
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Hatfield & Co., Ltd.  
Home Mixed Fertilizers, Ltd.  
St. John—  
Gunns, Ltd.  
Wilson, Patterson & Gifford  
St. Stephen—  
Dominion Fertilizer Co.

Nova Scotia  
Wolfeville—  
T. L. Harvey Co.

Ontario  
Chatham—  
National Fertilizers, Ltd.  
Hamilton—  
National Fertilizers, Ltd.  
Ingersoll—  
National Fertilizers, Ltd.  
Toronto—  
Swift & Company  
Wilson, Patterson & Gifford  
West Toronto—  
Gunns, Ltd.  
National Fertilizers, Ltd.  
Wingham—  
Gunns, Ltd.  
Prince Edward Island  
Montague—  
Poole & Thompson, Ltd.

*If unable to secure the grade of potash you want, write*

Dept. B. C.

**The Potash Importing Corporation  
of America**

81 Fulton Street

New York

Branch Office: 564 Market Street, San Francisco



# Potash Specimens Free

To Experiment Stations, County Agents,  
Agricultural Teachers, Extension Lecturers

In response to numerous requests for specimens of Potash Salts, we have secured a limited quantity which will be distributed free for educational or exhibition purposes as long as the supply lasts.

These specimens consist of the following:

**MINERALS:** 1 bottle, 6 $\frac{1}{4}$  in. high

Kieserit	Rock Salt with Polyhalit
Sylvin	*Hartsalz
*Kainit	*Sylvinit
Rock Salt	*Carnallit
	*3 or 4 colors

**POTASH SALTS:** 5 bottles, 4 $\frac{3}{4}$  in. high

Muriate of Potash	Sulfate of Potash Magnesia
Sulfate of Potash	Kainit
	Manure Salt 20%

Packed in a handy carton they will be sent you postpaid.

## HOW TO GET THESE SPECIMENS

Write to our Soil & Crop Service. Use your official letterhead. State your position and what use you intend to make of these specimens.

There is no charge or obligation for these samples. Send in your request promptly to insure immediate delivery.



**Potash Importing Corporation  
of America**

*Importers of  
Genuine German Potash*

81 FULTON STREET

NEW YORK

*Branch Office:*  
564 Market St., San Francisco



# Potash Pays

(From page 13)

At the Woburn Experimental Farm in England barley has been grown continuously for 46 years. The effect of potash on the production of barley is indicated below:

Plot No.	Treatment	Yield in Bushels in 1922
1	Unmanured.....	14.9
3b.	Nitrate of soda.....	17.3
11a.	Nitrate of soda, sulfate of potash.....	29.1
	Increase due to potash.....	11.8

This increase has been obtained by the use of only 100 pounds per acre per year of potassium sulfate. The addition of 100 pounds of potassium sulfate, having a market value of \$1.70, produced an increased yield of barley of 11.8 bushels. The December 1923 price of barley at Liverpool, England,

was 0.86 per bushel. The expenditure of \$1.70 per acre for potash for barley produced in England brought a return of \$10.15 per acre based on the results obtained at the Woburn Experimental Farm. Potash pays under such conditions for barley production in England.

The Pennsylvania Experiment Station commenced some soil fertility experiments in 1882. Plot one was left unmanured, Plot three received 42 pounds of phosphorus every four years and Plot seven received the same amount of phosphorus and in addition 166 pounds of potassium or the equivalent of 200 pounds, or ten units of potash, having a market value on the New York market at present of \$.68 per unit. The crop yields obtained are recorded below:

## *Use of potash at Pennsylvania Experiment Station.*

Plot No.	Treatment	Yield of Crops as Bushels per Acre.			
		Corn	Oats	Wheat	Hay, lbs.
1	None.....	29.2	27.2	10.1	2020
2	Acid phosphate.....	40.4	34.9	15.1	3180
7	Acid phosphate, Muriate of potash.....	48.4	40.8	17.7	4340
	Increase due to potash.....	8.0	5.9	2.6	1160



*Every other row fertilized with high percentage of potash.*

The farm value of corn, oats, wheat and clover hay in Pennsylvania in December 1922, was as

follows: Corn \$0.72 per bushel; oats, \$0.48 per bushel; wheat, \$1.10 per bushel; hay, \$14.30 per ton.



The value of the increased yields produced on Pennsylvania soils by potash, as indicated by the results obtained from the Pennsylvania Experimental Field, are as follows:

	Value
8 bus. corn at \$0.72=	\$5.76
5.9 bus. oats at .48=	2.83
2.6 bus. wheat at 1.10=	2.86
1160 lbs hay at 14.30 per ton=	8.29
Total value of crops produced by potash from four acres...	\$19.74

The expenditure of \$6.80 for potash for application to four acres of residual Pennsylvania land produced an increase in crop yields of corn, oats, wheat and hay, having a farm value of \$19.74. That is, an average annual expenditure of \$1.70 for potash, based on the latest New York quotation, would bring an increased yield of crops such as corn, oats, wheat and clover hay

based on the latest farm value of these crops in Pennsylvania of \$4.94, or a profit of \$3.24 per acre from the use of potash. A Pennsylvania farmer, owner of an eighty acre farm, can invest \$136.00 for the purchase of potash and get his money back and make a profit of \$259.20 on his investment! Potash pays in Pennsylvania for the production of common farm crops such as corn, oats, wheat and clover hay based upon present farm values and the prevailing price for potash.

There are numerous data reported from the several experimental fields located in southern Illinois showing the marked benefit derived from the use of potash in the production of such crops as wheat and corn. The results from the 'Odin and Ewing Fields are typical.

The fifteen year average for the Odin Field and the seven year yield from the Ewing Field are recorded below:

Treatment	Odin Field		Ewing Field	
	Corn	Wheat	Corn	Wheat
Residues, lime, phosphoric acid .....	30.7	22.3	33.0	13.4
Residues, lime, phosphoric acid, potash .....	48.5	25.6	42.1	20.2
Increased yield due to potash .....	17.8	3.3	9.1	6.8



Two rows on left fertilized with a high percentage of potash. Balance unfertilized.



The farm value of corn and wheat in Illinois in December 1922 were, corn \$0.60 and wheat \$1.07. The potash used was in the form of potassium sulfate at the rate of fifty pounds per acre per year, or approximately one and one-fourth units potash.

The market value of the potash used on two acres is \$1.70 at prevailing prices. The farm value of the increase produced on two acres by the use of potash on the typical gray silt loam of southern Illinois is as follows:

### *Odin Field*

17.8 bushels of corn at \$0.60=	\$10.68
3.3 bushels of corn at 1.07=	3.53
Total value of increase from potash.....	\$14.21

These results indicate that in investment of \$0.85 per acre in potash will give an increased yield of corn and wheat of \$7.10 per acre per year, i.e., a profit of \$6.25. A 160 acre farm in southern Illinois would require an annual investment of \$136.00 in potash and would give an increased crop yield valued at \$1,136.00 or a profit of \$1,000.00.

Similar calculations using the data from the Ewing Field give approximately the same results, the profit obtained based on the Ewing Field being \$878.40 for a 160 acre farm.

The Illinois Experiment Station has also tested out quite thoroughly the effect of potash on peat soil with extremely favorable results as indicated below:

Potash was applied as the sulfate at the rate of 400 pounds or approximately 10 units per acre every three years. During six years the use of 20 units of potash costing approximately \$13.60 has produced an increased yield of corn of 252.5 bushels, having a farm value based on December 1922 prices of \$151.50. On the peaty soils of America potash not only pays but actually means profitable production on such lands compared with no production at all.

Almost since its inception the Rhode Island Experiment Station has been investigating the influence of potash on potato production.

On soils well supplied with lime the following results were obtained:

Treatment	Pounds	Bushels
Nitrate of soda.....	12,354	206
Sulfate of potash.....	15,904	265
Increase due to potash.....	3,550	59

The use of 139 pounds of potash or approximately seven units, having a market value of \$4.76, produced an increased yield of potatoes of 59 bushels having a market value of \$53.10!

The use of potash under existing conditions of prevailing price for potash and the farm value of crops indicate clearly that potash can be used with excellent profit on many soils and for the production of some of our most important farm crops.

Plot No.	Treatment	Yield of Corn as bushels.						
		1902	1903	1904	1905	1906	1907	Total
101	None.....	6.6	14.9	4.8	6.8	6.8	0.3	40.5
104	Lime, phosphorus.....	1.3	4.6	0.4	1.8	1.9	0.2	10.2
108	Lime, phosphorus, potash...	32.0	73.1	42.0	36.3	59.2	19.9	262.7
	Increase due to potash.	30.7	68.5	41.6	34.5	57.3	19.7	252.5



## Picking Dollars Out of the Air

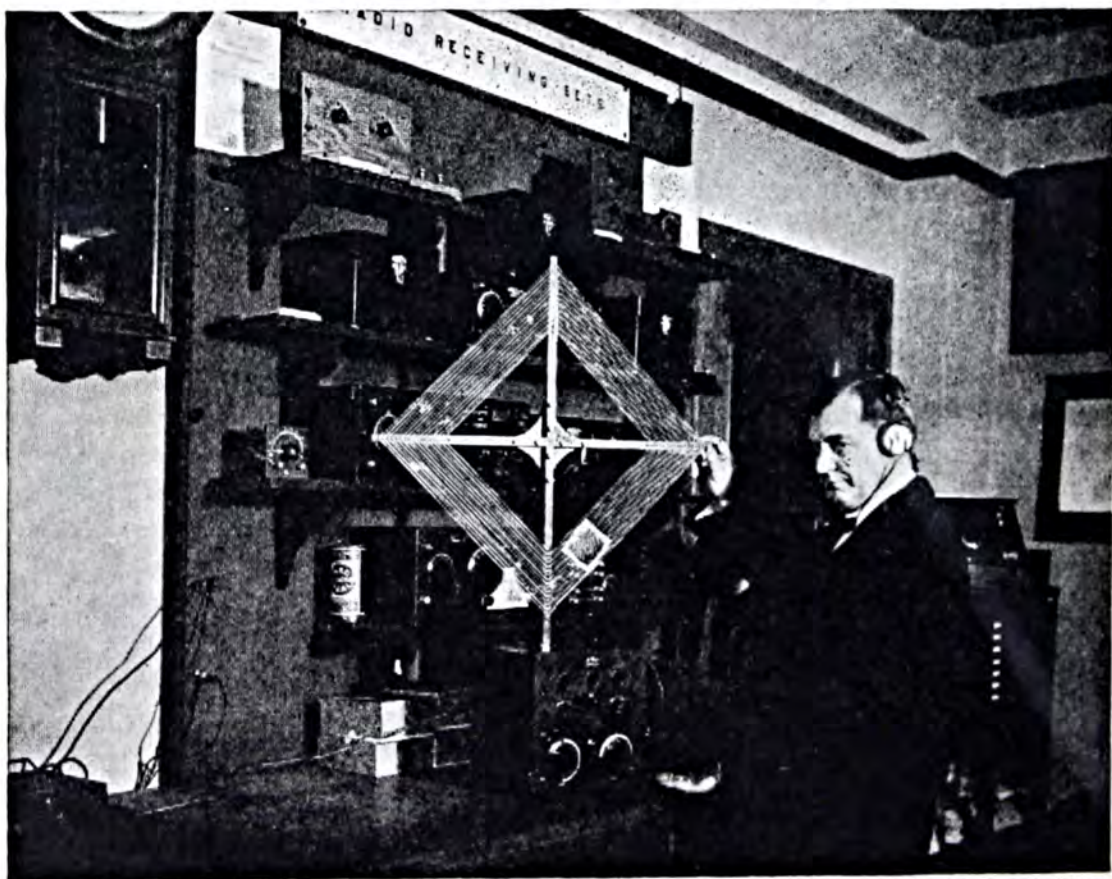
(From page 9)

given proper service on certain information which is vital to his very existence.

**E**ARLY in the days when the practical possibilities of the radio became evident, the U. S. Department of Agriculture inaugurated a comprehensive program which is being expanded as the demand requires. Radio crop and market reports and information are being sent out daily by seven high-powered radio-telegraph stations of the Navy Department and 75 radio-telephone stations owned by colleges, newspapers and commercial concerns. Daily weather forecasts and warnings are sent out by 117 stations daily and are being picked up by farmers, business men, vessels on the high seas and aviators. Over 100 stations receive news notes and special radio talks prepared by Department people.

Here is a typical program arranged by the Department although it varies in different parts of the country: At 9:15 in the morning reports on shipments and market prices of fruits and vegetables are broadcast. At 9:30 the opening reports on prices of cotton and grain, and livestock, butter and eggs are made available and get out on the air. A later reports on shipments and prices of fruits and vegetables is made at 10 o'clock. At 2 o'clock are given the closing prices on the cotton and grain cash markets, the closing on livestock markets, the complete fruit and vegetable market reports and miscellaneous agricultural news and reports.

Much could be said of what radio has done for the farmer in a social way as well. The farmer and his family are home-loving people. Through choice or force of circumstances they spend all day and most



© National Photo

Assistant Secretary of Agriculture Gore always has been an ardent Radio "Fan." He is here shown getting the latest market reports sent out by his department.



# Farmer picks \$375 out of the air!

HE learned *by Radio* that prices for pears in a nearby market were much higher than the local buyer offered. So he sold 1500 bushels at an extra profit of 25 cents per bushel.

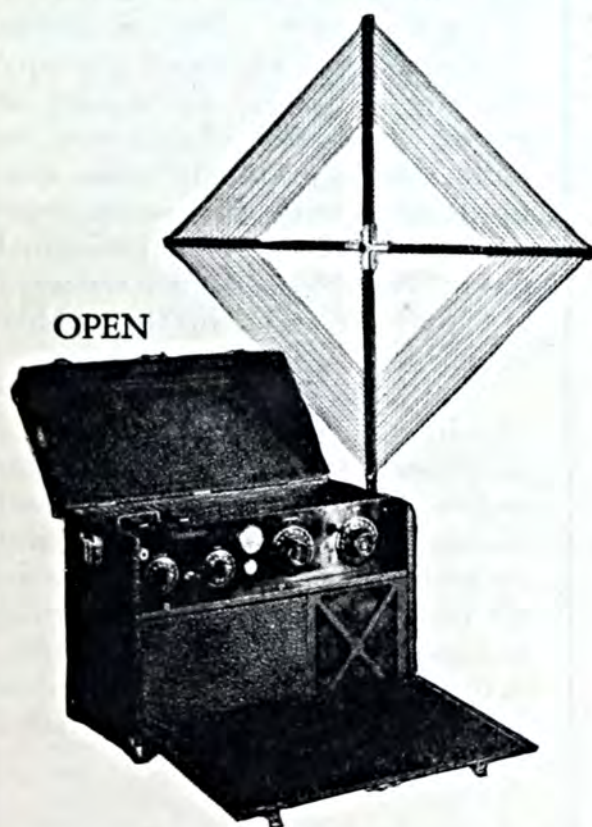
The extra profit on that one deal was twice the price of a good radio receiving set.

Today Radio is more valuable to the farmer than to almost any other business man. And in addition to important market

reports, Radio brings the city's pleasures to the farm—music; sports; news and speeches *as they happen*. Broadcasting programs include items of interest to every member of the household.

The VOCELESTE is ideally suited for farm use. No technical knowledge is required. The VOCELESTE takes no more room than a phonograph in the home, and it can be put into the car and taken on picnics or to the neighbors' houses. The set is complete in itself, requires no outside wires and weighs only 30 pounds.

We will gladly cooperate with farm agents and farmers, desiring information on Radio activities. In writing for information, please mention "Better Crops".



GENERAL AMERICAN  
RADIO MANUFACTURING CORPORATION

LEWIS J. SELZNICK, *President*

*Executive Offices:* 345 MADISON AVENUE • • NEW YORK



## Jeffisms

Burglars get caught because they cannot hold conventions and study the latest methods.



Some wives cannot seem to husband their resources.



A usurer uses your errors to get rich.



"Flee! All is discovered!" wrote a joker to a hundred names selected at random from the 'phone book. Next day the outgoing trains were packed.



Being shrewd is only a means of protection—it adds nothing of value to the community.



How to become a stupid sap: keep thinking of how stupid others are; hunt for the line which separates average intelligence from superior intellect; focus your eyes continually on the other fellows' deficiencies.

Jeff

of the evenings on the farm. In view of their surroundings and environment radio has opened up a vast field of education, instruction and entertainment for them. The possibilities of radio in this connection cannot be determined or ascertained, not even by the greatest stretch of the imagination. It has brought the world to the fireside of the farmer.

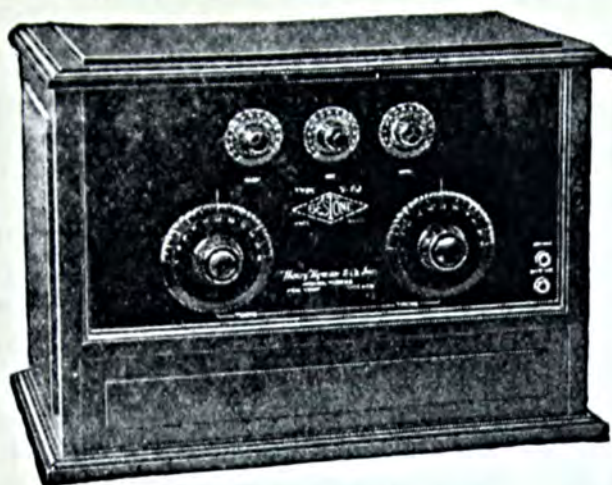
Here is what Secretary of Agriculture says about radio; "I never talk over a radio or listen to a radio talk, but my mind leaps back to the time when I was farming for myself. In years it does not seem so very long, but measured by changes which have taken place, these few years are equivalent to centuries. There were no farm telephones in the region in which I lived. There was no rural mail delivery. When we wanted our mail we had to go to town to get it. The automobile was unthought of, unless perhaps, by some dreamer. There were no improved roads. There was no radio. Social contacts were confined mostly to the small community round about the individual farm. News was passed by word of mouth or came in the weekly newspaper.

"Now all is changed. The farmer who lives on that old farm has the telephone, the radio, the automobile, the daily paper. He and his family can sit in the evening and by making trifling adjustments in the radio can reach up into the air and bring down musical programs, lectures, national and world news from a radius of a thousand miles or more."



*Dr. Thomas C. Atkeson, the Washington Representative of the National Grange, and one of the outstanding national figures in agriculture has prepared an article that will surely interest the readers of BETTER CROPS. Look for "Why the Grange is Different" in the August BETTER CROPS.*





## THE BESTONE V-60 Super-toned RECEIVER

### *Simplicity!!! Efficiency!!!*

The advantages of Radio Broadcasting to the farmer are, of course, immediately apparent—the necessary market quotations—educational features—political news—music and entertainment to relieve the monotony of farm life—yet these advantages can be realized to extreme satisfaction only on a Receiving Set of Quality. The “BESTONE” V-60, expressed by experts to be the most practical receiver on the market, will immediately meet with great favor in agricultural districts.

The “BESTONE” Circuit is selective and unexcelled for tone quality—the reception, regardless of distance, is always an exact reproduction of the Broadcasting, being unimpaired by distortion, squeals, howls, whistles, and is entirely free from body capacity; the circuit is non-regenerative and foreign noises are entirely eliminated.

The volume is tremendous on the more powerful stations and Loudspeaker reception may be had on the first stage or three tubes. The four tubes, however, are required for the more distant stations. During the Summer months, stations within a radius of from 1,000 to 1,500 miles may be had on the Loudspeaker, while during the Winter this distance is increased to 2,500 miles.

The operation is extremely simple—the tuning being limited to two control dials—a novice can select stations at will—and stations are always to be found on the same readings.

The Cabinet is of beautiful finished genuine mahogany with special compartment for “B” Batteries.

*Write for further particulars*

**HENRY HYMAN & CO., Inc.**

476 Broadway,  
NEW YORK  
212 W. Austin Avenue,  
CHICAGO, ILL.

“The ‘Bestone’ Receiver under tests conducted by the Radio Editor has proven superior in tonal quality to any set tested under similar conditions. It was noteworthy that volume was not sacrificed for clarity as is commonly the case.”

New York Telegram-Mail

“Easy to tune and it certainly does work—has the selectivity which is essential where the ether is congested as it is here.”

New York Herald-Tribune.

“The ‘Bestone’ Circuit combines the essentials of the ideal radio Receiver in an economical, practical combination. The outstanding features are its quietness of operation without distortion, its extreme sensitivity, simplicity, faithful reproduction and distance-getting qualities.”

New York World.

*Agents Desired in Rural Districts*



## Have the Farmers Met to Death?

(From page 23)

and you can tell them that stuff as I know they would be interested."

In this particular case it just so happened that the speakers were versed on two phases of peach production. As there was a new peach area developing in the county, one spoke on "Peach Soils" and the other on "Starting the Peach Orchard." Both speakers sensed the local problem and the talks appealed directly but the ones interested in the subject were not there. As an aftermath it may be said that about 20 of the leading citizens of the county spent two hours talking over peach production. These men stated that had the subject been announced there would have been at least 100 interested people to attend the meeting. Another meeting was demanded. These people were interested because there is a cost of \$200 to \$300 per acre to bring peaches into bearing.

Following a full comprehensive statement of the purpose of the meeting it is then essential to give the information as to who will discuss the question and his qualifications for speaking on the subject. Only in a few instances does the speaker carry a sufficient reputation to be accepted as an authority. Even then many people have never heard of him, so it is advisable to publish his title and the institution he represents in the announcement.

Farmers soon sense whether or not a speaker knows his subject. Speakers trained in one branch of agriculture and pinch hitting in a meeting in which another branch of agriculture is the topic under consideration have caused some of the life blood of farmers' meetings to ebb away. It is an injustice to the horticulturist to substitute him for the dairyman, but the greatest injustice is to the farmers. In case of emergency rather than sub-

stitute, postpone the meeting. If there is no authoritative speaker available don't call the meeting.

Circus advertising methods must be followed to a certain degree. This is particularly true when the farmers have lost interest in coming out. The effect of past meetings may have to be overcome. At any rate there must be injected into their stream of thought such facts as will overcome prejudice and will counteract past unfavorable impressions. New interest must be created and a desire to attend the meeting must be established.

Finally if a meeting for a certain purpose is called, restrict the meeting to that purpose; talk on that subject. One can do much to kill the interest by running in speakers to talk on subjects other than those advertised.



## Training Leaders

(From page 27)

man and he would approve of Four H club work as it is founded on a verse in the Bible—Luke 2-52. Look it up and find the four H's.

This state camp is strictly a boys' and girls' institution. It is only a few years old. Each county of the state will build a cottage there and the state has furnished the shops and dining room.

Proper leadership in any movement is always a serious problem. Leaders must be trained for the work they are to do. If we are to eventually offer Four H club work to the boys and girls of the entire nation we must have thousands of local leaders who will be responsible for a group of club members. Last year 700,000 boys and girls took up projects, but there are two million more that have not yet been reached. They are waiting for trained leaders.



# An Agricultural Program

(From page 11)

HERE is a program from County Agent M. H. Feddersen of Oskaloosa, Iowa, that covers a number of important points in a sensible way and also gives specific suggestions:

"We need to become more interested in *our* business. Cost of production must be reduced and I submit the following means to this end—1. Increased yield per acre. This will doubtless include the use of the fertilizer in which the particular soil is lacking. In Iowa it is phosphorus chiefly. 2. Decrease amount of work per acre. This includes improved machinery. Control of soil washouts so that we may have maximum length rows in fields. 3. Cull all kinds of live stock, including cows, sows, hens, so as to eliminate all poor producers and star boarders. 4. Increase length of usefulness of fences, buildings and implements by preservative treatment. 5. Cooperative marketing may be needed, but more efficient production comes first."

I was especially interested in one card that came back from Mr. L. N. Wilson, an agricultural student at the University of Idaho. It would be mighty illuminating if we could find out what these youngsters who will be the farmers of the next generation have in the back of their heads. Mr. Wilson writes:

*"What does Agriculture Need?"*

"1. To forget about legislation. 2. A thorough study by *agricultural* economists. 3. A definite program of marketing surplus products. 4. More and *'Better Livestock.'* 5. More energetic farmers, who will be willing to take 10 or 20 years to reach the top round, rather than *'plunge'* for it in two or three years. 6. More conveniences and comforts about the farm-house and farmstead. 7. Better rural schools and churches."

That sounds to me like a well thought out program.

ONE of the things that interested me most keenly was to see what attitude our readers took towards cooperative marketing. Contrary to my expectation this was not emphasized as much as I had anticipated. To be sure, it is mentioned in the majority of replies but there is a noticeable tendency to regard it simply as *one* means rather than *the* means. As Mr. D. F. Rainey, extension specialist at Michigan Agricultural College expresses it:

"I do not believe that cooperative organizations are going to anywhere near solve the problem at present, as our managers are too inexperienced. It is a help. Neither will legislation do it alone. More than farmers generally realize, I believe, depends on them individually."

I think I am stating it pretty accurately when I say that the general sentiment of our readers is that real, efficient cooperation is a good thing but that it is only part of the program and must be accompanied by other constructive measures to be most effective.

Among the definite suggestions as to how farming could be made more profitable, first place must go to diversification with the idea of making farms self-sustaining first of all and then providing several cash or surplus crops. These replies sum up the general sentiment:

"Stress, *all the time* that the country and the people totally dependent upon *one crop* are the ones calling for help. Then DIVERSIFY. —A. K. Robertson, County Agent, Goldboro, N. C."

"Preach continuously that the farmer first feed himself and his stock as near as possible and raise such surplus crops as best suit his soil, climate and market. Encourage him to work with his neighbor more. Teach him to study cause and effect in all things that affect



him.—*W. M. Hosier, Farmer, Waldo, Ark.*"

"Plan our farms so that we will have something to sell several times in the year. Cultivate only the best land on the farm; sow the other down to a permanent pasture with at least three legumes in it. Raise enough food crops and truck patches to feed your family the entire year, raise enough feed crops to feed the livestock on the farm. Do not buy new machinery every year. Build a tool shed to take care of the high-priced machinery you already have.—*L. C. Pace, County Agent, Bardwell, Ky.*"

"Our great work out here is—1st. Raise forage for man. 2nd. Raise forage for beast. 3rd. Raise forage to sell. If we can not do the first we certainly can not do the others, for if man has not forage, he will not have beasts and without beasts he will not raise much to sell.—*P. J. Gwyther, County Agent, Hellinger, N. D.*"

"Too few farmers are self-sustaining. More of what is consumed on the farm should be produced there. Economic production is and always will be the first essential in successful farming. The farmer cannot adjust freight rates, change marketing conditions, improve credit or secure helpful legislation, except by slow degrees. They are usually blamed for much of the trouble. The farmer can adopt better practices in many things than are in general use.—*A. E. Bowman, Director of Extension, Laramie, Wyo.*"

"Make every farm produce the food and feed for folks and livestock on it and have at least two cash (as surplus) crops. Here in this state the 3 'L's' are to be used 'L'egumes, 'L'ime, and 'L'ivestock, this last to include cow, sow and hen. With these the 3 'ee's' are to be used constantly, weed, feed, breed. Then we can make the soil rich and it will make us rich.—*R. L. Blackwell, County Agent, Calhoun, Ga.*"

### "SELL YOUR SURPLUS

If only a bushel of potatoes or roasting ears, sell them; a dozen bunches of radishes or onions, sell

them; or a half dozen roosters, sell them. Sell everything you can, and put the money in a separate account. Very few farmers use all the produce from their gardens and it is wasted because it would only bring a dollar or less at a time, but in a year it might pay your taxes. Try a 'surplus account.' DOLLARS LIKE MISERY, LOVE COMPANY.—*Frank N. Wallace, State Entomologist, Indianapolis, Ind.*"

II SHOULD have been sorry if in all the preoccupation with the economics of agriculture, our readers had forgotten another scarcely less important phase—what I might call the "social side." I was glad, therefore, to receive a number of suggestions dealing with the need of more sociological work. Several people, in fact, suggested a sociological survey—an interesting idea which needs fuller development. Here are the outstanding suggestions on this phase of the subject.

"1. A campaign designed to increase interest among farmers in their group affairs. 2. The development of a more intelligent and aggressive local leadership—among farmers. 3. Plans which will carry farm organizations into the smaller units such as school districts and develop strong following there.—*Harry L. Keefe, Pres. Neb. Farm Bureau, Walthill.*"

"Better livestock with legumes and pastures. Better provision for winter feed for the livestock raised. Better farm organization based on local community clubs dealing first and foremost with local problems. In order for the farmer to work out his problems and make a success he must do it himself, and a paternal government is bringing ruin on him and the whole country. Regulation of all business is bad for the farmer as it hurts the market by strangling business. The farmer must work his own way out, but not be asked to foot the bill for all this government expense and politics.—*Evan W. Hall, County Agent, Spearfish, S. D.*"



"1. Strong organization: (a) Leaders; (b) Membership; (c) Finance; (d) Local Units. 2. Sound Constructive Program: (a) Backed by Community Leaders of recognized standing; (b) Productive of tangible results; (c) Consciousness of organization back of program and necessary support needed and given.—*George H. Brainard, County Agent, Romulus, N. Y.*"

"Educate the young men of the country as to the possibilities for leadership in rural communities.—*Z. P. Metcalf, Dir. of Instr. School of Agri., N. C.*"

"Provide some means of educating farmers on the principles of farm organization and cooperative marketing. Farmers have too little understanding and faith in their own efforts and too few support their own organizations.—*J. F. Larson, Farm Bureau, Fieldman, Wis.*"

The farmer must organize himself. It is education, not law, which will save him. Ninety-eight per cent of the farmers' troubles can only be overcome by the farmers themselves. Let them quit listening to demagogues and work out their salvation.—*W. L. Stallings, Mgr. Agri. Dept. C. of C., Texas.*"

Right in line with this comes this suggestion from County Agent S. R. Bowell, of Richfield, Utah, which rings the bell with me.

"Agriculture needs a safe and sane program for each community. It needs good practical men with vision to be community leaders. This program should extend over a period of five years or more. When communities solve their problems thus and unite with the county, state and nation to solve the larger problems, agriculture will be safe and sane."

Mr. Boswell incidentally answers several critics who have written in to ask me what this was all about. "Suppose you do get a program," they say, "How will you ever get it put into effect?" Well, friends, I'm enough of a sceptic to think that

any program — no matter who framed it—would be pretty hard to put into execution right away. That wasn't my idea at all.

What I wanted to do was to bring forward the idea of a program, to get people thinking about one. It seems to me that most of us are rushing around furiously trying to make some progress but if we stop and ask ourselves "progress where? towards what?" we find that we haven't any very definite views beyond tomorrow or next month.

So I'm strong on making a plan even if you don't find it practical to follow it all the way through. I have published these contributions and shall publish others in the hope that they may furnish some sort of general guide to our readers.

As a definite example of what I have in mind, I should like to refer to a little booklet sent me by Mr. E. B. Johnston of the Dallas County Farm Bureau, Selma, Ala. This little 12 page booklet is entitled "1924 Agricultural Program for Dallas County." I have seen similar attempts but none that impressed me so much as this. Drawn up and endorsed by the Farm Bureau, it presents a finely rounded, sane program which ought to win the hearty support of every farmer in the county.

The trouble with most programs is that they are so general as to be meaningless, but here is one that talks in terms of local conditions and gets down to brass tacks and concrete suggestions.

I don't know how completely the people of Dallas County will be able to put this program in effect, but I'll wager they go a lot further than the farmers who haven't made any plans.

In concluding I want to thank those who sent in contributions. Some of the most interesting had to be omitted on account of space limitations. Perhaps we can print them in future issues.



## The Cooperative Marketing Situation

(From page 16)

business man nor is he skilled in the arts of competitive business. Once a farmer becomes a member of a cooperative association does not imply that he will always remain one, for when he listens to the arguments of those who aim to disrupt his organization, he too often weakens and sometimes leaves the association. Not until the farmer was convinced that his individual efforts were ineffective, did he realize or appreciate the value of cooperative marketing.

A prominent raisin grower in Fresno personally took me out among the farmers in the vicinity of Fresno and I learned their point of view directly from them, and from two angles—from members of the Raisin Growers' Association as well as from non-members. The members stated emphatically that they were whole-heartedly for the association and admitted that it was their only salvation. Non-members as a whole were not antagonistic toward the organization but spoke well of it and said that they simply did not join because they could obtain as much for their product without being members and did not have to wait for their returns. On the other hand, they frankly stated that the cooperative was instrumental in elevating the general price level of the product to the grower and in increasing consumption, brought about by extensive and efficacious advertising. Independent packers and dealers have never made any attempt to increase the consumption of surplus perishables.

**I**T is not my desire to convey the impression that all western cooperatives have been successful, for I obtained authoritative information to the effect that 75 to 80 per cent of all cooperatives have failed

at one time or other. A goodly number of these, however, were not permanent failures and have been reorganized and are functioning today. Like all new enterprises of this nature the commodity associations experienced many difficulties particularly in their early development. It was practically impossible to obtain directors and managers who had experience in this type of marketing. Furthermore, members were inexperienced in this method of selling their products, and most of them were unfamiliar with the operation, management, purposes and functions of their respective associations. This lack of information on the part of members, along with a lack of immediate financial benefits and with discouragements and insidious propaganda offered from the outside resulted in discontent and contract violations.

Many cooperatives have failed because they have endeavored to handle a great diversity of products produced over an unusually large territory. Such failures prove that the best results are obtained in co-operation when an organization is founded to handle a special crop and when the locality in which it operates is comparatively limited in area. Since each industry has its own individual problems to solve, its special difficulties to overcome and its particular practices and connections with which to deal an indiscriminate organization of growers is generally very unsatisfactory in practical results.

**T**HERE are two general plans of cooperative organizations founded. In the first, the grower joins his local association and the local association is tied to a central selling agency by a contract. An example of this type of organization is the



California Fruit Exchange, where the local has a contract with its growers, the district exchange with its locals, and the central agency with all the district exchanges; the second plan is different in that the grower is tied directly by contract to the central selling agency, the central owns all the packing houses, equipment, etc. An example of this type is the California Prune and Apricot Growers, Inc. From observations made and information gathered the best results are obtained when a large cooperative movement is founded on independent local units which, for greater business efficiency, federate and form an agency through which they handle their common problems. This means that each unit builds a packing house or provides other facilities, employs a manager, installs the necessary equipment—the growers themselves thereby owning and directing their local units. No man takes as much interest or becomes as active in a situation removed from him as he does in his own local, individual affairs. The activities of the central agency will, obviously, embrace all matters too large to be handled by the local units. The strength of a cooperative federation lies in the vitality of its local units.

Several of the associations where capital for the purchase of supplies or for other purposes is required have worked out a plan by which the capital contribution of the stockholders is kept permanently proportionate to their shipments by what is known as a Revolving Fund into which the stockholders agree to pay a specified amount per box (per acre or whatever the unit is) annually, based upon their respective shipments. With the money so contributed an equivalent amount of the oldest issued stock is purchased and transferred to the stockholders making the last contribution. The capital is revolved out every five or more years; depending upon the cycle adopted.

The grower contributes annually on the basis of his previous shipments, and receives a return of capital based on his shipments of five or more years previously. The capital contributed generally pays six per cent interest, but no dividends are paid on the capital except the interest rate.

Some cooperatives, for example, the Sun-Maid Raisin Growers, have adopted the policy of establishing their own sales forces in the markets, while others such as the California Peach and Fig Growers, Inc., use brokers exclusively, although they do not always give exclusive representation to any broker in his particular or surrounding marketing.

THE part played by the extension agent in all cooperative movements in the west has been purely of an educational character. He has not urged farmers to join any particular association, because he feels that it is a responsibility which farmers must take for themselves, since it is their own money and their own crops that are invested. The agent in the west has aroused farmers to the necessity of cooperative marketing of their products and educated them as to the needs of a standardized product put up in merchantable form. Although he is unable to solicit farmers to become members of any particular organization he has, nevertheless, full sympathy with the cooperative movement, and when requested to do so has gladly extended such advice and suggestions as he has had available.



### KEEP RIGHT ON!

Rate reductions up to 51 per cent on fertilizer shipped in less than carload quantities were announced recently by the Western Trunk Line committee, representing twenty-six railroads in the western territory, to be effective at once and to continue until May 1, 1926.



## Putting Over a Poultry Club

(From page 7)

secured from the United States Department of Agriculture to furnish each member with a complete bound set. This particular lesson proved very interesting and all of the members said "they took something very definite home with them." The second lesson was devoted to types of poultry houses suitable for this part of the State. Blue prints of the various types were secured from the Engineering Department of the Agricultural College so each one could have something to study. These kinds of discussions seemed to be putting the work across in good shape. Bulletins and printed information were secured for every lesson. The members were asked to keep the bulletins and other printed matter for permanent use.

The class was so encouraged with their work that they decided at their September meeting to hold a public gathering in the village in October in place of their regular meeting. A combination egg and poultry show, together with a poultry program was decided upon. The officers of the club met with the business men of the village one evening and explained what they intended to do and asked the business men to cooperate. A small purse of money was raised for prizes and the business men agreed to keep their places closed during the afternoon of the program. Entries were not limited to members of the Club, but anyone in the community could exhibit. While every member of the Club, exhibited eggs, poultry, or both, outsiders made a number of entries. A poultry man from the Extension Department did the judging and gave a general poultry talk in the afternoon.

The entire community, including the business men of the village,

turned out to see what was going on. The judging proved very interesting and instructive, as there was plenty of time to explain why birds were placed in the order they were. Words of approval were heard on all sides. Members of the Poultry Club accepted their responsibility willingly and did everything possible to show the community what they had gained by belonging to the club. The president of the club, who had never paid very much attention to poultry, will realize better than \$600.00 for eggs this year. All members think a lot of their egg accounts.

In order to keep the interest up and make the club a go, I knew it was necessary to attend every meeting, the same as taking charge of a class in school. I missed only one meeting. On that date the Club visited several large poultry breeders. The close association of the Agent with the members of the Club at every meeting formed a cordial relationship that could not be established in any other way, on a large scale. In this way they felt free to accept or reject any information brought to them right at the meeting. There was no ridicule after the meeting among themselves or in speaking with others. Every member felt that they could speak with authority on the various topics studied, and many people outside of the club came to them for information on various poultry subjects. This was admitted by members at the meetings. We expect to keep this club active next year, but probably will hold meetings at intervals. More attention will be paid to egg records. Each member will be visited from time to time on the farm and the egg record secured.

Since the organization of this club numerous communities have



requested that poultry clubs be organized for them. While it is impossible for the Agent to set all of his time aside for the conducting of classes it is beyond a doubt the most effective way of putting the information across and having it accepted by large numbers. It is not always necessary that the man of the house be reached with the information. I find that the women and interested boys go home with much more enthusiasm to do the things they learned in the class. It is my aim to increase the number of classes this next year, but not to get so many that they will become too big a burden. Classes will be held in the day time and regular attendance insisted upon. This will increase the efficiency of the County Agent's work and everyone taking the course will become a leader and teacher.

Not all of the men will be able to attend all classes during the busy months, especially if the meeting time is definitely fixed, but meetings during the busy months can be omitted and made up later. To put that across gives the work a high standing. Classes will have to know how much they are expected to do before they start. The large majority starting a project will then stick to the finish and the people will know that the work did not fizzle out. This kind of work commands respect from all.

## A Correction

Through an error on the part of the publisher, the price of *Vegetable Crops*, by H. C. Thompson, published by McGraw Hill Co., was quoted in last month's BETTER CROPS at \$12.50 a copy. The correct price of this book is \$4.50 postpaid.

We also neglected to state that the very fine bibliography on vegetable gardening in which this book was included, was compiled by Mr. H. F. Huber of the New Jersey Agricultural Experiment Station.

# About Ourselves

**B**ETTER CROPS is a monthly magazine edited primarily for those who act in an advisory capacity to the farmer.

**PUBLISHED** by the Better Crops Publishing Corporation, 81 Fulton St., N. Y. C.

**SUBSCRIPTION PRICE** — \$1 per year. Single copies 10c each.

**CHANGE IN ADDRESS** — Readers should always give old as well as new address and allow at least three weeks for the change.

**MANUSCRIPTS** should be brief and preferably typewritten. They will be returned only when proper postage is enclosed. Payment is made on publication.

**THE PUBLICATION** of an article over an author's name, pen name or initials does not necessarily imply that we endorse the opinions expressed therein. We print articles for their interest and merit regardless of whether they accord with our own opinions.

**ADVERTISING RATES** may be secured upon application.

**ADVERTISING — BETTER CROPS** accepts only such advertisements as it has investigated and believes to be thoroughly honest. Readers are requested to say "I saw your ad in BETTER CROPS" when ordering.

**INFORMATION SERVICE** — We are glad to supply all the information obtainable regarding agricultural supplies or equipment to any reader who will address the Editor, stating his problems and furnishing necessary details. Your name will not be disclosed unless you desire it. There is no charge for this service.

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**BETTER CROPS  
PUBLISHING CORP.**

81 Fulton Street      New York

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## Time

(From page 6)

eternity never has twins or triplets.

Providence wisely provides that you may squander one moment if you wish, but never two at a time. You cannot draw the entire sum today and blow it in tomorrow. You cannot leave your unused time to me in your will. You and I can spend an hour together; but we have each spent an hour—you cannot give me an hour, nor can I present you with so much as a single golden second.

Providence does not trust you and me in this most important matter of minutes, and for our own protection wisely interposes this trust fund arrangement between our heritage and our squandering propensities.

All of which is good—and if it were not so, many of us would have no moments left at this moment—and then what would become of us!

OF your hours 210,240 are an Indian gift, presented only to be taken away. These are spent in sleep—and sleep is temporary death. But do not worry about this, nor try to save these hours. It is all right. You cannot help it, and a good day's work begins with a good night's sleep the night before.

402,960 waking hours! Some of yours are gone; most of mine have vanished. Many went in childish play—others were wasted uselessly—how I wish I had them back. How many of yours are left is your job to figure out. What do you take me for!

How to live on the remaining hours, that is our problem, yours and mine. Before the slender thread is snapped, what can we do to make the world better than we found it; what can we do that someone may care to read our biography? We can live fully, laugh loudly, love deeply, work

hard and unceasingly and play as children, wasting not a moment. Or we can pass the moments in useless inanimity, our brains and hearts lying sluggish and dormant like a pound and a quarter of warm beefsteak.

It doesn't seem as if I've helped you much so far, but my job is not to tell you how to save time. I cannot aid you in planning your work. I cannot map out your days for you. You are the sole judge as to whether you are now wasting time. *My job is to make you think.* The best teacher lets the children do all of the work. Thus, and for this reason, there are very few good teachers, and a host of poor pupils—all because teachers do the work and the children sit and giggle.

The time is not wasted that you spend in thinking about time. The moments you invest in careful, thoughtful planning for the moments to come are yet yours—they are the fertilizer applied to future hours and days.

Plan your work and work your plan. Waste no moments. Remember that a second is a thunderous eternity—gone, it is gone; and who can gainsay this?

*Time!*



## Fertilizing Gravensteins

In reply to an inquiry addressed to him on the fertilization of Gravenstein Apples, Luther Burbank has the following to say:

"Poultry fertilizer has a tendency to make foliage and rapid growth in the Gravenstein apple. Potash is the one element which colors the apple or any other fruit. Lime in any form makes the trees more productive. All three of these combinations make a diet which the Gravenstein and practically all other fruits require. Humus is very important in soils that have been long cultivated."



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# OLIVER

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Before plowing use the disc on

the surface, cutting all trash and mixing it with the surface soil. This will eliminate clods and air pockets. Next plow the land, using a combined rolling coulter and jointer, so that all weed seeds and eggs and larvae of insects may be laid on the bottom of the furrow. Then, as a final preparation, use disc and pulverizer in pulverizing and firming the soil.

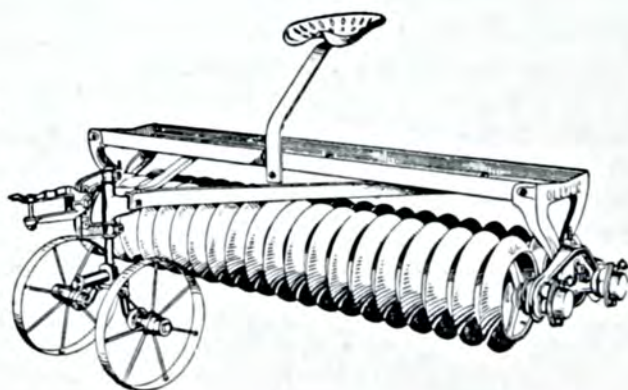
The result will be a seed bed that will be the greatest asset to the farm and to the farmer.

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# Better Crops

The Pocket Book of Agriculture

August 1924

10 Cents.



this issue—Dr. T. C. Atkeson—G. I. Christie—L. E. Call  
Firman E. Bear—W. C. Etheridge—T. A. Kiesselbach





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# Better Crops

## The Pocket Book of Agriculture

VOLUME II

NUMBER SIX

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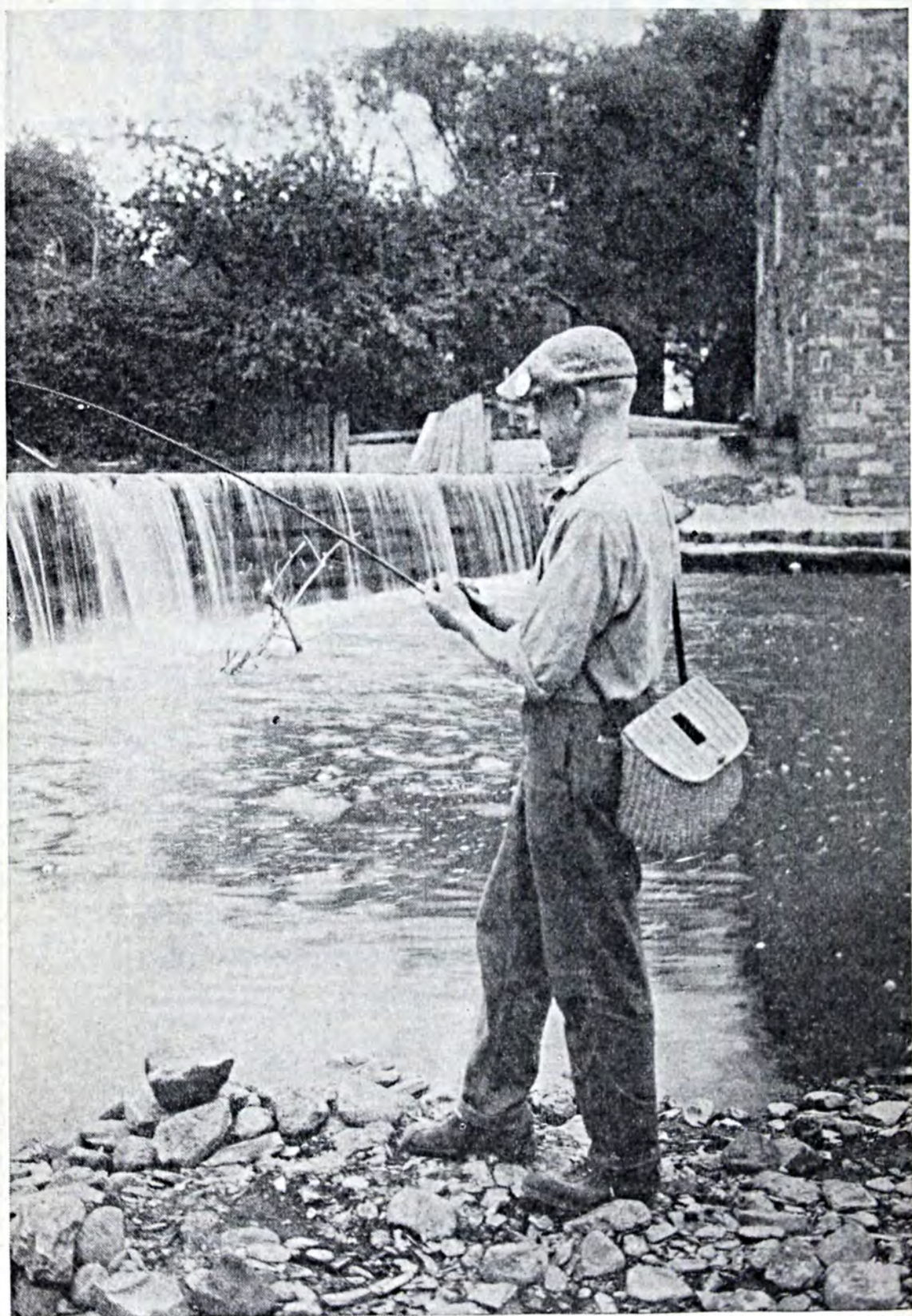
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MANAGING EDITOR	BASIL PILLARD
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VICE-PRESIDENT and TREASURER	H. A. FORBES
BUSINESS MANAGER	MORTON HIDDEN

Editorial Office: 461 Eighth Avenue, New York





*It's the Life!*





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VOL. II

NEW YORK, AUGUST, 1924

No. 6

*In which Jeff mingles some  
old and some new thoughts on*

# SYSTEM

By *Jeff Mc Dermid*

**T**HIS is not an advertisement for A. W. Shaw; for System is not only a magazine; it is a thing. System is the cord upon which we string the beads of events—the thread which leads us through and out of the labyrinth of the day's work and the maze of a life's accomplishment.

System is generally thought of as a plan through which the efforts of many may be concentrated, focussed and directed toward a single purpose. Like the salesman who, kicked down the stairs from the sixth floor of a building, was grabbed by a party on the fifth floor and kindly aided on the seat of the pants to the fourth. At each floor a husky pair of Number Nine-E Regals planted themselves on his weak-end and when he found himself on the street he gasped, "Gee whiz! What a system!"

But individuals need system.

Without it, events shape their own course—and Destiny waits behind a bush to throw cockleburs in our hair. Show me where a man works, or tell me how he works, and I'll tell you who he is and what he will be.

**N**O great thing was ever accomplished without system, for system is only a plan, and the working of the plan. And there is the trouble with most systems: they are



not worked. System in itself is nothing. As a house is not a home, so a system is not success until it is lived with, warmed with the fond breath of human personality, and injected with the arsenic of action.

Many systems are streaks of rust which point to the horizon, but upon which no trains run.

**Y**ESTERDAY I visited the president of a big company.

Proudly he showed me through the plant and back to the office. Here, amidst a marvellous array of sparkling desks, shining file-drawers and slick office machinery he explained "the system." "The girls take each incoming whosis and enter the number on these pink cards. The cards are punched in the upper left hand corner if the dufunny is not hijaculated; but in the right hand corner if it is. Then we draw off the bidiccum numbers and they go on through 'the system' as a followup. Each order has a number. And this order goes to the shipping room and is printed on the outgoing entry—(or the incoming outgo, I forget which.) Then the record clerks by-pass the allotment serial number and it goes to the adding machine."

His eyes shone with pride. Each desk had a polished glass top. Thousands of dollars were in evidence in the form of vari-colored celluloid index cards and tags. Records swung on easels, in drawers, in neatly stacked books. Marvelous!

"And who is that dirty, tousle-headed, old man over there in that dark corner at the littered and battered old roll-top desk," I asked.

"Oh, he? Why he's been with the company forty years. When I want to know anything about an order or the location of a shipment I ask him. He always knows!"

And there you are!

A system must be worked, and worked by a human being with a brain, a keen sense of the value of

time, and the exasperating uselessness of non-essentials.

A system is a combination of a blue print and a schedule—the blue print to tell how and where and the schedule to tell when. But lay the blue print and schedule on an acre of ground and no church will spring miraculously into being. Men must come, and dig, and hew, and sweat and struggle, and cuss, and laugh—and stop occasionally to draw sweet, cool draughts of water from the shiny tin pail.

Or gather your men, and let them dig and hew and sweat with no blue print or schedule to guide them and, though something will eventually take form, you will never recognize it as a cathedral, nor will it be completed in time to be of any use.

So then, a system is valueless without men who will work it, and hew to the line in so doing; and men's labor comes to naught when no system is followed. The combination is the thing.

**T**HINGS lie in this world in the raw state. Our lives are a series of decisions—selections from the mass. We choose this instead of that. All things are a matter of selection. This sentence is merely a selection from the twenty six letters of the alphabet, strung together according to a system we both understand. Without this system my sentence would be a hodge podge, and my thought hidden in a cloud of indecipherable hieroglyphics.

Harmony in music is merely selection from raw sounds, plus system in grouping the notes. The artist with a system, takes color in the mass, and daubs a bit here and there—a cow! or a Mona Lisa, depending upon the skill with which the system is worked.

Our selections should be the result of system.

"Shall I be a banker, butcher, or baker?"

"Shall I stop in on the way down  
(turn to page 62)



# The Unseen Factor

By Earl P. Robinson

County Agent Leader, New Hampshire Agricultural Extension Service

*Your success depends a lot upon the unseen factor in agriculture. Out of a wide experience, Mr. Robinson explains what it is and how it operates.*

THE average man considering the purchase of a farm, centers his attention on the farm itself. Are the fields fertile, well drained, reasonably free from weeds and fairly level? Is the soil adapted to a variety of crops? Are the buildings adequate to his needs, in good repair and pleasing in appearance? Are the fences satisfactory? Is there a sufficient supply of good water? Some men would not overlook the advantage of a woodlot for fuel supply or trees for shade and shelter. Outside of the farm itself, the distance to school, church and market, and the condition of the roads generally receive consideration.

If our home-seeker stops there he has overlooked a matter of as great importance as the farm itself. And that is the spirit of the community in which he expects to make his home. So great a factor is this that it may make or break a man, and in the event of success may rob him of the best fruits of his victory. It is possible for an able leader—a man of vision with deep faith and unflinching courage—to forge ahead in spite of an unfavorable spirit in the community, and he may even change the community to a progressive and helpful attitude, but the average man is engulfed in such a sea of indifference, or discouraged and beaten by the flood of criticism and unsympathetic comment.

Yes, there is a choice of communities as well as of farms. In some you find a spirit of pessimism,—"It can't be done" attitude. Every proposal for improvement is greeted with such remarks as, "They may do these things elsewhere, but you can't do them here," "You can't get anybody to stick here," "No use trying, everything we've undertaken here has gone to the dogs," etc., etc., ad nauseam.

OR another kind of community you find is where an extremely selfish attitude prevails. It is every man for himself and a feeling of distrust toward others. There is little confidence in the teachings of science and often scant courtesy toward those serving in fields of investigation and teaching. In such communities every departure from traditional methods is greeted with ridicule. A man trying a new variety of corn which proves late for the locality will find his neighbors expressing their interest by such remarks as, "Well, John, I reckon you need an extension on the season for that new fangled corn of yours." Or making a trial of alfalfa his enterprise is rewarded, perhaps, by such comments as, "Better see if the county agent can't come over and nurse your alfalfa through the winter; he hasn't

(turn to page 63)





*Filming a county agent demonstration in the field.*

# FILM FARMING

By Frank George

U. S. Department of Agriculture

THE Secretary of Agriculture donned his flowing robes, adjusted his turban, took a final satisfied look in the mirror, and seated himself on the deep-cushioned couch. In an opposite corner several chiefs of bureaus were being "made up" for their part in the Department's latest "all-star-cast" super-film production.

Oh no! this is not an actual scene, yet many of the Department's leading scientists and personnel on occasion have willingly abandoned their bugs and bacteria temporarily to take part in the films that carry the message of better agriculture via the silver sheet. Enthusiasm runs high in the Department over the results of the movie work.

More than 200 agricultural pictures have been made by the Department, and recently a modern

movie studio has been built in Washington, where 24 pictures a year will be produced. The films are intended primarily for the use of extension and field workers of the Department and of officially co-operating institutions, and have been an important factor in the campaigns for the eradication of plant and animal diseases and in encouraging the use of scientific production and marketing methods.

ONE picture, "Behind the Breakfast Plate" has been shown all over the world to a combined audience estimated at more than 250,000,000 people. "Out of the Shadows," the most popular picture that the Department has ever produced, has been shown in every county in the United States. This



is a film on animal tuberculosis eradication as woven into a story of how Mary Benton contracts tuberculosis by drinking the milk of a diseased cow on her father's farm, the destruction of the herd, its replacement by an accredited herd, and of Mary's ultimate recovery.

"Clean Herds—and Hearts," one of the Department's more recent productions, designed to replace "Out of the Shadows," is a conventional four-reeler that puts across the message of tuberculosis eradication in a dramatic story of mother love and local politics. The Mayor seeking re-election is persuaded by his daughter to extend the mortgages he holds on neighboring farms to enable the farmers to replace their herds with accredited tuberculosis free animals, and the election is won.

**L**ITTLE was known ten years ago of motion picture technique and plot construction in effectively presenting agricultural subjects, but as the Department's motion picture staff gained experience the pictures got out of the flicker-film class and

the subjects were handled with a finesse that competes favorably with the commercial film product. The pictures are continually used on the large city theatre circuits as well as in rural communities, and are doing much to induce in city people a real appreciation of agricultural problems.

The new studio of the Department employs every modern device in picture-making,—speed cameras for taking slow-motion pictures, cameras for microscopic work, rapid-developer tanks, drying drums, print racks and the like. A staff of stage carpenters can build on short notice any setting from a farm-house interior to an entire village. The scenes are "shot," negatives developed, prints made, titles inserted,—all in incredibly short time. The Agricultural Hollywood of America, the studio has been called.

It has been learned that to gain the attention of a wide audience the educational pictures must be presented in story form. Thus the message of proper wool handling and cooperative selling is brought out in a picture entitled "The Golden Fleece" in which Jason, a

*(turn to page 58)*



A studio scene in a cranberry story. The gentleman with obvious designs on the turkey is Dr. Homer L. Shantz in charge of Plant Physiological and Fermentation Investigations.



# How Can We Raise WINTER

By *Firman E. Bear, L. E. Call, G. I. Christie,  
W. C. Etheridge, T. A. Kiesselbach, H. W. Warner  
and H. E. Young*

THIS is the question that is uppermost in the mind of every wheat grower. A great many of our readers are pondering over it. I thought you would be interested in hearing what the leading authorities in the big winter wheat states had to say on this subject so I asked several of them to answer this question. Here are seven short and snappy articles that are well worth your perusal.

It should be borne in mind that in most instances the writer was thinking primarily of conditions in his own state but in each contribution you will find some valuable advice, whatever your section of the country.

*Jeff*

*L. E. Call*

Agronomist  
Kansas Experiment Station

THERE are two ways by which the returns from wheat production may be increased. First, by producing wheat of better quality and, second, by increasing the acre yield of the crop by means of well planned rotations, timely tillage and judicious fertilization. Fortunately, those practices that increase yields usually produce grain of better quality.

Under present international conditions, wheat will remain an unprofitable crop in this country as long as we continue to produce a

surplus of grain of poor quality. The American people demand white, light, fluffy bread. The baker, in order to satisfy this demand, must have flour of high gluten content that makes a strong dough that will stand hard, rapid working in power mixers. The miller, in order to produce flour of this character, must have wheat of high protein content. The American miller will pay a premium for such high quality wheat, but will not use low grade wheat at any reasonable price. This low grade grain, rejected by our millers, makes up a large part of our wheat exports. One hope, therefore, of a better price for wheat lies in our ability to produce grain of better quality.



# WHEAT

## *Profitably?*

The premium that has been offered in the past for wheat of good quality as compared with less desirable grain is well shown by comparative prices for No. 2 hard wheat at the Kansas City, Missouri, market during the past thirty-one years. In this period the average top price of choice dark hard wheat has been \$1.15 a bushel while the average low price for the best yellow hard wheat of the same grade has been \$1.00 a bushel.

THE future looks especially bright for those farmers in sub-humid and semi-arid sections of the United States where dark hard wheat of high protein content can be produced, providing they will adopt the methods and take the care necessary to produce grain of this quality. The urgent demand for such wheat at this time is well shown by the fact that an import duty of thirty cents a bushel was paid on fourteen million bushels of high quality Canadian wheat imported into this country between July 1st, 1923 and June 1st, 1924. Small quantities have continued to come in since the import duty was raised to forty-two cents a bushel. Better quality grain points the way to greater profit in wheat production.

Grain of good quality cannot be

produced economically where wheat is grown year after year upon the same land, where late plowing or poor tillage methods are practiced, or where such a large acreage of wheat is grown that the crop cannot be harvested promptly, stacked, or threshed under favorable conditions, and stored in such a way as to prevent damage from moisture and insects.

There is often a definite relation between good quality and low yield because those climatic conditions which favor high yield tend to reduce the protein content. Fortunately, however, those methods of culture necessary to produce a high yield per acre in most of the wheat belt also tend to produce grain with high protein content and excellent quality.

At the Kansas State Agricultural College, a good rotation of crops including alfalfa, not only greatly increased the yield, but also increased the protein content of the wheat from fourteen to eighteen per cent. At the same institution, the best early methods of preparing ground for wheat increased the yield ten bushels an acre and the protein content of the grain by two and three tenths per cent, when compared with the poor methods of soil preparation often used in wheat production. Increases in yield and improvement in quality



brought about in this way are produced at very small expense and are the surest means of making wheat growing profitable.



## G. I. Christie

Director  
Indiana Experiment Station

**R**EDUCED cost of production and an increased price will make winter wheat production profitable. There must be a reasonable margin between the cost of production and the price received by the farmer. There must be an improvement over present conditions.

The price of wheat is dependent upon many factors beyond the control of the individual farmer. It is hoped that through a better marketing system and a better balance between supply and demand, a reasonable and fair price for wheat may be secured.

Many factors which influence the cost of production of wheat are within the control of the farmer. He must assume the responsibility for these, and should make every effort to secure a crop of wheat at the lowest possible cost.

Farmers should grow the variety of wheat demanded by the market. Too many unsatisfactory varieties of wheat are now grown and bring a low price. In Indiana, Illinois, Ohio and other similar territory, there are several hundred local flour mills. Many of these mills are now demanding a hard wheat, rich in gluten, which will make a flour satisfactory for bread.

**I**N Indiana the Michikoff wheat has been developed, and millers are paying a premium of ten to twenty-five cents per bushel for this variety. This is a hard winter wheat, and yields a flour which is used in a satisfactory way by bakers in the making of bread. In other sections the soft winter wheat varieties, such as Rudy, Michigan Amber, Farmer's Friend, Harvest King, Fultz and Poole, are demanded for a special trade. The needs of the local market should be considered and met.

Fertilizers can be used with profit. Results from six experimental fields in Indiana covering five to eighteen years, show an increased yield of 7.3 bushels of wheat per acre where complete fertilizer was used. These



*This photograph and the one on the next page were taken on the farm of Ed. Hushaw, Rossville, Vermillion County, Illinois. They illustrate what can be done by efficient management of the soil.*



fields received an application of 200 to 300 pounds per acre of a 2-8-4 fertilizer.

Good farming demands that rotations including legumes be followed in the regular way and that the manure of the farm should be conserved, together with all crop residues and returned to the land, in order that the organic matter supply of the soils may be maintained and increased. The legume crops will also supply the bulk of the nitrogen.

The practice of top dressing wheat with manure or straw during the winter is to be recommended. In this way not only will plant food be added, but the amount of winter killing will be materially lessened and much will be done to aid in securing a stand of clover.

Late seeding of wheat should be continued in Hessian Fly territory. Fly free dates are announced each year by the State Agricultural Experiment Station. Farmers should follow these as closely as possible and prevent a heavy loss.

While the yields have not been extremely high one year with another, winter wheat furnishes a cash return which has been of great

assistance to farmers. In very few cases do farmers experience a complete failure.

The winter wheat crop in Indiana distributes the farm labor load. It is possible to prepare the ground and seed this crop in the fall when there is spare time, and when the horses and machinery can be used to advantage. If this land should be left until spring, when the rush of labor comes in connection with the corn crop, the cost of handling the farm is materially increased.



## W. C. Etheridge

Professor of Field Crops  
Missouri Experiment Station

THE average yield of wheat in Missouri is about 15 bushels per acre, but some good farmers make 30 bushels on land no better than the average, at small additional cost. They do it by combining the good methods of wheat farming. These methods are as simple to state as the first five letters of the alphabet:—

- (a) good preparation of the land
- (b) use of the right variety

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The wheat in this field, grown with fertilizer, ran twice as high in yield and far ahead in quality as compared with the wheat at the left without fertilizer. And that meant a more valuable crop with a lower cost of production.



## Jeffisms

Power lies in having  
done the thing before.



Relatives are people  
who come to visit you  
when it gets too hot to  
cook at home.



Are you famous? Try  
to cash your fame at a  
bank!



If you know you are  
right, you can afford to  
wait.



A magician is a farmer  
who made money last  
year.



The only men you  
hate are those you do  
not know.



Through belief, grief  
finds relief.



You can spend but  
one moment at a time,  
never two — Eternity  
never has twins.

Jeff

## MORE SPRAYING

By H. A. Cardinell

Extension Specialist  
Michigan Agricultural College

THE circulation of BETTER CROPS undoubtedly brings information to more persons interested, either directly or indirectly, in the fruit industry than any magazine devoted entirely to the fruit business. Such a publication is therefore the logical place for an article of broad and fundamental aspects of the fruit game.

The May issue contained a real article by F. J. Schneiderhan of vital interest to fruit growers of every region.

The writer has completed records on unpublished data gathered from a spraying demonstration that fits right on to the above mentioned article.

This test was made in a part of a 300 acre orchard in Benzie County, Michigan, owned by Joseph Smeltzer & Sons.

It was conducted throughout the season of 1923 to determine, (1) effectiveness of control under three different pressures; 190 lbs., 250 lbs. and 350 lbs. using the same number of gallons per tree throughout the season and for all pressures.

FRUIT growers in the U. S. A. are familiar with the experiments conducted by Leroy Childs of the Hood River, Oregon Branch Station which shows consistently that under all pressures used, the percentage of control of disease and insects fell off in the top parts of the tree. The Michigan trials showed the same condition.

In addition we found a marked difference in control in all parts of  
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# An Orange Grove that Came Back

By S. G. Rossiter

Redlands, California

*When everyone else gave up hope, this man stuck and found the way to success.*

**I**N the early planting of orange groves in Southern California, there was very little attention paid to the type of soil best adapted to orange culture.

All the soils were virgin and had plenty of plant food available to take care of the tree's needs for the first seven or eight years. But, as abundant crops were harvested, some of each necessary element was used up or leached out by excessive irrigation so that with some soils certain of these elements were entirely lost. Hence for the tree to keep its health and production it has been found necessary to apply fertilizer.

Many groves have decreased from a yearly production of five to six boxes per tree to one to two boxes.

In our large manufacturing plants the unit cost of production is decreased by giving particular attention to the quality of each article and increasing the quantity. This, too, seems to be the correct solution as to orange culture or any other agricultural production.

**H**IGH quality fruit or vegetables are the only portion of production that are bringing the farmer of today returns that justify the effort. Growing a larger percent-

age of first quality fruit and larger crops, he will reduce the cost of production per box or pound and realize a larger return per acre.

It has been observed by the Experiment Stations that to supply plots with nitrogen alone in the quantity of three pounds of actual nitrogen per tree reduced the cost of production lower than the use of all the three necessary elements, producing larger yield—not considering quality. These plots have all been run on practically young orchards planted in virgin soil, which accounts for the above findings. But when this plan is used on matured groves, such results are not obtained. The tree becomes sickly because of unbalanced feed. Hence production and quality decrease very heavily and discoloring of the foliage, called mottle leaf, is one result.

Also, owing to the soils throughout our districts not being of the same type, one fertilizer program cannot be used for all conditions. There are students of plant nutrition who have developed to their satisfaction the fact that they must apply all of the three food elements according to the particular conditions of growth and soil. The findings also indicate that there is a proper time for feeding the trees.



By analyzing the soil, we are not able to determine the actual availability of what is locked up. Therefore, from actual experience, it has been found that to apply different fertilizer materials in different combinations and proportions on experimental plots, is the only logical way to determine just what element is needed.

THERE are many growers today wondering what to do next—their quality and quantity are below the average. Their returns have diminished considerably, but their costs mount higher every year, resulting in many of the groves being fertilized on a basis of "what is the cheapest" instead of "necessary" to maintain quality and production.

From this there is only one deduction, and that is that there must be more serious thought given to fertilization by each grower to fit his individual needs.

*To apply more of one of the necessary elements than is needed, is a waste and to apply not enough is a loss.*

The following narrative of my experience on a 20-acre orange grove, is self explanatory as to the necessity of serious study of materials, their individual actions in relation to time of application of results desired, availability of each as to when needed, quantity as to whether a waste or loss.

In October, 1919, the grove was at its peak of production and value, a very fine crop had been harvested and nice returns realized, which

made the owner jubilant. Hence he wished to do more for the grove the next year and keep its condition the same. He ordered  $1\frac{1}{4}$  tons per acre of bone tankage analyzing 6 per cent nitrogen, 15 per cent phosphoric acid finely ground and first class mechanical condition. In view of the fact that the soil was of the sandy loam type, the caretaker begged him not to apply this material at that particular time, but to wait until January. His reason was that, if the month of December turned off warm, this material would

start action and produce a very heavy growth. If a cold spell should come the first part of January, the trees would be damaged to such an extent it would take at least three years to bring them back. This very thing happened. The grove went without fertilizer for nine months becoming one of the worst looking pieces of property in that district. Eighty to ninety Sweet trees were ordered taken out entirely. The owner debated and inquired of many as to what plant food to adopt to bring the grove back. Finding so many different



The 'author of this article beside the 12 year old Valencia trees that came back under the treatment he describes.

views and opinions—no two alike—he decided to let the caretaker work out the difficulty the best way he saw fit.

Nothing but a practical common sense rule was used in accomplishing the following results. There are three regular growths of the citrus tree which appear every year without fail—March, May, July. These growths come regularly each year. By applying fertilizer materials that

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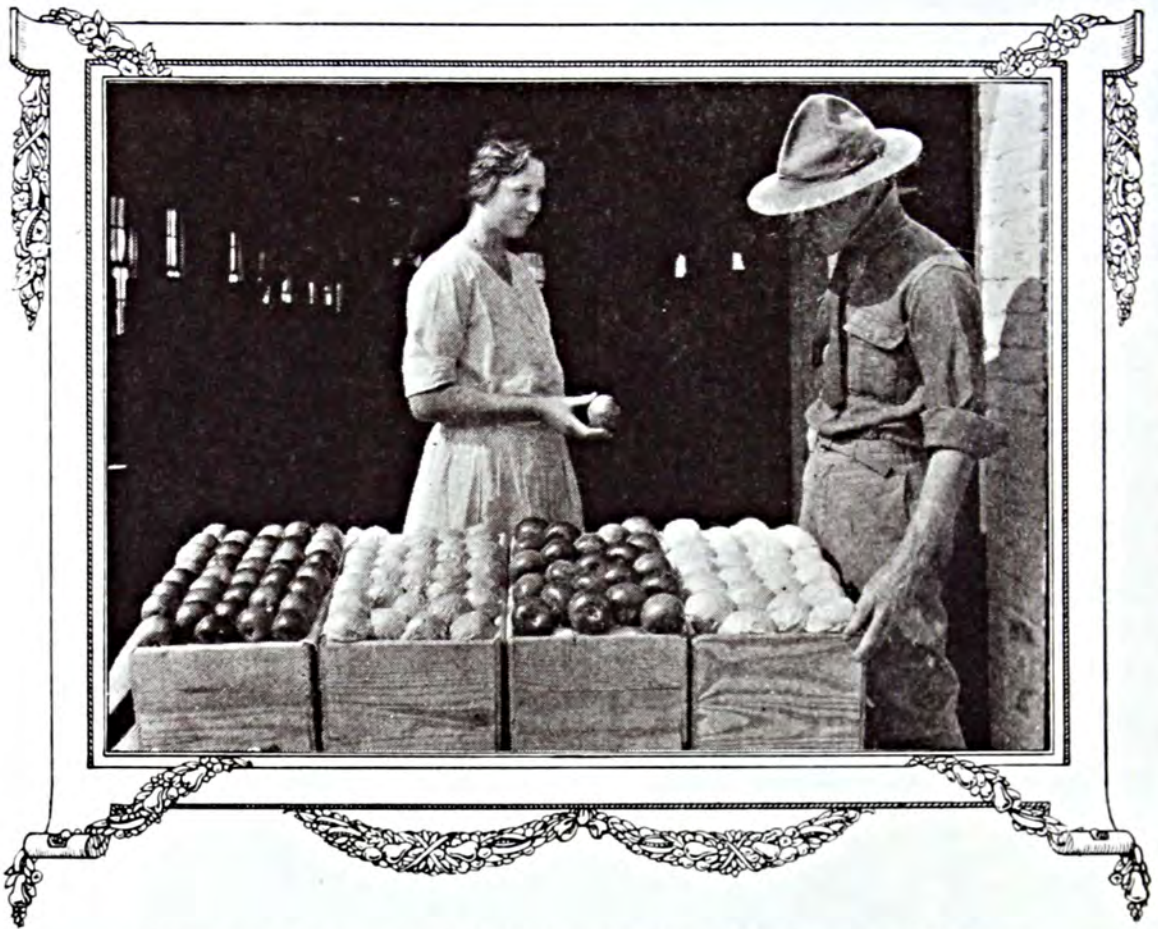


# *Better Crops'* ART GALLERY *of the month*



At the head of one of the most progressive agricultural stations in the country. Dr. H. L. Russell, Dean of the College of Agriculture and Director of the Experiment Station and Extension Service at the University of Wisconsin. A distinguished authority, an able executive, and a well-loved leader.





This attractive young lady is showing how the farmers of Habersham County, Georgia, are packing their apples well and so making more money.



A South Carolina County Agent demonstrating Ming Beans, a variety developed satisfactorily as a soil food in the South.

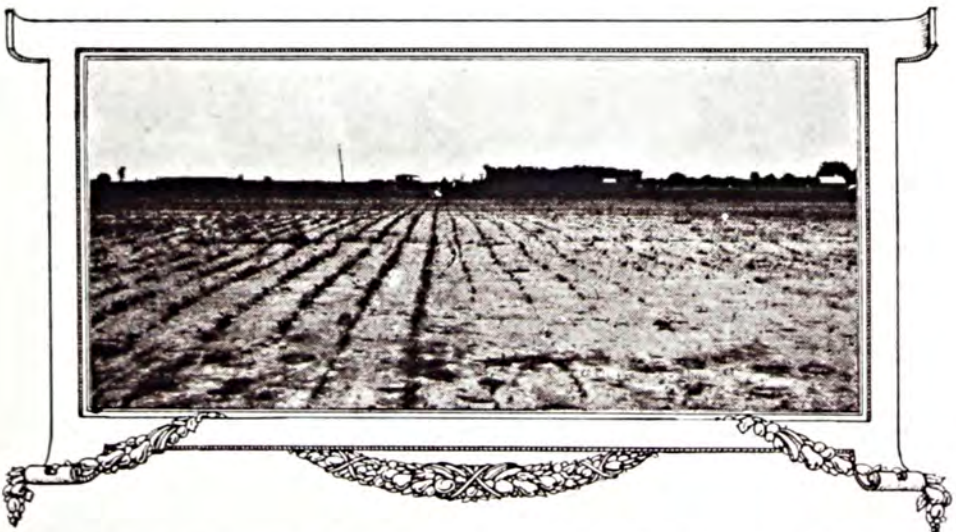




Purdue's Champion, a seven year old White Leghorn Hen, who in the past seven years has laid 1,243 eggs, the long distance record. She belongs to the flock at Purdue University, Lafayette, Ind.

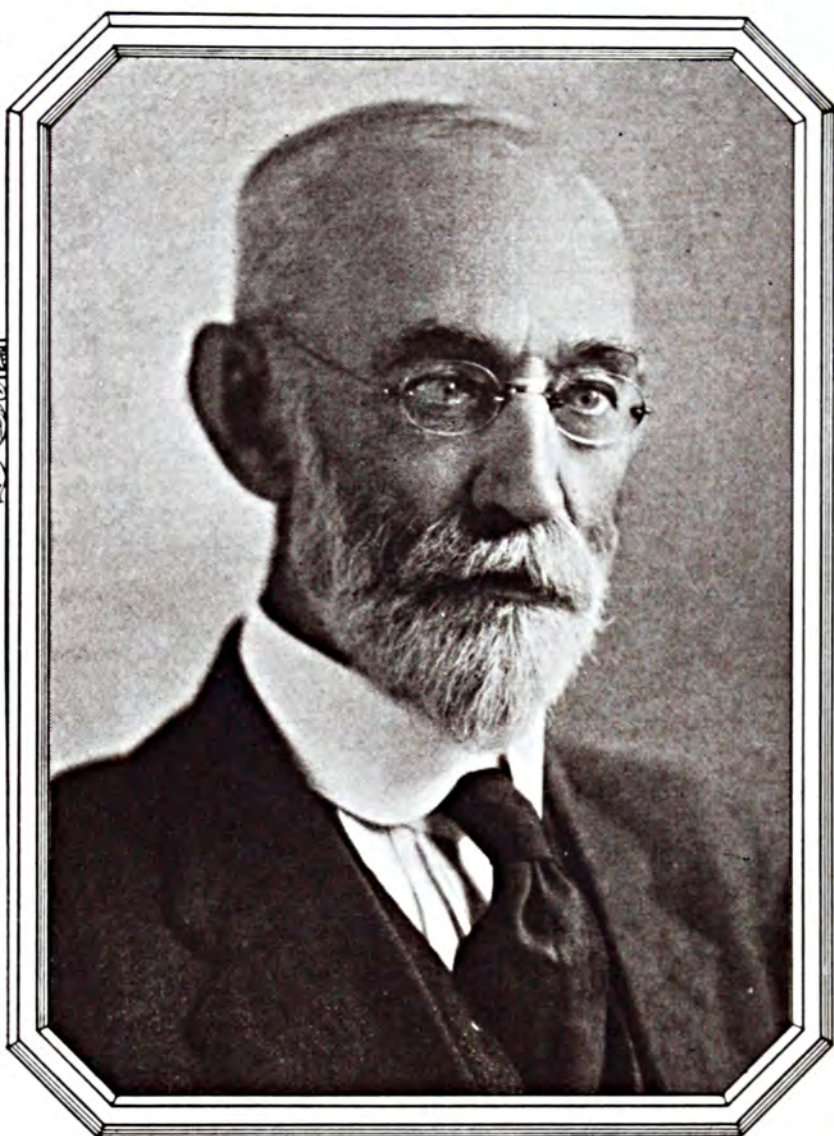


Dr. C. W. Larson appointed chief of the recently established Bureau of Dairying, U.S.D.A. A native of Iowa, he is also a graduate of the Iowa State College of Agriculture and has been interested in dairying for the past 20 years.



County Agent, L. M. Busche, sends us this photo of the 10 acre sugar beet field of Wm. Mitchell of Monroe, Ind. Four hundred acres were fertilized with 200 lbs. of 2-12-6 with excellent results. The rest was unfertilized and the stand so poor they were torn up.





© Harris & Ewing

For years Dr. Thomas C. Atkeson has represented The National Grange at Washington, D. C. His services to the progress of American agriculture have won him nation-wide respect and affection.



# Why the GRANGE is *Different*

By Dr. T. C. Atkeson

Washington Representative of the National Grange

*“Somehow it’s more difficult to make farmers’ organizations succeed than any other type. Yet the Grange has been growing steadily since its foundation in 1867. In this article Dr. Atkeson explains some of the principles on which its success is based. He has modestly omitted one important reason why the Grange is different: its ability to enlist men such as himself in its work.”*

**I** HAVE been asked to tell the readers of BETTER CROPS the characteristics of the National Grange which distinguish it from other farm organizations. It is a subject for a much more extended article than the limits of this publication, which features brevity and condensation, will permit. I hope I may, however, be able to say some things on the subject, which will lead those who may thereby have their interests awakened to pursue the subject further. I can now, after more than forty years of membership and experience in the Grange, and a careful study of all its history, see no reason why every farming community in the United States should not have a flourishing thriving Grange whose members and supporters would be the ones most profited thereby, and whose influence should be a radiant source of inspiration, for community and agricultural improvement benefiting every person within the radius of its influence.

This is the ideal toward which the National Grange is striving. There is neither pride of leadership, jealousy of prestige, selfishness of purpose, nor commercialism in any form at any point in its program. That is the first point in which it differs.

**T**HE Grange is a fraternity and not a business organization.

Builded and building for better men and women on the farm—and better children, and better conditions for all that surrounds childhood—the Grange believes that this will solve an important part of the economic problem of agriculture.

The Grange is an organization into which to put time, money and effort for the intangible benefits which come in double measure out



of the Grange and its influence. There is the benefit which comes from the very experience of co-operating with one's neighbors and participating with them in effort, the benefit of which is not purely selfish and personal. And then, when a Grange—representing the very best there is in a community—actually does do things, there are the very definite results, in profit if the effort is in business; in better school, or church, or roads, if it is that kind of an effort; or in social improvement, if that is the work which is undertaken.

I am stressing these aspects of The Grange first, because in this era of stress upon the purely material, instead of the individual or the community, upon profits in dollars instead of investment in character, training, leadership or knowledge, this is the most distinguishing characteristic of this old, tried, tested, successful, steadily growing and steadily progressing organization of farmers.

You reader out in the heart of the Corn Belt, where unfortunately for all of us there are not many Granges now in existence, will probably find it somewhat difficult to see just why your farmers' meeting should open with a deliberate and somewhat formal ceremony, with the flag of the Republic in place of honor behind the presiding officer, the open Bible on the altar, and a prayer of praise, and hope and appreciation for the great gifts of nature and abundance of God's bounty to the tillers of the soil, and a hymn of thanksgiving or a song of farm life, before the business of the meeting is begun. The Grange does this, and no meeting may be legally opened for business without thus turning aside from the commonplace of business and buying and bartering, to bring its members into common accord, and common regard for other, and perhaps into higher and more ennobling thoughts for a brief season.

This is certainly another reason the Grange is different. That it is worth while is attested by the fact that eight thousand and more subordinates and county granges, averaging more than a hundred farmers in each Grange, loyally carry on the work of the order this way. In these Granges where the fraternalism, and the esoteric work, thus briefly outlined, is best carried out, and where at every meeting this touch of ritualism, this raising of the mind and conscience of the members for a few moments out of sordid dealing with the material things into the realm of brotherhood and higher thinking to a real sense of the dignity of labor, the dependence of all others on agriculture, and the high character of our calling—it is in those communities the Grange flourishes most, and is most helpful in every way.

THE most successful working Granges are perfect examples of one of the most quoted rules by which individuals achieve success, to "do with the might what the hands find to do, to seize the first task nearest at hand and do it better than it was ever done before." The history of the hundred most successful Granges in the United States will be found to be records in which community achievement will rank largest, cleaning up the community, providing a place for socials and entertainments, providing for the boys and girls, aiding the schools and churches, looking after the community ne'er-do-well, providing scholarships for deserving young people, and item after item of this character. Is it strange that there is no word of farming, of agriculture, of marketing, of cooperation in this list of achievements? If you propound this question to the members of the Grange, they will look at you with surprise, and tell you, "Why we do farming and marketing all

*(turn to page 60)*



# The Wise Guy Family

By Dr. Frank Crane

I HAVE met members of the Wise Guy family all of my life. One of the boys used to sit next to me at school. He knew how to win at tit-tat-toe. He knew how the ball team ought to be run, and how the teacher ought to conduct the class. He knew the best kind of marbles and how much they were worth, also just how to pack a basket for a picnic. He was apt at telling the rest of us just where we were wrong, yet he was never wrong himself. ¶ Since those days I have seen members of the family in every corner of the world. At least one member of the Wise Guy tribe belongs to every club, every lodge and every Church. The Wise Guy is acquainted with all those people that the rest of us regard with awe from afar off. He knows that waiter in the restaurant to whom the rest of us would not dare speak, smiles at him and calls him Charlie. He knows how to row a boat and run a farm, how the barber ought to cut your hair, how the general ought to conduct the army, and how the woodman ought to chop a tree. ¶ At our boarding house he usually ends all discussion, for there is nothing that ever comes up for debate concerning which he does not know the ultimate facts. If you say there are three billion and ninety-six fishes in the ocean, he will give that superior smile and dry little laugh that show that he is very sorry for you, and generously inform you that any school boy knows that the correct number is four billion and twenty-seven. He knows why Germany went to war, and if people would only ask him he could easily tell them her ability to pay reparations. You may think you know why France occupied the Ruhr. You don't. He knows, he and Poincare and a few others. He knows the sinister motive behind every move that Great Britain makes, also the sly designs of the Japanese. ¶ You may think that Prohibition was voted by the people of the United States. Ha, ha. He can tell you the name of the man that supplied the money that did the whole business. He knows how to keep your hair from falling out and how to reduce your flesh. He knows why Hylan was elected, and what Hearst has up his sleeve. You may think you know why Lloyd George was finally defeated, but you do not. Mr. Wise Guy knows. ¶ He knows which way the market is going to turn and just what kind of collar and necktie you ought to wear. He knows the secret motives behind the labor unions, and can tell you exactly what the Standard Oil and the United States Steel Corporation are up to. He understands every subject in the world, with the possible exception of modesty. ¶ And the charming thing about him is that he not only knows everything, but he is perfectly willing to tell you.



# How Potash Pays in Alabama

By F. E. Boyd

Alabama Extension Service

*(This is one of the essays submitted in the contest recently conducted by the Potash Importing Corporation of America. It was warmly praised by the judges and we are glad to print it in BETTER CROPS for it tells a clear and convincing story.)*

**T**O establish the fact that "Potash Pays," it is absolutely necessary that a large number of well planned experiments, and demonstrations be conducted throughout a long period of time, on various types of soil and with several different crops.

In determining the true worth of potash as plant food it should be used alone, with nitrogen, with phosphorus and in a complete fertilizer. It should be used at different rates per acre and with varying amounts of nitrogen and phosphorus. In the cotton belt its value before and since the appearance of the boll weevil should be determined. During the period from 1911 to 1923, all the above mentioned phases of the potash question have been carefully studied by the Alabama Experiment Station. Certain facts have been definitely established by the Experiment Station and these facts form the basis for hundreds of crop and fertilizer demonstrations conducted by county agents.

## *Cotton*

**T**HE State of Alabama is divided geologically into seven soil regions

and on each of these soils potash has been used, alone and in various combinations, including a complete fertilizer, for cotton.

A study of the following table shows very clearly that on all soils except the Piedmont division, the return per dollar invested in potash is greater than the return from either acid phosphate or from nitrate of soda.

On most of these soils, with a minimum of 240 pounds acid phosphate and 100 pounds nitrate of soda, additional potash did not increase the yield. Based on a large number of experiments and demonstrations conducted in 1923 the preliminary reports indicate that extra potash may pay when the acid phosphate and nitrate of soda are increased.

Studying these data from another angle reveals an interesting fact. The Alabama Experiment Station recommends for cotton a minimum application per acre of 200 pounds acid phosphate, 100 pounds of nitrate of soda and 25 or 50 pounds of muriate of potash. At this rate per acre it costs \$92.00 or \$102.00, depending upon the amount of potash used, to fertilize 20 acres of land. On every soil division except



*The following table gives the return per dollar invested in acid phosphate, nitrate of soda and muriate of potash when each is used in a complete fertilizer.*

Soil Division	Acid phosphate* 240 lbs. per acre \$	Nitrate of Soda* 100 lbs. per acre \$	Muriate of Potash*	
			25 lbs. per acre \$	Additional 25 lbs. per acre \$
Lower Coastal Plain				
Before boll weevil . . . . .	3.72	4.64	14.80	6.00
Lower Coastal Plain				
After boll weevil . . . . .	3.20	4.82	12.60	2.20
Lower Coastal Plain				
S. E. Alabama . . . . .	5.71	6.00	14.60	16.00
Lower Coastal Plain				
S. W. Alabama . . . . .	3.58	4.07	13.00	....
Black Belt . . . . .	4.87	2.93	11.20	5.20
Upper Coastal Plain				
Yellow subsoils . . . . .	4.23	5.00	15.00	....
Upper Coastal Plain				
Red subsoils . . . . .	4.67	7.18	11.60	....
Piedmont . . . . .	5.57	5.86	4.20	....
Limestone Valleys				
Red subsoils . . . . .	7.00	8.54	13.00	....
Limestone Valleys				
Yellow lands . . . . .	7.82	4.54	24.40	7.60
Appalachian Plateau . . . . .	7.31	5.25	8.20	....
Highland Rim . . . . .	10.19	3.68	11.80	....

\*Acid phosphate . . . . . \$13.00 per ton.  
 Nitrate of soda . . . . . 56.00 per ton.  
 Muriate of potash . . . . . 40.00 per ton.  
 Seed cotton . . . . . .10 per lb.

two (Piedmont and Appalachian Plateau) the value of the increased yield of seed cotton per acre, due to the use of potash as recommended, amounts to more than the total cost of the minimum amount of fertilizer recommended for the 20 acres of land. That "potash pays" when applied to cotton on Alabama soils is evident even after a casual study of these data.

### Sweet Potatoes

FERTILIZER tests with sweet potatoes show the following results: On Appalachian Plateau soils, an application of 50 pounds of muriate of potash in a complete fertilizer (480 pounds acid phosphate and 200 pounds nitrate of soda) increased the yield 52 bushels per (turn to page 47)



On the farm of W. M. Johnson of Montgomery County, Alabama, a complete fertilizer gave a yield of 2,340 lbs. of seed cotton per acre. This is 356 lbs. per acre more than where an incomplete fertilizer containing no potash was used.



# A Giant Waits to Serve You

By Lewis Edwin Theiss

*Electricity is still in its infancy. Its possibilities have barely been scratched. Mr. Theiss, a Pennsylvania farmer, is interested in the Giant Power survey, now being undertaken in that state. He is particularly fitted to discuss the subject both from the farmer's and engineer's point of view.*

**I**N the physical world mechanical power holds the same place that truth does in the spiritual—it sets men free. If you do not believe it, glance backward a few centuries and see how little of freedom men had. Labor was then terrible and never-ending. Necessarily it was all hand work. It occupied every moment of daylight, and left the toiler so wearied that all he could do was to fall asleep. He was not free to read or study or improve himself. His situation was little better than that of the horse or the ox. The price of existence was toil so severe that at the same time it maintained life, it shortened it.

Came the invention of the steam engine, the development of machinery, the creation of electric power. Man's condition altered incredibly. The working day was cut to twelve, to ten, and finally eight hours. Work was made light. From producing a bare existence in sixteen hours, man came, by the use of power, in eight hours to produce a surplus. He was free from fear of starvation and poverty, free to

travel and educate and enjoy himself. By the use of power he freed himself in two or three hundred years from much of the weight that formerly, like an old man of the sea, clung round his neck.

That is, he did in part—the part that lives in towns. The part that lives in the country did not keep pace in utilizing power and machinery. So the farmer fell behind. He continued to work largely with his hands. His returns were for hand work. His brother in the city used mechanical power, more and more of it, and with every additional use of power his wages went up. A man using mechanical power can produce more wealth in a day than a man using only his muscles. Hence he can draw more pay, for wages are necessarily based on production. And so, as cities grew, and more machinery and power were used, the city worker earned relatively more and more money. Power had set him free.

**I**F the farmer also had the machines and the power to drive



them, he, too, could earn more. Alone he could do as much as formerly he did with hired help. With mechanical power to curry the horses, milk the cows, separate the cream, pump the water, hoist the hay, grind the feed, saw the wood, shell the corn, and do a hundred other tasks now done so slowly and laboriously by hand, the farmer could be much like the worker in a city mill. He could watch over machines that did the actual labor, and operate several machines at once.

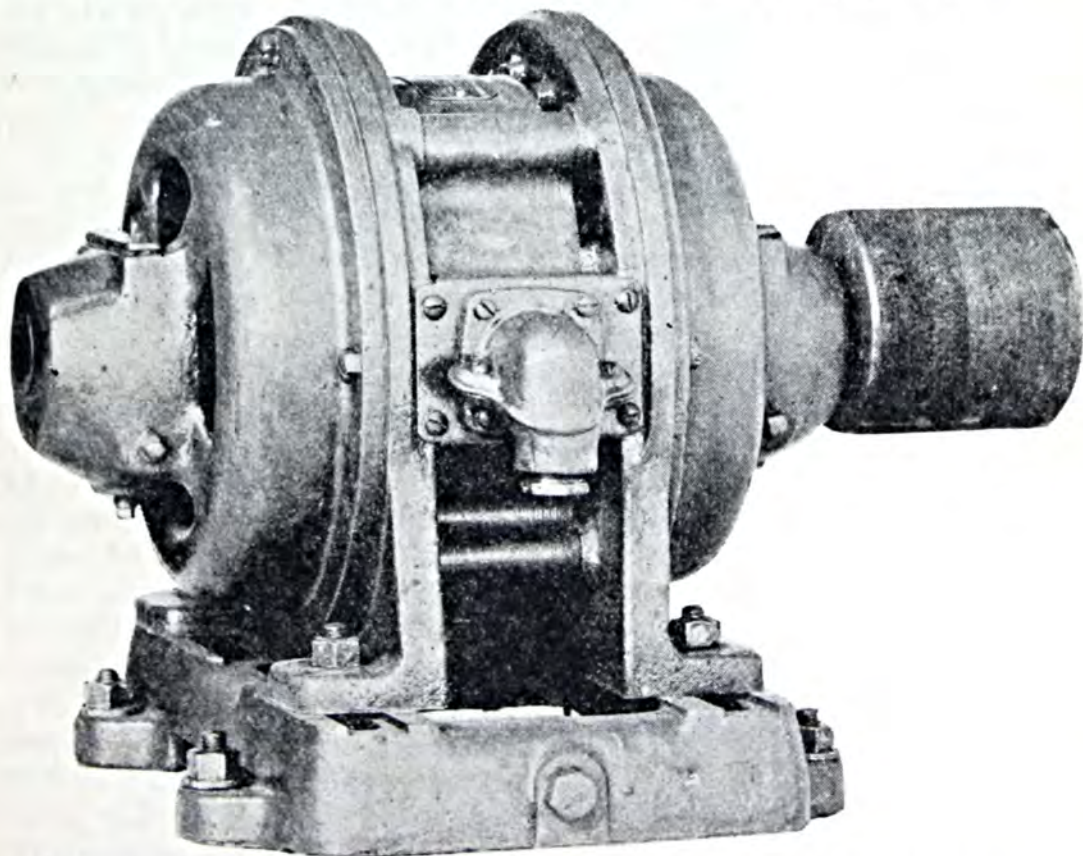
The reason it is not like that on farms generally today is because the farmer cannot command the use of mechanical power. If he can, too frequently it is on terms he cannot meet. Practically, the only power available to the average farmer is the gasoline or coal oil engine. Like all isolated plants, these are costly. When the farmer can get electricity, he often pays fifteen cents per kilowatt hour as against three to five cents paid by the big city manufacturer.

To be on a par with the city

worker, the farmer must have ample cheap power. If industry is to prosper, it, too, must have ample cheap power. All future development of our country, both industrial and agricultural, hinges upon power. Power will be the limiting factor. Not another spindle can turn, not another factory start, not another farm be electrified, without the creation of additional power. Each year sees an increase of something like ten per cent in the demand for power. When electricity is made available for farms generally, the demand will increase enormously. Power, power, and still more power will be needed through the years. And if we build up a gigantic civilization founded on power, and then run short of power, the disaster would be appalling beyond description.

Consequently, with power as our very life blood, we must give heed to the question of the proper development of our power resources. We think of them as unlimited. The fact is that, like our timber,

*(turn to page 43)*



*At present electricity works chiefly for city dwellers. Mr. Theiss in his article explains how it may soon be enlisted for the farmer's benefit.*



Why were these farmers successful? Was it good luck or good judgment or both? Whatever your decision, you will find their stories of unusual interest.

# They Made PROFITS by PIONEERING

By Arthur P. Chew

U. S. Department of Agriculture

SHERM S. RUMLEY, of Decatur County, Iowa, who has been a large grain farmer for many years and whose practice formerly was to sell all the corn he produced, was caught with a big crop of corn on his hands when corn went down to 25 cents a bushel in the winter of 1921-22. Did he dump his corn on the market for any price it would bring, or burn it for fuel because for the moment he could get more heat that way than by selling the grain and buying coal with the proceeds?

He did not. He held the corn and bought more. He fed his whole supply to livestock and made money while some of his neighbors were declaring the only way to get corn back on a profitable basis was to destroy or give away a large part of the surplus. Mr. Rumley is still a large grain grower. But he doesn't sell grain any more. He feeds it to

his hogs and cattle, and in that way he has got his farm in very prosperous shape.

That is one among many similar cases reported to the United States Department of Agriculture by county agents. Thousands of farm-

*THERE is no single formula which explains the success of all the farmers who are coming through the readjustment period in good shape. But these men all have one thing in common. They have faith in the power of agriculture to come back.*

ers have solved the problems forced on them by the collapse of formerly profitable markets by shifting from grain growing into dairying, poultry, swine, corn, alfalfa, and leguminous crops in general. They have not all gone about their task in just the same way. Some farmers have gone out of

wheat entirely and turned to corn and livestock. Others have not cut down their wheat production at all, but they have built up supplementary sources of income such as dairy herds and poultry flocks. Many have found success in greater diversification of crops. A few have found it in more efficient specialization.



Mr. Rumley gave a striking example of this faith when, in a crisis in the corn market, he turned from a seller to a buyer of corn. It took courage to do that in face of the prevailing pessimism about the corn outlook. But everyone knows now that Mr. Rumley's judgment was sound. Cheap corn fed to hogs in 1921 and in the early part of 1922 returned pretty close to \$1 a bushel when finally marketed in the form of pork. Later, when hog production expanded under the stimulus of cheap corn, the corn surplus vanished and the price of corn rose almost to a level with the price of wheat.

Thus was illustrated the old economic principle that over production for any long period is impossible, because over production means unprofitable prices and unprofitable prices put a check on production. Had more farmers been as confident as Mr. Rumley that the rule would work out in the case of corn, it would have been less easy for him to make money by going against the crowd. But, on the other hand, a more general optimism would have prevented corn from dropping as low as it did.

**A**FTER all, the secret of practically all successes in agricultural readjustment in the last two years is confidence in the value of getting production in right relation to demand. Consider the record, for example, of G. H. Humphrey, who lives in Corson County, South Dakota. Mr. Humphrey specialized in wheat up to 1922. He raised some oats and had from 50 to 60 head of beef cattle. He milked from two to five scrub cows. Farming in that way, to put it mildly, did not make him much money. With wheat below pre-war purchasing power parity, and with beef cattle heading downward toward less than pre-war prices, persistence in wheat growing and beef cattle raising looked like tak-

ing a header into bankruptcy. Accordingly, Mr. Humphrey got out of wheat growing and beef cattle, at least to a considerable extent.

After taking counsel with the county agent he built a fine dairy barn, reduced his beef cattle herd and increased his milking cows up to 10. He planted 15 acres to corn, built a cement silo 27 feet high, and mapped out a well-balanced livestock raising program. That was in 1922 and it was just a starter. Last year Mr. Humphrey planted 20 acres in corn of a pure strain of frost-proof Golden Glow dent. This year he plans to have 40 acres in this kind of corn. He has bought six high-grade Jersey cows from Wisconsin, and is making dairying his main pursuit, with hogs a side line. And he is no longer operating in the red.

**H**ERE is another case. Robert Empey, in Prairie County, Montana, grew little but wheat until 1917 and did not prosper. Then he turned to mixed farming. And note that he turned to mixed farming when wheat was fetching fancy prices and Montana farmers generally were concentrating on wheat in the hope of redeeming losses due to drought. Mr. Empey began cautiously to feel his way in dairying and poultry raising. Two years ago he started beans and corn. He had 50 acres of corn in 1922—and that in a locality formerly supposed not to be suited to corn growing. He milked eight cows, and raised 31 hogs, seven steers and 60 turkeys for market. He is now out of debt and is expanding his operations. And wheat prices are the least of his troubles.

Many other Montana farmers have done well in mixed farming. In fact, one of the good by-products of the agricultural depression will probably be a demonstration that some regions formerly considered

*(turn to page 42)*



# WAREHOUSE FINANCING of

By Richard H. Tingley

**D**URING the World War the business of warehousing suddenly woke up to find itself an industry of far greater importance than it had before realized. It also became aware that it was a sadly unorganized, disjointed, happy-go-lucky, hit - or - miss industry, conducted without cooperation, without standardization of method or practice—every man for himself and the devil take the hindmost.

I am speaking now of public warehouses, only. Private warehouses will be omitted from this sketch.

A public warehouse offers its customers two classes of service; a safe place where goods may be stored while awaiting a market, and a receipt for the stored goods which, under the proper conditions, may be used as collateral at bank for borrowing money. I shall deal chiefly with this latter, or financial feature, of public warehousing.

There are thousands of public warehouses in this country of all sorts and conditions—good, bad and indifferent. I do not know how many. I once tried to find out but failed. Every banker knows that there is no better security for a loan than a warehouse receipt based on the essential commodities of commerce stored in a warehouse of known responsibility. Becoming convinced, however, that ware-

housemen and depositors of merchandise generally did not fully realize this fact, I was asked, a few years ago, to compile some statistics on the matter. Nobody knew to just what proportional extent such receipts were being used at the banks, taken as a whole, and the results I found were most surprising and made both warehousemen and bankers take notice.

**T**HEY showed that, in 1921, all of the banks of the United States (except the Federal Reserve banks) loaned 27 billion dollars on collateral security of all kinds, of which, but a little more than 600 million dollars was secured by warehouse receipts for commodities stored; in other words, only about 2.26 per cent of the loans were based on warehouse receipts—universally acknowledged the very best of collateral. In 1920 this ratio was less, only 2.02 per cent, and in 1919 still less, 1.77 per cent.

The statistical research involved in arriving at these results brought out, also, another startling figure, namely, that, of the 600 odd million dollars loaned by the banks in 1921 on warehouse receipts as collateral 41 per cent was loaned on receipts based on cotton, 15 per cent on grain, and 44 per cent on all other



*(The United States Warehouse Act which became a law in 1916 aimed to establish a form of warehouse receipt that would be easily and widely negotiable and, therefore, of definite assistance in financing crops. Mr. Tingley here discusses the use that has been made of this machinery and the possibilities that lie ahead.)*

# Agricultural Products

commodities. These figures I shall tabulate:—

On Cotton.....	\$251,387,000	41%
On Grain.....	91,970,000	15%
On Other Com- modities (Gen- eral Warehous- ing) .....	269,781,000	44%
Total.....	\$613,138,000	100%

Armed with these figures, both bankers and public warehousemen are going out for business. They see that they have not been getting "theirs" in the past, and they propose to get it, and they have some very good selling arguments at their command to help them.

THERE are two classes of public warehouses; general warehouses applicable to the storage of all kinds of commodities, and special warehouses used for storing agricultural products. The former represents the large warehousing business as conducted in the big cities of the north and west; the latter do business in the cotton sections of the south and the agricultural districts of the west. The former are well organized in the American Warehousemen's Association and have gradually worked up to standard methods of practice. They have also adopted a standard form of receipt for goods stored which

is generally recognized by banks throughout the country—yet, in 1921, these big and prosperous warehouses developed but 44 per cent of the credit business of the country in warehouse receipts, and commanded only about one per cent of the nation's bank credit moneys.

The second class, the agricultural warehouses which have accounted for the other 56 per cent, are not so well organized. They are, however, rapidly becoming so under the guidance and assistance of Uncle Sam and his Department of Agriculture, Bureau of Markets.

UP to but a few years ago the financing of cotton by the grower or southern merchant was entirely a local affair. An owner of cotton in store at a warehouse might obtain a loan upon his receipt at the local bank readily enough provided his rating and that of the warehouse were good, and provided, further, that the local bank had the money to loan. In the rush for funds during the cotton marketing season it often happened that the bank had all of its available funds loaned out long before the demand for money had been satisfied. The only course then open to the cotton owner if he was in need of funds,

*(turn to page 55)*



Another plant on Prof. Hansen's blacklist.  
This is a common weed and it is well to know  
its characteristics.

# Jimson Poisoning

By Albert A. Hansen

Purdue University Agricultural Experiment Station

WHO would ever suspect Jimson weed, one of the commonest members of the hoglot flora, of being a fatally poisonous plant? But it is poisonous, nevertheless, to both animals and man.

The greatest wonder of Jimson poisoning is that anything or anybody would actually eat so vile smelling and ill tasting a plant, but under certain conditions Jimson weed is grazed by farm animals. And we have collected considerable field evidence in Indiana to prove that when Jimson is eaten it is a dangerous stock-poisoning plant. Take the case of Judge C. H. Wills, of Kokomo, for instance, who owns a farm in Howard County, Indiana. Last fall he lost six cattle and the veterinarian diagnosed the cases as plant poisoning, although he was unable to locate the death-dealing weed. A careful examination of the farm disclosed a solid half-acre of Jimson, and there was hardly a plant in the entire patch that did not show evidence of having been freely grazed upon.

THEN there is John Rose of Alfordsville, Daviess County, Indiana, who was sorely worried because a number of his hogs became ill and three of them died. The affected animals wandered around the hoglot in an aimless fashion, the pupils became dilated and the vision

was apparently seriously affected. One of the dead animals was posted by Dr. G. E. Norman, a veterinarian of Jasper, Indiana, and the stomach was found to be crammed with Jimson weed and a small sprinkling of corn. Incidentally, after the Jimson was destroyed, Mr. Rose experienced no further trouble of this character.

The field evidence against Jimson is supported by the laboratory investigations of chemists. An analysis of the plant reveals the presence of several dangerous alkaloids, principally *hyoscyamin*, the poisonous constituent of the deadly henbane, and *atropin*, used in medicine and commercially obtained from belladonna root. Experimentally, comparatively small doses of *atropin* have proved fatal to dogs and other animals. We also learn from the chemist that the poison is contained in all parts of Jimson weed, but that it exists in greatest quantities in the seeds and flowers. In fact, the United States Department of Agriculture, has reported a number of fatal cases of human poisoning, principally in children, as a result of eating Jimson seeds or fruits or from sucking the flowers. Two cases of this character occurred at Pleasant Lake, Indiana, where two children were seriously ill with Jimson poisoning, although neither case was fatal. Both the United States Department of Agriculture



and the Colorado Agricultural Experiment Station report poisoning in cattle due to grazing on Jimson sprouts.

**W**HAT are the peculiar conditions responsible for animals eating the disagreeable herbage of Jimson weed? In the cases on the farm of John Effinger, of Evansville, Indiana, who lost five hogs from Jimson poisoning, the weed was evidently eaten because no other green feed was available. The animals died during a period of drought when the only green growth in the hoglot and pasture was a heavy stand of Jimson weed. Since all grazing animals crave green vegetation this seems to be a feasible explanation. We suspect that a

faulty diet or lack of salt are other factors that may be responsible for animals eating the vile Jimson, although this has not been demonstrated experimentally. Under ordinary conditions, Jimson weed is left severely alone by all grazing animals, which is fortunate since it is one of our commonest weeds in farmyards and hoglots.

By the way, it may be of interest to know that Jimson contains *scopolamin*, the drug made prominent in connection with "twilight sleep" and lately used, according to newspaper reports, to place criminals in a strange sort of trance during which the subject is supposed to answer all questions truthfully. This certainly suggests a wide field of usefulness for the lowly and despised Jimson weed.



The fruit, flowers and foliage of common Jimson weed are all poisonous.



QDramatize an idea and you can put it over.  
That's what Brother Roberts did out in  
Nebraska and here he tells you how.

# Exit Scrub Bull

By Walter F. Roberts

County Agent, Saunders County, Nebraska

WHY should the scrub bull live? Why should any criminal live? Perhaps it is because his crime has never been discovered. Criminals walk the streets of our great cities and travel our public highways unnoticed. Then some day there comes a time of reckoning. The crime is discovered. A jury is called; a Judge sits upon the bench, and lawyers proclaim in eloquent terms the guilt or innocence of the offender.

Likewise the scrub bull parades over green pastures and fertile lands, king of his domain, until some wise farmer or meddlesome county agent calls him to account. A jury is called; a Judge again sits upon the bench; lawyers orate, and witnesses testify, while the king of yesterday stands by, waiting to hear the death knell which will make him the mince meat of tomorrow.

The following complaint is presented by the Judge, setting forth in no uncertain terms the present status of the prisoner;

In the farmers' court of "Progress" County,—"Forward" State.

The farmers of "Progress" County  
*Plaintiff.*

vs

A Scrub Bull

*Defendant.*

Complaint for degrading live stock, and causing loss of finances and pride.

The complaint and information of the farmers of "Progress" County, "Forward," State, made before the undersigned Judge of the Farmers' Court, within and for said County and State, alleges and shows that the said A Scrub Bull, since the memory of man runneth not to the contrary, in the County and State aforesaid, then and there knowingly, willfully, unscrupulously and with malice aforethought, contaminates the herds of dairy and beef cattle, progenating off-spring of the brindle, ringstreaked, and muckle dunn type, befouling and vilifying the size, shape, quality, quantity, and value of the entire bovine family, thereby causing calamity to the farmer, dairyman, and stock breeder, their homes, widows and orphans now and forevermore, bringing on financial loss and failure of pride, undermining the entire system of dairy and meat production, by the heirs and progeny of him, the said A Scrub Bull.

That the accused has also devoured the green pastures, and crops of golden grain, without remuneration to the owners thereof. He has come like a thief in the night and stolen their birthright; he has become a menace to their progress; their herds have become narrow, even to the width of two thumbs across the hips and one across the withers; the hoofs and the horns are all that have not diminished,



contrary to the peace and dignity of the farmers of "Progress" County "Forward" State, who ask that upon conviction the accused suffer death and extinction.

By A. Farmer.

Subscribed to in my presence and sworn to before me—

Upta Date.  
Judge.

**T**HE Scrub Bull's defendant now rises to speak. He proclaims the only known reasons for the prisoner's existence in the following words:

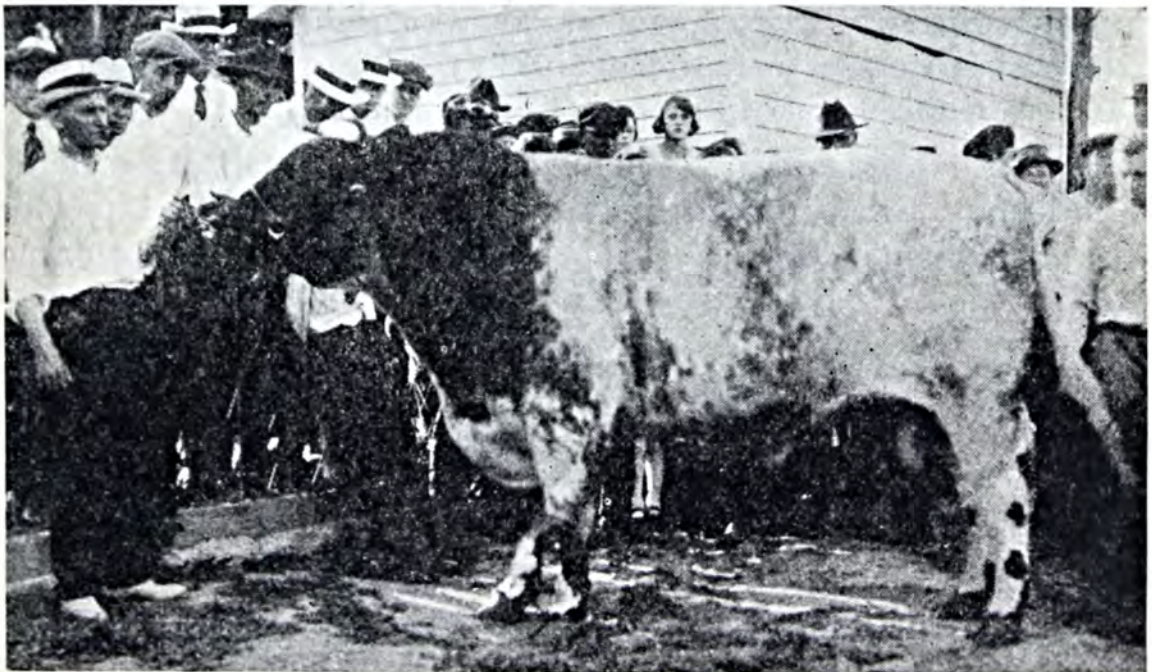
Gentlemen: We are proud of our civilization; we brag of our schools and flaunt our wisdom before the world. We hold in still higher esteem our peculiar form of government whereunder one person has the same rights as any other, be his position humble or high.

Years ago in the dark ages, the word of a King was the only law. It was well for those who gained his favor; they banqueted, were clothed and entertained at the people's expense. But what of the workers, the faithful throng who tilled the soil, and ran the factories,

such as they were? Let one of them make a mistake and he was hanged. Let him worship in a different way than the King and he was thrown into a dungeon. Let him question for an instant the King's authority and he was beheaded. In this high handed manner not only men, but also animals were persecuted. If the King wanted all the bulls killed except those who polished their hoofs, and wore pink ribbons in their tails, his wish was carried out.

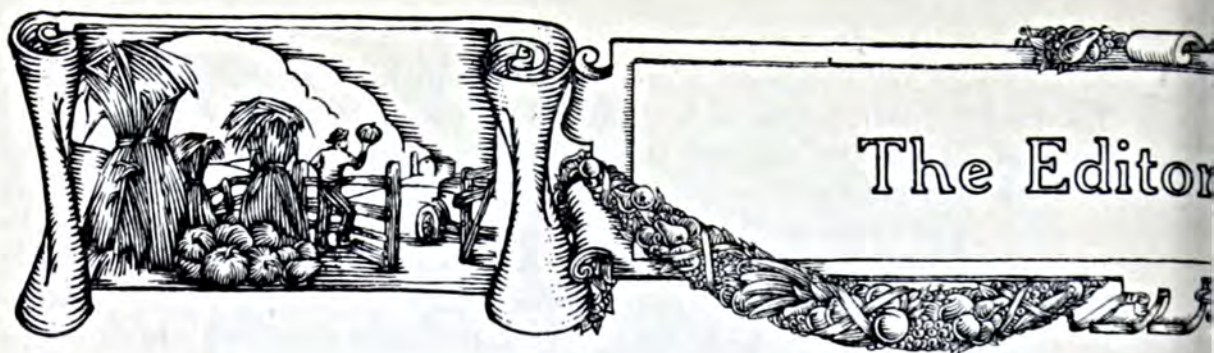
With the discovery of America a radical change took place. A long war with England freed the Colonists from the rule of a King. The Battle of Bull Run has freed the bulls. A government has been set up giving the poor and the weak the same privileges as the rich and the strong. It is a body blow to aristocracy, and includes the bovine family. Listen to this confession from A Bad Farmer, a death bed declaration; "I, A Bad Farmer, being on my deathbed, realizing that my heart may beat once and then beat no more, wish to make up for a wrong I have done one who was a friend in need.

(turn to page 46)



A pure-bred shorthorn who will take the place of A Scrub Bull if the latter is convicted and sentenced to death.





## THE RIGHT TO DISAGREE

Now and then I hear people complaining that farmers are too individualistic, too set in their own ways to be willing to work with others. This is often given as a reason for the failure of farmer organizations and farm improvement projects.

I am willing to admit that there is much truth in this assertion, but there is also another side to the story. It looks to me as though liberty, in any real sense of the word, is going out of date. I am just old fashioned enough to believe that liberty is a good thing and something we are all entitled to.

What is liberty, anyhow? Probably no two people would define it the same way. I would say it meant complete freedom of thought and as much freedom of action as could be permitted without trespassing on the rights of others.

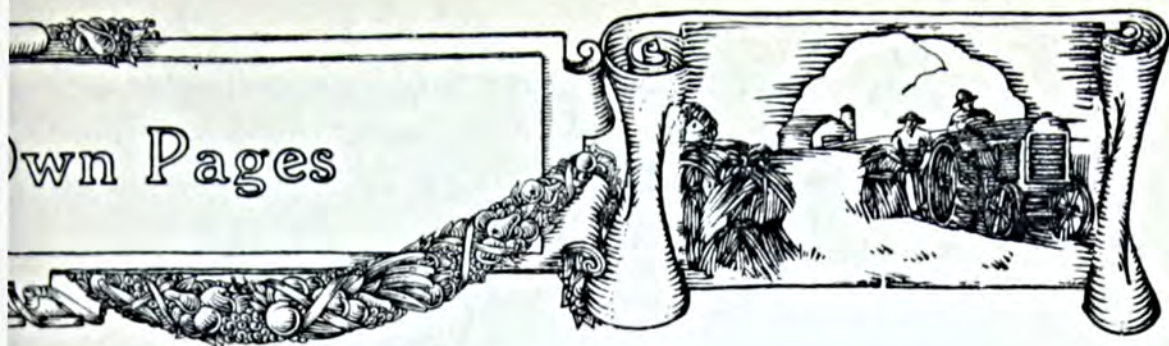
To accept and follow this conception of liberty, you must be something of an optimist. You must believe that there is a meaning behind life, a goal towards which mankind is working. However strongly you may believe that you, and those who agree with you, are on the right track you must have faith enough in the ultimate result to be willing to let others think and act differently from yourself.

This is going off into a field where there are lots of subtleties and complexities. I'm not much of a philosopher but I do think it would be well if we all pondered a little more about such things. The decay of the idea, of liberty in this country seems to me a great misfortune. Read over the Declaration of Independence and the Constitution of the United States and see if there isn't some truth in my assertion.

You readers of BETTER CROPS who are working with the farmers, you readers who are farmers and are working for better agricultural conditions, you know how difficult and discouraging it is when you are trying to put over some project that seems truly progressive and vital and some ornery cuss wants to throw a monkey wrench in the gears.

If he's just stupid, you can generally get on without him





but—look out! maybe he really has a good reason for not supporting you. He may start an active opposition. Then, if ever, you need to remember what liberty means.

Let's not assume that the man who doesn't agree with us is necessarily wrong and pig-headed. Unless we are free to disagree with others in an open, honest way, there isn't much sense in talking about our love of liberty.

**WINTER WHEAT** The discussion of raising winter wheat profitably which appears in this issue, emphasizes again the importance of efficient farming.

I would like to know the man who succeeds in raising winter wheat most profitably this year. Not the man who makes the largest profit on his entire crop, but the grower who gets the greatest net profit per acre. In other words, the man who gets the best yield and quality at the lowest cost per bushel.

I would like to know who he is and how he did it, for he certainly deserves recognition. Perhaps it will be one of your neighbors. If so, I'd be glad to have you write me about him.

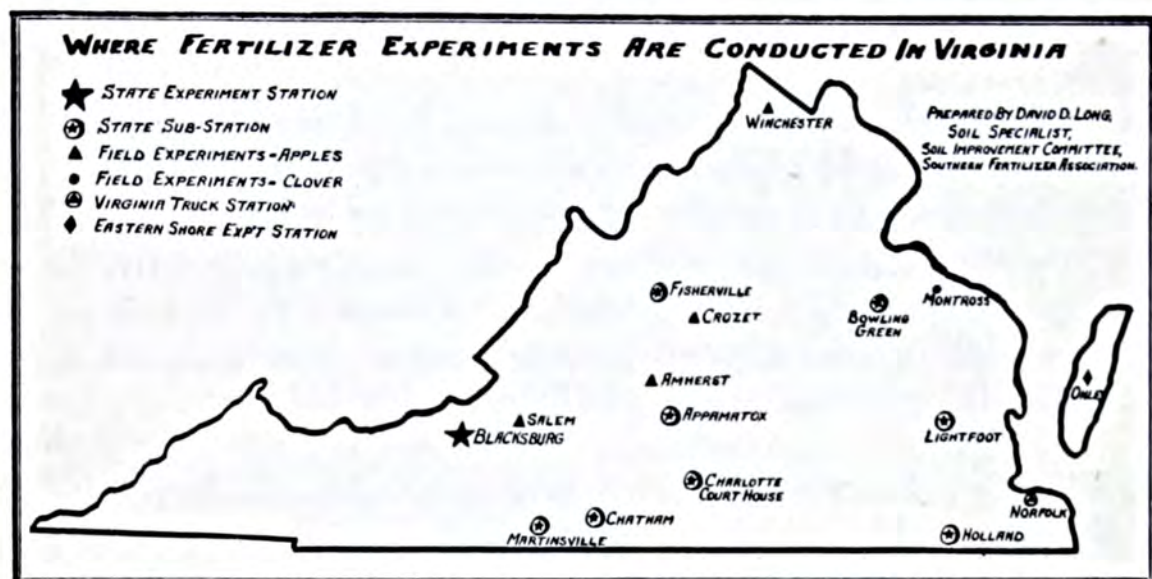
**FINIS VOL. II** This issue completes the second volume of **BETTER CROPS** and the first year of its existence. An index of Vol. I, has recently been printed and a limited number are available for free distribution to readers. There are also a few copies of Vol. I, including the index, bound in black buckram which may be obtained for \$3.25 postpaid by addressing the Business Manager, Mr. M. E. Hidden.

An index of Vol. II will be ready shortly as well as bound copies of Vol. II. If you desire either of these, we would appreciate your telling us as soon as possible.

*Jeff McQuinn*



These are the fourth and fifth maps in our series showing where fertilizer experiments are being conducted in the South. They were prepared by David O. Long of the Southern Soil Improvement Committee.



## VIRGINIA

### State Experiment Station — Blacksburg.

Kind and quantity of fertilizers for various crops grown in the locality.

Lime Experiments.

Rates of Liming.

Kind and quantity of fertilizers for peaches and apples.

### Sub-Station—Appomattox.

Kind and quantity fertilizers for dark tobacco and crops grown in rotation with dark tobacco.

Rotation in relation to crop production and Soil Improvement.

Pasture and grass investigations, find out suitable grasses adapted to pastures, their response to lime and fertilizer treatment.

Effects of the kind and quantity of fertilizers on

apple and peach trees, and the production of fruit.

### Sub-Station—Chatham.

Kind and quantity of fertilizers for bright tobacco and other crops grown on bright tobacco farms.

Sources of Nitrogen, phosphorus and potassium for bright tobacco.

Kind and quantity of fertilizers for cotton.

### Sub-Station—Charlotte Court House.

Same as at Chatham, except experiments with dark tobacco.

### Sub-Station—Martinsville.

Kind and quantity of fertilizers for general farm crops of the region.

Rates of liming for different crops.



**Sub-Station—Fisherville.**

Kind and quantity of fertilizers for general farm crops of the middle valley region of Virginia.

Rates of liming.

**Sub-Station—Bowling Green.**

Kind and quantity of fertilizers for sun-cured tobacco.

Crops relations experiment, complex fertilizer and crop rotation series.

**Sub-Station—Lightfoot.**

Fertilizer and lime requirements of alfalfa and other forage crops.

Hog pastures as means of pork production and soil improvement.

**Sub-Station—Holland.**

Kind and quantity of fertil-

izer and lime for cotton and peanuts.

**Field Experiments—Montross.**

Experiments to correct clover failures by lime and fertilizers.

**Field Experiments — Salem, Amherst, Crozet and Winchester.**

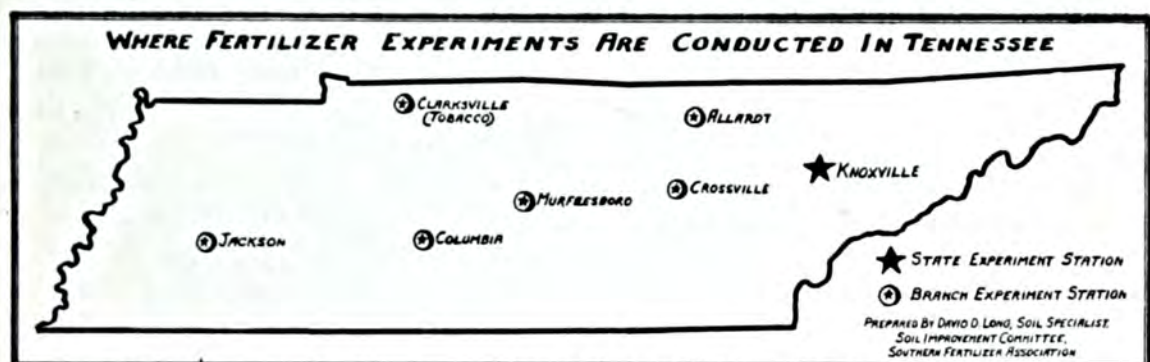
Effects of time of application on nitrogenous fertilizers on apple production.

**Virginia Truck Experiment Station—Norfolk.**

Kind and quantity of fertilizers for truck crops.

**Sub-Station — Virginia Truck Experiment Station—Onley.**

Kind and quantity of fertilizers for early potatoes and other truck crops.

**TENNESSEE****State Experiment Station — Knoxville.**

Fertilizers for corn, wheat, clover, grass and cowpeas.

**Branch Station—Clarksville.**

Fertilizers for tobacco—kinds and quantities and physiological effects of magnesium.

**Branch Station—Jackson.**

Fertilizers for cotton, corn, grasses and legumes—kinds and quantities—time of application of nitrate of soda to corn and cotton.

**Branch Station—Columbia.**

Fertilizers for cotton and

corn with legumes, clovers and grasses in rotation.

**Branch Station—Murfreesboro.**

Fertilizers for cotton and corn in rotation with legumes and grasses. Special attention to quantity of fertilizer.

**Branch Station—Crossville.**

Fertilizers for corn, potatoes, oats in rotation with clovers and grass. Special attention to quantity of fertilizers.

**Branch Station—Allardt.**

Fertilizers for corn, potatoes and oats in rotation with clovers and grass.





## A Successful Come-Back

*Second Wind by Freeman Tilden.  
Published by B. W. Huebsch, New  
York. Price \$1.50 postpaid.*

In the words of the author this is "the plain truth about going back to the land." There are one hundred sixty-nine pages—fifteen chapters. The first ten chapters are written in rather serious narrative strain concerning Alexander Hadlock, a mathematician, who at the age of sixty-two lost his position, his fortune, and his wife, and then became a floater and went back to the land. Mr. Tilden has taken the facts from an actual experience, simply changing names and places.

The best portion of the book gives graphic word pictures of the struggles of Hadlock on various farms in Vermont state, mostly with the lazy "Farm Eaters" who do not use modern scientific agricultural facts and information.

To a County Agent the book is good because it brings out clearly the salient facts of modern methods as compared with the lack of methods of the average farmer. It shows the difficulty experienced by Hadlock in trying to persuade his neighbor, a farm eater, to use balanced rations, for example.

"Stone Pulling," the author says, "is the symbol of all the laborious plodding, patient work from which there are no immediate results except the accomplishment of the task itself. It is the hand labor, the toil that no machine has ever been invented to perform, the kind of labor that impels the half hearted adventurer to go back *from* the farm."

"The real farmer, the only man that can wring happiness out of his broad acres, is the man who is content to work at the things that throw no chips, that make no pretty show and that never seem to get done."

The author describes the satisfactions of Hadlock—security, love of approbation and the greatest of all—Self Development. "What Hadlock has done for his sixty odd acres is little compared with what his acres have done for him." "They have taught him self reliance. They have developed his initiative. They have impressed upon him a religion, which has taught him justice—justice to other men, to animals, to himself."

Mr. Tilden divides the *right* kind of city people into three classes;—the successful, the splendid failures and the second wind folks. The first two need no explanation. The last constitute the great majority in the city—the square pegs who have been trying to force themselves into round holes. "They are the middleaged ones who cold sweat at the thought of being relegated to the scrap heap. From this class comes the folks who are going to get their second wind-back on the land."

The author discusses very clearly the advantages and disadvantages of farm life. He asks the city man what is absolutely necessary to his happiness and what is desirable but not necessary.

The book will be an inspiration to plodding farmers anywhere, to tired and discouraged middleaged clerks in the city who are just about ready for the scrap heap. To those interested in a serious, accurate dis-



cussion of the back to the land problem, I would say: read this book.

F. C. SMITH,

County Agent, Westport, N. Y.



## The Right Idea

*Purdue Handbook of Agricultural Facts. Published by Purdue University Agricultural Experiment Station, La Fayette, Indiana, March 1, 1924. Loose leaf, flexible I-P 6-ring binder \$2.00; cloth bound \$0.75 and paper bound \$0.50; 224-pages. New Facts in Farm Science by H. L. Russell and F. B. Morrison. Published by Agricultural Experiment Station, University of Wisconsin, Madison, Wis., March, 1924, not available for general distribution.*

Here are two experiments in bringing science to the farmer's aid. A praiseworthy undertaking and one that has been carried out successfully in both cases.

Of the two, the Purdue Handbook is the more elaborate and comprehensive. It seems incredible that 224-pages could hold so much useful information. Every subject relating to farm life and agriculture from how to grade eggs to how to establish a bull association is covered in this volume. The reviewer cannot claim to have read it word for word—though it would be a liberal education in agriculture if one had the time to do so—but he has tested it on a variety of subjects and found that it presents them simply, concisely and conveniently. Take alfalfa, for instance, and we have the following references: drainage of field, inoculation, insects, organic matter, plant food, seeding time, soil acidity, soil types, webworm. Under each of these heads you will find summed up the known facts on the subjects with reference to bulletins where there are any on the subject.

This progressive and useful piece of work reflects great credit on the Purdue Station. It is an example

of that kind of cooperative spirit that we need to see more of. The editor, Mr. I. J. Mathews of Winamac, deserves special mention and particular commendation for the excellent index which makes the contents of the book easily available.

New Facts in Farm Science does not pretend to cover the same ground as the Purdue Handbook. It embodies Director Russell's annual report (1922-1923) and summarizes the contributions made by the station members during this period to farm science.

If anyone has any question in his mind regarding the value of our experiment stations, I would ask him to read this pamphlet for it proves conclusively the debt of agriculture to research workers. All phases of agriculture are touched upon. We may learn a new butter test, the effect of direct sunlight upon baby chicks, rations for brood sows, the results of alfalfa and fertilizer experiments and so on.

The book is well illustrated. One might wish it were indexed. The only guide is the table of contents and that does not reveal half the wealth of information contained in this work.

Both these works are notable because they endeavor to carry to the farmer the results of experiment station work in a form which will be of real help to him. In thus making readily available the results of scientific research they justify anew the values of the experiment stations and perform a useful social service.

B. H. P.



"Something about livestock" several of our readers have requested. So we persuaded Mr. D. S. Burch of the U. S. D. A., the father of the Better Sires—Better Stock campaign, which now has so many converts, to tell us about this work. His highly interesting article begins in our September issue.





By Ted Butlar

BETTER CROPS' Washington Correspondent

When your correspondent pulled out of Washington the forepart of July for a swing through the middle west and west, he was a bit dubious about the real condition and attitude of those who make up the agricultural area in the "open spaces" or "sticks," as some people in the east are prone to dub this section of the country. Agricultural conditions, to be sure, are not satisfactory, but as one South Dakota farm leader said, "Why, we have only started to fight."

The trip was given a successful start by a brief visit at Brookings, South Dakota, where an enthusiastic group of the American College Editors' Association was in annual session. It was gratifying to note the constructive manner in which these fellows are attacking agricultural college publicity problems, and the splendid progress which has been made during the past few years.

According to C. W. Pugsley, President of South Dakota State College and former Assistant Secretary of Agriculture, his state does not ask to be placed on any charity list. South Dakota crop conditions, this year, are above expectations, and casual observation would convince anyone that the state is rapidly adopting a balanced production program and speedily pulling itself out of the agricultural depression. If you want to pick a fight with a South Dakota farmer just tell him how sorry you are for him in his present plight. This state and other states are coming through in

good condition, and don't forget it.

When the writer arrived in Omaha his pessimism got another severe jolt. Frank Taylor, President of the Omaha Grain Exchange, is optimistic over the 30 cent increase in the price of wheat and corn and gave proof that it was directly benefiting the farmer. With world production of wheat 13 per cent below last year and Canada short by over 32 per cent, Taylor is firmly convinced that wheat prices will rule higher, even though the coming crop might contain a high moisture content due to heavy rains.

Further optimism was in vogue at the Omaha Livestock Exchange. Hog prices were ruling above the \$8 mark and were the highest since September of last year. On the day your correspondent visited there, hog prices jumped 30 cents a hundred. It was the weighted opinion of authorities on the Omaha market that the cycle of hog prices was on the upgrade after the period of low prices and the healthy domestic and foreign demand for pork, coupled with more normal production, gave the middle western farmer a silver lining for his cloud.

It was quite apparent that crop production throughout the middle western states was on a more normal basis than it has been since the war. Marked adjustment has been made in most crops, particularly hogs and wheat. No matter what might be said to the contrary, this noticeable adjustment in production has been largely responsible for the noted



increases in the prices of many crops. A. F. Stryker, Secretary of the Omaha Livestock Exchange, by a simple problem of mathematics, on the basis of livestock receipts for the week previous, figured that increased prices had placed thousands of dollars into the pockets of farmers who needed it. Although corn is some two weeks late it is picking up rapidly. With this crop assured and a normal supply of feeder cattle and lambs in prospect, it is mighty difficult for the proverbial pessimist to find a hook to hang his arguments on.

Your correspondent returns to his desk feeling better. Agricultural depression and suffering during the past four years had been acute and the farmer has aged because of it. There is only one thing that will bring agriculture back and that is price. That prices are on the upward trend is encouraging. The recovery is genuine.



## More Spraying

(From page 14)

the trees in proportion to the pressure employed.

The trees were large, 34 year old apple trees carrying an average yield for 1923 of 25 bushels per tree at harvesting time.

1. The 190 pound pressure row showed 87.88 per cent of the tree run fruit free from scab and worm injury.

2. The 250 pound pressure row showed 91.64 per cent of the fruit free from scab and worms.

3. The 350 pound pressure row showed 94.96 per cent without scab or worms.

These three rows were sprayed with liquid lime-sulphur and paste arsenate of lead at the rate of 5 gal.—8 lbs.—200 water.

The average for the season was 14.2 gallons of diluted spray material applied per tree for all pressures.

Over 19,000 apples were examined by James L. Kraker and the writer under more critical grading

than is employed in any fruit section. Six applications were made.

Part of the orchard as sprayed by the owner, using 4.96 gallons per tree as an average for the season of six applications at 350 lbs. pressure, showed but 75.73 per cent of the tree run crop free from scab or "sting" injury.

MANY fruit growers lay the blame for poor control on the material used or the strength employed. This, undoubtedly, accounts for the fact that growers are constantly on the lookout for, or actually trying some new spray material. These growers should look to the number of tanks they are applying per acre and the pressure they are using as the cause for their trouble.

Very few growers can be found who know how many gallons they are using on each tree, or whether or not they are using less material for the second codling moth application than they did for the calyx period. The writer has examined the books of several commercial growers and found that they were using about the same number of gallons and pounds as they purchased when the orchard was ten years younger.

Enormous profits have been made from fertilizer applications, better colored fruit has resulted from pruning and thinning; but proper benefits can come from such orchard expenses, only when the grower has perfected his spraying practice to give the highest practical degree of protection to his crop.

If a grower cannot afford to purchase increased pressure and pump capacity, he can certainly reduce the size of the disks in the nozzles and even though it takes more time to apply the proper number of gallons to each tree, he can, if he desires, have at least 80 per cent of all the fruit on a tree at harvest time free from controllable insect and disease blemishes.



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Address.....

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## They Made Profits by Pioneering

(From page 25)

one-crop areas are much better adapted to diversified production. Western farmers who before 1919 were straight wheat growers, cropping their land almost continuously, are now growing sweet clover for forage, building up definite crop rotations, raising corn, and developing purebred herds of dairy cattle and droves of hogs.

John B. Brader, of Oswego, Kan., used to be a large wheat farmer. As a wheat farmer he prospered in good times, but found that bad times made a severe dent in his financial position. In 1921 he decided on a new policy. He rented out a part of his land and raised feed for Jersey cows and Leghorn chickens on the remainder. This policy put him on Easy Street. Records show that the average production of his cows increased from 250 pounds of butter-fat in 1920 to 333 pounds in 1922, and the return above feed costs was \$98 each. His Leghorn flock returned over \$2 each. From 17 cows and 350 hens in 1923 his returns were approximately \$2,600. Two of Mr. Brader's children are in high school, his farm is paid for, and he has been elected president of a bank. Fifteen years ago he was a renter. "And," he says, "the cow, the sow and the hen did it."

Possibly, however, Mr. Brader is not allowing enough credit to his own good farm management. Successes in farming that seem due to crop readjustments should often really be attributed to superior management. Crop readjustments must be wisely planned, and they must be timely, to produce good results. Time, in fact, is the very essence of effectiveness in crop readjustments. A cropping plan that was advisable last year may not be advisable this year. It is risky just to follow leaders, especially if the leaders have a long start.

Such a course may mean changing from one crop to another when it is almost time to change back again. Many farmers today, impressed by the example of neighbors who have been ahead of them for two years or more, are rushing into dairying and poultry raising, despite indications that these lines may be overdone. These men may get a painful reminder that success in farming is not to be found in any general formula of readjustment, but only in sound management and in constant adaptation of crop programs to the ever changing market situation.

The time factor in crop readjustments is never as favorable for the imitator as for the initiator. As the number of persons making readjustments increases, the benefit to the individual gets less. It does not, however, wholly disappear. Agriculture as a whole gains when its different branches of production are brought into right proportions. Waste is lessened and markets are stabilized, and that is always an advantage. Accordingly the leaders in readjustment are entitled not only to the special financial rewards that naturally accrue to them, but to the thanks of the farmers and the Nation, for what they are doing to promote a healthier general agricultural situation.

It is only necessary, in appraising the value of their service, to remember that what has brought success to them might not bring an equal success to the general body of farmers, should they try it out. In other words, what the leaders in crop readjustment have shown is not the value of any specific plan of production but rather the value of an alert readiness to shape farm programs in harmony with changing conditions, and to take time by the forelock in doing so.



## A Giant Waits to Serve You

(From page 23)

our oil, and our coal, our power, too, is limited. Too often we think of our power resources in terms of water power, which we shall harness when our coal is gone. That is a harmful idea, for if all the potential water power in the United States were harnessed today, it would not operate the machines now in use. Steam power must always supplement water power. That means that when our fuel is gone, our power supply will become inadequate. Every day that we allow our water power to go to waste by not utilizing it, we are wasting coal; for we are burning coal to do work that water should do. And whenever we burn coal inefficiently, we further waste our supply.

How efficiently do we use our coal? To begin with, we haul it vast distances, at a terrible cost in coal used for transporting it, and then burn it in the most wasteful way. Even the best of our isolated plants utilize hardly more than 16 per cent of the energy in the coal. And they burn twice as much coal as would produce the same amount of energy in large central power stations. In other words, it has been taking four pounds of coal to produce one horse-power in isolated plants. Recent improvements have cut that figure to something like three pounds per horse-power. But in large, central generating plants, such as should be constructed near the mouths of the mines, one horse-power could be produced by burning one and a half pounds of coal.

Again, in the isolated plants that now produce our power, no by-products are recovered. In our coke ovens the coal is processed and these by-products recovered. But not one pound of coal used for fuel in America is so processed. The result is the absolute loss of all the by-products. These are ammonia, useful for fertilizer; tar, for

making roads, etc.; hydro-carbons, useful in making dyes and otherwise in industry; and other products. We throw them away as smoke and gas, and their value is one billion dollars a year!

Formerly it was not possible to make power in great central stations and transmit that power long distances. Hence the multiplicity of power plants. The power had to be where the machinery was. But recent developments in electrical power transmission have stretched the power belt. Now it is possible to transmit energy hundreds of miles, with very little leakage of power. That makes possible the generation of power in huge central stations where power can be made cheaply, and the transmission of that power to places where it is needed. Our waterfalls can now be harnessed, no matter where they are located, and the power transmitted long distances to the cities, towns, and farms where it is needed. This should be done at once, to conserve coal. Whatever power is then lacking can be supplied by great steam plants located as near the mouths of the mines as water conditions permit.

When this is done, power can be produced at prices undreamed of to-day. Power generated by falling water is incredibly cheap. With coal freights practically eliminated, with the economies possible in such large-scale operation, and with by-product recovery to reduce power production costs, steam-generated electricity would cost hardly more than water-generated electricity. Steinmetz, the great electrical engineer, said that the creation of such a power system would make electricity so cheap it would not pay to have meters.

Yet the economies outlined are only a part of the economies that



would result from the creation of such a Giant Power system. There would be no coal for the railroads to haul. One-third of all railway freight is coal. The cars must be hauled back to the mine empty, adding to the freight burden. The coal used by steam locomotives— isolated power plants of the most wasteful type—would be sufficient to run vast industries. This coal would be saved, for a direct result of the creation of such a power system would be the prompt electrification of the railroads. The saving in freight capacity, through getting rid of coal freights, would put the railroads on their feet once more. Admittedly they are not now able to cope with the freight situation in times of high prosperity. We all recall the freight embargoes of recent years, when the roads, clogged with goods they could not handle, refused to accept further shipments. The farmers suffered not a little through these embargoes. So did the merchants. So did we all. By taking away the coal freight, and only by so doing, can we enable the roads to handle all the freight offered when the next wave of prosperity comes.

Now, the accomplishment of these things is possible only if we keep sharp hold of the situation and do not give our power resources away, as we gave away our coal and oil and timber lands, to individuals, and if we develop our power resources with a view to the common good rather than with the idea of benefiting some individual, or corporation, or particular section or state.

Naturally our country divides itself into a number of power regions, topographically determined, each of which should be a power pool or unit. That is, all the power that can be generated in a district should be fed into a common pool and tapped out wherever needed. That is the sense of the situation. That is the only way to serve all the people and effect the greatest

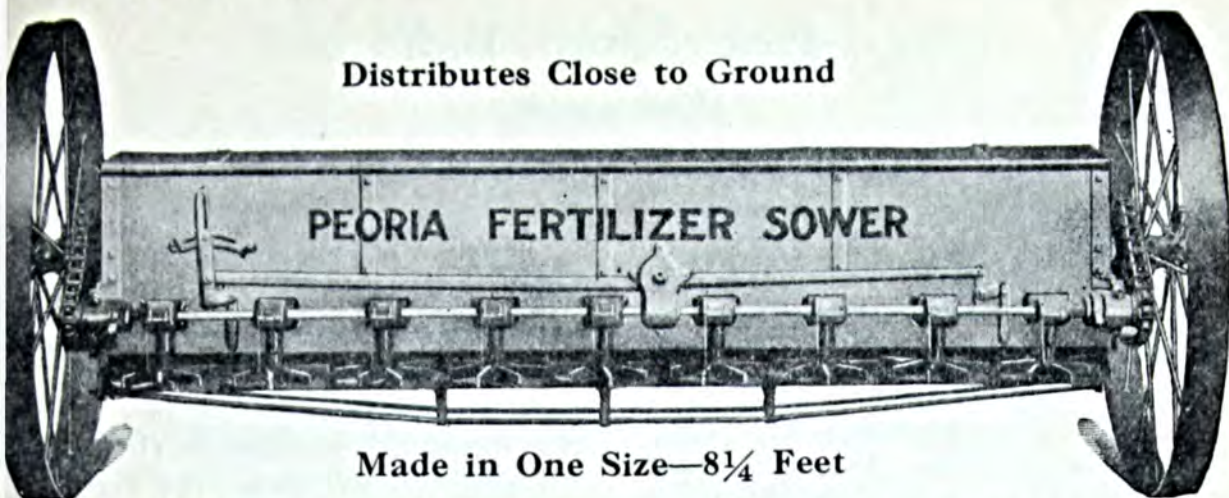
economies and give the widest service.

But in addition to the natural selfishness of men, there are some foolish state laws and narrow local notions that stand in the way of such power development in places. That is particularly true in the Northeast section—Maryland northward and Ohio eastward, which is a natural power district. Maine prohibits the exportation of power from the state. Connecticut forbids the importation of any into the state. New York claims its power is for New Yorkers only. Such narrow ideas must be broken down. Pennsylvania has the right idea. Realizing that her coal measures make her really the keystone in the power arch of this section, she is planning to develop her power resources with a view to the common good. Governor Pinchot got the state legislature to create a Giant Power Survey to examine the state's power resources and recommend plans for their development along broad, patriotic lines.

The outstanding example of pooled power is the far West. The war brought the threat of insufficient power to run the war industries. A power dictator was created. He at once linked up all the power lines along the west coast. The result is a power system 1,200 miles long, which will soon be increased to 1,600 miles. This insures universal service at low rates, and will give the West a great advantage over other sections unless like measures are taken. In California the farms are electrified as they are nowhere else. Eighty-three per cent of all California homes have electricity. Only the remotest farms cannot get power. If farms generally are to have power, it can come only through the development of such Giant Power systems, the transmission lines of which will cross the land like main highways, with distribution lines running hither and thither to convey power wherever it is needed.



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## Exit Scrub Bull

(From page 31)

Years ago, as a young man on a homestead in "Progress" County, I began in the best way I knew how to take an honest living from the soil, and to care for my wife and child. For two years we barely made a living; Then things grew worse. My two horses were stolen by the Indians, the hot winds destroyed my crops, my wife began to fail, and the baby became thin and gaunt. All we had left was three scrawny cows and A Scrub Bull.

Spring came, I had to yoke the bull to the plow. He lent his every ounce of strength and vitality to the task I had learned to dislike. He seemed to realize and want to help. His courage and industry raised my hopes. Things grew where we plowed and sowed. The three cows did their best that year by furnishing three scrub calves and a scanty supply of milk. Things went better and we were soon happy.

I have been a scrub as a farmer. I have failed to fertilize my fields, rotate my crops, or spray my fruit trees. I have given little time or thought to my bull and scrawny cows. They have had food enough to keep them alive although not a balanced ration. I have been told what was right to do by prosperous neighbors, and have been shown by our county agent but have paid no attention to them.

How I hate to think of it now. My farm is in poor condition, I leave nothing for my family, and as I lay here on my deathbed news of the prosecution of my old and true friend, A Scrub Bull, comes to me. Had I done what was right, had I given him proper care and attention, had I used good sires, this would not have happened. It is all my fault. May those who now hold his life in their hands, read these words and spare him.

With my last breath I say, "Spare him!"

A BAD FARMER.

THE Plaintiff then arises for his argument against A Scrub Bull. Witnesses have testified pro and con. A shuffle is heard in the hall outside, and in comes the Bailiff with one of A Scrub Bull's offspring. At another entrance A Pure Bred Bull and his offspring are lead into the ring. The sight is appalling, the comparison touches the little spark of bullyness still burning in the nature of A Scrub Bull. Realizing his guilt, he confesses through his interpreter, in the following manner.

"I am A Scrub Bull. Mine is no ancestry of red-blooded pedigree tracing back to the ark. I was sired by a scrub, dam'd by a scrub, and sometimes I think owned by a scrub. My sire's greatest accomplishment was to furnish dried beef to the hungry, my dam never paid her board. As for me I am a runty, slabsided, low backed "hunk" of beef. My owner tolerates me only because of a lack of understanding. He is beginning to see my short comings. I can see the handwriting on the wall. My tribe is doomed."

The Plaintiff has won the case. Remarks are useless in the face of this confession, and the sight of living evidence. The verdict returned by the jury was as follows; "We the jury duly empaneled and sworn in the above named case, find the defendant guilty as charged and condemn him to be shot. We also request that all living relatives residing within the borders of 'Progress' County 'Forward' State be given a like sentence within the shortest possible time."

A Scrub Bull is lead out of the room. A shot is heard outside, and a thud, as A Scrub Bull meets his fate at the hands of the executioner.



## How Potash Pays in Alabama

(From page 21)

acre, while an additional 50 pounds of muriate of potash produced only 11 bushels. This gives a return of \$26.00 per dollar invested when sweet potatoes are valued at 50 cents per bushel. The returns from acid phosphate and nitrate of soda were \$13.15 and \$7.44, respectively. On this soil "potash pays" more per dollar invested than the other two plant food elements combined.

On Coastal Plain soils a fertilizer mixture made up of 480 pounds of acid phosphate, and 400 pounds of cottonseed meal, together with 50 and 100 pounds of muriate of potash was used for sweet potatoes. Muriate of potash at the rate of 50 pounds per acre in above mixture increased the yield 21 bushels and at the rate of 100 pounds, only 18 bushels per acre. Based on the above yields the value of a dollar's worth each of acid phosphate, cottonseed meal (\$45.00 per ton) and muriate of potash is \$8.70, \$0.77 and \$10.50, respectively. As was true of the Appalachian Plateau soils potash gives a larger return for the money invested than the phosphatic and nitrogenous fertilizers combined.

When used with acid phosphate, nitrate of soda or cottonseed meal at above rates per acre, muriate of potash in excess of 50 pounds per acre is not profitable. The fact remains, however, that "potash pays" and pays well for sweet potatoes.

### *Sugar Cane*

CONSIDERABLE experimental data have been collected by the Alabama Experiment Station based on regular fertilizer tests with sugar cane on the Lower Coastal Plain soils. In these a mixture of 480 pounds of acid phosphate, 400 pounds of kainit (\$14.00 per ton)

and a nitrogenous combination of 400 pounds of cottonseed meal and 100 pounds of nitrate of soda, was used per acre. This mixture which cost approximately \$20.00 increased the yield 140 gallons of syrup, worth \$70.00 when valued at 50 cents per gallon. Based on the above increased yield and the above rates of application, one ton of acid phosphate increased the yield of syrup 208 gallons, one ton of cottonseed meal and nitrate of soda in above combination, 123 gallons, and one ton of kainit, 265 gallons; or gave a return per dollar invested of \$8.00, \$4.45 and \$9.46, respectively.

### *Result Demonstrations.*

ANOTHER interesting phase of the potash question as it relates to Alabama conditions is the constant and rapid increase in the amount of potash used throughout the north half of the state. This half of the state is composed largely of heavy land with red clay subsoils relatively rich in potash. There has always been a general impression among farmers and agricultural workers that potash could easily be left out of fertilizer mixtures for cotton in this section. The results of recent experiments conducted in this territory were so radically different from the old teachings that agricultural Extension workers have encountered some difficulty in converting farmers to the new method of fertilization.

The last three years have brought about some wonderful changes. County agents have established and carried to definite conclusion hundreds of demonstrations based on these experimental data. These demonstrations have shown conclusively that "potash pays" under cotton. As proof of this the following facts are submitted.



On one demonstration in a red land county where potash alone was applied to cotton, farmers visiting the demonstration were hard to convince that nitrate of soda had not been applied through mistake.

**A**NOTHER interesting case is of two farmers owning adjoining red land farms. One farmer fertilized 144 acres with acid phosphate, nitrate of soda and kainit and harvested 99 bales of cotton while his neighbor on 135 acres of similar land fertilized with acid phosphate and cottonseed meal, harvested 33 bales. As a result every farmer for miles around will use potash in his fertilizer mixture for cotton in 1924. In 1922 this county did not buy any potash as such, but in 1923 a few farmers bought 35 tons of kainit cooperatively, very largely for demonstration purposes. As a result of the increased yields obtained from this small tonnage the 1924 cooperative purchase amounts to 242 tons of kainit. Another typical red land county increased its kainit tonnage from 0 in 1922, to 83 in 1923 and to 605 in 1924. Many other examples just as interesting could be enumerated.

Taking the total amount of potash, expressed in terms of kainit, bought cooperatively by the 33 counties making up the north half of the state we find that the tonnage has increased from about 200 in 1922, to 1,397 in 1923 and to 4,826 for 1924 season.

"The proof of the puddin' is in the eating," and the proof of the value of experimental data is in the continual and ever increasing application by farmers of the principles evolved.

Establish the fact that "potash pays," then demonstrate this fact to the masses and the future will take care of itself.

## Tax on Fertilizers Reduced

The State Board of Agriculture is saving money for the Kansas farmers and stockmen, in the administration of the feedstuffs and fertilizer laws. The first saving was effected in the reduction of the cost of feedstuffs analysis, and the second is in the reduction of the fertilizer tax just now announced.

The last legislature transferred the administration of the fertilizer law from the Director of the Experiment Station at Manhattan to the Secretary of the State Board of Agriculture at Topeka.

Upon getting into the real work of administering the law it was found that in the seventeen years since the law was enacted conditions in Kansas have changed quite materially in some things affecting the law, and affected by the law. The secretary therefore called a conference at his office in Topeka and asked representatives of some of the leading fertilizer manufacturers to meet with him and the officials of the Control Division of the Board in order to go over these matters and come to a mutual understanding. Representatives were present from Chicago, St. Louis, and other centers of the fertilizer industry and it was decided with the approval of the Attorney General that a new tax tag good for 100 pounds is to be issued. This will reduce the tax on fertilizer for the reason that formerly only a tax tag good for 200 pounds was issued and when this was used on a 100 pound sack of fertilizer, which is the way much of the fertilizer is sold nowadays, it caused the payment of a tax of 50 cents per ton instead of the 25 cents per ton contemplated by the law.

Various other matters were discussed and an understanding reached which will have a tendency to simplify the administration of the law making it more practical and better for both consumer and manufacturer.



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## Winter Wheat

(From page 13)

- (c) treatment of the seed for smut
- (d) use of fertilizer
- (e) control of Hessian Fly.

Wheat is a delicate feeder which thrives best in a fairly deep seedbed with a fine, well packed bottom and a mellow top free from surface trash. That kind of seedbed is made by (a) early plowing, which gives the land time to crumble and settle (b) occasional harrowing during the summer to reduce surface evaporation and kill weeds and (c) making a mellow surface just before sowing. You cannot possibly make the best seedbed by late plowing or by failing to destroy weeds after early plowing. A rank growth of weeds leaves the land poor and dry. When they are plowed under late they make the land so loose and porous that young wheat is liable to be damaged by drying out or freezing. Thorough experimentation has proved the value of early plowing and summer fallowing as a profitable means of increasing yield.

Varieties of wheat are as different as people. A good man in the right place is a shining light; in the wrong place his light is dim. Between the yields of good varieties and poor ones there is often a difference of 5 to 10 bushels per acre. But misplacing even a good variety often makes a poor crop. Be careful then to use the right variety in the right place. It will cost no more, but will increase the yield profitably. Your State Experiment Station can tell you where different varieties belong.

Those terrible scourges of wheat, loose smut and stinking smut, cut profits by untold millions every year. Disease-free seed and the formalin treatment are simple, inexpensive means of avoiding the

greater part of these losses. A postcard to your Experiment Station will bring advice on how to save that 5 to 15 per cent of your crop, which may otherwise fall in blackened ruin before these diseases.

**I**N nearly every community someone has learned that fertilizing wheat pays. Even when wheat is grown out of rotation a dollar spent on fertilizer will net a profit of one or two dollars an acre; and when wheat is rotated with clover, corn, and oats, your dollar's worth of wheat fertilizer will earn several dollars in increased yields. The most profitable quantity of wheat fertilizer will depend upon how well the soil has been managed, the quantity of manure applied, and the number of legume crops grown. Tell your Experiment Station these conditions and ask for advice on this point.

The Hessian Fly is a terribly destructive pest, but easily controlled. It is partly controlled when you plow wheat land early, for large numbers of the fly are then buried and destroyed. After that, occasional harrowing to destroy surface growth and so deprive the fly of summer food, followed by delayed seeding in the fall, which puts the young crop out of the fly's reach, will largely settle your fly problem.

There is little or no profit in 15-bushel wheat; there is good profit in 30-bushel wheat. Some land will make 30 bushels or more without good farming, but no wise farmer will miss the greater profit that comes from aiding even good land. And the average man who now farms in an average way on average land will find some financial comfort in the five good practices I have suggested.



## Firman E. Bear

Associate Professor of Soils  
Ohio Experiment Station

**O**HIO stands in the center of a group of states which produce the highest average acre yields of winter wheat. North of these states lies the spring wheat area. South of the Ohio River, the climatic conditions are somewhat less favorable to the wheat crop. Within the state, the center of highest wheat yields is found in the northeastern portion of the state. Wayne County, of which the county-seat is Wooster, is one of the outstanding wheat counties of this area.

It happens that the main experimental farm of Ohio is located at Wooster, and that records of the effects of various soil treatments and of the weather as related to the yields of various varieties of wheat on this farm are available covering a period of more than a quarter of a century. In favorable seasons wheat yields of over 40 bushels per acre are not uncommon on well managed plots on this farm. The record yield is over 58 bushels.

From the weather records it appears that October, January, March and June are the critical months. Relatively, a dry October;

a warm, dry January; a cold, wet March; and a wet June seem to favor high yields. Under such conditions it is probable that the root systems of the wheat plants become better established in the autumn; the temperature is maintained above the critical point in the coldest month of the year; there is a rather sudden break between winter and spring; and there is sufficient rainfall to prevent the lack of water from being a limiting factor while the heads are being filled.

Notwithstanding the weather, it is possible to raise the average yields of wheat by systematic management of the soil and by the use of varieties or strains of wheat which have been selected as being best adapted to the conditions which obtain. Thus in the five year rotation fertilizer tests at Wooster, the average yields of wheat for the period from 1906 to 1918 have been 12, 15½, 25, 30½ and 32 bushels per acre on the untreated; limestone; limestone and acid phosphate; limestone, acid phosphate and nitrate of soda; and limestone and complete fertilizer plots, respectively.

**I**N an attempt to determine somewhat more specifically the fertilizer



Wheat field of P. R. Edgerton, Marion, Indiana. Note contrast between plot where no fertilizer was used and one which received a complete fertilizer. The first yielded 6.5 bushels per acre; the latter 33.8 bushels per acre.



treatment best suited to the needs of the wheat crop, when grown on the Wooster silt loam soil, a field test was begun about 10 years ago in which fertilizer analyses were employed which earlier investigations had indicated might be more nearly suited to the needs of the wheat crop than were those which had been employed previously. From the data obtained from these tests it seems logical to conclude that a 2-14-2 or similar fertilizer analyses can be expected to satisfy requirements both as to yield and as to the value of the increase above the fertilizer cost. It is necessary to add that this suggestion applies to soils on which the clover crop appears regularly every third or fourth year in the rotation, but which receive little or no manure.

Soils which have not been clovered, and which are therefore in a low state of productivity, will probably require a 3-12-4 or similar analysis for best results. Those which are manured regularly, in addition to growing good crops of clover, would probably produce satisfactory yields of wheat in favorable seasons if the fertilizer was confined to acid phosphate. Black soils may yield sufficient nitrogen and potassium for satisfactory wheat yields but most light colored soils, unless manured and clovered, are likely to show considerable response to all three of the fertilizer elements.

Three common varieties of wheat in Ohio are known as Fultz, Poole and Gypsy. Selected strains of these varieties which have been named Trumbull, Portage and Gladden, respectively, have been found to outyield the mother varieties by several bushels per acre. Farmers who use these improved strains of wheat and who maintain their soils in a fairly high state of productivity by the use of clover, manure and fertilizer, should have little difficulty in maintaining their wheat yields at an average of over 25 bushels per acre. Many factors

are involved in determining the profitableness of growing wheat, but a 25 bushel yield under average conditions is likely to make the wheat crop worth while on the general farm.



## H. W. Warner

Extension Associate Professor of Soils  
Iowa State College of Agriculture

ABOUT four years ago Alfred Meilike, a young farmer in Warren County, Iowa, agreed to put on a phosphate-on-wheat demonstration, cooperating with his county agent and a field man for one of the fertilizer companies.

The fertilizer was applied, the wheat sown and the treated plot harvested and threshed separate from the rest of the field. The test plot gave an 11 bushel increase for the fertilizer treatment plus better quality of grain. The next year a carload of fertilizer went into that community.

"Nothing unusual about that," someone may say.

Not at all. On the contrary, similar results might be expected on the great majority of winter wheat fields. But it should be remembered that the one thing that persuaded Mr. Meilike and his neighbors to start the use of fertilizers for wheat was the simple little one-acre demonstration plot.

The point I would make in citing this experience is: help farmers to learn how to reduce production costs. Over a great part of the winter wheat growing sections fertilizers are not generally used, although experiments have conclusively proven that their intelligent use is one of the sure means of increasing profits for the winter wheat grower.

Unless a farmer is using fertilizer on his wheat, there is good reason to believe that he should try it out to his own satisfaction, at least.



Therein lies an almost unlimited field for demonstration or trial. I have no statistics to support this statement but it is my belief that fully 50 per cent of the winter wheat growers have never used phosphates or other commercial fertilizing materials. In Iowa, the fertilizer users represent one or possibly two per cent of the wheat growers. The same is likely true of many other parts of the winter wheat belt.

Again, he may be using a fertilizer entirely unfitted to his particular requirements. This constitutes another broad field of educational possibilities.

Small-scale field tests will not at once result in greater profit from the 1925 winter wheat crop. The immediate profit and the important one—is in the experience and knowledge gained by the men conducting such tests and by their neighbors who have occasion to see the results. In other words, a field trial doesn't sell much fertilizer but it may sell the "fertilizer idea." Once this idea is demonstrated and fixed in the mind, the using of the fertilizer as a farm practice easily follows.

Demonstrations, or trials, need not and in fact, should not be elaborately planned or minutely detailed pieces of work. Complicated arrangements and too numerous treatments of plots only serve to confuse the ones for whom it is intended. One fact forcibly brought out is worth a half dozen which leave the mind in a state of partial doubt or confusion. Simple arrangements of plots enable the farmer to harvest and thresh separately the untreated and treated portions of the field. One acre plots are good. Three or five-acre plots are better.

"In numbers there is strength" applies equally well to the matter of putting across the fertilizer-for-wheat program. Ten 5-acre field tests are worth many times more than one 50-acre treated field.

Fertilizer requirements, both as to kinds and amounts, afford an almost unlimited opportunity to

the fertilizer industry, to county agents, to agronomists, to bankers and to all others directly interested in making winter wheat growing more profitable.

The suggestion offered in these paragraphs may not make anybody more profit in 1925. But it may help in making the winter wheat crop of 1926 or 1936 a more profitable venture for some who have not yet learned the needs of their soil.



## T. A. Kiesselbach

Agronomist

Nebraska Experiment Station

USE of the best farming methods applicable in any community will do much to put the growing of winter wheat on a more profitable basis. For the individual farmer, high yield of good quality grain, produced at relatively low cost means greater profit. This result can usually not be brought about to its fullest extent on the average farm in a single year, since the current crop is influenced to a considerable extent by the character of farming for several years past. Now is the time, however, to plan the farming system and lay the foundation for the greater and more profitable production which is certain to ensue. On many farms this means primarily a more effective use of crop rotation, and somewhat more feeding of livestock for the purpose of building up the organic matter content and available fertility of the soil. Such a rotation system should contemplate the use of more grass and leguminous pasture and meadow crops which are suitable for short time rotations. Where adapted, the biennial clovers are especially suitable. The queen of all forage crops, alfalfa, should be utilized wherever practicable, changing to other land about every four years rather than leaving down in long time permanent



meadows. Such judicious use of forage crops in the rotation wherever the best experience has indicated their use desirable, will in itself often add from 20 to 50 per cent to the yield of winter wheat as well as of other crops grown in the rotation. These forage crops are in themselves among the most profitable crops grown.

In some states the profitable use of commercial fertilizers has been fully demonstrated, and their judicious use in such regions should serve to increase profits from wheat growing. In other sections, such as Nebraska, which have been more recently brought under cultivation, the use of commercial fertilizers has not become profitable, and fertilizer applications should in general be restricted to barnyard manure and crop residues.

The character of the tillage given in preparation of the seed bed for winter wheat commonly influences the productiveness of the crop. Especially is this true in the matter of timeliness of plowing and the thoroughness of preventing undue weed growth. Relatively early seed bed preparation enhances bacterial action and the natural formation of available nitrates in the soil. Loss of soil moisture through weeds is thereby also checked and the land is made more receptive to rainfall. By early plowing the seed bed is also likely to become more compact by seeding time, through natural settling processes. It is a well established principle in regions of occasional winter killing that winter survival is superior on well settled seed beds.

A great deal has been accomplished in recent years largely through the efforts of the U. S. Department of Agriculture, and various Experiment Stations, in the production of higher yielding varieties of winter wheat. Every farmer should take advantage of these improved sorts and thereby increase his yields, at very little added cost.

As a very notable illustration of such recent introduction, Kanred wheat may be cited for Kansas and Nebraska. Due to its relatively greater rust resistance, winter hardiness and higher grain yields, this variety, disseminated less than ten years ago, has made money for those farmers in this territory who have been growing it. Together with this recommendation of superior varieties, we should sound a warning of conservatism to avoid highly priced seed of exploited varieties whose local value has not been fully established.

Wheat containing much rye is discriminated against on the market. Such loss should be avoided by the planting of pure seed, which can be done with little added cost. An additional reward for planting such seed will be a greater pride in the growing crop.

In sections of the country where stinking smut is prevalent in wheat in quantities sufficiently large to reduce yield and milling value, the seed should be treated with standard formaldehyde or copper carbonate applications.

ONE of the most important considerations in the profitable growing of winter wheat is the time of seeding. In any one locality there is usually a period of about ten days which may be considered the best time for planting. Greatly delayed seeding results in less stooling, under-developed root systems, greater susceptibility to winter-killing, delayed maturity, greater likelihood of rust damage, and lower yield. On the other hand seasonal conditions must be taken into consideration. In seasons and localities where Hessian Fly promises to be a menace, seeding should be delayed until the arrival of the Hessian Fly free date, as established by Governmental agencies charged with this responsibility. Great losses may



often be avoided by the exercise of due precautions in such matters.

After the crop has been grown its market value will vary with its quality. Harvest operations should be planned so that the least possible grain damage will be incurred.



## H. E. Young

Secretary,  
Illinois Farmers' Institute

**P**ROFIT in wheat growing depends more largely upon yield per acre and relative cost of production, than upon market conditions. Occasionally high prices may enable a farmer to make a profit from an ordinary, or below-the-average, crop of wheat, but year in and year out, only the man who produces a maximum yield per acre is assured of profitable returns. High yields usually net the grower a profit, and no single factor in wheat growing contributes more largely to profitable crops than the proper preparation of the seed bed.

The ideal seed bed for wheat is mellow above and solid below, with moisture close to the surface and all parts of the field equally well prepared. It should be fine and well pulverized on top, firm and well packed below. The nearer it can be made like a garden the better. The more uniform the preparation and condition of the soil, the more uniform will be the germination of the seed and the growth of the young plants. An abundance of soil moisture is necessary for the best growth and development of the crop. Proper and timely attention to the making of the seed bed will provide these conditions.

**P**LOWING is not always the best method of breaking ground for wheat. Unless there has been plenty of rain throughout the season, plowing will likely leave the ground too dry and cloddy. A cloddy seed

bed is always undesirable. This condition can best be avoided by not making clods rather than attempting to work them into condition with a clod crusher and harrow. In case the plow is used, plow shallow, just deep enough to allow sufficient depth for seeding. The under soil should not be disturbed more than necessary, as deep tillage tends to increase winter injury from freezing and thawing. About the only need for a plow in preparing a wheat seed bed is to kill weeds, or to cover an excess of stubble from the previous year.

A disk harrow is the best all-round implement for properly preparing a wheat seed bed. Repeated disking will make a fine seed bed of uniform depth without disturbing the lower soil. By lapping the disk one-half the ground is kept level and the soil is well pulverized, the number of diskings depending upon the condition of the field. Such preparation may require more labor than plowing and harrowing, but will invariably produce higher yields and greater net profits at harvest.

**E**XPERIENCE proves the advantage of preparing wheat ground as early in the season as possible. This means in July or early August, in most winter wheat sections. A very good practice is to seed wheat after oats, using a variety of oats which can be harvested early. Early seed bed preparation prevents the rapid and excessive loss of soil moisture caused by growing vegetation. The disking also conserves soil moisture by stopping evaporation, and opens the surface so that all rainfall is readily and completely absorbed for the use of the crop.

With good seed, treated for smut and planted at a time to avoid the Hessian Fly, it is entirely possible to increase winter wheat yields from 50 to 100 per cent, on ground prepared in this way.



## Warehouse Financing

(From page 27)

which was usually the case, was to sell on the market. Warehouse receipts of those days were valueless as collateral except in the immediate vicinity where both parties to the transaction were known.

Right here the Department of Agriculture stepped in and brought about the passage in Congress of the United States Warehouse Act, in 1916, which, with its amendments, has proved a veritable revolutionary document for it has taken the financing of agricultural products out of the restricted local class, and has placed it on a nation-wide basis. Still further aiding the farmer, the Agricultural Credits Act of 1923 has opened a larger field of credit than has ever heretofore been available. It is with these federally organized warehouses, largely, that the newly-created cooperative cotton marketing bureaus do their storage business.

The principal value of government supervision over warehousing is that every warehouseman under the Act must, upon request, issue a receipt to the owner in a standard form prescribed. Such a receipt, whether it be negotiable or non-negotiable, must contain a clear statement of the weight, quality, quantity, and the graded classification of the commodity. This receipt at once lifts the financing of the stored product out of the narrow local market and places it on the open money market of the country. The Federal Reserve banks know and recognize these receipts at sight. So does the War Finance Corporation. A local banker need no longer fear a shortage of funds in the crop-moving season for he knows that the rediscount privileges of these big reserve banks are open to such paper—indeed, that they consider it the best kind of collateral.

Not long ago I got into communication with a large number of banks in the agricultural districts and with many warehousemen operating under the United States Act. Almost without exception they voiced the same expression that the liquid credit facilities offered under the Act are a distinct boon to financing operations. Another significant fact came out that, almost without exception, a local banker is now to be found on the board of directors of the local Federal warehouse, and it has further developed that the Federal Reserve banks now decline to rediscount all paper based on commodities stored in a warehouse owned or controlled by the owner of the stored goods. Now that the Federal warehouses are so well established many of the cooperative cotton marketing associations demand that the cotton which they undertake to sell for their clients be stored in such a warehouse, and the War Finance Corporation writes that it has never had occasion to refuse a single application for a loan where the collateral offered was a Federal warehouse receipt.

The fee required for licensing under the Warehouse Act is, in case of cotton, \$1.00 for each 1,000 bales capacity. The minimum fee is \$5.00. The maximum, \$50.00. The amount of the bond required by Uncle Sam is also based on the storage capacity of the warehouse and is at the rate of \$5.00 a bale, the minimum being \$5,000, the maximum, \$50,000. The Bureau of Markets will supply, on application, licensed graders and classifiers. This is not obligatory, however, though most of the warehousemen employ the licensed graders as it is to their advantage to do so. The expense is small and is borne by the depositor of the goods.





## Wood and tonnage? Or fruit and profit?

**S**OME California fruit growers fertilize in such a manner that they get only wood and tonnage of yield. They get lots of fruit, but of a poor grade. Other more careful and farseeing growers fertilize to produce *premium products!* They are not interested in yield alone; they want grade, sugar, shipping quality, color—that's where the money is.

You, too, should look into this matter of fertilization. Find out what your own soil needs. You will need available potash if you are to raise premium products, for it is potash that influences the sugars. Potash also promotes the healthy growth of fleshy fruits.

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## An Orange Grove that Came Back

(From page 16)

will become available when needed, at least two months ahead of each of these growths, results became noticeable. Each growth responded to particular or individual feeding, different for each application. During the month of December, 1920, one bale per tree of damaged barley hay was spread on top of the soil with a mixture of commercial fertilizer on top, at the rate of 12 pounds per tree analyzing 8 per cent nitrogen, 8 per cent phosphoric acid, 2 per cent potash, all plowed under and harrowed down. Rains came on, which started a barley cover crop. A dry Spring followed. All the neighbors had to irrigate their cultivated and cover-cropped soil, but on this particular piece with the barley waist-high, there was sufficient moisture to carry the cover crop and trees through without any damage to either through that period. The cover crop was not disturbed—to do so would have disturbed the feeder roots. The deduction from this was that the trees had started feeding, therefore plowing and discing would disturb them.

April 20, 1921, an application of 12 pounds of the same analysis commercial fertilizer was applied on top of the cover crop and all turned under by discing. All this was accomplished after the bloom had set, and it was generally considered that there would not be any fruit under this sort of cultivation at that particular time.

The fall growth of 1921, came on very heavily and to harden this for Winter, an application of 2 pounds per tree of sulfate of potash was made. A fair crop was set and very good fruit wood was in the making, which fruit wood is the most essential thing to produce in order to accomplish desired results, for without new fruit wood each year,

the tree will have what we call die-back.

January, 1922, an application of 10 pounds per tree of a high grade tankage analyzing 10 per cent nitrogen, 8 per cent phosphoric acid was applied, with a thorough working of the soil, leaving the soil in a rough condition so as to absorb all the early Spring rains without any working.

April, 1922, the trees appeared to be back in their normal condition and an application of 12 pounds per tree analyzing 5 per cent nitrogen, 8 per cent phosphoric acid, 2 per cent potash, was applied, then 2 pounds of potash applied in August.

The crop picked in the Spring of 1923, was the heaviest of this grove's history, of the finest quality and the returns alone more than justified the cost of the fertilizer program without taking into consideration that the grove became one of the best in the District again.

The most remarkable change and lesson was accomplished on the Sweet trees that had been ordered out. Knowing that this type of tree had been failing in production and color all through the district and wanting to remedy this condition, the trees were not destroyed. They were characteristic of many groves of this variety in this district—defoliated, seemingly nothing but dead wood, yellow and mottled, producing *no* fruit. Certainly not profitable. The above treatment brought them back. They are now better than any other Sweets in the district. The only difference in the fertilizer program between these Sweets and those of the neighbors—it being accepted that fertilizer produced results—was that these particular trees received potash. Today the growers who have not added potash have not corrected their trouble.

(turn to page 59)



## Film Farming

(From page 9)

progressive farmer learns that clean handling of wool, grading and co-operative selling, will bring success in his search for the Golden Fleece.

"Sir Lacteus, the Good Milk Knight" is a fantastic story of a little girl, averse to drinking milk, who dreams she is kidnapped by Sir Disease. Her parents appeal to Sir Lacteus, who, aided by his cohorts, Sirs Fat, Sugar, Lime, Protein and Vitamine, defeat Sir Disease's men and rescue the child. Through this fanciful story the food value of milk is emphasized.

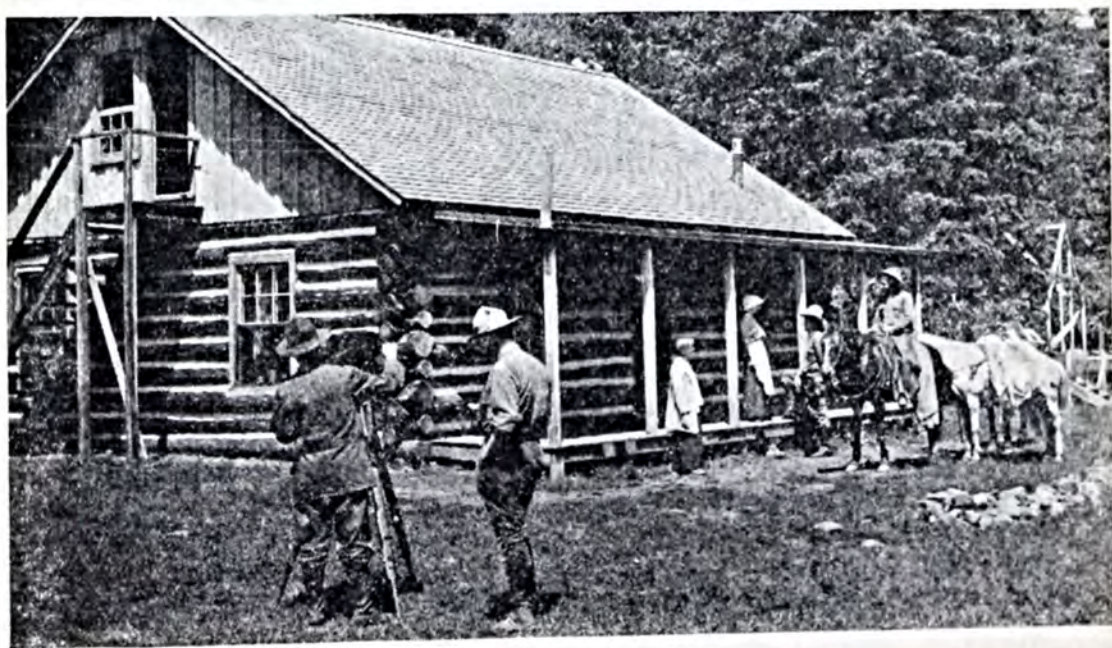
"The Charge of the Tick Brigade" is an animated cartoon in which cattle are attacked by ticks with resulting mortality, and Mrs. Tick in an illustrated lecture, thanks cattle owners for not dipping cattle. "Dates" is a picture that shows how determination, applied science, and irrigation water have transformed the desert land of the Southwest into productive date gardens.

Some strikingly beautiful scenic pictures have also been made in connection with the National Forests. "Up to Hyalite," for example, carries the audience through the adventures of a party

of tenderfeet in Middle Creek Canyon in the Gallatin National Forest of Montana, and their rescue by Forest Rangers. "She's Wild" is a thrilling picture of broncho-busting, roping and cattle tying. "Cloud-Busting" portrays the adventures of an automobile touring party in the White Mountain National Forest.

EVERY conceivable subject of the more important investigations and studies by the Department have thus been handled for visual presentation. These include methods of controlling hog cholera, cattle ticks and other animal diseases and parasites, the better breeding of livestock, eradication and control of plant diseases and insect pests, game protection, forest fire prevention and control, farm management, and marketing methods.

The main difficulty with the pictures is that the demand for the films is always greater than the supply, but the Department is planning even greater conquests in the future. "Rice, from Paddy to Bowl," for example, shows methods



Doing "Western stuff" on location is all part of the Department's movie work.



of harvesting and handling rice that tend to improve the quality of the product and enhance its market value. Many people in the northern part of the United States believe that all the rice sold at the local grocery store is grown in the Orient. The film shows that last year the United States produced over 22,000,000 bushels of rough rice, which allowed a large quantity for export. The picture was made in the rice fields of the Lower Mississippi Valley and in mills in that region.

Other films now in the making or which are being planned include a picture on the production and uses of turpentine, and how to produce the naval stores without injuring the stand of timber. There will be pictures on methods of combating strawberry diseases and forest insects. The Florida citrus fruit industry will be depicted from the laying out of orchards, types of soil, orchard management, packing house methods and marketing. Another picture will deal with cooperative livestock marketing.

Community cotton standardization that deals with seed selection and grading of the product will be filmed. "There's Magic In It" is the tentative title of a scenario on farm accounts and farm management. The work of boys' and girls' clubs will be shown in another picture. "Rodent Robbers" is the title of a picture on methods of combating prairie dogs. Another film will portray the social aspects of rural life, and still another will show approved methods of farm home management. "Weighed in the Balance" is a milk film dealing with better breeding of dairy cattle.

A drastic censorship has been set up in the motion picture work, so that the pictures will not give racial or religious offense to any group. The Board of Censors is composed of the Secretary of Agriculture, Assistant Secretaries, and Bureau Chiefs. Every presentation of scientific discovery is carefully checked

for accuracy; every gesture of the actors and actresses is carefully scrutinized. Custard pie comedies are anathema, as are also the fervid sex dramas of the Nickleodeon.

THIS censorship makes life hard for the movie folks, but the reward is a product that is unexcelled for educational value and story interest. Indeed, the films have been held by leading critics as the best type of educational pictures produced anywhere else in the world.

The Department has found that the showing of films on circuits makes it possible to get the maximum service from the pictures, and therefore favors the organization of circuits over which the films may be distributed. In such circuits county agents, home demonstration agents, club leaders, bureau field men, or any other class of Department or State extension workers may be organized and films may be routed from one to the other. The Department will gladly cooperate with any State agricultural college or other State or Federal institution in arranging such circuits and in preparing programs of films.



## An Orange Grove that Came Back

(From page 57)

As a caretaker, there was the opportunity to watch results, for fertilization to me at that time was nothing but a difference of opinion. After overcoming so much trouble, so easily, a larger field was entered. Today there are 14 groves totaling 450 acres in various stages of convalescence under my personal supervision, that is, as to their fertilization. I am using potash—2 pounds per tree—each fall.



## Why the Grange is Different

(From page 18)

the time. That is a part of our living. What the Grange does is to help us do them better, but the special things the Grange does are in helping out all these other projects which make our communities better, our people happier, and our hours outside of our work, more worth while."

I take it as fundamental that the reason the Granges keep on, keep working, keep growing, keep spreading, and keep increasing in prestige and in good repute, is because they deal so largely with the leisure, the outside-of-routine, the social, the recreational, and the educational sides of agricultural life. In the doing of these things, the members of the Grange are really learning to know each other as they are—outside of the dollar environment—and because of this knowledge of each other come the realities of business confidence, when the time arises for business organization for mutual benefit.

I have a map, on which is designated by black dots and other indications, the localities where successful cooperative enterprises are flourishing. I have another map on which by dots and other indications the localities where Granges are flourishing. With a few exceptions, one the great fruit cooperative section of California, the dotted and shaded areas of the two maps almost coincide. But the Granges are thirty and forty and fifty years old. The cooperatives are eight or ten or fifteen years old.

Because I have emphasized the ritual work, the open Bible, the American flag, the order and the secrecy of the Grange, its community work, its emphasis on social recreational and educational lectures, it must not be understood that these exclude definite agricultural work. I have emphasized them because in these things the

Grange is different. It does this in addition to doing for farmers, in relation to their own business, all that any organization can safely do, as shown by the history of agriculture in the last half century or more.

WERE I asked in detail to tell why the Grange is like other agricultural organizations, I would recount its experiments and its failures in the field of both cooperative buying and cooperative marketing. The history of the Grange from 1874 to 1880 is a history of spectacular cooperative efforts and failures. Since then those who went through this experience in which most of the dross had been burned out, and the lessons of hard experience learned, remained here and there in groups who still held fast to the fundamental principle of cooperation. These groups began to carry on cooperation, and to do it successfully. I would also recount its efforts to benefit agriculture by legislative expedients and remedies, and the record made up of the successes and of the failures of these efforts. I would tell of the participation of Granges in politics, usually resulting in the death of the organization so entangled, whether local or state. All farm organizations have done these things. But then I would tell of the wisdom born of experience, of the careful legislative programs worked out with deliberation and long and wise counsel, of tried and tested men sent to state capitals, of strong committees sent to the National Capital, and of the long record of achievements for the leveling up of opportunity and of service rendered by government, which has been secured for the farm people, by the Grange leaders, backed by the power of their organization. And in this recital I would again move out of the realm of



similarity to other organizations into the realm of differences, and if so minded I could recount so many achievements won by the Grange as to make up a record of service, which has never been equalled by any other organization of farmers in any land, at any time.

In the Grange every woman is the equal of every man, and there are no places in the leadership, or in the rank and file which can not be held by women equally with men. In the Grange every Grange law is sacred, and every national law is sacred, to be obeyed and enforced with equal vigor on every person alike. In the Grange there is no religious sectarianism, and no political partisanship. As an organization it takes no part in either, its members are urged to do their full duty and live up to every obligation to both. In the Grange there is no opposition to or jealousy against any other organization. As a secret order, it protects its own membership and limits it to those who are fit, in the eyes of their neighbors, to take part in its work. There was a time when interest in one legalized business—that of selling alcoholic liquor—barred from membership, and the American public took the example of the Grange to heart, and made this same business a bar to citizenship in our Republic. Above every other demand of the Grange, now stands its demand that this law, which it enforced for a half a century in its own membership, should be enforced by all the people, and that no man guilty of violating this law, no matter how high or humble his position, should escape its penalty.

**W**E in the Grange believe that in this organization is gathered today the largest, and most representative group of men and women with a common purpose, a common occupation, and a common desire to preserve so far as may be, the traditions of the founders of our

Republic, and the honesty and simplicity of life which gave to America its soundest and most enduring foundation, that can be found in any organization. We believe that this organization has made a larger contribution to the maintenance of a sturdy all-American, self respecting, self supporting citizenship in the open country, that has been made by any other group or organization.

With all this in the background, however, I am increasingly conscious of the difficulties of upholding agricultural life, and agricultural pursuits, and the life of the farm people, on a ground of equality with those in other environments. There are many, and very grave problems to be met and solved if agriculture is to remain free and equal. There are more, and graver problems to be met by the rest of our nation, if agriculture does not remain free and equal. For this, and for other reasons, the Grange welcomes help in meeting the task, points out the breadth of opportunity for other organizations to come in, opens its store of history and experience to guide others as far as may be, away from pitfalls, and into safe pathways.

**T**HE Declaration of Purposes, adopted in 1873 says:

"We propose meeting together, talking together, working together, buying together, selling together, and in general, acting together for our mutual protection, and advancement, as occasions may require.

"We wage no aggressive warfare against any other interests whatever. On the contrary, all our acts, and all our efforts, so far as business is concerned, are not only for the benefit of the producer and consumer, but also for all other interests that tend to bring these two parties into speedy and economical contact. Hence we hold that transportation companies of every kind are necessary to our success, that their



interests are intimately connected with our interests, and harmonious action is mutually advantageous, keeping in view the first sentence in our Declaration of Principles of Action, that 'individual happiness depends upon general prosperity.' "

In opening its Legislative Headquarters in Washington, by resolution adopted by the National Grange in November, 1918, the following instructions were adopted, and still govern the conduct of this office:

"Said headquarters may, and in our opinion should, cooperate with other farmers' organizations in support of such policies or measures as may be mutually agreed upon."

Perhaps in this too, The Grange is different.



## System

(From page 6)

town, or take a chance that I will meet him coming back?"

The first is a decision—magnus; the second a decision—infantus; but unless some system guides our analysis, selection and rejection in each case, we will find that we have acted on hunch, hallucination or habit, and having acted must hastily seek a reason to justify our jump.

A SYSTEM is first aid to time conservation. Where the disposal of time is left to chance, a day is chaos, and life a labyrinth of wasted hours. System is order, and order is next to cleanliness, and you can go on from that.

That man who plans his day, his week, his month, his life uses time as a measure, and having measured follows the schedule through a busy life to success. We use time as a

measure—a yard stick of eternity—but without this cutting of time into sections it would still go on. A dog displays no anxiety about the passage of hours, he measures not the position of the sun; but we are men, and must plan and systematize.

A system moves forward, but it must encompass possible retreats—it must be inflexible, and yet flexible enough to allow for emergencies. Napoleon spent one hour systematizing his plan for advancing; four hours carefully studying his retreats; but both were systems, and were carried out.

Individuals need system.

Start with the things nearest you. Begin by overcoming the general cussedness of inanimate things. For years I walked to my dresser for my shoe-horn; now it hangs on a screw-eye on the wall near where I dress. It saves a minute and two ruble's worth of energy. A small saving, but of what are hours made if not of minutes? I drop a collar button—there are six more at hand—find it tonight when time is not so precious.

From systems of this nature, branch off into larger things; what you learn of self-control, minute saving and order in kindergarten will help you in the University of Hard Knocks.

Go to the planets, thou sluggard! Learn order, control, system. And work the system as carefully, as steadily as uniformly as the sun and moon and earth uncomplainingly revolve in their planned orbits.

The universe is saturated in system, all of which is proof enough that we, too, should plan our days, our life and our accomplishments according to a system and a schedule.

Blue print your activities, brother, and when we're both rich let's go to the South Sea Isles, and live in peace and comfort, a million miles from the nearest card index file!



## The Unseen Factor

(From page 7)

anything else to do." One's natural reaction is that people ought to have greater confidence in their business and themselves so that they can go calmly on, indifferent to the banter and ridicule of unthinking people, but the facts are that most people are not indifferent. Many are not well enough grounded in science to go about their business with confidence that no matter who laughs now, they will laugh last. Of course, some are going forward with the courage of their convictions in spite of an unfavorable spirit, but for the greatest blessing almost everybody in that community should be in the procession of progress. An unfavorable attitude makes the faint-hearted hold back.

This spirit of selfishness affecting the members of a community is not different in effect from a case of exaggerated individuality on the part of the members. Such extreme individuality generally results in a multiplicity of breeds and varieties maintained to the serious disadvantage of all.

The effect of an unfavorable spirit is particularly disastrous with young people and new settlers. "I guess that pretty miss John picked up in the city won't last long when she bumps up against real work out here on the farm," isn't exactly the kind of encouragement (?) that one finds most helpful in trying to get started in a new environment, and "When that chap from Indiana gets that old, run-down farm so that you can raise beans on it he'll be ready for the undertaker," isn't calculated to greatly cheer a man in his stubborn fight against difficulties.

The pity of it is not alone in the failures it helps to make of those not quite strong enough for such an unfavorable atmosphere, but is also on account of the communities themselves that, growing weaker year by year, have so much need

of the initiative, the enthusiasm and the enterprise of beginners.

Like all situations, fortunately this one has another side to it. There are communities where the resources of soil, climate, human energy, accumulated capital are supplemented by a fine spirit of cooperation and helpfulness. In such communities big men with outstanding qualities of leadership do not consider their power justifies them in taking advantage of their fellows, but rather imposes an obligation to do a lot of lifting and carrying and encouraging so that everybody in the community may enjoy the largest measure of success possible.

And the attitude of people in such communities is that everything showing promise should be given a fair trial and that they should keep in close touch with the outside world so that ideas may be picked up quickly. Beginners and newcomers are given encouragement and assistance.

THE advantages of such a community cannot be better shown than by the brief story of a visit the writer made to one several years ago. This was a famous Holstein center, from which hundreds of carloads of purebred stock are shipped every year, being distributed to all parts of the United States and even to the far corners of the world. The writer, then a county agent in a neighboring county, worked up an excursion party of over a hundred farmers who went by train and auto into the heart of this purebred livestock area. Here the party was met by fifty farmers with automobiles and conveyed to the hotel and the dining hall where the cordiality and good spirit of the



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# About Ourselves

**B**ETTER CROPS is a monthly magazine edited primarily for those who act in an advisory capacity to the farmer.

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community was further demonstrated by the banquet provided and the good words spoken.

Then after dinner the party was divided into six groups and taken by their hosts over six routes to visit a total of over one hundred purebred herds. Here and there along the way the writer witnessed the practical results of this spirit of cooperation. He saw young fellows the victims of unavoidable bad luck kept in the game by a lift given by neighbors who were well established in business. He saw other beginners forging ahead much faster than they could have done in other communities, simply because their neighbors let them have the use of tried sires of breeding that beginners seldom have the advantage of. He learned that when buyers call at a given farm and do not find what they want the farmer takes them to a neighbor who has what he wants. But of all the examples of the advantage of this community spirit, the one that most impressed the writer was the case of the old man who had been induced by one of his neighbors seven years previously to buy a purebred heifer. Many a man has at one time or another owned a purebred heifer, and that is about all that has come of it. But in the favorable environment in which this man lived the heifer became the foundation of a herd of five splendid purebred cows and a thousand dollars' worth of purebred stock had been sold. This is not a big item in the credits and debits of the world nor even of a community, but this case is an illustration of a man who, without initiative, past middle life, and situated on a small farm, found intense satisfaction in his splendid accomplishment. If you please, this man, under the stimulus of the optimistic spirit of this community was a booster and helper where in a non-progressive community he would at best be neutral if not actually a negative influence.

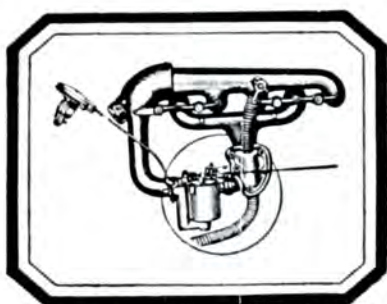


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