

Co-operation With County Agents

The Agricultural Service Bureau of the American Agricultural Chemical Company was organized before the first County Agent made his appearance in the United States. The primary object of the Bureau has always been research. Through the years, valuable data has been gathered regarding soil and crop conditions in various parts of the country, and this information has been made freely available to all.

The coming of the County Agent meant the gaining of a

valuable ally in our research work. We met him on common ground, for we were both seeking the same thing—facts about the soil and crop needs of his county.

In five Northern and Middle-West States alone, our Agricultural Service Bureau has worked with no less than 154 Counties Agents in conducting the co-operative fertilizer tests. The valuable information gained from these and other tests, is yours for the asking. Consult our Agricultural Service Bureau regarding your soil problems.

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Field Tested Fertilizers

Better Crops

The Pocket Book of Agriculture

VOLUME I

NUMBER ONE

Table of Contents: September, 1923

Do You Like Your Job?	5
<i>An inspirational dissertation by Jeff McDermid.</i>	
762 Eggs Pay Plasterer One Day	7
<i>A protest by Llewellyn Trapp.</i>	
What About Wheat?	8
<i>A calming commentary by Jeff McDermid.</i>	
The Three Brothers	14
<i>A thrilling fable by Dr. W. Jervitz.</i>	
Henry Ford is Smart Man	19
<i>An amusing story by Si Bellew.</i>	
Another Plant Disease Conquered	21
<i>A learned treatise by a staff writer.</i>	
Is Lime a Plant Food?	23
<i>A timely discourse by J. C. Penhook.</i>	
Fatigue	24
<i>A revelation on a simple subject by Dr. Frank Crane.</i>	
Farmers Borrow \$1,000,000,000	28
<i>A startling review by Herbert Myrick.</i>	
The Editor's Own Pages	30
<i>A series of brief comments by Jeff McDermid.</i>	
Is Co-operation a Failure?	34
<i>A decisive answer by George W. Hinman.</i>	

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☛ Looks like a good year for the cotton farmer, in spite of the boll-weevil. ☛ Latest Government reports show a reduced percentage and cotton prices soar. Diversification of crops in the South will get a severe blow if cotton goes much higher.



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VOL. I

NEW YORK, SEPTEMBER, 1923

No. 1

Do You Like Your JOB?

¶ *The music's in the
man—not in the violin*

By *Jeff McDermid*

WHEN Ole Bull, the famous English violinist, received an invitation to display his talent before the King and Queen of England, some jealous artists, their hearts fused with vitriol and their arteries flowing with hate, were enviously furious.

When the green-eyed god, burning his incense of asaphœtida, takes possession, the devil laughs with glee—his time is coming. The aim of the world being love, not hate, folks who carry malice soon discover they have no friends to aid them in their troubles—the envious artists could find no way to prevent Ole Bull from giving the exhibition of his skill.

In despair they sought a more direct method—they'd steal his violin, by thunder!

And so, on the eve of the concert, as the theatre was filling up with good folks who had come to hear Bull and see the King, a pair of

wretches from the envious clan crept into Ole's dressing room and stole his fiddle—a priceless heirloom of marvelous tone.

The orchestra strummed its opening overture—the curtain rose—a hush of expectancy dropped like a mantle over the audience and Ole Bull stepped forth—*without his fiddle!*

Unprecedented! What would His Majesty say!

"Your Highness—and ladies and gentlemen!" rolled forth the famous violinist's voice. "I am sorry to announce that in some unexplainable way my violin has disappeared from my dressing room, and I am forced

to appear with no means of entertaining you.

"I attribute this piece of astounding thievery to a brace of infamous scoundrels who hoped, by stealing my fiddle, to make me appear ridiculous. With your permission I am going to prove to them—and to you—that *the music is in the man, and not in the violin!* I have sent out to a music stall for a cheap fiddle. I gave my man a pound note and told him to purchase the first one that he found that could be bought for that price. He will return in a moment and we will proceed with the concert!"

Thus out of a cloud of gloom the Optimist weaves a strand of purest gold—the evil mind proposes, the righteous, with the strength of Gideon, disposes. All of which is tried, tested and true.

The man returned.

Bull took the pound note fiddle, tuned it carefully, and waved his bow to the orchestra leader as a signal to begin.

Softly at first, but gaining strength and sweetness, even as a girl flowers and evolves from rosy maidenhood into sweet and charming womanhood, the strains from the cheap fiddle mounted and soared to the roof of the old theatre, echoing back as if sent from Heaven—sweeter music had no man's ears ever heard.

The crowd was first charmed, then thrilled and finally could no longer restrain its enthusiasm. A wild, beating wave of hilarious applause burst forth, even before Bull had completed his masterly rendition!

The King himself rose and led the cheering.

For a man had proved beyond all question that the music was in himself and not in his instrument.

The envious artists crept from the

hall unseen, unsung, unnoticed. Those who vibrate evil and secure their joy in undermining others soon discover that the world has no niche for them, which is as it should be.

No one can kill the power that is in another man—that privilege is granted only to the man himself. Others cannot harm you. If you are harmed, if your prestige is shaken, your reputation shattered, look back and see what act of yours is responsible, and remember, brother, the music is in you, not in your job.

In every age, on every page of history, we see folks who are dissatisfied with their lot—artists who wished they had trained for the ministry, ministers who vow they would have had the world at their feet had their kind but brainless parents placed a palette and brushes in their hands at the psychological moment!

All wrong, brother, all wrong.

One man takes a board and makes a sidewalk of it; another chap, with clearer vision, takes the other half of the same board, tests it for fibre, strength, growth and resonance and makes a Stradivarius of it—the wood is the same—the difference is in the vision.

Those folks, who, enraged at the failure of Nature to place them in the proper niche, rant and rave and moan and pine and droop and fuss—these folks simply do not see what is in the wood. All of which goes to prove, without further exhaustive calculations, that each of us is put into this world to effervesce, create, evolve and fructify in our own little place—and woe be unto him who will not understand this—his job will wither, crumble and smother itself under a mantle of failure.

We, in agriculture, sometimes wish the gods had (*turn to page 55*)

762 Eggs Pay Plasterer for One Day's Work

¶ *Virginia farmer shows why farmers are not building new barns and houses*

By Llewellyn Trapp

A MAN who runs a farm in Virginia sent to the *New York Herald* the other day a letter in which he translated the cost of construction at present wages into food at the price the farmer gets.

The example he gives is most illuminating:

"It takes 63½ dozen, or 762, eggs to pay a plasterer for one day of eight hours work.

"It takes 17½ bushels of corn, or a year's receipts from half an acre, to pay a bricklayer one day.

"It takes twenty-three chickens weighing three pounds each to pay a painter for one day's work in New York.

"It takes forty-two pounds of butter, or the output from fourteen cows, fed and milked for twenty-four hours, to pay a plumber \$14 a day.

"It takes a hog weighing 175 pounds, representing eight months' feeding and care, to pay a carpenter for one day's work."

These facts are beyond argument. Reduced to barter and exchange the charges made by skilled labor are startling to say the least. How do they "get away with it," to use the slang expression.

The answer is simple. Labor is organized. Its creed is, "Work less,

demand more, increase membership." The farmer, in his present unorganized state, protestingly accepts what is handed to him. He dare not strike, from patriotic reasons. Food is the coin of the earth. He must go on producing, else nations starve. And his overproduction ruins his own market.

Labor knows how to handle its oversupply. So does Capital. When there is an oversupply of labor, each man continues to hold his job, but "strikes on the job"—that is, he simply loaf along and thus makes work for a brother workman. When there is an oversupply of oil, the Standard Oil and other big oil companies do not dump it on the market and thus destroy the selling price.

No, indeedy! They store it in tanks and hold it until the market is ready for it—at their own price.

Tire manufacturers, through The Rubber Club, an organization composed of the heads of the big rubber companies, wisely calculate just how many new cars will be manufactured each year. They then plan to produce just four tires for each new car, adding to this number a sufficient supply to (turn to page 56)



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What about

By Jeff McIlernid

MARK TWAIN is reputed to have said, "Everybody talks about the weather, but no one ever seems to do anything about it," and the farmer today feels that everybody is talking about wheat—talking until it is almost a taboo subject in many quarters—but no one seems to do anything about it.

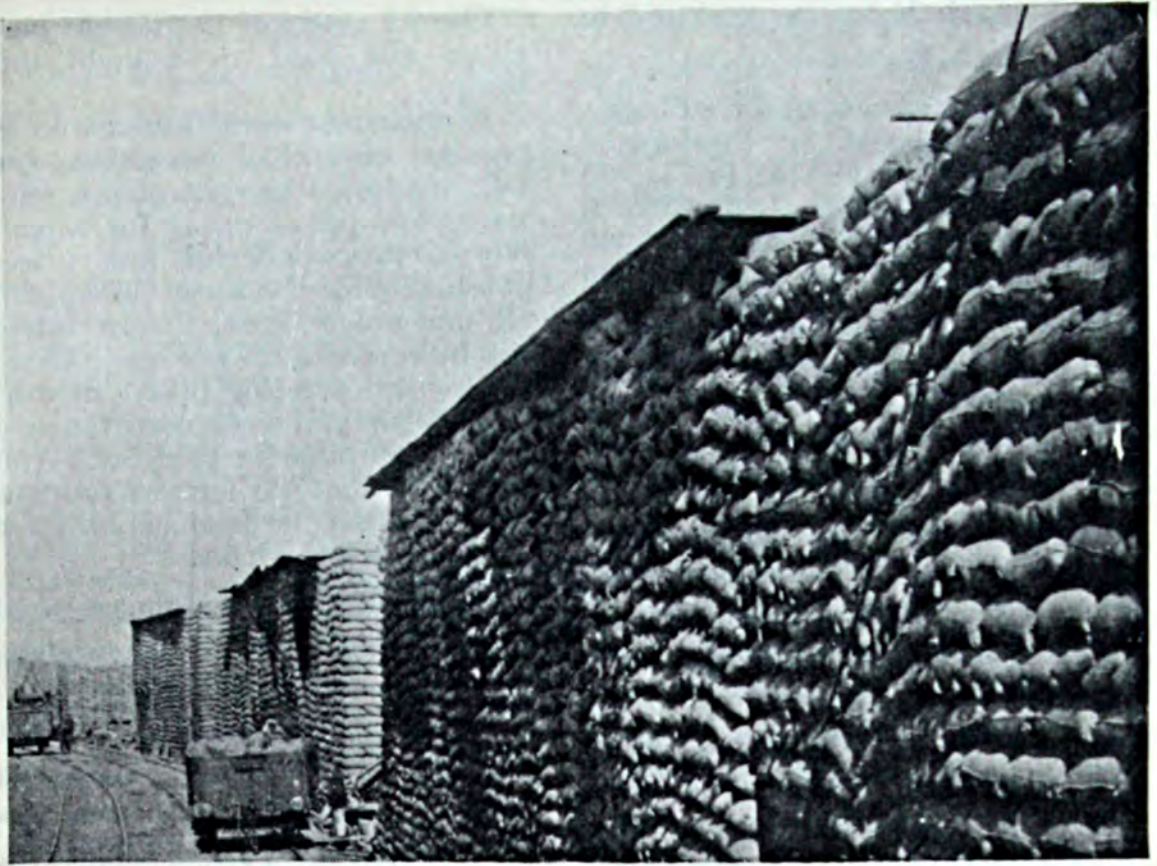
True, several organizations are planning to relieve the situation. Many solutions have been brought forward, discussed, discarded. Probably when all is said and done, the poor farmer will do as he has always done in the past; plant more wheat and hope that by the time the next

crop comes in things will be different.

But, beyond the individual farmer's problem in marketing wheat with elevator prices at 80c or thereabouts, what is the probable effect of dollar wheat upon the country at large?

B. C. Forbes, writing in the *New York American*, takes a rather optimistic view of the whole situation, and, using the Government's statistics he tries to prove that wheat is not the important crop that some of us think. He says, in part:

The truth is—and it should be published far and wide—that wheat



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WHEAT?

❏ *Is wheat the important crop it is supposed to be?*

❏ *Should it be fed to the hogs?*

constitutes less than 10 per cent. of the total value of our annual crops and a mere 6 per cent. of the total value of the gross wealth produced by our farmers.

Wheat is not even the most valuable single crop raised on American farms. Corn usually is worth twice as much as wheat. Hay and forage rank far ahead of wheat.

Cotton, lint and seed also greatly outrank wheat in dollars and cents.

Then Mr. Forbes, using tables prepared by O. P. Austin, statistician of the National City Bank of New York, shows that wheat stands fourth in value:

1922 CROPS

Corn.....	\$1,900,000,000
Hay and forage.	1,409,000,000
Cotton, lint, seed...	1,370,000,000
Wheat.....	864,000,000
Oats.....	479,000,000
Tobacco.....	306,000,000
Potatoes.....	263,000,000
Apples.....	202,000,000
Beets (1920).....	100,000,000
Wool (1920).....	85,000,000
Rye.....	50,000,000
Miscellaneous.....	1,933,000,000

Total.....\$8,961,000,000

He then goes on to show that live stock products, prices on which have on the whole been fairly satisfactory, almost equal the total

value of all the crops produced in the United States:

	Value of Crops Produced	Live Stock Products
1913	\$6,132,759,000	\$3,716,754,000
1914	6,111,684,000	3,753,277,000
1915	6,907,187,000	3,868,304,000
1916	9,054,459,000	4,352,000,000
1917	14,222,000,000	5,852,000,000
1918	14,331,000,000	8,149,000,000
1919	14,755,365,000	8,957,000,000
1920	10,909,000,000	7,354,000,000
1921	7,028,000,000	5,339,000,000
1922	8,961,000,000	5,349,000,000

Furthermore, Mr. Forbes asserts, "it will help to correct false ideas and help to keep the record straight if we study the following table showing the annual value of our wheat crop as compared with the gross wealth produced on our farms." He then calls attention to the following table:

	Gross Farm Wealth Produced	Value of Wheat Crop
1913	\$8,849,513,000	\$610,122,000
1914	9,894,961,000	878,680,000
1915	10,775,000,000	930,302,000
1916	13,406,000,000	1,025,112,000
1917	19,331,000,000	1,278,112,000
1918	22,480,000,000	1,881,862,000
1919	24,982,000,000	2,074,078,801
1920	8,263,000,000	1,197,263,000
1921	12,367,000,000	737,068,000
1922	14,310,000,000	864,000,000

These figures are presented, he states, not with the idea of belittling the seriousness of the drop in wheat prices to \$1 a bushel, and consequently to, roughly, 80c on the farm, but for the purpose of correcting widespread misapprehension concerning the rôle wheat fills in our agricultural scheme of things. Continuing in this optimistic vein, he says:

A lot of people and newspapers have been talking as if, no matter what prices our farmers receive for anything else or everything else they produce, the general business of this country could not continue even half-way satisfactorily if dollar wheat should continue.

Careful study of the figures here given will tend to explode this theory.

If optimism were fashionable at present, instead of pessimism, the talk would all be, not of the relatively low prices ruling for wheat, but of the wonderful fine prices obtainable for the most valuable of all our crops—corn. Corn lately has been selling 25 per cent. above the quotation ruling twelve months ago. Only this week corn touched a new high price for the year. And remember that our farmers produce three to four bushels of corn for every bushel of wheat.

But others do not seem prone to take to this optimistic viewpoint. Some farmers, writing to their favorite farm papers, seem to feel that the only solution lies in raising less wheat. They seem to have forgotten that either less acreage or a smaller crop per acre will bring higher prices next season, and that should they pursue this short-sighted policy wheat will be high just at a time when they have little to sell.

A much more intelligent suggestion comes from R. T. Garwood of Edgar County, Illinois, who writes:

One thing that would help wheat prices would be to appeal to cereal companies to sell their products on a closer margin. They buy wheat for 90 cents a bushel and sell it in 10-ounce packages for \$15 a bushel.

But Mr. Garwood must remember that the big cereal companies that use tons of wheat in their patent breakfast foods, and for flour, are organized and can demand, and get, the price they ask. The farmer in his present disorganized state cannot demand a profit, but must accept whatever is allotted to him.

Co-operative marketing of grains seems, on first thought, to have the germ of an idea, but regardless of the success of other methods of co-operation, the Moses who can

lead the wheat farmer out of the wilderness does not seem to have put in his appearance. The U. S. Grain Growers has busted up. As *The Prairie Farmer* puts it:

While much wheat is marketed co-operatively in Oklahoma, Texas and the Pacific Northwest, those co-operatives are too small to have any effect on the general price level. Co-operative grain marketing in the Middle West has been at a standstill for a good many months. The hybrid U. S. Grain Growers, which was a cross between the ideas of the advocates of commodity merchandising on the pooling basis and the representatives of farmers' elevators, has never been able to market much grain. It signed up a large amount of grain, borrowed a great deal of money, and finally broke up at the historic annual meeting nearly a year and a half ago.

Still there is a demand among farmers for some sort of Government action. *The Prairie Farmer* continues:

There is much sentiment among farmers in favor of some sort of government action to bolster up the declining markets. The demand for this is especially strong in the Northwest, and an influential group of senators and congressmen will demand that congress take some action on this question when it meets in December. The plan that meets with greatest favor is the establishment of a government grain corporation which will buy the surplus at a specified price at the end of the season. The argument for this plan is that it will remove the fear of a heavy carry-over and will stabilize prices at a satisfactory figure throughout the year.

A number of business men, among them Geo. N. Peck, president of the Moline Plow Company, endorse the general idea of government action to stabilize grain prices. The American Farm Bureau Federation opposes this plan on the ground that consumers are in the majority in the United States, and that government interference with prices will work to the disadvantage of farmers in the long run.

But the real danger to the country lies in the fact some farmers are planning to let the fertility of their soil suffer. They say that if they cannot get a price for their wheat that pays them to grow it, they cannot continue to fertilize their land. This is a situation demanding the earnest co-operation of the leading agronomists of the country on whose shoulders lies the burden of proving to farmers who are laying this course of action how foolish such a program must turn out to be. Brown's Crop Talks in *The Orange Judd Farmer*, in answering one correspondent who outlines the fact that he is determined to cease buying fertilizer until wheat again rises, says:

I hardly agree with the implied suggestion of this correspondent. We are at a stage of cropping in Illinois when deterioration and tearing down of soils goes on faster and faster, unless something is done to check this destruction; and on most farms something must be done in the way of replenishing crop-making material. Letting up on soil work now simply means that yields will decrease, and that means a mighty low pay for the labor put upon fields to produce a small crop.

And everyone seems to overlook the point that it costs just as much to raise a small crop as a large one. A soil that is rich and fertile in plant food is the soil that produces, for each unit of farm labor, the greatest number of bushels of grain. As one Western writer states:

One of the important angles of the question relates to soil fertility. The best utilization of farm labor requires that each person be able to produce the largest possible amount of results from the amount of labor he puts in. A fertile soil that responds readily and gives a large yield per acre is the economical soil to work with under these conditions. No one is so rich that he can afford in these days to neglect the proper maintenance of soil fertility.

Wheat shrinks (turn to page 57)

A Little Chat

BETTER CROPS completely covers a field untouched by any other single publication.

Its readers constitute every person in the United States in any way connected with the science of agriculture—county agents, soil advisers, agronomists, experiment station men, state and federal bureau members, and heads of co-operative societies.

Better Crops is not a farm paper. No farmer receives a copy. Its editorial material is intended to be read by those to whom the farmer refers his important problems.

It is a needed magazine. As succeeding issues are published and as its personnel becomes more fully organized, it will be more and more apparent that *Better Crops* is one source of authentic, unbiased news of what is going on in the agricultural world.

In size, format and editorial policy this journal is built for the busy man. It fits the pocket; a welcome relief from bulky, ponderous magazines. Each future issue will contain brief, unbiased digests of the more important phases of the crop situation. These digests, it is planned, will render its readers a similar service to that rendered by the *Literary Digest* on world happenings.

Any publication should truly be of and for its readers.

You, as a reader, can contribute immensely to

with the Publisher—

the value of *Better Crops* to other readers. Suggestions and criticisms will not only be appreciated but welcomed.

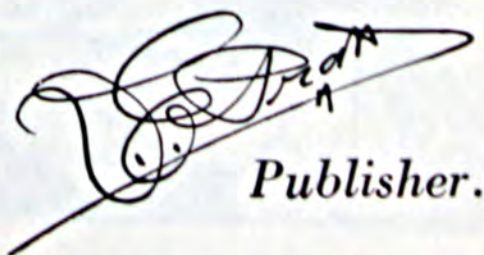
Stories, articles, editorials, pictures and statistics used in future issues should come from you. This issue is "home made" and accordingly does not realize, except in a small way, the plans we have on foot for the journal.

In this number are two invitations, one of which you should accept. The first is our invitation to submit stories and articles, which, if accepted, will be paid for at the rate of 1c per word.

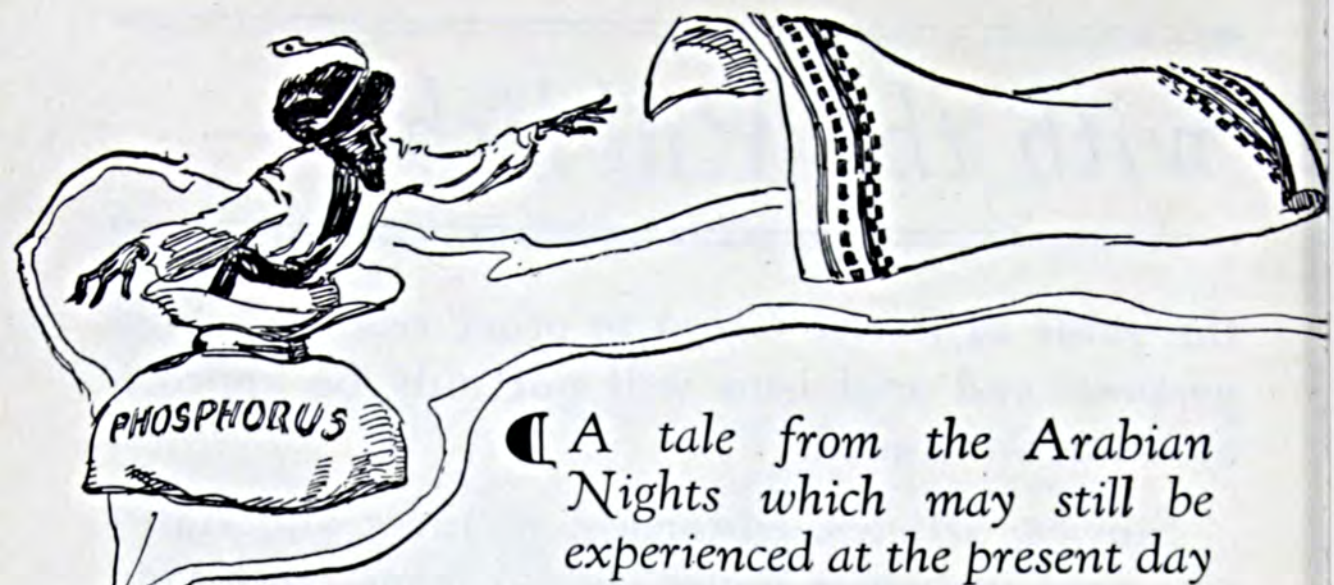
The other invitation is to compete for the \$50.00 prize awarded the best 2000 word article on the subject, "What Fertilizers Have Done for My County" (or my State, or Country). In this contest nothing counts but facts. English, rhetoric, appearance of manuscript and neatness mean nothing and will not influence the judges. A true presentation of the facts is all that is required in this contest.

Better Crops is a magazine for you.

Help us to make it help you. Tell us what you want to see in future issues and we will do our best to follow your suggestions.



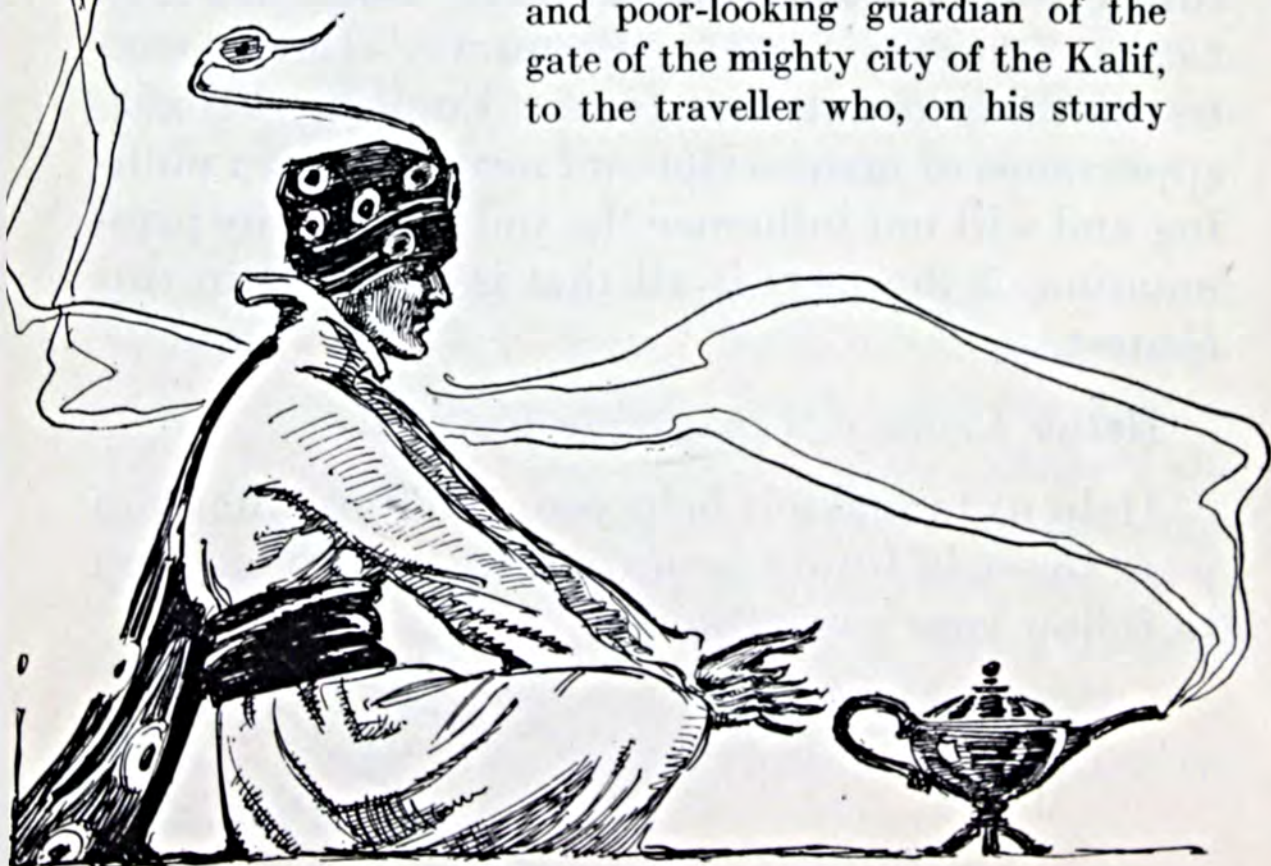
Publisher.



(A tale from the Arabian Nights which may still be experienced at the present day

The Three

“U NHAPPY stranger! Dost thou come here to increase our misery, and to perish thyself?” Such were the words used by the hungry and poor-looking guardian of the gate of the mighty city of the Kalif, to the traveller who, on his sturdy





BROTHERS

By Dr. W. Jervitz

palfrey, craved permission to enter the city. In great amazement the traveller asked what was amiss and received the answer, "Thou evidently hast come here from afar, O Stranger, that thou knowest not of the great misfortune that has befallen our all-powerful Kalif and his city. Although the God of Mohammed makes the sun to shine on us as he used to do, and although the good spirits of heaven send us rain when we are in need of it, yet grow our grain and our millet no more as in former years. Every year the devastating famine comes anew, bringing our children into dreadful misery and leaving our best warriors powerless and defenceless against our enemies." "And have ye then tried no remedy for this pestilence?" asked the stranger. "By the beards of the Prophets, Yea! For years already has our land been cursed, and the Ruler of the Faithful, Allah, bless him, proclaimed that he who succeeded in banishing these evil spirits from the land would receive in marriage the hand of his daughter. But all means which have been tried have been of no avail, and we must face further famine." The stranger listened with great eagerness to the words of the



guardian of the gate and entreated him to tell him further and with more detail all that had taken place.

He heard that at first the priests and the wise men assembled had tried to dispel the ban by prayers and charms. All these proved of no avail, and the Kalif and his people were in veritable despair. At last there came two strangers from the Land of the Setting Sun, each carrying with him a most mysterious sack. They wished to be brought into the presence of the Kalif, and each declared that by means of the content of his inexhaustible sack, the misery could be stayed, and the land be made as rich and happy as in former days.

“What did they call themselves, and what success had they?” cried the newcomer in great excitement. “Should’st thou know these two strangers, then thou hast reason for deepest compassion. One called himself Phosphorus, and the other, who also had a name strange to our ears, was called Nitrogen. Both of them now languish in prison, because they could not fulfill their promise with deeds. The one, Nitrogen, declared that he could make the corn grow so luxuriantly, as no one in the land had previously seen; the other said, ‘What use is it to you that the corn grows high, if the ears be empty?’ and promised to produce grains of corn as large as hazelnuts. The Kalif, in his



wisdom, entrusted to each a province in which he should prove the magical virtues of his sack. In truth, after a year Nitrogen produced stalks higher than a man, and the grains of corn which Phosphorus produced were as large as hazelnuts. Alas, in the second year, the corn and straw were again small, and in the third year

the old misery, famine and pestilence returned.

"Then the Kalif was wroth and had them both thrown into prison, where they led a miserable existence in the company of snakes and poisonous vermin."

"Oh! lead me to the Kalif," cried the stranger. "Unfortunate creature, wilt thou rush headlong to ruin? What would'st thou do?" But the stranger heeded not the warning; he was brought before the throne of the Kalif, and bending low said, "Ruler of the Faithful, I have heard of the misery that prevails in thy land, and I wish to help thee." But the Kalif said, "Hast thou also heard of these men, who came from the Land of the Setting Sun, and who now languish within the walls of my prison? They came here with as foolish notions as thou; would'st thou share their fate?" "As Allah ordains!" answered the stranger. "Set both of these men free, and I will, with their help, thy land deliver. These men are no imposters, as thou hast naturally supposed, but they lack prudence. Their selfishness has led them into this misfortune. Should it please your Highness, I will relate to thee their story, which is the same as my own:

"There lived once in the distant Land of the Setting Sun a merchant to whom a kind fairy had presented a talisman which consisted of three magical sacks whose contents were inexhaustible. He had only to strew a little from each of these three sacks on the land and even the driest sand bore a hundredfold. As the merchant was at the point of death, he summoned before him his three sons, whom he had named to honour the fairy after the three spirits which dwelt in the three sacks. Handing over to them the talisman, he said, 'I bequeath to thee jointly these three sacks. Ye will procure for yourselves riches and honour, if ye hold fast together and never part from one another. The spirit of the sack called *Nitrogen* makes the plants grow quickly;

the spirit of the second sack called *Phosphorus* makes the grains large and the ears full; the spirit of the third, *Potash*, gives to the plants health and vigour; it makes the corn nutritious and gives the fruit its good flavour. None of these qualities can the plants, which we mortals must cultivate for our daily bread, lack. Woe be the day, when ye quarrel and strive over possession of the sacks and drift apart! *Only if the three spirits work in unison* can the blessing of the good fairy, who gave me these three sacks, be obtained. Think over this well!" After the merchant had said this, his soul departed.

"But the sons quarrelled with one another and obeyed not their father's words, so that they went and divided up their inheritance, each taking a sack. The eldest brother took that which obeyed the spirit Nitrogen, the second that which gave the full ears of corn, and the third the sack in which the spirit of Potash dwelt. That youngest brother am I, O Kalif! Both my brothers then went into the country places amongst the farmers and promised them rich harvests by means of their magical sacks, if they gave them large sums of gold. The farmers believed them and paid them well. But when I came and told them the magical power of Potash was needed to give the grain vigour and health, they sent me away, for they had no more money. But the magical power of the talisman only works when Nitrogen, Phosphorus and Potash work in unison, and my sack, with the spirit of Potash, they had not.

"So the people got no return for the money they had spent; and when my brothers returned again the next year, they were driven away with insults and abuse. Now they have also come to thee, O Follower of the Prophets, and may Allah send his blessings on thee! How much less could each brother working alone serve thee, seeing that the magic of the talisman only fulfills its purpose if (turn to page 52)



Si Bellew Says, "Henry Ford is Smart Man!"

Q Flivver replaces horse; no more manure; then Ford goes into the fertilizer business!

By Si Bellew

THIS here now Hennery Ford, he's a right smart feller, sez I.

First off, he lays his plans to ketch 'em comin' and goin'. Y' see, it's like this, now. The farmers used to do all t' work with horses. Drivin' and plowin' wa'nt done with flivvers and tractors. They was allus plenty m'nure, roun' th' barn, an', come plantin' time, Mister Farmer loads up the ol' spring waggin wit' manure and off t' the field to spread it.

No fertilizer needed, sez Mister Farmer, 's long at I got plenty of m'nure. Then 'long comes this here now Ford and lookit what's happened! Everythin' done wit' gasoline! Plowin's done with tractors, an' Mister Farmer drives t' town in his Hennery. And where's t' m'nure. They ain't none. Y' can't spread crank case oil on th' land, kin ye? T' m'nure is jes' nacherly vanished.

'n here's where I say this Hennery Ford's a smart feller. After he gits rid o' all th' m'nure, then he gits hisself ready t' go into the fertilizer bizness! Ketches 'em comin' an' goin'. He ain't got Muscle Shoals yit, but Time an' Hennery Ford don't wait fer no man—he's a gettin' fertilizer now out o' his smoke-stacks! Yes sir-ee, bobtail! He takes the smoke-stacks, n' scrapes 'em an' gits out 'monium sulfate, er somethin' like that and he's a-goin' to sell it fer fertilizer.

Nex' thing he's gotta do 's t' fin' a way to make fertilizer outa th' tin lizzies that are ready fer the junk-heap. They's plenty of 'em in our county—nuf t' make lots of fertilizer!

NOTE: Ford dealers throughout the country will soon be selling "Ford Ammonium Sulphate," a high nitrogen product said to be manufactured from coal smoke. It is said not to be the regular by-product of the coke ovens, but to resemble table salt.



Tobacco plant of flue-cured type affected with sand drown. Note that the plant as a whole and the individual leaves have attained normal size and shape and the leaf surface is relatively smooth. The disease begins in the lower leaves and at the tips of the leaves. The veins retain their green color long after the leaf lamina becomes bleached. The leaf lamina usually does not die in local areas or spots as in potash hunger. Reproduced from lithograph, *Journal Agricultural Research*, Jan. 6, 1923.

“Sand drown” is produced by a lack of sufficient available magnesia to form the green coloring matter of the plant.

It affects both tobacco and corn.

Another Plant Disease Conquered

The United States Department of Agriculture cooperating with the North Carolina Department of Agriculture discovers cause of "Sand Drown" and a practical method of control.

THE serious leaf disease affecting tobacco, known to tobacco growers as "sand drown" first came under observation about 1912 at the Tobacco Station of North Carolina Department of Agriculture, located at Oxford, and has appeared each year on the tobacco grown at that station. It has been frequently seen on the sandy tobacco soils of the Connecticut Valley, and is liable to be widespread in wet seasons in those tobacco growing sections where soils distinctly sandy in character are found. The disease occurs in the more sandy portions of the field after a heavy rain.

In recent field investigations conducted by the Tobacco Branch Station of the North Carolina Department of Agriculture in connection with the Bureau of Plant Industry, U. S. Department of Agriculture, it was found that this disease was quite common, and was apt to occur in more aggravated form after a heavy rainfall on the more sandy spots of the field.

In this disease the green and yellow pigments of the leaves are affected, with a result of mottling or blanching of the leaf tissues; but the leaf tissues usually do not die as quickly as is the case in potash starvation. This blanching in the case of "sand drown" invariably begins on the lower, older leaves, and the first symptoms appear at the tips or outer margins of the leaves, the veins retaining their normal color. Corn is also affected in much the same way.

Field and laboratory studies show the cause of "sand drown" to be insufficient supply of magnesium in the soil or fertilizer, and in a general way it might be termed "Magnesium starvation." The ratio between sulfur and magnesium appears to be a factor of importance; increasing the amount of sulfate in the soil has a tendency to intensify the symptoms of magnesium deficiency. The addition of magnesium chlorid or magnesium sulfate to the fertilizer prevents the disease. Double Manure Salt and Kainit were effective in preventing the disease.

In the field experiments conducted at the Tobacco Station, near Oxford, N. C., potash from several different sources was used without lime, with ground limestone, and with dolomite which supplies both lime and magnesium. The Kainit and Double Manure Salt contain considerable magnesium. German Muriate and German Sulfate of Potash contain some magnesium but much less than German Kainit and Double Manure Salt.

The per acre application of ammonia, phosphoric acid, and potash was the same on all six plots: 40 pounds ammonia derived from dried blood; 64 pounds phosphoric acid from acid phosphate; 36 pounds of actual potash (K_2O) in the form mentioned in the table.

The results given in the following table represent the average of two years' work on three fields.

On the No Lime plots both Mu-

riate plots yielded better than the Sulfate plots; but on the Limestone plots the German Sulfate and German Muriate yielded the same and outyielded the American Muriate and Sulfate. The Dolomite increased the yield and value of the tobacco on all plots, except the German Double Manure Salt plot, over the No Lime and ground Limestone plots.

Where Double Manure Salt (a sulfate of potash magnesia) was used there was practically no difference in yield and not a great deal of difference in value between the

Salt and Kainit, containing magnesium sulfate and magnesium chlorid, had no "sand drown" regardless of whether the plot had Dolomite, ground Limestone, or No Lime.

The conclusion obviously to be drawn from the results of these and other experiments is:

"Sand drown" is apt to occur, in wet seasons, on the more sandy spots of the tobacco field where the purer forms of potash salts, Muriate and Sulfate of Potash are used in the fertilizer. The high grade Sulfate of Potash may even aggravate

Plot No.	KIND OF POTASH	Limestone		No Lime		Dolomite	
		CaCO_3 90.46%	MgCO_3 1.32%			CaCO_3 52%	MgCO_3 36%
		Yield in Lbs.	Value	Yield in Lbs.	Value	Yield in Lbs.	Value
1	Trona Muriate.....	670	\$205.66	776	\$248.88	850	\$275.54
2	German Muriate...	753	242.08	693	219.82	863	288.66
3	Nebraska Sulfate...	613	181.65	606	187.15	783	252.56
4	German Sulfate....	753	218.24	606	179.06	803	263.90
5	Double Manure Salt	853	254.46	860	279.13	860	262.59
6	Kainit.....	826	239.42	833	250.67	1000	296.18

Dolomite, No Lime, and Limestone plots. Approximately 55 pounds of magnesium sulfate was applied in the Double Manure Salt, and the further addition of magnesium carbonate in the Dolomite apparently had no effect.

It would appear that magnesium, either in the form of sulfate, chlorid, or carbonate, is a factor of considerable importance in the fertilization of the tobacco crop, especially on the more sandy soils.

So far the yield and value of the crop produced on the various plots has been discussed only. But from the standpoint of the amount of "sand drown" on the six plots the German Double Manure Salt and Kainit gave most striking and conclusive results in preventing the disease.

Plots 1, 2, 3, and 4 (the higher grade potash salts) had about the same amount of "sand drown" on the ground Limestone and No Lime plots, but there was no "sand drown" on the corresponding plots when the Dolomite, containing magnesium carbonate, was added.

But the plots 5 and 6 which received German Double Manure

the disease. Fairly pure ground Limestone does not control the disease.

Dolomite or dolomitic limestone, containing magnesium carbonate, used with the refined potash salts, Muriate and Sulfate of Potash, effectively controls the disease.

The German Potash Salts containing magnesium, Double Manure Salt and Kainit effectively control the disease whether used alone or with Dolomite.

Therefore, if the source of potash in the complete fertilizer is unknown or in doubt, and if the per cent. of potash is small it is important to apply additional potash in the form of German Double Manure Salt to furnish both the potash and magnesium requirement of the tobacco plant and the control of "sand drown."

If the complete fertilizer already contains a sufficient per cent. of potash, but the source is unknown or in doubt, the application of Dolomite, 1,000 lbs per acre, may be made to furnish the magnesium necessary for the effective control of the disease.

Where Dolomite (turn to page 54)

Is Lime a Plant Food, or Is It a Tonic?

☞ Bringing out the difference between the need for lime and for fertilizer

By J. C. Penhook

WHAT is the difference between fertilizer and lime. Is lime a plant-food?

These are questions that every County Agent must answer often daily.

Fertilizer is a food for plants. Lime is not a food. There are three main plant foods—nitrogen, phosphorous and potash. Lime is more or less of a “tonic” that builds up the plant and gives it the stamina to withstand conditions of the growing season. Lime improves the physical condition of the soil, but the plants do not use it as food.

Many people in cleaning their teeth now use a tooth paste that is an “anti-acid.” In other words, it is an alkaline paste that offsets or neutralizes the acid of the mouth and thus saves the teeth. But this tooth-paste is not a food. So lime in the soil neutralizes the acids present and improves the soil, yet it is not a food.

When you use a fertilizer you usually apply it just before seeding a certain crop, and you expect that crop to derive the benefits of the plant food in the fertilizer. Lime, however, should not be drilled to benefit any certain crop. Especially when applied directly to corn, lime

often shows no results. Lime applied before legume crops will show results with a rapidity that often surprises the farmer who has tried liming before corn and got no results.

Lime is applied less oftener than fertilizer. Fertilizer should be applied every season, suiting the mixture to the crop. Lime should be applied every two or three years, and you should expect to see the results of the liming on each crop grown during the three years following the drilling in of the lime.

Where possible drill your lime a short time before sowing clover, soy beans or some legume crop. Legumes react most quickly to lime. All crops following the legumes will then get the benefit, and the legumes will respond so readily to the increased physical condition of the soil that it will pay for the lime.

Many farmers have never heard of the “litmus paper test” for acid soils. In the West they use this test every day to find out if the soil needs lime. Any druggist can furnish either pink or blue litmus paper, and show you how to test soil for acidity. When the soil is acid the blue litmus paper turns pink. When it is alkali, the pink litmus paper turns (*turn to page 57*)

Fatigue—

IT IS not those who work the hardest who get the tireddest.

In fact, many physicians will tell you that those of their patients who have that tired feeling much of the time are people who do nothing at all.

Often the very worst remedy for tiredness is inactivity, the so-called rest cure, and if we would get out and hustle our weariness would disappear.

This is due to the fact that human fatigue is primarily mental.

It is something we think of that "takes the life out of us" oftener than some activity in which we engage. A disappointment or a sorrow or humiliation can fag us more than hard labor.

And we have often witnessed frail people working tremendously without complaint, even boasting that they enjoy it, simply because they are full of eager expectation or ambition or some other strong emotion.

It is what we give out that rests us more than what we take in.

The lake is fresh. It is full of lively fish, and its waters are good to drink, not because it is continually receiving but because there is a continual outflow.

The Dead Sea is dead because, while water continually runs into it, none runs out.

Human energy is like the widow's cruse. Though you take from it continually, it remains full.

Life and life force are not something that you can pile up and keep as you would potatoes or money

by Dr. Frank Crane

☞ *Better Crops has obtained the exclusive right to Dr. Frank Crane's articles in the agricultural field.*

bags. It is a running current and if it will not run it will spoil.

In the case of energy the paradox is true that what you give you have, and what you save you lose.

When we put forth our powers we find them continually replenished. If we bravely front our tasks, power leaps to our aid.

It is in the presence of danger that we have courage. It is under great strain that there comes to us the power to endure. It is when calamity and disaster descend upon us that there enters into us an unlooked for sturdiness to stand up against evil.

One way to cure fatigue, of course, is to rest when it is necessary and at proper intervals.

But we often forget that the very best way to get rid of chronic fatigue is to have hard work enough to do, dangers enough to face, problems enough to solve, and obstacles enough to overcome.

To quote from Captain Hadfield, "The average neurasthenic is ordered to take a rest in the afternoon, but he spends the time reading his paper; he goes to bed early, but sits up reading a novel. He gives his body more rest than it needs, failing to realize that what the body needs is not relaxation but reinvigoration. It is characteristic of the neurasthenic that in the morning, and possibly after a long night's sleep, he wakes up more fatigued than when he went to bed."

In other words, the best way to be full of energy is to give out energy copiously, and the price of perfect rest will always be hard work.

Copyright, 1923, by Dr. Frank Crane

The Most Profitable Crop per Acre

What is the most profitable crop per acre in the United States? Corn? No, you're wrong!

YOU will guess a long while before you get the right answer.

It is cranberries.

According to the recently completed official report of the Department of Agriculture, cranberries earned an average of \$288 an acre for farmers who cultivated them in 1922, a higher rate of return than that of any other principal crop grown in the United States.

And the next valuable crop per acre also surprises us. It is tobacco, which earned \$177 an acre.

The third crop is hops, which earned \$100 an acre.

The list of the dozen leading crops, with their value per acre, is as follows:

Cranberries.....	\$288.00
Tobacco.....	177.50
Hops.....	100.00
Potatoes.....	60.63
Rice.....	37.14
Cotton.....	35.21
Hay.....	19.88
Corn.....	18.55
Wheat.....	14.11
Barley.....	13.23
Oats.....	11.76
Rye.....	10.64

It might first be supposed that farmers would immediately rush to put a large acreage in cranberries this year and reduce their other crops. This will not happen, however, because the cultivation of cranberries can be undertaken successfully only in certain sections of the country. The same is true of tobacco.

There will also not be any stampede toward the cultivation of hops, because that involves a large investment and painstaking effort.

The above figures, of course, do not mean that the total value of the cranberry crop is the greatest. On the contrary, corn led all other crops of the last harvest in bringing money to the farmers. The corn crop at December prices was worth \$1,900,287,000.

The Winter wheat crop was valued at \$614,561,000.

Yet the earning power of corn per acre, according to the department report, was only slightly greater than that of wheat and was very much below that of cotton and potatoes, as can be seen by glancing at the list here given.

Why People Leave FARMS

I should like to see a discussion on this subject in the columns of *Better Crops*. Suppose we start, next month, by hearing why farmers are leaving your county—if they are! Drop me a line.

Jeff

AT a recent hearing staged by a Special Industrial Commission appointed by Congress, thousands of farmers, their wives, country bankers and small town merchants from every quarter of the United States were asked to state the reasons for the persistent city-ward trend of farm workers that has been so noticeably evident in recent years. In essence, the conclusions arrived at by the Commission constitute a handbook of information that in a large measure was responsible for many of the good roads appropriations by Congress, and the inauguration of other economic and social measures designed to make the rural classes happier on the farms. The deductions in order, briefly stated, are as follows:

The productiveness of modern farm labor through improved machinery calls for less human endeavor to produce the world's food supply.

The difficulty of getting efficient help on the farm has caused many farmers to quit and move to the city.

The fact that the farm does not furnish work for all of the sons in large families.

The desire for an exciting social environment leads many young people to leave the farms.

The absence of good roads and good schools, and the long distances children must walk to school.

Higher wages paid in the cities.
Shorter hours of (turn to page 60)

Jeffisms

Many businesses and professions are suffering from a rush of young blood to the head.

What we need today are more sweat glands and fewer monkey glands.

It isn't what you put in that counts; it's what you can leave out. Look at the flivver.

If you're friendly and human we can forget that you have no brains.

When you're right you don't need to lose your temper; when you're wrong you can't afford to.

A friend of mine has a sign above his desk that reads: I've been in business forty years. I've been lied about, sworn at, knocked, cussed and beaten. The only reason I'm still here is: I want to see whatinell's going to happen next!

There's a use for everything. Even the fellow who always exaggerates. When Columbus returned and told Isabella of the beautiful America he had discovered, he exaggerated terribly, but you and I wouldn't be here if he hadn't.

Jeff

Farmers Borrow

By Herbert Myrick

Editor, FARM AND HOME

LOANS to farmers from the Federal Farm Loan system now exceed one thousand million dollars.

These are long-term loans, mostly for 35 years, secured by an underlying first mortgage upon the borrower's farm. The interest rate has varied from 5 to 6 per cent. since the system started in 1917, being now $5\frac{1}{2}$ to the borrower, with no commissions, bonuses or rake-offs.

The borrower pays his interest twice a year, including with it about $\frac{1}{2}$ or 1 per cent. upon the principal. Such amortization counts up so fast that when the loan matures it is discharged, because these little amortization payments will by that time have equalled the principal.

Farmers Able to Buy

That is to say, a total payment of about \$65 a year on each \$1,000 of long-term farm mortgage from the Federal Land bank will in due time discharge principal as well as cover interest meanwhile. Contrast this with the 8, 10 and 12 per cent. interest plus bonuses, renewal charges and rake-offs previously exacted from the farmer, and you will see why it is that even during the hard times of 1920-22 farmers were able to buy quite liberally.

Even more significant is the new Agricultural Credits act, approved March 4, this year. It authorizes the Treasury to invest a total of \$60,000,000 in the capital stock of

twelve federal intermediate credit banks—\$5,000,000 to each. Of this amount, \$1,000,000 has already been made available to each bank. This capital will be gradually returned to the Treasury upon the earnings of the new system.

Each intermediate credit bank has the same directors as the Federal Land bank for its district, but its executive personnel, funds and accounting are wholly segregated from the Land bank.

What Banks May Do

The act provides that these new intermediate credit banks may make loans or advances to cooperative agricultural associations, or it may discount agricultural paper for such associations or banks and particularly for live stock loan companies. The credit bank is not allowed to loan direct to the individual farmer.

The new system offers credits over periods of from six months to three years, at present nine months. It is taking some time to work out all its details, but when it functions fully the new system may benefit advertisers largely by enabling farmers to pay cash instead of buying on time, or by rediscounting farmers' notes taken by dealers and manufacturers on account of the goods they sell to farmers.

A description of one of the first loans made under the new system, by the Federal Intermediate Credit

\$1,000,000,000

Q *The New Federal Intermediate Credit Bank is to farmers what the Federal Reserve Bank is to business men*

bank of Springfield shows clearly how the agricultural trade may benefit from the operation.

An agricultural credit corporation in New York received fresh applications recently from about 100 thrifty and successful farmers for advances averaging about \$500 each over periods of from six to twelve or eighteen months. Its own obligation for \$50,000 coming due in six months and secured by said collateral was discounted at the Intermediate Credit bank at the rate of $5\frac{1}{2}\%$ per annum. The local charged the farmer 6%. The spread of one-half of one per cent. was enough to cover the local's expenses.

Thus 500 farmers received an advance at a reasonable rate for their seasonal operations to an average amount of \$500. This money was spent for seed, fertilizer, tools, implements, machinery, household apparatus or other supplies and equipment essential to the farmer.

Could Pay Cash

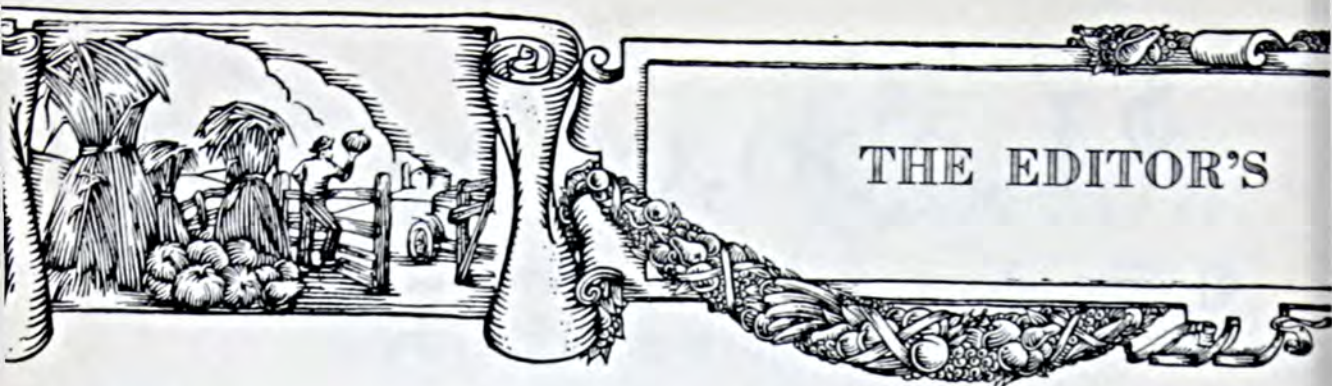
These 100 buyers were thus able to pay cash for such purchases to a total of \$50,000. Had these farmers been unable to secure such accommodation they would have been obliged to go without these purchases, which they so much needed in their business.

These borrowers will repay

their loans partly or in full as they sell their season's crop, which these loans aid them to produce more cheaply and efficiently. By autumn the system should be so well established that instead of hundreds there will be many thousands of such transactions.

Indeed, my experience as director of the Federal Land bank, and now in a similar position in the Federal Intermediate Credit bank, together with my intimate contact with thousands upon thousands of thrifty farmers, leads me to believe that within a comparatively short time most farmers may be so aided by this new system that they will be in a position to buy (*turn to page 58*)





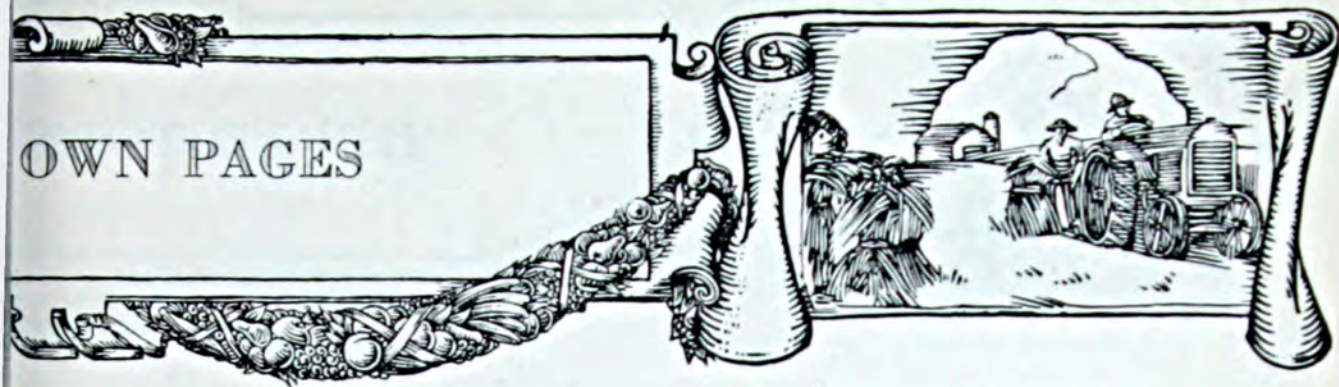
BUSES ELIMINATE ONE-TEACHER SCHOOLS

It would take more words than could be placed between the

covers of this journal to enumerate the changes that gasoline has wrought in the habits and customs of our nation. Si Bellew, in this issue, tells how Henry Ford first removed the source of manure with his flivver and now goes into the fertilizer business. The automobile, the tractor and the bus are working such changes in the rural communities that historians must needs work fast to record them all.

The mail-order houses suffered a loss in business when the automobile came; the farmer could get to town easier and his shopping habits were transformed. Politics was affected. Good roads became a matter of necessity. Railroads began to fear the inroads of bus transportation.

And now education will be improved by the automobile. In many parts of the country the one-teacher school is being replaced by community schools to which pupils come from great distances, *in buses!* Instead of the limited knowledge of a single teacher struggling to impart to a group of rural students the elements of reading, writing, arithmetic and the moving parts of a frog, the community school makes possible the importation of a number of trained



city teachers—the city school moves to the country, and the pupils move to the school in buses. What effect will this have on the coming generation of farmers? It is deserving of thought.

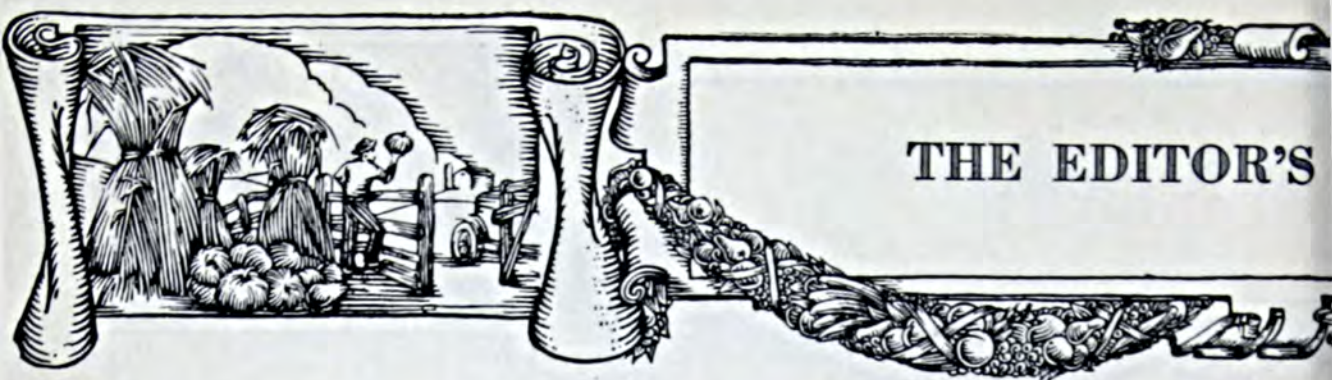
THE PENDULUM SWINGS AGAIN

Roger Babson, famous statistician, says, "For every action there is a compensating reaction." When sugar went to 20c, thousands who had never even seen a sugar plantation went into the business or invested in a company that planned to raise sugar. Then the pendulum swung again, the other way. So much sugar was raised that prices tumbled to 3c. Wall Street bankers will long remember the sugar holocaust!

Nature and habit seem to take care of the law of supply and demand. Wheat is below a dollar—the pendulum has swung to the extreme. But watch the next two seasons. Wheat will again be scarce, prices will soar, and the farmer who has wheat will be prosperous.

POISONING THE BOLL-WEEVIL

"Big fleas have little fleas to bite 'em, and so on, *ad finitum*," runs the old expression. California is importing the ladybug to eat the bug that

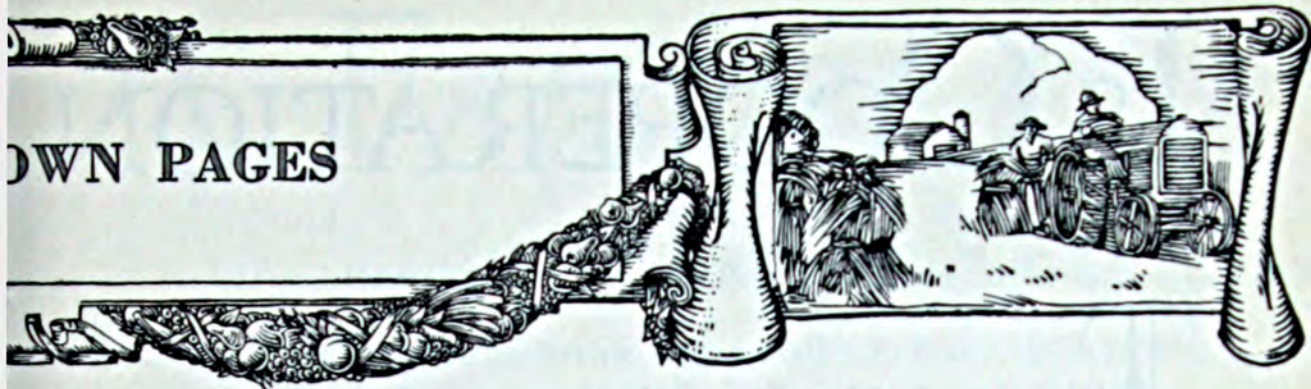


eats the fruit crop. Who will find the bug that will eat the boll-weevil? A fortune awaits him.

In the meantime inventors of poisons that can be mopped or sprayed onto the cotton square are cleaning up snug fortunes. Several have been invented that seem to do the trick. One, called "Slazum," clever name, has for its slogan, "Slazum on the square makes cotton anywhere."

Nature seems to take keen delight in making man fight for his sustenance. Wheat has its rust, cabbage its worm, cotton its weevil, tobacco its chlorosis. But for every enemy there is a super-enemy. Look out, boll-weevil! Eat, drink and raise Cain with the cotton crop while ye may, for tomorrow you die!

A DIRT FARMER Magnus Johnson leaps to
IN THE SENATE fame. The Farmer - Labor
Party has fired a shot that
will be heard around the world. Agriculture, a business in which more money is invested than in any other business in the world, shall be represented in Congress some day in a way that will startle the multitudes. Farmers have been too busy raising crops to be able to spend the time to organize. But farm work is getting easier every year. Farms are getting



smaller. A shortage of farm labor forces greater efficiency and an increased use of machinery. The farmer is going to have time to think. In Minnesota he has thought; and it is believed that the election of Johnson makes it possible for the Farmer-Labor Party to capture control of the entire state in 1924. A dirt farmer in the Senate! Let's have more of them.

ENCLOSED FIND POST CARD!

Demosthenes never spoke extempore; always he prepared his speeches in advance—such preparation being, he said, a kind of respect to his hearers. To slight and take no care how and what he said was likely to be received by his audience showed, he felt, something of an oligarchical temper, and was the course of one that intends force rather than persuasion.

Demosthenes could look upon his audience and see whether what he was saying was pleasing and effective. I cannot. But I have enclosed a post card addressed to me in this first issue of *Better Crops* on which you can register your suggestion, complaint, advice, counsel, criticism, praise, disapprobation, remonstrance, approval or sarcasm as you think I deserve! And, as the ad-smith says, "do it now!" Yours to a cinder,

Jeff McIlernid

Is COOPERATION

By *George W. Hinman*

TWO shareholders in a defunct co-operative company called on the writer. They had been enthusiastic co-operators, but they were discouraged. They thought the co-operative business was dying out.

The co-operative method of doing business is not dying out. It is less advertised in this country than during the hard times. That is all. But it goes on just the same.

Among American farmers alone there are reported to be about 5,000 buying and selling organizations, all conducted on the co-operative plan of cutting out the middlemen wherever possible. In one year these co-operatives buy goods and sell food-stuffs to the amount of \$800,000,000 to \$900,000,000. Those are the Government figures. And the movement to build up this business goes on every day and every hour. The farm papers tell the story every week. So do many of the trade papers.

Among most business men there is still a prejudice against co-operation among buyers and sellers. They seem to fear that the co-operators will push them off the earth. They therefore hope, and often seem to think, the co-operators are failing and disappearing. That is all foolishness. For example:

The latest co-operators' year book from England is at hand. It shows that the English Co-operators' Society will be sixty years old next year; that it has now three and a half million members; that it gathers and sells direct to these members between \$400,000,000 and \$500,000,000 worth of goods a year; that, though it has suffered the same sort of difficulties and losses in the recent panics that other enterprises suffered, it is still sound and solvent to the core; and that, in its own field, it has as good a prospect of growth and prosperity as any old line of business in Great Britain.

This English Co-operative Society is the best evidence of what co-operation can do, not only in the simpler business of buying and selling without interference of middlemen, but also in the difficult business of producing food and clothes co-operatively.

According to the report at hand, it has 33,500 acres of farms

A FAILURE?

¶ This article is by one of the best financial writers in New York. Now read, on page 45, a farmer's view

in England and 29,000 acres in India and Ceylon. It has 112 factories, mills and mines. It makes shoes, jams, automobiles, cigars, corsets, bicycles, soaps and a hundred other sorts of articles that its members eat or wear. It produces and sells more than \$100,000,000 worth of its own manufactures a year, besides the vast quantities that it buys ready-made and distributes practically at cost among its members.

This society has had heavy losses. It recently had labor troubles. It has

¶ In this article Mr. Hinman gives some interesting side lights on the English Co-operators' Society — the mother of all modern co-operative buying and selling organizations.

had even strikes. All this has been and is being used to prove that co-operation, even in England, is not a success. Yet it

proves just the contrary, for the co-operators have now settled all the difficulties, paid all losses and are going ahead as energetically as ever. No old line business of the usual sort could do more.

So successful is this society up to this date that Sidney Webb says it is one of the rocks on which the new labor commonwealth of England will be founded. That remark is quoted merely as an evidence of co-operative success. To the writer it does not seem likely to come true. Why? In the answer there is consolation for the business man who objects to co-operative enterprise because it may take the bread out of his mouth.

The answer is that, after sixty years, this English society, with all its successes, has not gone outside of a certain field, has not swept the usual lines of business off the earth, has not absorbed all or even a great part of the capital, industry and trade of the English people. There are plenty of reasons for this, good reasons, just as good in the United States as in England.

But at that, co-operation will doubtless go on doing good in England as well as in America. The figures that are reported from year to year virtually prove it.

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Fertilizers Do Not Replace Soil Management

"Fertilizers should be employed in addition to and not in place of other good soil-management practices," says Prof. A. T. Wiancko of the Purdue experiment station. "Legumes in the rotation, the use of manure or other organic matter, drainage and liming where needed are all perquisites to the most satisfactory use of fertilizers."

Results of a long-time experiment on a corn-wheat-clover rotation at the Purdue station illustrates this point. The treatment and results were as follows:

Plot 1—Limed 1912 and 1920, six tons manure on corn crop, 19.2 bushels wheat per acre.

Plot 2—Same as plot 1 with 200

pounds per acre acid phosphate on corn crop, 20.5 bushels wheat per acre.

Plot 3—Same as plot 2 with 200 pounds per acre, 2-8-4 on wheat crop, 26.7 bushels wheat per acre.

The significant thing about these results is that in plot 3, the combination of a good rotation, legumes, lime and manure produced conditions resulting in large returns from the use of a suitable complete fertilizer. In other words, as shown by plot 1, the rotation, legumes, lime and manure produced a favorable condition but, compared to the others, a small crop. The addition of complete fertilizer on plot 3 was all that was needed to push the crop into a new field of profits.

Spinach Requires Abundance of Plant Food

"Spinach requires a soil that is well filled with organic matter, is sweet, and contains an abundance of quickly available plant food and a uniform supply of moisture," says Lyman G. Schermerhorn, Professor of Vegetable Gardening at the State Agricultural College.

Stable manure is especially beneficial to this crop when applied sufficiently in advance of seeding. But with the decreasing supply of manure and the increasing cost, it is becoming necessary to use more green manures and commercial fertilizers. A high-grade commercial fertilizer, at the rate of 1,000 to 1,600 pounds to the acre, supplied before planting, gives excellent results. The growth of the crop may be hastened by a side-dressing of nitrate of soda or sulfate of ammonia.

In order to get the best results with commercial fertilizers the soil must be kept in a high state of cultivation.

The first of the fall crops of spinach is sown about the last week in July, and the succession crops every ten days up to September 1 in North Jersey. In South Jersey it is often cut as late as December 15, and sowings for a fall crop are often made up to September 15.

Further directions for growing spinach, as well as the results of recent experiments conducted by Professor Schermerhorn on fertilization and varieties are given in Bulletin 385 of the New Jersey Agricultural Experiment Station in New Brunswick. Free copies may be had on application.—Issued by the State College of Agriculture.

Soil Should Be Right For Alfalfa Crop

The secret of successful alfalfa growing in South Carolina is the preparation of the soil before planting. There are no soils in this state that are naturally adapted to alfalfa. Even our soils that are best adapted to it need to be further fitted before planting.

The obstacles that have to be overcome in our soils, as stated by R. W. Hamilton, Extension Agronomist, are: (1) insufficient lime, (2) insufficient organic matter, (3) lack of inoculation, (4) noxious weeds and grasses, (5) lack of mineral fertilizers.

The most efficient and economical method of overcoming all of these obstacles except lack of inoculation is turning them under during the winter and summer before planting alfalfa. The lime should be applied to the winter legume and this crop turned under deep and followed with a summer legume to which a large part of the phosphoric acid needed for the alfalfa may be applied.

What To Do Now

If no winter legume has been grown, the land for alfalfa should be plowed deep now, limed, phosphoric acid applied, and planted to a summer legume. If stable manure is to be used it should be applied to the summer legume so that the weed and grass seed it contains may germinate and be killed along with the seed already in the soil.

The summer legume should be disc-harrowed and turned under early in the fall so that the seed bed will become firm before time for seeding. If the summer legume following the winter legume makes a too heavy growth to turn under, it should be cut for hay and the stubble turned under.

By the use of legumes, lime, deep plowing and phosphoric acid before planting alfalfa, lime, organic matter and mineral fertilizer will be supplied, the topsoil will be increased in depth and weed and grass seed killed.

Commercial Fertilizers Do Not Injure Soil

Many farmers hesitate to use commercial fertilizers on their crops because they have the impression that the continued use of such fertilizer will "kill" the soil. The yield of crops over a long period of years should be the best indication of the extent to which the soil has been injured. An experiment of this kind which has been conducted on the rotation field at the Missouri agricultural experiment station shows that no injury results. The plot in this experiment has received an average application of 777 pounds of high grade fertilizer every year

for the last thirty years, according to Richard Bradfield of the soils department of the experiment station. They have yielded practically as well as the plots receiving six-ton annual applications of barnyard manure. If such enormous applications, for such a long period of years, have shown no harmful results, the average farmer who applies perhaps less than 200 pounds to only one crop in the rotation, or an average of perhaps less than 50 pounds per acre per year, has nothing whatever to fear from the use of fertilizer.

Market Gardener Found Fertilizer Made Profit

"As to fertilization, I sought the advice of college experts and practical growers. Uniformly I was advised to be liberal. I screwed up my courage when I figured the bill it would mean, but went the limit of the advice." That is how Gilbert

S. Watts, a young market gardener at Bellwood, Pennsylvania, described his experiences recently in getting started in the business.

He gave all his vegetables 1,000 pounds per acre of high-analysis fertilizer; a good bit getting twice

that amount. "The early cabbage," he said, "received 1,500 pounds of 3-8-5 broadcasted and harrowed in and 500 pounds more of bone when the plants were set." When two-thirds grown, 200 pounds of nitrate of soda was top-dressed on. One row had 400 pounds and it was 50 per cent. more profitable, being early and heavier.

Speaking of the results obtained, Mr. Watts remarked, "Most of the data on vegetable crop fertilization shows that the highest rate has given the greatest profit. Many growers have observed the same thing. What we need greatly is to know where the limit of profitable fertilization lies."

5-8-5 Gives Good Results on Sweet Corn

I grow about 40 acres of sweet corn, planting first week in April, and begin cutting about 4th of July. I put no fertilizer in with the corn but when it is breaking through the ground I apply 800 pounds per acre of 5-8-5 fertilizer on top of the row and harrow it in. When corn is about six inches high I side-dress with same amount. I wish to know if it would do as well to broadcast 1,500 pounds per acre. —E. J., Burlington County, New Jersey.

The practice described in your letter would indicate that your land is naturally in a good state of fertility and that, for this reason, the broadcasting of 1,500 pounds of a 5-8-5 fertilizer should give you entirely satisfactory results in the growing of sweet corn. It is only where smaller amounts of fertilizer per acre are used and where the land is not in a high state of cultivation that the application of fertilizer in the row is usually to be preferred. —J. G. L., *Pennsylvania Farmer*.

Every State Should Be Represented

THIS Department—"With the Soil Experts" cannot be *written*—it must be *compiled*.

BETTER CROPS is sent to every man in every Agricultural College, Experiment Station and County Farm Bureau in the United States. The material in this department, then, should be of interest to all soil experts in every state.

I've started the department out this month as best I could. Next month I want *you* folks to fill this section. There are over 12,000 Soil experts on our subscription list, and if each one would send in one six-line item, the department would get along swimmingly!

Will you help me out by doing your share?

Jeff



Fourteen Standard Fertilizers For Florida

All crops needs for added plant food are met by the fourteen standard fertilizer mixtures being recommended by the Florida Experiment Station through R. W. Ruprecht, chemist, according to a study of the needs of various crops of the state.

In discussing the standard fertilizers, Dr. Ruprecht says that every farmer should insist upon these formulas in ordering and that purchases should be by analysis rather than by brand name. He expresses the opinion that if the farmers of the state would do these things, the prices of fertilizers would be reduced.

The various formulas are mentioned below according to the various crops for which generally recommended:

For general field crops, such as corn, cotton and peanuts, use the 3-9-3. (The first figure stands for the percentage of ammonia in the mixture, the second for available phosphoric acid, and the third for potash.)

For sweet potatoes, use the 4-8-4.

For general truck crops, particularly watermelons, cantaloupes and

Irish potatoes, use either the 5-7-5 or the 5-8-5.

Celery, lettuce and cabbage would take the 5-5-5.

Peas, beans, young pecan trees, citrus nursery stock would take 4-8-3, also young grove trees for their spring application.

For sweet potatoes, Irish potatoes, tomatoes, sugar cane, bearing pecan, peaches and the home vegetable garden, use the 4-8-6.

For general truck crops or cabbage on clay soils, the 5-7-3 should be found suitable.

If the land is poor, use the 6-6-4 on general truck crops and cabbage.

If the soil is high in organic matter, use the 3-8-5 for tomatoes, also for summer and fall citrus applications.

On average land bearing citrus calls for either the 3-8-8 or the 3-8-10 for fall and winter applications.

If the land is rich hammock, bearing citrus needs the 2-8-10.

The 4-8-8 is all right for citrus in spring. It is also a good tomato fertilizer.

Florida Fertilizers Must Show Content

A legal procedure for the operation of businesses under declarations of trusts and an act providing that commercial fertilizer be labelled as to its contents became laws of Florida, July 1. The act dealing with declarations of trusts merely provides for the procuring of a certificate from the secretary of state upon payment of \$150, and subject,

of course, to the laws of the state governing operations coming under that class. A penalty of \$1,000 is provided for failure to comply with the terms of the act.

The fertilizer label law gives the purchaser for the first time in this state, according to its framers, the information as to its full contents.

Under the terms of the measure all commercial fertilizer must be labelled as follows: Name or brand of the fertilizer or fertilizer material; address of the manufacturer or jobber; net contents of package in pounds, and a chemical analysis showing minimum percentages, of available ammonia, insoluble ammonia, available phosphoric acid, insoluble phosphoric acid, water soluble potash and total plant food; the maximum percentages of chlo-

rine and moisture and a statement of the material from which it is made.

A third act along these lines which became effective Sunday provides that anyone desiring a chemical analysis of purchased fertilizer may send samples to the commissioner of agriculture. The samples must be witnessed by disinterested parties as to their having been taken from the package of which the analysis is desired.

Report Heavy Fertilizer Sale in Arkansas

During the eight months from October, 1922, to and including May, 1923, fertilizer sales in Arkansas amounted to 74,598.91 tons, according to the report of the fertilizer department filed in the Bureau of Mines, Manufactures and Agriculture.

The heaviest purchases were made in March, when 28,007.38 tons were bought, considerably more than a third of the total. The smallest amount purchased was

101.70 tons in October. The present season's fertilizer business was almost twice that of last season, when only 40,325.29 tons were purchased for the entire year beginning October 1, 1921, and ending September 30, 1922.

The sales by months this season were: October, 101.70 tons; November, 226.35; December, 340; January, 5,848.18; February, 13,229.40; March, 28,007.38; April, 25,062.69; May, 1,713.21.

Pennsylvania Plant Food Cost Six Millions

The approximate valuation of the nitrogen, phosphoric acid, and water soluble potash contained in the more than 320,000 tons of fertilizer sold in the state of Pennsylvania last year was \$6,310,866, according to a recent compilation of fertilizer registration made by the bureau of chemistry, Pennsylvania department of agriculture.

The figures cover every brand of fertilizer offered for sale in the state. Based on the guaranteed analysis of these fertilizers, it is estimated that the fertilizers supplied 3,506 tons of nitrogen, 34,698 tons of phosphoric acid, most of which was in available form, and 9,334 tons of potash in water soluble form.

37 Per Cent. of Cotton Acreage Fertilized

Increased use of fertilizer on the cotton acreage this year as compared with last year is reported to the United States Department of Agriculture. More than 37 per cent. of the acreage has been fertilized as compared with 32 per cent. last year.

A number of individual states show larger gains. In Georgia 93 per cent. of the total cotton acreage

received fertilizer this year, or 10 per cent. more than last year's acreage. Florida shows 88 per cent. of the cotton acreage fertilized or 8 per cent. more than in 1922. Alabama 88 per cent., an increase of 10 per cent.; Mississippi 44 per cent., an increase of 14 per cent.; Louisiana 38 per cent., or an increase of 18 per cent., and Arkansas 31 per cent., or an increase of 16 per cent.



The stuff that pays dividends

THE man who plows—who plants, cultivates and harvests—is interested only in *results*.

He believes in fertilization because it increases the fruit of his labor. He wants to maintain permanent soil fertility; and he knows that potash is the stuff that pays dividends.

But there are several *brands* of potash—all the brands are not equally efficient. The county agent who has the interests of his farmers at heart; the honest fertilizer mixer who wants to turn out good goods; the dealer that is building good-will—these *insist* on Genuine German Potash.

And *you* should insist on it. "PICA" is the brand name of the Genuine German Potash Salts imported by the

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PICA GENUINE GERMAN POTASH

¶ J. S. Carrol says that Smith County, Texas, had the first County Agent in the United States. If there had been no boll-weevil maybe there never would have been a County Agent!

The First County Agent in the UNITED STATES

By J. S. Carrol

THE county agent is the outgrowth of the Farmers' Co-operative Demonstration Work which was inaugurated and so successfully conducted by the late Dr. Seaman A. Knapp of the United States Department of Agriculture.

In 1903 when the Mexican boll-weevil was rapidly spreading over and devastating the cotton fields of Texas, leaving ruin in its path, Dr. Knapp was hurried to the scene to study the situation and to do what he could to help the cotton growers in their losing fight. He confronted a serious situation and realized the urgent need of quick action.

With no appropriation available at this time with which to fight the boll-weevil, Dr. Knapp called upon the local bankers, merchants and other business men for funds for the purpose of inaugurating under his supervision a practical field demonstration of the best and most modern methods of farming under boll-weevil conditions. Improved methods of cultivation, fertilization, rotation, and diversification were

used. The demonstration proved a success and attracted the attention of many farmers throughout that section.

In 1904 Congress made an appropriation for use in fighting the boll-weevil and with a fund of \$40,000, supplemented by local contributions, Dr. Knapp increased the number of demonstrations and employed several well-equipped agents to take charge of large districts and supervise the work. This marks the real beginning of the Farmers' Co-operative Demonstration Work.

As the work developed, Dr. Knapp realized that it could be made more effective by reducing the territory assigned to an agent and in this way the county was used as the unit.

The distinction of having the first county agent in the United States goes to Smith County, Texas, the appointment being made in the fall of 1906.

At this time there was no State law authorizing counties to appropriate money for (*turn to page 46*)



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5 8 7

5 5 5

4 10 4

3 10 4

2 12 2

2 8 10

2 10 4

2 8 5

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Ground Animal Tankage

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YORK CHEMICAL WORKS
YORK, PA.

Q A southern farmer who prefers to remain anonymous wrote this thought-provoking article on

Increasing the Income on the Average Farm

THE one problem confronting the people of this country at this time that, in our opinion, overshadows everything else is that of increasing the income on the average farm. It is not one that should challenge the attention of the farmer alone, as some seem to think, but all classes of people.

We are cultivating less land in 1923 than we did in 1922, due to the fact that a large number of farmers are leaving the farm and moving to town.

Why is this? Simply because the average farm has ceased to be sufficiently profitable to enable the farmer to meet his obligations and properly support his family.

Then what is the remedy? Some say that if we will improve our soil and increase our yields that it will increase our profits and solve the problem. Some assert that we have made no progress in production, consequently we cannot meet the increased cost of more modern standards of living.

There is no question that as a rule we have been negligent of our soils and that in many cases our methods of farming are faulty. These are fundamentals that should certainly occupy a good deal of our attention. However, the assertion that we have made no progress in this respect is not true. We say

diversify and the people have diversified. For instance, in South Mississippi the sweet potato crop went from almost nothing as a commercial crop to a surplus of over 800 cars in less than ten years. In the same length of time the cane syrup crop grew to a surplus of more than a million gallons. The same is true of a number of other crops. Did this bring prosperity? Not much. The profit on the syrup and potato crops last year, for instance, was so small that this year both crops are reduced. Why was this? Do the people not want syrup and potatoes? Certainly they do and they are using them in increasing quantities, but the farmers do not get the profits. This is what formerly happened. The farmers produced the syrup, sold it to a local buyer, who, of course, sold it to a standardizing plant for a profit. The standardizing plant sent out a traveling salesman to work the jobbers at a good salary and a profit. The jobber sent a salesman to work the retail trade at a good salary and a profit to the jobber. The retailer sold the syrup to the consumer at a profit. Now this meant one of two things, maybe both. The consumer had to pay too much or the grower did not get any profit at all. This same thing is happening with other products. (continued next page)

J. S. Carrol's story of The First COUNTY AGENT

(continued from page 42)

the purpose of co-operating with the United States Department of Agriculture in employing county agents and the funds for this work were supplied by the Federal Government, supplemented by local contributions.

However, in 1908, the Legislature of Mississippi passed a law creating the Office of County Commissioner of Agriculture and as Adams County made the first appropriation for this purpose, it must be given the credit of having the first agent employed on a co-operative basis.

Alabama, Florida and the other Southern States soon followed with similar laws and co-operated with the United States Department of Agriculture in employing County Agents.

The successful outcome of this work soon attracted the attention of the agricultural authorities and the leading business men throughout the United States with the result that in May, 1914, Congress passed the Smith-Lever Bill, appropriating money for extension work throughout the country and the employment of County Agents and Home Demonstration Agents in co-operation with the different states.

This important work has grown and expanded to such an extent that today out of a total of 3,059 counties in the United States there are about 2,228 County Agents and some eight hundred Home Demonstration Agents.

"Increasing the Income on the Average Farm"

(continued from page 45)

We have only taken syrup as a convenient example. What is the remedy?

Co-operative marketing. Can we cut out all dealers and sell direct to the consumer? We do not think so. It would not be feasible for the grower to undertake to retail his products to the actual consumers, and honest advocates of co-operative marketing make no such claim. We seek to destroy no man's business that is performing a necessary service, and dealers are necessary. We do, however, expect to eliminate a string of unnecessary dealers.

For instance, there is a spread of approximately \$25 per bale on cotton between the grower and the mills. This means that the mills pay approximately \$725,000,000 more for the cotton crop than the farmers receive. That is more money several times over than the Government appropriated for agricultural purposes for the last two years. Does anyone claim that that is necessary?

Besides, the elimination of unnecessary speculation by no means constitutes the sole benefit of co-operative marketing. It will enable us by co-operative effort to standardize and greatly improve the quality of the product, will enable us to protect from waste and will furnish an incentive that will bring about greatly increased production.

Co-operative marketing is here to stay. It will benefit not only the farmer, but by increasing his purchasing power, benefit the business man as well. Then it should have the undivided support of the whole people.

Armour's



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CONDITIONS of the CONTEST!

Who Is Eligible—Any person connected in any way with the practice of agriculture may enter this contest.

Subject—The subject must be "What Fertilizers Have Done for My County (or My State or My Country)."

Length—No article will be considered in this contest that contains over 2,000 words. Short articles of 500 to 1,000 words will have as good a chance to win the prize as any 2,000-word story.

Manuscript—Articles should be neatly typewritten on one side of white paper, preferably regular letterhead size, 8½ x 11 inches, but the judges will not be influenced unfavorably toward any story not so written.

Contest Ending—This contest begins the day you receive this issue of BETTER CROPS. It closes midnight, Saturday, December 1st, 1923. All manuscript in envelopes bearing a post mark showing that

they were mailed after this time will not be eligible.

Basis of Award—There is only one prize award in this contest—the First Prize of Fifty Dollars (\$50.00) in gold. The basis of award will be purely on the excellence of the presentation of the facts. In the event of a tie, the writers of each of the winning manuscripts will be awarded Fifty Dollars (\$50.00) in gold.

Method of Payment—As the contest closes midnight, Saturday, December 1st, 1923, announcements of the prize winner will be made in the January, 1924, issue of BETTER CROPS, and the prize mailed to the winner on December 20th, 1923, five days before Christmas.

Right to Publish—The Better Crops Publishing Corporation reserves the right to publish and copyright each and every manuscript submitted in this contest, either before or after the closing of the contest. No manuscript submitted will be returned.

\$50.00 in GOLD!

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MENT

FOR the best article on the subject, "What Fertilizers Have Done for My County [or State or Country]", the publishers of BETTER CROPS will award a prize of Fifty Dollars [\$50.00] in gold.

Read the conditions of the contest, and then get busy on your story. The time is short, but you have plenty of time to write an article that may win the prize.

That each contestant may feel sure of fair treatment, three men have been selected and have agreed to act as judges:

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Editor of the RURAL NEW YORKER

Mr. E. V. THOMPSON

Eastern Manager of COUNTRY GENTLEMAN

Mr. V. E. PRATT

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The Nervous Patient

A dentist had to crawl under his auto in order to make some adjustment in the machinery. Applying the monkey wrench to it he said soothingly, "Now this is going to hurt just a little."

Neutrality

It was during the impanelling of a jury; the following colloquy occurred: "You are a property-holder?"

"Yes, your honor."

"Married or single?"

"I have been married for five years, your honor."

"Have you formed or expressed any opinion?"

"Not for five years, your honor."

A Warning Sound

"Jim, I see that your mule has U. S. branded on his hind leg, I suppose he was an army mule and belonged to Uncle Sam?"

"No, suh; dat U. S. don't mean nothin' 'bout no Uncle Samuel. Dat's jess a warnin'. Dat U. S. jess stand fo' Un Safe—at's all."

No Waits! No Delays!

"Boy, does yo' get a letter from de Ku Kluxes, what yo' gwine do wid it?"

"Read it on de train."

Worse

"Your husband has been ill. Is his condition critical?" asked the vicar, who was paying his monthly call.

"It's worse than critical," replied the worried-looking woman; "it's abusive."

Sounded Difficult

Down in Texas the short cotton crop forced a large number of country Negroes to the cities. One of them applied for a job at one of the large employment agencies.

"There's a job at the Eagle Laundry," said the man behind the desk. "Want it?"

The applicant shifted uneasily from one foot to the other.

"Tell you how it is, boss," he said finally. "I sure does want a job mighty bad, but de fack is I ain't never washed a eagle."

He Kept Moving

A London zoo keeper took care of a new lion which the zoo had just bought. The animal was a bit wild, and one of the keeper's friends asked, "Mike, does the lion ever bite you?"

"He hasn't yet," replied Mike, "but he frequently bites the place where I recently was!"

Re-form

Reformer: "Multitudes of our young women are parading about the beaches scantily clad."

Voice from the Rear of Hall: (tired but happy): "Ah, yes—the shock troops!"

A Bad Mistake!

Nurse: Doctor, did you ever make a serious mistake in your practice?

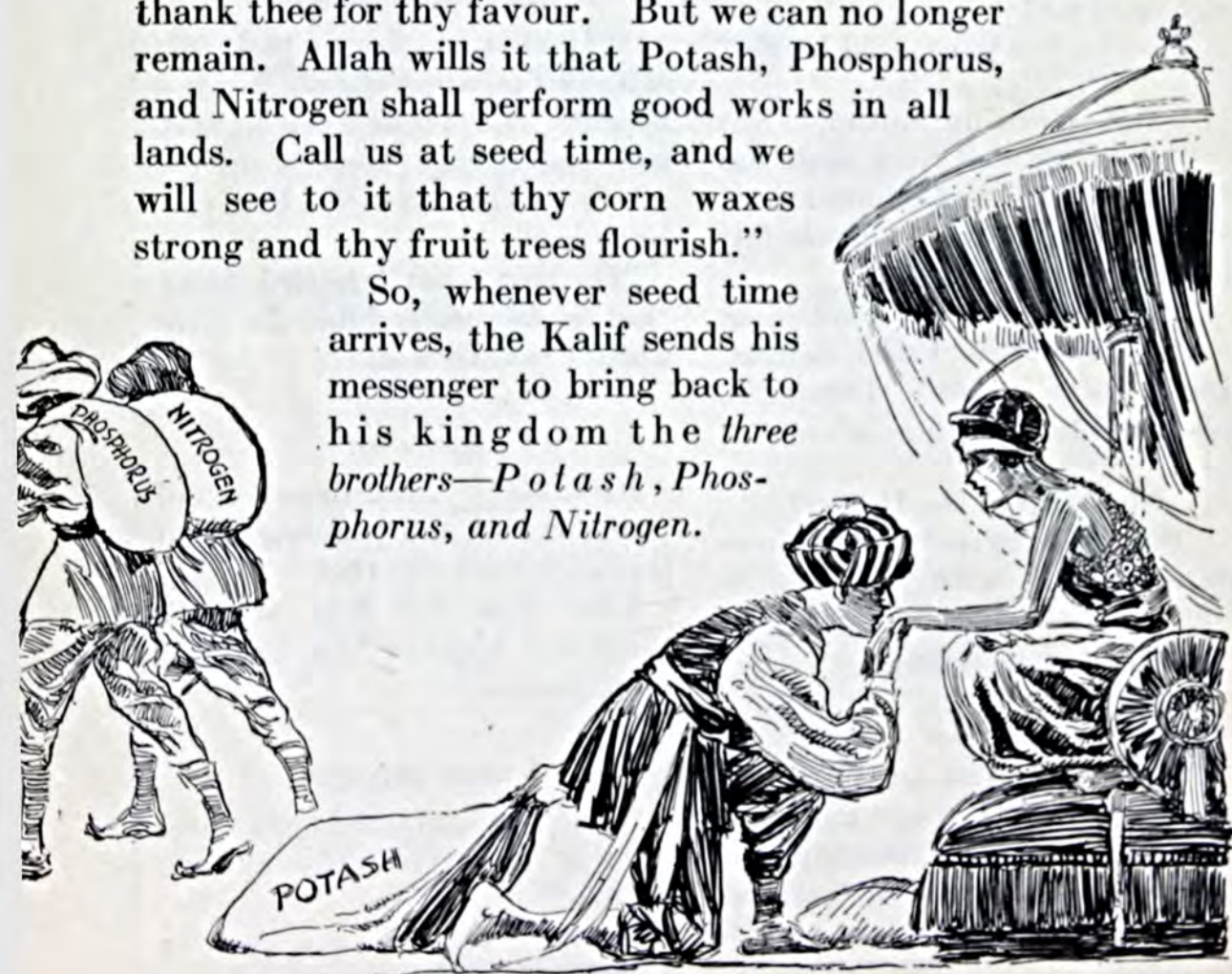
Doctor: Yes. I once cured a millionaire in three treatments.

(continued from page 18)

the three sacks are taken together. But if thou be generous and grant them their freedom so that we can all set to work together, then wilt thou and thy land be prosperous for all time." Then spoke the Kalif, "If thou hast spoken truly, Stranger, thou shalt wed my daughter, but if thou hast lied, then thou must die." Then he sent his Vizier with the stranger to the prison. And when Potash saw his brothers, he embraced them and said, "My dear brothers, know ye now that ye have done me a wrong? Why did ye wish to leave me, the youngest, behind? Ye should at any rate have known that without me, Potash, ye could accomplish nothing. I have now come to succor ye. Promise to abide by me with your sacks, and then ye shall be free." And the brothers agreed willingly and said: "We have seen that we did wrong; we will in future go hand in hand together."

The brothers then sowed the content of each sack, mixed together upon the fields, which now yielded corn, straw, fruits and grapes in plenty. The Kalif was happy once more and wished to give his daughter as wife to the youngest brother, Potash. But the latter said, "May the God of Mohammed thank thee for thy favour. But we can no longer remain. Allah wills it that Potash, Phosphorus, and Nitrogen shall perform good works in all lands. Call us at seed time, and we will see to it that thy corn waxes strong and thy fruit trees flourish."

So, whenever seed time arrives, the Kalif sends his messenger to bring back to his kingdom the *three brothers—Potash, Phosphorus, and Nitrogen.*



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Another Plant Disease Conquered

(continued from page 22)

is not readily obtainable Sulfate of Magnesia, ordinary Epsom Salt, used at the rate of 100 pounds per acre, will supply the required magnesia.

It is, however, cheaper to get the potash and magnesia combined in the German Sulfate of Potash Magnesia, also called Double Manure Salt, than to buy Sulfate of Potash, Epsom Salt, and Dolomite separately.

The bad effect of chlorin on the burning quality of tobacco is well known, and for this reason Muriate of Potash, Kainit, and ordinary 20% Manure Salt, all of which contain very large amounts of chlorin, should not be used in tobacco fertilizers where high quality is sought.

Another well established but less well known fact is that, other things being equal, the higher the potash content of tobacco the better its quality.

Recently some experiments have been conducted, using equal parts of German Sulfate of Potash and Sulfate of Potash Magnesia. This combination would supply 3 parts of Potash and 1 part of Magnesia. A moderate application for tobacco is 200 pounds, per acre, of actual Potash, or 550 pounds of a mixture of equal parts of Sulfate of Potash and Sulfate of Potash Magnesia (Double Manure Salt) would contain this quantity of actual Potash and 66 pounds of Sulfate of Magnesia, an amount ample to prevent "sand drown."

These data were prepared by consulting the following:

Article by W. W. Garner, J. E. McMurtrey, E. G. Moss, Bureau of Plant Industry, U. S. Department of Agriculture (Science LVI, No. 1447, September 22, 1922.)

Article by E. G. Moss, Assistant Director Tobacco Branch Experiment Station (Extension Farm-News, North Carolina, Vol. IX, No. 5, January, 1923).

Report by W. W. Garner, J. E. McMurtrey, C. W. Bacon, Bureau of Plant Industry, U. S. Department of Agriculture, and E. G. Moss, Bureau of Plant Industry, U. S. Department of Agriculture, and Assistant Director, Tobacco Branch Station, North Carolina, Department of Agriculture (Journal of Agricultural Research, Vol. XXIII, No. 1, January 6, 1923).

Do You Like Your JOB?

(continued from page 6)

foreordained us to be Wall Street brokers or what-not.

There seems to be no future. Plutocrats whizz by us in Multisix sedans, leaving us in a whirl of dust. The cotton is full of weevil, the wheat is drooping with rust, the banks are not in a position to extend further credit. The world is black, and spots of it are black and blue.

To blame the instrument—to exude the acid and froth at the mouth—would be the petty part of a palsied workman—only the bungling plumber blames the torch when he finds he can't wipe the joint.

The world is all right—the job is all right. It is we who are awkward boobs—crack-brained—yokels unable to deliver what the world expects of us.

Let us get busy. There is work to do. The world needs food—the soil needs fertilizer—the vine needs pruning—the organization needs our boost. Let us cease excreting the fizzling “if.” There is no “if”—no “and” and no “but.”

We will never have a better job—and even if there were a chance to make a change, in the womb of time we would only find ourselves worse off—from the frying pan into the fire—the whining symphony we now exhale would be doubled in brass—if we are not satisfied now, we never will be.

So let us to the job. Boost our game. Seek to improve it. As it soars, so we soar with it.

William Gilchrist, *President*
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762 Eggs Pay Plasterer One Day

(continued from page 7)

take care of replacements on old cars. All well organized. Well greased. A system that can't be beat.

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But can farmers organize for their own protection? You bet they can. And what is more, they are doing it. It comes slowly, but it is coming. The farmer is naturally suspicious of business, of banks, of corporations. When he is well organized, his statisticians will tell him just how much wheat he shall raise, and he will raise that amount and no more. His surplus land and energy will be put into other crops, also recommended by his statisticians. And then it will take the plasterer three days of labor to pay for a dozen eggs, instead of 762 eggs for one day's labor. The balance will be struck!

**See Prize Contest
Announcement on
Page 48—you may
win *Fifty Dollars!***

What About WHEAT

¶ Jeff McDermid's comments from page 11:

after it is harvested—that is, it shrinks unless the proper fertilizer is used. If a man raises 20 bushels of wheat per acre and it shrinks to 16 bushels he has lost the profit on his crop. One of the solutions of the wheat problem is to so fertilize the soil as to prevent this inordinate shrinkage.

And why is it that no one calls attention to the fact that wheat is graded? All wheat does not sell for the same price. There is a difference of quite a few cents per bushel in the various grades. Better seed, more careful cultivation, better fertilizers—all of these must be brought into play. In addition a more diversified system of farming must be advocated. Farmers may no longer devote all their time and energies to the raising of wheat. It is unsafe and probably will be unsafe until the Government takes a hand in the matter.

The farmer whose income is derived from corn, wheat, livestock, hay and a diversified line of small crops is on a safe and sane basis—and he is not worrying much.

Lime a Tonic?

(continued from page 23)

blue. Simply make up a ball of the soil, tighten it between the palms, then break it open and insert the litmus paper, and press the ball together again, leaving it for a while.

Lime should be applied if the soil is acid, for an acid soil has not the right physical condition for the proper utilization of fertilizer. But do not forget that lime does not, and cannot replace fertilizer. It is a tonic and not a food.

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(continued from page 29)

for cash instead of credit. Every advertiser, manufacturer, merchant, and dealer knows what this means. It will mean that the farmer no longer will have to be carried by the dealer, the dealer by the jobber, the jobber by the manufacturer and the manufacturer by his bank. How costly that old method of doing business is known to every reader of *Better Crops*. Gradually to substitute for it the new method of cash transactions will of itself be a tremendous benefit to all concerned.

Profit in Quick Sales

Quick sales on small margins for spot cash are more profitable for all concerned than long prices on long credits carried at long costs.

Of course many farmers will need time to turn themselves. Their credits are intermediate—six months to one, two or three years, in contrast to the merchants' two, three or four months. The new credit bank affords a market for such intermediate paper which runs longer than the law allows reserve banks to grant.

In other words, the country dealer and the country bank can unload upon the credit bank the farmer's intermediate paper, which, because it runs so long, would not be available for rediscount with the Federal Reserve Bank. What the latter institution has been for commercial business, the new Federal Intermediate Credit banking business is to be for the agricultural trade.

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Rogers & Hubbard Co.....	Middletown, Conn.
Wilson & Toomer Fertilizer Co.....	Jacksonville, Fla.
Gulf Fertilizer Co.....	Tampa, Fla.
Southern States Phosphate & Fertilizer Co.....	Augusta, Ga.
Mutual Fertilizer Co.....	Savannah, Ga.
Read Phosphate Co.....	Savannah, Ga.
Reliance Fertilizer Co.....	Savannah, Ga.
Southern Fertilizer & Chemical Co.....	Savannah, Ga.
Georgia Fertilizer & Oil Co.....	Valdosta, Ga.
Armour Fertilizer Works.....	209 W. Jackson Blvd., Chicago, Ill.
Swift & Co.....	Union Stock Yards, Chicago, Ill.
Rauh & Sons Fertilizer Co.....	Indianapolis, Ind.
Calumet Fertilizer Co.....	New Albany, Ind.
Federal Chemical Co.....	Louisville, Ky.
Baugh & Sons Co.....	Baltimore, Md.
Griffith & Boyd.....	Baltimore, Md.
Miller Fertilizer Co.....	Baltimore, Md.
Ober & Sons Co.....	Baltimore, Md.
Piedmont Mt. Airy Guano Co.....	Baltimore, Md.
Tilghman Co., Inc., W. B.....	Salisbury, Md.
Meridian Fertilizer Factory.....	Meridian, Miss.
Tupelo Fertilizer Factory.....	Tupelo, Miss.
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Why People Leave FARMS

(continued from page 27)

labor in the city—six to eight hours in unionized industries as against sixteen hours a day on the farm.

The greater opportunity for achieving success and distinction in commerce and industry in the city.

The opportunity for young people to advance themselves in the city.

The opportunity for all the members of large families to secure steady employment.

The idea some young rural people entertain that farm work is lowering and degrading.

Some young people have to work so hard on the farm that the farm becomes distasteful to them.

The seclusion and isolation of farm life, particularly during the winter months.

The lack of home comforts on the farm in the way of up-to-date conveniences.

The desire of young people to obtain a high school and college education causes them to go to the cities and subsequently to enter into some profession. (At the Pennsylvania State College in 1922 the great agricultural counties of Lancaster, Berks, Chester and York furnished only one-third as many students in agriculture as Philadelphia and Pittsburgh.) The young people from the country are flocking to professional schools and business positions in the cities.

The desire of some country people to get rich quick and the feeling that all they need to do is to leave the farm and start in business in the city.

The high price of land and the large amount of capital needed to successfully engage in farming keeps many from going into it.

The city offers a greater choice of vocations.

There are more conveniences and church privileges in the city.

The small margin of profit in farming as compared to city vocations.

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Smith's Standard 2-16-2..	2	16	2
Smith's Standard 2-12-2..	2	12	2
Smith's Standard 0-10-10..	0	10	10
Smith's Standard 0-14-4..	0	14	4
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Smith's Standard 0-18-0..	0	18	0
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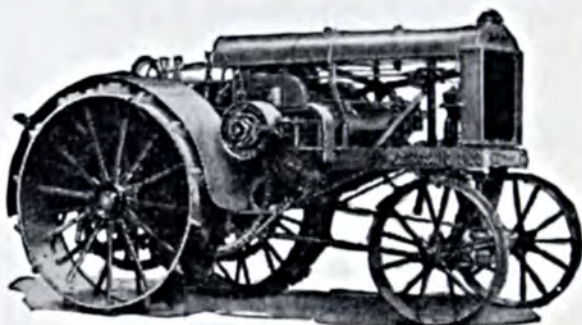
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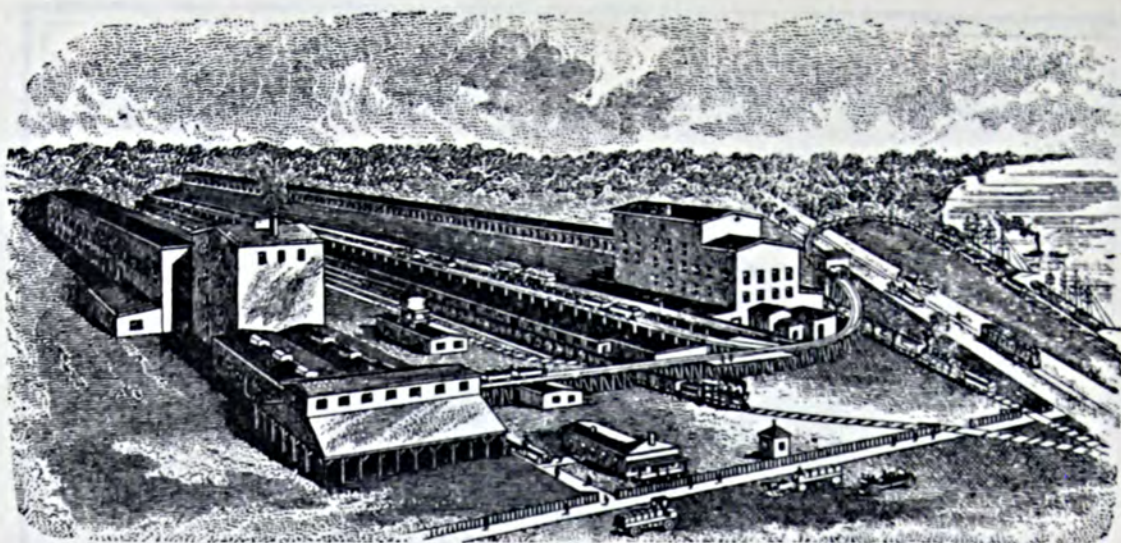
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be said?**

Better Crops

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September 1923



In this issue — Dr. Frank Crane — Jeff McDermid —
J. C. Penhook — Brief Digest Fertilizer and Crop News



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No one is so rich that he can afford in these times to neglect the proper maintenance of soil fertility. When crops are "selling off" at low prices, the wise farmer *increases* rather than reduces the fertility of his soil, knowing that his salvation lies in securing even greater yields from the same labor costs.

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The coming of the County Agent meant the gaining of a

valuable ally in our research work. We met him on common ground, for we were both seeking the same thing—facts about the soil and crop needs of his county.

In five Northern and Middle-West States alone, our Agricultural Service Bureau has worked with no less than 154 Counties Agents in conducting the co-operative fertilizer tests. The valuable information gained from these and other tests, is yours for the asking. Consult our Agricultural Service Bureau regarding your soil problems.

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The Pocket Book of Agriculture

VOLUME I

NUMBER ONE

Table of Contents: September, 1923

Do You Like Your Job?	5
<i>An inspirational dissertation by Jeff McDermid.</i>	
762 Eggs Pay Plasterer One Day	7
<i>A protest by Llewellyn Trapp.</i>	
What About Wheat?	8
<i>A calming commentary by Jeff McDermid.</i>	
The Three Brothers	14
<i>A thrilling fable by Dr. W. Jervitz.</i>	
Henry Ford is Smart Man	19
<i>An amusing story by Si Bellew.</i>	
Another Plant Disease Conquered	21
<i>A learned treatise by a staff writer.</i>	
Is Lime a Plant Food?	23
<i>A timely discourse by J. C. Penhook.</i>	
Fatigue	24
<i>A revelation on a simple subject by Dr. Frank Crane.</i>	
Farmers Borrow \$1,000,000,000	28
<i>A startling review by Herbert Myrick.</i>	
The Editor's Own Pages	30
<i>A series of brief comments by Jeff McDermid.</i>	
Is Co-operation a Failure?	34
<i>A decisive answer by George W. Hinman.</i>	

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☞ Looks like a good year for the cotton farmer, in spite of the boll-weevil. ☞ Latest Government reports show a reduced percentage and cotton prices soar. Diversification of crops in the South will get a severe blow if cotton goes much higher.



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VOL. I

NEW YORK, SEPTEMBER, 1923

No. 1

Do You Like Your JOB?

¶ *The music's in the man—not in the violin*

By *Jeff McDermid*

W

HEN Ole Bull, the famous English violinist, received an invitation to display his talent before the King and Queen of England, some jealous artists, their hearts fused with vitriol and their arteries flowing with hate, were enviously furious.

When the green-eyed god, burning his incense of asaphœtida, takes possession, the devil laughs with glee—his time is coming. The aim of the world being love, not hate, folks who carry malice soon discover they have no friends to aid them in their troubles—the envious artists could find no way to prevent Ole Bull from giving the exhibition of his skill.

In despair they sought a more direct method—they'd steal his violin, by thunder!

And so, on the eve of the concert, as the theatre was filling up with good folks who had come to hear Bull and see the King, a pair of

wretches from the envious clan crept into Ole's dressing room and stole his fiddle—a priceless heirloom of marvelous tone.

The orchestra strummed its opening overture—the curtain rose—a hush of expectancy dropped like a mantle over the audience and Ole Bull stepped forth—*without his fiddle!*

Unprecedented! What would His Majesty say!

"Your Highness—and ladies and gentlemen!" rolled forth the famous violinist's voice. "I am sorry to announce that in some unexplainable way my violin has disappeared from my dressing room, and I am forced

to appear with no means of entertaining you.

"I attribute this piece of astounding thievery to a brace of infamous scoundrels who hoped, by stealing my fiddle, to make me appear ridiculous. With your permission I am going to prove to them—and to you—that *the music is in the man, and not in the violin!* I have sent out to a music stall for a cheap fiddle. I gave my man a pound note and told him to purchase the first one that he found that could be bought for that price. He will return in a moment and we will proceed with the concert!"

Thus out of a cloud of gloom the Optimist weaves a strand of purest gold—the evil mind proposes, the righteous, with the strength of Gideon, disposes. All of which is tried, tested and true.

The man returned.

Bull took the pound note fiddle, tuned it carefully, and waved his bow to the orchestra leader as a signal to begin.

Softly at first, but gaining strength and sweetness, even as a girl flowers and evolves from rosy maidenhood into sweet and charming womanhood, the strains from the cheap fiddle mounted and soared to the roof of the old theatre, echoing back as if sent from Heaven—sweeter music had no man's ears ever heard.

The crowd was first charmed, then thrilled and finally could no longer restrain its enthusiasm. A wild, beating wave of hilarious applause burst forth, even before Bull had completed his masterly rendition!

The King himself rose and led the cheering.

For a man had proved beyond all question that the music was in himself and not in his instrument.

The envious artists crept from the

hall unseen, unsung, unnoticed. Those who vibrate evil and secure their joy in undermining others soon discover that the world has no niche for them, which is as it should be.

No one can kill the power that is in another man—that privilege is granted only to the man himself. Others cannot harm you. If you are harmed, if your prestige is shaken, your reputation shattered, look back and see what act of yours is responsible, and remember, brother, the music is in you, not in your job.

In every age, on every page of history, we see folks who are dissatisfied with their lot—artists who wished they had trained for the ministry, ministers who vow they would have had the world at their feet had their kind but brainless parents placed a palette and brushes in their hands at the psychological moment!

All wrong, brother, all wrong.

One man takes a board and makes a sidewalk of it; another chap, with clearer vision, takes the other half of the same board, tests it for fibre, strength, growth and resonance and makes a Stradivarius of it—the wood is the same—the difference is in the vision.

Those folks, who, enraged at the failure of Nature to place them in the proper niche, rant and rave and moan and pine and droop and fuss—these folks simply do not see what is in the wood. All of which goes to prove, without further exhaustive calculations, that each of us is put into this world to effervesce, create, evolve and fructify in our own little place—and woe be unto him who will not understand this—his job will wither, crumble and smother itself under a mantle of failure.

We, in agriculture, sometimes wish the gods had (*turn to page 55*)

762 Eggs Pay Plasterer for One Day's Work

¶ *Virginia farmer shows why farmers are not building new barns and houses*

By Llewellyn Trapp

A MAN who runs a farm in Virginia sent to the *New York Herald* the other day a letter in which he translated the cost of construction at present wages into food at the price the farmer gets.

The example he gives is most illuminating:

"It takes 63½ dozen, or 762, eggs to pay a plasterer for one day of eight hours work.

"It takes 17½ bushels of corn, or a year's receipts from half an acre, to pay a brick-layer one day.

"It takes twenty-three chickens weighing three pounds each to pay a painter for one day's work in New York.

"It takes forty-two pounds of butter, or the output from fourteen cows, fed and milked for twenty-four hours, to pay a plumber \$14 a day.

"It takes a hog weighing 175 pounds, representing eight months' feeding and care, to pay a carpenter for one day's work."

These facts are beyond argument. Reduced to barter and exchange the charges made by skilled labor are startling to say the least. How do they "get away with it," to use the slang expression.

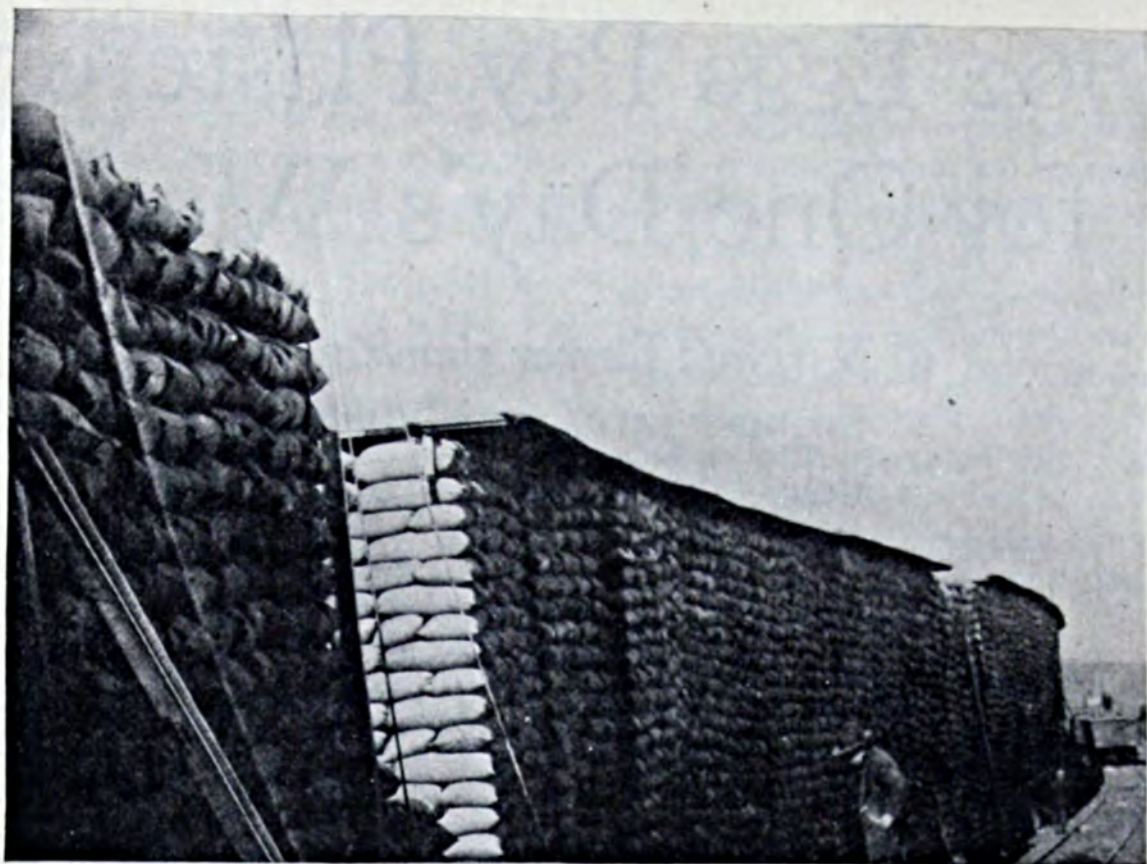
The answer is simple. Labor is organized. Its creed is, "Work less,

demand more, increase membership." The farmer, in his present unorganized state, protestingly accepts what is handed to him. He dare not strike, from patriotic reasons. Food is the coin of the earth. He must go on producing, else nations starve. And his overproduction ruins his own market.

Labor knows how to handle its oversupply. So does Capital. When there is an oversupply of labor, each man continues to hold his job, but "strikes on the job"—that is, he simply loaf along and thus makes work for a brother workman. When there is an oversupply of oil, the Standard Oil and other big oil companies do not dump it on the market and thus destroy the selling price.

No, indeedy! They store it in tanks and hold it until the market is ready for it—at their own price.

Tire manufacturers, through The Rubber Club, an organization composed of the heads of the big rubber companies, wisely calculate just how many new cars will be manufactured each year. They then plan to produce just four tires for each new car, adding to this number a sufficient supply to (*turn to page 56*)



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What about

By Jeff McIlernid

MARK TWAIN is reputed to have said, "Everybody talks about the weather, but no one ever seems to do anything about it," and the farmer today feels that everybody is talking about wheat—talking until it is almost a taboo subject in many quarters—but no one seems to do anything about it.

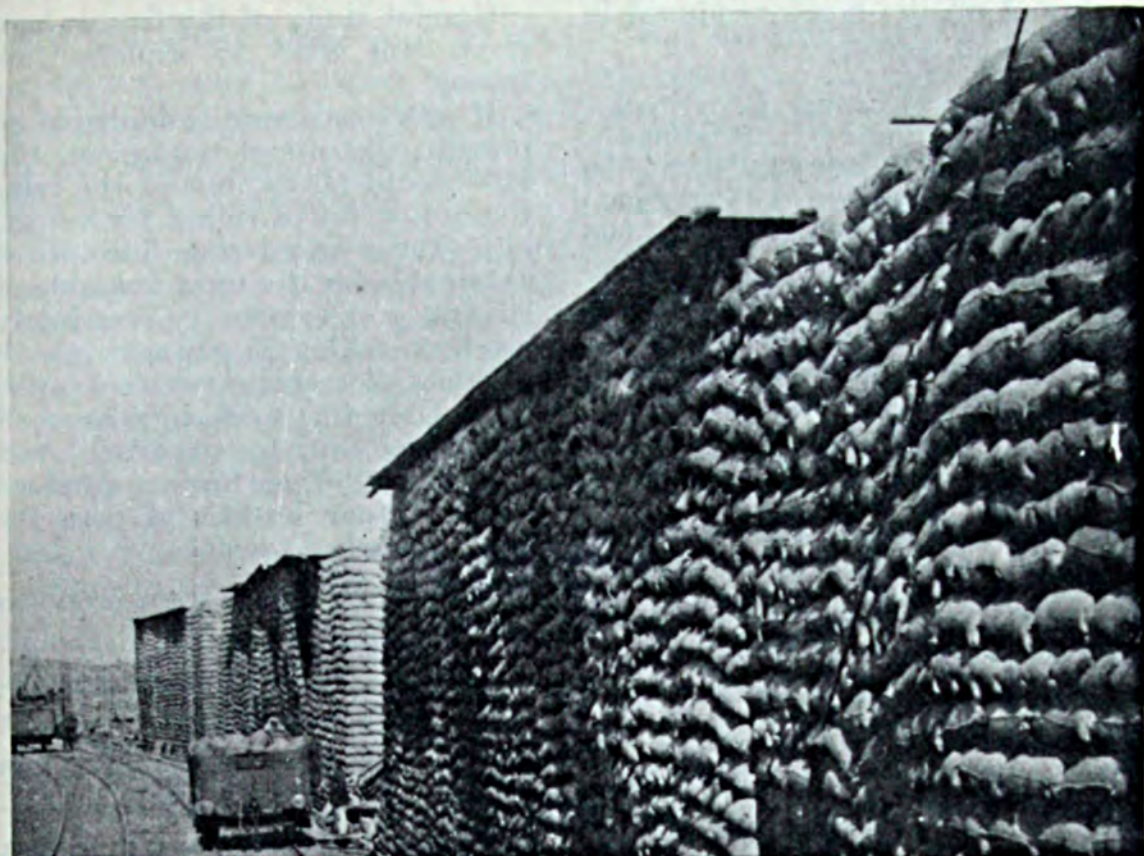
True, several organizations are planning to relieve the situation. Many solutions have been brought forward, discussed, discarded. Probably when all is said and done, the poor farmer will do as he has always done in the past; plant more wheat and hope that by the time the next

crop comes in things will be different.

But, beyond the individual farmer's problem in marketing wheat with elevator prices at 80c or thereabouts, what is the probable effect of dollar wheat upon the country at large?

B. C. Forbes, writing in the *New York American*, takes a rather optimistic view of the whole situation, and, using the Government's statistics he tries to prove that wheat is not the important crop that some of us think. He says, in part:

The truth is—and it should be published far and wide—that wheat



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WHEAT?

❏ *Is wheat the important crop it is supposed to be?*

❏ *Should it be fed to the hogs?*

constitutes less than 10 per cent. of the total value of our annual crops and a mere 6 per cent. of the total value of the gross wealth produced by our farmers.

Wheat is not even the most valuable single crop raised on American farms. Corn usually is worth twice as much as wheat. Hay and forage rank far ahead of wheat.

Cotton, lint and seed also greatly outrank wheat in dollars and cents.

Then Mr. Forbes, using tables prepared by O. P. Austin, statistician of the National City Bank of New York, shows that wheat stands fourth in value:

1922 CROPS

Corn.....	\$1,900,000,000
Hay and forage.....	1,409,000,000
Cotton, lint, seed...	1,370,000,000
Wheat.....	864,000,000
Oats.....	479,000,000
Tobacco.....	306,000,000
Potatoes.....	263,000,000
Apples.....	202,000,000
Beets (1920).....	100,000,000
Wool (1920).....	85,000,000
Rye.....	50,000,000
Miscellaneous.....	1,933,000,000

Total.....\$8,961,000,000

He then goes on to show that live stock products, prices on which have on the whole been fairly satisfactory, almost equal the total

value of all the crops produced in the United States:

	Value of Crops Produced	Live Stock Products
1913	\$6,132,759,000	\$3,716,754,000
1914	6,111,684,000	3,753,277,000
1915	6,907,187,000	3,868,304,000
1916	9,054,459,000	4,352,000,000
1917	14,222,000,000	5,852,000,000
1918	14,331,000,000	8,149,000,000
1919	14,755,365,000	8,957,000,000
1920	10,909,000,000	7,354,000,000
1921	7,028,000,000	5,339,000,000
1922	8,961,000,000	5,349,000,000

Furthermore, Mr. Forbes asserts, "it will help to correct false ideas and help to keep the record straight if we study the following table showing the annual value of our wheat crop as compared with the gross wealth produced on our farms." He then calls attention to the following table:

	Gross Farm Wealth Produced	Value of Wheat Crop
1913	\$8,849,513,000	\$610,122,000
1914	9,894,961,000	878,680,000
1915	10,775,000,000	930,302,000
1916	13,406,000,000	1,025,112,000
1917	19,331,000,000	1,278,112,000
1918	22,480,000,000	1,881,862,000
1919	24,982,000,000	2,074,078,801
1920	8,263,000,000	1,197,263,000
1921	12,367,000,000	737,068,000
1922	14,310,000,000	864,000,000

These figures are presented, he states, not with the idea of belittling the seriousness of the drop in wheat prices to \$1 a bushel, and consequently to, roughly, 80c on the farm, but for the purpose of correcting widespread misapprehension concerning the rôle wheat fills in our agricultural scheme of things. Continuing in this optimistic vein, he says:

A lot of people and newspapers have been talking as if, no matter what prices our farmers receive for anything else or everything else they produce, the general business of this country could not continue even half-way satisfactorily if dollar wheat should continue.

Careful study of the figures here given will tend to explode this theory.

If optimism were fashionable at present, instead of pessimism, the talk would all be, not of the relatively low prices ruling for wheat, but of the wonderful fine prices obtainable for the most valuable of all our crops—corn. Corn lately has been selling 25 per cent. above the quotation ruling twelve months ago. Only this week corn touched a new high price for the year. And remember that our farmers produce three to four bushels of corn for every bushel of wheat.

But others do not seem prone to take to this optimistic viewpoint. Some farmers, writing to their favorite farm papers, seem to feel that the only solution lies in raising less wheat. They seem to have forgotten that either less acreage or a smaller crop per acre will bring higher prices next season, and that should they pursue this shortsighted policy wheat will be high just at a time when they have little to sell.

A much more intelligent suggestion comes from R. T. Garwood of Edgar County, Illinois, who writes:

One thing that would help wheat prices would be to appeal to cereal companies to sell their products on a closer margin. They buy wheat for 90 cents a bushel and sell it in 10-ounce packages for \$15 a bushel.

But Mr. Garwood must remember that the big cereal companies that use tons of wheat in their patent breakfast foods, and for flour, are organized and can demand, and get, the price they ask. The farmer in his present disorganized state cannot demand a profit, but must accept whatever is allotted to him.

Co-operative marketing of grains seems, on first thought, to have the germ of an idea, but regardless of the success of other methods of co-operation, the Moses who can

lead the wheat farmer out of the wilderness does not seem to have put in his appearance. The U. S. Grain Growers has busted up. As *The Prairie Farmer* puts it:

While much wheat is marketed co-operatively in Oklahoma, Texas and the Pacific Northwest, those co-operatives are too small to have any effect on the general price level. Co-operative grain marketing in the Middle West has been at a standstill for a good many months. The hybrid U. S. Grain Growers, which was a cross between the ideas of the advocates of commodity merchandising on the pooling basis and the representatives of farmers' elevators, has never been able to market much grain. It signed up a large amount of grain, borrowed a great deal of money, and finally broke up at the historic annual meeting nearly a year and a half ago.

Still there is a demand among farmers for some sort of Government action. *The Prairie Farmer* continues:

There is much sentiment among farmers in favor of some sort of government action to bolster up the declining markets. The demand for this is especially strong in the Northwest, and an influential group of senators and congressmen will demand that congress take some action on this question when it meets in December. The plan that meets with greatest favor is the establishment of a government grain corporation which will buy the surplus at a specified price at the end of the season. The argument for this plan is that it will remove the fear of a heavy carry-over and will stabilize prices at a satisfactory figure throughout the year.

A number of business men, among them Geo. N. Peck, president of the Moline Plow Company, endorse the general idea of government action to stabilize grain prices. The American Farm Bureau Federation opposes this plan on the ground that consumers are in the majority in the United States, and that government interference with prices will work to the disadvantage of farmers in the long run.

But the real danger to the country lies in the fact some farmers are planning to let the fertility of their soil suffer. They say that if they cannot get a price for their wheat that pays them to grow it, they cannot continue to fertilize their land. This is a situation demanding the earnest co-operation of the leading agronomists of the country on whose shoulders lies the burden of proving to farmers who are laying this course of action how foolish such a program must turn out to be. Brown's Crop Talks in *The Orange Judd Farmer*, in answering one correspondent who outlines the fact that he is determined to cease buying fertilizer until wheat again rises, says:

I hardly agree with the implied suggestion of this correspondent. We are at a stage of cropping in Illinois when deterioration and tearing down of soils goes on faster and faster, unless something is done to check this destruction; and on most farms something must be done in the way of replenishing crop-making material. Letting up on soil work now simply means that yields will decrease, and that means a mighty low pay for the labor put upon fields to produce a small crop.

And everyone seems to overlook the point that it costs just as much to raise a small crop as a large one. A soil that is rich and fertile in plant food is the soil that produces, for each unit of farm labor, the greatest number of bushels of grain. As one Western writer states:

One of the important angles of the question relates to soil fertility. The best utilization of farm labor requires that each person be able to produce the largest possible amount of results from the amount of labor he puts in. A fertile soil that responds readily and gives a large yield per acre is the economical soil to work with under these conditions. No one is so rich that he can afford in these days to neglect the proper maintenance of soil fertility.

Wheat shrinks (turn to page 57)

A Little Chat

BETTER CROPS completely covers a field untouched by any other single publication.

Its readers constitute every person in the United States in any way connected with the science of agriculture—county agents, soil advisers, agronomists, experiment station men, state and federal bureau members, and heads of co-operative societies.

Better Crops is not a farm paper. No farmer receives a copy. Its editorial material is intended to be read by those to whom the farmer refers his important problems.

It is a needed magazine. As succeeding issues are published and as its personnel becomes more fully organized, it will be more and more apparent that *Better Crops* is one source of authentic, unbiased news of what is going on in the agricultural world.

In size, format and editorial policy this journal is built for the busy man. It fits the pocket; a welcome relief from bulky, ponderous magazines. Each future issue will contain brief, unbiased digests of the more important phases of the crop situation. These digests, it is planned, will render its readers a similar service to that rendered by the *Literary Digest* on world happenings.

Any publication should truly be of and for its readers.

You, as a reader, can contribute immensely to

with the Publisher—

the value of *Better Crops* to other readers. Suggestions and criticisms will not only be appreciated but welcomed.

Stories, articles, editorials, pictures and statistics used in future issues should come from you. This issue is "home made" and accordingly does not realize, except in a small way, the plans we have on foot for the journal.

In this number are two invitations, one of which you should accept. The first is our invitation to submit stories and articles, which, if accepted, will be paid for at the rate of 1c per word.

The other invitation is to compete for the \$50.00 prize awarded the best 2000 word article on the subject, "What Fertilizers Have Done for My County" (or my State, or Country). In this contest nothing counts but facts. English, rhetoric, appearance of manuscript and neatness mean nothing and will not influence the judges. A true presentation of the facts is all that is required in this contest.

Better Crops is a magazine for you.

Help us to make it help you. Tell us what you want to see in future issues and we will do our best to follow your suggestions.



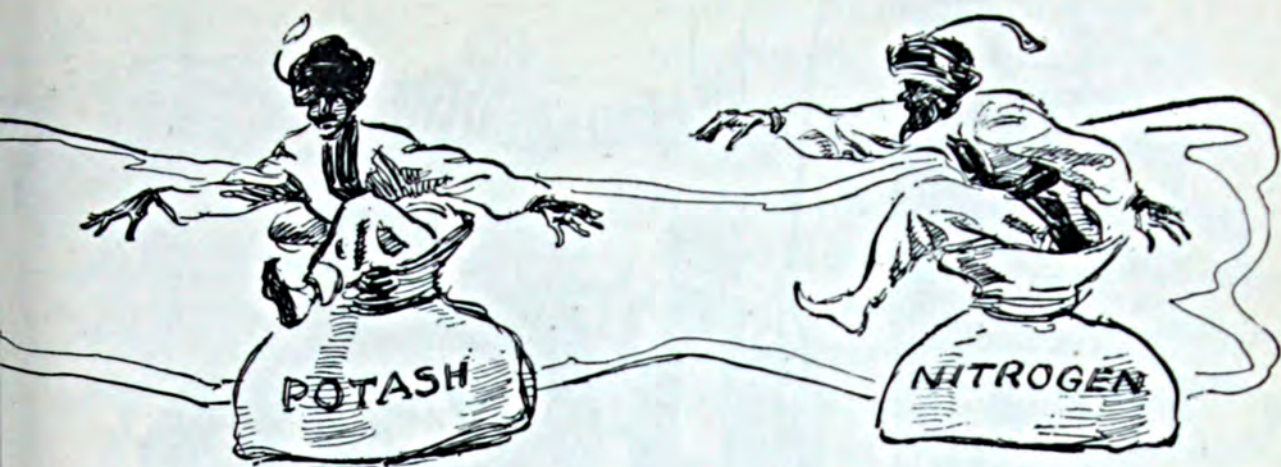
Publisher.



¶ A tale from the Arabian Nights which may still be experienced at the present day

The Three

“U NHAPPY stranger! Dost thou come here to increase our misery, and to perish thyself?” Such were the words used by the hungry and poor-looking guardian of the gate of the mighty city of the Kalif, to the traveller who, on his sturdy



BROTHERS

By Dr. W. Jervitz

palfrey, craved permission to enter the city. In great amazement the traveller asked what was amiss and received the answer, "Thou evidently hast come here from afar, O Stranger, that thou knowest not of the great misfortune that has befallen our all-powerful Kalif and his city. Although the God of Mohammed makes the sun to shine on us as he used to do, and although the good spirits of heaven send us rain when we are in need of it, yet grow our grain and our millet no more as in former years. Every year the devastating famine comes anew, bringing our children into dreadful misery and leaving our best warriors powerless and defenceless against our enemies." "And have ye then tried no remedy for this pestilence?" asked the stranger. "By the beards of the Prophets, Yea! For years already has our land been cursed, and the Ruler of the Faithful, Allah, bless him, proclaimed that he who succeeded in banishing these evil spirits from the land would receive in marriage the hand of his daughter. But all means which have been tried have been of no avail, and we must face further famine." The stranger listened with great eagerness to the words of the



guardian of the gate and entreated him to tell him further and with more detail all that had taken place.

He heard that at first the priests and the wise men assembled had tried to dispel the ban by prayers and charms. All these proved of no avail, and the Kalif and his people were in veritable despair. At last there came two strangers from the Land of the Setting Sun, each carrying with him a most mysterious sack. They wished to be brought into the presence of the Kalif, and each declared that by means of the content of his inexhaustible sack, the misery could be stayed, and the land be made as rich and happy as in former days.

“What did they call themselves, and what success had they?” cried the newcomer in great excitement. “Should’st thou know these two strangers, then thou hast reason for deepest compassion. One called himself Phosphorus, and the other, who also had a name strange to our ears, was called Nitrogen. Both of them now languish in prison, because they could not fulfill their promise with deeds. The one, Nitrogen, declared that he could make the corn grow so luxuriantly, as no one in the land had previously seen; the other said, ‘What use is it to you that the corn grows high, if the ears be empty?’ and promised to produce grains of corn as large as hazelnuts. The Kalif, in his



wisdom, entrusted to each a province in which he should prove the magical virtues of his sack. In truth, after a year Nitrogen produced stalks higher than a man, and the grains of corn which Phosphorus produced were as large as hazelnuts. Alas, in the second year, the corn and straw were again small, and in the third year

the old misery, famine and pestilence returned.

"Then the Kalif was wroth and had them both thrown into prison, where they led a miserable existence in the company of snakes and poisonous vermin."

"Oh! lead me to the Kalif," cried the stranger. "Unfortunate creature, wilt thou rush headlong to ruin? What would'st thou do?" But the stranger heeded not the warning; he was brought before the throne of the Kalif, and bending low said, "Ruler of the Faithful, I have heard of the misery that prevails in thy land, and I wish to help thee." But the Kalif said, "Hast thou also heard of these men, who came from the Land of the Setting Sun, and who now languish within the walls of my prison? They came here with as foolish notions as thou; would'st thou share their fate?" "As Allah ordains!" answered the stranger. "Set both of these men free, and I will, with their help, thy land deliver. These men are no imposters, as thou hast naturally supposed, but they lack prudence. Their selfishness has led them into this misfortune. Should it please your Highness, I will relate to thee their story, which is the same as my own:

"There lived once in the distant Land of the Setting Sun a merchant to whom a kind fairy had presented a talisman which consisted of three magical sacks whose contents were inexhaustible. He had only to strew a little from each of these three sacks on the land and even the driest sand bore a hundredfold. As the merchant was at the point of death, he summoned before him his three sons, whom he had named to honour the fairy after the three spirits which dwelt in the three sacks. Handing over to them the talisman, he said, 'I bequeath to thee jointly these three sacks. Ye will procure for yourselves riches and honour, if ye hold fast together and never part from one another. The spirit of the sack called *Nitrogen* makes the plants grow quickly;

the spirit of the second sack called *Phosphorus* makes the grains large and the ears full; the spirit of the third, *Potash*, gives to the plants health and vigour; it makes the corn nutritious and gives the fruit its good flavour. None of these qualities can the plants, which we mortals must cultivate for our daily bread, lack. Woe be the day, when ye quarrel and strive over possession of the sacks and drift apart! *Only if the three spirits work in unison* can the blessing of the good fairy, who gave me these three sacks, be obtained. Think over this well! After the merchant had said this, his soul departed.

“But the sons quarrelled with one another and obeyed not their father’s words, so that they went and divided up their inheritance, each taking a sack. The eldest brother took that which obeyed the spirit Nitrogen, the second that which gave the full ears of corn, and the third the sack in which the spirit of Potash dwelt. That youngest brother am I, O Kalif! Both my brothers then went into the country places amongst the farmers and promised them rich harvests by means of their magical sacks, if they gave them large sums of gold. The farmers believed them and paid them well. But when I came and told them the magical power of Potash was needed to give the grain vigour and health, they sent me away, for they had no more money. But the magical power of the talisman only works when Nitrogen, Phosphorus and Potash work in unison, and my sack, with the spirit of Potash, they had not.

“So the people got no return for the money they had spent; and when my brothers returned again the next year, they were driven away with insults and abuse. Now they have also come to thee, O Follower of the Prophets, and may Allah send his blessings on thee! How much less could each brother working alone serve thee, seeing that the magic of the talisman only fulfills its purpose if (turn to page 52)



Si Bellew Says, "Henry Ford is Smart Man!"

¶ *Flivver replaces horse; no more manure; then Ford goes into the fertilizer business!*

By Si Bellew

THIS here now Hennerly Ford, he's a right smart feller, sez I.

First off, he lays his plans to ketch 'em comin' and goin'. Y' see, it's like this, now. The farmers used to do all t' work with horses. Drivin' and plowin' wa'nt done with flivvers and tractors. They was allus plenty m'nure, roun' th' barn, an', come plantin' time, Mister Farmer loads up the ol' spring waggin wit' manure and off t' the field to spread it.

No fertilizer needed, sez Mister Farmer, 's long at I got plenty of m'nure. Then 'long comes this here now Ford and lookit what's happened! Everythin' done wit' gasoline! Plowin's done with tractors, an' Mister Farmer drives t' town in his Hennerly. And where's t' m'nure. They ain't none. Y' can't spread crank case oil on th' land, kin ye? T' m'nure is jes' nacherly vanished.

'n here's where I say this Hennerly Ford's a smart feller. After he gits rid o' all th' m'nure, then he gits hisself ready t' go into the fertilizer bizness! Katches 'em comin' an' goin'. He ain't got Muscle Shoals yit, but Time an' Hennerly Ford don't wait fer no man—he's a gettin' fertilizer now out o' his smoke-stacks! Yes sir-ee, bobtail! He takes the smoke-stacks, n' scrapes 'em an' gits out 'monium sulfate, er somethin' like that and he's a-goin' to sell it fer fertilizer.

Nex' thing he's gotta do 's t' fin' a way to make fertilizer outa th' tin lizzies that are ready fer the junk-heap. They's plenty of 'em in our county—nuf t' make lots of fertilizer!

NOTE: Ford dealers throughout the country will soon be selling "Ford Ammonium Sulphate," a high nitrogen product said to be manufactured from coal smoke. It is said not to be the regular by-product of the coke ovens, but to resemble table salt.



Tobacco plant of flue-cured type affected with sand drown. Note that the plant as a whole and the individual leaves have attained normal size and shape and the leaf surface is relatively smooth. The disease begins in the lower leaves and at the tips of the leaves. The veins retain their green color long after the leaf lamina becomes bleached. The leaf lamina usually does not die in local areas or spots as in potash hunger. Reproduced from lithograph, *Journal Agricultural Research*, Jan. 6, 1923.

“Sand drown” is produced by a lack of sufficient available magnesia to form the green coloring matter of the plant.

It affects both tobacco and corn.

Another Plant Disease Conquered

The United States Department of Agriculture cooperating with the North Carolina Department of Agriculture discovers cause of "Sand Drown" and a practical method of control.

THE serious leaf disease affecting tobacco, known to tobacco growers as "sand drown" first came under observation about 1912 at the Tobacco Station of North Carolina Department of Agriculture, located at Oxford, and has appeared each year on the tobacco grown at that station. It has been frequently seen on the sandy tobacco soils of the Connecticut Valley, and is liable to be widespread in wet seasons in those tobacco growing sections where soils distinctly sandy in character are found. The disease occurs in the more sandy portions of the field after a heavy rain.

In recent field investigations conducted by the Tobacco Branch Station of the North Carolina Department of Agriculture in connection with the Bureau of Plant Industry, U. S. Department of Agriculture, it was found that this disease was quite common, and was apt to occur in more aggravated form after a heavy rainfall on the more sandy spots of the field.

In this disease the green and yellow pigments of the leaves are affected, with a result of mottling or blanching of the leaf tissues; but the leaf tissues usually do not die as quickly as is the case in potash starvation. This blanching in the case of "sand drown" invariably begins on the lower, older leaves, and the first symptoms appear at the tips or outer margins of the leaves, the veins retaining their normal color. Corn is also affected in much the same way.

Field and laboratory studies show the cause of "sand drown" to be insufficient supply of magnesium in the soil or fertilizer, and in a general way it might be termed "Magnesium starvation." The ratio between sulfur and magnesium appears to be a factor of importance; increasing the amount of sulfate in the soil has a tendency to intensify the symptoms of magnesium deficiency. The addition of magnesium chlorid or magnesium sulfate to the fertilizer prevents the disease. Double Manure Salt and Kainit were effective in preventing the disease.

In the field experiments conducted at the Tobacco Station, near Oxford, N. C., potash from several different sources was used without lime, with ground limestone, and with dolomite which supplies both lime and magnesium. The Kainit and Double Manure Salt contain considerable magnesium. German Muriate and German Sulfate of Potash contain some magnesium but much less than German Kainit and Double Manure Salt.

The per acre application of ammonia, phosphoric acid, and potash was the same on all six plots: 40 pounds ammonia derived from dried blood; 64 pounds phosphoric acid from acid phosphate; 36 pounds of actual potash (K_2O) in the form mentioned in the table.

The results given in the following table represent the average of two years' work on three fields.

On the No Lime plots both Mu-

riate plots yielded better than the Sulfate plots; but on the Limestone plots the German Sulfate and German Muriate yielded the same and outyielded the American Muriate and Sulfate. The Dolomite increased the yield and value of the tobacco on all plots, except the German Double Manure Salt plot, over the No Lime and ground Limestone plots.

Where Double Manure Salt (a sulfate of potash magnesia) was used there was practically no difference in yield and not a great deal of difference in value between the

Salt and Kainit, containing magnesium sulfate and magnesium chlorid, had no "sand drown" regardless of whether the plot had Dolomite, ground Limestone, or No Lime.

The conclusion obviously to be drawn from the results of these and other experiments is:

"Sand drown" is apt to occur, in wet seasons, on the more sandy spots of the tobacco field where the purer forms of potash salts, Muriate and Sulfate of Potash are used in the fertilizer. The high grade Sulfate of Potash may even aggravate

Plot No.	KIND OF POTASH	Limestone		No Lime		Dolomite	
		CaCO_3 90.46%	MgCO_3 1.32%			CaCO_3 52%	MgCO_3 36%
		Yield in Lbs.	Value	Yield in Lbs.	Value	Yield in Lbs.	Value
1	Trona Muriate.....	670	\$205.66	776	\$248.88	850	\$275.54
2	German Muriate...	753	242.08	693	219.82	863	288.66
3	Nebraska Sulfate...	613	181.65	606	187.15	783	252.56
4	German Sulfate....	753	218.24	606	179.06	803	263.90
5	Double Manure Salt	853	254.46	860	279.13	860	262.59
6	Kainit.....	826	239.42	833	250.67	1000	296.18

Dolomite, No Lime, and Limestone plots. Approximately 55 pounds of magnesium sulfate was applied in the Double Manure Salt, and the further addition of magnesium carbonate in the Dolomite apparently had no effect.

It would appear that magnesium, either in the form of sulfate, chlorid, or carbonate, is a factor of considerable importance in the fertilization of the tobacco crop, especially on the more sandy soils.

So far the yield and value of the crop produced on the various plots has been discussed only. But from the standpoint of the amount of "sand drown" on the six plots the German Double Manure Salt and Kainit gave most striking and conclusive results in preventing the disease.

Plots 1, 2, 3, and 4 (the higher grade potash salts) had about the same amount of "sand drown" on the ground Limestone and No Lime plots, but there was no "sand drown" on the corresponding plots when the Dolomite, containing magnesium carbonate, was added.

But the plots 5 and 6 which received German Double Manure

the disease. Fairly pure ground Limestone does not control the disease.

Dolomite or dolomitic limestone, containing magnesium carbonate, used with the refined potash salts, Muriate and Sulfate of Potash, effectively controls the disease.

The German Potash Salts containing magnesium, Double Manure Salt and Kainit effectively control the disease whether used alone or with Dolomite.

Therefore, if the source of potash in the complete fertilizer is unknown or in doubt, and if the per cent. of potash is small it is important to apply additional potash in the form of German Double Manure Salt to furnish both the potash and magnesium requirement of the tobacco plant and the control of "sand drown."

If the complete fertilizer already contains a sufficient per cent. of potash, but the source is unknown or in doubt, the application of Dolomite, 1,000 lbs per acre, may be made to furnish the magnesium necessary for the effective control of the disease.

Where Dolomite (turn to page 54)

Is Lime a Plant Food, or Is It a Tonic?

☞ Bringing out the difference between the need for lime and for fertilizer

By J. C. Penhook

WHAT is the difference between fertilizer and lime. Is lime a plant-food?

These are questions that every County Agent must answer often daily.

Fertilizer is a food for plants. Lime is not a food. There are three main plant foods—nitrogen, phosphorous and potash. Lime is more or less of a “tonic” that builds up the plant and gives it the stamina to withstand conditions of the growing season. Lime improves the physical condition of the soil, but the plants do not use it as food.

Many people in cleaning their teeth now use a tooth paste that is an “anti-acid.” In other words, it is an alkaline paste that offsets or neutralizes the acid of the mouth and thus saves the teeth. But this tooth-paste is not a food. So lime in the soil neutralizes the acids present and improves the soil, yet it is not a food.

When you use a fertilizer you usually apply it just before seeding a certain crop, and you expect that crop to derive the benefits of the plant food in the fertilizer. Lime, however, should not be drilled to benefit any certain crop. Especially when applied directly to corn, lime

often shows no results. Lime applied before legume crops will show results with a rapidity that often surprises the farmer who has tried liming before corn and got no results.

Lime is applied less oftener than fertilizer. Fertilizer should be applied every season, suiting the mixture to the crop. Lime should be applied every two or three years, and you should expect to see the results of the liming on each crop grown during the three years following the drilling in of the lime.

Where possible drill your lime a short time before sowing clover, soy beans or some legume crop. Legumes react most quickly to lime. All crops following the legumes will then get the benefit, and the legumes will respond so readily to the increased physical condition of the soil that it will pay for the lime.

Many farmers have never heard of the “litmus paper test” for acid soils. In the West they use this test every day to find out if the soil needs lime. Any druggist can furnish either pink or blue litmus paper, and show you how to test soil for acidity. When the soil is acid the blue litmus paper turns pink. When it is alkali, the pink litmus paper turns (turn to page 57)

Fatigue—

IT IS not those who work the hardest who get the tireddest.

In fact, many physicians will tell you that those of their patients who have that tired feeling much of the time are people who do nothing at all.

Often the very worst remedy for tiredness is inactivity, the so-called rest cure, and if we would get out and hustle our weariness would disappear.

This is due to the fact that human fatigue is primarily mental.

It is something we think of that "takes the life out of us" oftener than some activity in which we engage. A disappointment or a sorrow or humiliation can fag us more than hard labor.

And we have often witnessed frail people working tremendously without complaint, even boasting that they enjoy it, simply because they are full of eager expectation or ambition or some other strong emotion.

It is what we give out that rests us more than what we take in.

The lake is fresh. It is full of lively fish, and its waters are good to drink, not because it is continually receiving but because there is a continual outflow.

The Dead Sea is dead because, while water continually runs into it, none runs out.

Human energy is like the widow's cruse. Though you take from it continually, it remains full.

Life and life force are not something that you can pile up and keep as you would potatoes or money

by Dr. Frank Crane

¶ *Better Crops has obtained the exclusive right to Dr. Frank Crane's articles in the agricultural field.*

bags. It is a running current and if it will not run it will spoil.

In the case of energy the paradox is true that what you give you have, and what you save you lose.

When we put forth our powers we find them continually replenished. If we bravely front our tasks, power leaps to our aid.

It is in the presence of danger that we have courage. It is under great strain that there comes to us the power to endure. It is when calamity and disaster descend upon us that there enters into us an unlooked for sturdiness to stand up against evil.

One way to cure fatigue, of course, is to rest when it is necessary and at proper intervals.

But we often forget that the very best way to get rid of chronic fatigue is to have hard work enough to do, dangers enough to face, problems enough to solve, and obstacles enough to overcome.

To quote from Captain Hadfield, "The average neurasthenic is ordered to take a rest in the afternoon, but he spends the time reading his paper; he goes to bed early, but sits up reading a novel. He gives his body more rest than it needs, failing to realize that what the body needs is not relaxation but reinvigoration. It is characteristic of the neurasthenic that in the morning, and possibly after a long night's sleep, he wakes up more fatigued than when he went to bed."

In other words, the best way to be full of energy is to give out energy copiously, and the price of perfect rest will always be hard work.

Copyright, 1923, by Dr. Frank Crane

The Most Profitable Crop per Acre

What is the most profitable crop per acre in the United States? Corn? No, you're wrong!

YOU will guess a long while before you get the right answer.

It is cranberries.

According to the recently completed official report of the Department of Agriculture, cranberries earned an average of \$288 an acre for farmers who cultivated them in 1922, a higher rate of return than that of any other principal crop grown in the United States.

And the next valuable crop per acre also surprises us. It is tobacco, which earned \$177 an acre.

The third crop is hops, which earned \$100 an acre.

The list of the dozen leading crops, with their value per acre, is as follows:

Cranberries.....	\$288.00
Tobacco.....	177.50
Hops.....	100.00
Potatoes.....	60.63
Rice.....	37.14
Cotton.....	35.21
Hay.....	19.88
Corn.....	18.55
Wheat.....	14.11
Barley.....	13.23
Oats.....	11.76
Rye.....	10.64

It might first be supposed that farmers would immediately rush to put a large acreage in cranberries this year and reduce their other crops. This will not happen, however, because the cultivation of cranberries can be undertaken successfully only in certain sections of the country. The same is true of tobacco.

There will also not be any stampede toward the cultivation of hops, because that involves a large investment and painstaking effort.

The above figures, of course, do not mean that the total value of the cranberry crop is the greatest. On the contrary, corn led all other crops of the last harvest in bringing money to the farmers. The corn crop at December prices was worth \$1,900,-287,000.

The Winter wheat crop was valued at \$614,561,000.

Yet the earning power of corn per acre, according to the department report, was only slightly greater than that of wheat and was very much below that of cotton and potatoes, as can be seen by glancing at the list here given.

Why People Leave FARMS

I should like to see a discussion on this subject in the columns of *Better Crops*. Suppose we start, next month, by hearing why farmers are leaving your county—if they are! Drop me a line.

Jeff

AT a recent hearing staged by a Special Industrial Commission appointed by Congress, thousands of farmers, their wives, country bankers and small town merchants from every quarter of the United States were asked to state the reasons for the persistent city-ward trend of farm workers that has been so noticeably evident in recent years. In essence, the conclusions arrived at by the Commission constitute a handbook of information that in a large measure was responsible for many of the good roads appropriations by Congress, and the inauguration of other economic and social measures designed to make the rural classes happier on the farms. The deductions in order, briefly stated, are as follows:

The productiveness of modern farm labor through improved machinery calls for less human endeavor to produce the world's food supply.

The difficulty of getting efficient help on the farm has caused many farmers to quit and move to the city.

The fact that the farm does not furnish work for all of the sons in large families.

The desire for an exciting social environment leads many young people to leave the farms.

The absence of good roads and good schools, and the long distances children must walk to school.

Higher wages paid in the cities. Shorter hours of (turn to page 60)

Jeffisms

Many businesses and professions are suffering from a rush of young blood to the head.

✦ ✦ ✦

What we need today are more sweat glands and fewer monkey glands.

✦ ✦ ✦

It isn't what you put in that counts; it's what you can leave out. Look at the flivver.

✦ ✦ ✦

If you're friendly and human we can forget that you have no brains.

✦ ✦ ✦

When you're right you don't need to lose your temper; when you're wrong you can't afford to.

✦ ✦ ✦

A friend of mine has a sign above his desk that reads: I've been in business forty years. I've been lied about, sworn at, knocked, cussed and beaten. The only reason I'm still here is: I want to see whatinell's going to happen next!

✦ ✦ ✦

There's a use for everything. Even the fellow who always exaggerates. When Columbus returned and told Isabella of the beautiful America he had discovered, he exaggerated terribly, but you and I wouldn't be here if he hadn't.

Jeff

Farmers Borrow

By Herbert Myrick

Editor, FARM AND HOME

LOANS to farmers from the Federal Farm Loan system now exceed one thousand million dollars.

These are long-term loans, mostly for 35 years, secured by an underlying first mortgage upon the borrower's farm. The interest rate has varied from 5 to 6 per cent. since the system started in 1917, being now $5\frac{1}{2}$ to the borrower, with no commissions, bonuses or rake-offs.

The borrower pays his interest twice a year, including with it about $\frac{1}{2}$ or 1 per cent. upon the principal. Such amortization counts up so fast that when the loan matures it is discharged, because these little amortization payments will by that time have equalled the principal.

Farmers Able to Buy

That is to say, a total payment of about \$65 a year on each \$1,000 of long-term farm mortgage from the Federal Land bank will in due time discharge principal as well as cover interest meanwhile. Contrast this with the 8, 10 and 12 per cent. interest plus bonuses, renewal charges and rake-offs previously exacted from the farmer, and you will see why it is that even during the hard times of 1920-22 farmers were able to buy quite liberally.

Even more significant is the new Agricultural Credits act, approved March 4, this year. It authorizes the Treasury to invest a total of \$60,000,000 in the capital stock of

twelve federal intermediate credit banks—\$5,000,000 to each. Of this amount, \$1,000,000 has already been made available to each bank. This capital will be gradually returned to the Treasury upon the earnings of the new system.

Each intermediate credit bank has the same directors as the Federal Land bank for its district, but its executive personnel, funds and accounting are wholly segregated from the Land bank.

What Banks May Do

The act provides that these new intermediate credit banks may make loans or advances to cooperative agricultural associations, or it may discount agricultural paper for such associations or banks and particularly for live stock loan companies. The credit bank is not allowed to loan direct to the individual farmer.

The new system offers credits over periods of from six months to three years, at present nine months. It is taking some time to work out all its details, but when it functions fully the new system may benefit advertisers largely by enabling farmers to pay cash instead of buying on time, or by rediscounting farmers' notes taken by dealers and manufacturers on account of the goods they sell to farmers.

A description of one of the first loans made under the new system, by the Federal Intermediate Credit

\$1,000,000,000

Q *The New Federal Intermediate Credit Bank is to farmers what the Federal Reserve Bank is to business men*

bank of Springfield shows clearly how the agricultural trade may benefit from the operation.

An agricultural credit corporation in New York received fresh applications recently from about 100 thrifty and successful farmers for advances averaging about \$500 each over periods of from six to twelve or eighteen months. Its own obligation for \$50,000 coming due in six months and secured by said collateral was discounted at the Intermediate Credit bank at the rate of $5\frac{1}{2}\%$ per annum. The local charged the farmer 6%. The spread of one-half of one per cent. was enough to cover the local's expenses.

Thus 500 farmers received an advance at a reasonable rate for their seasonal operations to an average amount of \$500. This money was spent for seed, fertilizer, tools, implements, machinery, household apparatus or other supplies and equipment essential to the farmer.

Could Pay Cash

These 100 buyers were thus able to pay cash for such purchases to a total of \$50,000. Had these farmers been unable to secure such accommodation they would have been obliged to go without these purchases, which they so much needed in their business.

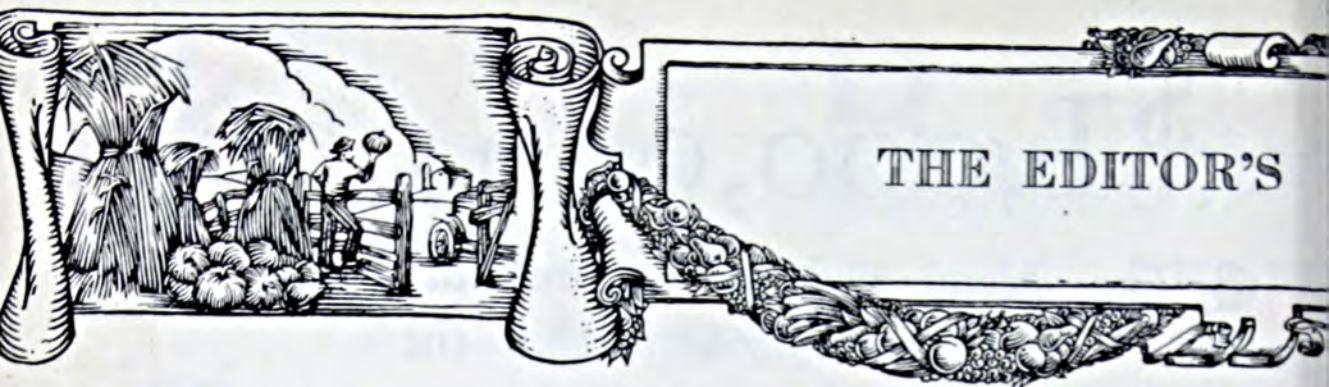
These borrowers will repay

their loans partly or in full as they sell their season's crop, which these loans aid them to produce more cheaply and efficiently. By autumn the system should be so well established that instead of hundreds there will be many thousands of such transactions.

Indeed, my experience as director of the Federal Land bank, and now in a similar position in the Federal Intermediate Credit bank, together with my intimate contact with thousands upon thousands of thrifty farmers, leads me to believe that within a comparatively short time most farmers may be so aided by this new system that they will be in a position to buy (*turn to page 58*)



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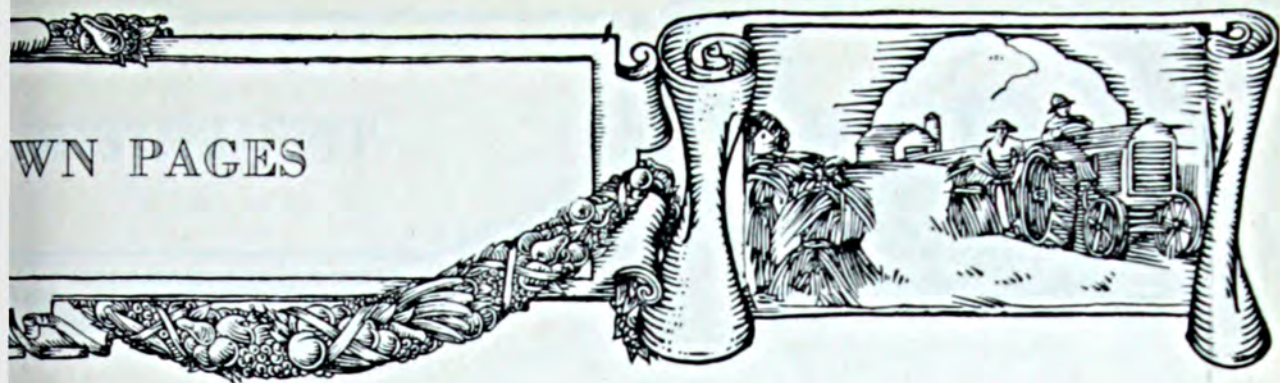
THE EDITOR'S

BUSES ELIMINATE ONE-TEACHER SCHOOLS

It would take more words than could be placed between the covers of this journal to enumerate the changes that gasoline has wrought in the habits and customs of our nation. Si Bellew, in this issue, tells how Henry Ford first removed the source of manure with his flivver and now goes into the fertilizer business. The automobile, the tractor and the bus are working such changes in the rural communities that historians must needs work fast to record them all.

The mail-order houses suffered a loss in business when the automobile came; the farmer could get to town easier and his shopping habits were transformed. Politics was affected. Good roads became a matter of necessity. Railroads began to fear the inroads of bus transportation.

And now education will be improved by the automobile. In many parts of the country the one-teacher school is being replaced by community schools to which pupils come from great distances, *in buses!* Instead of the limited knowledge of a single teacher struggling to impart to a group of rural students the elements of reading, writing, arithmetic and the moving parts of a frog, the community school makes possible the importation of a number of trained



city teachers—the city school moves to the country, and the pupils move to the school in buses. What effect will this have on the coming generation of farmers? It is deserving of thought.

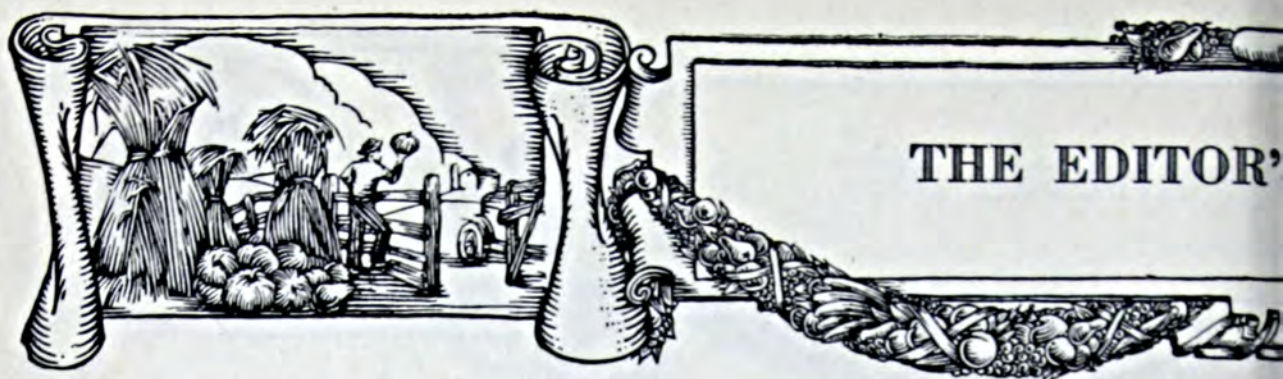
THE PENDULUM SWINGS AGAIN

Roger Babson, famous statistician, says, "For every action there is a compensating reaction." When sugar went to 20c, thousands who had never even seen a sugar plantation went into the business or invested in a company that planned to raise sugar. Then the pendulum swung again, the other way. So much sugar was raised that prices tumbled to 3c. Wall Street bankers will long remember the sugar holocaust!

Nature and habit seem to take care of the law of supply and demand. Wheat is below a dollar—the pendulum has swung to the extreme. But watch the next two seasons. Wheat will again be scarce, prices will soar, and the farmer who has wheat will be prosperous.

POISONING THE BOLL-WEEVIL

"Big fleas have little fleas to bite 'em, and so on, *ad finitum*," runs the old expression. California is importing the ladybug to eat the bug that

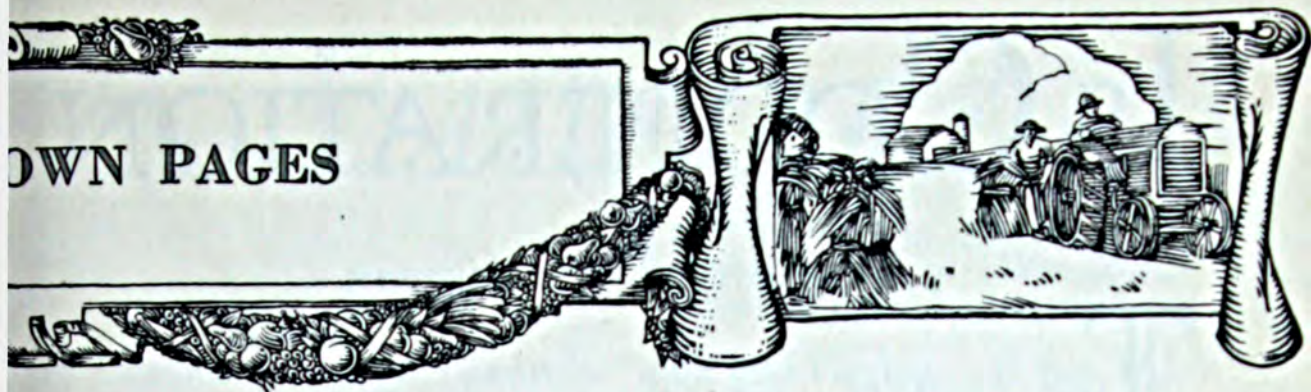


eats the fruit crop. Who will find the bug that will eat the boll-weevil? A fortune awaits him.

In the meantime inventors of poisons that can be mopped or sprayed onto the cotton square are cleaning up snug fortunes. Several have been invented that seem to do the trick. One, called "Slazum," clever name, has for its slogan, "Slazum on the square makes cotton anywhere."

Nature seems to take keen delight in making man fight for his sustenance. Wheat has its rust, cabbage its worm, cotton its weevil, tobacco its chlorosis. But for every enemy there is a super-enemy. Look out, boll-weevil! Eat, drink and raise Cain with the cotton crop while ye may, for tomorrow you die!

A DIRT FARMER Magnus Johnson leaps to
IN THE SENATE fame. The Farmer - Labor
Party has fired a shot that
will be heard around the world. Agriculture, a business in which more money is invested than in any other business in the world, shall be represented in Congress some day in a way that will startle the multitudes. Farmers have been too busy raising crops to be able to spend the time to organize. But farm work is getting easier every year. Farms are getting



smaller. A shortage of farm labor forces greater efficiency and an increased use of machinery. The farmer is going to have time to think. In Minnesota he has thought; and it is believed that the election of Johnson makes it possible for the Farmer-Labor Party to capture control of the entire state in 1924. A dirt farmer in the Senate! Let's have more of them.

ENCLOSED FIND
POST CARD!

Demosthenes never spoke extempore; always he prepared his speeches in advance—such preparation being, he said, a kind of respect to his hearers. To slight and take no care how and what he said was likely to be received by his audience showed, he felt, something of an oligarchical temper, and was the course of one that intends force rather than persuasion.

Demosthenes could look upon his audience and see whether what he was saying was pleasing and effective. I cannot. But I have enclosed a post card addressed to me in this first issue of *Better Crops* on which you can register your suggestion, complaint, advice, counsel, criticism, praise, disapprobation, remonstrance, approval or sarcasm as you think I deserve! And, as the ad-smith says, "do it now!"
Yours to a cinder,

Jeff M. Dermid

IS COOPERATION

By George W. Hinman

TWO shareholders in a defunct co-operative company called on the writer. They had been enthusiastic co-operators, but they were discouraged. They thought the co-operative business was dying out.

The co-operative method of doing business is not dying out. It is less advertised in this country than during the hard times. That is all. But it goes on just the same.

Among American farmers alone there are reported to be about 5,000 buying and selling organizations, all conducted on the co-operative plan of cutting out the middlemen wherever possible. In one year these co-operatives buy goods and sell food-stuffs to the amount of \$800,000,000 to \$900,000,000. Those are the Government figures. And the movement to build up this business goes on every day and every hour. The farm papers tell the story every week. So do many of the trade papers.

Among most business men there is still a prejudice against co-operation among buyers and sellers. They seem to fear that the co-operators will push them off the earth. They therefore hope, and often seem to think, the co-operators are failing and disappearing. That is all foolishness. For example:

The latest co-operators' year book from England is at hand. It shows that the English Co-operators' Society will be sixty years old next year; that it has now three and a half million members; that it gathers and sells direct to these members between \$400,000,000 and \$500,000,000 worth of goods a year; that, though it has suffered the same sort of difficulties and losses in the recent panics that other enterprises suffered, it is still sound and solvent to the core; and that, in its own field, it has as good a prospect of growth and prosperity as any old line of business in Great Britain.

This English Co-operative Society is the best evidence of what co-operation can do, not only in the simpler business of buying and selling without interference of middlemen, but also in the difficult business of producing food and clothes co-operatively.

According to the report at hand, it has 33,500 acres of farms

A FAILURE?

¶ This article is by one of the best financial writers in New York. Now read, on page 45, a farmer's view

in England and 29,000 acres in India and Ceylon. It has 112 factories, mills and mines. It makes shoes, jams, automobiles, cigars, corsets, bicycles, soaps and a hundred other sorts of articles that its members eat or wear. It produces and sells more than \$100,000,000 worth of its own manufactures a year, besides the vast quantities that it buys ready-made and distributes practically at cost among its members.

This society has had heavy losses. It recently had labor troubles. It has

¶ In this article Mr. Hinman gives some interesting side lights on the English Co-operators' Society — the mother of all modern co-operative buying and selling organizations.

had even strikes. All this has been and is being used to prove that co-operation, even in England, is not a success. Yet it

proves just the contrary, for the co-operators have now settled all the difficulties, paid all losses and are going ahead as energetically as ever. No old line business of the usual sort could do more.

So successful is this society up to this date that Sidney Webb says it is one of the rocks on which the new labor commonwealth of England will be founded. That remark is quoted merely as an evidence of co-operative success. To the writer it does not seem likely to come true. Why? In the answer there is consolation for the business man who objects to co-operative enterprise because it may take the bread out of his mouth.

The answer is that, after sixty years, this English society, with all its successes, has not gone outside of a certain field, has not swept the usual lines of business off the earth, has not absorbed all or even a great part of the capital, industry and trade of the English people. There are plenty of reasons for this, good reasons, just as good in the United States as in England.

But at that, co-operation will doubtless go on doing good in England as well as in America. The figures that are reported from year to year virtually prove it.

—Reprinted by permission of The Star Co., New York



Fertilizers Do Not Replace Soil Management

"Fertilizers should be employed in addition to and not in place of other good soil-management practices," says Prof. A. T. Wiancko of the Purdue experiment station. "Legumes in the rotation, the use of manure or other organic matter, drainage and liming where needed are all perquisites to the most satisfactory use of fertilizers."

Results of a long-time experiment on a corn-wheat-clover rotation at the Purdue station illustrates this point. The treatment and results were as follows:

Plot 1—Limed 1912 and 1920, six tons manure on corn crop, 19.2 bushels wheat per acre.

Plot 2—Same as plot 1 with 200

pounds per acre acid phosphate on corn crop, 20.5 bushels wheat per acre.

Plot 3—Same as plot 2 with 200 pounds per acre, 2-8-4 on wheat crop, 26.7 bushels wheat per acre.

The significant thing about these results is that in plot 3, the combination of a good rotation, legumes, lime and manure produced conditions resulting in large returns from the use of a suitable complete fertilizer. In other words, as shown by plot 1, the rotation, legumes, lime and manure produced a favorable condition but, compared to the others, a small crop. The addition of complete fertilizer on plot 3 was all that was needed to push the crop into a new field of profits.

Spinach Requires Abundance of Plant Food

"Spinach requires a soil that is well filled with organic matter, is sweet, and contains an abundance of quickly available plant food and a uniform supply of moisture," says Lyman G. Schermerhorn, Professor of Vegetable Gardening at the State Agricultural College.

Stable manure is especially beneficial to this crop when applied sufficiently in advance of seeding. But with the decreasing supply of manure and the increasing cost, it is becoming necessary to use more green manures and commercial fertilizers. A high-grade commercial fertilizer, at the rate of 1,000 to 1,600 pounds to the acre, supplied before planting, gives excellent results. The growth of the crop may be hastened by a side-dressing of nitrate of soda or sulfate of ammonia.

In order to get the best results with commercial fertilizers the soil must be kept in a high state of cultivation.

The first of the fall crops of spinach is sown about the last week in July, and the succession crops every ten days up to September 1 in North Jersey. In South Jersey it is often cut as late as December 15, and sowings for a fall crop are often made up to September 15.

Further directions for growing spinach, as well as the results of recent experiments conducted by Professor Schermerhorn on fertilization and varieties are given in Bulletin 385 of the New Jersey Agricultural Experiment Station in New Brunswick. Free copies may be had on application.—Issued by the State College of Agriculture.

Soil Should Be Right For Alfalfa Crop

The secret of successful alfalfa growing in South Carolina is the preparation of the soil before planting. There are no soils in this state that are naturally adapted to alfalfa. Even our soils that are best adapted to it need to be further fitted before planting.

The obstacles that have to be overcome in our soils, as stated by R. W. Hamilton, Extension Agronomist, are: (1) insufficient lime, (2) insufficient organic matter, (3) lack of inoculation, (4) noxious weeds and grasses, (5) lack of mineral fertilizers.

The most efficient and economical method of overcoming all of these obstacles except lack of inoculation is turning them under during the winter and summer before planting alfalfa. The lime should be applied to the winter legume and this crop turned under deep and followed with a summer legume to which a large part of the phosphoric acid needed for the alfalfa may be applied.

What To Do Now

If no winter legume has been grown, the land for alfalfa should be plowed deep now, limed, phosphoric acid applied, and planted to a summer legume. If stable manure is to be used it should be applied to the summer legume so that the weed and grass seed it contains may germinate and be killed along with the seed already in the soil.

The summer legume should be disc-harrowed and turned under early in the fall so that the seed bed will become firm before time for seeding. If the summer legume following the winter legume makes a too heavy growth to turn under, it should be cut for hay and the stubble turned under.

By the use of legumes, lime, deep plowing and phosphoric acid before planting alfalfa, lime, organic matter and mineral fertilizer will be supplied, the topsoil will be increased in depth and weed and grass seed killed.

Commercial Fertilizers Do Not Injure Soil

Many farmers hesitate to use commercial fertilizers on their crops because they have the impression that the continued use of such fertilizer will "kill" the soil. The yield of crops over a long period of years should be the best indication of the extent to which the soil has been injured. An experiment of this kind which has been conducted on the rotation field at the Missouri agricultural experiment station shows that no injury results. The plot in this experiment has received an average application of 777 pounds of high grade fertilizer every year

for the last thirty years, according to Richard Bradfield of the soils department of the experiment station. They have yielded practically as well as the plots receiving six-ton annual applications of barnyard manure. If such enormous applications, for such a long period of years, have shown no harmful results, the average farmer who applies perhaps less than 200 pounds to only one crop in the rotation, or an average of perhaps less than 50 pounds per acre per year, has nothing whatever to fear from the use of fertilizer.

Market Gardener Found Fertilizer Made Profit

"As to fertilization, I sought the advice of college experts and practical growers. Uniformly I was advised to be liberal. I screwed up my courage when I figured the bill it would mean, but went the limit of the advice." That is how Gilbert

S. Watts, a young market gardener at Bellwood, Pennsylvania, described his experiences recently in getting started in the business.

He gave all his vegetables 1,000 pounds per acre of high-analysis fertilizer; a good bit getting twice

that amount. "The early cabbage," he said, "received 1,500 pounds of 3-8-5 broadcasted and harrowed in and 500 pounds more of bone when the plants were set." When two-thirds grown, 200 pounds of nitrate of soda was top-dressed on. One row had 400 pounds and it was 50 per cent. more profitable, being early and heavier.

Speaking of the results obtained, Mr. Watts remarked, "Most of the data on vegetable crop fertilization shows that the highest rate has given the greatest profit. Many growers have observed the same thing. What we need greatly is to know where the limit of profitable fertilization lies."

5-8-5 Gives Good Results on Sweet Corn

I grow about 40 acres of sweet corn, planting first week in April, and begin cutting about 4th of July. I put no fertilizer in with the corn but when it is breaking through the ground I apply 800 pounds per acre of 5-8-5 fertilizer on top of the row and harrow it in. When corn is about six inches high I side-dress with same amount. I wish to know if it would do as well to broadcast 1,500 pounds per acre. —E. J., Burlington County, New Jersey.

The practice described in your letter would indicate that your land is naturally in a good state of fertility and that, for this reason, the broadcasting of 1,500 pounds of a 5-8-5 fertilizer should give you entirely satisfactory results in the growing of sweet corn. It is only where smaller amounts of fertilizer per acre are used and where the land is not in a high state of cultivation that the application of fertilizer in the row is usually to be preferred. —J. G. L., *Pennsylvania Farmer*.

Every State Should Be Represented

THIS Department—"With the Soil Experts" cannot be *written*—it must be *compiled*.

BETTER CROPS is sent to every man in every Agricultural College, Experiment Station and County Farm Bureau in the United States. The material in this department, then, should be of interest to all soil experts in every state.

I've started the department out this month as best I could. Next month I want *you* folks to fill this section. There are over 12,000 Soil experts on our subscription list, and if each one would send in one six-line item, the department would get along swimmingly!

Will you help me out by doing your share?

Jeff



Fourteen Standard Fertilizers For Florida

All crops needs for added plant food are met by the fourteen standard fertilizer mixtures being recommended by the Florida Experiment Station through R. W. Ruprecht, chemist, according to a study of the needs of various crops of the state.

In discussing the standard fertilizers, Dr. Ruprecht says that every farmer should insist upon these formulas in ordering and that purchases should be by analysis rather than by brand name. He expresses the opinion that if the farmers of the state would do these things, the prices of fertilizers would be reduced.

The various formulas are mentioned below according to the various crops for which generally recommended:

For general field crops, such as corn, cotton and peanuts, use the 3-9-3. (The first figure stands for the percentage of ammonia in the mixture, the second for available phosphoric acid, and the third for potash.)

For sweet potatoes, use the 4-8-4.

For general truck crops, particularly watermelons, cantaloupes and

Irish potatoes, use either the 5-7-5 or the 5-8-5.

Celery, lettuce and cabbage would take the 5-5-5.

Peas, beans, young pecan trees, citrus nursery stock would take 4-8-3, also young grove trees for their spring application.

For sweet potatoes, Irish potatoes, tomatoes, sugar cane, bearing pecan, peaches and the home vegetable garden, use the 4-8-6.

For general truck crops or cabbage on clay soils, the 5-7-3 should be found suitable.

If the land is poor, use the 6-6-4 on general truck crops and cabbage.

If the soil is high in organic matter, use the 3-8-5 for tomatoes, also for summer and fall citrus applications.

On average land bearing citrus calls for either the 3-8-8 or the 3-8-10 for fall and winter applications.

If the land is rich hammock, bearing citrus needs the 2-8-10.

The 4-8-8 is all right for citrus in spring. It is also a good tomato fertilizer.

Florida Fertilizers Must Show Content

A legal procedure for the operation of businesses under declarations of trusts and an act providing that commercial fertilizer be labelled as to its contents became laws of Florida, July 1. The act dealing with declarations of trusts merely provides for the procuring of a certificate from the secretary of state upon payment of \$150, and subject,

of course, to the laws of the state governing operations coming under that class. A penalty of \$1,000 is provided for failure to comply with the terms of the act.

The fertilizer label law gives the purchaser for the first time in this state, according to its framers, the information as to its full contents.

Under the terms of the measure all commercial fertilizer must be labelled as follows: Name or brand of the fertilizer or fertilizer material; address of the manufacturer or jobber; net contents of package in pounds, and a chemical analysis showing minimum percentages, of available ammonia, insoluble ammonia, available phosphoric acid, insoluble phosphoric acid, water soluble potash and total plant food; the maximum percentages of chlo-

rine and moisture and a statement of the material from which it is made.

A third act along these lines which became effective Sunday provides that anyone desiring a chemical analysis of purchased fertilizer may send samples to the commissioner of agriculture. The samples must be witnessed by disinterested parties as to their having been taken from the package of which the analysis is desired.

Report Heavy Fertilizer Sale in Arkansas

During the eight months from October, 1922, to and including May, 1923, fertilizer sales in Arkansas amounted to 74,598.91 tons, according to the report of the fertilizer department filed in the Bureau of Mines, Manufactures and Agriculture.

The heaviest purchases were made in March, when 28,007.38 tons were bought, considerably more than a third of the total. The smallest amount purchased was

101.70 tons in October. The present season's fertilizer business was almost twice that of last season, when only 40,325.29 tons were purchased for the entire year beginning October 1, 1921, and ending September 30, 1922.

The sales by months this season were: October, 101.70 tons; November, 226.35; December, 340; January, 5,848.18; February, 13,229.40; March, 28,007.38; April, 25,062.69; May, 1,713.21.

Pennsylvania Plant Food Cost Six Millions

The approximate valuation of the nitrogen, phosphoric acid, and water soluble potash contained in the more than 320,000 tons of fertilizer sold in the state of Pennsylvania last year was \$6,310,866, according to a recent compilation of fertilizer registration made by the bureau of chemistry, Pennsylvania department of agriculture.

The figures cover every brand of fertilizer offered for sale in the state. Based on the guaranteed analysis of these fertilizers, it is estimated that the fertilizers supplied 3,506 tons of nitrogen, 34,698 tons of phosphoric acid, most of which was in available form, and 9,334 tons of potash in water soluble form.

37 Per Cent. of Cotton Acreage Fertilized

Increased use of fertilizer on the cotton acreage this year as compared with last year is reported to the United States Department of Agriculture. More than 37 per cent. of the acreage has been fertilized as compared with 32 per cent. last year.

A number of individual states show larger gains. In Georgia 93 per cent. of the total cotton acreage

received fertilizer this year, or 10 per cent. more than last year's acreage. Florida shows 88 per cent. of the cotton acreage fertilized or 8 per cent. more than in 1922. Alabama 88 per cent., an increase of 10 per cent.; Mississippi 44 per cent., an increase of 14 per cent.; Louisiana 38 per cent., or an increase of 18 per cent., and Arkansas 31 per cent., or an increase of 16 per cent.



The stuff that pays dividends

THE man who plows—who plants, cultivates and harvests—is interested only in *results*.

He believes in fertilization because it increases the fruit of his labor. He wants to maintain permanent soil fertility; and he knows that potash is the stuff that pays dividends.

But there are several *brands* of potash—all the brands are not equally efficient. The county agent who has the interests of his farmers at heart; the honest fertilizer mixer who wants to turn out good goods; the dealer that is building good-will—these *insist* on Genuine German Potash.

And *you* should insist on it. "PICA" is the brand name of the Genuine German Potash Salts imported by the

**POTASH IMPORTING CORPORATION
OF AMERICA**

81 Fulton Street

New York

**PICA GENUINE POTASH
GERMAN**

¶ J. S. Carrol says that Smith County, Texas, had the first County Agent in the United States. If there had been no boll-weevil maybe there never would have been a County Agent!

The First County Agent in the UNITED STATES

By J. S. Carrol

THE county agent is the outgrowth of the Farmers' Co-operative Demonstration Work which was inaugurated and so successfully conducted by the late Dr. Seaman A. Knapp of the United States Department of Agriculture.

In 1903 when the Mexican boll-weevil was rapidly spreading over and devastating the cotton fields of Texas, leaving ruin in its path, Dr. Knapp was hurried to the scene to study the situation and to do what he could to help the cotton growers in their losing fight. He confronted a serious situation and realized the urgent need of quick action.

With no appropriation available at this time with which to fight the boll-weevil, Dr. Knapp called upon the local bankers, merchants and other business men for funds for the purpose of inaugurating under his supervision a practical field demonstration of the best and most modern methods of farming under boll-weevil conditions. Improved methods of cultivation, fertilization, rotation, and diversification were

used. The demonstration proved a success and attracted the attention of many farmers throughout that section.

In 1904 Congress made an appropriation for use in fighting the boll-weevil and with a fund of \$40,000, supplemented by local contributions, Dr. Knapp increased the number of demonstrations and employed several well-equipped agents to take charge of large districts and supervise the work. This marks the real beginning of the Farmers' Co-operative Demonstration Work.

As the work developed, Dr. Knapp realized that it could be made more effective by reducing the territory assigned to an agent and in this way the county was used as the unit.

The distinction of having the first county agent in the United States goes to Smith County, Texas, the appointment being made in the fall of 1906.

At this time there was no State law authorizing counties to appropriate money for (turn to page 46)



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5 5 5

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Nitrate of Soda

3 10 4

2 12 2

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2 8 10

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Pure Ground Bone

We are prepared to furnish Potash Salts in any
quantity

YORK CHEMICAL WORKS
YORK, PA.

¶ A southern farmer who prefers to remain anonymous wrote this thought-provoking article on

Increasing the Income on the Average Farm

THE one problem confronting the people of this country at this time that, in our opinion, overshadows everything else is that of increasing the income on the average farm. It is not one that should challenge the attention of the farmer alone, as some seem to think, but all classes of people.

We are cultivating less land in 1923 than we did in 1922, due to the fact that a large number of farmers are leaving the farm and moving to town.

Why is this? Simply because the average farm has ceased to be sufficiently profitable to enable the farmer to meet his obligations and properly support his family.

Then what is the remedy? Some say that if we will improve our soil and increase our yields that it will increase our profits and solve the problem. Some assert that we have made no progress in production, consequently we cannot meet the increased cost of more modern standards of living.

There is no question that as a rule we have been negligent of our soils and that in many cases our methods of farming are faulty. These are fundamentals that should certainly occupy a good deal of our attention. However, the assertion that we have made no progress in this respect is not true. We say

diversify and the people have diversified. For instance, in South Mississippi the sweet potato crop went from almost nothing as a commercial crop to a surplus of over 800 cars in less than ten years. In the same length of time the cane syrup crop grew to a surplus of more than a million gallons. The same is true of a number of other crops. Did this bring prosperity? Not much. The profit on the syrup and potato crops last year, for instance, was so small that this year both crops are reduced. Why was this? Do the people not want syrup and potatoes? Certainly they do and they are using them in increasing quantities, but the farmers do not get the profits. This is what formerly happened. The farmers produced the syrup, sold it to a local buyer, who, of course, sold it to a standardizing plant for a profit. The standardizing plant sent out a traveling salesman to work the jobbers at a good salary and a profit. The jobber sent a salesman to work the retail trade at a good salary and a profit to the jobber. The retailer sold the syrup to the consumer at a profit. Now this meant one of two things, maybe both. The consumer had to pay too much or the grower did not get any profit at all. This same thing is happening with other products. (*continued next page*)

J. S. Carrol's story of The First COUNTY AGENT

(continued from page 42)

the purpose of co-operating with the United States Department of Agriculture in employing county agents and the funds for this work were supplied by the Federal Government, supplemented by local contributions.

However, in 1908, the Legislature of Mississippi passed a law creating the Office of County Commissioner of Agriculture and as Adams County made the first appropriation for this purpose, it must be given the credit of having the first agent employed on a co-operative basis.

Alabama, Florida and the other Southern States soon followed with similar laws and co-operated with the United States Department of Agriculture in employing County Agents.

The successful outcome of this work soon attracted the attention of the agricultural authorities and the leading business men throughout the United States with the result that in May, 1914, Congress passed the Smith-Lever Bill, appropriating money for extension work throughout the country and the employment of County Agents and Home Demonstration Agents in co-operation with the different states.

This important work has grown and expanded to such an extent that today out of a total of 3,059 counties in the United States there are about 2,228 County Agents and some eight hundred Home Demonstration Agents.

"Increasing the Income on the Average Farm"

(continued from page 45)

We have only taken syrup as a convenient example. What is the remedy?

Co-operative marketing. Can we cut out all dealers and sell direct to the consumer? We do not think so. It would not be feasible for the grower to undertake to retail his products to the actual consumers, and honest advocates of co-operative marketing make no such claim. We seek to destroy no man's business that is performing a necessary service, and dealers are necessary. We do, however, expect to eliminate a string of unnecessary dealers.

For instance, there is a spread of approximately \$25 per bale on cotton between the grower and the mills. This means that the mills pay approximately \$725,000,000 more for the cotton crop than the farmers receive. That is more money several times over than the Government appropriated for agricultural purposes for the last two years. Does anyone claim that that is necessary?

Besides, the elimination of unnecessary speculation by no means constitutes the sole benefit of co-operative marketing. It will enable us by co-operative effort to standardize and greatly improve the quality of the product, will enable us to protect from waste and will furnish an incentive that will bring about greatly increased production.

Co-operative marketing is here to stay. It will benefit not only the farmer, but by increasing his purchasing power, benefit the business man as well. Then it should have the undivided support of the whole people.

Armour's



BIG CROP *Fertilizers*

Do you buy a horse just because its name is Dobbin or Daisy? No! You look at its teeth, feel of its legs, try out its wind and hitch it up to make sure it will pull.

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PRIZE CONTEST

CONDITIONS of the CONTEST!

Who Is Eligible—Any person connected in any way with the practice of agriculture may enter this contest.

Subject—The subject must be "What Fertilizers Have Done for My County (or My State or My Country)."

Length—No article will be considered in this contest that contains over 2,000 words. Short articles of 500 to 1,000 words will have as good a chance to win the prize as any 2,000-word story.

Manuscript—Articles should be neatly typewritten on one side of white paper, preferably regular letterhead size, 8½ x 11 inches, but the judges will not be influenced unfavorably toward any story not so written.

Contest Ending—This contest begins the day you receive this issue of BETTER CROPS. It closes midnight, Saturday, December 1st, 1923. All manuscript in envelopes bearing a post mark showing that

they were mailed after this time will not be eligible.

Basis of Award—There is only one prize award in this contest—the First Prize of Fifty Dollars (\$50.00) in gold. The basis of award will be purely on the excellence of the presentation of the facts. In the event of a tie, the writers of each of the winning manuscripts will be awarded Fifty Dollars (\$50.00) in gold.

Method of Payment—As the contest closes midnight, Saturday, December 1st, 1923, announcements of the prize winner will be made in the January, 1924, issue of BETTER CROPS, and the prize mailed to the winner on December 20th, 1923, five days before Christmas.

Right to Publish—The Better Crops Publishing Corporation reserves the right to publish and copyright each and every manuscript submitted in this contest, either before or after the closing of the contest. No manuscript submitted will be returned.

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MENT

FOR the best article on the subject, "What Fertilizers Have Done for My County [or State or Country]", the publishers of BETTER CROPS will award a prize of Fifty Dollars [\$50.00] in gold.

Read the conditions of the contest, and then get busy on your story. The time is short, but you have plenty of time to write an article that may win the prize.

That each contestant may feel sure of fair treatment, three men have been selected and have agreed to act as judges:

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Editor of the RURAL NEW YORKER

Mr. E. V. THOMPSON

Eastern Manager of COUNTRY GENTLEMAN

Mr. V. E. PRATT

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The Nervous Patient

A dentist had to crawl under his auto in order to make some adjustment in the machinery. Applying the monkey wrench to it he said soothingly, "Now this is going to hurt just a little."

Neutrality

It was during the impanelling of a jury; the following colloquy occurred: "You are a property-holder?"

"Yes, your honor."

"Married or single?"

"I have been married for five years, your honor."

"Have you formed or expressed any opinion?"

"Not for five years, your honor."

A Warning Sound

"Jim, I see that your mule has U. S. branded on his hind leg, I suppose he was an army mule and belonged to Uncle Sam?"

"No, suh; dat U. S. don't mean nothin' 'bout no Uncle Samuel. Dat's jess a warnin'. Dat U. S. jess stand fo' Un Safe—'at's all."

No Waits! No Delays!

"Boy, does yo' get a letter from de Ku Kluxes, what yo' gwine do wid it?"

"Read it on de train."

Worse

"Your husband has been ill. Is his condition critical?" asked the vicar, who was paying his monthly call.

"It's worse than critical," replied the worried-looking woman; "it's abusive."

Sounded Difficult

Down in Texas the short cotton crop forced a large number of country Negroes to the cities. One of them applied for a job at one of the large employment agencies.

"There's a job at the Eagle Laundry," said the man behind the desk. "Want it?"

The applicant shifted uneasily from one foot to the other.

"Tell you how it is, boss," he said finally. "I sure does want a job mighty bad, but de fack is I ain't never washed a eagle."

He Kept Moving

A London zoo keeper took care of a new lion which the zoo had just bought. The animal was a bit wild, and one of the keeper's friends asked, "Mike, does the lion ever bite you?"

"He hasn't yet," replied Mike, "but he frequently bites the place where I recently was!"

Re-form

Reformer: "Multitudes of our young women are parading about the beaches scantily clad."

Voice from the Rear of Hall: (tired but happy): "Ah, yes—the shock troops!"

A Bad Mistake!

Nurse: Doctor, did you ever make a serious mistake in your practice?

Doctor: Yes. I once cured a millionaire in three treatments.

(continued from page 18)

the three sacks are taken together. But if thou be generous and grant them their freedom so that we can all set to work together, then wilt thou and thy land be prosperous for all time." Then spoke the Kalif, "If thou hast spoken truly, Stranger, thou shalt wed my daughter, but if thou hast lied, then thou must die." Then he sent his Vizier with the stranger to the prison. And when Potash saw his brothers, he embraced them and said, "My dear brothers, know ye now that ye have done me a wrong? Why did ye wish to leave me, the youngest, behind? Ye should at any rate have known that without me, Potash, ye could accomplish nothing. I have now come to succor ye. Promise to abide by me with your sacks, and then ye shall be free." And the brothers agreed willingly and said: "We have seen that we did wrong; we will in future go hand in hand together."

The brothers then sowed the content of each sack, mixed together upon the fields, which now yielded corn, straw, fruits and grapes in plenty. The Kalif was happy once more and wished to give his daughter as wife to the youngest brother, Potash. But the latter said, "May the God of Mohammed thank thee for thy favour. But we can no longer remain. Allah wills it that Potash, Phosphorus, and Nitrogen shall perform good works in all lands. Call us at seed time, and we will see to it that thy corn waxes strong and thy fruit trees flourish."

So, whenever seed time arrives, the Kalif sends his messenger to bring back to his kingdom the *three brothers—Potash, Phosphorus, and Nitrogen.*



You have lots to read—but have you *these*

These and other important books on agricultural subjects, formerly available through the Soil and Crop Service of the German Kali Works, may now be obtained, free of charge, from the

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Another Plant Disease Conquered

(continued from page 22)

is not readily obtainable Sulfate of Magnesia, ordinary Epsom Salt, used at the rate of 100 pounds per acre, will supply the required magnesia.

It is, however, cheaper to get the potash and magnesia combined in the German Sulfate of Potash Magnesia, also called Double Manure Salt, than to buy Sulfate of Potash, Epsom Salt, and Dolomite separately.

The bad effect of chlorin on the burning quality of tobacco is well known, and for this reason Muriate of Potash, Kainit, and ordinary 20% Manure Salt, all of which contain very large amounts of chlorin, should not be used in tobacco fertilizers where high quality is sought.

Another well established but less well known fact is that, other things being equal, the higher the potash content of tobacco the better its quality.

Recently some experiments have been conducted, using equal parts of German Sulfate of Potash and Sulfate of Potash Magnesia. This combination would supply 3 parts of Potash and 1 part of Magnesia. A moderate application for tobacco is 200 pounds, per acre, of actual Potash, or 550 pounds of a mixture of equal parts of Sulfate of Potash and Sulfate of Potash Magnesia (Double Manure Salt) would contain this quantity of actual Potash and 66 pounds of Sulfate of Magnesia, an amount ample to prevent "sand drown."

These data were prepared by consulting the following:

Article by W. W. Garner, J. E. McMurtrey, E. G. Moss, Bureau of Plant Industry, U. S. Department of Agriculture (Science LVI, No. 1447, September 22, 1922.)

Article by E. G. Moss, Assistant Director Tobacco Branch Experiment Station (Extension Farm-News, North Carolina, Vol. IX, No. 5, January, 1923).

Report by W. W. Garner, J. E. McMurtrey, C. W. Bacon, Bureau of Plant Industry, U. S. Department of Agriculture, and E. G. Moss, Bureau of Plant Industry, U. S. Department of Agriculture, and Assistant Director, Tobacco Branch Station, North Carolina, Department of Agriculture (Journal of Agricultural Research, Vol. XXIII, No. 1, January 6, 1923).

Do You Like Your JOB?

(continued from page 6)

foreordained us to be Wall Street brokers or what-not.

There seems to be no future. Plutocrats whizz by us in Multisix sedans, leaving us in a whirl of dust. The cotton is full of weevil, the wheat is drooping with rust, the banks are not in a position to extend further credit. The world is black, and spots of it are black and blue.

To blame the instrument—to exude the acid and froth at the mouth—would be the petty part of a palsied workman—only the bungling plumber blames the torch when he finds he can't wipe the joint.

The world is all right—the job is all right. It is we who are awkward boobs—crack-brained—yokels unable to deliver what the world expects of us.

Let us get busy. There is work to do. The world needs food—the soil needs fertilizer—the vine needs pruning—the organization needs our boost. Let us cease excreting the fizzling “if.” There is no “if”—no “and” and no “but.”

We will never have a better job—and even if there were a chance to make a change, in the womb of time we would only find ourselves worse off—from the frying pan into the fire—the whining symphony we now exhale would be doubled in brass—if we are not satisfied now, we never will be.

So let us to the job. Boost our game. Seek to improve it. As it soars, so we soar with it.

William Gilchrist, *President*

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No suggestion is made as to the subject. The editors simply want articles that will be of intense interest to those who constitute its readers—County Agents, Agronomists, Experimental Farm Men, State College Soil Experts, etc.

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762 Eggs Pay Plasterer One Day

(continued from page 7)

take care of replacements on old cars. All well organized. Well greased. A system that can't be beat.

But, proving the value of organization, an "outlaw" busted out of the Rubber Club, it is said, and started to make tires on a large scale, paying no heed to demand. What happened. You remember. Tires tumbled. Every tire manufacturer suffered, including the man who started the landslide. As long as exactly the right number of tires were produced prices were held at a satisfactory level. As soon as the oversupply came into the market prices fell.

But can farmers organize for their own protection? You bet they can. And what is more, they are doing it. It comes slowly, but it is coming. The farmer is naturally suspicious of business, of banks, of corporations. When he is well organized, his statisticians will tell him just how much wheat he shall raise, and he will raise that amount and no more. His surplus land and energy will be put into other crops, also recommended by his statisticians. And then it will take the plasterer three days of labor to pay for a dozen eggs, instead of 762 eggs for one day's labor. The balance will be struck!

**See Prize Contest
Announcement on
Page 48—you may
win *Fifty Dollars!***

What About WHEAT

¶ Jeff McDermid's comments from page 11:

after it is harvested—that is, it shrinks unless the proper fertilizer is used. If a man raises 20 bushels of wheat per acre and it shrinks to 16 bushels he has lost the profit on his crop. One of the solutions of the wheat problem is to so fertilize the soil as to prevent this inordinate shrinkage.

And why is it that no one calls attention to the fact that wheat is graded? All wheat does not sell for the same price. There is a difference of quite a few cents per bushel in the various grades. Better seed, more careful cultivation, better fertilizers—all of these must be brought into play. In addition a more diversified system of farming must be advocated. Farmers may no longer devote all their time and energies to the raising of wheat. It is unsafe and probably will be unsafe until the Government takes a hand in the matter.

The farmer whose income is derived from corn, wheat, livestock, hay and a diversified line of small crops is on a safe and sane basis—and he is not worrying much.

Lime a Tonic?

(continued from page 23)

blue. Simply make up a ball of the soil, tighten it between the palms, then break it open and insert the litmus paper, and press the ball together again, leaving it for a while.

Lime should be applied if the soil is acid, for an acid soil has not the right physical condition for the proper utilization of fertilizer. But do not forget that lime does not, and cannot replace fertilizer. It is a tonic and not a food.

¶ Use
high-grade
fertilizers
for big
yields

• •

We recommend:

For cotton: 8-4-4

For truck, with
potash from
sulphate of
potash, especially
for potatoes 7-5-5

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High-Grade Acid Phosphate
and Potash Always in Stock

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\$1,000,000,000

(continued from page 29)

for cash instead of credit. Every advertiser, manufacturer, merchant, and dealer knows what this means. It will mean that the farmer no longer will have to be carried by the dealer, the dealer by the jobber, the jobber by the manufacturer and the manufacturer by his bank. How costly that old method of doing business is known to every reader of *Better Crops*. Gradually to substitute for it the new method of cash transactions will of itself be a tremendous benefit to all concerned.

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Quick sales on small margins for spot cash are more profitable for all concerned than long prices on long credits carried at long costs.

Of course many farmers will need time to turn themselves. Their credits are intermediate—six months to one, two or three years, in contrast to the merchants' two, three or four months. The new credit bank affords a market for such intermediate paper which runs longer than the law allows reserve banks to grant.

In other words, the country dealer and the country bank can unload upon the credit bank the farmer's intermediate paper, which, because it runs so long, would not be available for rediscount with the Federal Reserve Bank. What the latter institution has been for commercial business, the new Federal Intermediate Credit banking business is to be for the agricultural trade.

Where Can Genuine German Potash Be Secured?

HERE IS A LIST OF THE
DISTRIBUTORS OF GENUINE
GERMAN POTASH SALTS:

Grasselli Chemical Co.....	Birmingham, Ala.
Arkansas Fertilizer Co.....	Little Rock, Ark.
Berkshire Fertilizer Co.....	Bridgeport, Conn.
Olds & Whipple, Inc.....	Hartford, Conn.
Rogers & Hubbard Co.....	Middletown, Conn.
Wilson & Toomer Fertilizer Co.....	Jacksonville, Fla.
Gulf Fertilizer Co.....	Tampa, Fla.
Southern States Phosphate & Fertilizer Co.....	Augusta, Ga.
Mutual Fertilizer Co.....	Savannah, Ga.
Read Phosphate Co.....	Savannah, Ga.
Reliance Fertilizer Co.....	Savannah, Ga.
Southern Fertilizer & Chemical Co.....	Savannah, Ga.
Georgia Fertilizer & Oil Co.....	Valdosta, Ga.
Armour Fertilizer Works.....	209 W. Jackson Blvd., Chicago, Ill.
Swift & Co.....	Union Stock Yards, Chicago, Ill.
Rauh & Sons Fertilizer Co.....	Indianapolis, Ind.
Calumet Fertilizer Co.....	New Albany, Ind.
Federal Chemical Co.....	Louisville, Ky.
Baugh & Sons Co.....	Baltimore, Md.
Griffith & Boyd.....	Baltimore, Md.
Miller Fertilizer Co.....	Baltimore, Md.
Ober & Sons Co.....	Baltimore, Md.
Piedmont Mt. Airy Guano Co.....	Baltimore, Md.
Tilghman Co., Inc., W. B.....	Salisbury, Md.
Meridian Fertilizer Factory.....	Meridian, Miss.
Tupelo Fertilizer Factory.....	Tupelo, Miss.
The American Agricultural Chemical Co.....	2 Rector Street, New York, N. Y.
International Agricultural Corporation.....	61 Broadway, New York, N. Y.
Caraleigh Phosphate & Fertilizer Co.....	Raleigh, N. C.
Acme Manufacturing Co.....	Wilmington, N. C.
Smith Agricultural Chemical Co.....	Columbus, Ohio
Thomas & Sons Co., I. P.....	Philadelphia, Pa.
Tunnel & Co., F. W.....	Philadelphia, Pa.
York Chemical Works.....	York, Pa.
Etiwan Fertilizer Co.....	Charleston, S. C.
Maybank Fertilizer Co.....	Charleston, S. C.
Planters Fertilizer & Phosphate Co.....	Charleston, S. C.
F. S. Royster Guano Co.....	Norfolk, Va.
Priddy & Company, Inc.....	Norfolk, Va.
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riate of Potash,
German Kainit, etc.



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Jacksonville: Florida

Established 1893

Main Offices: 772 West Bay St.

Why People Leave FARMS

(continued from page 27)

labor in the city—six to eight hours in unionized industries as against sixteen hours a day on the farm.

The greater opportunity for achieving success and distinction in commerce and industry in the city.

The opportunity for young people to advance themselves in the city.

The opportunity for all the members of large families to secure steady employment.

The idea some young rural people entertain that farm work is lowering and degrading.

Some young people have to work so hard on the farm that the farm becomes distasteful to them.

The seclusion and isolation of farm life, particularly during the winter months.

The lack of home comforts on the farm in the way of up-to-date conveniences.

The desire of young people to obtain a high school and college education causes them to go to the cities and subsequently to enter into some profession. (At the Pennsylvania State College in 1922 the great agricultural counties of Lancaster, Berks, Chester and York furnished only one-third as many students in agriculture as Philadelphia and Pittsburgh.) The young people from the country are flocking to professional schools and business positions in the cities.

The desire of some country people to get rich quick and the feeling that all they need to do is to leave the farm and start in business in the city.

The high price of land and the large amount of capital needed to successfully engage in farming keeps many from going into it.

The city offers a greater choice of vocations.

There are more conveniences and church privileges in the city.

The small margin of profit in farming as compared to city vocations.

Standard Brands recommended by
Agricultural Officials of Ohio,
Indiana and Michigan:

BRAND NAME	Ammonia	Available Phosphoric Acid	Actual Potash
Smith's Standard 2-12-6..	2	12	6
Smith's Standard 2-16-2..	2	16	2
Smith's Standard 2-12-2..	2	12	2
Smith's Standard 0-10-10..	0	10	10
Smith's Standard 0-14-4..	0	14	4
Smith's Standard 0-16-0..	0	16	0
Smith's Standard 0-18-0..	0	18	0
Smith's Standard 0-20-0..	0	20	0
We also offer the following Brands:			
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Smith's 1-8-4	1	8	4
Smith's 1-8-2	1	8	2
Smith's 0-10-5	0	10	5
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Columbus, Ohio Indianapolis, Ind.

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Columbus, Ohio

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Avery Threshers and Avery Tractors—new and improved—designed in 1923, built in 1923—and now priced to give you the greatest value per dollar ever offered in threshers and tractors.

An Avery Thresher and an Avery Tractor make the most practical threshing outfit that any one can own. Avery Threshers, always champion Grain-Savers, have many new improvements for 1923, which mean better work—easier running—and more profits than ever. Built in "Yellow Fellow" sizes for any size threshing runs.

In the Improved Avery Tractor you have a machine giving you the latest and most advanced ideas in tractor design. Built in 20-35, 25-50 and 45-65 H. P. sizes—all with the famous 4-cylinder "Draft-Horse" Motor, Direct Drive Transmission and other features; and all with the Avery 1923 improvements. These include the increasing of motor power 10 to 25%; the adoption of a cooling system with cellular radiator, pump and fan, and a Madison-Kipp Lubricator for oiling the motor. Never before have tractors offered so much horse-power per dollar invested as is now given by Averys.

Our Booklet shows the complete new Avery Line for 1923. Also special circular on Threshers. Every farmer and thresherman should know about the new Averys. Write us today.



Avery Grain-Saver Thresher



Improved Avery 20-35 H. P. Tractor



Improved Avery 25-50 H. P. Tractor



Improved Avery 45-65 H. P. Tractor

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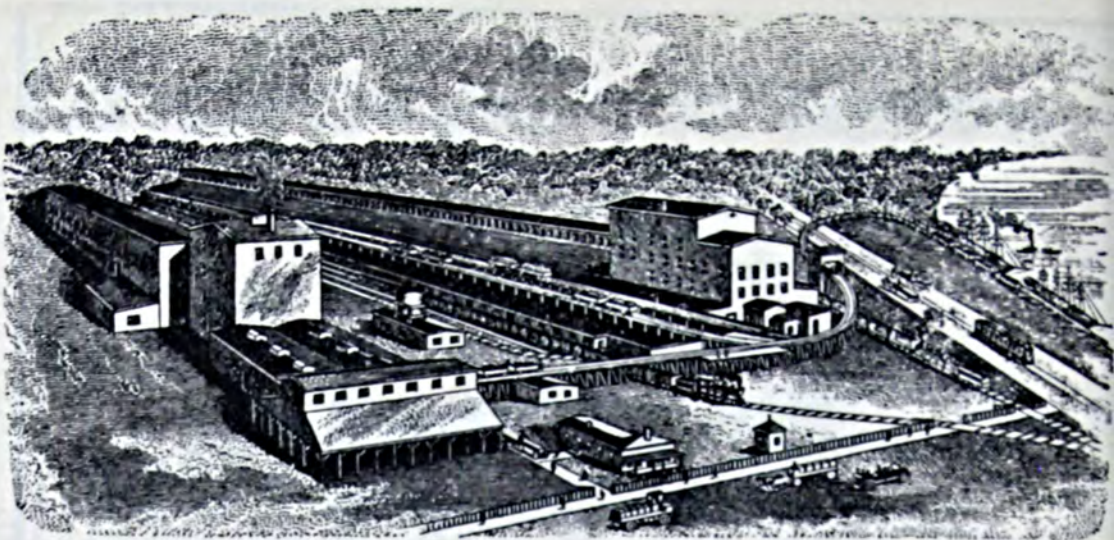
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**High-Grade Fertilizer
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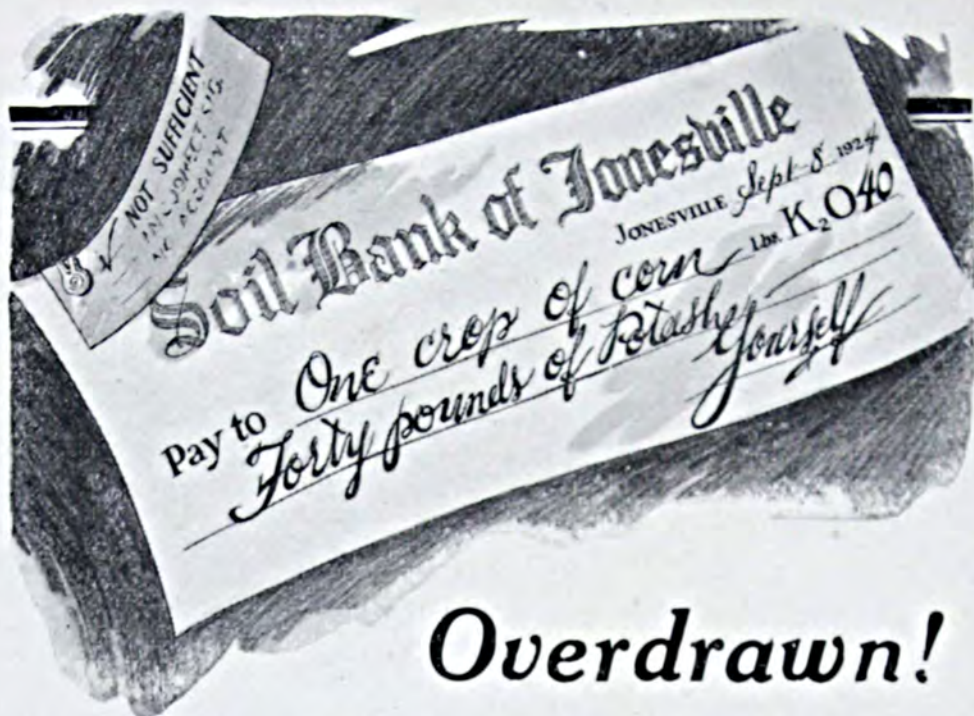
The Pocket Book of Agriculture

10 Cents.

November 1923



this issue—Dean Williams—Dr. Frank Crane—E. A. Trego
Jeff McDermid — Charles J. Brand — Don P. Shannon



Overdrawn!

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Some day a crop will be returned in your county marked "Insufficient Potash!" You will recognize it because the yield will be so light it will startle you.

How much thought do the farmers in your county give to the

amount of potash in their soil? Do they carefully calculate just how many pounds each crop removes and then as carefully replace it? It is just as important to do this as it is to go over your returned vouchers from your bank and make the needed covering deposits.

If you do not know how to figure this we will send you, upon request, a chart showing the number of pounds of potash, nitrogen and phosphoric acid removed from the land by each different crop.

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POTASH

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FOR the best article on the subject, "What Fertilizers Have Done for My County [or State or Country]," the publishers of **BETTER CROPS** will award a prize of Fifty Dollars [\$50.00] in gold.

Read the conditions of the contest, and then get busy on your story. The time is short, but you have plenty of time to write an article that may win the prize.

That each contestant may feel sure of fair treatment, three men have been selected and have agreed to act as judges:

Mr. E. V. THOMPSON
Eastern Manager of COUNTRY GENTLEMAN

Mr. HUBERT W. COLLINGWOOD
Editor of the RURAL NEW YORKER

Mr. V. E. PRATT
Publisher of BETTER CROPS

CONDITIONS of the CONTEST!

Who is Eligible—Any person connected in any way with the practice of agriculture may enter this contest.

Subject—The subject must be "What Fertilizers Have Done for My County (or My State or My Country)."

Length—No article will be considered in this contest that contains over 2,000 words. Short articles of 500 to 1,000 words will have as good a chance to win the prize as any 2,000-word story.

Manuscript—Articles should be neatly typewritten on one side of white paper, preferably regular letterhead size, 8½ x 11 inches, but the judges will not be influenced unfavorably toward any story not so written.

Contest Ending—This contest began in September. **It closes midnight, Saturday, December 1st, 1923.** All manuscript in envelopes bearing a post

mark showing that they were mailed after this time will not be eligible.

Basis of Award—There is only one prize award in this contest—the First Prize of Fifty Dollars (\$50.00) in gold. The basis of award will be purely on the excellence of the presentation of the facts. In the event of a tie, the writers of each of the winning manuscripts will be awarded Fifty Dollars (\$50.00) in gold.

Method of Payment—As the contest closes midnight, Saturday, December 1st, 1923, announcements of the prize winner will be made in the January, 1924, issue of **BETTER CROPS**, and the prize mailed to the winner on December 20th, 1923, five days before Christmas.

Right to Publish—The Better Crops Publishing Corporation reserves the right to publish and copyright each and every manuscript submitted in this contest, either before or after the closing of the contest. No manuscript submitted will be returned.

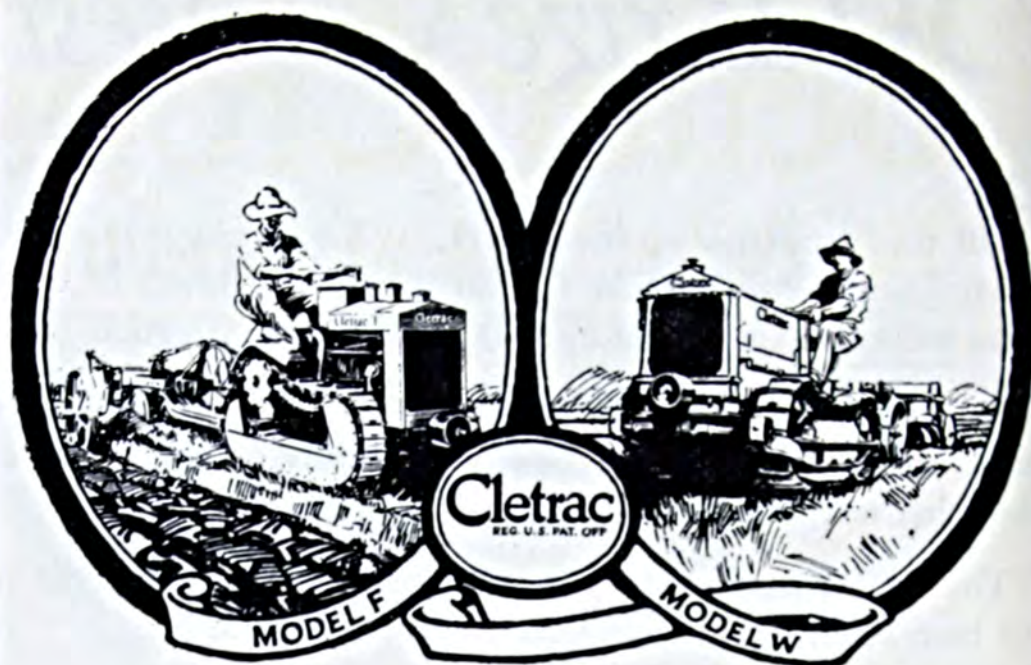
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The Better Crops Publishing Corporation

81 Fulton Street

New York, N. Y.

Contest Editor



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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.

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THE CLEVELAND TRACTOR COMPANY
CLEVELAND, OHIO

Better Crops

The Pocket Book of Agriculture

VOLUME I

NUMBER THREE

Table of Contents: November, 1923

Most Men Have Markers	5
<i>An article of inspiration by Jeff McDermid.</i>	
Putting the Peat Bogs to Work	7
<i>An interesting fact-article by Don P. Shannon.</i>	
How Southern Soils Are Run Down	9
<i>A masterly essay by Dean Williams of North Carolina.</i>	
Do Circular Letters Hit the Mark?	11
<i>How a county agent uses the mails.</i>	
What Is Cooperation?	12
<i>The first of a series by Charles J. Brand.</i>	
Why I Use a Horse in Making My Rounds	14
<i>A Kentuckian tells why he cannot use a car.</i>	
Why I Use a Car in Making My Rounds	15
<i>A Texan tells why he cannot use a horse.</i>	
Tobacco Stems Poor Substitute for Potash	21
<i>Some real inside information on tobacco fertilization.</i>	
The Curb Market at Athens, Georgia	24
<i>A report on a successful cooperative venture</i>	
The Farm's Best Crops	26
<i>A rather surprising story by E. A. Trego.</i>	
How I Teach the Principle of Terracing	28
<i>An illustrated explanation by W. A. Hook.</i>	
Strictly Business	30
<i>The monthly essay of Dr. Frank Crane.</i>	
\$576.86 Profit From One Acre	32
<i>Florida Reports, through D. A. Armstrong, on Strawberries</i>	
Keeping Hogs Clean Pays Dividends	33
<i>Walter F. Roberts illustrates some new portable houses.</i>	
Kainit Used Successfully to Kill Cadlock	39
<i>Nova Scotia experiments prove very successful.</i>	
What Fertilizers Have Done for My State	41
<i>An Alabama agronomist gives some facts and figures.</i>	

Who's Who of BETTER CROPS

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¶ Rural scenes of any kind are always delightful; but this quiet, peaceful view from the land of dikes, canals, windmills—and Dutch courage—is *especially* fine. ¶ Don't you think so?



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VOL. I

NEW YORK, NOVEMBER, 1923

No. 3

Most MEN Have Markers!

In which Jeff diverges a bit from his customary path, and gives some common sense dope on character

By *Jeff McDermid*

CHARACTER is a thing that is built—you do not inherit it. You may inherit a leaning toward a certain type of character, but from the time you are old enough to think—to choose right from wrong—you are at work, either consciously or unconsciously, in building up within yourself that thing we call character.

We must not confuse character with disposition, type or nature. A man may be either serious or joyous, businesslike or fused with the artistic temperament—he may be a tightwad or a spendthrift, large or small, young or old—yet none of these things affects his character.

Character has to do primarily with our relations to each other and with our attitude toward what has been found, after thousands of years of human experience, to be right. It is impossible for a man not to have character that never in

his life has broken a single one of the Ten Commandments. Now don't think I am getting preachy. All of this is in the nature of an introduction.

EVERY day we add something to our character. Every word, action, movement, decision, shapes our features and mars or makes our souls. Ever watch a sculptor at work? The marble face is not quickly formed—a thousand little blows of the chisel chip away, here a piece and there a

particle, until at last the finished work stands before us. Character is a work of years—of time. And because this is so, I believe it is just as possible to read a person's character as it is to tell an eight of clubs when all but a tiny corner is hidden.

Take a hand of cards.

You do not need to see the full face of each card to tell what you have drawn, do you? A peep at the fraction of a corner and you can tell the King of Hearts from the Queen of Spades.

So men have markers.

I attended the Follies in New York a few weeks ago. Oh, no, I simply wanted to see Will Rogers! The rest of the show did not interest me at all. Well, anyway; one little skit there impressed me and gave me the incentive for this article. The act was called, "In a Pullman Car." The stage was arranged so that only the feet and ankles of the actors could be seen—a curtain was dropped to within two feet of the stage floor so that the upper parts of the bodies were hidden.

Without a word, with no sight of faces, a complete little playlet was enacted before us—an unfolding of the characters developed—and the plot carried through to the climax in a breath-taking manner.

The villain, evidently a race-track tout—you could tell that because he wore violently checked trousers and white spats—tried a mild flirtation with a show girl. You knew she was a show girl because her heels were higher than any you had ever seen before, and because they were fashioned from bright vermillion suede, encrusted with diamond buckles. The playlet ended with the entrance of the business-man husband—this was easy, because he wore blue serge and nicely polished black shoes of unknown make.

"We in the audience were able to read the characters of the people in the play as surely as if their life histories had been laid before us. It was a remarkable proof that men have markers.

And men *do* have markers.

I DO not hold any brief for the purveyors-of-buncombe who teach you to read character entirely by the shape of the jaw or the curl of the hair—the poor bloke might have got kicked by a mule in early childhood, and his hair may be curly from strenuous thinking—but I firmly believe that in a hundred ways each man's character is carried with him like a banner flaunted in the wind, that he who runs—and understands—may read.

Do you know a crafty man? Ever notice the little wrinkles of craftiness around his eyes and how he squints when he makes you a proposition? Look out for him.

Do you know a kindly man? See how his spirit shines through his eyes. Note how Nature has fashioned his whole face and form to breathe the spirit of kindliness.

Don't trust these things too far. Use your own judgment, but study men, their faces, their clothes, the wrinkles around their eyes—it will help you in your daily contact with men. You will learn how to prepare yourself, defend or guide or control as the case may be.

I repeat that I do not believe in the orthodox methods of discovering character. Whether or not phrenology, handwriting, and the study of the sun, moon and stars can teach us to decipher those with whom we must do business remains to be seen—I, for one, have my doubts whether these pseudo-sciences have much to recommend them. But faces, deeds, words, clothes, (turn to page 64)

Putting the Peat Bogs to Work

Plow to a Moderate Depth, Pack with Heavy Roller, Disc and Fertilize

By Don P. Shannon

A SCANT four years ago, Blaine Township was considered a liability to Anoka County, Minnesota. Today it is one of the heaviest tax-paying townships in the county. Turning worthless peat bogs into productive fields of potatoes, corn, clover and timothy did the business. The Soils Division of the University of Minnesota, working together with the farmers and commissioners of Anoka County, pointed the way to the successful farming of peat lands.

August 22 was visiting day at the Coon Creek experimental farm in Anoka County north of Minneapolis, where the College of Agriculture is carrying on peat investigations. Nearby farms where peat land is under cultivation were visited. About 250 farmers and experiment station men attended this inspection of the peat farms.

"The year 1919 marks the date when the first peat lands in Anoka County were put under successful cultivation," says Dr. Alway, in charge of the University peat investigations. "The only fields then under cultivation in Anoka County were the experimental plots at Coon Creek. That summer we held our first inspection day for the public. Mr. and Mrs. Simon Kruse, owners of the Radisson Farm in this county,

were among the visitors. They took our methods home with them from our plots and applied them to their farm on a large scale."

IN 1920, the Radisson Farm put in 80 acres of oats and 40 acres of corn on peat land. The following year, the Radisson Farm broke up more peat and put in some timothy and clover. The Elwell farm near there also started peat farming in 1921. In 1922, nearly 40 farmers in Anoka County had crops on peat. This year more than 200 farmers in this county are farming their peat lands.

From the Iowa line to the Canadian boundary, farmers are farming peat lands. There is a farming company in Freeborn County which has 15,000 acres under cultivation. In Kittson County there is a farmer who has more than 200 acres of peat land in crop. A development company in St. Louis County has for several years been farming peat lands.

There are farmers practically all over Minnesota who have at least a few acres of peat in crop. Practically everywhere that they are farming peat successfully, they are following much of the same methods of treatment used (turn to page 70)

¶ In this article, Dean Williams tells

How SOUT are RUN Do

¶ And methods that mu

By Dean C. B. Williams

of the NORTH CAROLINA EXPERIMENT STATION

A PRODUCTIVE soil is one that is sweet and mellow and which contains a goodly amount of well rotted organic matter and of the different plant food constituents needed by crops in available forms.

Any one who is at all familiar with Southern conditions, as well as conditions generally throughout the country, must know such soils are not, as a general thing, the predominating kinds. Our soils, generally speaking, are rather low in organic matter, nitrogen and phosphoric acid content. Most of the sandy soils of the Coastal Plain region, too, are particularly low in available potash. In order to handle our Southern soils in the production of crops in such a way as to economically conserve their plant food resources, it will be essential for us to know just how the main losses occur from them and what means, if any,

are available for lessening the losses and for restoring them, where they have been reduced in producing power.

As the South, in a general way, has been a section in which crop production has been the main pursuit of the farmers, the selling of these crops or a portion of them, especially the grains, which are high in plant food constituents, from the farms, associated with some leaching and erosion have been important agencies in reducing the plant food reserves of the soils, in many cases, below the quantities sufficient for large yields. To appreciate the part the selling of crops from the farm has played in exhausting the soils, it will only be necessary to give a few examples.

Average yields for this state are for corn, about 20.4 bushels; for

HERN SOILS

WN in productivity

st be used to restore them

peanuts, 895 pounds; for wheat, 8.6 bushels; for cotton, 265 pounds; for soybeans, 16.5 bushels; for cowpeas, 10 bushels; for grass hay, 1.19 tons; for tobacco, 634 pounds per acre. These average crops would, when the grains, seeds, hay and tobacco leaves are sold from the farm, require the expenditure of the following amount for commercial fertilizer to replace in the soil the plant food constituents carried away by the crops: \$4.28 with corn; \$2.31 with wheat grain (and with straw \$1.07 additional); cotton lint, 26 cents, and cotton seed, \$4.19; for soybeans, \$13.45; for cowpeas, \$4.78; for peanuts, \$9.80; \$8.08 with grass hay; and \$8.03 with tobacco. One cannot, therefore, but help being struck with what tremendous drains our soils have suffered in their plant food reserves by the production and sale of crops

from the farm through the years of the past.

IN addition to these, there are in some cases material losses of the reserves from leaching with soils of an open nature and from erosion with those poorly cultivated and of a compact nature. Still another source of loss of plant food from the farm is that resulting from the feeding of crops to livestock. One of the most efficient animals we have on the farm in the utilization and manufacture of feeds into human food (milk and butter) is the dairy cow. To show just what a good cow would remove from the farm when her milk is sold, it is only necessary to say that average milk of a good cow will contain as much nitrogen as is found in 18 bushels; phosphoric acid as in 12 bushels; and potash as

in 31 bushels of wheat. When contrasted with the selling of corn, the milk from a good cow during the year will contain as much nitrogen as is in 22 bushels; phosphoric acid as is in 19 bushels; and potash as is in 31 bushels of corn.

Director Thorne, of the Ohio Station, has found in that state that the selling of milk, from the farm, of an average cow, carries away from the farm as much phosphoric acid as either 20 bushels of wheat and 30 bushels of corn, considering the grain alone. He has calculated that for conditions obtaining in Ohio that the supply of phosphoric acid in the soil is exhausted by the feeding of the crops to dairy cattle as rapidly as would be the case when good average grain crops of corn and wheat were sold directly from the farm. Another drain that is not generally recognized is that resulting from the feeding of animals kept on the farm. This is a tremendous loss annually for average conditions obtaining of the farms of the state.

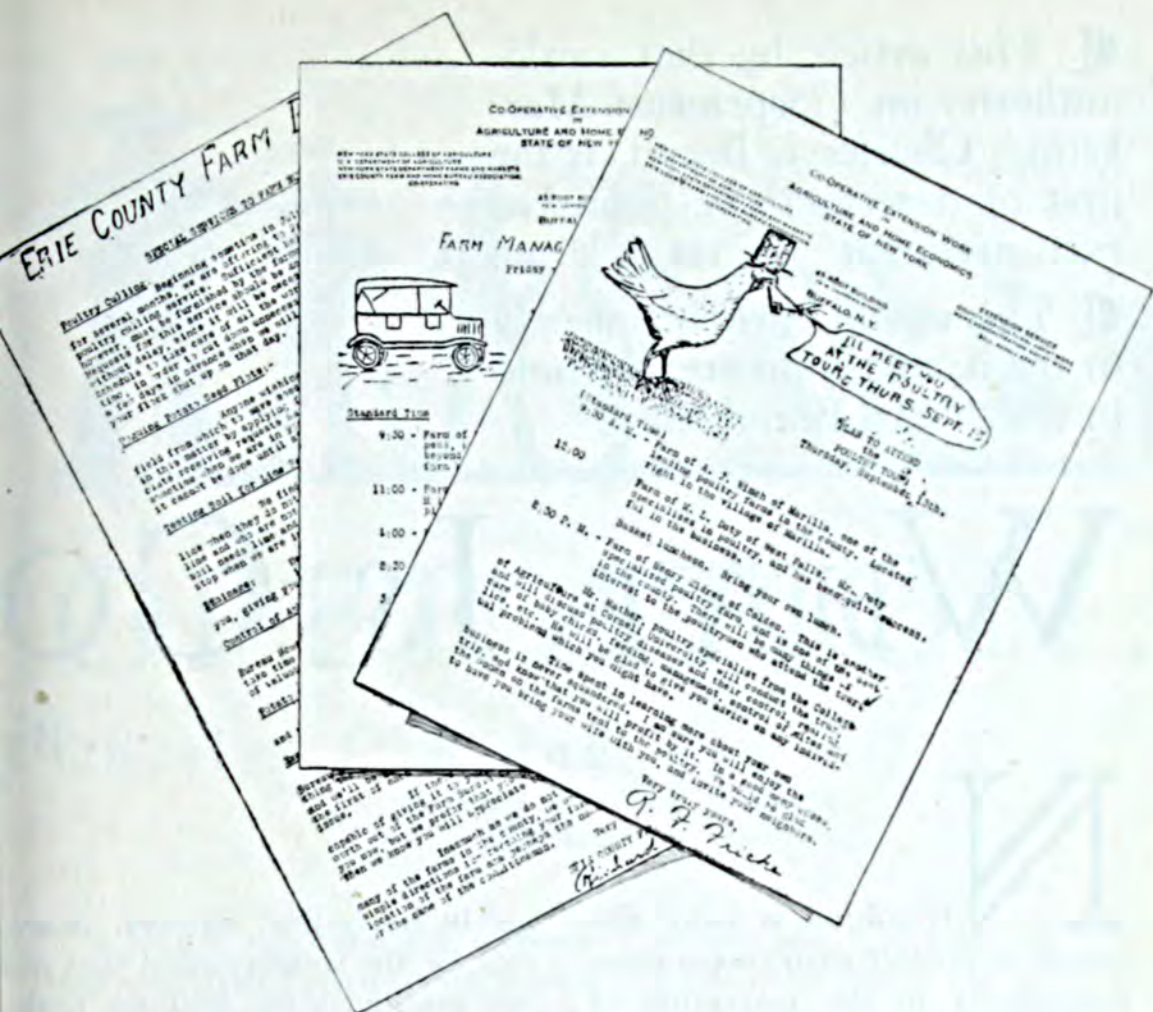
MANURE produced on the average farm and applied under average conditions, not only from dairy cattle, but from all other kinds of livestock on the farm, will ordinarily not return more than about 50 to 60 percent of the plant food constituents of the original crops. In fact, in many cases, if not in most, it will be quite less than this percentage. This, as may be seen, will therefore aggregate a considerable loss annually of the plant food reserves of our soils. From these facts, it may therefore be seen that where only crops produced on the farm are fed to livestock there will not be any gain in the fertility of the lands of the farm as a whole through the saving and use of the manure from

livestock kept on the farm, but rather on the other hand there will be a constant loss of at least 50 to 60 percent of the plant food constituent contained in the crops fed to them.

Above are given the main sources of loss of fertilizing constituents of soils. These processes of loss have now been going on pretty generally throughout the South for many decades, and at the present time many of the soils are not nearly so productive as they were formerly. The question, however, which Southern people are particularly interested in is not only the ways of reducing these losses, but how to replenish these losses from our soils and to do it in the most practical and economical ways.

Nitrogen is one of the constituents in which most soils of the South are low. This constituent is almost always held in them in such form or forms as to be lost much more quickly than is either phosphoric acid or potash. Fortunately, we have a group of crops, known as legumes, which are able, when grown on our soils and are inoculated, to take from the atmosphere a goodly supply of this constituent and leave it in the soil if they are after growth plowed back into the soil.

It is not possible, however, in any practical way, to utilize the vegetation part of such leguminous crops, as soybeans, cowpeas and clovers, and have the growth of them on the land materially increase, if at all, the nitrogen supply of the soil. Crops of this type are the only ones known that have this power of taking nitrogen from the air, storing it in their different parts and thereby adding to the nitrogen, as well as organic (*turn to page 67*)



CIRCULAR LETTERS

Do They Hit The Mark?

By R. F. Fricke

County Agent, Buffalo, New York

JEFF McDERMID! Never heard of him till I got that little book entitled **BETTER CROPS**, yet I feel I know him now. Why? Don't know exactly, but there is something personal about his writings. Reminds me of Tom Wright, manager of the New York State Canning Crops Association. His bulletins have that same personal touch and he signs himself "Tom." "Jeff" asked you and I to write him a little story. Couldn't refuse him if you read his letter, now, could you? Oftentimes I don't read circular letters, but when I saw the signature I wanted to know what it was about, because his stuff in **BETTER CROPS** kind of appealed to me. Don't mean the facts necessarily, but the style.

I couldn't help but have the wheels go around in my head—got

me thinking about the style of lots of our circular letters. We all write them. Kind of cold blooded, stiff things. Do folks like to read 'em, whether they're interested in that particular meeting of yours or not? Got anything to catch their eye or get their attention?

This story is all introduction, boys. What I've been getting ready to tell you about is a stunt I use on some circulars. Just a little sketch on the side or top or bottom of the letter. I'm sending Jeff a few copies. If he thinks they're good enuf, he'll show you a few of 'em. (Here they are, Jeff.) You know, lots of folks don't meet you for quite a while in this work, except through your letters. Let's think about that, all of us, and see if we can't get that "style" that will make us friends from the start.

¶ This article by that world-authority on Cooperative Marketing, Charles J. Brand, is the first of a series to be published exclusively in BETTER CROPS.

¶ This month's article is merely in the nature of an introduction, in which Mr. Brand tells—

WHAT IS CO

By

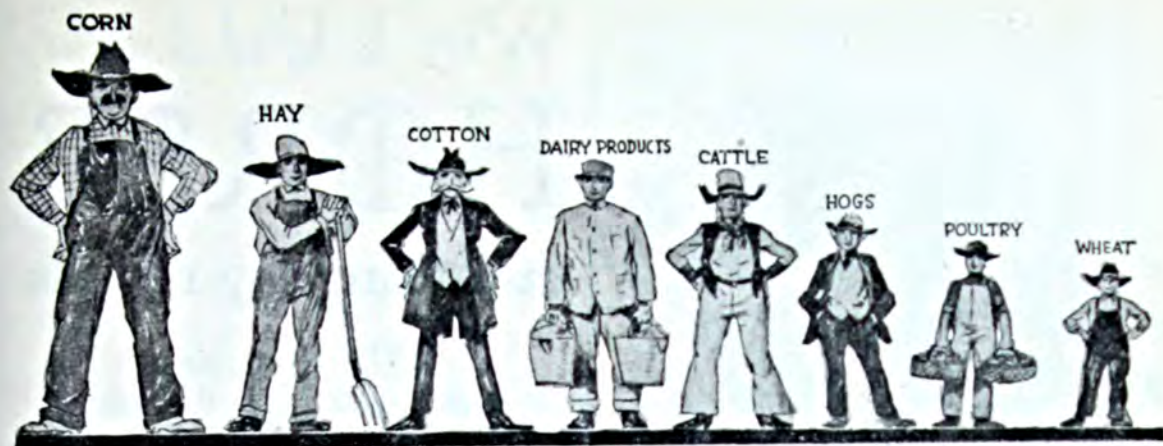
N O subject is more discussed at present than cooperation, particularly in the marketing of agricultural products. Nevertheless, there is a great deal of misunderstanding as to what cooperation really is and how it functions.

Cooperation is merely a way of doing business. Instead of selling products for distribution to private enterprises who buy them outright, or who may on occasion handle them on commission for the grower, a group of growers get together and employs its own help for the disposal of its products. We are so accustomed in America to the great middleman system that it is a little difficult sometimes to think clearly about cooperation. Hence, I say it is merely a way of doing business.

In certain European countries it is as much *the* way as the middleman system is with us. For instance, if an American agricultural machinery manufacturer wished to sell his machinery in Germany, he would not find scattered throughout the German Republic middlemen deal-

ing in harvesters, mowers, plows, etc., for the simple reason that not only machinery but fertilizer, feeds, and practically all other large farm needs in Germany are purchased through the cooperative organizations that cover the whole country. The individually owned coal yard, wood yard, feed store, implement business, etc., are as rare there as the cooperative organizations have been in some sections of the United States throughout our history.

BEING merely a way of doing business, cooperation must make its way on its merits. It must produce economic results first of all that cannot be attained in any other way. Necessarily it has important by-products in the way of awakening interest in the conduct of business, a knowledge of what is involved in the marketing and distributing of crops, and it creates a keener appreciation of the problems of rural communities by reason of the participation of each individual in its operation.



OPERATION?

Charles J. Brand

Consulting Specialist in Marketing
U. S. Department of Agriculture

A proper treatment of any one of the agricultural products involves a general understanding of the whole fabric of cooperation. For the first time in the history of the United States the census of 1919, by the request of the Department of Agriculture, obtained definite figures on cooperation in the United States. This canvass revealed that 624,527 farms participated in the cooperative marketing of some part or all of their products. As there were on the census data 6,448,000 farms, it is evident that practically 10 per cent of the farms of the United States have a vital interest in co-operation. In the census year \$725,000,000 worth of crops were sold cooperatively.

BASED on this figure and having in mind the extraordinary development of the past four years, particularly in the cooperative handling of cotton, tobacco, wheat, and certain other crops, it is probably safe to say that even with the reduced prices of agricultural products a

million and a quarter of dollars worth of products will be handled by cooperative organizations in 1923. In order to show you the geographical location of cooperation, I will give the leading states in the order of value of their products marketed cooperatively:

California	\$127,990,981
Minnesota	82,760,455
Iowa	59,403,626
Illinois	47,920,487
New York	44,906,247
Nebraska	44,755,140
Kansas	44,290,957
South Dakota	31,651,244
Wisconsin	28,884,215

It is significant that the states named are amongst the most prosperous agriculturally in the whole country. The group of nine includes six of the twelve leading states in the value of all farm crops. While California leads in total value, Minnesota stands first in the percentage of the total number of farms participating in cooperative marketing. 43.9 per cent (*turn to page 60*)



☛ Oh, boy! Here's a "stand" for you!

Jeff

Why I Use a HORSE in making my rounds

T. L. Britton

County Agent, Hyden, Kentucky

IT is strange to me, anyway, that a man should stay in a country like this any longer than he could get out. I say this in all earnestness, not because I have travelled from the Atlantic to the Pacific, and from Canada to Mexico, but because of the topography of the country, and the condition of the so-called public roads. It is a strange Providence that people exist here, but they do. On the other hand, when we know the mountain fastnesses, the good old Anglo-Americans who dwell here, with that good old time hospitality unequalled anywhere on the globe, when we travel for hours along the clear, cool streams viewing overhead the hemlock, the spruce, the laurel and the rhododendron, we do not wonder so much why Uncle Johnny Shell could live to be 135 years old. And so I make my rounds on the back of my horse, for it is the only means other than to walk. In the county there is not one car, and of course it is too rough for even a buggy; if there is a single buggy in the county we do not know of it. During the month of August we rode 341 miles, made 28 talks to 2,674 people. The county is very sparsely settled in some parts, and the sidehill lands are becoming more and more depleted. The county is principally a bed of coal, as good as Kentucky can produce. The people came (turn to page 68)

Why I Use a CAR in making my rounds

Charles H. Alvord

County Agent, San Antonio, Texas

IT would seem at first that this question was as foolish as 1001 asked by Goldberg, for I cannot conceive of any possibility of being able to accomplish all that I have to do without the use of a car.

Without a car I would be like the plodding ox, willing and efficient, but not possessed of enough speed to keep up with the procession. In my particular county we have more good miles of hard surfaced roads than in any other county in the United States, with the exception of one, at least this claim is made by our county commissioner. If for no other reason, it would be impossible to use a horse and buggy in this county, on account of the fact that during wet weather macadamized roads are so slippery that it is almost impossible for a horse to stand.

This county is about 45 miles wide from east to west, and nearly 60 miles long from north to south. It is not uncommon for us to have meetings at the very outskirts of the county at night, showing motion pictures from the Department of Agriculture to interested audiences that are always loth to leave the assembly hall even after the pictures have been completed, but if we are so fortunate as to be able to get away about ten-thirty, it is no trouble at all to spin over these fine country roads, chasing the beacon light down the way at a speed of thirty miles (turn to page 69)

Jeffisms

There are three S's in success — Start, Serve, Stick.



It takes *volts*—not *dolls*—to make a live wire organization.



Don't give up! What if you are wrong once in a while. What do you suppose they put rings around the bullseye for?



COURAGE: The fly lighting on the hand that holds the swatter.



A stopped clock is right once every day.



To live, to think, to work — respiration, inspiration and perspiration. How can such a formula fail?



Most of the things we worry about have already happened.



I always give every hooch peddler two orders—"Get Out!" and "Stay Out!"

Jeff

CLYDE W. WARBURTON

New Director of EXTENSION WORK

From BETTER CROPS'
Washington Correspondent

APPPOINTMENT of Clyde W. Warburton as Director of Extension Work of the United States Department of Agriculture has been announced by Secretary Wallace. This office was created by Congress in the reorganization plan of the department for the purpose of coordinating all of the extension activities now being carried on.

For a number of years Mr. Warburton has been actively engaged in staple crop research projects in the Office of Cereal Investigations, Bureau of Plant Industry, involving co-operative work between the agricultural colleges and the department. He is well known to the teaching, research and extension people of most of the agricultural colleges as well as to the scientific staff.

Mr. Warburton graduated from Iowa State College in 1902 and joined the Department of Agriculture staff in 1903 where he has been in continuous service ever since. During this period he has held many important positions and has been assigned to special tasks which has given him a wide acquaintance among agricultural extension workers.

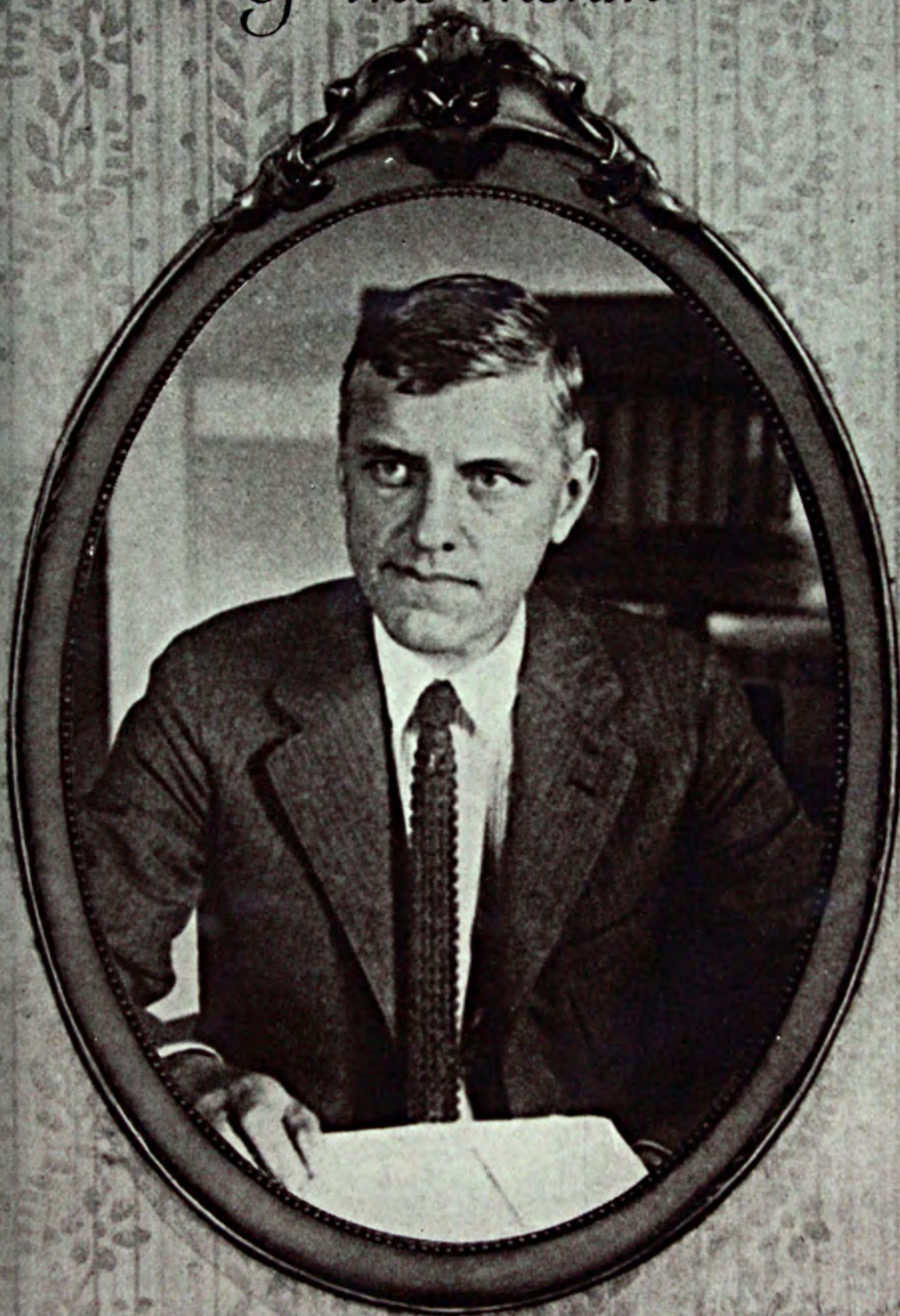
On several occasions during the past few years Mr. Warburton was detailed by the department to ad-

minister federal seed grain loans in the Dakotas, Montana and other western States and met with unusual success. In 1918 he was the department representative of the Federal Seed Stocks Committee in the purchase and resale of oats and barley to meet the emergency conditions obtaining in North Dakota and Montana. During this detail he purchased, recleaned and made the necessary arrangements to resell to grain dealers and others, approximately 800,000 bushels of oats and 100,000 bushels of barley, involving an expenditure of about \$1,000,000.

One of the particular accomplishments of Mr. Warburton of an investigational nature was his development and establishment of selections from the Sixty-Day and Kherson oats, which are more productive than the original varieties, and at the same time are free from the undesirable color of the latter.

In announcing the appointment Secretary Wallace said, "Mr. Warburton's agreeable and effective personality, enabling him to gain the warm support and highly effective effort of those whose work he supervises, and his executive and administrative ability, ably fit him for the duties of coordinating the extension work of the department."

Better Crops'
ART GALLERY
of the month



© Inter News

We have with us today, gentlemen, Mr. Clyde W. Warburton, the new Extension Director of the Agricultural Department. He is already at work at his desk—as you can plainly see!



©Harris & Ewin

Mr. William Harper Dean comes with a broad experience to act as Chief of the Agricultural Bureau of the Chamber of Commerce of the United States.



While his dad makes \$75,000 a year Calvin Coolidge, Jr., aged fourteen, keeps his \$3.50 per diem job in the tobacco field.



© Inter. News

All Hail! Here is the Chief of the new Bureau of Home Economics—Dr. Louise Stanley—who has the best wishes of BETTER CROPS.



© Inter. News

Msieu. Pomme de Terre of the family of Irishus Spudlits. This potato is a freak of agriculture, closely resembling a human being. Note the two arms, two legs, and head, not to forget the body.

Tobacco Stems Poor Substitute for MINERAL POTASH

S. O. Izlar

NOTING your article, "Another Plant Disease Conquered," in the September issue of BETTER CROPS brings to mind a visit made not very many weeks ago into a North Carolina tobacco growing county near Raleigh, N. C., in order to see a crop of tobacco which was reported to be "burning up." Observations made would indicate a case of "Potash Starvation," or at least that the lack of potash contributed very largely to the condition of the tobacco. Perhaps there were other things in part responsible for the disaster to the crop, but the appearance of the leaf certainly checks up with expert reports on the subject of "Potash Starvation." The facts in the case will be given, anyhow, as the story may be of interest to your readers, and will put someone to thinking.

The farm is well located and admirably adapted to the growing of a fine quality of tobacco. The owner of the crop was found in the field busy cutting and hauling out such stalks as he thought were worth curing. The work must have been discouraging, after an expenditure of much fertilizers, labor, etc., and to only expect, according to his statement, a third of a crop. A conservative estimate would indicate fully 25 per cent. of the stalks damaged, and to such an extent that it would not be worth while to go to the expense of cutting, drying and preparing the same for market. On several other farms in the same vicinity the tobacco was "burning up," and one large planter stated that his crop was in such a fix that

he did not think it would pay him to cut any of it. This crop was not seen, but information from other sources leads to the belief that the statement was about correct.

The farmers were blaming the fertilizers for the condition of the crops. The suggestion was made that they not "talk so fast," as there were, no doubt, other factors to be considered, and that an effort would be made to ascertain what the trouble was and what method should be adopted to eliminate the condition from other crops. There is no doubt about the crop being a failure. The tobacco growers whose crops had suffered from the disease had made up their minds that the fertilizer was solely responsible for the failure. They had no intention of studying the problem further with the view of getting the right answer, so help was volunteered in the matter of finding out what the trouble was.

Several stalks of the tobacco were taken to one of the North Carolina Experiment Stations for inspection, etc. It did not take long to diagnose it as a case of "Potash Starvation."

It may not be amiss to state right here that the roots of one of the diseased plants was examined carefully, "externally," and appeared to be normal and healthy.

Regarding the fertilizer used by this particular farmer, and others in that neighborhood where the tobacco was damaged in like manner, it is reported that it contained a large amount of Tobacco Stems. It is therefore, (turn to page 66)

Rattling along in old Henry,
I was weary and ill at ease.
My thoughts were well worth a penny:
My farmers were so hard to please!
I knew not what I was thinking
As I bumped along in the dark,
Till the car struck a rut and then skidded
Right out on the side of the park.

I floated away into silence,
And went to a beautiful world
Where farm folk always seemed happy;
I asked for the reasoning word.
I was told of a wonderful spirit
That dwelt up on high light of wing;
How each did his share to encourage
The "Agent" in 'most everything.

I returned to the earth with a headache,
To find Henry, wheels up in the air;
How I ever got home is a wonder,
But I found that next day I was there.
Now I strive, but it all seems so hopeless,
That wonderful spirit to teach
Here on earth to my own rural farm-folk,
Whom my duty demands that I reach.

It may be that the spirit will grapple
The hearts of our people around,
But perhaps it is only in Heaven
This spirit can truly be found.
And what was the name of this something,
That brought peace and such comfort and gold,
And dwelt there with each of the farmers?
They called it, or so I was told:

COOPERATION

Submitted By A. L. CHRISTIANSEN, Toole, Utah

Si Bellew says: It's Tough to Have to Be a County Agent

*It's damned if you
do and damned if you
don't, so what's the use?*

By Si Bellew

W

ELL, I swan, I wooden be a County Agent fer all th' money in th' mint—it's a tough job, by thunder!

Y' take Herm'n Blake, down in Perkins County—he's our agent, an' he's plum' wore out a-tryin' to please all them Perkins County folks to once.

The fellers with th' big farms—them as lives in Jacksonville an' rides out 't night in there Roll Nice coops—they sez thet Herm'n spends too much time with the small fry, one-hoss farmers. An' the small farmers, they up and sez that Herm'n is tryin' t' get in with them golluf players, so's he c'n spend his time out in the pasture chasing a ball, 'nsted o' spending his time in th' cornfield showin' farmers how to make wun cultivatin' do th' work o' three.

'n if Herm'n stays in his offus to right a few letters, an' sumbody sees him, they tells aroun' that Herm'n is gettin' lazy an' aint

a-doin' no good like the man thet hed the job afore Herm'n cum. On tuther han', if poor Hermie stays out'n his office, sumbody's sure t' cum in an' say where's Blake—whynell don't he never stay so's a feller can fin' him!

If he don't get out no letters to the folks in th' county 'bout the Veg'tible Tour, then sure'n tarnation sin sumbody'll tell how Joe Bent up in Or'nge County allus gets out letters whenever ennythin's doin'. An' if Herm'n *duz* get out a nice fansy letter, they kick an' say look how he's spendin' our munny, he's a reg'l'r tax-eater.

So I sez t' Hermie when I seen him las' week, never yew min' Hermie ol' boy, yew're doin' good work, ol' Si Bellew he knows it, an' yew'll get yewr reward up above! Never min' these hear farmers—they don' no nothin' annyhow! Jes' yew keep pluggin' away, an' they'll cum inta yewr fold befour y' can say jack robins'n!



The CURB MARKET

J. W. F i r o r
County Agent

THE writer started work as county agent of Clarke County, Georgia, on March 1st, 1923. Excepting routine duties, the first practical undertaking was in connection with the establishment and organization of a curb market in the city of Athens—a town with an estimated population of 18,000.

Athens is a college town with a very active demand for fruits, vegetables, poultry and dairy products. The country surrounding has been a heavy producer of fine upland cotton—this productive enterprise was seriously demoralized by the advent of the cotton boll weevil several years ago.

This curb market opened on May 5th with but a dozen farmers at the curb offering their products for sale and the total sales for the first day did not exceed \$100.00. Both the selling at such a market and the buying were new experiences to the people of this section. Consequently, it took some time to get the

market going good, but in a few weeks' time the sales increased to about \$500.00 a day and the number of farmers offering things for sale and those who came to buy increased rapidly. During these first few weeks the market was held but one day a week. With the increased interest the market was increased to two days a week and then to three days a week. The total sales per day also increased until they reached over \$2,000.00 for the best day. It is estimated that the total sales will exceed \$75,000.00 before Christmas. The number of farmers offering products has likewise increased rapidly and to date over 600 different producers have sold at this market—some of these have attended only a few times while others have been regular sellers.

IT was the opinion of a number of the progressive business men of the city that a curb market was needed



at Athens, Georgia—

¶ A college town of 18,000 makes a successful experiment with a local cooperative market for fruits, vegetables, poultry and dairy products

to furnish a channel to divert money, which was going out of this section, back to the farmers. This thought was supported by conclusions formed by the county agent from certain investigations made among the farmers, which investigations will be set forth later. The active and legal cooperation of the Mayor and City Council was obtained through the endeavors of the Kiwanis Club, the Rotary Club and the Chamber of Commerce. Each of these associations went before the city fathers and expressed a desire for their cooperation. The city officials then passed an ordinance setting aside a portion of a certain street to be used for a curb market; and established the rules for its operation.

When this was accomplished the civic organization immediately took steps to get the market under way. It was deemed desirable to have a marketmaster, who would look after the details of the market's

operation and the Kiwanis Club underwrote this official's salary and later collected the money needed by public subscriptions. The members of these civic clubs used their influence in getting the townspeople interested in buying at this market at its beginning.

THE county agent was requested to act as general supervisor and advisor. The marketmaster was instructed to look after such details as the giving out of permits, the allotting of space and the making of change for the sellers and buyers. At the time the permits were issued—and each seller was required to obtain one—the marketmaster asked a number of questions for the purpose of finding out whether the prospective seller was a genuine producer and not a professional peddler or huckster, as the city fathers had decided that only "dirt" farmers who were real and sure enough producers (*turn to page 57*)

¶ I asked a professional writer what he thought were the best crops raised on a farm. ¶ His novel answer—this article—is worth reading.

The FARM'S Jeff BEST CROPS

By E. A. Trego

IN seeking "better crops" the tiller of the soil sometimes overlooks the best crops ever produced on the farm. It is generally an outsider who comes along and harvests these crops.

We might refer to the crop "David Grayson" gathered from a crusty old farmer's barren acres. When Grayson told the farmer how much he had received for something taken from his hillside pasture, but without disclosing the exact nature of the produce, the farmer was startled. He began to visualize outcroppings of gold or buried treasure, for the land was not disturbed. What Grayson had done was merely to look at the land with an appreciative eye and then pass along to others through the medium of a magazine or book, a word picture of the charm of the place and its highest meaning.

The farmer who can see that sort of crop in his land is never a failure. John Burroughs became the intimate friend of Roosevelt because of his ability to describe and explain things which many farmers never see, though in contact with them at all seasons of the year. Burroughs learned about them on the farm. The story of his boyhood on the farm is a fascinating tale. It is a plain recital of homely facts, but

hundreds of thousands of people have read and enjoyed every word of it. And that suggests another crop which works in beautifully with the poetic inspiration men like Burroughs always find in the soil.

DID you ever go to an "Independence Day" rally in the country? Never was there an occasion of this kind that the "orator of the day" failed to speak of Washington and Lincoln. Now, a peculiar circumstance is that Washington, who was much closer to Independence Day than Lincoln, is soon dismissed, while much stress is put upon Lincoln's career. The explanation is that we love to cite as something calculated to cheer and encourage us, everything that pertains to the lives of great men of humble origin. And so we are told that Lincoln won immortality in spite of his restricted opportunities in youth, great emphasis being placed on the fact that his home was a log cabin.

Now, there are some philosophers and sound thinkers who have developed a theory about this humble origin business that is quite the reverse of that generally accepted as a fact. It is that Lincoln did not achieve everlasting fame in *spite* of his humble home and primitive environment, but *because* of them.

In other words, men acquire through close contact with nature during their childhood what Prof. Dallas Lore Sharp, of Boston University, is pleased to call "education for authority" as distinguished from book learning, or the education of the scribes. He compares Lincoln with Edward Everett, the latter college president and professor, senator, governor, editor and ambassador. He says that Everett at Gettysburg spoke for an hour with this vast book education, like the scribe, leaving Lincoln, with his natural education, to speak for five minutes with authority. He says further that the simple words of the farm boy have ever been the language of the poets and prophets, and that poets and prophets must ever live as he lives and learn what he has learned of language and things. If we accept Professor Sharp's statements as true, we find them applicable to Washington's life and character, for he, too, understood soils and crops and the nature and habits of both wild and domestic creatures. His private letters concerning the management of his plantation are finer literature than some of his studied public addresses.

Virgil was inspired by the work of the husbandman, and had a comprehensive knowledge of the science of agriculture as developed in his day. Thus every farm boy is attending a wonderful college, and "education for authority" is his one best crop. As Professor Sharp puts it, "books make a full man; it is life and nature that give him authority." Unfortunately the farmer himself does not always realize this. He is prone to feel that his calling is a rude occupation compared with those of professional and business men. That he is over-sensitive on this score is revealed by the

recent protest of a farmer's convention against the jokes and caricatures of farmers and farm life exploited by the "movies." They wish to be shown as business men.

As an illustration of the attitude of all intelligent people when it comes to the beautiful business of agriculture, we quote from the book of a town-dweller—impressions gleaned from the countryside to which this man, who knows Broadway better than some farmers know their land, had fled that he might be healed in body and mind. For months he lived in a cabin on a hill-top, and then for weeks traversed country highways afoot. This is what Le Gallienne saw in farmers and in farm buildings and implements:

"**T**O the meditative, romantic mind, the farmer and plowman, standing thus in the foreground of the infinite perspective of time, take on a sacred significance, as of traditional ministers of the ancient mysteries of the earth. Perhaps it is one's involuntary sense of this haunted antiquity that gives its peculiar expressiveness to the solemn, almost religious quiet of barns and stables, the, so to speak, prehistoric hush of brooding, sun-steeped rickyards; and gives, too, a homely sacerdotal look to the implements and vessels of the farm. A churn or cheese-press gives one the same deep, uncanny thrill of the terrible vista of time as Stonehenge itself; and from such implements, too, there seems to breathe a sigh—a sigh of the long travail and unbearable pathos of the race of men."

The farmer who is able to get out of life the crop this town-dweller garnered on his long walk through pastoral scenes will never care to be shown as a "business man."



I I want more articles like this--telling how to do things. How about you? Can you send me one?

Jeff

How I TEACH the Principle of TERRACING

By W. A. Hook

Phelps County Farm Bureau, Rolla, Missouri

BELIEVING that I could teach the principle of terracing by building a miniature mound of earth and terracing it, I secured the cooperation of the County Engineer who had two truck loads of earth delivered at the rear room of my office headquarters, where I proceeded to build the demonstration shown on the above picture.

First I secured a piece of one-inch garden hose and attached it to the water system. The hose was fitted with a spray nozzle so that when the water was turned on it fell on all parts of the mound very much like a shower of rain falls naturally on the ground.

In terracing the mound of earth the water in the top terrace is carried all way round the hill while

the lower terraces direct the water each way from the middle of the terrace. At the rear of the mound two methods of discharging the water is shown, one on grass or waste lands and the other by means of the soil saving dam.

SINCE building this demonstration a large number of farmers have been taught the principle of terracing. By turning on the water and letting it run for a short time the water can be seen moving around the terraces at a slow rate of speed and the danger of breaking over easily explained as well as the necessity of laying off the terraces on the proper grade. A floor sink catches the water as it is discharged from the terraces.

The Slacker HEN; The Four-Leaf CLOVER; The C. A.'s MISTAKE!



J. Robert Hall

County Agent, Linn County, Missouri

I WAS trying to establish my work in a new community. It was fall, and time to get rid of the slacker hen, so this was chosen as my avenue of entrance into this new territory.

The project was most popular and a large audience had gathered on the lawn in a farmer's yard in Community 21. I prepared my charts on the back of a chair and was ready to speak when I caught sight of a large, healthy four-leaf clover. Not having superstitions, yet eager for good fortune to befall me on this occasion, I plucked it and carefully placed it in my note-book, making the jest to the audience—that certainly means good luck today.

When I had finished my talk on feeding, housing, and breeding poultry for profit, we went to the hen-house to demonstrate the most popular part of our topic—culling hens.

Many medium to good hens came out of the hen-house, but finally a most perfect layer appeared. She met all the requirements of a high producer. In fact I proclaimed that

she would doubtless lay every day in the year. A poor one was selected to contrast with her. The good type hen was sent out among the women and men eager to handle her, so they might learn the clever trick of culling.

While I was contrasting the poor hen with the good one and proving that she never had laid an egg in her life, so was a star boarder, the women began to snigger and even laugh. I wondered what mistake I had made and paused to reiterate—probably with a big question written on my countenance. I was embarrassed and the women seemed even flushed with abashment.

There seemed no way of telling what mistake I had made, so I asked. A good woman in the audience said:

“You have made no mistake; this good hen you handed us just laid an egg in my hand.”

So the four-leaf clover put my work to the forefront in Community 21. Thanks to clover—it is, after all, our old stand-by.

Strictly BUS

W

HY is there in all high-brow literature and the alleged best society and among many religionists a covert sneer at business?

The enthusiastic youth is quite liable to get the idea that there is something soiling, at least second rate, about business?

It seems to be quite grand and noble to be an uplifter or beautifier or loafer, provided none of these things is done for profit; but the minute a man makes a living out of anything he is supposed to lose caste a bit.

The trouble is that we live in a haunted world. Our civilization is ghost-ridden by the specters of mediævalism. All the nobles of the past were supposed to be supported by low-brow workers who got paid. When a man earned his salt in former days he lost standing among the best people and there is a good deal of that sentiment abroad yet.

As a matter of fact, business is the keenest, finest, noblest, most wholesome and normal direction in which the energies of men can be exercised.

Life itself is strictly business. Life is certainly not a lark as the wastrel thinks. It is not a tragedy, nor indeed is it play-acting of any kind, notwithstanding the views of Mr. Shakespeare as to all the world being a stage. And life is not a mere prelude to the hereafter, something to be gotten through with and gotten rid of, something unclean to be washed away by death and salvation. Life is business; that is to say, it is most worth while when it is conducted on business principles in honesty, integrity, and with due regard of values.

Religion is strictly business. The best type of religion is certainly that which can be used, used to make life stronger, sounder and more worth while. The best religion is not a mere Sunday performance separated by a water-tight compartment from the rest of the week, but if it is any good at all it is something to be employed constantly with good judgment and intelligent planning for the enrichment of the soul.

INESS—

by Dr. Frank Crane

Politics is strictly business. As a matter of fact, it is not, but it ought to be. We should get along a lot better if we regarded the government of the state and the nation to be a business matter conducted by business men for the benefit of the people. The great trouble with politics is that it is loaded down with unbusinesslike ideas. Traditions, prejudices, septic sentiment and the like. Politics contains too much flag-waving and cannon-shooting and not enough book-keeping and budget.

Even love is strictly business. Lovers would get along much better and families would be happier if they abandoned the unbusinesslike idea of trying to get something for nothing, and if they adopted the business principles of fair-play, good work and an honest wage.

Business is not sordid, selfish and crafty. In fact, the sharper, the side-stepper and the smarty are the most unbusinesslike of people. The genuine business man is honest. His morality is four square. His conscience is on the job. And what religion he has consists in something that makes him do right and not something that makes him construct fancy theories.

The business man is ideal. No man can go very far in business who has not vision. He takes into account the spiritual values, the importance of character and all the higher values.

The business man is occupied in service. His claim upon the world is based upon the fact that he does something to help his fellow-man. He is not a parasite.

Business is interesting. It calls into play all of the faculties. It enables a man to give some decent and intelligent answer to the conundrum, "Why was I born?" For if a man is engaged in feeding, clothing, transporting, informing or otherwise helping his fellow-man, at least he has some sort of excuse for living.

\$576.86 PROFIT

from one ACRE OF

Strawberries

By D. A. Armstrong

County Agricultural Agent, Palatka, Florida

WHILE driving around the county I stopped in to see how Mr. W. N. Durben came out with his strawberry crop last season. Mr. and Mrs. Durben, with their little girl, live about three miles from Palatka on the Penial road.

The reason why I was interested in the welfare of these people was that they resemble so many others in our county in that they came to Florida from a northern state and had no previous experience in farming. I also was interested because I am asked the question very frequently: What can I plant to make some money?

I had watched this place develop from a neglected place to one that was good to look at. The house was gone over and repairs made where needed, and instead of a barren stretch of sand and weeds a beautiful lawn of St. Augustine grass was made around the house.

Mr. Durben was a railroad man and came to Florida from Cambridge, Ohio, in June, 1922, and bought the small farm where they now live. The land on which Mr. Durben planted the strawberries was no better, and in fact not so good for strawberries as plenty of

land near by, which simply proves that the success of a crop is not altogether in the quality of the land, but in the common-sense methods applied in raising the crop.

Mr. Durben had planned to plant one acre to berries and bought about ten thousand plants of the Missionary variety and set them out in September, 1922. The ground was cleaned of all trash as well as could be done at the time and given an application of fertilizer, the plants were well cultivated and grew to be large plants which began bearing fine berries, and the first three boxes were picked and shown at the County Fair in Palatka the first week in December, and were readily sold there for 75 cents a quart. From this time on pickings were made every day and were sold at a good price until about the first of June.

MR. Durben proved to be a good bookkeeper as well as a good hand to raise berries, for when I asked him about how much he had made on his berries he produced the cost and income and the net proceeds neatly kept in a book for that purpose, and the (*turn to page 51*)

❧ *A fact-article on a subject of universal interest*

Keeping HOGS CLEAN Pays Dividends

By *Walter F. Roberts*

NOT always the man having most expensive hog equipment is making the most money. Proper care of equipment at hand, good feeding, and good management are much more essential than high priced buildings. Although a good hog house is an advantage, it is not always essential. We find some men with the best of equipment coming through the season with a litter average of two or three pigs per litter. Carelessness and mismanagement have taken all the profits.

It has been said and is perhaps true that six pigs per litter make double the profit of four pigs per litter. In fact it takes nearly four pigs per litter to pay the cost of production. It is quite necessary that the extra two or three pigs per

litter which are the margin of profit be saved.

In preparing this article I interviewed D. D. Davis, of Ithaca, who raised 60 good pigs from 8 sows with only \$30.00 worth of equipment. He had three individual A-shaped houses which he built himself, using largely material that was rotting in the fence corners. Mr. Davis does not believe in March farrowing for the average farmer. His sows farrowed in April, far enough apart so that the individual houses were each used for two litters. He also made two individual pens on the south side of an old straw stack with practically no expense. He says he is going to keep on building individual houses until he has ten of them.

Six other hog raisers were inter-



\$10 portable houses built by D. D. Davis of Ithaca

viewed who had had experience with the individual type of house. Five of them had the litters farrowed in the individual houses, although some expressed the opinion that a good colony house would be more suitable for farrowing. The average cost of these houses ranged from \$10.00 to \$33.00, depending upon the type of house and whether or not waste lumber was used. The highest priced houses were those purchased ready made.

The advantages reported for the individual houses were as follows:

1. Less trouble with scours and other pig diseases.
2. They can be moved to clean ground any time.
3. They are easier to clean and keep sanitary.
4. The sows are less irritable and nervous.
5. Two reported them warmer than the colony house.

The only disadvantage reported was the extra work in choring, especially during wet or stormy weather.

All seven farmers reported that they could be successful hog raisers with nothing but individual hog houses. All reported that they would build ten individual hog houses if they were equipping a place, having no equipment, for ten brood sows. The estimated cost given for the ten houses ranged from \$100.00 to \$350.00. In any event two extra pigs saved from each of the ten sows would about pay for the construction of all ten houses the first year.

T. W. Porter, of Wahoo, has used nothing but individual houses for six years. He has made several sizes, and says the following regarding his experience: "I first built sheds 8x10 feet, but found that these were larger and more expen-

sive than necessary for one sow and litter. They were built out of drop siding on a 2x4 framework, with a ventilator on top and a ventilator window in the end. I next tried a shed 6 feet wide by 8 feet long, but found this too small for a sow to turn around in. The last and most satisfactory shed was 7x7, made out of grooved barn roofing with bats on top of the grooves. This shed is just tall enough to stand up in and has a small ventilator on top, which I consider very essential. It also has a small window in the end, high enough so that the sow will not try to jump through."

Some put a floor in the houses and some prefer a dirt floor. It is well to build the house so a floor can be built in easily.

Aside from the advantages given, the necessity of changing the pigs to new, clean ground every year or two is making the individual houses more popular. Hog raisers who have raised pigs in the same lots for several years are finding that a change is necessary. The old lots are becoming contaminated with worm eggs and other filth diseases to such an extent that the entire hog profits are "wormed" away before the pigs reach a marketable age. The individual houses make it very easy to change lots every year if it seems advisable. There is still more advantage for the tenant who may have to move occasionally. The individual house can be hoisted on a wagon or truck and moved to the new farm.

If the sows farrow in cold weather the houses can be well protected by standing them in a row and banking with straw. In very severe weather some heat them by hanging a lantern in each one, but this is very seldom necessary.



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*Is the final test of the
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One of the difficult problems you have in the growing of any crop is to determine the kind and amount of fertilizers to use for the most profitable yield.

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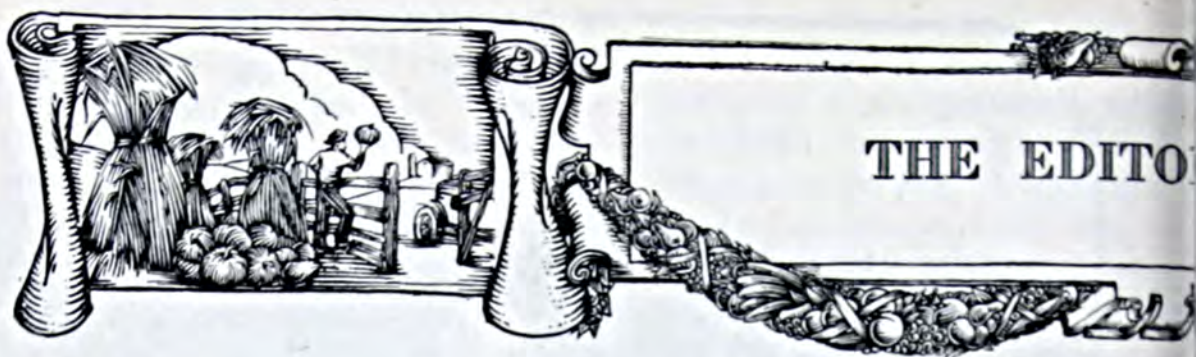
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A MAIL-ORDER KING'S IDEA The head of a famous mail-order house was in conference with one of his travelling "scouts"—an estimable gentleman whose job was to scour the agricultural districts in search of facts and news that might have a bearing on the future of the mail-order business. The scout was sad. He told his chief that the various cooperative movements around the country were growing so fast that some day there would be no mail-order houses at all—the farmers would get together and buy their needs cooperatively.

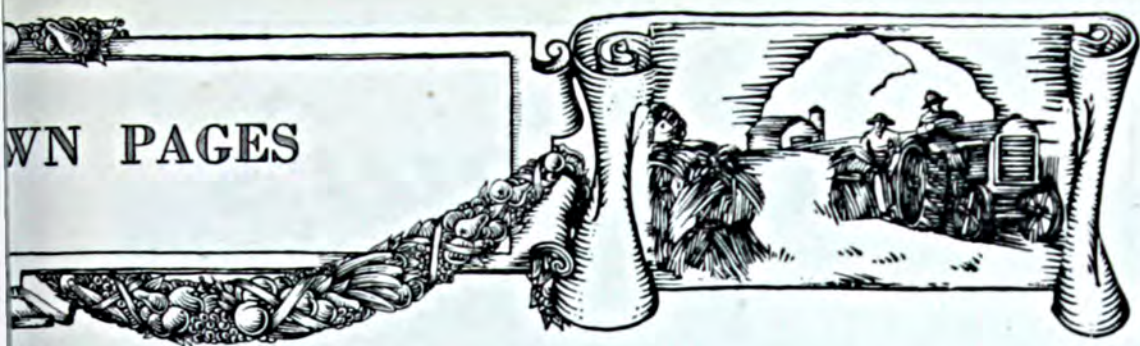
As proof of his vision he pointed out the great number of cooperative selling organizations now doing business, and also called attention to the fact that several of these coops were doing buying on a limited scale.

"Don't fret and stew and get yourself all thin and anæmic over *that*," admonished the m. o. king. "So long as farmers are farmers they will never consent to pay the manager of their cooperative a real, genuine salary. Consequently they will never get a real, genuine manager and ere long inefficient management will bust 'em up."

"But," the chief continued, "when you find a cooperative going into the highways and byways of big business, searching for real managerial talent, and baiting their hooks with a \$50,000 salary—you pop right in here with the news, because then we might have something to worry about. But, with \$3,000-per-annum managers handling \$5,000,000 businesses we have nothing to fear."

I am not sure that the m. o. king used these exact words, but the thought is there—and food for thought for you, too.

TWO MEN IN A COUNTY Complaint comes from farmers in many sections of the country to the effect that the County Agent and other scientific agricultural advisors are becoming so engrossed in the intricacies of the business end of farming that they are neglecting their real mission—the chemistry of the soil, the improvement of breeds, the



protection of crops from blights, etc. These farmers claim that every County Agent is slacking off on the most important end of his work, and is devoting three-quarters of his time to co-operative movements.

It may be that eventually we will have to have two men in each county—one man to advise on farming and the other to advise on marketing, finance, and management.

Seldom do you find a combination scientist and business man, just as it is hard to find an artist who can understand management and money. County Agents are trained at Agricultural Colleges—not in banks—and it is not reasonable to expect them to become expert in finance, large scale management and co-operative marketing.

MISSILES AND MIGNONETTES Elsewhere in this issue I hope to squeeze in a page which I will call "Missiles and Mignonettes,"—a page of brickbats and bouquets tossed at me by readers of **BETTER CROPS**.

Out of five hundred letters and postal cards received only five were "missiles" and the rest were sweet, gracious mignonettes. made it quite clear, I hope, that either were acceptable—and admit that the knocks received more attention from me than he boasts. Most of the knocks came from a certain college in a certain state—somebody must have spilled the asaphœtida jar in the "lab"—anyway, I appreciate the suggestions made.

Flattery does not assist much. It's nice and all that, but a real good, honest, constructive criticism will be of real aid—and it will come back to you in the form of a *better* **BETTER CROPS**. For, after all, **BETTER CROPS** is *your* paper. I do not know of a single other publication that devotes one hundred per cent. of its time to the affairs of the County Agent, the Soil Expert, the Agronomist, and the men in the various colleges and bureaus.

So come on. All together, now!
let's have the "missiles."

Yours to a cinder,

Jeff McIlernid

Armour's



BIG CROP *Fertilizers*

You would not waste one man's time by having two men drive a four-horse pulverizer, when one man can do it equally as well.

Why buy two tons of 1-8-1 when you can get the same amount of plant food in one ton of BIG CROP 2-16-2?

You save the freight on one ton.

You save the bags on one ton.

You save factory costs on one ton.

You save hauling home and handling in the field.

You save in a dozen ways.

Ask our Agent to show you the saving in dollars and cents. All our BIG CROP Brands carry a high percentage of plant food.

Factories centrally located in all fertilizer consuming territories

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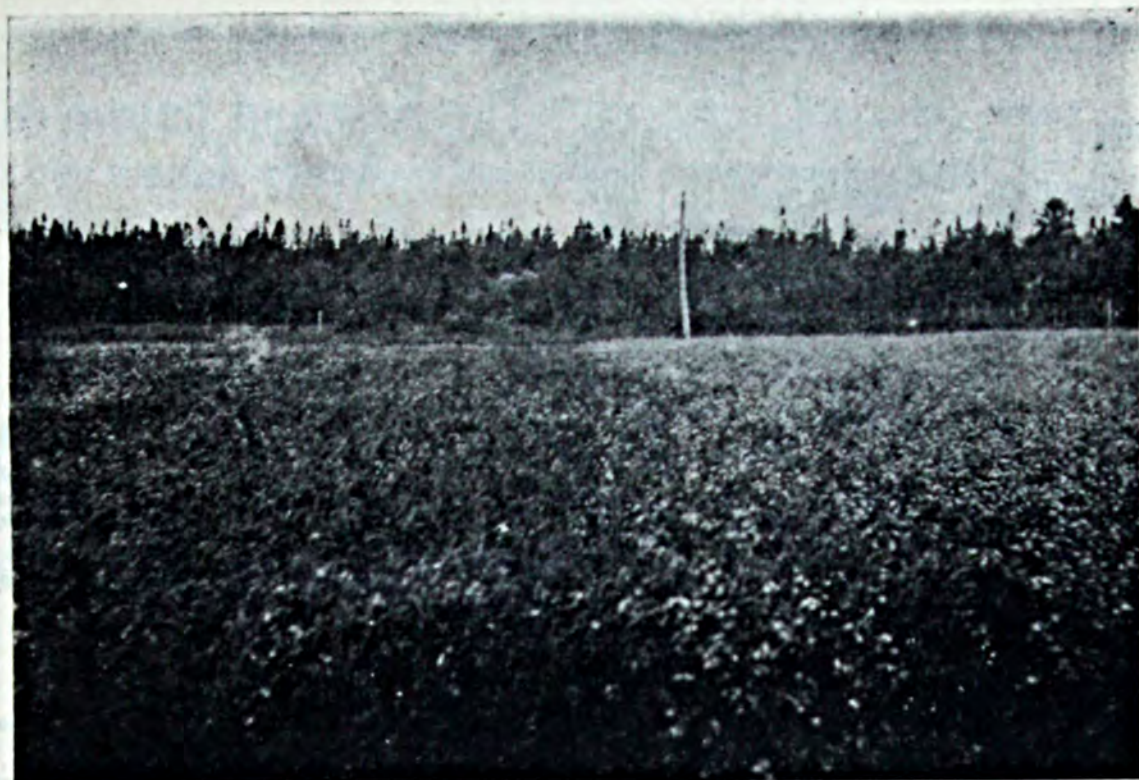
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Picture taken six weeks after applying Kainit to "cadlock" or wild radish. Left side of field was treated, right side untreated.

Kainit Used Successfully to Kill Wild Radish, or "Cadlock"

John M. Trueman, B. S. A.

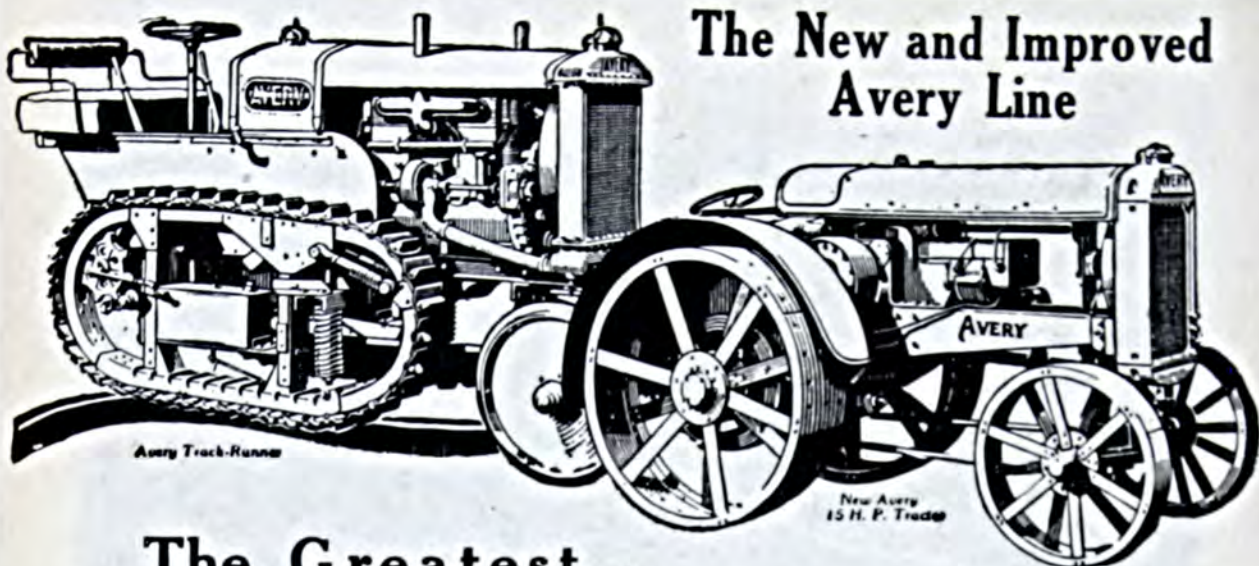
Nova Scotia Agricultural College, Farm Department, Truro, N. S., Canada

NUMEROUS reports from Great Britain have stated that powdered Kainit has been found useful in destroying wild radish, the weed known in Nova Scotia as Cadlock. During the past summer of 1923 the Nova Scotia Agricultural College tested this material in a small way.

A quantity of Kainit was ground to powder in a ball-mill and applied on a small area badly infested with cadlock. The Kainit was used at the rate of about 400 lbs. per acre and applied with a hand blower. The results were quite satisfactory as practically all the growing cadlock was killed. The application was made early in the morning while the leaves were wet with dew

and the air was still. All the cadlock plants receiving the dust were killed and only a small number developed later.

This preliminary test indicates strongly that cadlock may be greatly reduced and practically controlled by the use of Kainit. Some conflicting reports have been received from England but in the main their tests have been quite successful in destroying this serious weed. The Nova Scotia Agricultural College cannot make complete and definite statements based on the results of the one test made last summer. The indications are hopeful, however, and much more extensive trials will be made the summer of 1924.



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Harvests and threshes
the grain in one opera-
tion.



☛ Contributions are coming in on every mail to be entered in the \$50 Prize Contest, announced in October BETTER CROPS. See page 3 of this issue for details of the contest; then get your own contribution under way. You still have time, and you may win the Fifty Simoleons. ☛ Here is one of the good articles received—it will give you an idea that you may be able to follow or excel.

Jeff

What Fertilizers Have Done For My STATE

By F. E. Boyd, Agronomist

Alabama Extension Service

THE principal field crop in Alabama is cotton. During the 1923 season, 76.7 per cent. of all the fertilizers used were applied to this crop. When a bale of cotton (seed, lint and stalk) is produced on a given area of land, it removes from the soil 28 pounds of phosphoric acid, 75 pounds of nitrogen and 54 pounds of potash. Either the soil must give up these fertilizer elements or they must be supplied in commercial form. The average acre of land devoted to cotton in Alabama contains in the surface seven inches less than 1,000 pounds of phosphoric acid and even less nitrogen. The potash content of this land varies from about 2,500 pounds in the Coastal Plain region to approximately 25,000 pounds per acre seven inches in the heavy clay lands of east and north Alabama.

With the above analyses figures as a basis, farmers have been led to believe that, when buying fertilizer ingredients for cotton, it was not necessary to include any potash for

the clay lands of the northeast two-fifths of Alabama, and not much, if any, on lands with red subsoils throughout the Coastal Plain section of the state.

Since it is generally conceded by all farmers that phosphoric acid and nitrogen are essential for the normal development of the cotton plant, and that potash, being present in such abundant quantities in most soils, is not so essential and can be easily left out of the mixture, it shall be the purpose of the remainder of this discussion to show what potassic fertilizers have done and are capable of doing for the farmers of Alabama.

The Alabama Experiment Station, in cooperation with 143 "dirt" farmers representing every soil division in the state, conducted from 1911 to 1922 more than 200 regular cotton fertilizer tests. These tests covered a period of 12 years and included years before and after the appearance of the boll-weevil,

Where Can Genuine German Potash Be Secured?

HERE IS A LIST OF THE
DISTRIBUTORS OF GENUINE
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Capital Fertilizer Co.	Montgomery, Ala.
Arkansas Fertilizer Co.	Little Rock, Ark.
Meyer, Wilson & Co.	454 California Street, San Francisco, Cal.
Berkshire Fertilizer Co.	Bridgeport, Conn.
Olds & Whipple, Inc.	Hartford, Conn.
Rogers & Hubbard Co.	Middletown, Conn.
Wilson & Toomer Fertilizer Co.	Jacksonville, Fla.
Gulf Fertilizer Co.	Tampa, Fla.
A. D. Adair & McCarthy Bros.	Atlanta, Ga.
Empire State Chemical Co.	Athens, Ga.
Southern States Phosphate & Fertilizer Co.	Augusta, Ga.
Pelham Phosphate Co.	Pelham, Ga.
Mutual Fertilizer Co.	Savannah, Ga.
Read Phosphate Co.	Savannah, Ga.
Reliance Fertilizer Co.	Savannah, Ga.
Savannah Guano Company	Savannah, Ga.
Southern Fertilizer & Chemical Co.	Savannah, Ga.
Georgia Fertilizer & Oil Co.	Valdosta, Ga.
Armour Fertilizer Works	209 W. Jackson Blvd., Chicago, Ill.
Darling & Company	Chicago, Ill.
Swift & Co.	Union Stock Yards, Chicago, Ill.
Rauh & Sons Fertilizer Co.	Indianapolis, Ind.
Calumet Fertilizer Co.	New Albany, Ind.
Federal Chemical Co.	Louisville, Ky.
Baugh & Sons Co.	Baltimore, Md.
Griffith & Boyd	Baltimore, Md.
Miller Fertilizer Co.	Baltimore, Md.
Ober & Sons Co.	Baltimore, Md.
Piedmont Mt. Airy Guano Co.	Baltimore, Md.
Tilghman Co., Inc., W. B.	Salisbury, Md.
Meridian Fertilizer Factory	Meridian, Miss.
Tupelo Fertilizer Factory	Tupelo, Miss.
The American Agricultural Chemical Co.	2 Rector Street, New York, N. Y.
International Agricultural Corporation	61 Broadway, New York, N. Y.
Caraleigh Phosphate & Fertilizer Co.	Raleigh, N. C.
Acme Manufacturing Co.	Wilmington, N. C.
Smith Agricultural Chemical Co.	Columbus, Ohio
Wuichet Fertilizer Company	Dayton, Ohio
Thomas & Sons Co., I. P.	Philadelphia, Pa.
Tunnel & Co., F. W.	Philadelphia, Pa.
York Chemical Works	York, Pa.
Etiwan Fertilizer Co.	Charleston, S. C.
Maybank Fertilizer Co.	Charleston, S. C.
Planters Fertilizer & Phosphate Co.	Charleston, S. C.
F. S. Royster Guano Co.	Norfolk, Va.
Priddy & Company, Inc.	Norfolk, Va.
Robertson Chemical Corp.	Norfolk, Va.
Virginia-Carolina Chemical Co.	Richmond, Va.

THE POTASH IMPORTING CORPORATION
OF AMERICA

81 Fulton Street

New York

with high and low rainfall and other conditions that might be expected during any 12-year period.

Based on these tests, the Alabama Station recommends for cotton a minimum application of 200 pounds acid phosphate, 100 pounds nitrate of soda and 100 to 200 pounds of kainit, or its equivalent, per acre. At this rate per acre, and at the present cash price of fertilizer materials, the total cost of fertilizers for 20 acres of cotton is \$95.00 or \$108.00, depending on the amount of potash used. Kainit is valued at \$13.00 per ton and seed cotton at 9 cents per pound.

On the gray lands with yellow subsoils of southeast Alabama, one and two tons of kainit on 20 acres increased the yield of seed cotton 1,460 and 3,060 pounds, valued at \$131.40 and \$275.40, respectively. Compare these values with the total cost of all fertilizers for 20 acres. On Coastal Plain soils with red subsoils, one ton of kainit increased the yield of seed cotton 1,280 pounds, worth \$115.00, which is more than enough to pay for all fertilizers applied to 20 acres. Additional kainit did not produce profitable increase.

The Black Belt or lime lands of middle Alabama show a response of 1,120 pounds additional seed cotton for one ton of kainit and 1,640 pounds for two tons of kainit. At 9 cents per pound the above increases more than pay for all acid phosphate, nitrate of soda and kainit applied to 20 acres.

There are two divisions of soil in Alabama (Piedmont and Appalachian Plateaus) on which potash does not increase the yield sufficiently to pay for all fertilizers applied, but on these divisions the return per dollar invested in potash is \$2.91 and \$5.68, respectively, for an applica-

tion of one ton of kainit to 20 acres. Extra kainit was not profitable.

In north Alabama throughout the Limestone Valley region, there are isolated areas of gray and yellow chert-free lands with yellow subsoils on which potash gives largest returns in the state. One ton of kainit increased the yield 2,240 pounds seed cotton and two tons kainit, 3,200 pounds seed cotton per 20 acres. These yields are worth \$219.60 and \$288.00, respectively. The return per dollar invested is \$16.09 and \$11.08, respectively. The heavy red clay lands found in the Limestone Valley region of north Alabama, according to the farmers of that section, do not need commercial potash, but the accurate tests show that one ton of kainit, costing \$13.00, increased the yield of seed cotton 1,300 pounds, worth \$117.00.

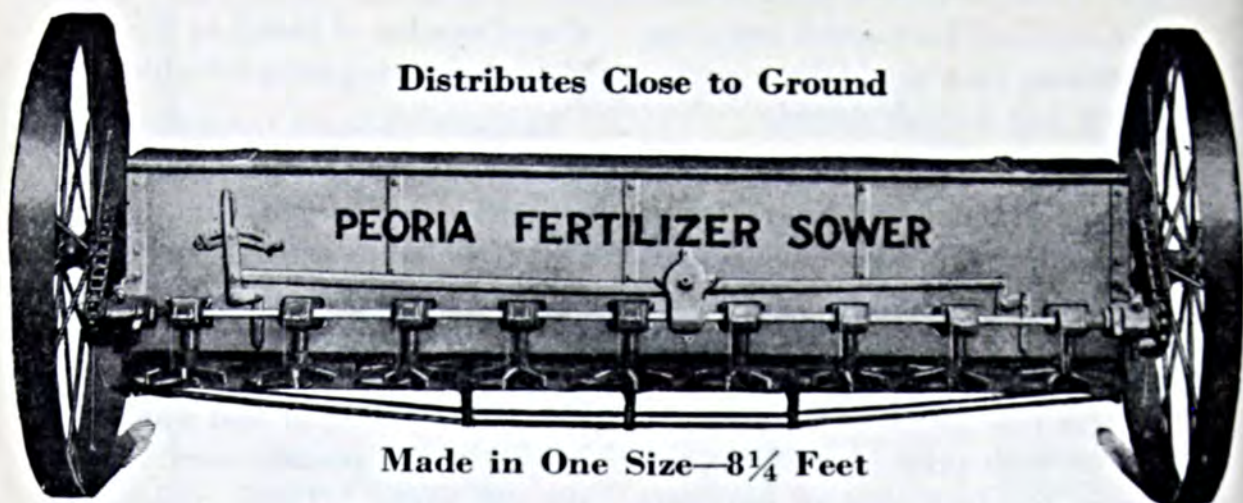
There are other results from various subdivisions in line with data given above. In studying the returns per dollar invested in the various fertilizer materials, it was found that the profit from potash was greater than from either phosphoric acid or nitrogen, with the exception of the Piedmont Plateau soils.

Potash is very essential, and the most profitable ingredient in fertilizer mixtures for cotton in Alabama. Apply 65 cents' worth of potash per acre and it will make enough additional cotton to pay for all the fertilizer materials added, except on the two soils noted above.

I think this magazine can fill a place that no other magazine is filling at this time.—*Glen Briggs, Asso. Agronomist Agricultural and Mechanical College, Stillwater, Okla.*

I have had occasion to read several articles in this magazine and find it very helpful.—*Gordon G. Brown, Horticulturist, Agricultural College Experiment Station, Hood River, Oregon.*

Distributes Close to Ground



Made in One Size—8¼ Feet

The Greater Harvest Getter FERTILIZER SOWER

WILL successfully distribute Lime and Fertilizer 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.



The Color of a Fertilizer

THERE are some farmers who seem to think their nose and eye are equal to an entire chemical laboratory. They judge fertilizers by their looks or smell and often make some ludicrous mistakes. The characteristic smell of ammonia is seldom detected around first class fertilizers, because it would indicate that the fertilizer was losing its most costly part. We have heard farmers express satisfaction at the awful smell of sulphureted hydrogen, (much like rotten eggs), around manure piles, although it is no indication whatever of the fertilizing value.

A farmer may also criticize the appearance of a fertilizer, having become used to a certain color. For example, acid phosphate is usually light brown or light gray in color, and yet perfectly good examples may be found dark brown or almost black. It may be hard for a farmer to realize that such strange looking goods are equal to what he has formerly seen, yet analysis would show that they contain just as much available phosphoric acid—and analysis is the only test. It is easy to see how a sample of fine ground bone might be stained by exposure or by contact with some other chemical so as to be quite unlike the ordinary bone, yet it would lose nothing in fertilizing value. As another instance, sulphate of am-

monia, in a pure condition, should be light gray or white, yet as bought by farmers it sometimes varies in color, comprising shades of blue, green and brown.

The most interesting case is found in Kainit, which many farmers use for supplying potash. As they usually buy it, the color varies from white through light gray or yellow to a light red. Probably most farmers have come to associate a yellowish-red with Kainit. Yet it is often found a deep red and when thus seen many farmers will become suspicious and fear that they are not only being cheated with regard to the potash but that the "red stuff" may "poison" their land. All these fears are groundless, for the color of the Kainit has absolutely nothing to do with its fertilizing value. Whenever the guarantee is found on the bag or tag the buyer may rest assured that Kainit, no matter what the color may be, contains at least 12.4 per cent. of potash.

But why should the color vary? All the German potash salts are dug out of mines. The Kainit in the mines varies in color and these colors frequently change, according to the position of the substance in the mine. It must be remembered that what we call Kainit is a mixture of different salts, containing soluble potash. Some of these substances vary so in color (*turn to page 54*)



Manufacturers of
High Analysis Fertilizers

Importers of
Potash Salts

Dealers in
**High-Grade Fertilizer
Chemicals**

To Insure Results Use Only
**High Analysis Mixed
Fertilizers**

Manufactured by
I. P. THOMAS & SON CO.
Philadelphia, Pa.



Dear Jeff:

I received your first issue of **BETTER CROPS** and enjoyed reading it. Will appreciate receiving it through the year. I do want to call your attention to a statement in the magazine to the effect that farmers were going to organize because they had been getting the worst of it. It has been my experience as a farmer and an extension worker that we cannot expect this generation of farmers to accomplish much through organization. Each individual farmer must work out his own salvation. And only those will win out in these troublous times who watch such things as conserving the fertility of the soil, higher yielding varieties of crops, and improved livestock; also by putting more time and energy into those farm operations that pay today.

Sincerely yours,

J. G. WELLS, Jr., *Division of Extension Work, Dairy Husbandry, Michigan Agricultural College, East Lansing, Mich.*

Hancock, Maine
Sept. 18, 1923

To Jeff:

In answer to your direct question "Why people leave farms," will ask a few. Why are there so few real Statesmen in our halls of Congress? Why import a man from the West to supervise the schools of the Pine Tree State? Why remove all the responsibility of the parents from our schools and school property? Why use such reading books in the rural schools, those that contain only senseless fiction? Why change all these things from what they were forty to sixty years ago?

We have but one city in our county and the rest rural towns. Could write reasons why farmers are leaving the country, but no one wants to know it. The rising generation don't care. Those in authority don't know, and much more don't want to know, as long as their salaries and positions are increased and kept intact, so it is a waste of time to try to correct it.

Many of the deductions drawn do not have a bearing in this county, but the country over do, and hundreds of others, and for one the lack of contentment of the growing child with his surroundings, and not feeling he is a part and has responsibility of this busy world, getting the notion that his every wish is to be granted and nothing in his education to the contrary, leads to the conclusion that the training and education of today of the child from six to sixteen is a deplorable failure. The school system in the rural towns is 90 per cent. responsible for this failure.

Have dropped you a number of lines.

Respectfully yours,
C. B. Young.

Missiles and Mignonettes

Think it's a mighty good magazine. What is the subscription price?—A. E. McClymonds, *Experiment Station, Aberdeen, Idaho.*

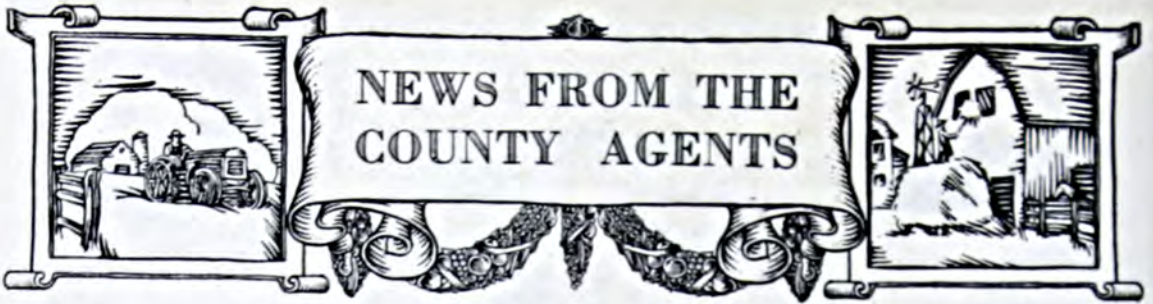
I like the plan of your book.—T. C. Craven, *County Agent, Martinsville, Ind.*

Go to it. You are doing well.—L. D. Clintock, *County Agent, Knowlton, Quebec.*

Keep up your initial gait.—M. Folsom, *204 St. James Bldg., Jacksonville, Fla.*

Ole Bull was never accused of being an Englishman as in your September article.—A. O. Hollstrum, *Tillamook, Ore.*

(Editor's note: When in Rome do as the Romans do. Ole Bull was a Norwegian. How about you, Hollstrum?)



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

The first Calf Club show ever held in South Carolina will take place November 20-21, at Lancaster, S. C., under the direction of County Agent W. F. Howell. At least 20 head of pure-bred Jersey heifers belonging to club members will be shown.—*W. F. Howell, County Agent, Lancaster, S. C.*

Wheat and apple men are greatly discouraged over present market conditions. I don't know how long they can keep up the unequal battle. A number of farmers attended the meeting in Spokane to hear Eugene Meyers. His whole-hearted endorsement of cooperative marketing was encouraging.—*A. R. Chase, County Agent, Grant, Washington.*

Farmers prepared to live-at-home. Ample supply of corn, meat, hay, grain. Good crop of pecans. BETTER CROPS great little magazine.—*Wm. F. Scarborough, Independence County, Arkansas.*

10,000 egg hatchery just installed and in operation. Large size creamery being constructed. Nine car loads of grade and high grade Jersey cows recently shipped into the county and more coming. Large veneer and basket factory recently installed and in operation. Special efforts being put forth by bankers and farmers for the growing of tobacco. Rigid campaign being put on for the growing of pineapple pears. Best Tourist Camping ground along Dixie Highway at Blue and Grey Park—equipped with free water and lights.—*C. T. Owens, Ben Hill County, Fitzgerald, Ga.*

A year ago Foster County was tested on the area plan for tuberculosis in cattle. The work of completing the second test is practically done and by the time your magazine goes to press Foster County hopes to be below the half of one per cent. required by the Department of Ag-

riculture for a territory to be designated as tuberculin free.—*Chas. C. Lake, Foster County, Agricultural Agent, Carrington, North Dakota.*

We're doing sweet potato certification work with three of our sweet potato growers, who have taken 35 acres. Each of them used seed produced last year from vine cuttings, dipped their seed in a mercuric chloride solution, put the seed in new beds, set the slips on fields that have not been in potatoes in at least five years. Recently we disinfected their storage house with bluestone solution 5-40. We gave field inspection 10-12 and found 100 per cent disease free potatoes.—*Chas. L. Doughty, County Agent, Hamilton, Tennessee.*

Our boys' and girls' club members are again "cleaning up" at the Fairs. They brought home \$196.50 from the State Fair and must have taken almost as much at the County Fair. Our old breeders are finding pig and calf club boys stiff competition.—*Walter F. Roberts, Saunders, Nebraska.*

Farmers who sowed Grimm alfalfa this spring are well pleased with it, since practically all the red clover and sweet clover in the county failed to "catch." Considerable acreage of Grimm will be sown next spring as result.—*L. M. Busche, Adams, Indiana.* I liked BETTER CROPS.

Twenty farmers and business men from Augusta and Richmond counties have just returned from a trip to Turner County (Ga.), where we went to study the farming system practiced that is causing nationwide attention. "The Cow, The Hog and The Hen" is being pushed there and hundreds of counties are going to follow. *Bright McConnell, County Agent, Richmond, Georgia.*



Co-operation With County Agents

The Agricultural Service Bureau of the American Agricultural Chemical Company was organized before the first County Agent made his appearance in the United States. The primary object of the Bureau has always been research. Through the years, valuable data have been gathered regarding soil and crop conditions in various parts of the country, and this information has been made freely available to all.

The coming of the County Agent meant the gaining of a

valuable ally in our research work. We met him on common ground, for we were both seeking the same thing—facts about the soil and crop needs of his county.

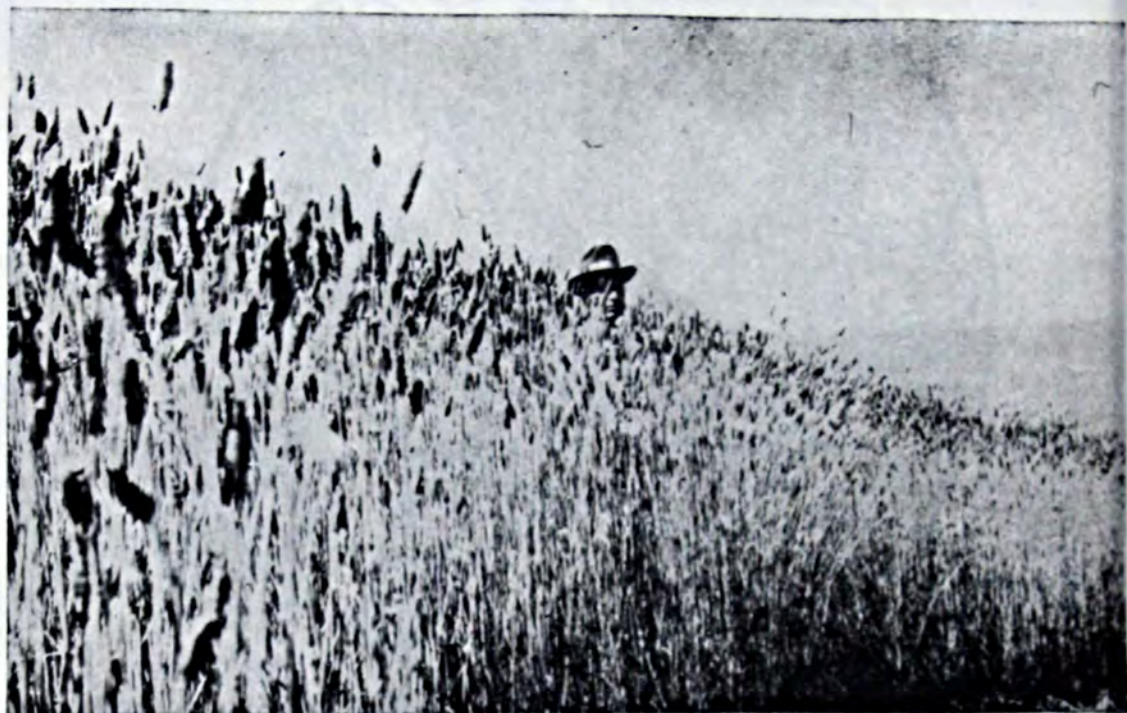
In five Northern and Middle-West States alone, our Agricultural Service Bureau has worked with no less than 154 Counties Agents in conducting the co-operative fertilizer tests. The valuable information gained from these and other tests is yours for the asking. Consult our Agricultural Service Bureau regarding your soil problems.

**THE AMERICAN AGRICULTURAL
CHEMICAL COMPANY**

Branches in Principal Cities

A·A·C
"DOUBLE A" QUALITY
FERTILIZERS

POTASH - THE ESSENTIAL PLANT FOOD



There is no excuse for low-potash-unit fertilizers

POTASH is again the lowest priced fertilizer ingredient. Genuine German Potash, direct from the mines, is plentiful.

There is now no excuse for low-potash-unit fertilizers. The soil on many farms is hungry for its quota of K_2O —and until the proper amount of this essential plant-food is maintained these soils cannot raise the bountiful crops of which they are capable.

Be certain that the fertilizer brought into your county contains a high percentage of Genuine German Potash! **POTASH PAYS!**



**POTASH IMPORTING
CORPORATION OF AMERICA**

**81 FULTON STREET
NEW YORK CITY**

GERMAN POTASH IS BEST FOR COTTON

\$576.86 Profit from One Acre of Strawberries

(from page 32)

following is what he told me from his book:

The total cost to place the crop on the market in round figures was \$100. During the season 2,500 quarts were picked and sold at a net profit of \$576.86. This neat sum was made on one acre of Putnam County land by an inexperienced farmer who applied common sense along with his labor, which leads us to conclude that it is not always the fault of the land or climate that failures are reported, but in a large majority of cases it is the fault of the farmer.

Besides making a decided success of raising berries, these energetic people raised and sold other garden stuff to the amount of \$175.00. These figures do not include what was used for home consumption, which, as Mrs. Durben related, was no small amount as they had a good cow and strawberries and cream was a common dish on their table. They have a good flock of hens that help in the living, a peach orchard and plenty of grape vines will soon be contributing to the table as well as the cash income.

We hear so much about what can be done in Florida that I have come to the conclusion if we tell more about what has already been accomplished it will be just as good advertising and we will have the figures to back up our statements.

What has been done can be done again by others and the opportunity is with us for more farmers to plant a patch of berries and cooperate in the marketing. If we wish to make money on the farm we must be awake to the opportunities that are ours for the taking.

The Color of a Fertilizer

(from page 45)

that what is mined one day will be quite different from what is dug out the next day. Yet in spite of this difference of color, the quality will be the same—that is, there will always be at least 12.4 per cent. of potash in every lot. Thus we see that the color has nothing to do with the value of Kainit as a fertilizer, since only the amount of potash is considered in selecting the salts of which it is composed. As for "poisoning the soil," the idea is absurd. The coloring matter is mostly iron and forms less than half of one per cent. of the total quantity. In like manner the higher color of "Potash Manure Salt" has nothing to do with its quality as a fertilizer—not as much as the color of a man's shirt has to with his ability to do a day's work.

The main ore of the German potash deposits is carnallite, from which the concentrated Potash Salt-Muriate of Potash is made. Carnallite may be white, greenish, pink, gray or nearly black; the ores from which Sulfate of Potash and Sulfate of Potash Magnesia are made are of equally varied colors.

These high-grade concentrated salts are usually of a light buff shade, but occasionally a shipment of Sulfate may be of a darker buff shade, or a shipment of Muriate may be white or light gray.

These differences are due to minute quantities of the ingredients of the differently colored ores from which the high-grade salts are manufactured. They have no influence on the quantity or fertilizing value of the potash, all of which is soluble in water and immediately available to plants.

If the guarantee of a certain per cent. of potash is on the bag, that is all that is necessary to show the value of its contents.

The color has no influence on the fertilizing value of the goods in the bag.

DARLING'S

ANIMAL BASE

FERTILIZERS

Complete line of

Mixed Goods

Acid Phosphate

Bone Goods

*Better Acid Phosphate
Made by Improved Method*

DARLING & COMPANY

**EAST ST. LOUIS
ILLINOIS**

**CHICAGO
ILLINOIS**

Missiles and Mignonettes

I was very much interested in your little magazine, BETTER CROPS, especially the first article.—Howard A. Cowden, *Secretary, Missouri Farmers' Assn., Columbia, Mo.*

The little magazine is sure full of pep, ideas and up-to-the-minute information.—Ralph Wyand, *Hagerstown, Md.*

Let me say to you it's a humdinger. Your style of telling the people what's what touches the spot. This country is sadly in need of a publication which will tell the facts without asking the permission of every he-long-hair from Occident to the Orient.—W. S. Killingsworth, *State Department of Agriculture, Sacramento, Calif.*

I can truthfully say that the time was well spent reading a few of the articles that interested me most.—Victor E. Trigg, *Wayne Co. Farm Bureau, Waynesboro, Miss.*

I enjoyed BETTER CROPS very much and I think it will prove valuable to County Agents and Extension Workers.—S. R. Doughty, *County Agent, Gadsden, Ala.*

I cannot refrain from dropping you a line of recommendation. I believe your magazine furnishes more straight-from-the-shoulder information and valuable information done up in a small package than any other publication I have ever received.—Clair Taylor, *County Agent, Fremont, Mich.*

Wish to congratulate you on your efforts. I enjoyed BETTER CROPS immensely.—Harry A. Glick, *Assistant Entomologist, Arizona Com. of Agriculture, Phoenix, Ariz.*

I received your magazine and feel that it has a place in the agricultural field and, personally, will do anything I can to promote this work.—W. C. Sterritt, *Clearfield County Farm Bureau, Clearfield, Pa.*

Cut out the Ole Bull, and substitute higher analysis fertilizer.—E. K. Howard, *Czecho-Slovakia.*

Not so much about Jeff McDermid. More facts.—J. Thomas, *Waukesha, Wis.*

Go ahead. I will probably quote you.—Egbert F. Bush, *Stockton, N. J.*

You've got the right idea. Keep it up.—George J. Baker, *State Agent in Live Stock, Agricultural College, Fargo, N. D.*

There is a real need for some publication which will condense statistical material for busy persons in the form of charts and diagrams.—H. D. Phillips, *Delmar, N. Y.*

Don't forget to send October issue. Your magazine is mighty good.—A. R. Chase, *County Agent, Ephrata, Wash.*

The quality of your articles is excellent, and the condensed form a great time saver.—Howard Selby, *Springfield, Mass.*

Jeffisms and editorials fine. Whoop'er up, and let her buck some more. Cut out the fables and stuff like "Fatigue," by Dr. Frank Crane.—C. B. Heinemeyer, *Beulah, N. D.*

Give facts in a concise form without too much effort at popularizing them.—H. W. Anderson, *University of Illinois, Agricultural Experiment Station, Urbana, Ill.*

Have longer articles. Continue the pictures.—R. N. Miller, *Pullman, Wash.*

Put soft pedal on fertilizer advertising.—W. W. Owen, *Logan, Utah.*

No need for the expense of the magazine which the farmer eventually pays.—R. E. Blackburn, *Windon, Minn.*

It was good from kiver to kiver.—Wm. C. Calvert, *Agent, Sweetwater, Texas.*

Glad you don't preach.—V. S. Crippen, *County Agent, Hutchinson, Kansas.*

Always state facts and BETTER CROPS will win the respect and support of its readers.—W. S. Killingsworth, *Sacramento, Calif.*



What we are telling the

OVER three million farm families are being reached thru our extensive farm paper campaign, inaugurated to urge farmers to demand high potash-content fertilizers. Figuring three readers to a paper, nearly ten million people will see these messages and they are going to ask *you*, Mr. County Agent, to confirm what we say in these advertisements.

We believe that farmers can more readily absorb our message if it is presented in the form of an analogy. Notice the advertisements pictured above, which are to appear this fall and winter in farm papers illustrated below.

THE POTASH IMPORTING

*Importers of Genuine
German Potash of the
German Kali Syndicate*





farmer about POTASH

No farmer will willingly starve his cows or horses, nor would he starve his soil if he could **see** the amount of plant food in it. The purpose of these messages is to show the farmers of the United States how foolish it is to refuse potash to their potash-hungry soils. Help us in our efforts.

You know that potash is one of the essential plant foods. You know that every crop removes some potash from the soil. You know that potash, to be helpful, must be **available**. The best way to add available potash to the soils of this country is to use Genuine German Potash, either in the raw state, or in the form of mixed fertilizers.

CORPORATION OF AMERICA

81 Fulton Street
New York City
New York



*Mixed Fertilizers**Fertilizer Materials*

A. P.A. P.

Muriate of Potash

7 8 3

Sulphate of Potash

5 8 7

5 5 5

Acid Phosphate 16% and 18%

4 10 4

Nitrate of Soda

3 10 4

2 12 2

Sulphate of Ammonia

2 8 10

Dried Ground Blood

2 10 4

2 8 5

Ground Animal Tankage

0 12 4

Pure Ground Bone

We are prepared to furnish Potash Salts in any
quantity

YORK CHEMICAL WORKS
YORK, PA.

The CURB MARKET at Athens, Georgia

(from page 25)

should be permitted to sell at this market free from assessments, taxes and rental charges. A bulletin board was obtained and used for posting the prices, which were to act as a guide to both sellers and buyers. During the first few times this price list was made up by getting the average prices at which such articles as might be offered were selling for and posting prices slightly below the retail prices at the stores. Later the market, through the operation of the supply and demand readily established and changed its own prices. This scheme was found to be of great help, as it tended to stabilize prices for each market day and to encourage active trading.

Also some work was done in instructing the producers in the preparation of their products for this market. This was accomplished by the county agent giving personal instructions and in sending out letters explaining the needs along this line; and the home demonstration agent pushed this end vigorously through the rural women's clubs.

THE daily paper gave space liberally to the enterprise, by carrying each day some story or explanatory write-up of the people who came to the market and the things that were being done there. Several of the progressive merchants of the town used space in their advertisements to increase the interest in this market; others sent out posters and cards speaking well of this proposition. These in turn caused people both in the city and in the surrounding rural districts to talk about it, which of course was effective advertising.

While the business people and city officials were discussing the establishment of this market, it seemed advisable to make a survey of the farmers and see just what they thought about it. The county agent and the home demonstration agent visited the farmers and farm women to find out what they thought of the idea and also to make a survey of what was in prospect in the nature of fruits, vegetables, eggs, poultry, butter, etc., available for selling at the curb market when it opened. This survey readily indicated that there would be sufficient products to start the market, but to the surprise of the county agent, it indicated that the farmers generally were not enthusiastic for it. Some of them stated that they did not believe it would work, and with the usual reticence of farmers gave no reason for this conclusion, others stated that they had been selling from door to door and were satisfied with that method, and still others stated that it was a scheme to break down the prices of farm products. It was also rumored that there would be a heavy charge made for the privilege of selling. These objections were met by stating and restating the facts about the organization and the giving of much publicity as possible to the advantage that would result from its operation. The home demonstration agent met with better support from the rural women, who were keenly interested in finding a means of making some money during the rather depressing times. It might be stated here that the farmers generally were hard up for ready cash to continue their farming operations, as the cotton crop had



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.

Richmond, Va.

Charlotte, N. C.

Columbia, S. C.

Atlanta, Ga.

Montgomery, Ala.

Baltimore, Md.

Toledo, Ohio

ROYSTER

Field Tested Fertilizers

fallen from about 12,000 bales in 1919 to about 3,000 bales in 1922. In the past farmers were in the habit of borrowing from banks and supply merchants during bad crop years to get started again, but the hazard created in cotton production by the boll-weevil made it difficult to borrow money during 1923. This fact was a strong reason for attempting the curb market, as it was reasoned that the crops during this season would be very poor regardless of the season, if farmers could not obtain from time to time the needed cash to meet the peak loads of production.

A SURVEY was also made by the county agent to see just how the selling of produce from house to house supplied the wants of the housewives. This was not thoroughly done, but accomplished by asking people and streets at random, reasoning that possibly this would give sufficient data for drawing tentative conclusions. It was found that on certain streets, especially those which were direct routes from the country to the business section of the town, the offering of fruits, vegetables, poultry, etc., exceeded greatly the demands on those streets. A case was discovered where one housewife had 20 farmers to stop at her door in one week. On another street, which was not a direct route from the country to the center of the town, only one farmer offered produce during an entire week. This seemed to be a general situation. Furthermore, the prices at which the different things were offered varied as much as 100% during a few days and sometimes greatly on the same day—this variation existing as between different sellers and in different sections of the town. It was also learned that some people could not patronize a curb market

as they were in the habit of ordering by phone and having their products delivered to the door; others stated that they did not have available ways of attending the market. It seemed from this survey that the business of retailers and that of regular peddlers would be continued, but that there was need of a central place where some standardization would be given to the selling of this class of products.

It was the general opinion that the local supply exceeded the local consumption of fruits, vegetables, poultry and dairy products, but a casual investigation of the amounts of these things shipped in to the town showed that annually great sums were sent away for purchasing of such products as could be grown in the surrounding country, that is fruits and vegetables in season, poultry and dairy products and allied products. It seemed that the proper channels for passing these things from the local producers to the local consumers had not been developed. It later proved that not only was this true but that with most of these products, sufficient quantities were not being produced and could not be produced this season as sufficient preparations for their production had not been made. From the opening of the market up to the present time, that is, the latter part of September, there never has been sufficient eggs to meet the local demand and at this writing approximately 4,000 dozens of eggs are being shipped in each week. There likewise has not been a continuous supply of poultry, dairy products and most vegetables.

To my mind the most important thing accomplished has not been the \$75,000 turned back from its attempts to go to other sections, although in this time of readjustment that feat alone has meant the doubling and trebling of the actual amount in the beneficial effects it had on this year's crops, but the most important accomplishment is that it has illustrated to our people the possibilities that lie dormant right here at home.

WHAT IS COOPERATION?

(from page 13)

of the Minnesota farms market some or all of their products through cooperative associations. South Dakota is next with 27.1 per cent. California, which is first in value, is fifth in the percentage of participation with 21.9 per cent of the total number of farms participating.

Types of Organizations

In order that you may have at the beginning of this series of articles a picture of the cooperative system, I wish to outline most briefly the three types of cooperative enterprises most frequently met with.

1. The independent farmers' marketing unit, such as the individual farmers' elevator at the local shipping station, the fruit shipping association, which confines its membership to a single locality or practically so, and the individual unit of farmers' nut warehouse. Numerically, this is by far the most important group of cooperatives.

2. The federated organization, which is made up of individual units confined largely to single localities like those outlined in 1, but unified into a central or federated agency which either directly or through an employed marketing agency disposes of the products of the local association's members.

3. The large central association which executes directly with individual growers a marketing contract covering a period of from one to five years, through the operation of which the farmers' products, when harvested and delivered for marketing, come under the absolute control and direction of the central body. This type of organization may or may not have local branches, but when they exist, they are

usually of a more informal character without authority to direct or control the marketing of products of their own members.

Of the federated organizations described under paragraph 2, the most outstanding example is the California Fruit Growers' Exchange, which handles roughly 70 per cent of the citrus fruits of California, reaching a value of about sixty millions in a single year. This is the type of federated cooperation that has had the longest test in America.

The type of organization described in paragraph 3 is of more recent origin and is best illustrated by the cotton and tobacco growers' associations and exchanges that have been organized during the past three years in Oklahoma, Texas, Georgia, the Carolinas, Kentucky and other States.*

Fundamentals of Cooperation

There are certain fundamentals that must be observed in all cooperative organizations if they are to be successful in the highest degree. First, they should center themselves either upon a single crop or upon a group of closely related crops.

In other words, organize a cotton association to handle cotton; a pecan association to handle pecans. Do not attempt to tie up with the special activities of a marketing association a confusion of products handled by different enterprises in the markets and requiring a totally different type of salesmanship and training for successful handling.

Live stock is distributed through a series of channels totally foreign to grains. Fruits and vegetables are handled by (turn to page 62)

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 larvæ 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.

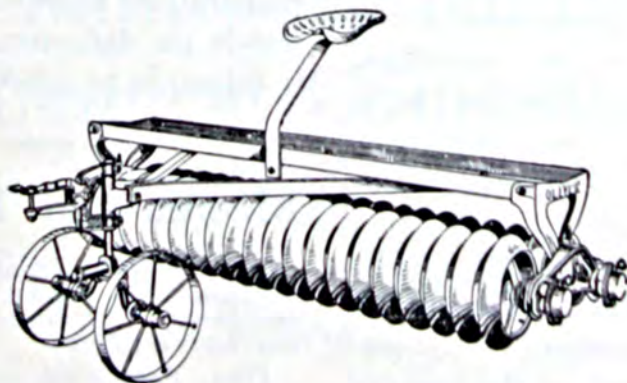
The result will be a seed bed that will be the greatest asset to the farm and to the farmer.

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

OLIVER CHILLED PLOW WORKS

Plowmakers for the World

South Bend, Indiana



(from page 60)

enterprises foreign to both of the foregoing, and similarly, nuts are distributed through a fourth set of channels of distribution. On the other hand, an organization intended primarily for marketing wheat can very well handle oats, corn, rye, and barley, and even other grains. An apple association can handle peaches and pears and berries and vegetables because they are sold through the same trade agencies in the same consuming centers.

The second fundamental principle is that the *local* unit should be completely, perfectly, and strongly organized and should be the foundation stone of the marketing structure to be raised above it. The reasons for emphasizing this point are that only in this way each individual grower can be brought into intimate participation in the many business activities that are involved in the distribution of their products. If the local association is not a genuinely functioning body, it is not long before the grower loses sight of the fact that he is a part of a cooperative enterprise. He can see little difference between a distant cooperative sales agency and a private sales agency operated for individual profit. On the other hand, if his local organization handles an important part of the business and he is present at its frequent and regular meetings, or on its board of directors, he is soon educated to the extent and complexity of the marketing problem and forthwith becomes a more valuable member of the community. I do not wish by this to be misunderstood. Some successful organizations are conducted on the basis of a direct relationship between the individual grower and the distant central exchange with a relatively

weak connection with any local organization.

I would liken the benefits of cooperation on the basis of the federated agency, based on strong locals, and the centralized agency with direct connection with a distant selling agency, somewhat to the game of baseball. The local associations in the federated body are the individual members of the team.

In the type of organization described in 3 above, generally called the centralized type of organization, the growers are to some extent, at least, merely interested spectators. They are taking in the game, rooting, cheering, but not actually participating beyond the point of turning over the product. There are advantages and disadvantages in each of the different types of cooperation. Some situations and some crops may call for one and some for another.

The third fundamental in the conduct of a cooperative organization is that it shall not speculate in the growers' crops. By the same token, it should not be so constituted to tempt its operating officers and employees to create speculative conditions by unduly withholding supplies or by dumping them. The owner of the product may with propriety assume speculative risks in his own behalf, but his agent, the cooperative marketing enterprise, treads on dangerous ground when it attempts to speculate for him.

Missiles and Mignonettes

There is a distinct place for your paper. Continue the present convenient size and form.—*R. E. Karper, Experiment Station, Lubbock, Texas.*

Fine. Keep it up.—*H. H. Morehouse, Wilkes County Farm Bureau, Oakwoods, N. C.*

Good stuff. Keep it up.—*A. T. Erwin, Truck Crop Section, Ames, Iowa.*

The first issue sets a good standard.—*N. H. Ford, Hillsboro, Ohio.*

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Smith's Standard 2-12-2..	2	12	2
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Smith's Standard 0-14-4..	0	14	4
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MOST MEN HAVE MARKERS!

(from page 6)

actions all have a story for us if we will listen.

I know a chap that looks like John D. Rockefeller looked twenty years ago—before Jawn got so many wrinkles. This fellow has the same thin, tight lips and he has the same essentials of character that have made John D. famous—my friend got those lips by pursing them so tightly that the blood had to leave for self protection! He is—well, we will say he is tight with his money—at least he is no spendthrift. Thin lips to me always spell miserliness, that is, unless they are caused by actual anæmia or some physical deficiency.

The open-hearted man who laughs right out loud and enjoys life usually has full red lips and a mess of tiny little wrinkles around his eyes—and laughing makes him fat and gives him good digestion—ask your doctor.

Another man I know quite well is a very loud talker. He monopolizes the conversation—he believes in the art of self-boosterino. Hear him and see him once and you have his number—his loud talk and his egotism are markers as clearly defined as the 6 and the heart on the 'Six o' Hearts! No thinker was ever a loud talker. No gentleman ever finds it necessary to raise his voice to be heard.

AND deeds. Yes, deeds will tell you even more of character than will faces or words or clothing. A man may change his words, his tone or his clothing to suit his purpose, but his deeds spring from an inward source—they are a true signpost—the label that tells what is in the can.

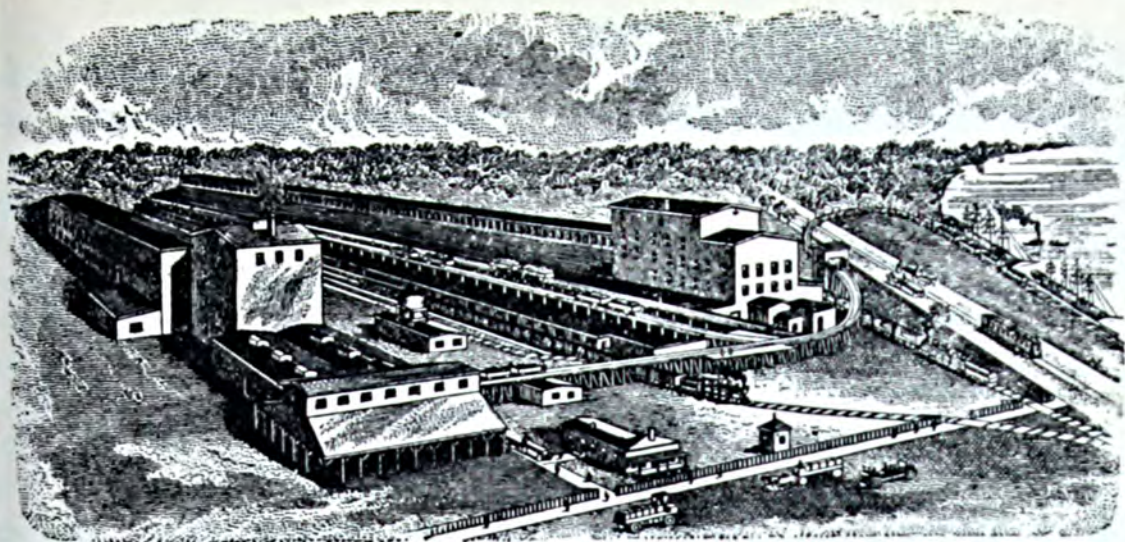
One worthy gentleman, coming up our front drive, presumably to sell me something, kicked our cat flat in the slats, as he passed up the path. That was *his* marker. I saw the deed and when he rang the bell I gave him the tra-la-loo—I don't care to even talk to a gazabo that'll kick a poor harmless cat that cannot defend itself and doesn't know what it's all about.

And these slick boys that stand out in front of the clothing stores in the large cities—the “draggers-in” they are called. I could tell one of them by the cut of his jib and the creases on the sides of his coat if I saw him in a group of stock brokers on the Exchange floor—in fact I could almost tell you what side of the street he works—his markers are so plain.

It is an interesting study—this study of men—interesting and profitable. All of us have to make our way in this world (from which none of us hope to escape with our lives) by contact with others. No two men ever meet on the same level—either he is a greater man than you, Ghunga Din, or *you* have it all over *him* like a roof. If by rapid observation we can learn to gauge the man with whom we have to do business we work faster than he does—he may have to go back home and look up our antecedents—unless they are in the wash—while we know how to wind him around our finger in the first round.

CHARACTER is power in a truer sense than knowledge is power. Cleverness without character, dexterity without goodness are meat without salt. A highwayman may be a crack horseman, and a pickpocket may be 'stordinarily skilful with his fingers, but who admires such feats when uncoupled with character?

Learn to look for the markers, brother, they're there every time.



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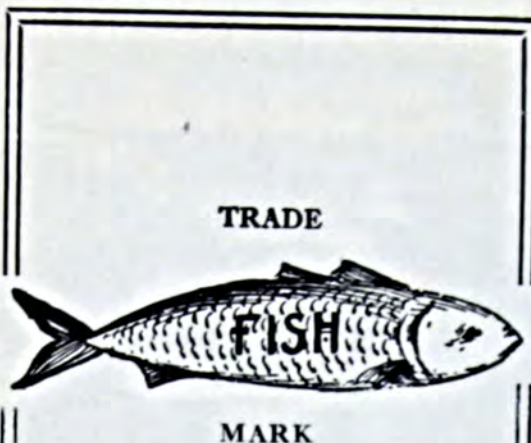
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(from page 21)

possible, and very likely probable, that the larger, if not the total, potash content was derived from Tobacco Stems. The extremely dry June and early July of course did not permit of sufficient moisture reaching the fertilizer, consequently no chemical action or decomposition of the Tobacco Stems took place. The plant then naturally starved for lack of potash. It received, no doubt, from the mineral nitrogen in the fertilizer sufficient food to make a stalk and a weak leaf, but the potash was not there to make the "balanced ration." The leaves spotted and these spots dropped or fell out. The entire edges of the leaf for an inch or two inches, or more, simply dried up or burned up and fell off. Statement was made that the fertilizer could be seen in the ground at the time the tobacco was being harvested; in which case it is very apparent that the plant did not, for some reason, take it all up, and as the "ration" was not a balanced one it failed to develop into a true and healthy type.

More than likely had this potash been in a mineral form, which would have more readily attracted moisture, and which is of course more soluble than a dry powder like Tobacco Stems, the trouble in question would have been reduced very materially, if not entirely. In that same territory where a fertilizer containing potash derived from a mineral source was used under tobacco no complaints have been made—so far as is known—and the crops generally were good.

Therefore, for "safety first" it perhaps is best to figure only on a mineral potash as a source of potash in a commercial fertilizer, particularly where it is to be applied to tobacco—or is there a better answer?

How Southern Soils Are RUN DOWN

(from page 10)

matter, reserves of the soil when the crops are plowed in. In the minds of thoughtful farmers this raises the question of the best utilization of crops like these.

BECAUSE of lack of space, it will not be possible for us to go into this matter in any detail, suffice to say, however, that in any crop rotation on any farm in the South there should be found a place for one or two suitable legumes, which, after growth, should as largely as practicable be plowed back in part or in whole into the land.

It should be the aim of every farmer, as far as he can practicably do so, to supply the nitrogen needed by the non-leguminous crops of the rotation by the turning in of the leguminous crops used in the rotation. When this plan is followed, there will still be with many soils other deficiencies to be met, in order that the largest and most profitable production of crops may be secured.

Usually on most soils, phosphoric acid and potash will have to be purchased and applied. With some crops, like tobacco and truck crops, potash will need to be added in fairly liberal amounts for best returns. Every precaution should be taken to save the supply of manure produced on the farm, but when this is done and when leguminous crops have been grown and turned in, there will still usually be the need for the buying and addition of phosphoric acid and potash, and some nitrogen with most of our crops.

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Why I Use a Horse in making my rounds

(from page 14)

in here after the Revolution as hunters and settled temporarily. The topographical environment (as mentioned above), was so attractive that they remained here. Let it be understood now that these pioneers were an energetic, well educated people. Let us remember still that the same blood that served sweet potatoes on bark during the Revolution dwells in the hills of Leslie County.

County agent work offers wonderful opportunities to the people in a region like this, but your rounds **MUST** be made riding on the back of a horse or mule. Just now all the beauty which nature can give seems to manifest itself on the side of every hill.

The future holds in store great wealth for the dwellers of these hills, but it will not always be as it now is; great highways will be cut through, and across these hills, then we will not make the rounds on the back of a horse, but like the more favored sections—in the modern roadster and sedan. These conditions are incubating just as fast as the hand of God would have them be.

To-day I would not exchange places with that county agent on the plains of Illinois or Iowa or Kansas, for I **KNOW**, and am persuaded that I work with and for a responsive, appreciative people, who hold in their hand the balance of power in years to come. And so I ride among these hill dwellers on the back of a horse, and rather like it, for I am one of them.

(from page 15)

an hour and be safely home and in bed before midnight. I wonder how it would seem to attempt to make a drive of this kind with a horse, no matter how good he might be; in fact, I think it would be very discouraging. The car enables me to see a great many people and carry our demonstrations in many distant parts of the county, and I am enabled, by the use of a car, to keep in much closer touch with the different communities.

Notwithstanding the many benefits that can be mentioned resulting from the use of a car in county agent work, there is one caution that I would mention: I must be careful not to pass up a visit to an outlying community simply because it is off the main traveled road. Unless some care is exercised there may be a tendency in this direction. If the agent will take the trouble to chart his travels from day to day, he will soon discover that there are communities that have been overlooked, and even though the road may be a little rough, or hilly, or sandy, make it a point to get in touch with these communities at once, for that may be the place that may need the most assistance.



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Don P. Shannon's
interesting article on

Putting the PEAT BOGS to Work

(from page 7)

and advocated by the Soils Division
of the University of Minnesota.

HERE are the methods of cul-
tivation which Dr. Alway and his
assistants recommended: Plow to a
moderate depth, pack with a heavy
roller, disc and fertilize. In case of
low-lime peats, apply ground lime-
stone, limestone screenings, or marl.

For plowing they use at Coon
Creek a sulky plow with a rolling
colter, a sod bottom and a furrow
pusher attachment which helps to
lay the furrow slices even. For
traction power, they use a light ker-
osene tractor.

The roller is a cylinder of galvan-
ized metal through which a shaft or
axle is passed. The cylinder is then
poured full of concrete.

"Packing with a heavy roller is a
very important part of peat farm-
ing," says Dr. Alway, "A roller
about 30 inches in diameter is heavy
enough.

"The amount and kind of fer-
tilizers vary with the kind of peat,"
continued Dr. Alway. "In Minne-
sota we have five kinds of peat.
They can all be divided into two
greater classes, the high-lime and
the low-lime peats. There are four
kinds of high-lime peats: those that
need no fertilizer, those that need
potash, those that need phosphate,
and those that need both potash and
phosphate.

The low-lime peats need lime in one form or another in addition to one or more of these fertilizers. There are beds of marl near almost every peat bog in Minnesota," says Dr. Alway. "These are excellent sources of lime to sweeten the soil."

IN a general way it may be said that the peat soils of Southern Minnesota need both phosphate and potash, while those of Northern Minnesota need phosphate alone. These are the results of experiments conducted at Anoka for Southern Minnesota and at Golden Valley and Fens for Northern Minnesota. However, peat soils vary greatly, even in the same community; and the peat farmer will have to use these results only as a basis for experiments on his own farm.

Crop yields are very good on the fertilized peat at the Coon Creek experiment farm. Burbank potatoes this year yielded 344 bushels per acre; Early Ohios, 469 bushels; Bliss Triumphs, 425 bushels; and Irish Cobblers, not yet through growing, went 516 bushels to the acre.

These plots were fertilized at the rate of 300 pounds of potash and 150 pounds of phosphate per acre.

Missiles and Mignonettes

You have started a good piece of work. Keep it going.—*M. L. Hall, Lafayette, Ind.*

Very good as is. —*A. J. Platten, College of Agriculture, Madison, Wis.*

Keep it up. I think it's fine.—*D. A. O'Brien, County Agent, Lancaster, N. H.*

I enjoyed everything in your book.—*R. H. Lovejoy, County Agent, South Paris, Maine.*

I certainly enjoyed reading the snappy, crisp articles. The only comment that I can make is that the subjects are so well presented that one had a great thirst for more information. However, I suppose the short, snappy articles are just what your readers like and they certainly are very readable. However, nearly every article terminates while you still wish to continue reading.—*A. C. Smith, Chief, Poultry Division, The University of Minnesota, University Farm, St. Paul, Minn.*

William Gilchrist, *President*
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No one is so rich that he can afford in these times to neglect the proper maintenance of soil fertility. When crops are "selling off" at low prices, the wise farmer *increases* rather than reduces the fertility of his soil, knowing that his salvation lies in securing even greater yields from the same labor costs.

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Better Crops

The Pocket Book of Agriculture

December 1923



This issue—Dean Williams—Dr. Frank Crane—C. A. Bacon
Jeff McDermid — Charles J. Brand — Harrison Fuller



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Few farms in other parts of the country have grown crops over two hundred years, but

already on many soils the lack of potash is standing in the way of bigger and better crops. No farmer is a potash millionaire. The supply on any farm eventually runs out.

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Better Crops

The Pocket Book of Agriculture

VOLUME I

NUMBER FOUR

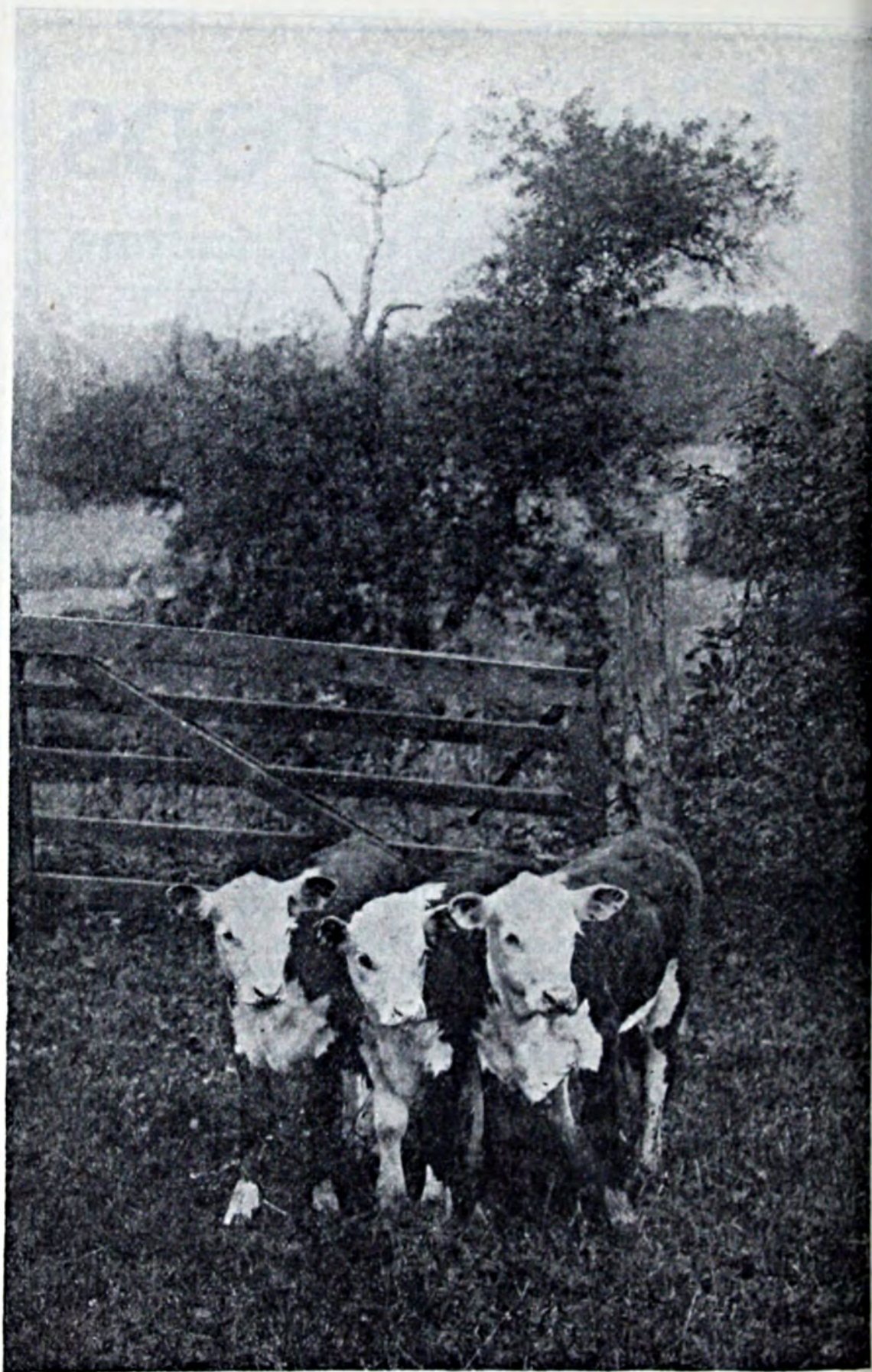
Table of Contents: December, 1923

Money Makes Money Sometimes	5
<i>A warning exhortation by Jeff McDermid.</i>	
A Wool Market That Pays	7
<i>How farmers exchanged wool for blankets, by E. P. Wallis.</i>	
How to Increase Efficiency of Southern Farms	8
<i>Another masterly essay by Dean Williams.</i>	
Getting Rid of the Barberry	9
<i>What the wheat rust squad is doing, by Harrison Fuller.</i>	
The California Walnut Growers' Association	12
<i>Second article in series by Charles J. Brand.</i>	
Isaac Newton, First Head of U. S. D. A.	21
<i>An historical reminiscence by C. A. Russel.</i>	
Beware of Water Hemlock	24
<i>A story of a deadly plant, by Albert A. Hansen.</i>	
Planting 25,000 Trees in One Day	27
<i>How the Roycrofters reforested East Aurora, by Irving Price.</i>	
Liming the Soil	29
<i>An interesting and new thought by C. A. Bacon</i>	
Six Awards for County Soil-fertility	30
<i>How six county agents won a trip to Chicago.</i>	
250 Bushels of Potatoes per Acre	33
<i>A fact-story of modern potato fertilization.</i>	
Cotton Seed Selection Would Increase Yield	41
<i>The views of an eminent Texan on an important subject.</i>	

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VOL. I

NEW YORK, DECEMBER, 1923

No. 4

Money Makes MONEY— Sometimes

¶ *A little exhortation on the fine art of speculating, by our mentor,*

Jeff McDermid

ONE summer night in 1830 as Mark Twain sat musing over the details of an unborn story with his famous pipe hanging from the corner of his mouth, the doorbell rang.

It was Dwight Buell, the local jeweler, come to see Twain on a matter of business. Professional and scientific men are always being sought on "matter of business"—not because they know so *much* about business, but because they know so *little* about it.

BUELL was shown to the billiard room, which also served as Twain's study—caught in a tight place in unravelling the plot for a "Huckleberry Finn," it was Twain's

habit to knock the balls around the table until the plot straightened itself out.

True to formula—scientific men should make a note **of** this—Buell wanted Twain to buy some stock in a company that was about to manufacture a type-setting machine. Twain was reluctant. Buell was persuasive. Buell became passionately argumentative—submitted estimates showing that the American business alone would earn thirty-five millions of dollars per year,

while the European business would surely bring in twenty millions more. These tantalizing figures dazzled Twain, who knew little about investing. He faltered, stuttered, stammered, but finally fell—he would take a little of the stock, but only a little, mind you.

Buell signed him up for \$2,000 worth of the stock—when we go shooting for elephant and find no spoors we are wise to grab off an occasional rabbit. "Never overlook anything," is the motto of the energetic and successful stock salesman.

ONCE in on the ground floor, Twain professed a desire to see this machine. He knew all about setting type by hand from personal experience, and even at the time he put his name on the dotted line, subscribing for the stock, he held the settled and solidified opinion that a successful type-setting machine could not be made. "A machine cannot be made to *think*," he said, "and the thing that sets movable type *must* think or retire defeated."

So the performance he saw at the Colts Arms factory, where the model was being built, thoroughly amazed him—here was a machine that could do everything that a human being could do, except drink, smoke, chew, swear and go on strike. He might have omitted the latter—but more of that later in our story.

The machine, invented by James W. Paige, was the first to set movable types automatically—the monotype had not been invented, the linotype was still in embryo in Mergenthaler's brain—all type was set by hand, slowly, carefully, expensively. The world was waiting to pour its gold into the lap of the man who would come forth with such a device—hungry presses were waiting to devour the forms.

Who blames Twain for becoming enthusiastic about his chances for getting rich? He was a professional man, knew little about ordinary business and nothing about invest-

ments. He wrote to his sister, "How strange it will be to have unlimited means, to be able to do whatever you want to do, to give whatever you want to give, without counting the cost!"

ISN'T that the dream of every scientific or professional man? He must do something with his surplus. He cannot invest it in his business, as can a manufacturer—for the professional man's business is in his head. With a home paid for, furnished, and enough laid by for the rainy day—the surplus must go to somebody else for investment.

The type-setting machine began to absorb money. It was put together and taken down, again and again. Twain invested thirty thousand more to make his first two thousand safe. But still the rat-hole was calling for more, more money. Paige, the inventor, called on his stockholders for another assessment—got it, invested it in new parts, and still the machine did not work properly. How careless we are of other people's money, and Paige was no exception to the rule.

With Twain down to almost his last nickel, home mortgaged, want and the wolf growling in the distance, Paige announced his latest joker—the machine would not space the type properly—it must be designed all over again! It was an undertaking for a millionaire. Twain begged to be counted out.

ONCE more the man who had tickled the world until it laughed a fortune into his vest pocket was broke—all had gone into the invention. The millions he was to make were vanished. Cold, biting breezes wrapped themselves lovingly around the nape of his neck. To work he must go again, and remake his fortune. Once again his pen was cleaned, papers arranged and the professional man was on the job. He wrote to a friend, "I have been an author for twenty years and an ass for fifty!" (turn to page 70)

A WOOL MARKET *that* Pays

By E. P. Walls

County Agent, Talbot County, Maryland

BACK in 1921, as a good many people remember, wool was not worth very much. Some of it sold as low as 15c per pound, while the average price throughout the year was 25c per pound. How this price was increased to 55 cents per pound, net, will no doubt be interesting and some county agents who have not tried out this plan may be able to make use of it.

Late in the fall of 1920 the Extension Service of the University of Maryland made arrangements with a woolen mill in North Carolina to receive shipments of wool from counties in the State, the wool being assembled by the county agent or through his office, and shipped as a county pool, he furnishing a summary of the number and patterns of the blankets to be made.

The amount of wool required to make a large double blanket 72 by 84 inches is ten pounds, and to make an automobile robe 60 by 72 inches, eight pounds. A day on which the wool would be received was advertised and farmers made acquainted with the whole plan through the local press. For each blanket the wool grower wished made up, he was required to deposit at the time the wool was brought in \$5.00 to cover cost of manufacture and 75 cents for carrying charges to and from the mill. For each robe he

must deposit \$4.00 for manufacture and 75 cents for carrying charges. Thus, if a farmer had 100 pounds of wool or enough to make ten blankets, he would deposit \$57.50. This was deposited in a local bank and the grease wool shipped to the mill by freight, prepaid with a part of the 75 cents per blanket or robe deposited. When the blankets were made up, they were shipped back by express, collect, the cost of manufacture and transportation being paid to the express company on arrival of goods. The farmers were then notified to come in for their blankets.

The idea of the blanket plan was primarily to give an opportunity to those farmers having wool on hand, to supply themselves with some blankets of excellent quality and perchance sell a few surplus ones to their neighbors who might want them.

THE shipment in 1920 was small, some growers being skeptical about how it might work out and dubious about the disposal of their surplus. But when the first shipment returned from the mill, all doubts quickly disappeared. The blankets were of excellent quality and appearance and the demand for them at \$11.25 each was so (*turn to page 65*)

¶ Dean C. B. Williams, Chief of the Division of Agronomy, North Carolina Experiment Station, in this second article tells

how to increase the EFFICIENCY of Southern FARMS

NO one who has studied the actual conditions existing on many of the farms of the South can doubt but what there is much room for increasing the efficiency of the operations. According to the last census, the average value of all crops per farm in the South Atlantic States, even during this war period, was only \$1,798, which leaves a pretty small margin after deducting expenses of production. Now the problem is, what can be done by the Southern farmer to increase the net returns from his farming operation so as to afford a better living for his family.

The following are some of the things, it seems to me, he can do: First, by a better organization of his cropping system so that suitable legumes will find a place in the rotations more frequently than now for hay and for soil-improving purposes. It is not possible, generally, to add materially to the producing power of his soils in the most economical and permanent way unless legumes

are grown more largely than at present, and after growth are utilized more generally for the building up of the organic matter and nitrogen supply of his soils. These two prime needs of Southern soils and the one most economical way to store the soils with these is by the growth of leguminous crops as far as practical and having some of them go back into the soil.

Second, by the use of well-planned rotations of crops. In arranging such rotations, crops should be used that are suitable for growth on the particular farm and which may be depended upon as major money crops. Of course, as indicated above, legumes, such as cowpeas, soybeans, clovers and vetches, should be included, using the ones best suited to the soil and needs of the farm. These may be used not only for soil-improving purposes, but for feed for such live-stock as may be necessary to keep on the farm for its most profitable operation. In the arrangement of the



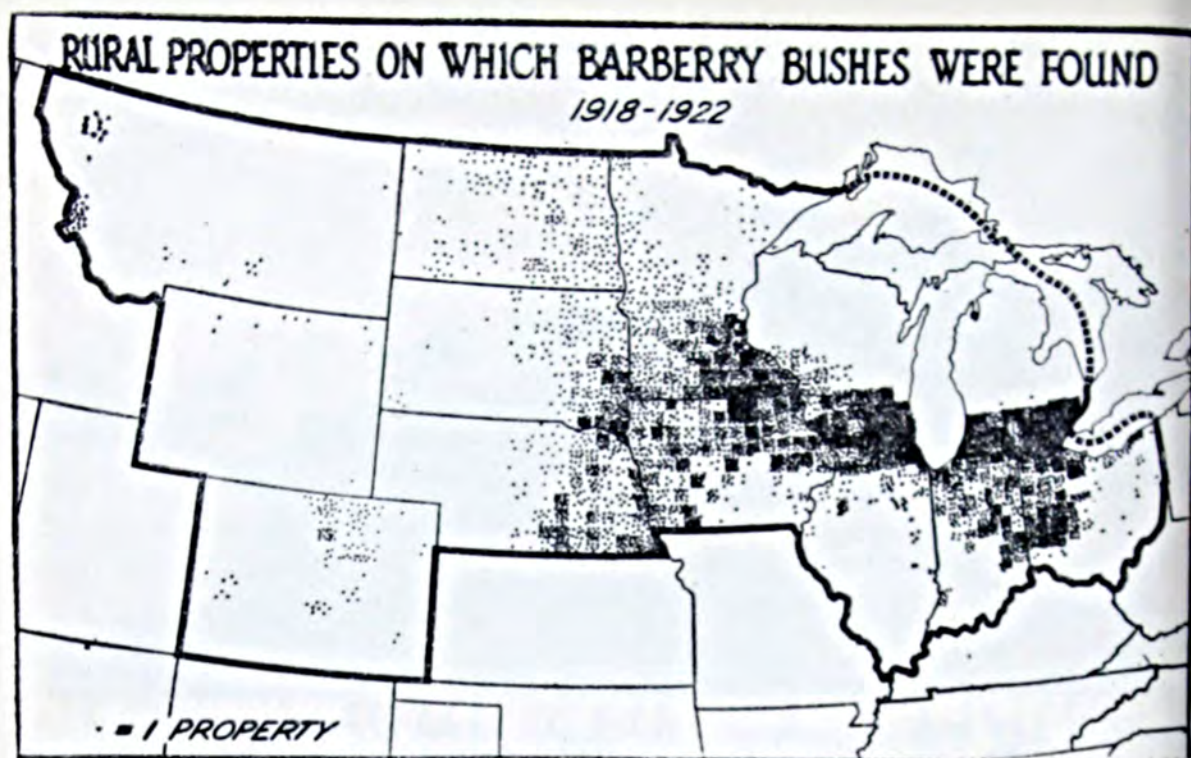
Ⓒ. *The main crop of the South—KING COTTON*

crop rotations one may, with care and judgment, provide for a greater income and for a better distribution of labor on the farm throughout the year.

Third, in some cases, crop yields might be materially increased by giving a little more attention to the better preparation of the soil, and to more thorough cultivation of the crops after they are up. It is not possible, ordinarily, with many of our soils, however, to prepare the land with a one-horse plow, as is too frequently done, just before planting time and have the soil in best shape for most profitable crop production. Again, generally, the cultivation may be carried on more cheaply and satisfactorily where the crop is planted on the level or a little below the level. This plan, however, is not generally advised except where the drainage conditions of the soil are good. When planted on the level, suitable cultivators may be employed, thereafter, to good advantage to keep the land well pul-

verized, while the crop is growing, going over the fields every 10 to 12 days, or as soon as possible after the land is in proper condition to cultivate after rains. If this plan is followed, small weeds and grass starting into growth after rains will be killed before they get much of a start and thereby conserve the moisture present in the soil for the use of the growing crops. It is a fact that frequently crops yields are limited by insufficient supply of moisture in the soil, notwithstanding the rainfall is ample for large yields.

Fourth, another matter of importance to be looked after is that of the intelligent use of fertilizers bought and of manures produced on the farm. Of course the fertilizers used should supply amply for the particular crop needs after what manures used and legumes grown and turned under have been taken into consideration. Where the latter two have gone into the soil in fairly good amounts, the nitrogen requirements in (turn to page 66)



Getting RID of the BARBERRY

By

Harrison Fuller

Conference for the Prevention of Grain Rust



UT in the great grain-growing region from the Ohio River to the Rocky Mountains you may observe, in many places, on almost any summer day, two young men in a rickety flivver drive into a farmyard, hastily disembark, go straight to a certain hedge or clump of shrub-

bery, examine it with confirmatory nods, proceed to the house, speak a few words to the farmer, return to the car for a sack of salt, dump it unceremoniously on the bushes, then circle around the farm buildings, through the garden, orchard, wood lots and along fence rows in the

vicinity and finally rattle away to repeat the performance at the next place down the road.

These are barberry scouts. Some 300 of them are employed during the summer months by the United States Department of Agriculture and thirteen states to find common barberry bushes and see that they are destroyed. The common barberry is the host plant which gives a start in the spring to black stem rust of grain, a ruinous disease which annually destroys an average of some 50,000,000 bushels of cereal crops in the north central states.

By eradicating the barberry, agricultural scientists hope to reduce this tremendous loss to negligible proportions. The campaign has now been in progress for six years. In that time some six million bushes have been destroyed.

In the states in the eradication area west of the Mississippi—Iowa, Minnesota, North and South Dakota, Nebraska, Colorado, Wyoming and Montana—every city and town and every farm, except in a few counties in each state, has been visited by scouts in search of common barberries and practically every bush they have found has been removed. In the states east of the Mississippi—Wisconsin, Illinois, Michigan, Indiana and Ohio—all except a few of the largest cities and about half of the rural territory has been covered.

To date the results of the campaign have not been entirely conclusive, but they have been satisfactory. This year in the western states the weather was ideal for rust and the damage to crops was considerable. It did not, however, even distantly approach the 200,000,000

bushel loss of 1916, and this figure might easily have been reached, or surpassed, experts declare, but for the fact that barberry eradication has materially cut down the number of the original sources of rust infection.

It is agreed that there still are enough bushes overlooked in previous surveys, in sections not yet visited, and from old roots not completely destroyed, to account for all the rust that was present in the Northwest this season. In the prairie states the rust spores may be blown for many miles from the barberries on which they get their start to distant fields of grain and a single bush accordingly may be responsible for widespread damage.

In the eastern states of the eradication area, the effect of barberry eradication in reducing rust losses has been much more marked. In many localities in Ohio and Indiana rust has been traced directly to common barberry bushes in the immediate vicinity of grain fields. Observations made after the removal of these bushes revealed that subsequent crops suffered practically no damage from stem rust and in most cases no evidence whatever could be found of the disease.

An especially impressive case is reported from Rush County, Indiana. Last year a farmer named Darius Patterson suffered severely from black stem rust. In the fall a common barberry bush 100 years old was found on his place. It was removed. This season there was no rust on Mr. Patterson's grain. He is an old-timer in the vicinity and said that this was the first time his wheat had escaped damage from rust since 1882.



How 4200 Walnut Growers

THE cooperative marketing association of the California Walnut Growers was organized under the Civil Code of California, which permits growers engaged in the production, packing, or marketing of horticultural products to form a non-profit cooperative association,

The Walnut Growers operate at cost and without profit except as the profits accrue directly to the grower. The Association sells all of the walnuts produced by more than 4,200 growers, who raise 82 per cent. of the walnut crop grown in California.

BEING purely a sales organization, the Association does not contract directly with the growers. There are 42 local associations, comprised of growers in the important walnut-producing sections. The federation of these locals constitutes the membership of the California Walnut Growers' Association.

The Association is now about 12 years old.

The local associations of the California Walnut Growers' Association are corporations formed either with or without capital stock, as the California law permits either method. In each case, however, the purpose of the local association is the same, namely, to provide facilities whereby the walnuts of the growers may be received, graded, packed, shipped

or marketed by the local association on a cost basis and through the marketing facilities furnished by the central association.

The Board of Directors of the Association is comprised of one elected director from the membership of each local association.

Operation Methods

The Association does not operate sales offices under its own ownership and management. Sales are made to the wholesale trade through merchandise brokers. The territories of these representatives are carefully outlined by the Association's sales department and only with a definite understanding is one broker permitted to operate in the same territory as another.

¶ The second article in this series of interesting and instructive articles.

¶ Next month the story of The California Almond Growers' Association will be told exclusively in
BETTER CROPS

by

Charles J. Brand

Consulting Specialist in Marketing
U. S. Department of Agriculture

Market COOPERATIVELY

Accurate records are kept showing annual sales in each representative's territory. This enables the sales department to obtain the maximum efficiency in securing distribution, and when efficiency is not secured it enables the department to locate weaknesses and under-distribution and to correct them.

Formerly the Association sold its walnuts under a plan involving a binding future contract. This method has been abandoned. A plan has been substituted whereby "memorandum orders" are accepted by the brokerage representative in the markets from the jobbers in their territory during the summer and early fall months. The broker retains possession of these memorandum orders. As they are not confirmed, no actual sales are made until later, when the opening prices for the season are named by the Association.

About six weeks before harvest time the Association, after making careful estimates of the crop both as to total amount and as to amounts of the different varieties and grades, makes allotments to each broker for the trade in his territory. These allotments are based

not only upon the expected crop but upon the past performance of the broker and the estimated requirements of his territory.

The broker in his turn applies the allotment made to him to the memorandum orders which he has retained on file and makes new sales from any surplus that may remain over after his orders have been filled.

The first shipments of walnuts are usually made around October first. When they are ready to go forward, the Association announces the opening prices. The trade is allowed 72 hours in which to confirm the memorandum orders that have been placed with the brokers. When these confirmations are received by the broker, he wires them to the Association and properly executed contracts are then forwarded to each buyer. This method brings a maximum number of orders into the Association's hands at one time so that it is practical to consolidate smaller orders for carlot shipments, thus obtaining the advantage of lower freight rates and in many other ways facilitating the work of the local association and the central body in distributing the crop. (turn to page 57)

How One County Agent MET a BIG PROBLEM

C The doubting Thomases were soon convinced—practice proved the theory

By M. F. Gaddis

County Agent, La Grange, Georgia



C Last month in this space I showed you a stalk of corn ten feet high. **C** Now here is some wheat that is nearly six feet tall.

Jeff

T HIS is a little personal story of how I managed to get the "Rat-Proof, Weevil-Tight Corn Crib" movement on in Brooks County, Georgia.

Brooks County being one of the border counties of Georgia on the Florida state line, where it is warm enough most of the winter until corn weevils can work and destroy corn, coupled with the rat destruction, made it important to put a stop to the losses every year, of the corn crop that were produced in that county. To sell the idea of such a construction of a rat-proof and weevil-tight corn crib was rather a hard job.

Every county agent has a number of "Doubting Thomases" to deal with who make excellent demonstrators if they can ever be broken into the harness, and that was my predicament.

After spending nearly a year trying to get some one to follow my plans for the crib construction that would give the results that I was trying for, I had not accomplished any visible results, so I decided to try out another plan or so depending upon the individual involved.

When I selected my men, among them was a wealthy farmer who had recently bought an (turn to page 61)

How to Increase the VALUE of County Agent Work

C. Here is a mighty good suggestion from a man who has been extraordinarily successful in getting other folks to cooperate with him

By R. R. Smith

County Agent,
Manitowac, Wis.

Jeff

THE value of a county agent's work can be very much strengthened by his taking into consideration not only the farmers, but also the town and city people as well. He is a public servant and the more he can do to serve both classes individually or to get them together collectively, the more weight and value will his work have.

It is my personal opinion that every county agent, wherever possible, should endeavor to join a city civic organization in which he holds office. One of the principal reasons for this move is the fact that today we find too many differences of opinion between the city and town man. In other words, the city man, as a general rule, cites the farmer as a hayseed, and the farmer on the other hand regards the man in the city as a hold-up and a crook. One big reason for abuse of this kind, I think we will all admit, is because they are not acquainted with each other sufficiently to appreciate the troubles and trials of the other fellow. If country man and city man could be brought closer together they would appreciate each other's efforts, gain confidence in one another, which is the sound requisite in the foundation upon which all (turn to page 68)

Jeffisms

Never write until you have something to say, or unless you must make your living that way!

✂

The investor's hell is paved with poor inventions.

✂

The china egg can still hope, you know!

✂

Thoughts fool the world.

✂

Time is money, but daylight saving time is funny.

✂

To keep what you know, learn something new.

✂

When you get balled up, you are likely to get bawled out.

✂

Sometimes a single nut thinks he is the whole machine.

✂

Some men are like a broken Ingersoll—good face, but both hands useless, and the inside works worthless.

✂

There is nothing new under the son, until he sits on mother's new bonnet.

Jeff

HOWARD M. GORE

Assistant Secretary of Agriculture

From *BETTER CROPS*
Washington Correspondent

WHEN Howard M. Gore, farmer and live-stock raiser straight from the blue-grass section of West Virginia, was mentioned as a successor to Charles W. Pugsley, Assistant Secretary of Agriculture, who had resigned to accept the Presidency of the South Dakota agricultural college, practically every farm organization and farm leader from Maine to California jumped to his support. They recognized him as one of 'em. It was because he truly represented the farmer's interest that he was named by President Coolidge upon recommendation of Secretary Wallace.

The agricultural experience of Mr. Gore has been complex and intensive. It was back in 1778 that his mother's people settled in the blue-grass region of West Virginia. His father's family located there somewhat later, in 1842. Born on a West Virginia farm, Mr. Gore has been intimately identified with the agricultural welfare of his state and the country ever since. In fact it is pretty hard for him to be contented with an executive job. He would rather be out in the field lot with his cattle. At the present time he owns a 500-acre farm and, with his brothers, is joint owner of two other large farms in his home state.

For 20 years the new Assistant Secretary has been a producer of cattle, hogs, sheep and horses. Until beef exports from this country fell off, much of his finished stock was shipped to foreign countries, where it sold at a premium. And quite frequently his fat lambs have sold for the year's highest price on the New York market.

Before Mr. Gore left the farm he and his brothers were extensive breeders of Jersey, Hereford, and Shorthorn cattle, Berkshire hogs, and horses. Shorthorns have been raised by the family for two generations. Breeding operations on a

comparatively large scale are still being conducted by his brothers.

Few men in this country have a wider acquaintance in the live-stock and agricultural world than Howard M. Gore. He has come in contact with agricultural college people, particularly extension service, and has given a great deal of time and support to the boys' and girls' club work. It is an every-day occurrence for him as Assistant Secretary to receive a letter from some youngster whom he has encouraged to take a part in club work. And these letters receive as careful attention and consideration as important government documents.

Mr. Gore has been an intensive worker in state and national farm organizations. He was a member of the Committee of Fifteen, named by the American Farm Bureau Federation, to study live-stock marketing conditions. He has served terms as President of the West Virginia Hereford Breeders' Association and the West Virginia Live Stock Association. Further than this—and it would take great space to enumerate his farm organization connections—Mr. Gore has taken a keen interest in the work of the International Live Stock Exposition and for years took part in the program.

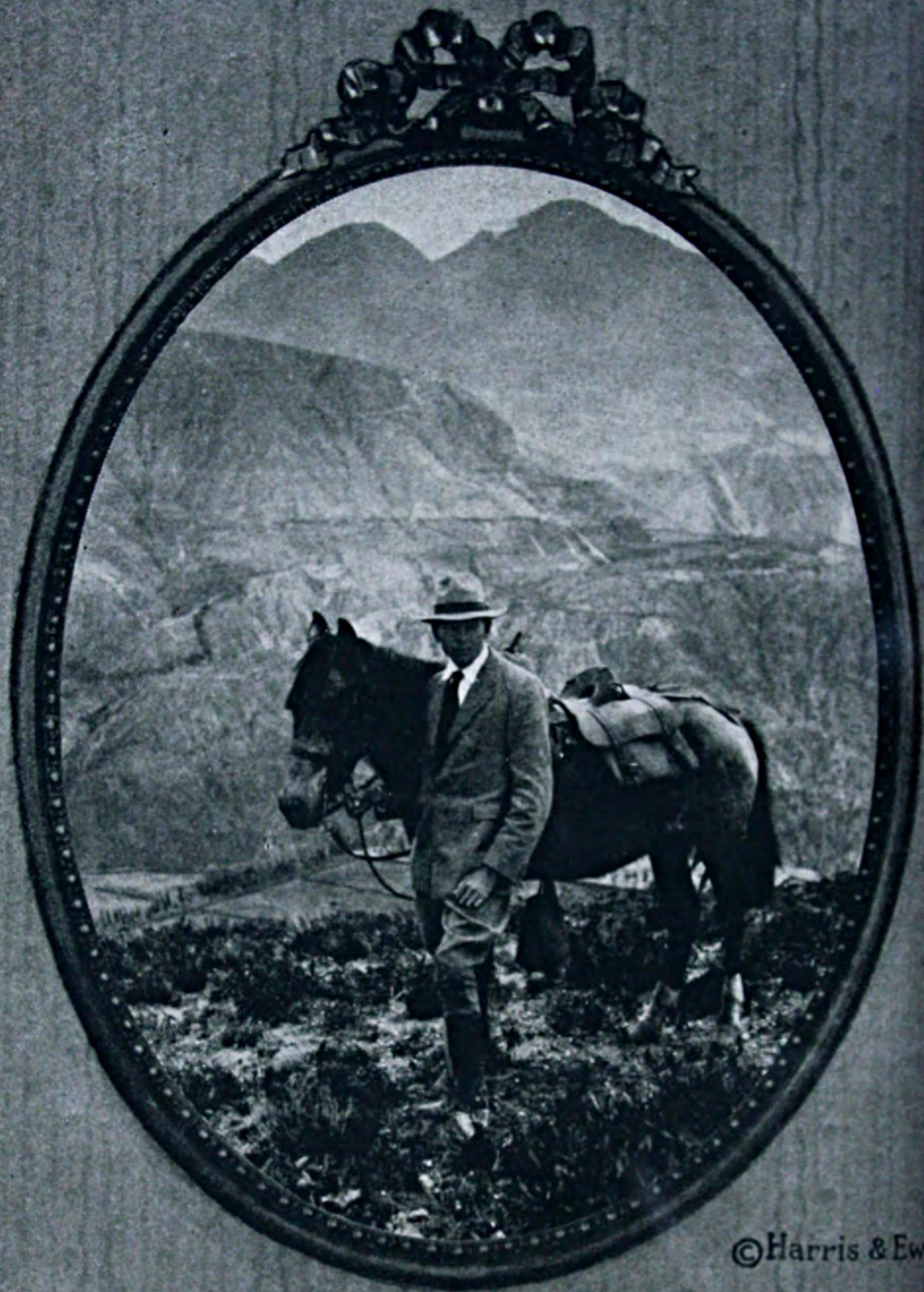
Just before accepting the position of Assistant Secretary, Mr. Gore held a prominent position in the Packers and Stockyards Administration, charged with the duties of administering the Packers and Stockyards Act. In this work he was again thrown in contact with all phases of the live-stock industry and broadened his experience and acquaintances. One of his last pieces of work before taking up his new duties was to act as one of the arbitrators in the case involving rates for selling live-stock at four of the principal markets of the Middle West.

Better Crops'
ART GALLERY
of the month



© Inter. News

And here is another loyal worker added to the roster of those pledged to help the farmer. Gentlemen, meet Mr. Howard M. Gore, Assistant Secretary of Agriculture.



©Harris & Ewin

Wilson Popenoe, plant explorer for the United States Department of Agriculture, standing directly on the equator in Ecuador. He has brought many valuable plants, including avocados and chayotes from Central and South America. These collections, says David Fairchild, Chief Plant Explorer for the Department, "represent real exploration work of a strenuous and dangerous character in countries through which no one travels easily and where poor food, almost impassable roads, and malaria are the constant companions of the explorer."



The U. S. D. A. goes into the movies! Scene from "Sir Lion of T-Bone Ranch," a recent film produced by the Department, showing James I of England and his favorite cut of beef upon which he conferred Knighthood.



© Inter. News

J. R. Patterson, one of the predatory animal hunters employed by the Government, and the skin of a grizzly killed by him in Arizona where it had been very destructive of livestock. The bear was an exceptionally large animal.



© Inter. News

Isaac Newton was the first head of the United States Department of Agriculture, long before the department was honored by recognition as a part of the government. His granddaughter Amanda is connected with the department today and gave Mr. Russel the facts in the interesting story which begins on the next page.

ISAAC NEWTON—

the first head of the U. S. D. A.

By F. M. Russell

In Charge Press Service, U. S. Department of Agriculture

IT is now some fifty years ago that Isaac Newton, friend of Lincoln and first head of the U. S. Department of Agriculture, gave his life in the interests of American agriculture. Today his granddaughter, Miss Amanda A. Newton, is rounding out her twenty-fifth year in the same Department, where, at a meagre salary, she is displaying the loyalty and sincerity of purpose evidenced by her grandfather. In fact, the Newton family has been intimately associated with the development of the Department of Agriculture since the day Lincoln persuaded its founder to come from his farm in Pennsylvania to see what he could do to foster agriculture in this country.

The writer went over to see Miss Newton in her office, located in one of the numerous buildings occupied by the Department, to secure a few details of the life of her illustrious grandfather in order that the farmers of the country might know something of the great man who was more responsible than any other for the creation of a federal department that now employs something over 20,000 people.

She was clearing her desk after completing a most difficult task in a short time. It was the modeling from wax and coloring of 17 different kinds of cheeses which were shown at the World's Dairy Congress held at Syracuse, N. Y., the week before. Besides these she had modeled enlargements of numerous bacteria found in milk and its products in order that visitors at the dairy congress might know something of their physical appearance. She was continuing the work of instructing the American people as to the intricacies of agriculture just as her grandfather was doing over 50 years ago.

You will not find the full life of the Quaker, Isaac Newton, inscribed in the annals of history, but every detail stands out most vividly in the memory of his granddaughter. Today she is spending her leisure time, brief as it is, compiling the different phases of her ancestor's life in order that his record may be preserved as an example of devotion to the cause of the American farmer. Further than this she hopes to bend her artistic talent in the production of a painting of her grandfather to be presented to the Department of

which he was the first executive.

When the writer asked Miss Newton for a few sidelights on the work and character of her grandfather, her face lighted up with a certain pride that no one could deny her. To tell of him and what he had done for agriculture was a pleasant task, though she displayed that modesty so characteristic of the Quaker.

Born on a New Jersey farm, Isaac Newton moved in his early youth to Delaware County, Pennsylvania, where he devoted his life to scientific farming. It was here that he established what later became known as the "Model Farm," because of the new practices which he put into effect. Queer enough this farm today is located within the city limits of the city of Philadelphia, forming one of the suburbs of the city proper.

"Long before Lincoln was elected President my grandfather used to send butter each week to the White House," said Miss Newton, in recalling some of the incidents of his life before he was called upon to take charge of the agricultural department. "I remember also my father telling of a fatted calf grandfather fed and sent to Washington, where it created a sensation and was later presented to the White House. Father always remembered that, because he had to break eggs in the mouth of the calf as a means of feeding it properly."

Before reciting the details of her grandfather's activities in the government, Miss Newton related the tragic circumstances surrounding his death. It was in 1866 when he was working diligently with his experimental farm in Washington, in the production of better varieties of grain. Included in these were several varieties of wheat now in general use.

One day in July of that year, when the grain had been cut, and was lying on the ground, a thunder shower suddenly appeared. Mr. Newton hastened from his office to the field, located a mile away, to instruct his men in the proper method of saving the crop. In his supreme effort under an intense heat he suffered a sunstroke. He partially recovered, but died from the effects of the injury on June 19, 1867. As we would say today, "he died with his boots on."

It was while Isaac Newton was making a reputation as a farmer out of the ordinary on his model Pennsylvania place that he won the friendship of Lincoln and frequently went to Washington at the request of the Chief Executive to consult on matters relative to agriculture. He was constantly being called upon by Congressmen for advice and direction.

Though the Department of Agriculture was not established until 1862, work along agricultural lines dates back much earlier. It was in 1839 that Congress appropriated \$1,000 for the purpose of collecting and distributing seeds and the gathering of agricultural statistics in a modest way. The money was to be taken from the Patent Office funds and the work to be carried on by a Commissioner, at that time an official of the Department of State. The work of sending out seeds and collecting statistics was continued under succeeding Commissioners of Patents.

Largely through the efforts of the United States Agricultural Society, and through the leadership of such men as Isaac Newton, the necessary legislation was enacted in 1862 for the establishment of an independent Department of Agriculture and Newton, then in (*turn to page 47*)

The Root of Gambling

By Dr. Frank Crane



THE root of gambling is the desire to get something for nothing. ¶ It is precisely the same thing as the root of theft, embezzlement, robbery and burglary. ¶ There are millions of dollars lost every year in speculation. But it is safe to say that not a dollar is lost by anyone who is not expecting to get something for nothing. ¶ The swindler and confidence man is a rogue, but he would have no success except for the fact that his victims are also rogues. The difference is that he knows that he is a rascal, while they think they are not rascals. They do not realize that every man who expects to get something for nothing is already a thief in his heart. ¶ The first lesson every boy ought to be taught in school and in the family is, that he has no right to call any penny he may have honest unless he has given a penny's worth for it. ¶ No dollar that ever came to man, whether by gift or luck or treasure trove, was ever a blessing and a strength to him, except the dollar that cost him commensurate effort. ¶ Whoever will take for his motto in life that he will never receive something for nothing, will not only be safe from being cheated, but will also be preserved many a time from making a fool of himself. ¶ Honesty is so extraordinarily simple that it is extremely difficult to understand; while fraud is so complex that it is very plausible. ¶ It is a curious commentary on human nature that a man often pities himself because he has to work hard for every cent he gets, while the swindler is vastly satisfied with himself. ¶ As a rule and in the long run a sort of rough justice is worked out in the world, and a man who is of service to his fellows usually gets paid for it; while as a rule, although there are many exceptions, and in the long run, although very many get tired and do not run long enough, the man who complains that he has been ill treated and is unlucky, is one who is disappointed because he did not get something for nothing. ¶ You do not always get your just pay for the work you do, and some men get pay for work they did not do; it is an uneven world, but it is certain there is one satisfaction that a man has that no one can take from him, one treasure he possesses which moth cannot corrupt nor thieves break through and steal, and that is the consciousness that he has never tried to get something for nothing. And that will give him a faith in human nature that the other kind of man can never have. ¶ A certain Frenchman said that the honest man has at least one advantage over the rascal, he knows there is at least one honest man.

Copyright, 1923, by Dr. Frank Crane.

BEWARE of Water Hemlock

—one of the deadliest
plants in America

By

Albert A. Hansen

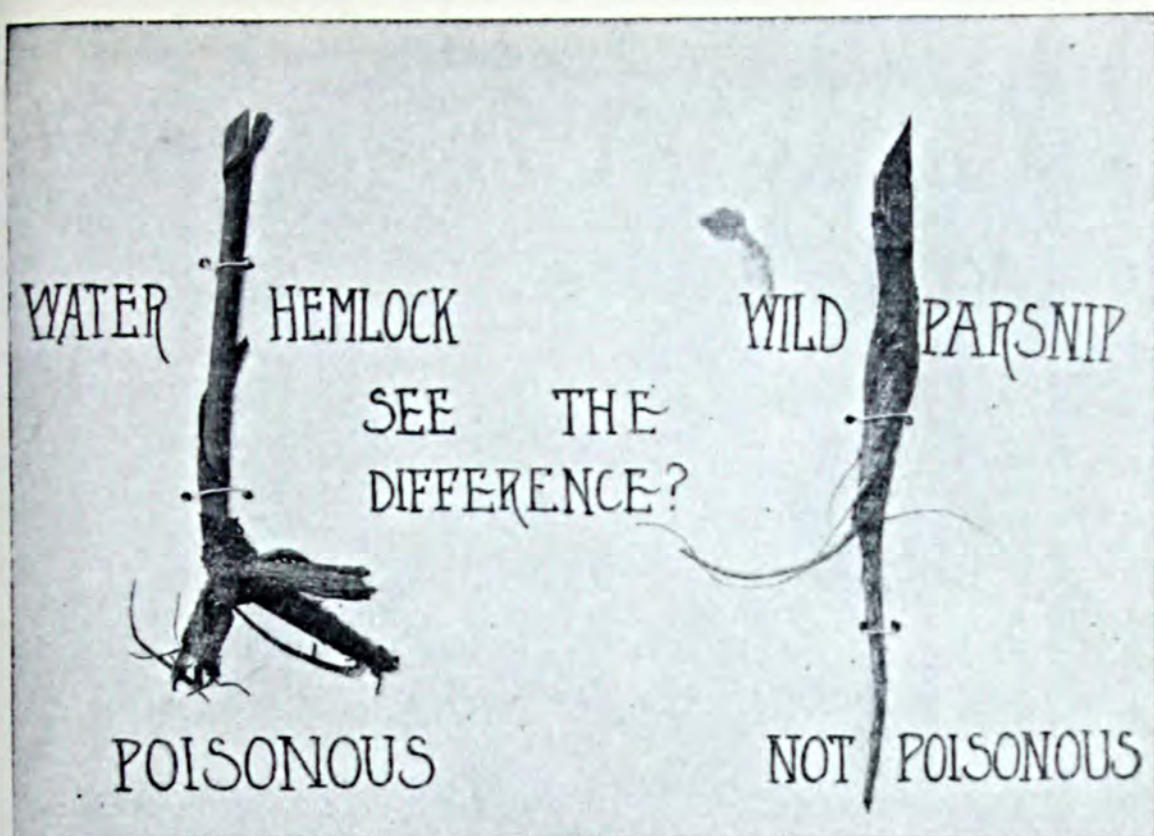
Purdue Experiment Station, Lafayette, Indiana

ABOUT four o'clock on the afternoon of June 20, 1923, Clyde Shady, of Craigville, Indiana, partook of some sweet tasting, fleshy roots that grew in a wet spot on a railroad right-of-way, on which he was working as a section hand. On account of the fragrant odor he thought they were the roots of sweet anise. A half hour later he died in horrible agony after suffering from violent intermittent convulsions. A piece of the dangerous root that was clutched in the dead man's hand was later definitely identified as water hemlock, one of the deadliest plants in America.

One day last summer Frank Kayser, a farmer of Clinton County, Indiana, noted that his hogs were acting queerly. The animals tore frantically around the hog lot, butting their heads against the fence and exhibiting signs of agonizing pain. A few hours later five of his prize hogs were stiffened in death. An examination of a ditch bank where the hogs had grazed revealed

an abundance of water hemlock and several partly-eaten hemlock tubers were found in the vicinity. The trouble occurred during a period of drought, when hogs naturally root for food.

IN all parts of Indiana the deadly water hemlock has been the cause of loss to cattle, sheep, horses and hogs, and Indiana conditions are probably similar in this respect to most sections of America, since water hemlock may be found in practically every state in the Union. It is true that we do not hear as much about plant poisoning east of the Mississippi River as we do in the plains region of the West, but this is due largely to the fact that on account of the vast areas of land devoted to grazing in the West, the losses are more spectacular. In the East losses from water hemlock and other poisonous plants occur singly or in small groups, unaccompanied by a great hue and cry. Nevertheless the losses



☞ The dangerous roots of water hemlock are frequently confused with the harmless root of wild parsnip. ☞ This shows the difference.

occur and the aggregate destruction is heavy.

But why term water hemlock one of the deadliest plants in America? Because the species is common, because the poisonous roots are sweet and aromatic and are eaten by farm animals, because experimental work has demonstrated that a small tuber the size of a walnut is capable of killing a calf within four hours, and because a small quantity of the deadly root may be fatal to man.

We should know more about so dangerous a plant. In the first place, water hemlock grows in wet or moist situations only, such as in marshy places, along ditch banks and on wet roadsides. The plant has much the appearance of wild parsnip or wild carrot (both harmless species), but it can be readily distinguished from either of these two plants by the purple stem and the cluster of fleshy roots which frequently resemble a bunch of small sweet potatoes. Both wild carrot and wild parsnip are simply the

wild forms of our common garden plants and possess single roots like ordinary carrot or parsnip. If in doubt, cut the root and if a few tiny drops of a shiny, brilliant yellow liquid are exuded, the plant is water hemlock. Another good characteristic is found in the leaves; the leaf veins terminate at the bases of the notches between the marginal teeth instead of at the tips of the teeth, as other leaf veins do.

The danger of hemlock poisoning is greatest during early spring days, when the roots have been exposed by the thawing of the land, and during times of drought, when hogs root for food. The poison is concentrated in the roots, although field experience indicates that the tops are also dangerous. Feeding experiments with the foliage have failed to produce sickness or death, but the succulent young roots should be regarded with strong suspicion. The plant is dangerous at all seasons of the year, although it is possible that the poison is most virulent during springtime.



¶ One of the Roycroft Squads planting trees. ¶ Over 25,000 white pine seedlings were planted in one day.

¶ That which lives after the action has survival value. He who plants a tree has the joy of doing it; it adds to the value of his estate; but the trees will exist long after the man has turned to dust.

—ELBERT HUBBARD

Planting 25,000 TREES in one day—

Ⓒ How a little, nature-loving village made reforestation a big success. Ⓒ A lesson for many other small towns is here. Read

By

Irving Price

“**I** TELL you, it's the biggest day East Aurora ever had,” said an old villager as the parade went by.

There have been many big days in East Aurora, New York, since 1895, when Elbert Hubbard made his astounding offer of one dollar a load for field stones, and started to build the Roycroft Shops. The farmers thought their village neighbor was surely going crazy, but they rushed their surplus nigger-heads, boulders and plain rocks to market, to get some of the easy money before the bank broke. Unfortunately the supply of sizeable stones gave out before the demand was satisfied, and the top story of the big print shop had to be finished in timber. The field-stone market reverted to a standstill, but ever since plowing has been easier in the fields around East Aurora.

During Hubbard's life there were many happenings in town, and the

farmers came to know and respect him as a good citizen as well as a man of genius—and every year since 1915 The Roycrofters and their neighbors had planted a tree on May 7, in memory of their founder's tragic death on the *Lusitania*.

FOR this year, 1923, a new idea was offered by Luther W. Tarbox, at a winter meeting of the Fish and Game Club. The idea spread until it took in every organization in town—why not combine a reforestation program with the Hubbard Memorial? And every individual, from Elbert Hubbard II, president of the village, to the newest tender-foot Boy Scout, answered, “Yes, let's do it. I'll help.”

The Fish and Game Club, assured of support, offered to furnish and plant state-grown white pine seedlings for every farmer who was

interested. The farmers were interested, for every farm has waste corners, bare hillsides or other spots that need trees, after several generations of despoiling our native forests. One city editor commented that this was the first time on record that farmers have ever cooperated with a sportsmen's organization.

To their surprise twenty-five thousand trees were requested, many more than they had bargained for, but they made good. Through efficient organization and hard work every tree was planted, even if some of the local storekeepers and printers had blisters on their hands before they finished.

The big parade was the spectacular feature of the day.

First the band, followed by the members of the Village Board—then five troops of Boy Scouts in uniform—next The Roycrofters in their outdoor regalia of hiking boots, red-topped socks, knickers, flannel shirts and flowing black ties—the Girl Scouts in khaki—farmers in overalls—members of the Fish and Game Club and members of the local Board of Trade, also dressed in overalls and jumpers.

The last three groups looked much alike, and they all carried picks, shovels or spades.

Then came the school trustees and a thousand school children and teachers, each with a bright new American flag. Bringing up the rear were trucks and cars of all descriptions loaded with digging implements.

The line of march led from the center of the village to the disposal plant, where two thousand trees were planted in thirty minutes of organized effort. They worked in teams, some digging the holes, others following with the trees and with water, while the rearguard filled in the earth around the roots. It was real fun for everybody, the most successful kind of community enterprise. The Scouts did their full share to make this record and had been on the job since sunrise, as well as the men.

The same evening the Board of Trade held a dinner at the Roycroft Inn, where it was decided to make Reforestation Day an annual event. At present writing it appears that it will be Reforestation Week hereafter, for over one hundred and fifty thousand trees have been requisitioned for 1924—and more requests coming every day.

The moral of this tale is, "Go thou and do likewise." Every community can handle its own reforestation and have lots of fun in doing it.



C. Planting 2,000 trees in 30 minutes on waste land belonging to the village of East Aurora, N. Y.

Liming the SOIL

By C. A. Bacon

THE use of lime as a soil corrective or tonic is becoming generally recognized. Yet farmers often fail to secure the benefits claimed for it. When negative results meet the gaze of a farmer, he is very apt to condemn the lime treatment, charge his experience to profit and loss, and harangue the neighborhood against these "new fangled" ideas.

THE occasion for this article is experience of this very sort. The writer told a farmer who had a sour, sandy soil that lime would correct this condition and enable him to grow clover. The test showed four tons of lime per acre were required to neutralize the sourness.

The farmer plowed early in the Spring, spread the lime and sowed oats and clover expecting to start a vigorous growth of clover. The oats grew, yielding a crop of forty-five bushels per acre; the clover started and reached a growth of three to four inches in height, then wilted and finally died in July.

Searching for the cause revealed a soil condition, not unusual, but quite conducive to upsetting any rigid rule for applying lime.

In this instance the weather was very dry, the last half of June and the first half of July. No rainfall. The fact that the oats continued to grow during this time indicates that moisture was coming up from the sub-surface by capillary attraction. The ground showed sufficient moisture to keep the clover growing.

After the clover died, an analysis

of the soil, six inches below the surface, showed a sour condition even though it was neutral a few days after the application of lime in the early Spring. Digging three feet into the ground brought to light a sour soil at that depth.

The deduction then becomes very simple. The moisture rising passed through this area carrying the acid up to come in contact with the roots of the clover. While the early Spring trend of moisture was downward, very obviously the lime was doing its work well. In this instance the movement of water into the ground must have been slow for the lime spread on the surface could not have reached a depth sufficient to neutralize the acid moisture before it reached the clover roots.

Assuming this to be the cause, lime at the rate of two tons per acre was spread on the stubble, and the ground plowed nine inches deep in September. The object of this treatment was to turn the lime under to force the upward moving moisture to pass through a limed area before coming in contact with the clover roots. (turn to page 63)



Six County Agents who received awards for excellency of their county soil-fertility programs from Committee of the American Society of Agronomy at Chicago. *First row, left to right, C. F. Class, W. F. Gahm, E. G. Roth; Second row, left to right, F. R. Churchill, R. E. Wilson, R. E. Gwin.*

6 AWARDS for County Soil-fertility Programs

By Herbert C. Brewer

MOST of the readers of BETTER CROPS know something about the county agent's job. From the little I know, I could write a book. Any county agent could doubtless write several volumes without feeling he had really gotten started. If there is any man in the country who is handling a man-sized job, he it is. The county agent earns every nickel he is paid. Measured in terms of his potential power to vastly expand the agricultural resources of the country simply through organizing and directing the farming practices of his county toward better things, he is one of our most important men. Agriculture is the science of the efficient

production of food. The county agent is its apostle and missionary.

But one wonders after spending a day or two of vain effort to follow his pace, how the county agent ever gets enough quiet moments to sit by himself, apart from the daily confusion of seemingly petty detail, and figure out just what it's all about. How does he ever get away from the tumult long enough to see the trend, catch a glimpse of the goal, visualize the means by which it may be attained?

And yet during the past year, nearly 50 county agents in almost as many sections of the Northern States have been doing that very thing. Six of them have just been

accorded high honors for—but I am running a little ahead of the story.

In September, 1922, the Soil Improvement Committee of the National Fertilizer Association, after consultation with officials of the American Society of Agronomy and of the colleges and experiment stations of the Northern and Eastern States, announced to the county agents of those States a plan for the development of county soil-fertility programs. Briefly, this plan constituted an appeal for greater attention to the importance of developing in each agricultural county a definite, rational program for the maintenance of the fertility of its cultivated lands.

In order to stimulate interest and induce immediate action, the committee offered to pay the expenses of the eight men, who should submit the best reports of work accomplished, to the annual meetings of the American Society of Agronomy in Chicago, November 12-15.

In order to insure impartial and unbiased judgment upon the reports, a Committee on Awards, composed entirely of members of the American Society of Agronomy, was appointed. It included Prof. F. E. Bear, Ohio State University, Chairman; Prof. S. B. Haskell, Director, Massachusetts Experiment Station and President, The American Society of Agronomy; Prof. M. F. Miller, University of Missouri; and Dr. A. G. McCall, Maryland Experiment Station. These men were charged with the responsibility of making the awards, but to the extension directors of the various states fell the task of first weeding out the reports which they thought undeserving of consideration by the judges.

In order that each county agent might know about what would be expected of him, the judging committee announced the following scorecard, which they used later in making the awards:

Score Card for Judging the Work of County Agents From Reports Submitted by Them on Their County Soil Improvement Programs.

Points to be Considered		Relative Weights
1 Analysis of the Problem		
Formulation of a statement of the problem as determined by the nature of the soil and the methods of soil management which seem to be feasible in the various systems of farm management which may or should prevail		30
2 Methods		
An outline of the plans by which it is hoped to improve the methods of soil management in the county with specific reference to demonstrations, meetings, press notices, publicity, etc.		20
3 Results		
A statement of the extent to which the analysis of the problem appears to be correct and the methods effective as measured by success in carrying out the program. This should include field data, photos, records of meetings, copies of press articles or of extracts from the specialists' report		30
4 Applications		
An outline of the supplemental plans looking toward the follow-up work with special reference to the means to be employed in measuring the extent to which the program is successful in improving the soil management practices of the county and to the further steps to be taken in insuring continuity of progress		20
TOTAL		100

On October 25, 1922, the Committee on Award met in Columbus and subsequently announced the names of six men to receive the awards. They were as follows:

Walter F. Gahm, Scioto County, Ohio.

E. G. Roth, Crow Wing County, Minnesota.

R. E. Wilson, Kent County, Delaware.

C. F. Class, Warren County, Ohio.

R. E. Gwin, Cherokee County, Kansas.

F. R. Churchill, Addison County, Vermont.

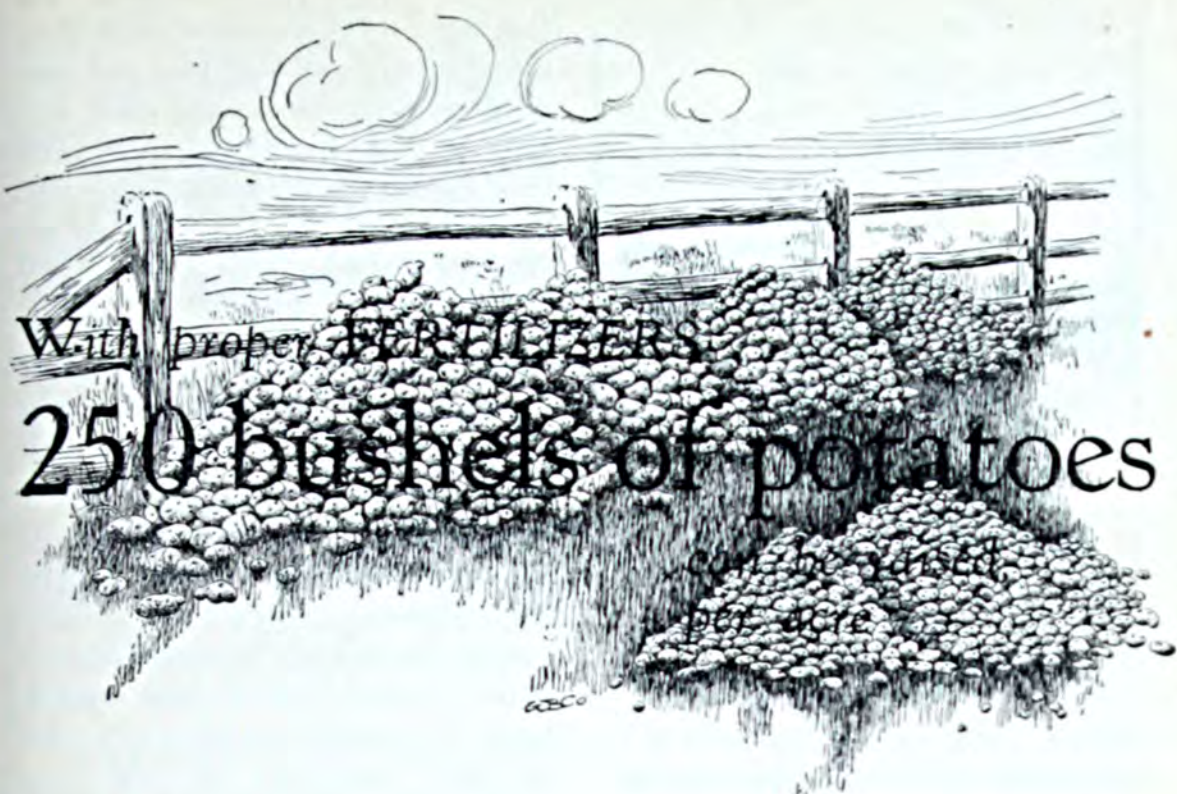
Mr. Gahm's program was given the highest ranking and because of its unusual merit, it will be reviewed in some detail in next month's issue. Mr. Gahm was also accorded the unusual distinction of a place upon the Society's program at Chicago, and what he had to say at that time regarding his work was received with marked interest.

There seems to be little doubt but that this first year's work already has been productive of important results. Mr. Wilson, speaking for the successful county agents, at a meeting given in their honor in Chicago, declared, "Even if we had not been given the trip to Chicago, we would have considered our work as having been most worthwhile. We feel that this important phase of our duties is now well organized and will go forward constantly and more rapidly than could have been possible otherwise." That the American Society of Agronomy is gratified by the work which has been done is indicated in the resolution which was passed at its recent meeting, *i. e.*:

RESOLVED, That the thanks of the Society be extended to the Soil Improvement Committee of the Na-

tional Fertilizer Association for their interest in the soil-fertility program and recommend that the Committee continue its support.

The six soil improvement programs offer a strange, an almost incredible range of conditions and problems. We like to think of the pioneer days, the days of the 1700's and 1800's, as gone—almost forgotten. But we find, for example, in the program for Crow Wing County, Minnesota, that land clearing is an important phase of the development of its agriculture. Apparently, the pioneer days are not all past. Not that there is more agricultural land in this country to be explored and placed under cultivation; our present tillable acreage probably will not increase very much nor very fast. No, our pioneering is of a different, a more important, permanent sort. We are pioneers in fertility. Ours is the task of discovering how to use the same land year after year with increasing or, at least, constant profit. Ours is the duty of growing better crops at lower cost. One thing we know! The land, our great, common resource, will not respond indefinitely to exploitation. Today, in the older cultivated sections of the Eastern States, there is no question, Shall I use fertilizer? It is rather, What fertilizer and how much is best suited to *my* crops on *my* land? It has reached the stage where every farmer has his individual problems—problems that cannot be answered fully by experience, demonstration or experiment anywhere else in the world. It is only a question of years before the same thing will be true wherever crops are produced in this country. Already in Missouri and Iowa, hitherto unsuspected soil plant-food deficiencies are being revealed by the surprising responses which (turn to page 38)



THE potato crop is one of the most valuable money crops in the rotation. It is coming to be one of the most important of our field crops, because, if properly grown, it is usually a profitable crop in itself; besides, it is a crop which is improving in its character. Crops of grain and grass grown after potatoes succeed much better than when sown after many other crops.

The reasons usually given for this improving character of the crop are that it is a cultivated crop, and therefore requires constant stirring of the soil, making the plant food in it more available, and because, if it is fertilized properly, the residues of fertilizers which the potatoes have not used are still available for the use of the crop which follows.

It must not be assumed, however, that potatoes can be grown profitably everywhere and by everybody. The average yield of potatoes in our Eastern States is from 70 to 80 bushels per acre—a yield that, on

the average, does not pay well. It is only those who get a yield of 150, 200 or 250 bushels per acre that are really making it a paying proposition. There are a small number of growers at the present time getting 150 bushels per acre; there must be, therefore, a large number of growers who obtain less than 70 bushels per acre.

The cause of the difference in yield between 70 bushels or less and 150 or more is due largely to the intelligent use of commercial fertilizers; even our best soils in their natural condition, while they may contain enough total plant food, are not supplied with a sufficiency of the right kind at the right time, and, because yard manures are neither sufficient in quantity nor properly adjusted in respect to plant food to meet the requirements in the best manner, recourse must be had to artificial supplies or fertilizers. That is, while it is possible to grow a big-paying crop of potatoes on our best



soils without heavy manuring, and while it may be possible on our light soils to grow big-paying crops with heavy manuring, neither one of these methods will always result in profit, first, because, if depending entirely upon soil supplies, the crop would have to be an all-season crop requiring a long period of growth and constant cultivation, or it would have to be manured very heavily and thus make the cost so great as to leave but a small, if any, profit.

In the growing of potatoes, therefore, from the fertilizing standpoint, it is important that the crops should be grouped as follows: Early potatoes, main-crop potatoes and late potatoes, each requiring special characteristics of soil and special fertilizers in order that they may return the largest net profit. It does not follow always that the largest crop is most profitable. For example, in the growing of potatoes for the early markets, whether they are grown in South Carolina or on Long Island, the early market potato usually brings a much higher price per bushel or barrel than the main-crop potato. Furthermore, in many sections of the potato-growing states

the early market potato requires a much lighter soil, that is, a soil containing more sand—one that will heat up more quickly in spring and thus permit an earlier working and a more rapid growth than is required for the main crop.

The yields of early potatoes are ordinarily not so large as for other kinds, because the varieties that can be grown very early in the season or grown quickly have not the opportunity to make so large a tuber as those that have the entire season at their disposal. Moreover, potatoes grown for the early market must make a large part of their growth before the conditions are really very favorable for rapid soil activities, and therefore must be supplied with fertilizers containing a larger proportion of food already prepared for the plants to absorb them.

In other words, in the growing of potatoes for the early market the soil is regarded more as a suitable place for the plants to grow rather than as a place where they may obtain a large part of the food which they require. Hence, in growing early potatoes, commercial fertilizers are not only a very useful amendment, but they are really absolutely necessary to make big and profitable crops and also to insure quick maturity. Maturity must take place when ordinarily the most rapid growth is being made.

In the case of the main crop, reliance may be placed upon the soils for a considerable supply of the needed plant food, first, because the crop may utilize practically the entire season for growth, therefore being able to absorb from the soil a much larger proportion of food; and, second, as it is not necessary that they should be planted so early in the season, the necessity for so large a proportionate amount of readily

"available," immediately usable food is not so apparent, and thus the cost of the fertilizer may be reduced.

For the late crop the same principles which apply in the main crop apply more specifically, for in the late crop planting is not usually made until the weather is warm and all soil agencies are active, and, because sun, air, water and bacteria are all exercising their maximum effect during the summer season, soil food is made available much more rapidly, and not only a less quantity but a different kind, must be used in order to derive the most profit.

Potatoes belong to that group of plants which are called "potash-loving," that is, requiring proportionately more potash than many other kinds of crops. The form of potash is also important, especially for the main crop, as the muriate has a tendency to encourage the growth of a larger and rougher tuber and one often more watery than if potash in the form of sulphate were used as the source of supply of this element. In the growing of potatoes on light soils the form of potash is not so important, for the chlorine, which is believed to be the cause, is easily washed away from the light soils.

The practical questions are, therefore: What fertilizer shall I use, and how much shall I use per acre? While the analysis of the potato is some guide as to what to use, it must be regarded as a guide, and not as a rule, because, if it were possible for the potato to use just the kinds and amounts of constituents which it takes out, the fertilizer must be distributed everywhere in the soil; the conditions of growth must be absolutely perfect during the entire season, and these conditions cannot be fulfilled.

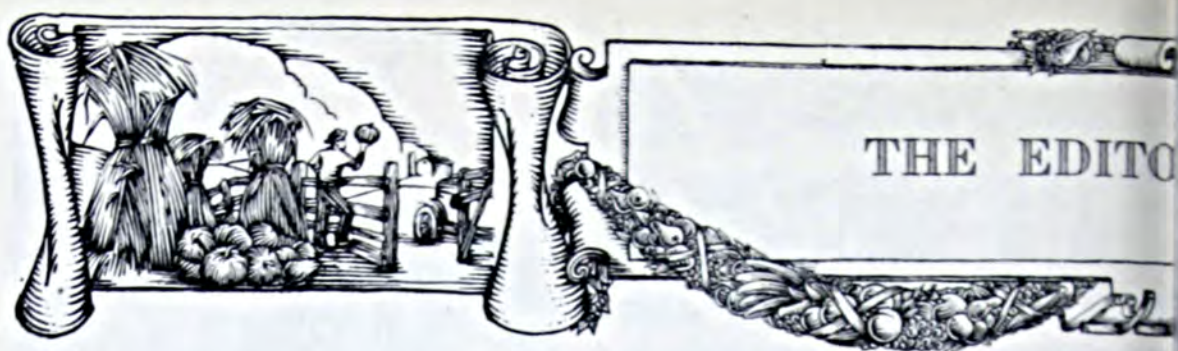


A crop of potatoes of 200 bushels per acre will contain practically 30 pounds of nitrogen, 12 of phosphoric acid and 60 of potash. If these were rendered in a formula they would have to be stated as follows:

Ammonia.....	3.00%
Phosphoric acid.....	1.00%
Potash.....	5.00%

The main thing that this analysis shows is that the element taken out in smallest quantity is the phosphoric acid, and that in the largest quantity is potash. It would be manifestly foolish to apply a formula of this sort, because it would be absolutely impossible to distribute such a small quantity of phosphoric acid, even if soluble, so completely as to enable the plant roots to reach it and utilize it for the crop. The proportions in which these elements exist do indicate, however, the use of nitrogen and potash in excess of that of phosphoric acid in order to maintain the balance.

As a rule, the brands of fertilizers made by the manufacturers are nearly always richer in phosphoric acid than in any other constituent, and there must be some good reason for this, although (*turn to page 52*)



ROTATION OF MEN Land becomes tired of raising the same crops year after year. It runs out of phosphorous, potash, or nitrogen—one, or all three. It becomes infertile and finally refuses to function.

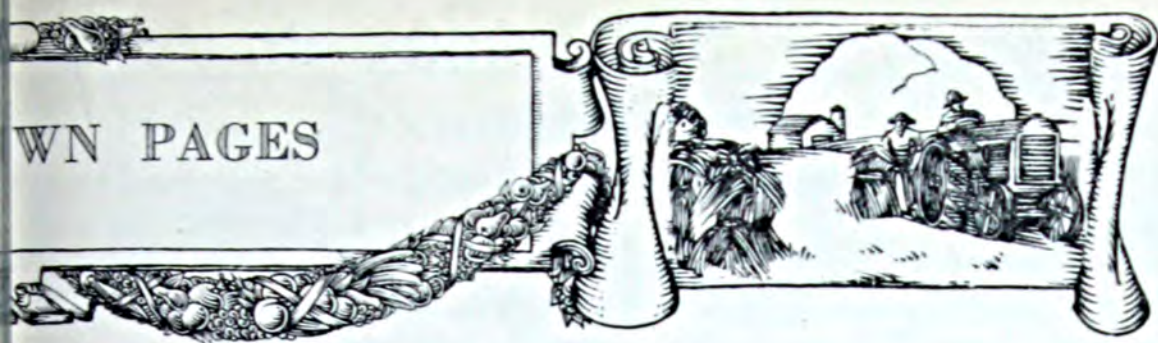
We have learned at least two methods of overcoming this tendency of the soil to become indifferently apathetic—we can rotate our crops, thus giving the soil something refreshingly new to think about each season, or we can chemically and physically inject artificial stimulants that brighten the outlook, increase the ambition of the soil and cause it to laugh a harvest as we tickle it with fertilizer.

I wonder if a wise and provident Nature has not arranged her universe on a plan that demands either the *rotation of men*, or an artificial mental Martini of some kind?

We hear much about men leaving the farm. I do not believe that those who forsake agriculture do so because of their inability to make a living. I think they have simply become mentally infertile. They are tired of doing the same things over and over again—they need an injection of mental potash, and Nature rotates them to other fields. They move to the hilarious city where there is something doing every minute.

These country folk who transfer their ambitions to urban life lend a something to the community that was lacking before their arrival. Lincoln came to the political life from the woods, bringing to a cosmopolitan circle the cosmic pollen of a frugal and industrious mentality which etched his name deep in the granite of his times and of all time.

This inter-pollenization—this *rotation of men*—is not something to “view with alarm.” I believe it is a wise precaution and provision of an all-encompassing Nature, designed by her to prevent the fields of men’s minds from becoming fallow, futile and infertile.



Let the farmer move to the city and the clerk to the ranch—each will bring to his new work a fresh, active mind, unhampered by precedent and tradition—a new pollen that will stimulate both grange and town. Selah!

NO SUBSTITUTE FOR WORK Not many years ago to say that a man worked for a living was to insult him. The very term “business man” was originally a slur, meaning a “busy-ness man”—one who was so unfortunate in the selection of his ancestors as to have to sweat for his sustenance. Now we know that work is the real salvation of our cosmic ills.

Every invention, every comfort gained, every progressive move is the result of work—90 per cent. perspiration and 10 per cent. inspiration being the set and unchangeable rule for success and progress. There is no substitute for work.

Men like to sit around and plan. They like to smoke good cigars and in the wreaths of their ropes dream great things. They draw up bills and legislation, draft pamphlets and other rubbish in a vain attempt to circumvent Nature—to find the royal road to social ease, when there is no royal road to social ease, except that long, thin road—that arduous lane called “WORK.”

Even the preparation of two editorial pages like these you have just been skimming over and trying to read—is work. They were written over four times, and will not be of any real value until they are re-written fourteen times more. You see that I am nothing, if not honest. There is no substitute for work.

All right, Jack, hitch up the plow, I'm ready!

Yours to a cinder,

Jeff Mc Dermid

6 Awards for Soil-fertility Programs

Herbert C. Brewer's story from page 32

crops are making to fertilizing applications. Referring to Crow Wing County again, a county which 20 years ago was practically all in timber, County Agent Roth reports that on the peat land, which comprises a large proportion of its area, potash and phosphate fertilizers are producing splendid crop increases.

Is there, then, a need for soil-fertility plans; a need for organization to insure to our children and to theirs an opportunity to make at least as good a living as we are making; an incentive to begin, sooner or later, a definite, sensible effort which will insure the food supply of future generations?

In the opinion of the Committee on Awards, the soil-improvement program which Walter F. Gahm has developed in Scioto County, Ohio, was the most complete of all that had their consideration. It illustrates something of what can be accomplished by one who is able to diagnose correctly existing conditions, to develop a plan of attack, to organize every resource for carrying out that plan, and to effectively put the whole thing over.

Mr. Gahm was raised on a farm in a neighboring county and therefore was fairly conversant with the needs of Scioto County before he actually undertook to meet them.

Scioto County is located in the south-central part of the State, on the Ohio River. It is hilly country. The soil, excepting the river bottoms, is acid, lacks organic matter and all the plant-food elements, particularly phosphorus. Drainage in general is good. The land responds to good management.

There is a wide diversity in surface features and soil types and

naturally there is a corresponding diversity in types of farming. General farming, orcharding, market gardening, and livestock farming were the principal activities.

Little attention has been given to systematic soil improvement. The yields of ordinary farm crops were low. The carrying capacity of pasture land was far from satisfactory. A serious proportion of the cultivated land was in process of severe erosion. Less than 1,000 tons of limestone per year and not over 60 pounds of fertilizer per crop-acre per rotation were being used in the county. Only 2.6 per cent. of the cropped acres were in legumes. Each livestock unit required six acres of pasture land for its maintenance.

The Program

Four major lines of work, therefore, were decided upon as constituting a program of improvements, i.e.:

1. The use of more limestone.
2. The application of more fertilizers of the right kind.
3. The introduction of better crop rotations, including larger acreages of legumes.
4. The rejuvenation of permanent pastures.

Better handling of manure and the use of more tile in some soil types also had their place in the program.

The details of Mr. Gahm's program as developed during the past six years in co-operation with the county and township farm bureaus, the extension specialists of Ohio State University, and community leaders will be given in the January BETTER CROPS. Watch for it!



Dear Jeff:

I have read the magazine *BETTER CROPS* very carefully. It shows a lack of knowledge of the true conditions that the farmer works under.

Take the article trying to minimize the importance of wheat, for instance. Of course, I understand that you are not responsible for that article. However, it was your duty to comment on it intelligently and show the fallacy of the article. Wheat, as you know, is a cash crop that enters into world markets, is grown to some extent in every state in the Union, is consumed at a distance from its origin. It, with its by-products, probably fills more cars than any other farm product and on its abundance and profit to the grower depends to a great degree whether he is prosperous or not. Have we so soon forgotten that "Food will win the war?" So many of the other products compared with wheat depend upon the consumption of other products, for instance, hogs eat corn, tankage, mill feeds, etc., cattle corn ensilage, hay, etc., poultry, etc.

Often they are listed separately and it makes an astounding total, but some of the products have been consumed in raising the other. Corn to a large extent is consumed in the county in which it is grown. Something like 87 per cent. is used as feed for live stock and the remainder for human food and industrial purposes. So many people do not know what they are talking about and in doing so seriously injure the cause they wish to help. At the Wheat Council held in Chicago last summer, Gov. Preus, of Minnesota, said we should increase our per capita consumption of wheat to equal Canada's. He said we were only eating a fraction over 51 bushels per head,

while Canada was eating over 90. Were that to happen we would all have to be fitted out with a new set of inner tubes. Of course he got the wrong dope, but not a paper that I saw commented on it. It is things like this that hurt the farmer.

Ignorance where we have a right to expect knowledge.

You will not be able to fool many of us who are in a position to know, but many who do not know are often misled. So if you wish to do agriculture a real service, get some one who can comment wisely on the smooth sounding, yet fallacious article, that is taffy to city people and a cause of disgust to those who know.

One of the greatest causes of discontent of the farmer here in the Middle West is the continual harping on his conditions by someone who can sling ink with ready and fluent pen, but who knows little and cares a lot less about what he writes.

I beg your pardon for this long letter, but I feel very earnestly about the matter.

Here in the West there is a feeling of hate being fostered by farmers who see railroad men getting high wages and noting the indifference of the industrial east to our plight. We did not win the war alone, neither did we profit from it as has organized labor and capital, who obtained our Liberty Bonds. It is a hate that is being fostered by men who fill the air with blatant promises by articles, written by ignorance, published in ignorance, and consumed by ignorance.

Sincerely,

C. F. WOODARD, *Pres. Thayer Co. Farm Bureau, Chester, Nebraska.*



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.

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ROYSTER

Field Tested Fertilizers

Q Herbert Dallam Martin,
of Dallas, Texas, says :

Cotton Seed Selection

Would
Increase **YIELD**

ALTHOUGH the late Dr. Steinmetz produced a fair quality of "synthetic" lightning, and no doubt science will some day find a way to tap the clouds, that time is not yet and the loss from drouth is not a preventable one. E. E. Bartlett, Jr., president of the New York Cotton Exchange, says that the loss from weevil and drouth has been this last season \$750,000,000. However, considerably the greater portion of the \$750,000,000 loss is due to the weevil, and Government experts, after thirty years of research and experimentation and at great cost, have reached the definite conclusion that calcium arsenate will effectively destroy the boll weevil, so that the appalling loss due to the ravages of that curse may be called preventable.

Mr. Bartlett might have mentioned another loss that probably runs into the hundreds of millions of dollars annually and likewise a

preventable one, which is the growers' utter indifference to the matter of seed selection. That is in so far as it applies to the cotton grower, for in the Northern and Western corn

States this question of the value of seed selection has been drummed into the ears of the farmers by the business men and educators — men like Perry G. Holden—to such an extent that very material results have been accomplished.

IN view of the fact that competent authorities agree that the increased yield as a

result of proper 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 are, of course, some splendid and glaring exceptions, progressive farmers who read the farm papers keep abreast of the times and have the energy to make what-

It would be interesting to know just how many hundreds of millions of dollars could be added to the wealth of the South if the cotton crop were grown by the Japanese or the Dutch or the Italians, for we well know that any of these thrifty and intelligent peoples would see to it that none but the most virile seed were planted and reap the attendant harvest.



Co-operation with the Farmer

The American Agricultural Chemical Company is more than a fertilizer manufacturing concern. It is a constructive force in the development of modern agriculture. Our formulas and manufacturing methods have kept pace with the findings of the scientific workers, and the influence of the company in improving crop production has been great.

An important factor in this work is our Agricultural Service Bureau which has co-

operated with farmers for years in discovering important facts about soils and crops. This Bureau has been conducted since its inception by Dr. H. J. Wheeler, formerly Director of the Rhode Island State Experiment Station, a man whose authority on soil matters is beyond question, and whose advice is at the disposal of farmers and others interested in the solution of soil and fertilizer problems. Our Agricultural Service Bureau is for your use; consult it freely!

**THE AMERICAN AGRICULTURAL
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"DOUBLE A" QUALITY
FERTILIZERS

ever effort is necessary to produce better and cheaper crops. And these are the men who are responsible for having checked the ravages of the weevil through the judicious use of calcium arsenate. But they know that they are in the hopeless minority and most of their neighbors, with obligations due at the bank and needing every dollar they can get, will give no thought to the matter of planting the best seed obtainable, either from their own fields or from some breeder. Many of them even sell to the oil mills the best of their seed and then plant along with the trash what is left in their bins at the end of the season.

It would be interesting to know just how many hundreds of millions of dollars could be added to the wealth of the South if the cotton crop were grown by the Japanese or the Dutch or the Italians, for we well know that any of these thrifty and intelligent peoples would see to it that none but the most virile seed were planted and reap the attendant harvest.

ISN'T it singular, then, that the subject is one that arouses practically no interest in the South? I recall that during the administration of Gov. Colquitt, he issued a proclamation to the people of Texas, naming the first Monday in September as "Seed Selection Day." He probably had in mind that, while the men who worked for a wage in the cities were celebrating Labor Day, the cotton grower could not spend it more profitably than in selecting his best seed from the portion of the crop already ginned or else selecting in the field the hardiest stalks from which he would later cull the best developed bolls and then the most virile seed.

At the time of the Governor's

proclamation the people and press were loud in acclaiming the wisdom of the movement and the bankers and merchants hoped it might be the dawn of a brighter day and help the farmer solve some of his financial problems by materially increasing his yield at practically no added expense. It has been only a few years since Gov. Colquitt's administration and do you suppose that any cotton grower in Texas would know what you meant if you mentioned "Seed Selection Day"? Incidentally in this connection to the Dallas Chamber of Commerce is due the credit for having called one of the first meetings to consider the widespread activities of the weevil, which was held here in the City Hall in 1902. Colquitt, then Railroad Commissioner, presiding, and which was followed by a similar meeting in Shreveport the next year. And it was Gov. Colquitt who called the meeting of Governors to consider the same subject, which met in New Orleans in 1911.

ISN'T there, then, an opportunity for Chambers of Commerce, co-operative associations and other organizations which have the facilities for reaching the cotton growers to appeal to their self-interest and urge upon them the value of planting none but the best seed obtainable and to keep eternally at the propaganda until we get from every planted acre in Texas every pound of the best cotton it will produce?

Missiles and Mignonettes

Don't fail to send me BETTER CROPS. I carry all issues to date in my car so, if I have to wait for someone, I have it on hand to read, and often show it to farmers.—*J. B. McCool, County Agent, Clinton, Pa.*

Enjoyed Si Bellew and received some good information on curb markets.—*Mrs. Daisy M. Frazier, Ass't State Club Agent, Stilwater, Oklahoma.*



Is there a farmer in your county

who does not use potash? If so, upon what basis does he decide that it is unnecessary?

Does he believe that there is plenty of potash in his soil? Often it is there, but it is not available; and available potash is the only kind that can feed hungry plants.

Does he decide against sufficient potash because a neighbor got as good results without it? Often soils differ completely on adjoining farms; and the number of years two fields have been cropped may vary half a century.

Does he guide himself entirely by experiments performed at the State College? Often these experiments are performed on soil that is entirely different from the soil in your county; and in addition many experiments are carried through upon a basis that does not intend to prove the value of potash.

Does he know that the only real way to be certain that potash is not a limiting factor in his yield is to *try it one year*?

You advise him to use plenty of potash next season—if he buys mixed fertilizer let him be certain that the potash-unit is high; and you can be certain that your advice will make money for him. *Potash pays!* But be sure that only Genuine German Potash is used, as imported direct from the mines by

**POTASH IMPORTING CORPORATION
OF AMERICA**

81 Fulton Street

New York

PICA GENUINE GERMAN POTASH



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

Our potato crop is about cleaned up. One hundred cars have been shipped at prices ranging from \$26 to \$35 per ton. The crop was about 40 per cent. short on account of the unfavorable weather.—*L. Buckman, Washoe, Nevada.*

More bur clover has been sown in Lancaster County (S. C.) this year than ever before. It is estimated that one thousand farmers have seed patches. Five years ago there were only eight or ten patches of bur clover in the county. Several farmers have acreages amounting to more than 100 acres. This crop is being used mostly as a soil improver and for early spring grazing.—*W. F. Howell, Lancaster, S. C.*

Indications are that the Dane County tobacco farmers are adopting the practice of using less barnyard fertilizer on their tobacco lands and increasing the amount of commercial fertilizer used in the row at planting time. The use of commercial fertilizer in the row gives them some barnyard fertilizer for other crops. Results this year with the combination of commercial and barnyard fertilizer were very satisfactory.—*G. M. Householder, Dane, Wisconsin.*

Cotton about all picked. Ginning practically done. Cotton shortest crop in years. Very little fall plowing done yet. Cotton selling on

streets today at 33½ cents.—*P. P. Gilchrist, Morgan, Ala.*

The Farm Bureau Cotton Association members of Marshall County are building a concrete cotton warehouse at Albertsville. When finished it will accommodate 4,000 bales. A farmers' curb market was started in Gadsden, November 17, which will offer an opportunity to the farmers of that section to market their surplus products at a satisfactory price and at the same time give the consumer an opportunity to make a saving over the retail prices.—*E. E. Binford, Auburn Post-office, Alabama.*

Corn crop in southeastern Iowa much below the standard of quality, with an average of about 35 bushels to the acre. Winter wheat doing well. Farmers, on account of prices of corn and hogs, are sending their hogs to market half finished.—*H. O. Weaver, Louisa, Iowa.*

Sugar beets are all out of the ground. High prices of hay and corn are curtailing the feeding of lambs. The number of dairy cattle is rapidly increasing.—*B. O. Chambers, Scotts Bluff, Neb.*

Fall plowing nearly finished. Feed prices high. Milk prices none too good. Plenty of hay and grain for winter but small amount of ensilage.—*E. L. Blordin, Huntingdon, Quebec.*

*Mixed Fertilizers**Fertilizer Materials*

A.	P.A.	P.	
7	8	3	Muriate of Potash
			Sulphate of Potash
5	8	7	
5	5	5	Acid Phosphate 16% and 18%
4	10	4	Nitrate of Soda
3	10	4	
2	12	2	Sulphate of Ammonia
2	8	10	Dried Ground Blood
2	10	4	
2	8	5	Ground Animal Tankage
0	12	4	Pure Ground Bone

We are prepared to furnish Potash Salts in any quantity

YORK CHEMICAL WORKS
YORK, PA.

NEWTON—*first head of the U. S. D. A.*

(from page 22)

the Patent Office, was named by Lincoln as the first Commissioner of Agriculture. It was many years later that the office of Secretary of Agriculture was created and given official recognition in the cabinet of the President.

Under his new appointment Commissioner Newton was given full control of the property of the division in the Patent Office and conducted his work independently of the Department of the Interior. The propagating garden, now located in the heart of Washington, was placed under his care and a tract of 40 acres, constituting at present the grounds of the Department of Agriculture, was assigned to him for an experimental farm.

In 1862 Commissioner Newton appointed William Saunders to be superintendent of the propagating gardens. During the same year C. M. Wetherill was appointed Department chemist and started experiments with new varieties of grapes with which it was thought analyses could be made with profit. His experiments with grapes and also with sorghum sirup were given to the public in the second bulletin issued by the Department. The first bulletin dealt with the objects and aims of the experimental garden.

Commissioner Newton appointed Lewis Bollman as statistician and Townsend Glover as entomologist. He imported several hundred bushels of choice seed wheat, corn, rye, and other cereals, and several thousand dollars' worth of other seeds. These seeds, with others, were distributed to farmers and every effort made to promote the production of more and better crops. In all, Com-

missioner Newton distributed in 1863, 1,200,000 packages of seed and 25,750 bulbs, cuttings and vines.

At the suggestion of Commissioner Newton that the government establish a practical service for the prediction of storms and floods, the organization of a meteorological division was made in the office of the Chief Signal Officer of the Army, and finally, after many years, in the establishment of the Weather Bureau as it exists today.

The following summer, 1865, the Commissioner finally got possession of the 40-acre farm and started his experimental farm. It was at this point that the second Newton joined the forces of the struggling Department, for a son, Isaac Newton, Jr., was placed in charge of the new farm.

Under the leadership of the second Newton tests were made during the summer of 1865 of new and promising varieties of corn, wheat, rye, oats, barley, rice, sorghum, peas, beans, grasses, clover, cabbage, lettuce, onions, tomatoes, potatoes, and melons. Seventy-seven kinds of potatoes were tried. A large quantity of seed was saved from the farm and distributed during the winter and spring.

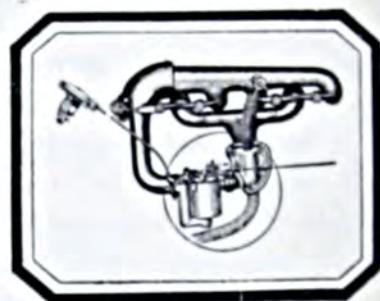
Such, in a brief way, was the work and development of the Department of Agriculture under the leadership of that great man, Isaac Newton, followed, as he was, by his son, who remained in active service for years after his father's death, and today by his granddaughter.

Little do we appreciate or realize the struggle made in the early day that agriculture might be justly recognized and advanced.

Over 100,000 Stromberg Carburetors and Hot Spots Sold

for Fords!

A Carburetor sales record never before equalled — and made possible only by the fact that the STROMBERG CARBURETOR and HOT SPOT for Fords delivers more mileage—more power—than any other Carburetor offered. It makes possible quicker get-away and much easier starting—four great essentials that every Ford owner is looking for.



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.

*More than 135
Passenger Car
and Truck
Manufacturers
use Stromberg
as standard
equipment.*

See your nearest dealer—if he doesn't carry the famous Stromberg Carburetor for Fords, write us direct for free literature and further information.

**The Stromberg
Motor Devices
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64 East 25th Street
Chicago, Ill.
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New

**STROMBERG
CARBURETOR**

Does it!



Fertilizer Salesmen Meet College Scientists

During the last month or so, meetings for fertilizer salesmen have been held in four of the eastern States—Virginia, Maryland, New York, and Pennsylvania, primarily to give the officials of the colleges and experiment stations an opportunity to explain their respective soil-fertility programs, particularly as regards the “standard” lists of high-analysis fertilizers.

In general character, the four meetings were much the same—in each, two keynotes were struck; 1, the importance of cooperation between the station workers and fertilizer salesmen, in order that all members of both groups might carry the same fertilizer story to the farmers; and, 2, the necessity, in view of the tendency toward concentrated fertilizers, of more intelligent, helpful service to the purchaser.

The Virginia Meeting

The first of the fall salesmen’s meetings was held at Richmond, Virginia, with about 120 men in attendance. Director W. D. Hurd, of the Soil Improvement Committee, after a brief review of the history of the “high-analysis movement,” which began in 1918, discussed its purposes and the results which have been achieved thus far. As this information, for the most part, has appeared in previous issues of the *News Bulletin*, it will not be repeated at this time.

Director A. W. Drinkard, Jr., of the Virginia Experiment Station, spoke optimistically of the future of the fertilizer business in the State. “A million tons of fertilizer can be used in Virginia in economic crop production, and this amount will in all probability be used within the next ten years. The prosperity of

Virginia depends upon its agriculture, just as the prosperity of the fertilizer industry depends upon its selling those fertilizers which give the best results. Virginia’s greatest natural resource is her land. More intensive agriculture is necessary to the proper development of the State, and this will necessitate a much larger use of plant food.”

With regard to orchard fertilization, Director Drinkard voiced the sentiment which prevails generally that nitrogen has an important effect upon growth and yield, while phosphoric acid and potash often produce negligible results.

Director T. C. Johnson, of the Virginia Truck Station, Norfolk, related several years’ results showing that the best results with fertilizers on truck crops are obtained in connection with lime, legumes, and manure. He emphasized the importance of potash in improving the carrying qualities of truck crops and strawberries and the necessity of using both organic and inorganic ammonia in vegetable fertilizers.

The various ways in which a fertilizer salesman can help himself and the community was the subject of Professor T. B. Hutcheson’s talk. “The one thing,” he said, “we need in Virginia is a better production per acre, and we can’t get very far without fertilizer. That’s why we want fertilizer salesmen to get so close to the experiment station that we can consider them as extension agronomists.”

Doctor J. B. Weems, State Chemist, and several representatives of the industry also made brief talks. Mr. C. W. Priddy, of Norfolk, emphasized the economies to the manufacturer and the benefits to the farmer as rapidly as the number of

brands and grades are reduced. "Every man," he declared, "should go home and sell the Virginia analyses and sell service, too. It's not salesmanship to sell by cutting prices. A real salesman can sell a thing on its merits; there is no merit in selling at a loss."

Mr. H. Walker Wallace, of Richmond, asserting that salesmen should talk values and service and not alone tonnage, stated that already there is a concentration of demand upon high-analysis fertilizers and that the result of the movement is unmistakably apparent in the tonnage being handled in the Middle West.

The New York Meeting

At the meeting in Ithaca, November 2nd, Doctor T. L. Lyon, head of the Department of Soils, laid the basis for an explanation of the New York soil-fertility program by indicating briefly the quantity and types of experimental work being done in the State.

Following Director Hurd's story of the high-analysis movement, Professor H. O. Buckman discussed fertilizer systems as related to New York soils. There are two general fertilizing systems that have been developed in the State, one for mineral soils containing only about five per cent. organic matter, the other for muck and peat soils containing approximately 70 per cent. of organic matter.

The mineral soils are low in phosphoric acid, and even that which is present is largely unavailable in the ordinary soil. For these conditions, a system has been developed involving the use of acid phosphate and the maintenance of nitrogen by crop residues, farm manure, and a rotation, including a legume. This, the phosphate system, may and often does necessitate the use of complete fertilizers on special crops.

Muck and peat soils are very high in organic matter and nitrogen but relatively low in phosphoric acid and potash. Their greatest need, however, is for potash, and fertilizers recommended for these soils are composed accordingly.

Professor E. L. Worthen gave a clearly defined analysis of the New

York fertility program and explained in considerable detail the use of the "New York High Five" fertilizers.

Space does not permit an extended account of each feature of the program, which was long and interesting. In addition to those mentioned, Dean A. R. Mann, of the College of Agriculture, Professor G. F. Warren, Economist, Professor Paul Work, Vegetable Gardening, Professor A. J. Heinicke, Department of Pomology, and Professor A. F. Gustafson addressed the meeting on various phases of crop fertilization and agricultural conditions.

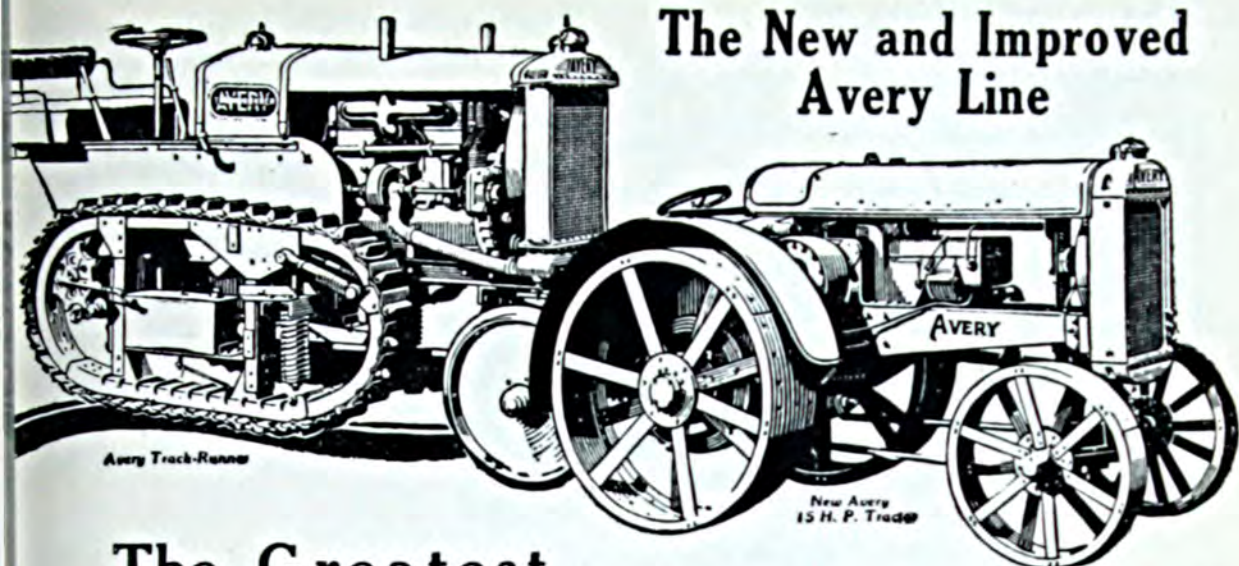
According to Professor Warren, New York farmers are much better off this year than last, and their purchasing power is just about normal as compared to the pre-war basis. The outlook for the long pull ahead is brighter at present than it has been for some time, but still calls for conservatism and safe business practice.

The Pennsylvania Meeting

At the opening of the Pennsylvania meeting at State College, November 8th, Dean R. L. Watts, welcoming the visitors to the College, stated, as his experience as a successful truck grower, that most truck farmers fail to use enough fertilizer to secure maximum profits.

Professor F. D. Gardner followed with a talk on economy in the use of fertilizer. Speaking of the savings which are being effected through the reduction in the number of analyses and the manufacture of high-analysis goods, he said:

"Reduction in number of analyses saves in storage space and facilities, saves in printing of bags and tags, saves in bookkeeping and accounting, saves in loss of time in mixing, and reduces the work of the State control officials. High-grade goods save freight and bags and reduce space for storage and reduce labor in handling on the part of both producer and consumer. Economy on the part of the consumer is quite as important. First, he should purchase the analysis best suited to the soil and crop to be fertilized, be guided by fertilizer tests and experience, use heavy applications for



The Greatest Achievement in Tractor History

NEW 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.

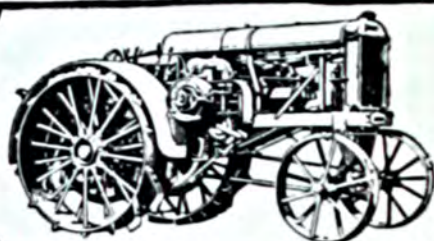
Branch Houses, Distributors
and Service Stations covering
every State in the Union.

AVERY

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

The New and Improved Avery Line

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-Roller - Tractor. Also built in 45-65 H. P. size



Avery "Road-Razer"

Avery Motor Truck



Avery Grain-Saver Thresher. Built in "Yellow-Baby," "Yellow-Kid" and "Yellow-Fellow" sizes.

Avery Header Thresher. Harvests and threshes the grain in one operation.



crops of high money value and light ones for crops of low money value. The range is from 100 to 2,500 pounds per acre." Professor Gardner also called attention to the importance of proper distribution of fertilizer in the soil.

Director Hurd's talk on the high-analysis movement was followed by a discussion by Professor A. L. Patrick, of proper fertilization as determined by soil type.

"Factors that must be considered in determining the kind and amount of fertilizer to use," he stated, "are:

1—Character and composition of the soil.

2—Requirements of the crop.

3—Character of preceding crop.

4—Fertilization of other crops in the rotation.

5—Whether or not manure is used.

6—Value of the crop.

7—Cost of the fertilizer."

Professor W. B. Nissley emphasized anew the fact that market gardeners are being forced by the shortage of manure to turn to cover crops and commercial fertilizers for their humus and plant food. Once having made the change, there are few who are not better satisfied with the new system. He suggested the following adaptation of the "New York High Five" to the common truck crops:

For General Use

4-8-4—General.

6-8-4—Asparagus, celery, lettuce, spinach.

4-12-0—4-12-4—Cabbage, tomatoes, peppers, eggplants.

4-8-6—3-10-6—Root crops.

Special Use

0-10-10—Muck soils.

4-8-10—Muck.

Nitrogen top-dressing.

Phosphorous with manure.

The excessive acidity of a large proportion of Pennsylvania soils was characterized by Professor J. W. White as being sufficiently serious as to prevent commercial fertilizers from exercising their proper functions.

Fertilizer recommendations for potatoes were given by Professor Nickolas Schmitz; for the cereal crops, meadows, and pastures by Professor J. B. R. Dickey, and for fruit by Professor R. D. Anthony.

An interesting sidelight on the progress of the high-analysis movement in the State was given by Doctor Kellogg, State Chemist. Already the number of registered brands has been reduced, the number of different analyses is steadily decreasing, while the average plant-food content of the fertilizers being sold in the State is rising.

250 Bushels of Potatoes

(from page 35)

they do not pretend that the phosphoric acid is more important always than the other constituents. Experience as well as practice, has taught, too, that profit from the use of a fertilizer is not so much a question of proportions of nitrogen, phosphoric acid and potash as it is a question of the quality and quantity applied. Nevertheless, formulas carrying

No. 1

4.00% ammonia,

6.00% available phosphoric acid,

3.00% potash,

seem to be better adapted for use for the general crop than those containing other proportions, the variations from these formulas depending upon the character of the crops, whether early, medium or late, the kind of soil, whether poor, medium or good. For early potatoes and for light soils a formula richer in nitrogen and phosphoric acid and carrying

No. 2

5.00% ammonia,

8.00% available phosphoric acid,

10.00% potash,

is to be recommended.

Many farmers buy fertilizers on the "hit or miss" plan, without special regard to either the proportion of the constituents or their quality. It is this class of farmers who, while they may not be failures, do not derive as large a profit as if greater care was used in making selection of brands.



IT has been said that the educated man is he who follows the standards of truth and beauty, who employs his learning and observation, his reason, his expression for purpose of *production*, that is, to add something of his own to the stock of the world's ideas.

The line of least resistance for the fertilizer manufacturer is to compound various ingredients without respect to their chemical properties and their relation to the soil and crop. The past two decades of increasingly intensive farming have been exemplary of the dangers of soil exhaustion, with the accompanying toxic conditions.

The ingredients making up I. P. THOMAS FERTILIZERS are specially selected to accomplish results, to minimize losses resulting from adverse weather and to furnish plant nutrition by which we mean assimilable, productive plant food.

I. P. THOMAS FERTILIZERS are sold to the farmer that he may *profit* from their use.

In Every Fair Bargain, Both Parties Gain.

I. P. THOMAS & SON CO.
Philadelphia, Pa.



Half fed cows yield half full pails

WHEN the meadow or grazing land is scanty the udders are light. Cows cannot make milk from air—they must have food. Not only soil produce bountiful yields it is hungry for plant food. Three elements are essential to plant growth—nitrogen, phosphorus and potash. These three should be returned to the land as fast as your crops remove them. If any are short you will be light and will not repay you for your effort in preparing your seed-bed, cultivating and harvesting.

All crops remove potash. No plant that grows can rear itself without potash. Cabbages remove 270 pounds of potash from every acre; wheat takes out 31 pounds and 55 pounds are withdrawn with every crop of corn.

To be successful you must replace the potash that has been removed from the land. Otherwise you are a miser and the day will come when your potash will become a real limiting factor to prevent further farming. Your land will be "played out."

Bigger yields, bigger profits. Until you are grown in potash and sufficient quantities you will never have for a real make this a potash year—and our plan is to get you started.

Your dealer has Genuine German Potash in stock. Order in the form of mixed fertilizer or in 100-pound sacks. It is absolutely pure. Should be for sale in all good stores. Write or call and we will send you a sample where to get it in the States.

The distribution of Genuine Potash, American Potash, is being managed by the Potash Importing Corporation of America, 81 Fulton St., New York.

POTASH

Genuine German
POTASH

81 FULTON ST., NEW YORK

Two advertisements—and

THESE two advertisements will appear, during December and January, in a list of farm papers read by over a million farm families in the fertilizer-consuming sections.

What do these messages mean to you? This: we are helping you spread the gospel of increased soil-fertility. We are assisting you in your efforts to get more and better fertilizers used in your county and state. We are doing our part to popularize high-analysis fertilizers, and particularly high-analysis as pertains to potash.

You know that the fertilizers used during the

THE POTASH IMPORTING

*Importers of Genuine
German Potash of the
German Kali Syndicate*



The bottom of the barrel—

THERE was an old lady who took only a spoonful or two of flour from a barrel each day and noticed that the bottom was still far away. She exclaimed, "Why this barrel of flour will last forever."

But the bottom finally came. In your soil there are three plant foods—nitrogen, phosphorus and potash. Every crop you grow takes its toll of each of these three elements. You replace some of the food by growing legumes, by rotating your crops, and by returning the farm manure.

But do you return all the potash that is removed? If you do not, there will come a day when the "bottom of the barrel" will be reached.

Manure alone will not do it. You must add potash to your mixed fertilizer, or buy mixed fertilizer that contains plenty of potash.

The use of potash is profitable. Potash pays. If you buy mixed fertilizer 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. 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.

Since May 1st, 1923, the distribution of German Potash, formerly managed in this country by the German Kali Works and the Potash Syndicate, has been controlled by the

POTASH IMPORTING CORPORATION OF AMERICA
81 FULTON ST. NEW YORK

Genuine German
POTASH

what they mean to you

last four or five years in your community have been deficient in potash—they have not contained enough of this essential plant food. Until this situation is remedied no crop in your section will attain its full potentialities.

Readers of farm papers are going to ask your opinion of potash. We ask you to help us as we are helping you. Tell your farmers to use plenty of potash, and convince them that the best way to add available potash is to use Genuine German Potash, either in the form of potash salts or in the form of mixed fertilizers that contain a high potash-unit.

CORPORATION OF AMERICA

81 Fulton Street
New York City
New York

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 sub-soil.

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 larvæ 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.

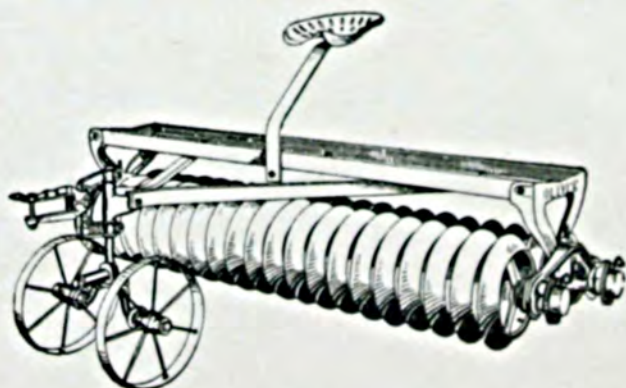
The result will be a seed bed that will be the greatest asset to the farm and to the farmer.

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

OLIVER CHILLED PLOW WORKS

Plowmakers for the World

South Bend, Indiana



How 4,200 Walnut Growers Market Cooperatively

(from page 13)

Shipping and Financing

During the shipping season the shipping department of the Association keeps in close communication with the local associations by telegraph and long-distance telephone, so that it knows at all times the stock on hand available for shipment.

Before a shipment can be made it must be thoroughly inspected to insure delivery to the buyer of the particular quality of walnuts specified in the contract with him. This important work is done by the inspection department of the Association, which keeps in touch with the local associations and examines each shipment through one of its inspectors prior to its going forward.

Samples are drawn from each bag to determine the quality and the size and the appearance of the nuts after bleaching. Cracking tests are made of representative samples and if the shipment passes the standard established by the Board of Directors of the Association an inspection certificate is issued to the local association manager, which constitutes his permit to roll the car on the order of the shipping department.

When the local association manager receives the bill of lading and inspector's certificate, he forwards these with a bill for the value of the shipment to the head office in Los Angeles. Upon receipt of the documents, this office immediately invoices the shipment and draws a draft on the buyer, with bill of lading or delivery order attached. One per cent. is allowed if the draft is paid within three days from the date of presentation, or net on arrival and

examination of car. The drafts are deposited for collection with the Association's bank in Los Angeles.

So long and so satisfactory have been the relationships not only between the Walnut Association and its bank but many others of the California organizations, that the banks give the Association credit as cash for the full face value of the draft, in some cases charging a modest rate of interest to the date of collection. After this, the Association immediately sends its check for 90 per cent. of the f. o. b. value of the shipment to the local association. The local association deducts the amount of its operating expenses and dis-

tributes the balance of the proceeds to the growers.

A surplus of ten per cent. reserved by the California Walnut Growers' Association on all shipments provides the funds for the operation of the central body. After the close of the first pool, which takes place November 20, the balance is returned to the associations and by them to their growers pro rata.

Approximately 97 per cent. of the entire tonnage of the Association is usually shipped under the first pool. The Association does not in any case borrow money to make advances to the local associations prior to the shipping period. If the grower requires funds for his operations he either arranges to finance himself in the usual way or secures assistance from his local association.

The Association's sales and other expenses for the marketing of the 1922 crop were $5\frac{1}{2}$ per cent. of the

$5\frac{1}{2}\%$ of the f. o. b. value of the product. The expenses in detail were classified as follows:

Advertising..... $2\frac{1}{4}\%$

Cash discount.... 1%

Brokerage paid to Association's sales representative..... $1\frac{1}{2}\%$

Interest, rent, salaries, inspection, legal, legislative, growers' services, field work allowances, shrinkage and all other expenses..... $\frac{3}{4}\%$

Total..... $5\frac{1}{2}\%$



For tobacco —Sulphate of Potash

For tobacco, fruit, succulent vegetables, sugar cane and other crops where flavor is an element, sulphate of potash is usually used instead of muriate.

Its slight additional cost is justified. Tobacco growers, for instance, demand sulphate because its use gives a broader leaf, better flavor and superior burning qualities. The use of sulphate of potash does not create an acid condition of the soil which will necessitate a heavy application of lime to sweeten the seed-bed.

Sulphate is always the safest source of K_2O . See that the mixed fertilizer that comes into your county or state is manufactured from Genuine German Sulphate of Potash and you cannot go wrong. *Potash pays!*

**POTASH IMPORTING
CORPORATION of AMERICA**

81 Fulton Street

New York

f. o. b. value of the product. The expenses in detail were classified as follows:

Advertising.....	2¼%
Cash discount.....	1%
Brokerage paid to Association's sales representative.....	1½%
Interest, rent, salaries, inspection, legal, legislative, growers' services, field work allowances, shrinkage, and all other expenses.....	¾%
Total.....	5½%

Approximately 60 per cent. of the Association's advertising appropriation is spent for national magazine advertising, 20 per cent. for poster space and material, and the balance for recipe books, dealers' helps, broadsides, and other methods. All details for advertising campaigns are worked out in advance by the management and the advertising department and are then submitted to the Board of Directors for approval.

Approximately ½c. per pound on the estimated tonnage to be shipped for the season is set aside for the advertising appropriation.

When the Association was organized each of the locals had its own house brand. Almost immediately after the Association was created in 1912, it was found necessary to discontinue them. As a matter of policy it was decided to apply the name "Diamond" brand to cover all walnuts that came above a certain specified quality. After the product is cured, bleached and packed, it is put in branded bags so that all walnuts that are up to the standard quality can be readily identified.

The Association is endeavoring to bring about the invention of a machine that will place the Diamond mark on each individual nut, feeling this will be a big asset and selling point.

1¢ a word —for you

BETTER CROPS wants interesting articles about crops, fertilizers, marketing and subjects of interest to County Agents, Experimental Farm Men and other readers.

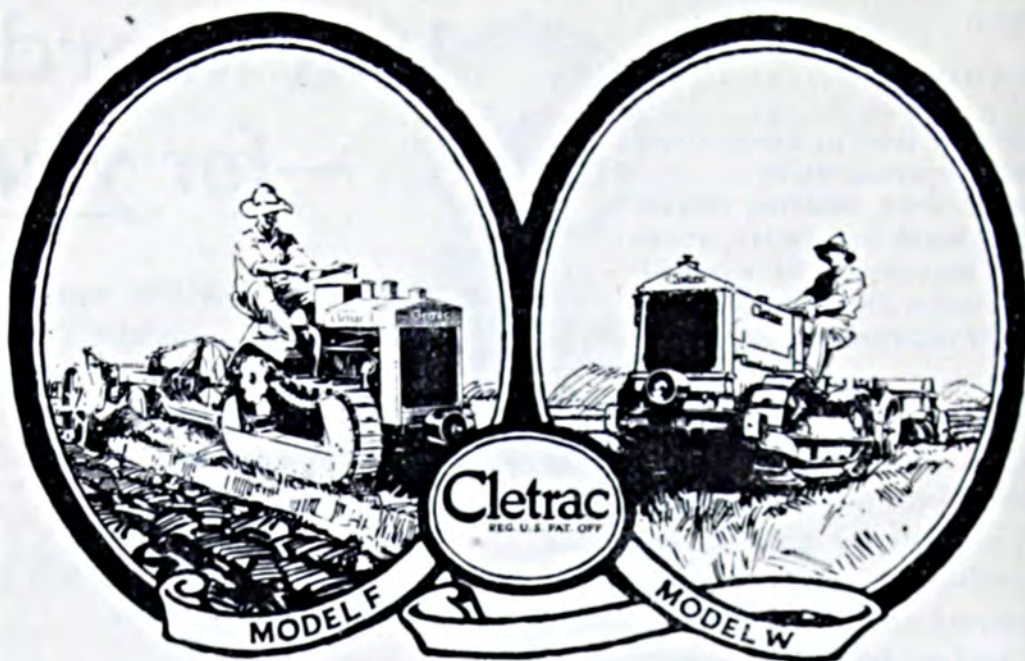
For acceptable stories we will pay at the rate of 1c per word.

BETTER CROPS is edited for the busy man who has not time to read the endless bulletins, farm papers and such material put before him each day. Remember this when you write. Make your story snappy and to the point. Send photographs if you have them. Put in all the local color you can. Do not be afraid to make your article very personal. That is just what we want.

No suggestion is made as to the subject. The editors simply want articles that will be of intense interest to those who constitute its readers—County Agents, Agronomists, Experimental Farm Men, State College Soil Experts, etc.

An easy way to earn money. Two thousand words, \$20. But make your story *under* two thousand words, if possible.

**BETTER CROPS
PUBLISHING CORP.**
81 Fulton Street New York



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

How One COUNTY AGENT met a BIG PROBLEM

(from page 14)

ideal little farm, having sold his large holdings. He was doing some repair work on the new farm, apparently more for his health's sake than for the necessity of the thing. I approached him after spending a half day with him and taking great interest in the little changes that he was making in the arrangements of the new location.

When we came to the crib, which seemed like an accident to him, but was intentional on my part, I began assisting in the plans for that building. It seemed that it would surely need repairing, but when I began getting onto the rat-proof idea he did not want to follow, but I immediately stopped the chance for an argument by proposing to bear half the expense if he would follow the transformation plans. He could not reject that proposal and, on the other hand, I felt sure after he was convinced that he would not require me to live up to my agreement, but I was willing to take the chance in order to get the idea over.

The work was begun and he followed the plan to a letter and informed me of the time when his corn was all in. I took my carbon di-sulphide and a car full of the leaders of the local organizations and drove out to fumigate the corn, which was done and the doors sealed with instructions to leave them sealed until I returned, which he did.

When my party and myself returned I opened the doors knowing

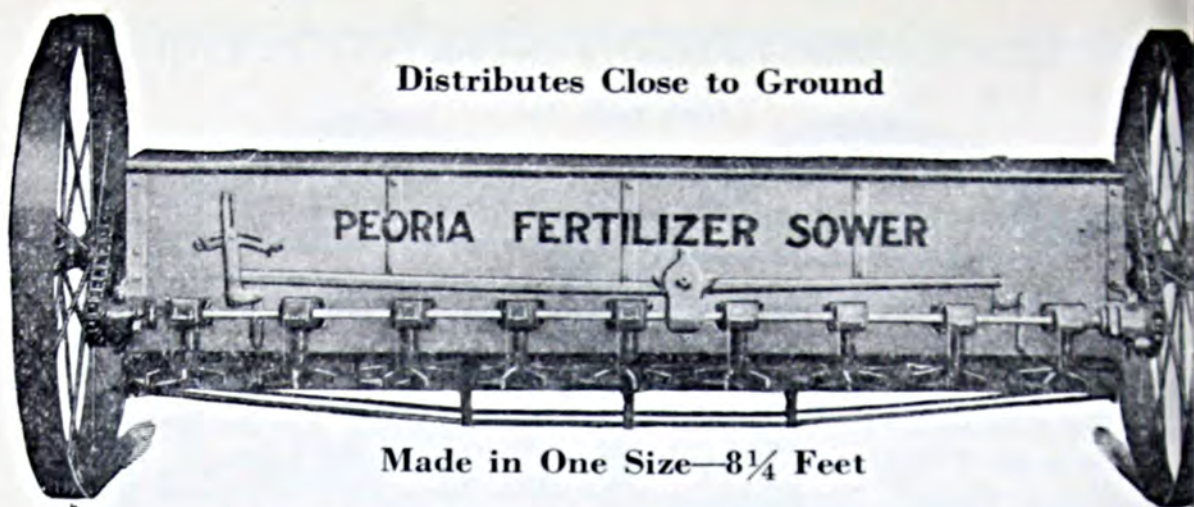
my men were expecting a failure, which made me half doubt a possible success myself; in fact, I knew there was a chance of leakage and if such had happened the demonstration would not be a success, and my chance for carrying the work over was lost, but that was the first time carbon di-sulphide fumes smelt good to me. They were still there in abundance and my confidence was restored.

The farmer was invited to take charge and look over the casualty list, which he did. Among the dead was a huge rat that had stolen his way in and had died near enough the door to slip out as soon as the opening was large enough. The weevil were all dead, just hundreds of them, daddy longlegs, crickets and every other thing living in the crib.

Not a word was said among the party for some seconds and in the meantime I had stepped back some number of feet and seated myself. About this time the farmer simply remarked to the fellows, "Did you ever see the like?"

This was another one of those personal service propositions that was used as a means for an end. It was one of those things that I could not get over by any sort of an organized move, but would have been purely personal service if by some reason it had failed in its purpose. While I am not an advocate of county agents doing a great deal of personal service, at times it has to be done in order to get a starting place for future demonstrations.





Distributes Close to Ground

Made in One Size—8¼ Feet

The Greater Harvest Getter FERTILIZER SOWER

WILL successfully distribute Lime and Fertilizer 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.

L i m i n g t h e S O I L

(from page 29)

The following Spring, oats and clover were sown as the previous year. The result was a thirty-five bushel crop of oats and a flourishing clover stand, which grew and yielded heavily for several years. Since that time, several troubles of like nature were successfully cured in that way.

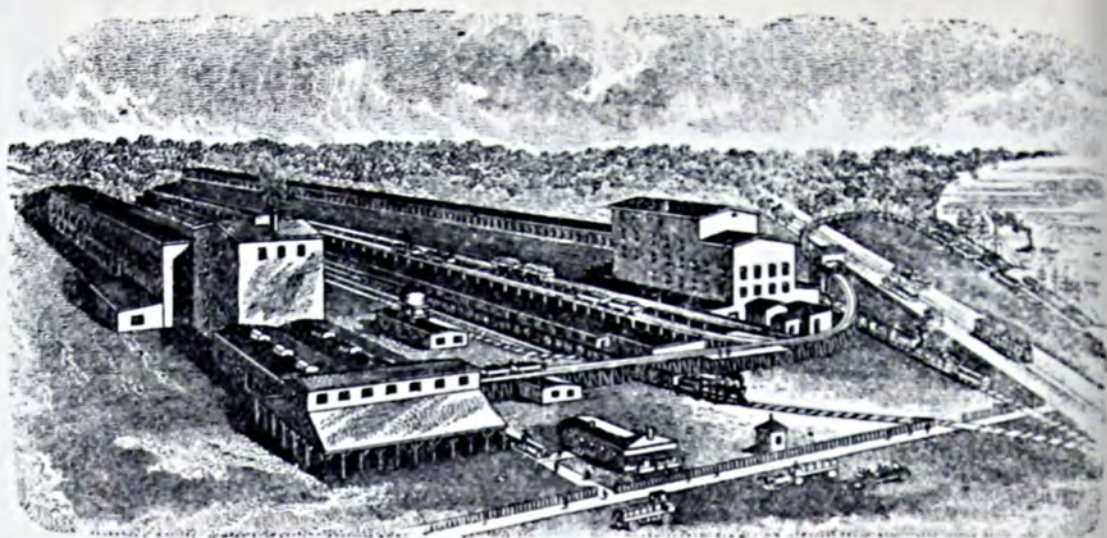
This instance proves that a correctly diagnosed soil trouble is just as important as the remedy. When something goes wrong a human being is more inclined to condemn a doctor and his medicine than he is his own lack of inclination to learn the real value of the doctor's service and the worth of his medicine.

A too literal interpretation without an understanding of the trouble often leads one into difficulty. One night a doctor told his patient,

afflicted with stomach trouble, that his recovery was far enough advanced for him to carry an oyster on his stomach. The next morning the doctor was astonished to find his patient had a slight fever, and was exceedingly restless. "Did you eat your oyster last night?" he inquired. "Eat nothin'," answered the patient, "you told me to carry it on my stomach and the pesky thing slipped around everywhere."

The fact that lime is universally good for soils does not mean that it can be used indiscriminately, with the expectation of reaping the full benefits. Any soil sour below the depth of the plant roots must have lime between the root system and the sour area, if a crop affected by acidity is to be grown.





THE HOME OF MUTUAL FERTILIZERS



WOULD you buy trouble?

Yet, you do when you buy Acid Phosphate that is not properly manufactured.

Too much or too little Sulphuric Acid—just a fraction—added to the rock dust can cause no end of trouble.

MUTUAL ACID PHOSPHATE

is always dry and friable because properly made and cured.

The fine mechanical condition makes all mixtures drillable, no matter how much mineral salts are used.

Write or Wire To-day for Price

MUTUAL FERTILIZER CO.

==== *Manufacturers* =====

SULPHURIC ACID, ACID PHOSPHATE
AND COMPLETE FERTILIZER

124 Bay St., E

SAVANNAH, GEORGIA

A WOOL MARKET that PAYS

(from page 7)

great that a number of people began to inquire into "this blanket game" and the possibility of further shipments, and during 1921 five shipments were made at different times of the year, totaling 8,000 pounds, or enough to make 800 blankets. The greater number of these were sold, the standard price being \$11.25 each. It was found that there was not nearly so great a demand for robes as for blankets, and consequently very few robes were manufactured after the early shipments. Nearly all the blankets were sold on orders received directly or indirectly through the county agent's office. When a shipment arrives the farmers are notified to come in and get their blankets, leaving a memorandum as to the number and patterns they wish to sell. Samples of each pattern remain in the office, where they may be seen by anyone interested. In this way orders are received and distributed to those who can fill them. Orders have been filled not only locally but in a number of neighboring cities, and even as far west as Chicago and north to New York and the New England States. Each blanket sells another. Whenever one is shipped into a new section, there have immediately been new orders from the same section to follow.

As stated in the beginning, the blankets sold in 1921 netted the farmers 55 cents per pound for their wool, and placing a value of \$11.25 per blanket on each of the eight hundred made up that year, the group of farmers participating in this project realized \$2,700 more for their wool in 1921 by this plan than they would have received had it been sold on the local market at the average price during the year. Possibly the entire amount of time spent by the county agent in connection with the wool-blanket work would amount to one entire week, certainly not more. Of course, the opportunity was open to all farmers in the county and was not limited to members of any organization.

In 1922 the current local price of wool was higher than in 1921, the average for the year being about 40 cents per pound. This, of course, did not make the blanket proposition nearly so attractive as it had been when wool was much lower, but the mill voluntarily reduced the cost of manufacture ten per cent. and 1,200 pounds of wool were shipped. Blankets were sold at the same price as before and the wool in the shipment netted the growers $62\frac{1}{2}$ cents per pound, or an increase of $22\frac{1}{2}$ cents above the average local price for the year. Thus this wool shipment brought in \$270 more than would otherwise have been realized.

The average price of wool in the county in 1923 has been 50 cents. A shipment of 1,400 pounds was made to the mill and the blankets have sold very readily at \$12.00 each, the farmers feeling that this was a very reasonable increase in price, compared with the increase in the local price of wool. At this price the wool has netted the growers $70\frac{5}{16}$ cents per pound, or a total of \$295 above local price.

While these transactions have not been of any very great magnitude, they do show the practicability of the plan and its possibilities. It should be remembered that no selling campaign has been put on. The blankets have literally sold themselves and there are always a number of orders received after the supply is exhausted. Our success would indicate that if a group of wool growers would undertake a real selling drive for such a product, that a very large number could be handled. A number of inquiries have been received from individuals and organizations in other states and this brief review of the plan is given here with the thought that some other county agents might find it workable. The writer will be glad to make clear any details of the proposition which necessarily have had to be only touched upon here.



Pigs is pigs—says Ellis Parker Butler—“but where’s our grub?”

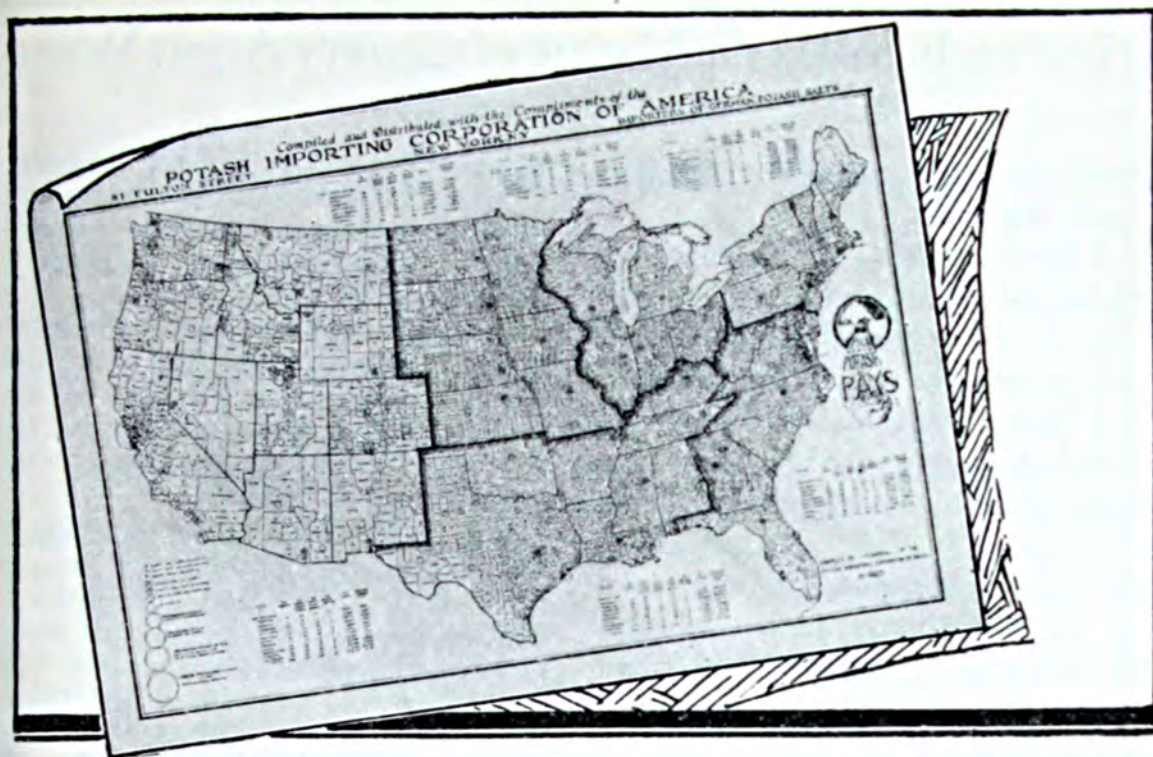
How to INCREASE the EFFICIENCY of SOUTHERN FARMS

(from page 9)

the fertilizer is reduced. In fact, in some cases, it will not be necessary to supply for general crops anything much more than materials carrying available phosphoric acid and potash. Where fertilizers are used wisely they will pay well, certainly with such crops as tobacco, cotton, truck, small grains, legumes and corn.

Fifth, the unit production of crops will have to be moderately large per acre in order that the cost per bushel or other unit may be relatively small. To do this, larger yields than are commonly secured will have to be produced which involves the most intelligent use of fertilizers in large amounts coupled with the use of the best cultural methods. It will, too, be necessary to so market the crops produced as to get the greatest returns for them consider-

ing the fertility which they carry from the farm. For instance, at the present time, a man who sells crimson clover hay for \$20.00 per ton from the farm would be selling actually from the farm in the ton of clover hay, fertility that would cost him in commercial fertilizers more than half of this amount. It is, therefore, highly important that the seller know just what amounts of fertilizing constituents are being taken from the soils of the farm when crops are sold. For it is not only fair but business-like for farmers to take into consideration in selling not only the cost of producing and marketing the crops, but also the value of the fertilizing constituents which their sale carries and which must be purchased to replace them if the producing power of their soils is to be maintained or increased.



Have You Sent for Your Copy?

Free

WE have prepared a map which shows in colors the location of every County, State and Federal Bureau to which the farmer can refer his problems.

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

For over twenty years the soil and crop service of the German Kali Works has cooperated with the County Agents of the United States in careful, thorough analytical research. The good work generated during the past two decades is being continued and expanded under the guidance of the Potash Importing Corporation of America, who, since May 1st, has taken over the importation of Genuine German Potash Sales in the United States.

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.

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

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

Gentlemen:

I would be glad to receive, free of charge, a copy of this large map showing the location of every County Agent, Farm Bureau and Experiment Station. I have written my name in the margin below.

How to Increase the VALUE of County Agent Work

(from page 15)

good business and fair dealings must be built.

I have found by being a member of the local Kiwanis Club that I was able to do a great deal in getting the farmer and city man together.

I have continually taken the stand as being the man on the fence whereby I could cite at public meetings the views of the farmer on the one hand and the city man on the other hand, and a solution of the problem which could come about by their becoming better acquainted.

DURING the past year, through the efforts of other committee members and myself of the Kiwanis Club, we have held five what we call Kiwanis-Farmers' Dinners. Our club invites approximately seventy-five farmers at each of these dinners. We hold them in the evening in some rural hall which will accommodate a gathering all told of about one hundred forty men. We have a chicken dinner and after the dinner we call on speakers from both the Kiwanis and farmer group. To end the program the county agent is given the opportunity to cite the views of both city man and country man, where they have each been making their mistake in a social way, not intentionally, but due primarily to the fact that they were not acquainted with each other. The

farmer-dinners held by the Kiwanis Club so far have not only increased and strengthened the good fellowship between both country and city business men, but it has put the county agent in a position where he is appreciated a great deal more by the farmers and is also viewed by the city people who are interested in the social and business welfare of both.

The farmers have been told that one of the customs of the Kiwanis Club, both locally and internationally, is to call each man by his first name. Since the farmers were informed of this custom, I find that they call me by my first name rather than by my last. This has been a decided step toward a personal acquaintanceship which results in better service by the county agent to the individual as well as his entire community.

I find at the present time that my strongest communities and the ones in which I can do the most constructive work are those in which our Kiwanis Club has held their dinners during the past year. This all means in my mind that every county agent could make his work of more value to the people of his county by becoming a member of a local civic organization and see to it that the city people get acquainted with the farmers and vice versa and thereby sell something to each other on which there is not a price tag attached, which is good fellowship.

All business dealings must be built upon confidence, respect for each other and good fellowship in a social and business way.



Where Can Genuine German Potash Be Secured?

HERE IS A LIST OF THE
DISTRIBUTORS OF GENUINE
GERMAN POTASH SALTS:

Grasselli Chemical Co.	Birmingham, Ala.
Capital Fertilizer Co.	Montgomery, Ala.
Arkansas Fertilizer Co.	Little Rock, Ark.
Meyer, Wilson & Co.	454 California Street, San Francisco, Cal.
Berkshire Fertilizer Co.	Bridgeport, Conn.
Olds & Whipple, Inc.	Hartford, Conn.
Rogers & Hubbard Co.	Middletown, Conn.
Wilson & Toomer Fertilizer Co.	Jacksonville, Fla.
Gulf Fertilizer Co.	Tampa, Fla.
A. D. Adair & McCarthy Bros.	Atlanta, Ga.
Empire State Chemical Co.	Athens, Ga.
Southern States Phosphate & Fertilizer Co.	Augusta, Ga.
Pelham Phosphate Co.	Pelham, Ga.
Mutual Fertilizer Co.	Savannah, Ga.
Read Phosphate Co.	Savannah, Ga.
Reliance Fertilizer Co.	Savannah, Ga.
Savannah Guano Company	Savannah, Ga.
Southern Fertilizer & Chemical Co.	Savannah, Ga.
Georgia Fertilizer & Oil Co.	Valdosta, Ga.
Armour Fertilizer Works	209 W. Jackson Blvd., Chicago, Ill.
Darling & Company	Chicago, Ill.
Swift & Co.	Union Stock Yards, Chicago, Ill.
Rauh & Sons Fertilizer Co.	Indianapolis, Ind.
Calumet Fertilizer Co.	New Albany, Ind.
Federal Chemical Co.	Louisville, Ky.
Baugh & Sons Co.	Baltimore, Md.
Griffith & Boyd	Baltimore, Md.
Miller Fertilizer Co.	Baltimore, Md.
Ober & Sons Co.	Baltimore, Md.
Piedmont Mt. Airy Guano Co.	Baltimore, Md.
Tilghman Co., Inc., W. B.	Salisbury, Md.
Meridian Fertilizer Factory	Meridian, Miss.
Tupelo Fertilizer Factory	Tupelo, Miss.
The American Agricultural Chemical Co.	2 Rector Street, New York, N. Y.
International Agricultural Corporation	61 Broadway, New York, N. Y.
Caraleigh Phosphate & Fertilizer Co.	Raleigh, N. C.
Acme Manufacturing Co.	Wilmington, N. C.
Smith Agricultural Chemical Co.	Columbus, Ohio
Wuichet Fertilizer Company	Dayton, Ohio
Thomas & Sons Co., I. P.	Philadelphia, Pa.
Tunnel & Co., F. W.	Philadelphia, Pa.
York Chemical Works	York, Pa.
Etiwan Fertilizer Co.	Charleston, S. C.
Maybank Fertilizer Co.	Charleston, S. C.
Planters Fertilizer & Phosphate Co.	Charleston, S. C.
F. S. Royster Guano Co.	Norfolk, Va.
Priddy & Company, Inc.	Norfolk, Va.
Robertson Chemical Corp.	Norfolk, Va.
Virginia-Carolina Chemical Co.	Richmond, Va.

THE POTASH IMPORTING CORPORATION
OF AMERICA

81 Fulton Street

New York

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 In-
creased Their Bank Accounts"*

Money Makes MONEY— Sometimes

(from page 6)

Thus, through unwise investing, we are drawn into a chain of events which bind us beyond our will—we only wanted a link and behold we are grappled to fate with the chain. Time and events slide on into space and we are powerless to control either our purse, our passions or our purpose.

We want the assurance of a comfortable old age. Who doesn't? And along comes a stock salesman who promises us exactly what we desire—simply sign right here—haven't enormous fortunes been made out of the telegraph, the telephone, the radio, oil, automobiles, chemistry and non-losable hairpins? Certainly! Well, this proposition will make more money than any of those. You can't lose. Sign right here!

Those of us who are tempted to ease our old age in this fashion, should take our surplus, convert it into silver dollars, stand at the river's edge and sail the miserable little cartwheels out over the shining ripples as far as we can throw—at least we will get some exercise out of it, and the beauty of the sparkling dollars sinking for the last time in the golden sunset will be a vision that will recall itself many times in after life.

But put every tenth dollar back in your pocket, if you follow this program—*don't sail that tenth dollar*. Save it. Put it back in your pocket. Put every fourth, fifth, sixth, seventh and eighth dollar back into your pocket if you wish. Then go back home to your banker, or someone in whom you have implicit confidence and take his advice as to a safe bond, a good preferred stock or a first mortgage, or gilt-edge mortgage bond. There is the place to invest.

DOCTORS, dentists, agronomists, county agents and other scientific and professional men have from time unremembered been the victims of unscrupulous, devilish purveyors-of-bunk who foully prey on the scientific, professional mind. These slickers believe with Abou

Ben Adhem, "Lo! Thy name leads all the rest!" when it comes to men who make their money from what they know—they are the easy meat—plenty of money to invest and no business judgment.

Listen, brother—soft music up there, professor—when the slicker comes into your suite, annihilate him, souse him, turn in the fire alarm or shoo him out of your office door. Tell him, while he can yet listen, of the fun you have with your money. Relate to him how you go down to the water's edge each evening at sun-down with the day's surplus, and toss the merry cartwheels over the shining water. Convey to him, if you can, how perfectly delightful is the evening sun as it floods its last golden rays on the shining dollars before they hit the surface—and sink from sight for ever and ever, amen!

Rhapsodize a little! Contrast your method for him with the crude vulgar, awkward way in which *he* suggests that you accomplish the same ultimate effect—a dingy check and a "sign here." What inelegance, what a grotesque and uncouth way that is to sink your money when you can have so much fun at the river's edge—and get some much needed exercise in the bargain!

YES, yes, I admit fortunes have been made in inventions, in oil, in licorice-stick factories and Broadway shows. And if you have enough good, safe investments—bonds, preferreds, mortgages, and such—then take a thousand, look at it smilingly and kiss it goodbye. Speculate with it. Toss it into the sea of hope, and if it comes swimming back to you with twins, welcome the twins and send the thousand back to copulation! If it drowns, forget it.

But do not speculate until you have an assured income for your old age, from coupons that will never fail to be acceptable at the little old grilled window. You and I for the safety first idea, Henry, or just when life is getting sweetest, it's us for the poorhouse where the golden-rod is wilted, the chill winds fleck our faces and the honk bird sings softly to his mate in the magenta bush, "Clunk, clack!"

Use high-grade fertilizers for big yields

∴

We recommend:

For cotton: 8-4-4

*For truck, with
potash from
sulphate of
potash, especially
for potatoes* 7-5-5

∴

**High-Grade Acid Phosphate
and Potash Always in Stock**

**RELIANCE
FERTILIZER
COMPANY**
Savannah, Georgia

"35 years' experience
back of every sack"



Captain Kidder

comments on this
month's issue

Our old friend Jeff McDermid gets quite blasphemous, doesn't he? How he hates the swindlers that sell fake stocks! He says "take your surplus, convert in into silver dollars and toss 'em into the creek" or words to that effect. But he doesn't instruct us what to do if we have no surplus. Must speak to Jeff about that omission. Perhaps he'll give us the dope next month.



Dean William's article this month is so reasonable that what he says seems over-obvious. Yet, I suppose, overlooking the obvious is the one best thing we all do.



That fellow Brand certainly knows his game, doesn't he? No wonder he is around the country lecturing all the time; and no wonder Jeff has such a hard job getting him to come through with his promise to furnish an article each month. He hasn't time to work—too busy talking.



I had a lot of fun reading the article on page 14; didn't you? That one about the county agent that carbon-bisulphided the weevils and rats? These county agents have some unique experiences in their daily work. Jeff ought to get more of them to tell about their adventures.



Irving Price, who wrote the article about the Roycrofters and the way they planted 25,000 trees in one day, is an old friend of mine. He was with Elbert Hubbard when The Fra had but one Philistine, and the Little Journeys were in embryo. His wife is a wonderful painter. You'll hear from her some day, and Irving will be known as "Mrs. Price's husband!"

"Liming the Soil" is a subject of intense interest to everybody, but I rather think that C. A. Bacon's ideas, as expressed in his article on page 29, will not be accepted by many readers of BETTER CROPS. If anybody wants to write to Bacon, send me the letters and I will forward them to him.



That chap Anderson of the Purdue Experiment Station just seems to live on poisonous plants, paradoxical as that may seem. Never knew there were so many obnoxious plants until Anderson's first article appeared in the October issue.



But wait until the returns are in on that story on page 41 by Martin of Dallas! Whew! Won't he catch it! The idea of saying that the Japanese or the Dutch and Italians would add millions of dollars of wealth to the South, because of their superior methods of seed selection. Just you wait, Brother Martin, till we hear from our readers!



Congratulations to County Agent Gahm! He wins the sandpaper bath towel for the best Soil-fertility Program, and with five others received a trip free to Chicago. Many of us would not consider a trip to Chicago much of a prize, but—well, anyway, *part* of the time was undoubtedly spent at the Convention of the Society of Agronomy!

Captain Kidder

WE 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 offices; these
are maintained for your service.

H. J. BAKER & BRO.

81 Fulton Street, New York

BALTIMORE, MD. CHARLESTON, S. C. SAVANNAH, GA.
ATLANTA, GA. SAN FRANCISCO, CAL.
BUENOS AIRES, A. R.

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 & dealers in Sulphate
Ammonia, Blood, Tankage Phos-
phate and all fertilizer materials*

POTASH - THE ESSENTIAL PLANT FOOD



Test on Potatoes: by W. H. Caldwell, East Freetown, N. Y.

Plot No. 1 <i>No Fertilizer</i>	Plot No. 2—Complete <i>Fertilizer (With Potash)</i>	Plot No. 3—Incomplete <i>Fertilizer (Without Potash)</i>
Yield: 128 Bushels per Acre	Yield: 176 Bushels per Acre	Yield: 152 Bushels per Acre

Increase from \$4.50 worth of Genuine German Potash: 24 bushels

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January 1924



this issue - Prize Essay Award - Dean Stewart - Dr.
Frank Crane - Albert Hansen - Charles J. Brand - Jeff McDermid



The bottom of the barrel—

THERE was an old lady who took only a spoonful or two of flour from a barrel each day and noticed that the bottom was still far away. She exclaimed, "Why, this barrel of flour will last forever."

But the bottom finally came.

In your soil there are three plant foods—nitrogen, phosphorus and potash. Every crop takes its toll of each of these three elements. Some of the food is replaced by growing legumes, by rotating crops, and by returning the farm manure. But do the

farmers in your county return *all* the potash that is removed? If they do not, there will come a day when the "bottom of the barrel" will be reached. Manure alone will not do it. The farmer must add potash to his mixed fertilizer, or buy mixed fertilizer that contains plenty of potash.

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BETWEEN OURSELVES

THE most important part of my job as editor of BETTER CROPS is to keep in touch with you and our other readers.

With each succeeding number of the magazine, I am trying to make improvements. I am particularly trying to secure timely, lively, interesting articles that will hit home with you.

The only way I have of knowing whether I am succeeding is from your suggestions and criticism. Write me your opinion of this number. Tell me frankly how we can make the magazine of more service to you.

For the February BETTER CROPS I have secured several articles that I feel sure you are going to vote "the best yet." Among them are the following:

An Exclusive Interview with Secretary of Agriculture HENRY C. WALLACE

DANGEROUS AGRICULTURE

by Charles W. Gapen

This is the beginning of a series of interesting accounts of the perils encountered by workers of the Department of Agriculture.

MARKETING COTTON COOPERATIVELY

by R. H. Tingley

Mr. Tingley is a great expert on cotton and has written a timely article on the present situation in cotton marketing.

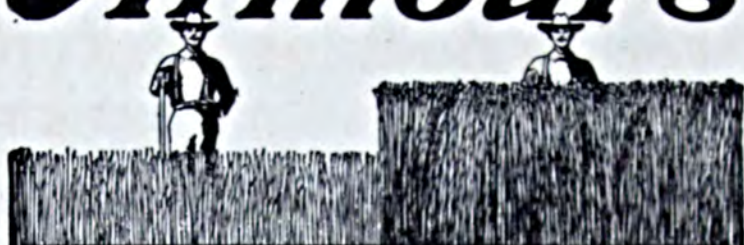
There will be a number of other worth-while articles and the usual departments and features—and, of course,

Yours truly,



P. S.—If you want to send some friend a year's subscription to BETTER CROPS, you can make him happy at the small cost of \$1. Just mail his name, address and check or money order to me.

Armour's



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Better Crops

The Pocket Book of Agriculture

VOLUME I

NUMBER FIVE

Table of Contents: January, 1924

Are Economical Wives Economical ?	5
<i>A new slant on an old subject by Jeff McDermid.</i>	
Save That Million!	7
<i>How they do it in Iowa by Hi Fedderson.</i>	
What Fertilizers Have done for My State	8
<i>The prize essay by C. P. Blackwell.</i>	
What Can Cooperative Marketing do for the Farmer	10
<i>A level-headed view of this subject by Dean Stewart.</i>	
Profitable Fertilization	12
<i>The results of some significant experiments by Prof. Paul Wagner.</i>	
Toiling the Hay in the Bruley	16
<i>What makes successful farmers by Irving Price.</i>	
An Open Letter to Mr. Samuel L. Ewing	21
<i>Some essential facts cogently set forth by E. K. Howe.</i>	
How the California Almond Growers' Exchange Achieved Success	24
<i>The third of this interesting series by Charles J. Brand.</i>	
The Winning Program for County Soil-fertility	26
<i>County Agent W. F. Gahm's program in detail.</i>	
Cocklebur Sprouts are Deadly	28
<i>The answer to a puzzling question by Albert Hansen.</i>	
New Facts in Orchard Spraying	30
<i>An expert article by H. W. Anderson.</i>	
Tiling Above the Ground	33
<i>An amusing experience by F. H. Ley.</i>	

Who's Who of BETTER CROPS

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¶ A "Grab-and-Run" lunch in Georgia. Nothing so sweet as a "swiped" banana.



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VOL. I

NEW YORK, JANUARY, 1924

No. 5

Are ECONOMICAL WIVES ECONOMICAL?

Q A startling question
with an even more
startling answer by

Jeff McDermid

SAUNDERS NORVELL, the wizard of hardware, sat one day in his office at the front of the main building of the Norvell-Shapleigh Hardware Company, in St. Louis.

IN the doorway stood a woman whom he had never seen. She wanted a check. She explained that she was the wife of one of his salesmen who was out on a long trip, and had been instructed by her husband to step in on the first of the month and collect his salary. She showed Norvell her letter of instruction—Norvell reached for it; touched her hand. She withdrew the hand blushing.

"My, but your hand is hard!" Norvell exclaimed. The poor woman did not know whether to be insulted, alarmed for her safety, or merely displeased.

"It has a right to be," she said. "I do my own washing, dress and take care of five children, and do all my own housework. I have no time to fuss over myself—no spare minutes to soak my hands in cold cream. Dishwashing and sewing and peel-

ing potatoes and washing under-clothing do not improve the hands. Of course they are rough and hard! *What about it?*"

"Why do you do all this?" Norvell gently questioned.

"To help my husband save money!" was the earnest reply.

"And are you really saving money?" Norvell asked.

"I should say yes!" the now garrulous soul retorted. "On the first of every month I deposit John's check. Then I draw a check for fifty dollars to the savings account, ten dollars to the Home Building and Loan Association and five dollars to the Christmas Savings Club. All told that makes sixty-five dollars each and every month that we put away for a rainy day. And if I didn't wear my hands off doing my own work we would never have a cent. As it is, we have nearly six hundred dollars put away and some day we are going to build our own home—we have it all planned on paper."

UNDER his breath Norvell said: "And of such as these is the salt of the earth." But aloud he questioned, "And if you hired a girl to do your housework, a laundress to do your washing and spent ten dollars a week on yourself in the form of beauty parlor treatments, hairdressing, manicures, and turkish baths, you could not save a cent, could you?"

"Of course not!" the woman indignantly replied, now getting hot under the collar.

"Well, as your husband's employer, Mrs. Jones, that is exactly what I am going to ask you to do! I want you to go home, hire a laundress, a maid and whatever help you need around the place. Then go to a beauty shop and get yourself into shape where you feel human and

respect yourself. Spend a little money getting your hands softened up. I have heard that certain kinds of rubber gloves worn at night tend to bleach and soften the——"

"Why, you're crazy, Mr. Norvell!" burst out the woman. "Begging your pardon, sir, of course! I know you mean well, and there is nothing on earth I would like to do as well as to spend a little money on myself; but John and I have our course all planned out. And I am willing to do my share now, that I may live comfortably later in life. I know red hands do not appeal to John. He often complains that I do not look "appetizing," as he calls it, when he comes home off the road. But it is better to have red hands and money in the bank, than white, tapering fingers and be broke all——"

It was now Norvell's time to interrupt.

"It is not my idea to have you go broke, madam; far from it. You are typical of the average conscientious, hardworking wife who spends every waking moment drudging, squeezing and saving in a mistaken idea that she is helping her husband save money for the future."

"Now," he went on "your husband is bringing in around \$200 a month; perhaps nearer \$250. I haven't paid particular attention to his commission checks the last sixty days. But, anyway, we will say \$250. You save \$65 of this each month. That means that it costs you \$185 to live. Now, if I can show you how to increase his income each month by three or four times \$65, would you be willing to get your laundress, your girl-of-all-work, and spend a little money on yourself? Provided that you are still able to save \$65 a month—or more?"

(turn to page 69)

Save That Million!

Here's a good suggestion from
Hi Fedderson

County Agent, Mahaska, Iowa

VIA the eye is the shortest route to the brain. Movie enthusiasts tell us that the moving picture is the best educator, but there is one method which beats that. It's the actual doing of a thing right when your pupil can see you and help you do it that gets the real results. And that's the way we get farmers to treat their fence posts before setting them. Here in Iowa we spend approximately \$6,000,000 each year on fence posts for new fence lines and for replacements. This is an average of \$30.00 for each of our 200,000 farms, but what's \$30.00 compared with the expense of *digging* holes to accommodate \$30.00 worth of fence posts?

In order to encourage a cutting down of this monetary expense and to get away, partly at least, from the drudgery of digging post holes, we rig up an outfit to show how to lengthen the life of usefulness of a fence post.

We select well seasoned posts of different varieties of wood to be treated in order to show the difference in the degree of penetration in a soft wood as compared with a hard wood. The deeper the wood

preservative penetrates the more years are added to the life of the post. This encourages the use of the softer, quicker growing trees, such as willow, cotton-wood and maple for posts and allows the oak, walnut and other harder woods to be put to some better use.

All the equipment necessary may generally be found on the average farm. About forty bricks, a few iron rods and a steel drum with one end removed, about six feet of stove pipe and you are ready to go. The bricks are laid up in a circle as large as your drum with an opening on one side for a fire door and with the stovepipe acting as a smokestack on the other side. Short iron rods are laid across the top to help support the drum. Bank the brick fireplace with dirt to keep the heat in.

We use gas tar as a cheap substitute for creosote and treat the butts of the fence posts hot for from three to four hours, depending on the variety of wood being treated. After treating the butts in this manner it is well to provide a long tank in which to cold-treat the entire post, especially when the softer woods are being utilized.



Treating fence posts à la Fedderson

The Winning Essay

What Fertilizers

By C. P. Blackwell

Clemson Agricultural College, S. C.

¶The first prize essay contest conducted by BETTER CROPS closed on December 1st. The subject "What Fertilizers Have Done for My County (or State)" apparently struck a popular note—for we received over twice as many manuscripts as we anticipated.

¶I turned these over to the three judges, Mr. E. V. Thompson, of "Country Gentleman," Mr. Herbert Collingwood, of the "Rural New Yorker" and Mr. V. E. Pratt, the Publisher of BETTER CROPS. In their opinion, Mr. C. P. Blackwell had submitted the best essay. They all agreed, however, that the choice had been difficult to make, owing to the number of excellent manuscripts submitted. ¶The \$50.00 in gold was sent Mr. Blackwell on December 19th, and I imagine it was a pleasant Christmas surprise package. I'm sure you join with me in congratulating Mr. Blackwell heartily. I also want to thank everyone who took part in this contest. From time to time, I hope to publish some of the best of the other essays submitted.

Watch out for our next contest!

Jeff

WHEN the native vegetation was removed from the soils of South Carolina they soon lost their native fertility. This was due to the fact that the state receives a very high annual rainfall and a large part of this comes in the fall and winter while the soil is protected by no growing crop. The soils of the state continued to decrease in fertility until the situation became serious. Farmers could no longer produce profitable crops, and as a result many left their homes here and moved westward to settle on the virgin lands of the west where better results could be secured. It finally became apparent that, unless something could be done to improve the fertility of our soils, the state could not maintain a prosperous population, as agriculture was the chief and almost only industry in the state.

Prior to the war between the states, no very accurate yield records are available. From 1866 to the present time we have a record of the yield per acre for each of our leading crops. These records show that for the twenty-year period, 1866 to 1885, the average yield of lint cotton in the state was 150 pounds per acre; corn, 9.3 bushels; oats, 11 bushels; wheat, 6 bushels. Then something happened. The yield of cotton began to rise. For the ten-year period, 1886 to 1895, it went to 159 pounds. This was a small gain, but significant. The next decade, 1896 to 1905, saw a better gain, with an average of 196 pounds. From 1906 to 1915 the average yield increased to 221 pounds. The average for the three years just before the appearance of the boll weevil was 250 pounds.

in the BETTER CROPS Contest

Have Done for My State

This was a gain of $66\frac{2}{3}$ per cent. over the twenty-year average from 1866 to 1885. Other crops followed the same course. Corn made an average yield for the ten-year period, 1911 to 1920, of 17.7 bushels, or a gain of 90 per cent. For the same period oats rose from 11 bushels to an average of 20.64 bushels, or a gain of 87 per cent. Wheat went from 6.1 to 10.8 for the same period, or a gain of 77 per cent. This was an average gain for the four crops of 80 per cent. in a period of approximately thirty years. Such gains, when averaged over a long period of years, could not be due to climate or accident. What caused this tremendous increase in the yields of our crops?

Coincident with the beginning of this increased productivity, several other things happened. The South Carolina Agricultural Experiment Station was established and began its work of investigating methods of soil and crop improvement along with other lines of work. Clemson Agricultural College was founded

and began to preach its gospel of better seed, crop rotations, legumes, and fertilizers. The gradual adoption of some or all of these practices by many of the farmers of the state was responsible for the increased production noted above.



The Prize Winner
MR. C. P. BLACKWELL

The object of this paper is to fix as definitely as possible the responsibility of one of these factors, namely, fertilizers, for these results. In order to do this the writer has worked out the coefficient of correlation between the yield of the various crops and the amount of fertilizer used for a period of thirty

years, this being the approximate time over which we have a definite record for the entire state. This correlation is as follows for the three crops used: Cotton $.673 \pm .0673$; Corn $.865 \pm .0301$; Oats $.844 \pm 0.354$. This means that commercial fertilizer deserves credit for 67.3 per cent. of the increase in cotton, 86.5 per cent. of the increase in corn and 84.4 per cent. of the increase in oats. The remaining percentages are undoubtedly due to the (*turn to page 65*)

What Can COOPERATIVE

C In this article, Dean Stewart contributes some sound, common-sense thinking on one of the biggest problems of the day—the efficient marketing of farm products.

AN ancient Chinese philosopher has well said, “Public prosperity is like a tree; agriculture is its roots, industry and commerce are its branches and leaves. If the root suffers, the leaves fall, the branches break, and the tree dies.”

THE truth of this bit of ancient philosophy has never been better demonstrated than during the past three years. The rapid fall in farm prices in 1920 and the resulting depression among the farming population was immediately felt in all industries, as demonstrated by unemployment, closed mills, factories, smelters, and failures in many lines of industry. The hesitancy with which business even now looks upon the revival of prosperity is due in a large measure to the still prevailing agricultural depression. There is a general feeling that there will be no permanent prosperity until the situation confronting the farmer, whatever may be its cause, has been cleared up.

What shall we do to save American agriculture? Various proposals have been made. One of the earliest was to have some one, preferably the government, finance European

nations so that they could buy our agricultural products. Another was to establish by law a fixed price for certain food products which would insure cost of production plus a reasonable profit. Neither of these proposals made much headway. The proposition of establishing a fixed price for certain farm commodities will undoubtedly be brought to the early attention of Congress this winter.

At present various proposals are being made such as:

(1) Revive the U. S. Grain Corporation which handled the wheat situation so favorably during the war.

(2) Since the Grain Corporation made \$50,000,000 profit for the government during the war, distribute this profit as a bonus among the wheat growers.

(3) Secure an agreement among the farmers to restrict the acreage

MARKETING

do for the farmer?

By Dean Robert Stewart

College of Agriculture, University of Nevada

devoted to wheat and thus decrease the wheat surplus.

(4) Force by law a reduction in freight rates on the railroads of the country.

(5) Have the government give an export bounty on wheat.

(6) Increase the tariff on wheat from foreign sources.

(7) Create a government commission to promote cooperative marketing among farmers, particularly the wheat growers.

(8) Have a special session of Congress to consider the agricultural situation and to "do something" to correct the situation.

These proposals have been made in all seriousness and most of them will be given earnest consideration by Congress this fall.

The situation is a serious one. It is true that taxes are too high on farm land and the cost of living is too high, due to the advanced cost of the things the farmer must buy and the comparative low value of the things he has to sell. The products of his labor and investment have not been marketed to the best advantage. It is strange that

all of the proposals made to remedy the conditions affecting the farmer, if adopted, would result in the expenditure of more government money, which must come from taxation!

The farmer is far from being a failure or a bankrupt and he is not saying very much. He is leaving all that to his would-be saviors. He is going right ahead preparing for next year's crop. But he is doing a lot of real thinking on the subject. Cooperative marketing is appearing on his horizon as a welcome beacon light to guide him by the present shoals.

It is important, however, that all concerned, the farmer himself, the business man, and the public, get a proper perspective regarding co-operative marketing of agricultural products so that all may have a clear conception of what it can actually do and also what it cannot do. In order to achieve this result it is necessary to consider certain fundamental facts.

The farmer is no longer self-sufficient. The products of his farm must be transported, often great distances, to the mar-(turn to page 63)

PROFITABLE FERTILIZATION

*Principles that underlie
Productive Farming*

By Prof. Paul Wagner

¶ Prof. Wagner is director of the Experiment Station at Darmstadt, Germany. ¶ His official experiments in plant nutrition and in the use of artificial fertilizers have given him a world-wide reputation. ¶ In this article are presented some of his most significant conclusions.

THE term "manuring" or "fertilizing" as employed here means the use of the manurial substances—potash, phosphoric acid and nitrogen—for the purpose of increasing the growth of plants. In practical farming the object is to get the greatest growth for the least amount of these manurial principles, or in other words, to avoid using manures or fertilizers wastefully. A crop needs certain quantities of potash, phosphoric acid and nitrogen, and must have them all to make the crop; but there is a way to make certain crops fertilizer-producers as well as crop-makers, as shown by the following experiments.

The first experiment shows the effect of attempting to grow certain crops without nitrogen.

Figure 1 shows wheat and barley, grown in pots. Of the four pots of each experiment, two (marked O) were fertilized with potash and phosphoric acid, the remaining two (marked N) also received potash and phosphoric acid, and in addition

nitrogen in the form of nitrate of soda. The increase of growth in the pots where nitrate of soda was used, shows the effect of nitrogen. Stated in figures, the gain was three to one. This experiment was made with soil known to be deficient in nitrogen, and serves to show beyond doubt that these two crops cannot be grown to advantage unless there is enough nitrogen supplied to balance properly the potash and phosphoric acid.

However, results from the same experiment on *legumes* show that some plants, at least, do not require any considerable amount of nitrogen manuring; and that it would be wasteful to use much nitrogen fertilizer on such.

We have gone to some trouble to illustrate this point, as it is the basis of profitable manuring, and must be fully understood as a fact. For the purpose of profitable manuring, plants may be divided into two classes: First, those which *need* nitrogen manuring, and second, those

which *do not need* nitrogen manuring. Among the plants of the first class are wheat, corn, oats, rye, barley, potatoes, beets, turnips, cabbage, fruits, etc. Among those of the second class are peas, beans, vetches, serradella, cow peas, alfalfa and all the clovers. Plants of the

contain such quantities of potash, phosphoric acid and nitrogen, that, as nearly as may be, all of each is taken up by the crop. A manure or fertilizer thus proportioned is said to be well balanced. In practice, however, we more often use unbalanced fertilizers to supply a



Fig. 1. Effect of nitrogen fertilizer on grain.

second class are called legumes. They have the power of drawing the nitrogen from the air and changing it into forms suitable for plant food. This power is due to the action of certain bacteria which infest the roots of plants of this class, and whose presence is recognized by the growth of little knots on the roots, the so-called root "nodules."

We have spoken of potash and phosphoric acid to *balance* the nitrogen; this means that if a plant is supplied with a certain amount of nitrogen in plant food, a certain amount of potash and phosphoric acid must also be supplied. If the amount of nitrogen is reduced by one-half, the potash and phosphoric acid also may be reduced by one-half; if this is not done, the extra half of the potash and phosphoric acid would not be of any use, there being no nitrogen to associate with the two ingredients to make a complete plant food. A complete plant food, whether farmyard manure, commercial fertilizer, or a home-made mixture of fertilizer chemicals, should

soil deficiency or to supplement manures or legumes. The origin of the soil, the previous cropping, the kind of rotation and the particular crop to be grown determine to a great extent the formula of the fertilizer that is likely to prove most profitable.

In the figure referred to in the earlier part of this article, an illustration is given of an attempt to grow plants without nitrogen, and, through the use of pictures taken from actual photographs, it was shown that, except in the case of the class of plants called legumes, plants cannot make any useful growth without nitrogen. Had we withheld either potash or phosphoric acid, no considerable growth would have been made in the case of either the barley or the legumes. The illustration was made, however, not to show that any crop or crops can do without one or another of the elements of plant food, but to show that a certain class of plants can supply their own nitrogen. Legumes must have nitrogen as well as other plants, but do not need

much nitrogen manuring. This one point is the basis of the most important detail of profitable manuring.

Manuring, as already stated, means the use of potash, phosphoric acid and nitrogen in growing a crop. Profitable manuring includes the selling of the crop for an increase over the cost of the manure, cost of seeding, tillage, and other necessary expenses. Thus plant food may be regarded as something which is bought to grow crops and sold as crops to repay for the investment. Therefore, the potash, phosphoric acid and nitrogen converted into crops should always be sold at a much higher price than they cost in the form of plant food. Nitrogen is the most expensive of the three elements of plant food and costs from two to three times as much per pound as either potash or phosphoric acid; the latter two cost about the same per pound. A rough example will illustrate the broad general principles of profitable manuring at its best. Assuming that potash and

nitrogen, 88 pounds of potash and 15 pounds of phosphoric acid, with a value as follows:

Nitrogen, 83 lbs. at 18 cts.	\$14.94
Potash, 88 lbs. at 5 cts.	4.40
Phosphoric acid, 15 lbs. at 5 cts. . . . .	.75
Total	\$20.09
Fertilizer cost	5.15

Apparent gain \$14.94

Under average conditions about two-thirds of the apparent gain may be real, since legumes take some nitrogen from the soil, current opinion being that on good soils about one-third is secured from the soil and two-thirds from the air, if the plants are well inoculated.

While these results are theoretical, pure and simple, still they represent the problem of using legumes profitably. In many crops the margin of profit is narrow, and it is only by making use of legume nitrogen that the results may show a balance on the right side. It is not enough that



Fig. 2. Different results from legume and non-legume green manure.

phosphoric acid cost each 5 cents per pound, and nitrogen 18 cents per pound, and that to grow a fair crop of clover requires per acre 88 pounds of potash and 15 pounds of phosphoric acid, there would be a total cost for plant food of \$5.15 per acre. The crop will contain 83 pounds of

a farmer in these days must know the nature of manures generally, but he must also know how to make the most of each and all of them.

By green manuring is meant the growing of crops for the purpose of plowing them into the soil to increase its fertility. One of the ob-

jects of green manuring is to enrich the soil in organic matter, which is valuable, especially with soils that are either too loose or too stiff. The improvement consists in bettering the mechanical texture, making soils more retentive of moisture and consequently less subject to the effects

added to the potash and phosphoric acid. The four pots to the right (also planted to oats) received potash and phosphoric acid in the same manner, and all four were green-manured, the first two by a crop of mustard, the second two by a crop of vetches. These green-manure



Fig. 3. Different results from legume and non-legume green manure.

of drouth. The most important feature, however, in connection with green manuring lies in the use of legumes, because these plants are valuable not only for the organic matter they produce, but also for the nitrogen they absorb from the atmosphere, which is useful as plant food for succeeding crops. Plants which are not legumes do not have this property of taking nitrogen from the air. Whatever plant food they contain has been taken from the soil.

Some interesting experiments were made showing the value of legumes for green manuring.

Figure 2 is from a photograph illustrating one of these experiments. The four pots to the left were planted with oats and all of them received sufficient potash and phosphoric acid, but the first two were not supplied with nitrogen, while the other two received an ample supply. The difference in growth shows the effect of the nitrogen

crops were grown in the pots the previous season and worked into the soil.

As will be seen from the picture, the effect of mustard and vetches, when used as green-manure crops, is strikingly different. Green-manuring with mustard (a non-legume) failed to supply the nitrogen needed, and a very poor crop of oats resulted—practically no better than where neither nitrogen nor green manuring was used; while vetches (legumes) being nitrogen gatherers, supplied the nitrogen needed to make a good crop of oats, and proved equal to the nitrate of soda in the first case.

Figure 3 refers to another important experiment bearing on green manuring. All eight pots received potash and phosphoric acid alike. The first two pots received no nitrogen, second two were green manured with lupines, the third two with buckwheat, and the fourth two with peas. The results showed the (turn to page 57)

Toiling the HAY in the Bruley

¶ *Farming has its attractions—when you look at it right. ¶ Read these sage reflections on the subject*

By Irving Price

P AW?" answered the boy, "he's toiling the hay in the bruley."

Cousin Tom Sears and I were only an hour's ride north from the Canadian border and the boy had evidently understood our question, but the word-puzzle "bruley" stumped us, and I don't know yet whether I'm spelling it correctly.

"Toiling the hay" was also a new expression to our ears, but one that needed no interpreter. We both had toiled hay and other crops in our own boyhood days until old enough to quit the farm and its toil for the city and business.

We found Paw in the bruley, as directed, toiling the hay, as specified. He was glad to stop and rent us his boat for a few days' fishing on his own terms of fifty cents a day.

We were out of touch with farm life, but could tell that the soil was poor, the crops were thin, and the general atmosphere hopeless. Tom's keen mind reacted indignantly.

"'Toiling' is right," he muttered. "Poor land and the man is

land-poor—no fun—no society—no progress—no inspiration—no future. Talk about primitive man——"

Just then a two-pound black bass got on his line and interrupted the discourse. Later quiet settled down, and Tom grew sentimental.

"I was a boy like that on a farm not so many years ago, and such a man I would be to-day if I hadn't had the nerve to strike out for the city. There are other boys right now on the old farm back in New York State, and Lord knows you and I have not kept in touch with them or done much for them in the last fifteen years. Wow!"

THIS time we hooked a double-header, a fish on each line, and toiling the hay interested us no longer, but off and on during the week we discussed it again and finally decided to pay a sentimental visit to our second cousin, Charlie, who had stayed on the farm.

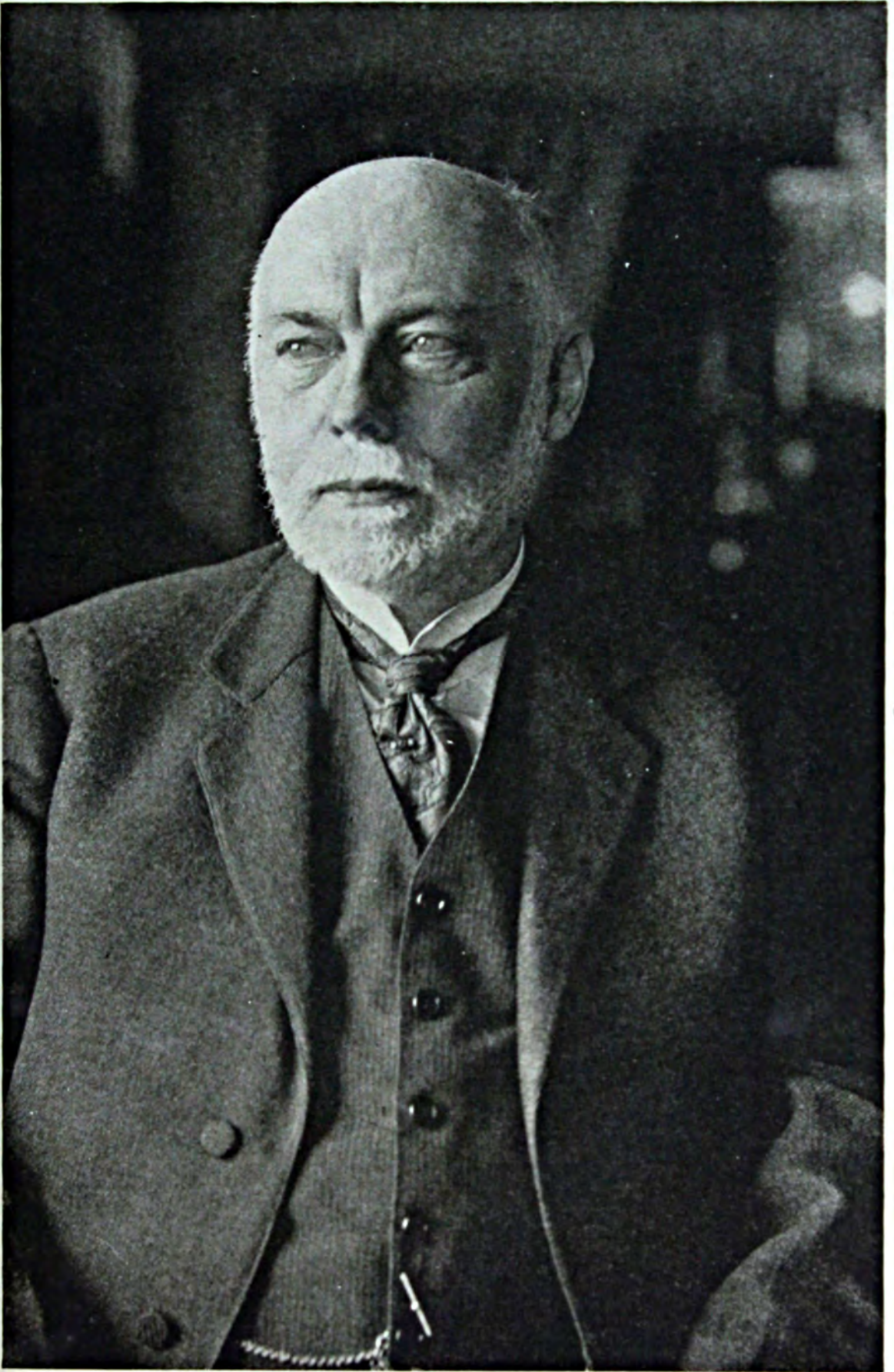
"The place looks thrifty," remarked Tom in a (*turn to page 67*)



☪ Dr. C. A. Browne, new chief of the Bureau of Chemistry, U. S. Department of Agriculture. He left the department 16 years ago and, up to the time of his return to take charge of the chemical work, he was in charge of the New York Sugar Trade Laboratory. ☪ The enforcement of the Food and Drugs Act is a part of his work.



¶ Dr. W. W. Garner, of the U. S. Department of Agriculture, whose discovery of the effect of the length of day on the flowering and fruiting of plants is one of the most important in recent years. ¶ He has found that it is not the coming of colder weather that makes plants start the work of making fruit and seed, but the shortening of the hours of daylight. He can produce the same effect at any time by artificially reducing daylight, running the plants into a building in the afternoon and bringing them out in the morning. ¶ There are practical applications of this new fact.



Dr. Frederick B. Powers, of the U. S. Department of Agriculture, whose discoveries regarding chaulmoogra oil have had much to do with its development as a specific for the cure of leprosy.



¶ Professor Milton Whitney, chief of the Bureau of Soils, United States Department of Agriculture, is famous the world over for the work he has done to increase our knowledge of the country's most fundamental resources.

An Open Letter

to MR. SAMUEL L. EWING
from E. K. HOWE

¶ A copy of this letter happened to come to my attention. ¶ It struck me as such a sensible, straight-forward presentation of important facts that are not generally known that I secured Mr. Howe's permission to print it for the benefit of our readers.

Jeff

MR. Samuel L. Ewing,
c/o "San Francisco Bulletin,"
San Francisco, California.

Dear Sir:

I have read your article in the San Francisco Bulletin of November 23rd entitled "Potash Industry Success in California is Assured by German Mark Collapse," and it calls forth the questions, "Does the American Potash Industry depend for its existence upon the elimination of competition?" "Must the farmers of the United States be subjected to a Potash famine and the excessive prices of an industry not able to supply a fraction of their requirements?" The answer to both questions is "No!"

As a Native Son, I hope the California industry will continue a success. But as the distributor of German Potash in the United States I can assure you there will always be sufficient potash to supply the needs of our farmers at prices that will pay them to increase their yields and build up the fertility of their soil.

There is no uncertainty of delivery nor disorganization in the German potash industry as has been lately broadcasted throughout the press. The industry is self contained, able to secure all its raw materials and coal within its own organization and any quantity of potash salts can be supplied to meet all demands of our farmers. This does not mean, however, that the American potash industry will suffer, as there is a potential market sufficient for us all.

To give you a clearer idea of the potential business which can be obtained from the farmer as compared with the comparatively small amount of potash now used, we give you herewith two tables. Table A shows the amount of potash imported and produced in the United States between 1913 and 1921, as against actual potash required to make up an average of 5 per cent. in mixed fertilizers, which is considered the average to give the farmer the best minimum results.

TABLE A

The following table shows the consumption of fertilizers in the United States (not including Hawaii) for ten years; the amount of potash required to provide an average of 5 per cent. in these fertilizers; and the imports and domestic production of potash:

Year	Fertilizer Sold in U. S. (Short Tons)	Actual Potash (K ₂ O) Required to Make 5% Potash in Fertilizers Sold (Short Tons)	Imports of Potash (K ₂ O) (Short Tons)	Domestic Production Potash (K ₂ O) (Short Tons)	Total Potash (K ₂ O) Used (Short Tons)
1913	6,544,340	327,217	273,124	.....	273,124
1914	7,240,320	362,016	178,610	.....	178,610
1915	5,573,200	278,660	59,114	1,090	60,204
1916	5,390,540	269,527	7,885	9,720	17,605
1917	6,206,540	310,327	8,100	32,573	40,673
1918	6,756,740	337,837	7,957	54,803	62,760
1919	6,891,320	344,566	28,560	32,474	61,034
1920	7,654,220	382,711	199,175	48,077	247,252
1921	4,500,000	225,000	64,379	7,618	71,997

You will see from the above table that there is a very great opportunity for increased sales in this respect, even though the farmer does not increase the use of fertilizers.

Table B gives even more startling figures, for it shows that taking into consideration all of the potash put back into the soil through manures, domestic and imported potashes, there is a minimum annual loss of over one million tons of pure potash, or five times the amount which it is anticipated will be imported and produced in the United States over the coming year.

TABLE B

CROP	Tons actual potash removed from soil in 1 year, based on a ten-year average
Corn.....	1,783,345
Wheat.....	304,628
Oats.....	484,692
Barley.....	131,799
Rye.....	24,904
Potatoes.....	54,512
Hay.....	1,035,810
Cotton.....	106,752
Tobacco.....	48,370
Total.....	3,974,812

The most extended and careful investigation into the amounts returned in manures and crop resi-

dues indicate that not over two-thirds of the plant food removed by crops is returned to the soil under the very best farm practice, while under average practice not over one-half is returned.

Even under the best practice this would indicate that every year there is a loss of 1,054,464 tons of actual potash which is gone beyond hope of recovery.

Our account with the land then stands:

	Tons
Potash removed by Principal Crops, approx.....	3,900,000
Recoverable under very best methods, approx. . .	2,600,000
	1,300,000
Less highest amount imported and produced in any year.....	273,124
Minimum annual net loss, approx.....	1,026,876

The field for increased sales for any supplier of potash is in this potential tonnage that is now being robbed from farm lands throughout the United States, and until the point is reached where supplies replace withdrawals, it is futile for potash manufac- (turn to page 49)

The Bunk About Wage Slaves

By Dr. Frank Crane



THE Wage System has been cursed by every tyro in reform. We have heard talk of wage slaves, and the scream that their condition is little better than that of pre-war negro slaves. Indeed, some say they are worse off, as the slave was cared for by his master and felt he was one of the family, while the wage-master is cold, aloof and heartless. ¶All this is pure bunk. ¶You can easily prove that it is by asking any hired man how he would like to be bodily owned by his boss, as was Uncle Tom. ¶To do an honest job for money is the most equitable and the decentest way of doing it. ¶You can prove this by your instincts. ¶When a man approaches you with a proposition, and says he does not want any profit, his soul is above money, and he is actuated by altruism, you punch the button signaling the house detective to keep an eye on him. You only do business with satisfaction with any man when you see clearly that he is going to make a profit. ¶Whoever tries to get something for nothing is a cheat. Beggars are nuisances and the worst type of menace to the poor. It is an open question whether most benevolence, money doling and all gifts do not create more harm than good. ¶The one transaction that is clean as a hound's tooth, square and solid in the eyes of men and wholly acceptable to God, is to pay a man an honest price for his labor or his goods. ¶America is founded on the wage-system. ¶It is the corollary of democracy. ¶It was not devised. It grew. It is a process of evolution. ¶It is the best way we have found so far in which one free man can serve another and lose none of his manhood. ¶It has its drawbacks, because humanity has its imperfections, and it is human. ¶Crafty employers will underpay workers, and lazy workers will swindle employers in all probability to the day of judgment. ¶Get the buying and selling and wages of the world equitably arranged, and thousands of laws would disappear from the statute books, hundreds of charitable organizations would close their doors as no longer needed, fantastic economic theories would vanish as thin clouds, the capital letters of Capital and Labor would be permanently replaced by lower-case and the industries of the world would bound forward as if touched by a magic spur. ¶Be fair, and you will not need that anyone urge you to be kind.

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How the CALIFORNIA ALMOND Achieved Success

By Charles J. Brand

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

THE California Almond Growers' Exchange is, to a certain extent, a product of evolution. During the fourteen years of its existence it has been shaped by necessity.

Like all cooperative enterprises, it was born also of necessity. Prior to 1910, the year of organization of the Exchange, the marketing of almonds was chaotic, as is always the case where a product is a luxury and its distribution is left to a private venture inspired only by desire of profit. The almond growers of California found themselves begging speculative elements to move their crops and their importunities met with offers of prices below the cost of production. Those who had to sell, sold; those who did not, let their almonds rot.

FOR a number of years prior to 1910, there were in existence a few local associations of almond growers whose membership was dictated by geographical proximity and, of course, natural communal interest. These made an ineffectual effort to obtain a living price for almonds. By 1910 their ineffectiveness was clearly demonstrated as speculative shippers of almonds were successful-

ly pitting one local association or pool against another.

Something had to be done. The formation of the California Almond Growers' Exchange resulted. It was first a combination of the different local associations or pools existing at the time and these, having associated themselves, went forth and organized other local associations, nine in number all told.

A decorative background featuring several almond shells scattered across the page, some whole and some cracked open, framing the title.

GROWERS' EXCHANGE

Through Cooperation

C This article concludes the splendid series that Mr. Brand has contributed on the subject of cooperative exchanges.

The first year passed and as time went on, by careful management, the Exchange grew and took shape. Continually those who were in the Exchange labored with their benighted fellow almond growers and gradually the membership grew, year by year, with the formation of local association after local association, until at the end of 1921 it embraced 23 local groups of growers, all bound together into the California Almond Growers' Exchange.

The system worked all right as long as it did not require great sums to receive, process, and market the annual almond crop. The value of the California crops, however, had steadily increased from a total of \$300,000 in 1910 to nearly \$2,000,000 in 1921. It was a different sized baby that had to be clothed and the financial trousers it had worn were too small.

Although at the beginning of 1922 the Exchange had assets, through

careful management, of some \$500,000, the five directors confronted the membership of some 3,500 growers with a proposition to liquidate or reorganize, deserting the annual basis and going forward on a five-year crop pooling agreement. The decision of the five farmer directors was instantly met with the opposition of the speculative element in the almond trade. The battle ended in reorganization of the Exchange with a five-year crop pooling agreement carrying a lien on members' land for specific performance of the contract, namely, delivery to the Exchange of the entire almond crop each year for a period of five years and a fine of five cents per pound for every pound of almonds sold in violation of the contract. In other words, against great odds, the Exchange rebuilt in three months a structure which took eleven years to construct originally.

The success of the reorganization was immediately (turn to page 45)

¶ Last month we printed an account of the contest for county soil improvement conducted by the Soil Improvement Committee of the National Fertilizer Association and the six county agents who won the awards. ¶ We promised to give you this month the details of County Agent W. F. Gahm's program which won first prize. ¶ Here they are.

The Winning Program for County Soil-fertility Improvement

A REMARKABLE achievement, made possible by his ability and foresightedness in planning his work! That is what lies behind the program with which County Agent W. F. Gahm won the first award in the county soil-fertility improvement contest. It was agreed that in ability to analyze conditions correctly, to build a sound plan of attack and to effectively execute it, Mr. Gahm excelled all other competitors.

Scioto County, in the south-central part of Ohio, was the ground on which Mr. Gahm worked. After a study of the soil, four major lines of work were decided upon as constituting a program of improvements:

1. The use of more limestone.
2. The application of more fertilizers of the right kind.
3. The introduction of better crop rotations, including larger acreages of legumes.

4. The rejuvenation of permanent pastures.

The following is the program as it was worked out in co-operation with the county and township farm bureaus, the extension specialists of Ohio State University and community leaders over the past six years.

1918

Recognizing the need for immediate action, and in order to stimulate wide interest, ten preliminary meetings were held in various localities, at which the true conditions were placed before the farmers. In this way, 26 lime and fertilizer demonstrations, located in 12 of the 16 townships, were started. Twice as much limestone was ordered as in the preceding year. Seventy farms were persuaded to keep records, 31 of which were summarized at the end of the year.

"The men in the group of the best five," says Mr. Gahm, "were

producing over \$600 with more crops than the average of the 31, practically on the same acreage. How were they able to do so? They purchased \$125 worth more of fertilizer than the average of the whole group. All but one of the best five men are regular users of limestone, while but 43 per cent. of the whole group use limestone. Likewise, the men who secured the best crop yields keep more livestock than the average and so have more manure to use on the farm."

1919

Twelve meetings were held early in the spring. At each, the results of the 1918 work were discussed.

Twelve sweet clover demonstrations were begun; 15 additional limestone demonstrations were started. An investigation of sources of liming material was also instituted. Fertilizer demonstrations on wheat and corn produced results so impressive that even farmers on bottom land, hitherto considered as unresponsive to commercial fertilizers because of its inherent richness, began to use fertilizer.

"Farm management records for this year showed that the five best farmers who kept records produced \$56 worth of crops per acre, while the average farm produced \$44. This was brought about through better fertility practices as evidenced by the expenditure of \$226 per farm for fertility and lime on

the five best farms, while the average farm received only \$130 worth.

1920

In each township, a community leader was appointed as soils chairman, with the idea of developing them into a county "Soils and Crops" organization. A careful check was made of the previous two years' work.

The results were brought to the attention of every farmer, a number of special field meetings being held for that purpose.

One of the features of the work in 1920 was the County Fair exhibit. Two miniature farms were shown on which records had been kept for two years. The exact feed value of the crops grown on each farm was also indicated. The well-managed farm grew \$560

worth more protein per year on seven and a half acres less land than was used on the poorer farm, through the growing of more legumes, made possible by the use of more limestone and fertilizer.

Fifteen soybean demonstrations, totaling 100 acres, were begun. The acreage of soybeans has increased from a few acres in 1919 to over 2,000 in 1923.

Three community soil demonstrations were established "to demonstrate the effectiveness of logical, systematic fertility treatment followed through (turn to page 41)



County Agent
WALTER F. GAHM

Cocklebur Sprouts *are* DEADLY

¶ A question that has puzzled farmers and scientists for many years is now definitely answered.

By

Albert A. Hansen

Purdue Experiment Station, Lafayette, Indiana

IS the cocklebur a poisonous plant? This has long been a mooted question and the answer is exceedingly important, since the plant is of common occurrence and losses to livestock that apparently can be attributed to no other cause are quite frequent.

The experimental evidence against cocklebur has been very contradictory. It has been demonstrated that the spiny burs may clog the digestive tract and they may even puncture the intestines and many experimenters were firm in the belief that the only harm to be expected from cockleburs was from the mechanical action. This explanation, however, was unsatisfactory to all who have studied the heavy losses in the field. Strangely, however, numerous feeding experiments failed to get results.

To show how puzzling the situation was let us take for example the case of Foster Hoffman, of Centre Point, Indiana. On the afternoon of May 5th, he turned his swine into the hog lot. Next day seven pigs and a gilt were dead. The writer investigated the case on May 8th and noted millions of young cocklebur sprouts in the hog lot. Suspecting them to be the cause of the trouble, a large quantity of the sprouts were gathered and shipped to the Purdue Agricultural Experiment Station, where they were fed in liberal quantities to pigs. The animals devoured the sprouts with avidity and thrived on the fare. Puzzling, wasn't it?

The mystery, however, has at last been solved. Recent experimental work has demonstrated conclusively that at one stage in its growth the

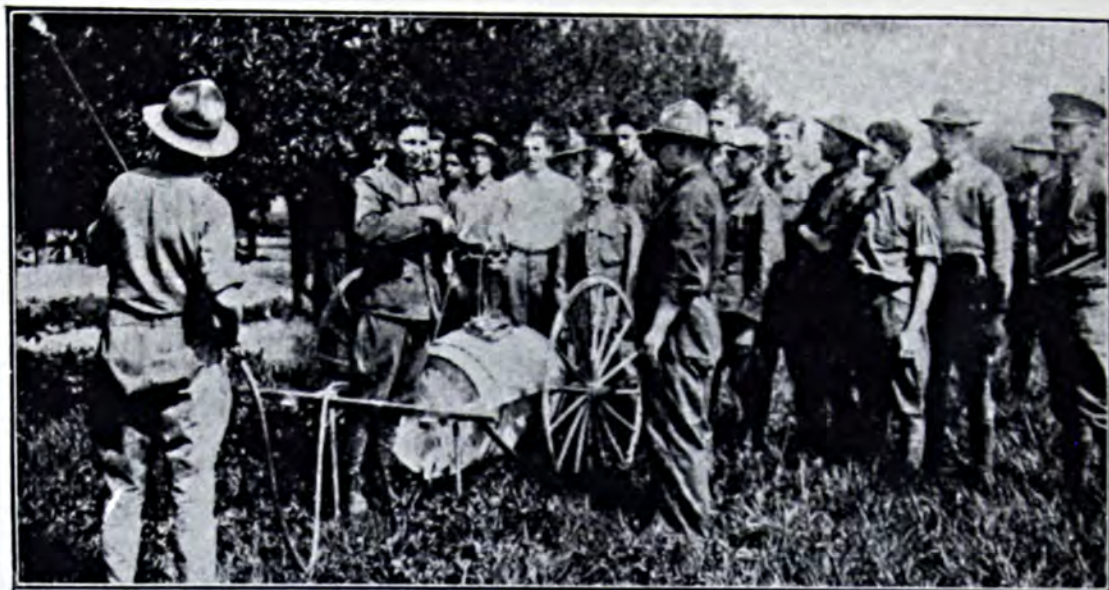


Cocklebur Sprouts. **C** The young plant is poisonous only in the first stage, marked 1. Stage 2 shows the pair of slender, false leaves which were poisonous, but the poison left when the true leaves above them developed. **C** The picture also illustrates two different methods by which young cocklebur plants emerge from the old burs.

common cocklebur is a fatally poisonous plant. The poisonous stage is immediately after the seed has sprouted, when the two slender, grass-like false leaves have opened and before the bud containing the true leaves has unfolded. As soon as the true leaves begin to show, the young plant apparently loses its poisonous properties. This explains the failure of the feeding experiments previously mentioned and clears up the mystery of the deaths of thousands of young swine, cattle and sheep throughout the Mississippi Valley states and in the Southwest.

The importance of this discovery to the individual farmer may be judged by citing the case of Will Adams, of Azalea, Indiana. During the spring of 1922 he lost over a score of young swine in the field.

The local veterinarian diagnosed the case as septicæmia and Mr. Adams invested over a hundred dollars in antitoxins, but the trouble did not cease. An investigation revealed that not only was the field heavily infested with cocklebur sprouts, but the animals exhibited symptoms typical of cocklebur poisoning. At first their backs arched in a peculiar manner, their heads were thrown backward and there was evident depression and nausea. A few of the poisoned animals frothed at the mouth and most of them lay on their sides and kicked in a convulsive manner, sometimes squealing in evident pain. Frequently the eyes whitened just previous to death. The result was usually fatal in from twenty to thirty hours after the first symptoms were noted. (turn to page 43)



© Underwood

New Facts in Orchard Spraying

By H. W. Anderson

Illinois Agricultural Experiment Station

A FEW years ago the experiment station workers and the orchardists were satisfied that they knew how to control San Jose scale, the worst pest of the orchard. The standard practise consisted in spraying when the trees were dormant with "winter strength" lime sulphur.

Suddenly, about three years ago, growers in the southern Mississippi Valley region discovered that scale was getting worse and that in spite of heavy and careful spraying with extra strong lime sulphur the scale continued to increase. By the end of the summer their fruit was almost a total loss and many of their trees were dead. This led to an appeal for help to the experiment stations and the United States Department of Agriculture. The answer to their problem was found in the use of an entirely new spray, based, however, on the old oil emulsion sprays.

This new or modified spray was

made from two very cheap substances, fish-oil soap and ordinary stationary engine oil. This was doubly fortunate because the cost of protecting orchard trees against insects and fungi had steadily mounted during the past year and the scale spray was one of the most expensive. Furthermore, this spray could be applied in the summer time when the young scale insects were getting established on the new growth.

This spray is used almost exclusively at the present time by growers in the Middle West, where scale has become so serious as to kill out many of the best orchards. It is fairly easy to make and will remain in a good condition for months. The formula and method of preparation is as follows:

Stock Solution

Diamond Paraffin Oil.....	1 gal.
Potash Fish-oil Soap	2 lbs.
Water.....	¼ gal.

The water, soap, and oil are poured into a large kettle or steam cooker and boiled for about five minutes. Care should be taken not to burn the mixture. While still hot the mixture should be pumped twice through a spray pump in order to thoroughly emulsify it. This is the stock solution and it may be stored in barrels for future use. Enough should be made at one time to spray the entire orchard at least twice during the season.

The spray mixture to be applied during the dormant season is made by adding 3 gallons of this stock solution to 100 gallons of water. It will mix readily with the water and may be poured directly into the spray tank. The summer strength is 2 gallons to 100 gallons of spray mixture (Bordeaux) or water. The oil may be added to Bordeaux mixture and lead arsenate can be added as in a regular summer spray, but *oil emulsion should never be used with lime sulphur* and if the tank has had lime sulphur in it, it should be carefully washed.

Another method for making this oil emulsion, especially for summer spraying, is to use Bordeaux mixture instead of soap as the emulsifier. This is made by using equal parts of oil and a 4-4-50 Bordeaux mixture. No boiling is necessary. The mixture is pumped through a spray pump at least twice. A good method of making this is to mix it in the spray tank, start the pump and agitator and spray back into the tank, first removing the cap to the spray nozzle. Then, after being satisfied that the mixture has all gone through the pump once, it may be pumped into the barrels where it is to be stored. This mixture is to be used at the rate of 4 gallons to 100 gallons of water or

Bordeaux mixture for the summer spray.

The cost of these sprays is much less than the cost of lime sulphur spray, and they are much more effective when thoroly applied. If the scale is found alive in the summer one or more applications may be made at the same time the bitter rot or blotch sprays are applied. All that is necessary is to add the oil emulsion to the regular Bordeaux-lead-arsenate spray.

A Convenient Peach Spray

Credit is due the New Jersey Experiment Station for developing an easily prepared summer spray for peaches. The old self-boiled lime sulphur spray was always a bugbear for the peach growers. It took skill and patience to prepare it properly. Also lump or stone lime was used and this article is now hard to find on the market and will not keep well. The formula and method of preparation is as follows:

Finely ground sulphur (usually called superfine sulphur)	16 lbs.
Hydrated lime	8 lbs.
Calcium caseinate (Kayso or other similar brands may be used)	1 lb.
Water	100 gal.

The sulphur, lime, and caseinate (and powdered lead arsenate if it is called for in the spray) are mixed dry and sifted thru a fine sieve (about 20-25 mesh to the inch). This mixture may then be sifted directly into the tank while it is being filled, with the agitator going, or it may be sifted into a small quantity of water and stirred up into a paste and then added to the required amount of water. Most growers prefer to (*turn to page 43*)

Jeffisms

If you run up against a tough job, jam your umbrella down its throat and open 'er up!



To the pessimist every bump on the body politic is a political cancer.



The largest, emptiest instrument in the orchestra makes the most noise and the least music—the bass drum.



Blessed are the meek, for they shall pay 40 per cent. inheritance tax.



If ignorance is bliss, don't tell me the world is not happy!



Give me a man who has thrice failed; his feet are on the ground, though his head is still in the clouds.



It isn't what you know you know that helps your progress; it's what you know you don't know that spurs you on.



Don't be a lightning bug, with your headlight on your caboose; look ahead.

Jeff

Russia's Grain Harvest Still Below Normal

FROM the Riga Commercial Bank, Riga, Latvia, comes a special bulletin on the Russian harvest of the past year.

Although conditions are steadily improving it does not appear that Russian wheat will be a factor in the international markets for some time to come. There have been rumors that Russia was this year preparing to export large amounts of grain, which would materially reduce exports of American grain.

As the facts are presented in the report of the Riga Commercial Bank, it appears that in Crimea, the grain crops amounted to about 153,000 tons. In spite of the fact that this compares favorably with last year's crops, it is insufficient to satisfy the needs of the population. Harvesting is hindered through lack of credit and cash and grain prices are low.

In the Ukrainian grain market, Russia's largest grain producing province, the crops are nearly normal this year, but prices have fallen almost 50 per cent. from August 1st quotations.

The Siberian crops are reported to be below the average. In Southern Siberia the crops were damaged by drought, but in Central and Northern Siberia they are more favorable. Agricultural appliances are in a very bad state, as the peasants are unable to acquire new machinery, owing to high prices.

It is also interesting to note in the Riga Bank's report that trade conditions in Russia are showing considerable improvement. English, French, German, Dutch, and Polish companies have been organized to work Russian Concessions or to trade with Russia. The English in particular seemed heavily interested in Russian trade and are making rapid strides in developing it.

Tiling Above the GROUND!

Q *Fellows, read this and enjoy
a good laugh with*

F . H . L e y

County Agent, Poughkeepsie, New York

P ERHAPS this should go in the "Just Among Ourselves" column or be headed "For County Agents Only," for it is of course awfully unprofessional to talk about people among whom we go or to show amusement over the mistakes of another. However, I notice that when the boys get together in the hotel corridors around conference time to while away the midnight hours, one of the favorite pastimes appears to be swapping yarns about the funny things picked up on their travels; and those of us who happen to be in counties near enough to the large cities so that we get a sprinkling of back-to-the-landers among our clientele, have some rather amusing incidents to relate.

Some of these yarns we have often suspected were drawn from what might be regarded as "Old Wives' Tales" or were perhaps the product of a vivid imagination plus a little embellishment for the occasion, but in this brief narrative I shall stick to the honest-to-goodness truth, possibly for the reason that in our humble opinion the facts of the case do not permit the addition of a single detail to render the story more astonishing. I shall therefore relate it "as is."

A few months ago a farmer made

inquiry of me over the phone relative to the culture of alfalfa, with particular reference to a drainage problem, as he stated that he was tile draining a field which he hoped to sow to alfalfa in the not far distant future.

After some discussion I told him that I would run out and look the project over as it was difficult to discuss details by 'phone without a personal familiarity with the land under consideration. I had not met the gentleman before, but located the place without difficulty and ran my eye over the field.

I T was a small area of perhaps two or three acres in the shape of an oval, the land sloping from all sides gently toward the center, with the exception of one corner, from which there was a natural outlet with a very moderate grade thru the field and a rather heavy grade into an open ditch beyond.

The owner was at the time working on the drain and approached me with the easy air of a man familiar with the affairs of the world and well pleased with himself and the job he was doing. As I took in the situation somewhat at a glance I noted that there were several rather acute problems to be solved

before alfalfa would be likely to thrive in this situation, among them such rather major questions as drainage, fertility and soil acidity.

The drain had been dug from the outlet at the edge of the field up to and a little beyond the middle and was as well located as would be possible. In fact, if properly constructed, should do the job nicely as there appeared to be no complications in the way of a satisfactory grade or other factors which puzzle the farmer with wet land. However, the whole job looked a little out of kilter, a great deal of dirt had been moved and I noted that the engineer in charge might be an expert along certain lines but was an amateur at drainage.

AT the time of my visit the tile had all been laid and the ditch nearly filled with stone but no dirt had been placed over them and the tile were readily visible down among the boulders. I started in at the outlet to look the job over and noted that the tile were started all right, but as they progressed upstream seemed to be trying to climb out of the ditch and at the end of the first hundred yards were on a level with the top of the ground. At this point a sort of derailing switch had been installed as the next tile lay hidden away in its proper place some two and one-half feet below the surface, and the gradual climb to reach the surface had commenced again.

At the end of the second hundred yards the purpose had been accomplished and the drain tile were again on a level with the top of the ground, but as there was only a little ways yet to go, the derailing process had not been repeated but rather a sort of tressle-work effect had been

adopted and the tiles were supported by stones laid on top of the ground until they actually climbed up into the air.

"A 'back-to-the-lander' " was my mental comment, but my comment aloud was "You have done a pretty good job in some respects, but I think the ditch would operate a little better if it was laid on a uniform grade. I would be inclined to take those tile out and get them all down at the bottom of the ditch and all about two and one-half feet below the surface."

"Well," was the reply, "that was the way I had intended having it, but the tile would not seem to come together at the top and I had to keep tipping each one up as I laid it to close the cracks. Then, when I got to the surface, the only thing that I could see to do was to get off to a fresh start."

"As to covering these tiles which are above the surface of the ground," I made inquiry, "won't you have trouble with ice and snow and their getting out of place, and how is the water to get into them when they are above the general ground level?"

"Oh! that's easy enough," replied my farmer friend. "I'll bank them up and cover them with dirt and so keep the ice and snow out and get the ground level up to where the tile are. You see, if I couldn't bring my tile to the water, I thought the next best thing was to bring the water to the tile."

"By the way," was my further inquiry, to develop the history of the case as well as the farmer's experience, "has this spot always been wet? How long have you known this place?"

"Born here fifty years ago," was the reply, "and farmed it ever since."

To County Agents

FIRST of all, I want to express my thanks to you for the way you have received the first four issues of BETTER CROPS. It's mighty fine to feel that you are working for live wire people who appreciate your efforts.

BETTER CROPS is still a long way from perfection, but we're all doing our darndest to improve it with every issue.

In order to be really helpful and serviceable to you, I feel we need to know more about the particular conditions and problems in your own county. This will enable us to give you the kind of information and advice you want. We can also pass on the benefits of your experience to other county agents.

For this purpose I would like to have you fill out the questionnaire below and send it back to me. If you haven't room enough here, send me a letter or a postcard. It's only a few minutes' work and I will certainly appreciate it. If you have had any especially successful results in fertilizing in your county, I would especially appreciate a letter and photos. If suitable these will be published in BETTER CROPS at our regular rate of 1c. a word; \$3 per photo. Thanks!

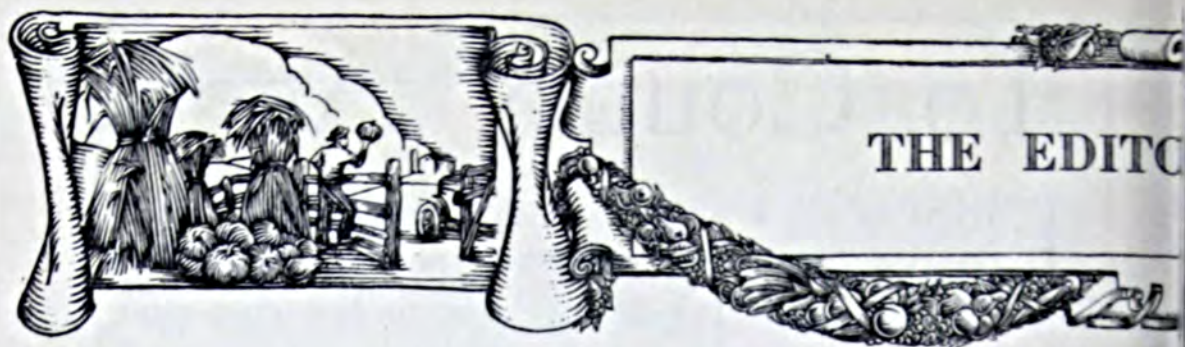
Jeff

Jeff McDermid, Better Crops Publishing Corp.,
81 Fulton Street, New York, N. Y.

1. What is the predominating soil in your county?.....
2. What are the chief crops in your county?.....
3. What are the most successful fertilizer formulas used in growing these crops?.....
4. What are your greatest troubles regarding fertilization?.....
5. What remedies do you use?.....

Name.....County.....

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

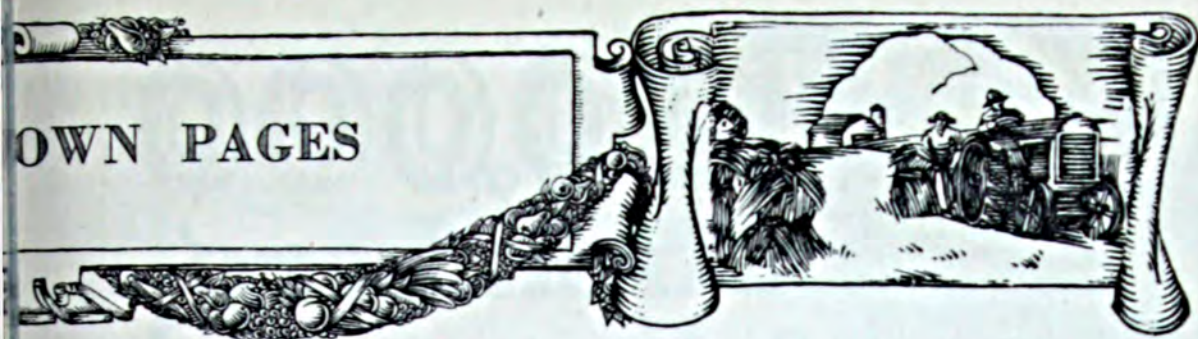


COOLIDGE'S MESSAGE On Thursday, December 7th, 1923, Calvin Coolidge, Chief Magistrate of the United States, read before Congress his first message.

It was a strong message, written by a man who is not afraid to say what he thinks. That part of his message regarding agriculture is interesting. He said, "With his products not selling on a parity with the products of industry, every sound remedy that can be devised should be applied for the relief of the farmer. He represents a character, a type of citizenship, and a public necessity that must be preserved and afforded every facility for regaining prosperity."

One cannot mistake that message. It is clear as day. Coolidge goes on, "Cheaper fertilizers must be provided." Here we have a thought that is close to our hearts. All of us know that fundamental agricultural prosperity in these United States depends upon *permanent soil fertility*. In many sections of the country the soil is being robbed and mined of its plant food by short-sighted farmers who, because fertilizers seem high in price, have refused to use sufficient of them to replace the plant food removed by their crops.

There are two ways to overcome this situation. One is to secure cheaper fertilizers; and the other is to prove to the tiller of the soil that even were all fertilizers ten to twenty-five per cent. higher in cost than they now are, it would still be wisdom to apply plenty of chemical fertilizing salts. Farmers have been taught by Experiment Stations to carefully analyze the returns received from the application of fertilizers; they have been told that to apply five dollars' worth of fertilizer and increase the yield of the succeeding crop but four dollars' worth was poor business—better use less fertilizer. There is a fault in this reasoning that is quite apparent to the agronomist, but which is not apparent to the farmer. It is quite impossible to so accu-



rately gauge the needs of a forthcoming crop that precisely the right amount of each plant food can be drilled; a good guess must be made, based upon facts furnished by previous experiment.

Therefore, it is wise, in most instances to apply *more* fertilizer than the coming crop needs, even though the immediate increased yield does not make this heavier application profitable. Let the farmer once realize that the soil is a bank into which deposits may be safely made, even beyond withdrawals, and you have changed the complex of the situation and made permanent soil fertility a subject, not of nice balance and calculation, but of *investment*.

The farmer tries to accumulate in his bank more money than he has actual use for. He considers this the aim of his study and labor—to get ahead. Let him, then, consider his soil and its deposits in the same light, and you have removed the immediate necessity for cheaper fertilizers and have instilled into him a desire for permanent soil fertility—made of him an *investor*, instead of a robber and a miner. He will then be willing to put ten dollars' worth of fertilizer on his soil for every five dollars increased yield taken out, and the time will arrive when such deposits will be sufficient for many crops to come. The subject of "leaching" does not inhibit this program.

Cheaper fertilizers are needed, of course; and they will come as soon as freight rates are reduced, taxes cut, and more money is available for investment in productive industry. In the meantime, let us try to gain a new viewpoint on this subject and teach the farmer to become an investor in permanent soil fertility. In that program only lies our fundamental agricultural prosperity.

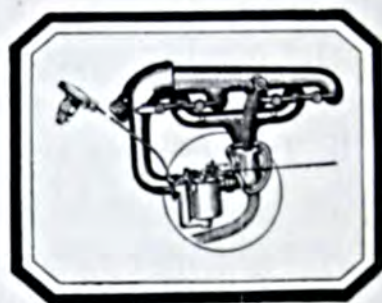
Yours to a cinder,

Jeff McIlernid

Over 100,000 Stromberg Carburetors and Hot Spots Sold

for Fords!

A Carburetor sales record never before equalled — and made possible only by the fact that the STROMBERG CARBURETOR and HOT SPOT for Fords delivers more mileage—more power—than any other Carburetor offered. It makes possible quicker get-away and much easier starting—four great essentials that every Ford owner is looking for.



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
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See your nearest dealer—if he doesn't carry the famous Stromberg Carburetor for Fords, write us direct for free literature and further information.

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64 East 25th Street
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New

**STROMBERG
CARBURETOR**

Does it!



Dear Jeff:

The evenings are getting longer, the work becomes easier and a farmer finds time to read, write and study a little.

I read with interest the story in your November **BETTER CROPS** about how the "Southern Soils Are Run Down in Productivity," and I think a story about how the Northwestern Soils Are Run Down in Productivity is a proper subject in **BETTER CROPS**.

To start in with, I am not a college teacher or graduate, just a plain old farmer and on the job all the time. I raise the grain and feed in summer and feed most of it in winter to cattle, horses and poultry—very busy summer and winter.

You have heard a good deal about the bad shape of the Northwest, and I wonder if you people know what ails us. Sometimes I wonder if we know it ourselves.

You hear talk about good farmers and poor farmers, but that name is not correct—*robbers* would be better and more fitting. Because that is what we are—robbers of our soil.

When we came here and others before us, we had wonderful soil, the finest, richest prairie soil to be gotten anywhere, and we cropped that soil. We plowed, sowed and always harvested, year in and year out. The soil was so full of plant food, humus, that we could raise anything abundantly and very cheap. The business shaped itself to our cheap grain, cattle, hogs, poultry, in fact anything that comes from the farm.

That robbing of our soil has been going on always, more or less, and the results are smaller yields. Besides, the ground gets full of foul seeds, such as pigeon-grass, mustard, wild oats, quack grass, cockle burrs, etc., and to a certain extent crop failures. We will have more of all that in the future, unless we "robbers" become "farmers," and in order to do so we must have the means to farm with, which we have not at present. More credit will not do, but we must have a profit on our work.

Cheaper money so that we can work to advantage, first of all.

There is no pleasure in raising crops, but the pleasure comes in raising your *own* crop. We cannot raise anything cheap any more, and the whole business world is shaped by our cheap products. Do you see where the shoe begins to pinch? We farmers are up against the whole business world (which wants to go on the old way), and we farmers are just now lying on our backs flat. This is the situation just now and not much hope in sight. We have overdrawn our bank account and the time to deposit some money is here. Our deposit lays back in the cattle yard, waiting for an active hand to haul it to the fields; active hands are hard to find and, besides, they don't like that dirty work, rather work in towns and cities. Consequently the fertility of our soil lies in heaps in the yards instead of in the fields.

Yours truly,

T. MULDER,

Allamont, Denel Co., S. Dakota.



Selling Fertility

With every crop the farmer sells, he also sells some of the fertility of his soil that helped to produce the crop.

Intelligent marketing of farm products is possible only when the seller takes into account the fertility he is selling and its replacement value.

Here, for example, is a list showing the number of pounds of potash per acre removed by the average yield of:

Grain and Hay in rotation..	75 lbs. potash
Oats	62 lbs. potash
Potatoes	74 lbs. potash
Sugar Beets	143 lbs. potash
Alfalfa Hay	168 lbs. potash
Green Corn	164 lbs. potash
Tobacco	200 lbs. potash

These losses must be replaced every year or poverty of the soil will rapidly follow.

A high percentage of Genuine German Potash Salts in mixed fertilizer is the most effective way of restoring the potash that has been withdrawn from the soil. Insist that mixed fertilizers used in your county contain Genuine German Potash and you can't go wrong. *Potash pays.*

**POTASH IMPORTING
CORPORATION of AMERICA**

81 Fulton Street New York City

The Winning Program

(from page 27)

one or more rotations." from 36 to 90 bushels per acre.

1921

In 14 different communities a program of work was outlined in which some phase of soils work was incorporated. The people of the community elected a project leader and set a goal of work to be done. These ranged all the way from the growing of 50 acres of soybeans to the building of a limestone storage bin, depending upon the chief need of the community.

An analysis of the farm records for the year included a "Fertility Balance," which was worked out for each farm and compared with the average of the five best farms. Thus, the five best farmers had labor incomes of \$1,094 compared to \$551, the average of the labor incomes for the entire group. The five best farmers used more lime, more fertilizer, bought more concentrates, grew more legumes, and handled their manure better than did the average farmer.

1922

Following a conference of the community leaders, six "Fertilizer and Lime Schools" were held in various sections of the country. Five pasture improvement demonstrations were begun with a limestone and phosphate treatment, all planned and conducted almost wholly by the local community leaders.

Eight-hundred bushels of soybean seed were purchased cooperatively.

Fertilizer demonstrations were started on tomatoes and potatoes, which revealed the effectiveness of a 4-10-4 analysis. In one case, 800 pounds per acre of a 4-10-4 fertilizer produced an increased yield \$63.89 greater than the cost of the fertilizer. On potatoes, 1,000 pounds of a 4-10-4 gave increased yields ranging

1923

At a conference of community soils leaders in January, a county soils program was outlined, based on the community programs. It was also decided to stress pasture improvement work and "Fertilizer and Limestone Schools" during the year.

Thirteen additional pasture improvement demonstrations were begun in seven communities, their combined areas being about 75 acres. "Pasture Improvement Week" was observed, beginning June 11th.

Summarizing the work of six years, these things have been accomplished in Scioto County through Mr. Gahm's improvement program.

1—An organization of Community Soils leaders has been perfected. These leaders meet annually to consider problems and methods of solving them.

2—As a result of demonstrations, the use of limestone and fertilizer has been materially increased.

3—The acreage of legumes, particularly sweet clover and soybeans, has been much enlarged.

4—Many successful pasture rejuvenation demonstrations are under way.

5—Six permanent Community Demonstration Fields have been established.

6—A supply of limestone, available at all times, has been made possible by community cooperation in the building of a storage bin.

The people of Scioto County feel that this work is now only well begun—that the great benefits from it lie in the future. It is expected and planned that all work under way will continue to grow and expand to meet all needs that appear.



The Harvesting of the Crop

*Is the final test of the
fertility of your soil*



One of the difficult problems you have in the growing of any crop is to determine the kind and amount of fertilizers to use for the most profitable yield.

Through our Agricultural Service Bureau, which is in touch with the fertilizer practice on the best farms from Maine to Texas, we are in the position to give our customers the benefit of our experience and observations as to the kind of fertilizers to use on your soil. Consult our Agricultural Service Bureau about your soil and crop problems. This service is free. Address

Agricultural Service Bureau

VIRGINIA-CAROLINA CHEMICAL COMPANY

Sales Offices

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Atlanta, Ga.
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Richmond, Va.
Savannah, Ga.
Shreveport, La.
Wilmington, N. C.
Winston-Salem, N. C.

Cocklebur Sprouts are Deadly

(from page 28)

Mr. Adams was much relieved to learn that the trouble was due to cocklebur poisoning, since he is a breeder, and the sale of his stock fell off alarmingly because his neighbors suspected cholera. The animals have not been allowed further access to young cocklebur sprouts and no more trouble has been experienced.

Considerable field work with cocklebur poisoning has been done by the Purdue Agricultural Extension Department, from which it seems that the trouble usually occurs when moist land dries in the spring. The drying of the land is followed by the simultaneous sprouting of millions of burs on well-infested land and it is then that poisoning develops, principally among swine and particularly in young animals. We are indebted to the experiments of Dwight, Roe and Clawson of the Bureau of Animal Industry for the knowledge that a quantity of cocklebur sprouts equal to one and one-half per cent. of the body weight of the animal is usually sufficient to prove fatal. From field experience, however, it is quite evident that degrees of susceptibility exist among animals in the same manner that some folks "take" poison ivy, while others do not.

If you are in doubt as to whether or not cocklebur sprouts have been eaten, it might be worth while to post poisoned animals and examine the stomach contents. This was done by Walter Grelle, of Dillsboro, Indiana, who lost eight out of nine hogs the first day they were put in the pen last spring. He compared

the plant parts found in the stomach with the sprouts growing in the pen, and although he did not recognize the juvenile stage of cocklebur, he sent the sprouts to Purdue for identification.

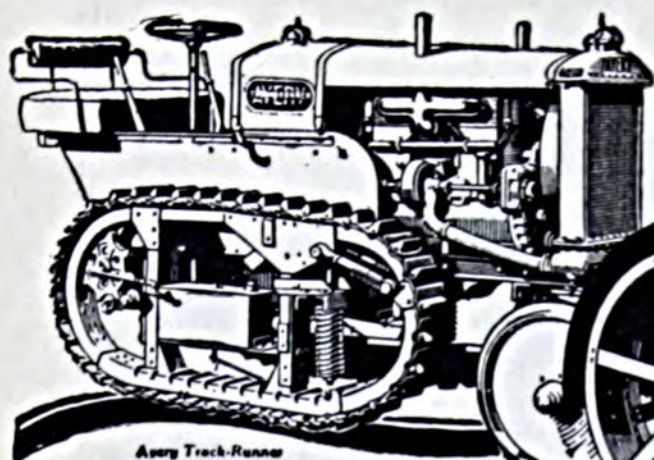
The remedy? Perfectly simple; don't allow animals to graze on cocklebur land until all the sprouts are at least four inches high and mow the weeds before new burs form. And doctor the sick animals by giving them liberal quantities of salted lard or grease of any kind. The fat, by coating the lining of the stomach, will do much to prevent the further absorption of the poison by the system, and the animal can be saved by this means if not too far gone. The poison, by the way, is probably a glucoside that has been given the imposing name xanthostrumarin.



New Facts in Orchard Spraying

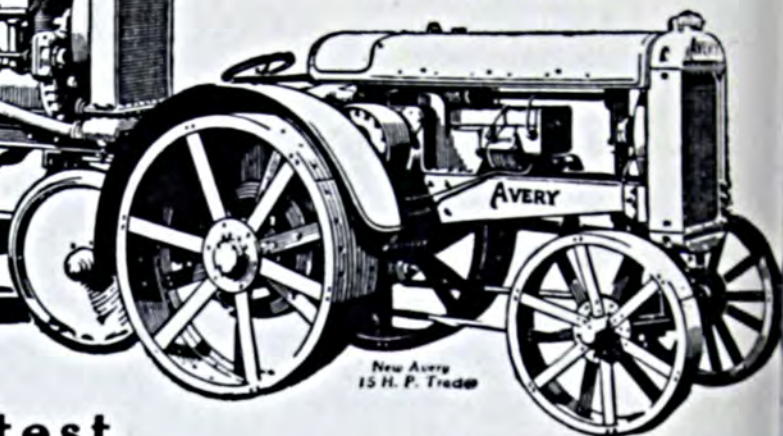
(from page 31)

mix enough sulphur, lime, caseinate, and lead arsenate at one time to furnish material for the entire spraying. They then weigh out the amount required for each tank. This dry-mixed lime sulphur has been used with satisfactory results during the past season, in several states, and most progressive peach growers will be using it exclusively next year. It is cheap, easy to prepare and has proved effective. The secret of preparation is that the caseinate renders the sulphur wettable. The sulphur is the active ingredient in the control of brown rot, the most serious disease of the peach. The lime is used primarily to prevent injury to the foliage.



Avery Track-Runner

The New and Improved Avery Line

New Avery
15 H. P. Tractor

The Greatest Achievement in Tractor History

NEW 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.

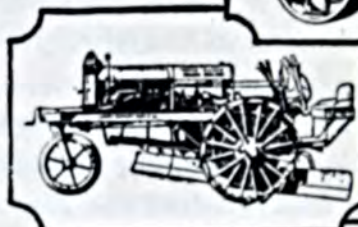
AVERY

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-Roller - Tractor. Also built in 45-65 H. P. size

Avery
"Road-Razer"Avery
Motor Truck

Avery Grain-Saver Thresher. Built in "Yellow-Baby," "Yellow-Kid" and "Yellow-Fella" sizes.

Avery Header Thresher. Harvests and threshes the grain in one operation.



How the California Almond Growers' Exchange Achieved Success Through Cooperation

(from page 25)

reflected in increased banking credit so necessary for financing the marketing operations of the Exchange. On the 1922 crop the Exchange was enabled to advance a higher percentage of the market value of the crop than ever before, owing to the increased confidence created and the stability of the loans which were necessary to make the advances. There had been much opposition to the lien clause on the part of the growers solicited to sign it, but this was wiped away in the general approval of the larger advances it made possible.

This brings us to the method of operation of the Exchange, but it is worth while to revert for a moment to the phase of the reorganization campaign, involving the opposition to the lien clause in the contract. The belief was propagated by enemies of cooperation that the lien clause, following as it did the land, would deter sales and transfers of almond orchard property. This argument was wholly fallacious, as later experience proved. In cases of bonafide sales, where it was necessary to release the grower from his contract to effect sale, the Board of Directors very early adopted a liberal policy. Likewise they relinquished priority of lien on 24 hours' notice to banks from whom growers had asked loans on the property under contract. In short, the lien clause, while it insures delivery of the crop to the association, operates in no way as a barrier to ready transfers of land or to quick loans on growers' properties.

Now, further, as to the operation of the association. The grower is a member directly of the Exchange and accounts are settled with him individually. He has a direct vote in the election of the enlarged Board of Directors on a tonnage basis. Local associations still exist and are still members.

The Exchange, through the local associations, operates some 14 warehouses and processing plants to handle the almond crops marketed

by the Exchange. With the exception of a central plant at Sacramento, California, these warehouses and plants are owned cooperatively by various local associations.

The Exchange exercises a general supervision over the conduct and operation of these warehouses and dictates standards of grading and the methods employed, although the warehouse forces are hired and paid by the local association except where local associations prefer to have the Exchange render this service. If, however, a warehouseman is not suitable to the Exchange he is replaced.

Members deliver their crops to the local warehouses or, at their option, to the central plant at Sacramento. These deliveries are receipted for and copies of the receipts are cleared each night to headquarters at San Francisco and a check covering advance payments at figures previously fixed by the Board of Directors per variety goes forward to the grower directly in the next day's mail. The Exchange, from these receipts, compiles a list of stock by varieties in each warehouse and orders cars out against these delivery reports. The almonds are bleached in warehouses and resacked. In no case is a grower allowed to do his own processing and bleaching. This assures uniform color.

Neither is a grower permitted to grade. All grading is done by experts in the warehouse and delivery receipts show the grades assigned. Grading standards have been raised above what they have been in the past. Grading is on the basis of size within each variety, save in the case of wormy or stained nuts which, of course, are classed as such.

The Exchange opens its books for orders on "subject to price approval" basis the latter part of January or the first of February for the crop of that calendar year. These orders are obtained through jobbers, food commodity (turn to page 48)

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
Southern California Fertilizer Co.
Spreckels Bros. Comm. Co.
Western Meat Co.
San Francisco—
A. M. Bloomer Co.
California Fertilizer Works
Getz Bros. & Co.
Growers' Fertilizer Co.
Meyer Wilson & Co.
Mountain Copper Co., Ltd., Fert.
Dept.
Pacific Bone, Coal & Fert. Co.
Pacific Guano & Fertilizer Co.
Western Meat Co.

CONNECTICUT

Bridgeport—
Berkshire Fertilizer Co.
Hartford—
Olds & Whipple, Inc.
Middletown—
Rogers & Hubbard Co.
New Haven—
American Agricultural Chem. Co.

FLORIDA

Bernandina—
Nitrate Agencies Co.
Bradentown—
Gulf Fertilizer Co.
Clearwater—
Gulf Fertilizer Co.
Daytona—
Cornelius Christiancy Co.
Eustis—
Gulf Fertilizer 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
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.
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.
Mutual Fertilizer Co.
Read Phosphate Co.
Reliance Fertilizer Co.
Savannah Guano Co.
Southern Fertilizer Co.
Virginia-Carolina Chemical Co.
Valdosta—
Georgia Fertilizer & Oil Co.
Vidalia—
Vidalia Chemical Co.

ILLINOIS

Chicago—
Armour Fertilizer Works
Darling & Company
Swift & Company

INDIANA

Indianapolis—
Rauh & Sons Fertilizer Co.
Smith Agricultural Co.
New Albany—
Calumet Fertilizer Co.
Read Phosphate Co.

(Continued on next page)

(Continued from preceding page)

KENTUCKY

Louisville—
Armour Fertilizer Works
Federal Chemical Co.

LOUISIANA

New Orleans—
Armour Fertilizer Works
Nitrate Agencies Co.
Shreveport—
Virginia-Carolina Chemical Co.

MAINE

Houlton—
International Agricultural Corp.

MARYLAND

Baltimore—
American Agricultural Chem. Co.
Armour Fertilizer Works
Baugh & Sons Co.
Griffith & Boyd Co.
Miller Fertilizer Co.
Nitrate Agencies Co.
Ober & Son Co.
Piedmont Mt. Airy Guano Co.
F. S. Royster Guano Co.
Virginia-Carolina Chemical Co.
Salisbury—
Tilghman Company, Inc., W.B.

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

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

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

Greensboro—

American Agricultural Chem. Co.
Armour Fertilizer Works

Henderson—

American Agricultural Chem. Co.

Lillington—

Farmers Cotton Oil Co.
Harnett Oil & Fertilizer Co.

Raleigh—

F. S. Royster Guano Co.

Tarboro—

F. S. Royster Guano Co.

Washington—

Pamlico Chemical Co.

Wilmington—

Acme Manufacturing Co.
Nitrate Agencies Co.
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.

Columbus—

Smith Agricultural Co.

Dayton—

Wuichet Fertilizer Co.

Sandusky—

Armour Fertilizer Works

Toledo—

F. S. Royster Guano Co.

OREGON**No. Portland—**

Swift & Co.

Portland—

C. C. Cate & Co.
Portland State Co.

PENNSYLVANIA**Philadelphia—**

Baugh & Son
I. P. Thomas & Son
Tunnel & Company

Reading—

Keystone Bone Fertilizer Co.

Wadsworth—

Ohio Match Co.

York—

York Chemical Co.

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.

Columbia—

American Agricultural Chem. Co.
Darlington Guano Co.
F. S. Royster Guano Co.
Virginia-Carolina Chemical Co.

Greenwood—

T. M. Miller Co.

North—

J. E. Culler Co.

(Continued on next page)

(Continued from preceding page)

Spartanburg—

American Agricultural Chem. Co.

TENNESSEE

Memphis—

Virginia-Carolina Chemical Co.

Nashville—

Read Phosphate Co.

Virginia-Carolina Chemical Co.

VIRGINIA

Alexandria—

American Agricultural Chem. Co.

Lynchburg—

Pocahontas Guano Co.

Nashville—

American Agricultural Chem. Co.

Read Phosphate Co.

Virginia-Carolina Chemical Co.

Norfolk—

American Agricultural Chem. Co.

Baugh & Sons Co.

Farmers Guano Co.

International Agricultural Corp.

Priddy & Co.

Robertson Chemical Co.

Virginia-Carolina Chemical Co.

Richmond—

Old Buck Guano Co.

Virginia-Carolina Chemical Co.

WASHINGTON

Seattle—

Balfour, Guthrie & Co.

Chas. H. Lilly Co.

Tacoma—

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Marine Products Co.

CANADA

British Columbia

New Westminster—

Triangle Chemical Co., Ltd.

Vancouver—

Canadian Explosives, Ltd.

Victoria Chemical Co., Ltd.

Quebec

Montreal—

Arthur Lavigneur, Ltd.

Quebec—

George Tanquay, Ltd.

New Brunswick

Bath—

C. E. Gallagher Co.

Hartland—

Hatfield & Co., Ltd.

Home Mixed Fertilizers, Ltd.

St. Stephen—

Dominion Fertilizer Co.

Nova Scotia

Wolfeville—

T. L. Harvey Co.

Ontario

West Toronto—

Gunns, Ltd.

National Fertilizers, Ltd.

Prince Edward Island

Montague—

Poole & Thompson, Ltd.

THE POTASH IMPORTING CORPORATION OF AMERICA

81 Fulton Street

New York

Almond Growers

(from page 45)

brokers and through a corps of salesmen employed by the Exchange who are constantly on the road. The buyer's order is taken on a subject to price approval basis, which means that, when prices are named that are not satisfactory to him, the buyer has the right to cancel his contract. On the other hand, if he confirms his contract in full when prices are named, he will obtain the advantage of one cent per pound discount from the opening prices, according to variety.

Harvesting of the earlier varieties generally begins about August 15 and continues through into October. The financing of the movement of the crop is arranged sometime prior to harvest. Bank loans for the movement of the crop run as high as two and one-half million dollars and are retired as the proceeds of sales are returned. Not only are the market operations of the Exchange financed through these bank loans, but they also provide funds for advances to the grower upon delivery of his crop. The Board of Directors have full power to contract such debts as are necessary in the interest of the business. This blanket power has worked to the best interest of the Association at all times, as it allows the directors complete freedom to meet emergencies. It has never been abused.

The crop is gathered into state pools according to variety. In these pools are lost the individual deliveries of all members. However, true to the fundamental principles of co-operation, the Exchange does not dump upon the market that part of its tonnage which it may find itself unable to sell. On the (see next page)

An Open Letter

(from page 22)

turers and distributors to be seeking one another's scalp for the comparatively few tons of potash we are now producing and distributing. The destiny of the potash industry is not to preach cramped supplies but greater and still greater consumption.

Our efforts should be expended in constructive work—in inducing our farmers to cease impoverishing the plant food deposits of our land, and to put back on the land some of the wealth withdrawn by our crops. To show them these redeposits in their overdrawn land account are for their own profit and for the conservation of the food supply of unborn generations.

A plentiful and cheap supply of fertilizer is what this country needs to enable the growing of large crops and the production of abundant food supplies at lowest possible costs, with the greatest profit to the farmer. This ideal can be reached only by maximum crops per acre cultivated per man employed, and the answer to that riddle is cheaper and more fertilizers.

The question of paramount importance to these United States and especially to California is not whether a few manufacturers of a small fraction of an essential fertilizer product shall prosper by an artificial increase in prices, but whether the people in general and farmers in particular shall have the possibility of obtaining its foods cheaply and profitably and whether they can afford to assure the future prosperity of our country by putting back into our soils the plant foods which our crops are continuously draining.

A cheap and plentiful supply of potash is a prime necessity to this end.

The test of the worthiness of any industry, like that of an individual, and its justification for support from civilization is what it contributes to the progress of the world. Does it return to mankind an equivalent for what it has received? Or is its end solely that of self enrichment? The potash industry must be judged by these standards if it is to serve the high purpose for which it was intended. It must make potash available in unlimited quantities for every farm in these United States at a price that will make possible the profitable production of cheap food for the feeding of our people.

Very truly yours,

E. K. HOWE.

Almond Growers

(from preceding page)

contrary, it prefers to carry over any surplus stock it may have in order to protect the market. Its protection of the market goes further than this as the Association guarantees its opening prices against decline until January first, the end of the active almond market. The Exchange has always followed this policy of market protection, preferring to pay the cost of storage on the unsold product and delay payment to its members, rather than give its product away at sacrifice prices and thus jeopardize standards of value from year to year.

It has been a steep and rocky road that the Exchange has traveled. The journey has not been finished and probably never will be, as cooperation rests with the human element and the human element will never be perfect. The California Almond Growers' Exchange or any cooperative must operate upon sound business principles, principles as secure and as tested as the business formulæ employed in private enterprise. Whenever cooperation deviates from these principles, it is bound to fail.



The Protection That Potash Gives

POTASH is known to be an essential plant food. Without it, growth is impossible.

In addition to supplying a vital element of nourishment, potash has a tonic effect that keeps the plant in a healthy condition. It is a demonstrated fact that crops well supplied with potash are better able to ward off fungus and other diseases.

Full rations of potash overcome the effect of nematodes on beets and other root crops. German Crude Potash Salts drilled in at the time of seeding protect against cutworms and root lice.

Fruit and vegetables generously fed with potash stand shipping better and keep in marketable condition longer. Potash aids plants to resist low temperatures and light frost.

These are a few of the ways in which potash gives *health-protection* to crops. It is one of the reasons why *Potash Pays*.


For best results, be sure that Genuine German Potash is used, as imported direct by

**POTASH IMPORTING CORPORATION
OF AMERICA**

81 Fulton Street

New York City

**PICA GENUINE POTASH
GERMAN**



NEWS FROM THE COUNTY AGENTS

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

For several weeks past, the movement of paper shell pecans has been heavy—marketing through two corporations—National Pecan Exchange and Southern Pecan Growers' Corp. Ass'n.—and through local dealers. Estimated receipts at Albany, 2,000,000 pounds.—*J. Irwin Davis, Southerly, Ga.*

We have the largest acreage of new alfalfa this fall that we have ever had. Plenty of moisture at seeding time has made an excellent stand and growth and it looks favorable for going into the winter. Alfalfa is the wonder crop on our sand land in this county.—*T. R. Isaacs, Mason, Ill.*

We have bought ten carloads of Nitrate of Soda cooperatively through the Farm Bureau, eight in excess of amount purchased last year. Have also purchased three carloads of Calcium Arsenate from the same source for use in fighting boll weevil and army worms on next year's crop. Saving on these two cooperative purchases will pay Agent's salary for eight years.—*R. H. Benton, Franklin, La.*

The Georgia Experiment Station has just issued a bulletin on the Pineapple pear, the pear that has been proven to be blight resistant. The pear has been grown by individuals in various places in the south for over fifty years, but the originator cannot be placed, from the closest investigations.

This bulletin is for free distribution.—*J. G. Woodroof, Asst. Hort., Ga.*

The Cooperative Pure Milk Association of Cincinnati, which controls around 70 per cent. of the milk

produced in that territory, has just completed purchase of the French Bros.-Bauer dairy interests of Cincinnati. This gives the milk producers' organization an outlet for all of its milk through its own distributing organization and makes it the second largest industrial organization in Cincinnati and the second largest cooperative milk distributing organization in the U. S.—*Waller D. Hunnicutt, Butler, Ohio.*

Cotton, a new crop for this section, looks like a "good bet," expect several thousand acres to be planted in 1924, almost no wheat planted. This has been one year that string beans have hit the "Bull's-eye." Weather fine—very few frosts—corn too damp to crib. Hens resting. No one wants to work on farms as wages are not satisfactory. Gas 14c.—eggs 50.—*H. L. Spaulding, Pulaski County, Ill.*

Just received reports from 10 demonstrators of Yellow Sweet Clover as a pasture crop on dry land. The average acre pastured 10 hogs for 3 months and 9 days and 1 cow for 3 months and 7 days. Seven recommended planting 5 pounds of seed per acre. Five recommended planting oats or barley as a nurse crop to give shade to the young plants. The clover grew 3 inches higher when shaded by Russian thistles.—*S. L. Owens, Huerfane, Colorado.*

Collections are improving. Citrus crops are particularly promising. Fertilizer sales increased 13 per cent. over same period last year. Tourists (our money crop), arriving in greater numbers.—*R. R. Rogers, Duval, Fla.*



Potash Hunger in Tobacco Crops

Field tests conducted on "tobacco-sick" soils in the Connecticut Valley have brought out marked differences in the effects of various crops on the growth of tobacco following in the rotation. The effects of timothy sod, red clover, and corn have been particularly unfavorable, while the growth of tobacco has been much better after onions, after tobacco itself, and on land kept free from vegetation during the previous season.

Field tests in the Southern manufacturing and export-tobacco districts have demonstrated that mixed fertilizers containing 2 to 3 per cent. of potash applied at the usual rate of 800 to 1,000 pounds per acre frequently do not supply sufficient potash for the tobacco crop. As a result characteristic symptoms of potash hunger frequently develop. When the application of potash is increased to 40 pounds or more per acre, these symptoms do not occur, there is a notable increase in resistance to leaf-spot diseases, and the

leaf is otherwise improved in quality and in yield.

On light soils, and especially in comparatively wet years, "Sand Drown," a serious deterioration of the tobacco crop, may be expected when a sufficient quantity of magnesia is not contained in the fertilizer or otherwise added to the soil. The quantity of magnesia required by the crop, however, is comparatively small, perhaps not more than half that of the potash which is needed.

Both potash deficiency and magnesia deficiency present characteristic symptoms which are easily recognized, and both are readily corrected by suitable applications of fertilizer. With constantly decreasing supplies of cottonseed meal and other similar materials containing appreciable quantities of magnesia, it is apparent that there will be greater necessity for making special provision for magnesia in the fertilizer mixture.—*Report of Wm. A. Taylor, Chief of the Bureau of Plant Industry.*

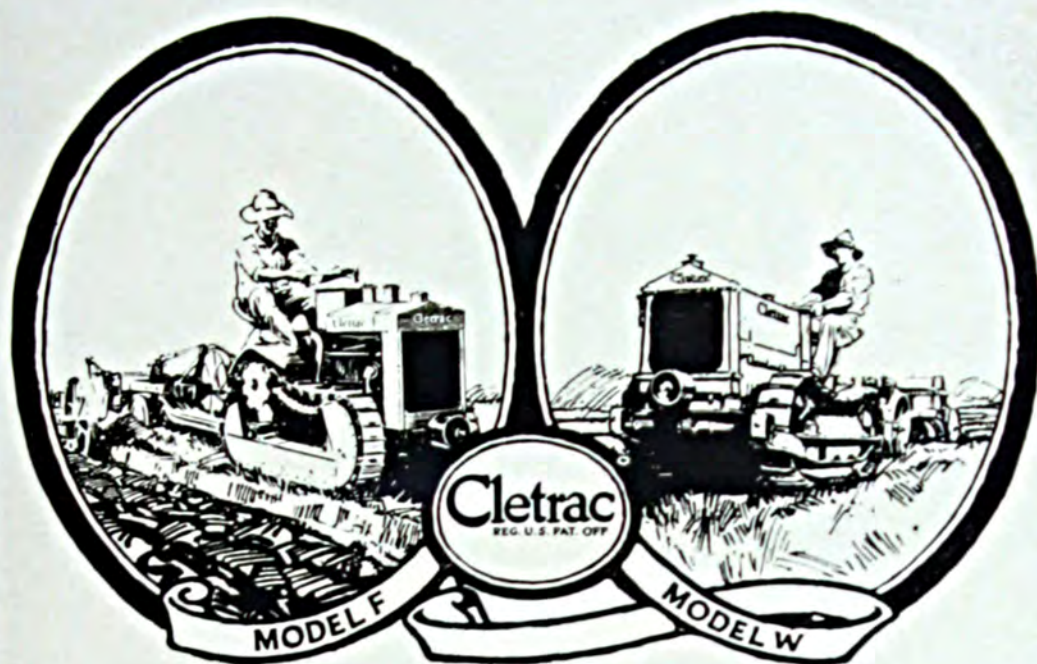
Feeds, Fertilizers and Lime Worth \$50,000,000

The Bureau of Chemistry of the Pennsylvania Department of Agriculture, one of whose duties is to see that all feeds, fertilizers and agricultural limes sold in the state are properly registered and correctly guaranteed and labeled, annually protects Pennsylvania farmers in the purchase of \$50,000,000 worth of these materials.

State Chemist James W. Kellogg estimates that every year one million tons of feeding stuffs, 325,000 tons of fertilizers and 300,000 tons

of agricultural lime are sold within the state. The feeds are valued at \$40,000,000, the fertilizers at \$11,000,000 and the lime at \$1,500,000.

The chemical analysis of all the products sampled by the bureau in a year requires over 12,000 single determinations, each of which must be carefully and accurately made. Through these analyses the chemists determine which brands are deficient and which are giving full value for the purchase price.



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



Half fed cows yield half full pails

place the potash that has been removed from the land. Otherwise you are a miser and the day will soon come when potash will become a real limiting factor to your further farming. Your land will be played out.

Bigger yields, bigger profits

Used you are potash to grow and sufficient quantities will make your land a real money-maker. Make this a potash year—and you know how much to expect.

Four dollars has German Potash cost you. It is the best of all potash fertilizers. It is the only one that is guaranteed to be pure and to give you the best results. It is the only one that is guaranteed to be pure and to give you the best results.

POTASH IMPORTING CORPORATION OF AMERICA
81 FULTON ST., NEW YORK

Genuine German POTASH

Two advertisements — and

THESE two advertisements will appear, during December and January, in a list of farm papers read by over a million farm families in the fertilizer-consuming sections.

What do these messages mean to you? This: we are helping you spread the gospel of increased soil-fertility. We are assisting you in your efforts to get more and better fertilizers used in your county and state. We are doing our part to popularize high-analysis fertilizers, and particularly high-analysis as pertains to potash.

You know that the fertilizers used during the

THE POTASH IMPORTING

*Importers of Genuine
German Potash of the
German Kali Syndicate*



The bottom of the barrel—

THERE was an old lady who took only a spoonful or two of flour from a barrel each day and noticed that the bottom was still far away. She exclaimed, "Why this barrel of flour will last forever." But the bottom finally came. In your soil there are three plant foods—nitrogen, phosphorus and potash. Every crop you grow takes its toll of each of these three elements. You replace some of the food by growing legumes, by rotating your crops, and by returning the manure. But do you return all the potash that is removed? If you do not, there will come a day when the "bottom of the barrel" will be reached.

Manure alone will not do it. You must add potash to your mixed fertilizer, or buy mixed fertilizer that contains plenty of potash.

The use of potash is profitable. Potash pays. If you buy mixed fertilizer (must 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. Should be temporarily out of stock, write us and we will tell you how and where to get it in the grade you wish.

Since May 1st, 1923, the distribution of German Potash, formerly managed in this country by the German Kali Works and the Potash Syndicate, has been controlled by the

POTASH IMPORTING CORPORATION OF AMERICA
81 FULTON ST. NEW YORK

Genuine German
POTASH

what they mean to you

last four or five years in your community have been deficient in potash—they have not contained enough of this essential plant food. Until this situation is remedied no crop in your section will attain its full potentialities.

Readers of farm papers are going to ask your opinion of potash. We ask you to help us as we are helping you. Tell your farmers to use plenty of potash, and convince them that the best way to add available potash is to use Genuine German Potash, either in the form of potash salts or in the form of mixed fertilizers that contain a high potash-unit.

CORPORATION OF AMERICA

81 Fulton Street
New York City
New York

Table giving the amounts of fertilizer ingredients (Potash, Phosphoric Acid and Nitrogen) contained in the crop from one acre

CROP	Yield	Straw, etc.	Potash	Phos. Acid	Nitro- gen
Alfalfa hay.....	4 tons	.....	168 lbs.	40 lbs.	196 lbs.
Apples.....	.....	.....	55 "	14 "	52 "
Barley.....	30 bu.	2,000 lbs.	51 "	17 "	57 "
Beans.....	30 "	2,700 "	53 "	30 "	75 "
Buckwheat.....	34 "	2,800 "	40 "	14 "	56 "
Cabbage.....	30 tons	.....	270 "	70 "	200 "
Clover (Alsike)...	2 "	.....	50 "	20 "	84 "
Clover (Crimson)...	2 "	.....	60 "	18 "	84 "
Clover (Dry).....	2 "	.....	88 "	18 "	82 "
Clover (Green)...	15 "	.....	140 "	40 "	130 "
Clover (Mam- moth).....	2 "	.....	48 "	22 "	88 "
Clover (Sweet)...	2 "	.....	74 "	22 "	80 "
Clover (White)...	2 "	.....	50 "	20 "	90 "
Cow Pea Hay....	2 "	.....	70 "	22 "	100 "
Cow Pea Seed....	20 bu.	.....	15 "	12 "	37 "
Corn.....	70 "	5,000 lbs.	100 "	42 "	105 "
Seed Cotton.....	1,500 lbs.	3,000 "	61 "	38 "	97 "
Grapes.....	2 tons	7,000 "	39 "	11 "	32 "
Hops.....	600 lbs.	2,700 "	53 "	23 "	84 "
Mixed Hay.....	5,000 "	.....	77 "	18 "	70 "
Oats.....	60 bu.	3,200 lbs.	62 "	22 "	55 "
Onions.....	45,000 lbs.	.....	72 "	37 "	72 "
Peaches.....	.....	.....	72 "	18 "	75 "
Pears.....	.....	.....	33 "	7 "	30 "
Peas.....	30 bu.	3,000 lbs.	52 "	33 "	108 "
Plums.....	.....	.....	38 "	9 "	30 "
Potatoes.....	200 bu.	1 500 lbs.	74 "	21 "	46 "
Rice (Rough)....	2,000 lbs.	4,000 "	20 "	16 "	53 "
Rye.....	30 bu.	4,250 "	45 "	26 "	51 "
Serradella Hay...	2 tons	.....	80 "	30 "	96 "
Soybean.....	20 bu.	2,000 lbs.	54 "	36 "	100 "
Soybean Seed....	20 "	.....	24 "	22 "	64 "
Sugar Beets.....	15 tons	6,000 lbs.	143 "	32 "	69 "
Sugar Cane.....	30 "	18 tons	100 "	55 "	80 "
Timothy Hay....	4,000 lbs.	.....	94 "	23 "	89 "
Tobacco.....	1,600 "	1,400 lbs.	200 "	16 "	76 "
Tomatoes.....	10 tons	.....	54 "	20 "	32 "
Turnips.....	700 bu.	5 tons	180 "	52 "	80 "
Vetch Hay.....	2 tons	.....	92 "	30 "	112 "
Wheat.....	35 bu.	3,000 lbs.	31 "	24 "	59 "

Profitable Fertilization

(from page 15)

usefulness of green manuring with legumes and the failure with non-legumes, that is, plants that do not have the power of drawing nitrogen from the atmosphere.

As has been shown by the illustrations, crops like buckwheat and mustard are not adapted for green manuring, but farmers sometimes raise these crops in the fall, manuring them with nitrogen fertilizers, so as to get a good growth, and plow them under in the spring. Many experiments and practical experience show that this method of green manuring is not advisable or economical. The reason is that the nitrogen in its usually soluble form, as applied in nitrate of soda, changes into less soluble organic compounds, which are not so readily available as plant food for the succeeding crop.

In the illustrations so far presented, the reader will notice that in each case the pots have been supplied with potash and phosphoric acid, because no plant can make its growth without these two substances. Furthermore, in order that leguminous plants may accumulate their fertilizer nitrogen, it is necessary that potash and phosphoric acid be applied first, or at any rate be present in the soil in available forms and in ample quantities. Many soils contain considerable quantities of potash and phosphoric acid, but as they are in such an insoluble state, they cannot be absorbed by the growing crop and are, therefore, of little value.

The need of potash and phosphoric acid is well illustrated in another experiment. The pots shown in the upper half of illustration Figure 4 were

planted to peas, and are divided into three sets of two pots each. They were treated as follows: First two, no fertilizers; second two, potash and phosphoric acid; third two, potash, phosphoric acid and nitrogen. The three sets are marked by "O"—no fertilizer, "KP"—potash and phosphoric acid, and "KPN"—potash, phosphoric acid and nitrogen. The growth shows that potash-phosphate manuring was practically as effective as when nitrogen was added, and that the use of nitrogen fertilizers in this case was a needless expense.

The lower half of this illustration shows pots treated exactly the same way, but planted to oats, a non-legume. As the picture shows, the potash-phosphate pots are scarcely better than those not manured; but the pots treated with nitrogen, in addition to potash and phosphoric acid, made an excellent growth. In other words, the peas secured practically all the nitrogen they needed, but the oats have not this power, and unless they are given the fertilizer nitrogen, they will fail to make profitable growth. It is scarcely necessary to remark that the results would have been similar had the legumes, instead of peas, been any of the clovers, vetches, lupines, soja beans, etc.

From the data already given, two important conclusions were established:

1. Sufficient potash and phosphoric acid must be supplied in order that leguminous plants may be able to draw a full supply of free nitrogen from the air and thus reach their full growth.

2. In order that grain and all other farm crops may utilize the

nitrogen present in the soil, it is necessary that a sufficient quantity of potash and phosphoric acid be also present in the soil.

A very striking practical illustration of successful green manuring is in meadows of mixed grasses. Among the grasses in meadows will be found more or less of clovers and other legumes, and if a meadow be fertilized with potash and phosphoric acid, these leguminous plants will show a more vigorous growth and condition.

The grasses of such meadows will also show the beneficial effect of this treatment. The first year or two they may not seem to do much better than before. That is because they were not supplied with sufficient nitrogen. But in the third and fourth years, the grasses begin to thrive and run rank, because they feed upon the nitrogen supplied to the soil by the decaying leaves, stalks and roots of the legumes, the growth of which was promoted by the use of potash and phosphoric acid.

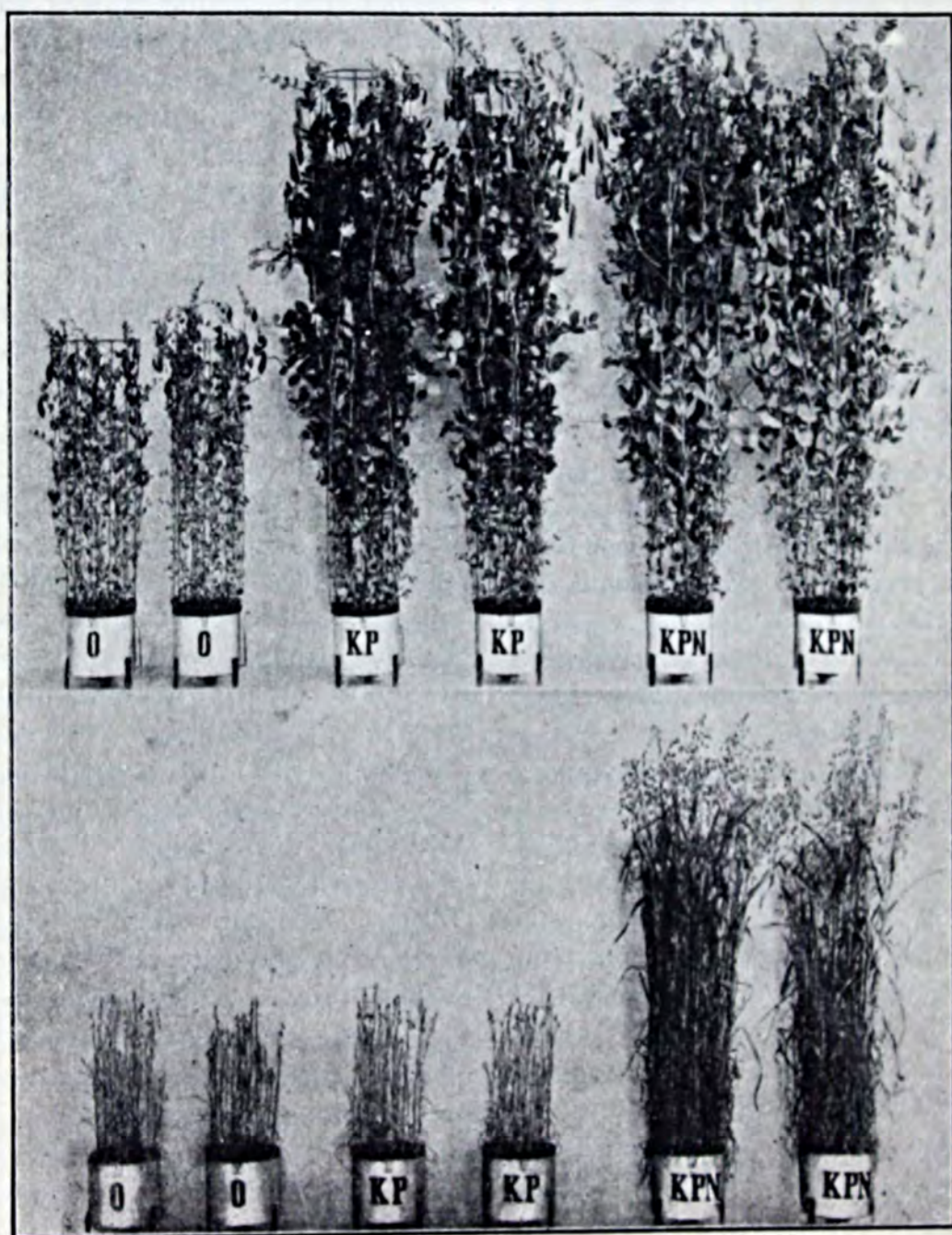


Fig. 4. Showing effect of potash-phosphate manuring on legumes (above) and non-legumes (below).

Every farmer should practise potash-phosphate fertilization on poor meadow fields. It is thus possible to transform an unprofitable "grass meadow" into a valuable "clover meadow." By repeated and heavy applications of potash and phosphoric acid, the very appearance of a neglected meadow, which has produced only sour grasses, can be en-

plant food and still fail for the lack of it. This is shown by an experiment illustrated in Figure 5.

The four pots to the left contain clay soil, the four pots to the right sandy soil. The crop planted was peas. The first two pots in each soil received no potash fertilizer, while the second two pots of each soil were given the regular potash

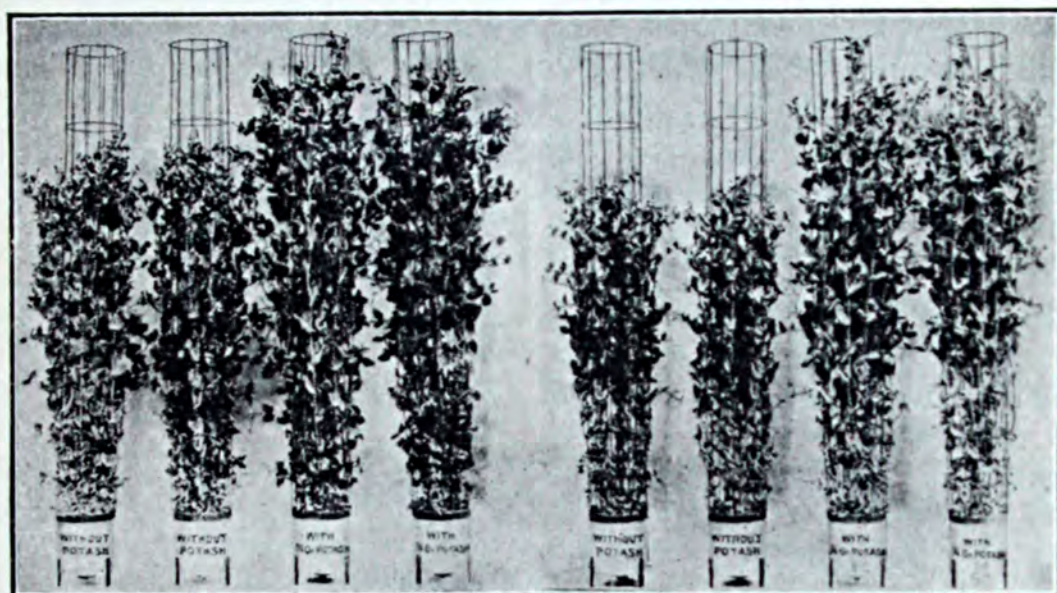


Fig. 5. The potash in soils is of no value, unless available.

tirely changed, owing to the predominance and rank development of clovers and other legumes.

To sum up: It is necessary to supply liberal amounts of potash and phosphoric acid to the soil in order that the costly nitrogen present, or applied in the form of fertilizers, or in the form of green manuring, may exert its full effect upon the growing plants and thus produce a maximum crop.

All farmers should know, by this time, that what is commonly called "plant food," comprises three ingredients: Potash, phosphoric acid and nitrogen. Large quantities of these plant food elements are usually present in agricultural soils, most of which, however, is in an insoluble (unavailable) condition, and, therefore, useless to growing plants. Thus soils may contain, as shown by chemical analysis, large supplies of

application. While the clayey soil without potash fertilizer produced a heavier growth than the sandy soil under the same conditions, the application of potash in both cases showed a material gain from its use, notwithstanding the fact that, in all the pots, the soil contained enormous quantities of potash naturally. Of the two soils used, the amount of potash in the top twelve inches of one acre, was as follows:

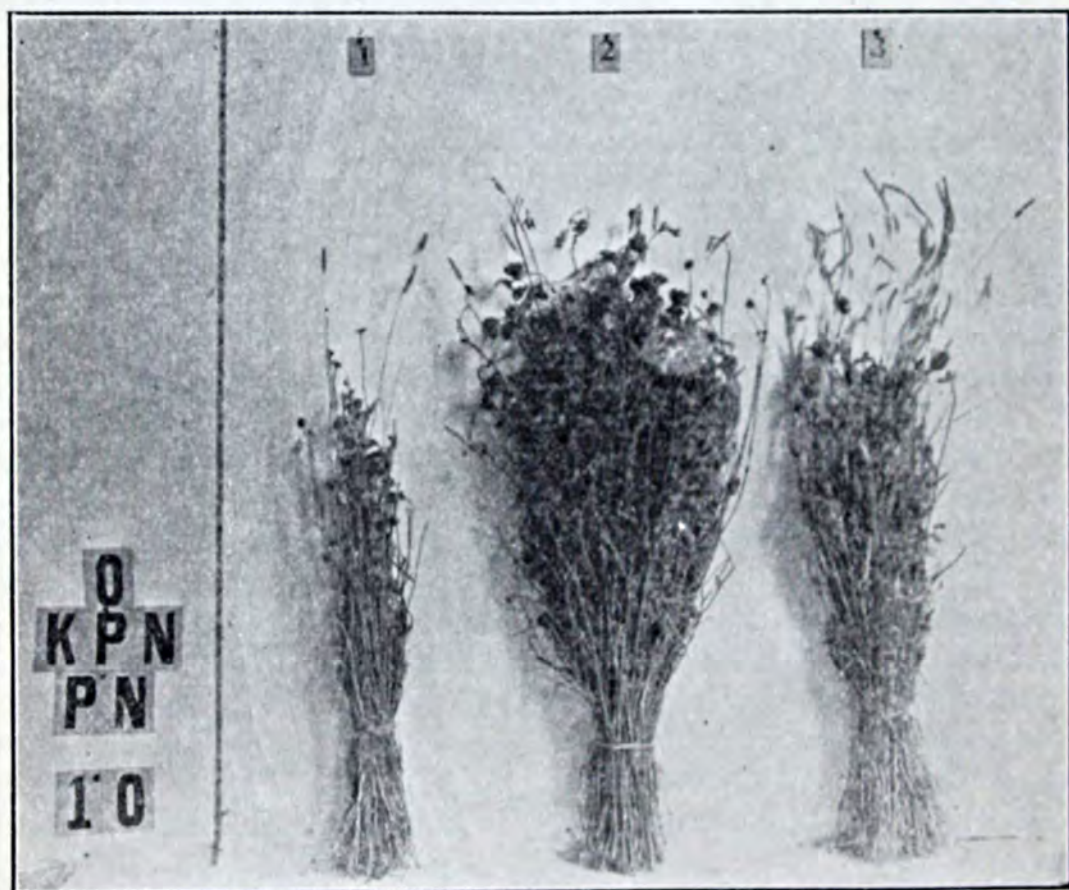
Clayey soil.....	8249 lbs.
Sandy soil.....	2110 lbs.

The amount of potash applied to the soil was about 100 pounds per acre, whereas the crop removed only about 70 pounds. This small fertilizer application of *available* potash made all the difference between success and failure on these two soils, although the sandy soil contained enough potash for 30 suc-

cessive crops, and the clayey soil for 117 and more.

The principle, that potash, phosphoric acid and nitrogen, to be useful to plants, must be in an available form, refers with equal force to plant food contained in artificial fertilizers, their agricultural value is dependent on and measured solely by the *available* potash, *available* phosphoric acid and *available* nitrogen, which they contain. Thus crude phosphate rock, while very rich in phosphoric acid, is nearly valueless as plant food, and the phosphoric acid it contains must be made soluble (available) by treatment with sulphuric acid (acidulated) and converted into "acid phosphate," so that it may become useful. The same refers to crude

bones, which contain their phosphoric acid, for the most part, in an unavailable condition, and must be converted into acidulated or "dissolved bone" to become fully effective. The potash in potash salts from the German mines is all soluble in water, and, therefore, readily available to the crop. The potash contained in feldspar and other mineral silicates is insoluble and practically useless, while that contained in organic matter is slowly available. Nitrogen is also irregular in availability; in the form of nitrate of soda and sulphate of ammonia, it is readily soluble and available; in dried blood, fish scrap, tankage and manure, it is more slowly available; while in leather and wool wastes, the nitrogen is so slowly available, that



Experiment on Hay by J. F. Nolan, Eagle Bridge, New York.

		Yield—lbs.
Left	No Fertilizer	1077
Center	500 Lbs. per Acre: 3—8—10	3708
Right	500 Lbs. per Acre: 3—8—0	2519

Note the great increase in clover on the 3—8—10 plat.

The bundles represent hay from equal areas.

they are well-nigh worthless as plant food.

The experiments show, first, that plants of a certain class have the power of obtaining nitrogen from the air, and converting it into such a form that it serves as plant food. They show, further, how this nitrogen may be afterwards employed to the best advantage in practical planting or farming. The reader, however, should thoroughly understand that, though these legumes have the power of securing nitrogen from the atmosphere, still they in turn must be fed with potash and phosphoric acid to promote full growth. While it is not known exactly how much potash and phosphoric acid is necessary to enable a legume to gather or produce or "make" one pound of fertilizer nitrogen, it may be estimated, by taking the composition of a number of staple legume crops. The following table shows the relative amounts of plant foods contained in several legume crops:

	Potash	Phosphoric Acid	Nitrogen
Red Clover.....	220	38	207
Crimson Clover.....	131	40	205
Alsike Clover.....	223	67	234
Alfalfa.....	168	51	219
Soy Bean—Whole Plant.....	108	67	232
Cow Pea—Whole Plant.....	147	52	195
Average.....	166	63	215

For 215 pounds of nitrogen, as an average, are required 166 pounds of potash and 63 pounds of phosphoric acid. That means for every pound of nitrogen "made" by the use of legumes, the crop must have used over *three-quarters of a pound of potash* and over *one-quarter of a pound of phosphoric acid*.

Much has been said about clovers "leaving the soil better than they find it," and it is the common belief that they improve the soil. This is

true in one sense, but not in another. To illustrate, a clover crop, cut for hay, three tons, removes from the soil per acre about 132 pounds of potash, 23 pounds of phosphoric acid and 124 pounds of nitrogen. Of this, most of the nitrogen may come from the air, but the potash and phosphoric acid come from the soil, and when the crop is removed, the soil is poorer by just that much potash and phosphoric acid. The rowen, or after-crop, contains nitrogen which may be turned into the soil; also, the roots and stubble count for something. At the same time, all must keep in mind, that the gain is in *nitrogen only*, and there is not even this gain if potash and phosphoric acid are lacking. Clover failure is very common, indeed, but a farmer rarely stops to think that exhaustion of the soil in potash and phosphoric acid may be the cause of it.

To sum up: To use legumes profitably, they must be well supplied with potash and phosphoric acid,

and the crop either turned under as green manure, or used as forage and returned to the soil as farmyard manure. In either case, a sale crop, such as wheat, corn, oats, barley, potatoes, or other non-legume, should be grown, to be followed by a legume again, either the following season or the second season after. In this way less fertilizer nitrogen need be bought, and this comprises practically the whole value of legumes as a fertilizer.



IT has been said that the educated man is he who follows the standards of truth and beauty, who employs his learning and observation, his reason, his expression for purpose of *production*, that is, to add something of his own to the stock of the world's ideas.

The line of least resistance for the fertilizer manufacturer is to compound various ingredients without respect to their chemical properties and their relation to the soil and crop. The past two decades of increasingly intensive farming have been exemplary of the dangers of soil exhaustion, with the accompanying toxic conditions.

The ingredients making up I. P. THOMAS FERTILIZERS are specially selected to accomplish results, to minimize losses resulting from adverse weather and to furnish plant nutrition by which we mean assimilable, productive plant food.

I. P. THOMAS FERTILIZERS are sold to the farmer that he may *profit* from their use.

In Every Fair Bargain, Both Parties Gain.

I. P. THOMAS & SON CO.
Philadelphia, Pa.

What Can COOPERATIVE MARKETING do for the farmer?

(from page 11)

kets of the world. He, in turn, must buy commodities which also have been transported great distances. In spite of the telephone, wireless, and automobiles, he is still isolated from association with his fellow man. The quantity of farm products each individual farmer has for sale is small. He is not a salesman and does not possess the necessary market information. His business is, always has been, and always will be, one of production. The farmer's condition is far from ideal, but nothing is gained by berating him and making proposals for changing his condition which do not solve the real difficulty.

There are certain evils in the present system of marketing. Private profit tends toward individual gain and some individuals engaged in marketing no doubt take dishonest advantage of the farmer. At the present moment the idea of co-operative marketing seems to be sweeping rural America. Co-operative marketing must do more than eliminate the profits of the middleman. It must make the shorter road to the consumer of real economic importance.

The marketing of farm commodities is a real service which must be performed by some one and as such must be compensated for. The present system is a product of evolution. It is the logical result of the evolution of the farmer from the self-sufficing period and the localization of industries into large units with the natural development of our large cities. Farm commodities must be transported from the place of production, the farm, to the

place of consumption, the industrial centers. They must be properly prepared for such handling. They must be stored somewhere for use when needed. The individual farmer can't do these necessary things; he must have help. Such help must receive compensation. This help must be well trained and highly specialized. In a word, an extremely sensitive market machine must be developed.

Such a market machine must be controlled by one of four agencies; (1) the government; (2) the consumers; (3) the farmers; (4) or by private enterprise. The individual farmer who is primarily a producer has neither the training, ability, experience or time to personally supervise the machine. If the machine is controlled by the farmer he must hire help to man the machine. Will such hired help work in the interests of the farmer any more zealously than some one whose interest is primarily one of profit?

The business of agriculture differs from other lines of industry in a number of very important points:

(1) The quantity of commodities produced by the farmer is subject to weather and other external conditions over which he has practically no control.

(2) The farmer can control the quality of his products in only a very small degree.

(3) The farmer, owing to his isolation, is not familiar with the market demands.

(4) He cannot feed the market in an orderly manner because there are so many individuals producing the same things.

(5) He cannot quickly increase or decrease the quantity of farm products when such a change is needed.

(6) He cannot quit when the market is low.

At the close of the war there was a vast surplus of copper available and the price was low. The copper smelters met this situation by closing down for a long period or until the surplus copper was disposed of, thus throwing the burden of readjustment in the copper market on the shoulders of a great many men, such as the laboring man, the merchant, the doctor, the lawyer; each bore his share of the readjustment in the copper situation brought about by *overproduction*. The individual farmer, however, can't readjust himself in this manner.

A combination of farmers, however, can do many things that the individual farmer can't do. It can determine what the consumer wants, how he wants it, when he wants it, and then can assist him in meeting this demand. The farmer must learn what the consumer is willing to pay for. He cannot continue to produce certain commodities which he likes to produce and then expect some one to pay him cost of production plus a reasonable profit. Society won't pay for things it does not want. A farmer in Washington State last year produced an excellent crop of turnips. The yield was wonderful and the quality excellent. But no one wanted turnips and acres of turnips went to waste.

The producer must produce the things the consumer wants and is willing to pay for. A combination of farmers can more readily find out the facts in the case and determine the demand for farm products of various kinds and better assist in regulating the supply.

It is far better for all concerned for the producer to furnish the quantity the consuming public wants at a stable price. The product must also be standardized and prepared for the market in the form the consumer wants it.

Cooperative marketing has not yet solved the problem brought about by the overproduction of any farm product. The real benefits of cooperative marketing lie in the standardization of farm products, the determination of the market requirements for a given product, the control of the preparation of that product for the market, and the proper regulation of the flow of that product to the market in an orderly manner so as to prevent dumping and the glutting of the market with the lowering of the price.

The production of farm crops always has been and always will be an individual matter requiring the close personal attention of the individual farmer who is an expert on that line. The organization of farmers with cooperative marketing associations will give the farmer more control over the marketing of his products because he will know more about the market demands and how to meet them. The "elimination of the middleman" will not be a drop in the bucket in comparison.

There is no danger to the consumer in such an organization because there never can be a monopoly organized for a given farm product. Farming is an individual proposition which demands the careful personal attention of the farmer. There are a number of small tasks on the farm which must be personally attended to and any improvement in the farming conditions must result largely from the individual efforts of the farmer himself.

What Fertilizers Have Done for My State

(from page 9)

use of better seed, more legumes and lime, crop rotations, and better cultural practices.

But, someone may say, these are only percentages and mean little. What do they mean in dollars and cents? To answer this question let us take a specific case. In order to determine the average increase, we have in each case compared the ten-year-period, 1911 to 1920, with the twenty-year period, 1866 to 1885, except in the case of cotton, where we omitted two years during the war when yields were low, due to the lack of potash. On this basis the percentage gains were as follows: cotton 62 per cent., corn 90 per cent., oats 87 per cent. Applying these to the crops of the present year we find that, on the basis of present prices for cotton and cotton seed, the crop is worth \$144,000,000. The value of the total gain is \$55,000,000 in round numbers. Fertilizer's share is \$37,000,000. Making our calculations in the same way we find that the value of the gain due to fertilizer for corn is \$15,500,000, oats, approximately, \$2,000,000. While we have no accurate figures for tobacco, it must have shown a similar gain, and we assign as a conservative estimate of the value of the gain due to fertilizer on this crop \$5,000,000. This means that fertilizer increased the value of these four crops \$59,500,000. But this is not all profit. We must deduct the cost of buying and applying the fertilizer, which we estimate at \$20,000,000. This is charging against the four crops listed above 90 per cent. of all the fertilizer used in the state and leaving 10 per cent. for truck and other crops. We must also subtract the

cost of harvesting and marketing the increased yield of these crops. We estimate these costs as follows: Cotton \$5,500,000, corn \$2,000,000, and oats \$500,000. Subtracting all these charges from the value of the increase due to fertilizer we have remaining \$30,500,000 as a net profit on an investment of \$18,000,000 in fertilizers. This is 169 per cent. interest on our investment as a state for 1923.

Was 1923 an exceptional year or can we expect these results to be repeated? Only one year in the past thirty has fertilizer failed to pay a profit. In 1920 we paid a very high price for fertilizer and used much of it. Deflation came before we could market the crop, with the result that the increased yield of cotton resulting from the use of fertilizer for this year could not be sold for enough to pay for the fertilizer and the cost of harvesting the increased yield. The average for the ten-year period, 1911 to 1920, gave a profit from fertilizer of more than 50 per cent. It has probably averaged above fifteen million dollars annually. For the ten years that is one hundred and fifty million dollars.

But I started out to tell you what fertilizer has done for my state. So far I have told you only of the increased crop yields, and the money it has brought to the state. What has this money done for my state? It has built comfortable homes, churches, public schools and colleges. It has bought automobiles, trucks, and tractors. It has built good roads and constructed bridges. It has changed many thousands of acres of our poor, unproductive

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sandy soils into some of the best agricultural communities in the United States. In short, it has made possible a prosperous agriculture where without it there could be only abandoned farms and poverty.

Mr. Blackwell gives us the following facts about himself:

I am a native of Texas, grew up on a ranch, graduated from Oklahoma A. & M. College, 1911; took a Master's degree at University of Wisconsin, 1915; taught in a city high school between those two dates; taught Agronomy for three years in University of Texas; attended Cornell University three semesters and was assistant in department of crops at that institution two semesters; have been chief of Agronomy Division, at Clemson College, since August, 1918.

Missiles and Mignonettes

Certainly enjoyed your booklet BETTER CROPS.—*Geo. A. Stuart, Bureau of Markets, Harrisburg, Pa.*

BETTER CROPS is very helpful to me in my work.—*J. T. Belue, Clayton, Ala.*

The "Jeffisms" have more point and punch than poetry, but I like 'em. Keep a-goin'.—*W. C. Salter, La Fayette, Ind.*

The editorials in BETTER CROPS are well written and quite to the point.—*F. W. Seck, Director Agr. Extension, St. Paul, Minn.*

Like BETTER CROPS fine. It's brief and contains about as much as a county agent has time to read. Trot it along, will be looking for the December number.—*J. W. Helms, Cullman, Ala.*

I had been saving previous copies of BETTER CROPS. Had placed them on a shelf for future reference—which generally means to forget things. Took time to read this issue, then went and dug out the others and read them. Now they are "on file" instead of being piled up "for future reading." Thanks awfully.—*Russell G. Briggs, Auburn, Ala.*

I have enjoyed reading the one copy of your publication which has come to hand. I like the idea of terse articles with especial leaning toward the matter of profits. I believe that one of our functions as agriculturists should be the continual dwelling on such subjects rather than repeating the old adage of plowing deep.—*C. R. de Ong, University of California, Berkeley, Calif.*

Toiling the Hay in the Bruley

(from page 16)

surprised tone as we drove into the yard. "‘Test farm’ on that sign. Wonder what it means."

We soon found out for, while Charlie wore overalls and presented a wiry leather-necked appearance similar to our first farmer—there the resemblance ceased.

"Why, boys, do I like farming? Nothing better. Things have changed since you left the farm. Just let me show you what we're doing."

"See that field? That's my own new strain of potatoes grown under test conditions for the last four years. It took some time to get me started, but the county agent knew his business. I have been studying spraying and fertilizing with him and we've worked it out just like a laboratory. This year every potato in the crop was ordered for seed before they ever sprouted."

"See those two fields of corn across the creek? There's a big contest on over there. Young Charlie used 2-8-2 on his and your namesake, Tom, is trying 3-8-4 and they can't wait till harvest to see which one wins."

"Here," interrupted Tom, "you're getting too technical for us. What does it all mean?"

Charlie tried to tell us, but we hadn't the equipment to understand the details. We did learn in our short visit that Charlie and some of his neighbors understood seed fertilizers, and labor-saving devices, and the others were falling into line. They took courses at

Cornell, had frequent visits from experts in every branch of agriculture. They subscribed to farm papers and were eager for new ideas.

They were making money, too, and best of all, their sons and daughters were finding farm life interesting. Young Charlie and Tom had been members of calf clubs and pig feeding clubs. They had visited test farms in half a dozen counties and had contact with trained men who swapped ideas and experiences with theirs. There was still plenty of hard work for all, but they could see the results and could measure their progress. It was fascinating to us, and bewildering.

"Well, well," said Tom as we started for home. "I didn't think it possible. It's none of my business, but when we go fishing next year, I'm going to tell that fellow up in Canada to buy some fertilizer and subscribe to some literature that will tell him how to use it."

Thirty miles later—

"Did you hear what Charlie said about hay? Prepare the soil and select the seed and average 2½ tons to the acre. Only one acre to 'toil' against three in our day. That farm bureau agent is a credit to his profession."

Another thirty miles—

"Believe I'll study this thing and buy a farm myself. My own boys are coming along and I'm going to give them a chance, anyway. The same chance you and I had, but we passed it up."



Co-operation with the Farmer

The American Agricultural Chemical Company is more than a fertilizer manufacturing concern. It is a constructive force in the development of modern agriculture. Our formulas and manufacturing methods have kept pace with the findings of the scientific workers, and the influence of the company in improving crop production has been great.

An important factor in this work is our Agricultural Service Bureau which has co-

operated with farmers for years in discovering important facts about soils and crops. This Bureau has been conducted since its inception by Dr. H. J. Wheeler, formerly Director of the Rhode Island State Experiment Station, a man whose authority on soil matters is beyond question, and whose advice is at the disposal of farmers and others interested in the solution of soil and fertilizer problems. Our Agricultural Service Bureau is for your use; consult it freely!

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FERTILIZERS

Are Economical Wives Economical?

(from page 6)

"Why, surely," replied the salesman's wife, wonderingly.

"Well, it can be done," said Norvell. "If wives and their husbands too, for that matter, would spend as much time thinking out means for increasing their income as they now spend in squeezing out the pennies to be saved, they would be far happier, live better and still put as much money away for the rainy day as they now accumulate."

"There is not a man, whether he be a salesman, scientist, farmer, doctor, writer, clerk, lawyer, or any other trade, profession or calling that cannot increase his income by doing better work. If he is working on a civil service or government job which carries a certain specified salary, he can increase his efficiency to a point where dozens of other opportunities will be showered upon him—at greater salaries—if his wife will help him do it."

"You go home, and prepare yourself for John's homecoming, Mrs. Jones. When he comes home he will be tired, disgruntled, discouraged and worn out, from contact with men. You should be there, dressed pleasingly but not expensively, to greet him, to cheer him up. Let someone else prepare the dinner. You coax him out of his despondent mood—and I know he will be despondent, for no man can travel two months away from home meeting all kinds of human beings without feeling the hopelessness of it all. The next day both of you come down to my office and we will talk over a plan I have in mind."

THE woman agreed — what could she do? Norvell was her hus-

band's chief—had the privilege of crossing his fingers and her husband would be on the street.

When John returned Norvell told him the plan. The wife was to take each day a record of the calls he made, list what he sold, card index the sales by commodities, and make numerous records which her husband was too busy to make. Then on the next trip, he would have in his pocket a complete history of the previous trip and could govern his sales talks accordingly.

The plan worked even better than Norvell anticipated. So interested did this little woman become in her husband's work that she found numerous ways to help him sell—invented a way to enter the peculiarities of each of his customers on a card—when he went into the store he could greet the buyer with "Hello, Charles, hear your daughter won first prize at Smith for oratory! Good stuff!" putting his prospect into a friendly frame of mind, and opening the avenues to bigger sales; sent him encouraging letters almost every day; totaled his sales by saws, nails, hatchets, planes; in fact, she worked up a complete little business system all of her own.

In two years this man was leading all of the others. In five years he was vice-president of the company—and still is. His salary today is thousands where at the time Norvell first introduced his plan it was hundreds.

His wife, through Norvell's planning, ceased to think of saving, squeezing, and pinching, and turned her thoughts to increasing her husband's efficiency—sent him out each trip with his head high and courage in his heart. He feared no man; nor

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was he in danger from any woman. His wife was now as attractive as the year before he married her. Her hands were soft, appealing—no practised flirt could steer him off the straight and narrow.

This happy couple saved more money in one year, after the plan got to working, than they would have saved in five years by plodding along in their disgruntled, penny-squeezing way. They were happier, and the wife has lost none of her attractive femininity—she had even more time to spend with her children, and the hours she spent with them were not harassed and worried—she was calm, at peace with the world, and in complete possession of her soul.

Thrift does not mean stinginess. Saving starts with making. Incomes come before bank books. Thrift means careful spending; *but it means getting the money first!* Do not think that because you saved a dollar today by going without a book, that you can pat yourself on the back for your mental courage and your ability to withstand temptation. Perhaps had the time you spent arguing with yourself whether to buy the book or not, been spent in quiet thinking of your position in the world and how you might increase your efficiency, it would have yielded you five dollars in return—a dollar for the book you wanted and four for the savings account.

Some people get just so far up Income Road—then lay down under a tree and contentedly chew their cud. Some wives seem content if, by slaving and grinding, and worrying and fretting, and squeezing and pinching, they can put away fifty dollars a month. Fine! A noble sacrifice and an honorable ambition. The good book says, "Woman

was created to be an helpmeet to man." So be it! But the greatest help to a man is brain-help, intellect-help—not dollar-help.

Even the tight-wad husband who remarks to his wife, upon her application for a little more dough, "What became of the dollar I gave you last month?" will react favorably to suggestions for improving his income—it shows that wifey is thinking along the right lines.

I don't know whether what I here write will reach the wives of my readers. Chances are that some readers will carefully mark this page and leave BETTER CROPS where it will surely be seen by the better seven-eighths; others will destroy the issue completely and at once, as they would a Robert G. Ingersoll Memorial Edition—for fear it might put some fool ideas into a head in which a flea would rattle around like a skeleton on a tin roof. It all depends upon the reader!

But, the truth is there—regard it how we will. Economical wives are not always the most economical in the end. They are sincere, hard working, honest in their intent, but are simply working down Misguided Avenue, when they should be spiritedly dancing up Realhelp Boulevard, chin in air and thoughts on improving hubby's income—so that there will surely be something to save.

Let the "little woman" in on your plans—let her see what you are up against in your manly struggle to bring home the bacon. Let her get her teeth-and-talons set into the skin of your problems, and trust woman's intuition for the rest. I know what your answer is: You can do it with some women, but—.

Yes, there is always a "but" with some people, as there is with a goat!

But let me tell you something else, brother: scientist though you may be, county agent, professor of agriculture, county farm bureau president or chief-oiler-of-the-hinges-of Sohelpme, you can appreciate plain talk, and that is the only kind you ever get from Old Jeff—the greatest danger to a happy married life, and especially the married life of a man whose income is derived from his brain, is that he will advance faster, farther and more certainly than his wife!

Is there anything more pitiful to see than a splendid scientist or business man or doctor reading a deep book, that not one person in a hundred could understand, only to be constantly interrupted with inane nothings interpolated by his wife! He is reading,—"and the fifth derivative is a philological contemporaneous viewpoint that rarely coincides with Freudian theory," when she interrupts with, "Did you ever notice that leather heels wear down faster than rubber, John?"

Well, it's his fault—he kept her in her own sphere—felt that she could not possibly learn enough to keep up with him, and anyway, a woman's place is "Kind, Kirk and Kuchen." Finally there is not one plane upon which she can meet him—not even the physical. She is not his equal mentally, nor his match in any other way. *Then the trouble begins!*

Brother, do some thinking. Don't brag because your wife is a good saver; nor cuss because she is a spendthrift and you will probably end up in the poorhouse. Let her help you earn the income and she will equal you in saving.

And now, if you want to show her this, go to it!



Captain Kidder

comments on this
month's issue

Jeff's article on economical wives is likely to start some lively family discussions. I haven't made up my mind whether to show it to Mrs. Kidder or not. If I do, she's very apt to give me her ideas about uneconomical husbands. I can't help wondering if Jeff tried it on his Missus. If so, he won't have much comeback when he gets next month's bills from the dressmaker. Seriously, though, he's right about husband and wife planning together to *increase* their income. I don't know many cases where it's done, but all I do know of have been surprisingly successful.



Mr. Brand's articles are just the kind I like—full of interesting facts told in an entertaining, readable style. I hope we get more from him, don't you?



While on the subject of Mr. Brand's articles, I might mention an error in his first article which appeared in the November issue and which Mr. Brand called to my attention. He wrote that "it is probably safe to say that a billion and a quarter dollars' worth of products" will be marketed cooperatively in 1923. In print it appeared "a million and a quarter"—only a little over \$999,000,000 out of the way.



Maybe some one ought to take a try at kidding me. Last month during a temporary brain storm, I referred to Albert Hansen as "Anderson." Perhaps his poison plant stuff went to my head. Anyway, I offer him my apologies. If he keeps on exposing these deadly weeds, we won't dare let cattle out to graze. All their fodder will have to be hand-picked.

Be sure you read that letter from Brother Mulder on page 39. It's chock-full of common sense and sound reasoning. I'd like to see more of the readers of *BETTER CROPS* writing good, straight-from-the-heart letters like this. How about it?



One of the things *BETTER CROPS* aims to accomplish is to end this "robbery of the soil" that Mr. Mulder speaks of, and to show how the units of plant food may be *increased* instead of decreased. Mr. E. K. Howe's letter shows very graphically how we are robbing the soil of one essential plant food—potash—and Jeff's editorial suggests a good means of remedy.



That \$50 in gold must have looked pretty good to Brother Blackwell. Wonder what he'll do with it? Probably start saving for a Rolls-Royce.



I read Irving Price's article over several times, but I'm still in the dark as to just what the "bruley" is. How about it, Irv.?



A good many agriculturists have got the idea in their heads that cooperative marketing is the great cure-all for everything that ails the farmer. Far be from me to deny that it can and does accomplish a lot. But I wish everyone interested in it would read Dean Stewart's article carefully. His careful logic and reasoning should be a corrective to a lot of careless assertions that are being made.

Captain Kidder

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Potash Pays on Corn

AN investment of \$2.25 in muriate of potash increased the yield 15 bushels in the above experiment. Corn needs potash and, when it is liberally supplied, firm, full ears and superior quality are secured—as well as increased yield. Remember that the average yield of corn takes 100 pounds of potash from the soil per acre. See that plenty of Genuine German Potash is used to secure the best results.



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February 1924

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In this issue — Sect. Henry C. Wallace — Jeff McDermid — Dr. Frank Crane — R. H. Tingley — C. E. Gapen — Albert Hansen



—These old shoes contain “fertilizer”!

OLD shoes contain fertilizer. Throw them in a field. Will they help the crops to grow?

You know, of course, they will not. Why? Because it will be years before the shoes decay into a form where the food elements become available.

Yet many good farmers, believing their soil contains plenty of potash, buy mixed fertilizer containing no potash of any kind, or very, very little potash.

They forget that plant-food to be of any use must be *available*—in such form that hungry roots can readily absorb it.

Try potash one year.

There is only one way to make sure that crops are getting sufficient potash—*try it one*

year. Get the farmers in your county to sow a check-strip at least. Encourage them to experiment for themselves. Soils often differ completely in two adjoining farms.

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A GLANCE AHEAD

YOU will notice that this month we are starting a new department, "News of the Farm Bureau." Many of our readers are engaged in this work and we want to keep this department as a regular feature. That, however, is up to you. If you have interesting news of your local Farm Bureau and its doings, send it to me on a post card. It's up to you to make this department worth while.

Among the interesting features that I am going to offer you in our March number are the following:

GIVE THEM AN EARLY START !

An Exclusive Interview with
HOWARD M. GORE, *Assistant Secretary of Agriculture*

Mr. Gore has an interesting message for you on the subject of boys' and girls' club work. This is one of the most important articles we have published.

THE COOPERATIVE IDEA

by *Charles J. Brand*

You are already acquainted with Mr. Brand from his series of articles on cooperative marketing among the nut growers. Under this new title he will begin a series of articles on the history and recent developments of the cooperative idea. It's the best thing I've seen on the subject and, when you've read it, I think you will agree.

DANGEROUS AGRICULTURE—II

by *Charles E. Gapen*

Mr. Gapen relates further thrilling experiences of Department of Agriculture employees. Read his article in this issue and you won't want to miss the conclusion.

Lots of other good things, too. Watch out for them!

Yours to a cinder,

Jeff

P S.—How about passing the word about BETTER CROPS to your friends who might like to read it? A year's subscription is only \$1. We will be glad to send a sample copy free to anyone interested.

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You would not waste one man's time by having two men drive a four-horse pulverizer, when one man can do it equally as well.

Why buy two tons of 1-8-1 when you can get the same amount of plant food in one ton of BIG CROP 2-16-2?

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one ton.

You save factory costs
on one ton.

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Better Crops

The Pocket Book of Agriculture

VOLUME I

NUMBER SIX

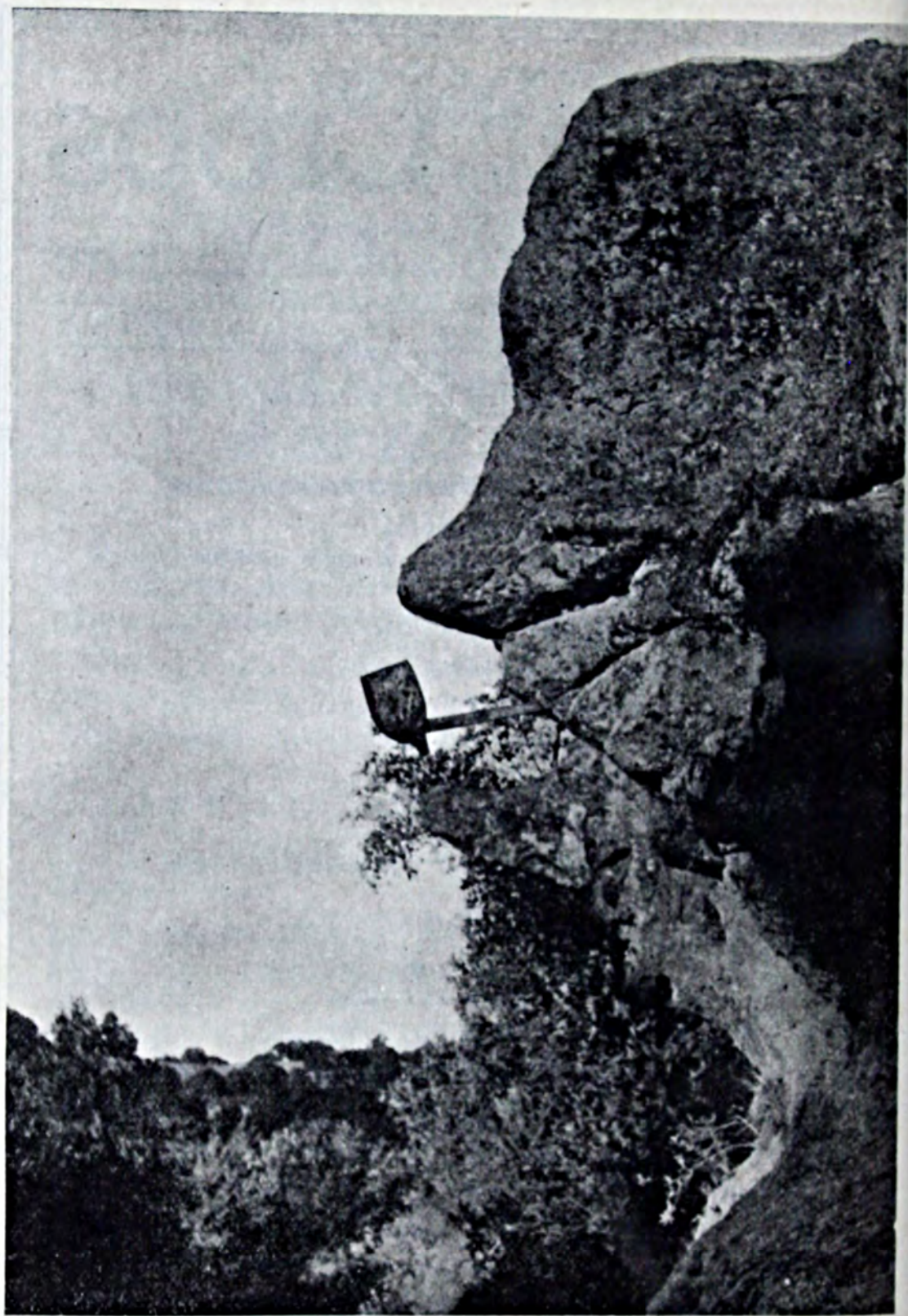
Table of Contents, February, 1924

The Crucial Moment	5
<i>A forceful message from Jeff McDermid.</i>	
Marketing Cotton Cooperatively	7
<i>Another successful cooperative enterprise described by R. H. Tingley.</i>	
Dangerous Agriculture	10
<i>Thrills aplenty by C. E. Gapen.</i>	
Paying Points on Tobacco Fertilization	12
<i>More profits from tobacco cultivation by J. C. Penhook.</i>	
The Greatest Business in the World	15
<i>Jeff interviews Secretary of Agriculture, Henry C. Wallace.</i>	
Selling the Idea of a County-wide Cow-Testing Association	21
<i>A fine accomplishment by Wallace Sullivan</i>	
Fighting Mr. Boll Weevil From the Sky	24
<i>A promising new method by Ted Bullar</i>	
What Fertilizers Have Done for Georgia	26
<i>A masterly résumé by P. W. Chapman</i>	
Making the Best of a Scanty Supply of Moisture	28
<i>What the West has learned by M. R. Lewis.</i>	
Corn Rheumatism Is Cured with Potash	30
<i>Surprising new facts by Albert A. Hansen.</i>	
Why Do Our Boys Leave the Farm?	32
<i>A real human interest story by J. S. Malone.</i>	
Where Once Algonquins and the Bears Held Sway	34
<i>Timely reflections by K. D. Scott.</i>	

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¶ Nature made a face and man gave it a "smoke." ¶ View of Pipe Rock in Napa County, California. ¶ This oddity of nature is given the final touch by man, in the shape of a tobacco pipe of steel. ¶ Now you can even see the face smile.



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No. 6

The Crucial Moment

What happens when
you have to face it?

By Jeff McDermid

ONE fact stands out in bold relief in the history of men's accomplishments. That is that there comes a time in every enterprise when the first flush of novelty has worn away and when the temptation is to drop the thing completely and start afresh on some other venture.

THE virile pages of success in history abound with such phrases as, "I'll fight it out upon this line if it takes all summer," and "We haven't begun to fight!" Neither history nor biography can visualize for us the confusion in the minds of the two men who uttered these living, glowing sentences. We hear the famous one say, "Don't give up the ship!" but the turmoil in his own mind, as his confused senses consider a possible retreat, is ours but to conjecture upon. History re-

cords the man's success, and his flashing command—it sets down for us his great strength in the face of disaster—we admire his courage and applaud his invincible and indomitable will.

But I believe that many of these famous sentences, breathed in the heat of battle and tossed into the teeth of confusion, were uttered as much for the stiffening of the hero's own backbone as for the rallying of the spirits of his men.

I believe that the line between

cowardice and heroism is but slight—and that there comes a time in every man's life when by far the greater temptation is to drop the job we are working upon—when our greatest desire seems to be that we might forget it, bury it, burn it, and get rid of it completely.

THAT we have these doubts and that we are obsessed with these desires to leave off the undertaking, but proves that we are human and are governed by human errors and instincts. The line between cowardice and heroism is so slight that a single action may mark for future generations the fork in the road where our hero stumbled and was lost to history, or where our coward uttered a simple prayer for strength and strode onward into history as a hero.

This thought, it seems to me, applies equally and as forcefully to selling a piano, carrying out a soil fertility program, or writing a book; to painting a great landscape, building a new henhouse, or writing a letter to your mother; to organizing a great business, finishing up a chemical laboratory experiment, or repairing a mower.

You start a job with enthusiasm. It is a good plan or idea and you have discussed it with others and it seems to meet their hearty approval. You jump into the work and, as you sweat, your enthusiasm mounts and soars. Your heart pounds with expectation. The various elements or factors in your work begin to take shape and form.

Soon comes the time when the flush of novelty has worn off; the beautiful picture you have painted of the future seems to have slightly faded—the gilt on the frame is tawdry and chipped. The work begins to become drudgery. Your

interest needs artificial stimulation. You begin to invent certain alibis, more for your own protection against yourself than for publication to the outside world. Soon you begin to use these alibis when talking to others about your work. Each time you use the alibi you find it easier to invent another.

Well, here you are at the crucial point. The work you so happily commenced has dragged until it has almost stopped. Its breathing is scarcely audible. The various parts of your machine do not seem to fit as you had anticipated. Certain people will not do what you thought they would do for you. You find that others are not so easily enthused as you had hoped. The world is cold and frosty and you seem alone in it, working feebly along to finish something, the finishing of which no longer seems important to you.

Here, then, is the crucial moment!

Have you the courage to go ahead? Have you the nerve to stiffen up your spine—to insert a ramrod in your backbone where you now have only a wishbone? Can you rekindle your early fires of enthusiasm? Can you clench your fists till the nails tear into the flesh with pain, grit your teeth and say "I haven't begun to fight"?

Unless at the crucial moment, you have this last ounce of extra push you will not cross the line between success and failure! This is the acid test of your worthiness.

UP to this point no one in the world has seen the inside of your mind. It looks to outsiders as though you were destined for success. The stylus of the historian hovers over his parchment ready and anxious to record the flaming words that shall (turn to page 70)

Selling Cotton COOPERATIVELY

By Richard Hoadley Tingley

¶ You may remember Mr. Tingley's fine article on Cotton in our October issue. Here's an even better one on the marketing of this important crop. ¶ Mr. Tingley has investigated Cotton Economics and Transportation for the War Industries Board in 1918 and later was connected with the National Association of Cotton Manufacturers on the World Cotton Conferences.

STATISTICS proclaim that there is a shortage of cotton; that, during the last two years, the world has consumed about 41 million bales, and has produced but 33 million; that there are 157 million spindles operating normally in the world and that the present crop with the "carry over" will keep but about 125 million of them turning.

This short supply with the consequent rise in price has brought prosperity to the South, and the farmer is particularly benefited because he has, at last, learned how to market his crop and get the most money out of it.

In this article Mr. Tingley tells how the farmers are getting "theirs" through their cooperative marketing organizations.

RUSSIA isn't the only country where they have revolutions; nor is Germany. There is one going on now right here in the United States, and millions and millions of people don't know it is under way. It is nothing like the Russian revolution, or the German revolution, or any other revolution. It is a quiet, orderly, peaceable affair; no bloodshed, no cheering, no shouting, no brassbands. There isn't even a tinge of politics in it to liven it up—and the revolutionists are just plain farmers,

"dirt farmers," Southern farmers, and the battle wages about that "Stormy Petrel" of commerce—cotton.

For generations the cotton farmer has been under the domination of the buyer of his product. His overlords were the Northern spinners, the Southern spinners, the British spinners, the cotton merchants, middlemen of all sorts and conditions, warehousemen, banks and speculators. Between them they managed



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When the "Princes of the Cotton Kingdom" Cash In
C. Cotton is King—and these lads are the Princes of the Kingdom. Auctioning bales of cotton raised by the Boys' Cotton Club at Griffin, Ga. The kids' cotton was so good that it brought more than the market price, some selling for 40c. a bale with the market at 33.

to keep the price he received for his staple down to starvation levels. The "spread" between the market price upon which the middle man fattened, and his price upon which he grew thinner and thinner every year, was too wide. At last the worm has turned; the cotton farmer has taken matters into his own hands; has forced his price upward and the "spread" downward. In other words, he has come to his own; has "arrived." Add to this the general advance in the price of cotton due to purely economic conditions and the result has spelled prosperity not only to the farmer, but for the South as a whole.

A few weeks ago Mr. Joseph O. Thompson, of the American Cotton Association, told President Coolidge that the cotton growers needed no aid from the government; that they could now "paddle their own canoe," so to speak; that "Buy a bale" was a slogan of the past. He

is said to further have intimated that, if the United States was in need of money, it might apply for it in Dixie. These are bold and unfamiliar words to come out of the South, but they serve as an index to what has been going on in the "Land of Cotton" during the last two or three years, while the North has been, cottonwise speaking, asleep.

Since Mr. Thompson's reported talk the price of cotton has continued to advance. Except for a brief period during the inflation of 1920 it is at a higher level than at any time for the last sixty years. But the 1920 price was an incident brought about by post-war conditions. The present rise and sustained high level is due to natural, economic causes; for the first time in a generation there is a world cotton shortage; a shortage that bids fair to prevail for another year at least, or until the 1923-1924 crop is

marketed — and perhaps, after.

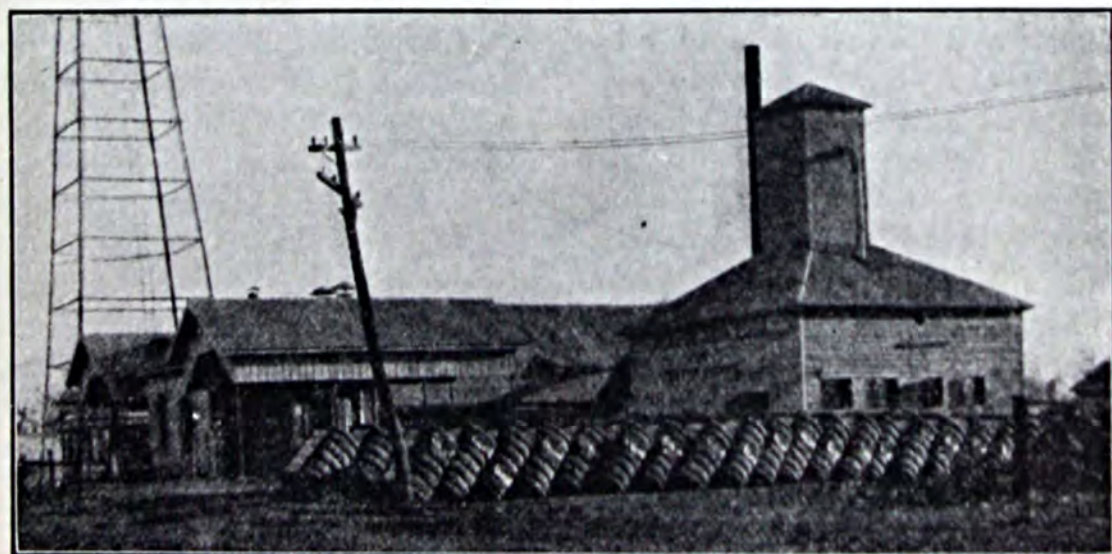
In acknowledging that he has "come to his own," the cotton farmer has, to a certain extent, the boll weevil to thank for it, for it is that insidious little pest that is mainly responsible for the present short crop. But there is another agency beside the shortage and the weevil that has contributed to bring about the present independent position, and this is the spirit of cooperation between the farmers in the handling and marketing of their product; after generations of independent effort with every man for himself and "the devil take the hindmost" methods, they have discovered the virtue behind Æsop's fable of the "Bundle of sticks" and have formed cooperative associations for the marketing of their product.

The cotton farmer has the American Cotton Association, largely, to thank for this movement. Persistently, and for years its president, Mr. J. S. Wannamaker, and other members have conducted a campaign of education to instruct him in how to handle his crop and make it pay; how to warehouse his product awaiting a favorable market and

keep it from accumulating "Country damage," how and what to plant, and when and how much; how to combat the boll weevil. They taught the farmer to think in terms of the industry, rather than of the bale. Their propaganda was on the front page of every daily in the South. Instructive literature without end has been published, distributed, and has found a place in the libraries and the schools of the South, and in this work the United States Department of Agriculture, Bureau of Markets, with its instructive publications, has been extremely helpful.

One of the most important works of the American Cotton Association has been in promoting the organization of the American Cotton Growers' Exchange with its branches in nearly every state in the Cotton Belt. It is these cooperative marketing agencies that have been putting money into the cotton farmer's pocket. Under the leadership of Mr. Carl Williams the cotton farmers are rapidly being knit together into a single cooperative selling unit.

The exchanges are organized in a carefully thought-out plan under the legal direction of (*turn to page 67*)



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A modern Cotton Gin at Wewoka, Oklahoma

¶ Not all the employees of the U. S. Department of Agriculture have peaceful jobs; some of them take big chances. Read

Dangerous Agriculture

By C. E. G a p e n

with U. S. Dept. of Agriculture

THERE are great leather-bound volumes full of laws designed for the protection of bob-whites, squirrels, antelopes, and oysters; also there are laws which enable farmers to protect themselves to some extent, and there are acts put on the statute books to prevent the defrauding and poisoning of the well-known consumer. But whoever thought of protective legislation for the workers in the United States Department of Agriculture, many of whom have taken part in framing the acts just referred to and in securing their passage through Congress?

Well, they have thought about it themselves, and I have been informed that early in the present session of the national legislature a bill will be introduced to provide adequate means for the protection, through federal action, of workers who encounter difficulties in the enforcement of laws which have been entrusted to the Department. These workers include game wardens, foresters, inspectors engaged in enforcing cattle tick eradication in the South, meat and food inspectors, and men engaged in a host of other duties. Experience has shown that these servants of Uncle Sam fre-

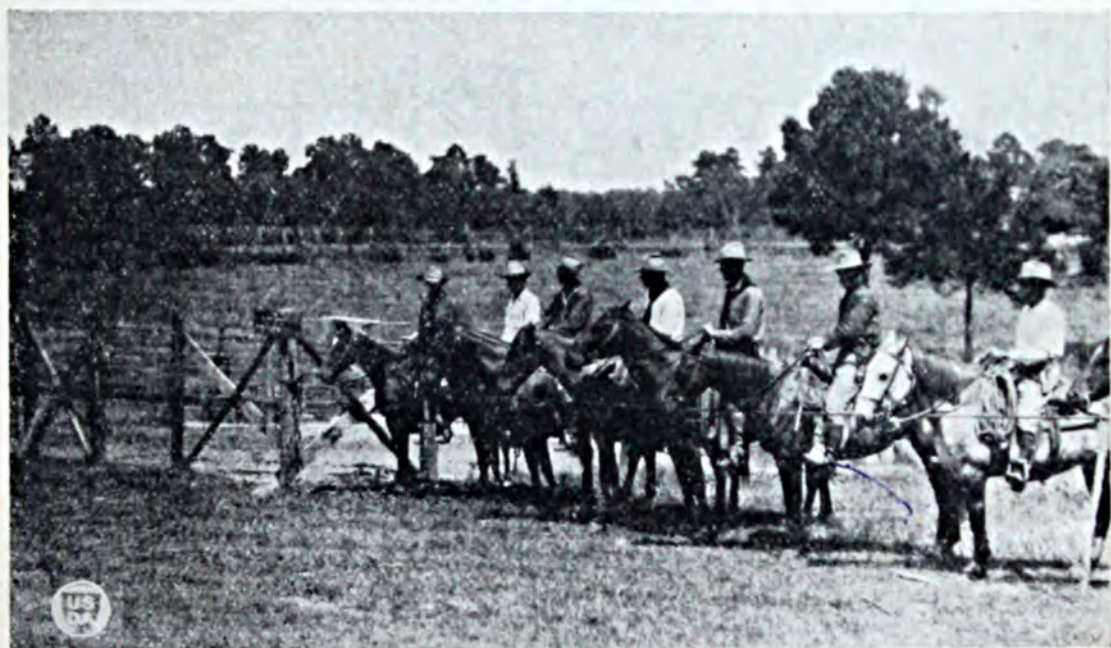
quently get more action per minute than the barroom bouncer of bygone days, and it often happens that they are strangers in a hostile community which has no sympathy with, and little understanding of, the law. Naturally they want the horny hand and heavy boot of their employer right along with them when they go out to do his bidding. State laws help a great deal when the Government man gets into a mess and sometimes they deal out speedy justice, as they did recently following the murder of a game warden, but the federal men feel the need of something closer.

THERE is a gloomy sound to this, but such an atmosphere is not going to persist. This proposed law is just a means of getting started on the subject of dangerous occupations of some of those men who are working for the improvement of that peaceful industry, agriculture. There are not a few risky jobs in this branch of the national service, and not all of them by any means are in connection with the enforcement of laws. A few days ago I was talking with one of the movie men who helps make the popular pictures illustrating better farming, and he told me

of an experience, not without its comic aspects, which might have had a serious outcome. He was making a livestock picture having to do with the handling of bad-tempered bulls and had parked his three-legged camera on the top of a precipitous dunghill and awaited the release of the bull from his pen. When the door was rolled back the bull charged the cameraman's retreat and for an hour kept him there. A farmhand finally got the beast back in the barn by strategy. A funny situation, but every now and then a

to comply with rules and regulations formulated for the ultimate good of the community and the industry. Dipping vats have been blown up, some dynamiters have been wounded and one was killed while in the act of destroying a vat. These battles sometimes have grown as intense and bitter as the moonshine fights in the mountains, but, fortunately, they are rare.

A county in Arkansas was one of the worse recalcitrants in the tick war, although the eradication work had gone far. It was found that cer-



Armed men of the tick eradication squad

bull gets a victim. A Department man was killed a year or so ago while photographing a "trusty" bull led out without a staff.

In certain parts of the South the dipping of cattle in the war against the tick and Texas fever has provided plenty of thrills and several funerals. Within a few weeks of this writing, trial will begin in Georgia of 21 men indicted in the killing of a young federal inspector and the serious wounding of another. In a number of other places some cattle owners and their sympathizers have stubbornly refused

tain men in one community had stopped dipping and the inspectors were letting them have their way and not reporting the cases. The county authorities were requested to get the needed materials and get men to dip the cattle; in a week two of the men had been shot and one killed. Notices appeared on trees, buildings and fences warning that others who tried dipping enforcement would get the same gun medicine. The county men preferred to quit; then ex-service men were employed and equipped with horses, guns, and (*turn to page 64*)



Complete fertilizers on this plot at Cerulean, Ky., resulted in increased profit of \$34.39 per acre.

Some Paying Points on Tobacco Fertilization

By J. C. Penhook

C Smoking cigars by machinery has disclosed important facts for tobacco growers. Read about the latest discoveries in this field.

A GROWER of tobacco is interested primarily in the amount of cash returns that can be obtained from his crop.

Two factors influence the cash returns.

1st—The yield-per-acre.

2nd—The grade.

Climate, soil conditions, choice of seeds, careful and proper fertilization of the seed-plot, perfect transplanting, and especial care while the plant is growing—all of these are very important factors in increasing the yield and improving the grade of leaf secured.

But the majority of tobacco growers understand well enough how these factors affect their income. What we shall discuss here are some recently discovered facts concerning tobacco fertilization that have a direct bearing on the returns obtained by the tobacco grower.

TOBACCO is a rapid growing plant, seldom remaining in the field for over 90 days. It has a much shorter life than most farm crops.

The tobacco plant has smaller roots, in proportion to the upper

structure, than most any other common crop.

Tobacco, because of its rank, rapid growth and the shortness of its life in the field is a very heavy feeder—it requires an abundance of available plant food if it is to attain its greatest possible growth.

Fortunately for the grower, the acre-value of tobacco is very high, and the prices he receives are sufficiently great to justify heavy applications of those plant food elements which are deficient in his soil.

A 1,600-pound crop of tobacco contains:

Nitrogen.....	76 pounds
Phosphoric Acid.....	16 pounds
Potash.....	200 pounds

A tobacco crop, large or small, requires nearly three times as much potash as nitrogen; nearly thirteen times as much potash as phosphoric acid.

Tobacco is a heavy potash feeder—in fact, the only other crops that approximate tobacco in potash requirement are cabbages and turnips.

There are as many types of soil upon which tobacco is grown as there are kinds of tobacco and modes of cultivation.

In Connecticut tobacco is grown on sandy loam and light sandy soils which are very infertile if left to themselves. Only a liberal use of commercial fertilizers enables this part of the country to continue to grow the famous "Connecticut Shade Grown" and other types of cigar wrapper and binder leaf.

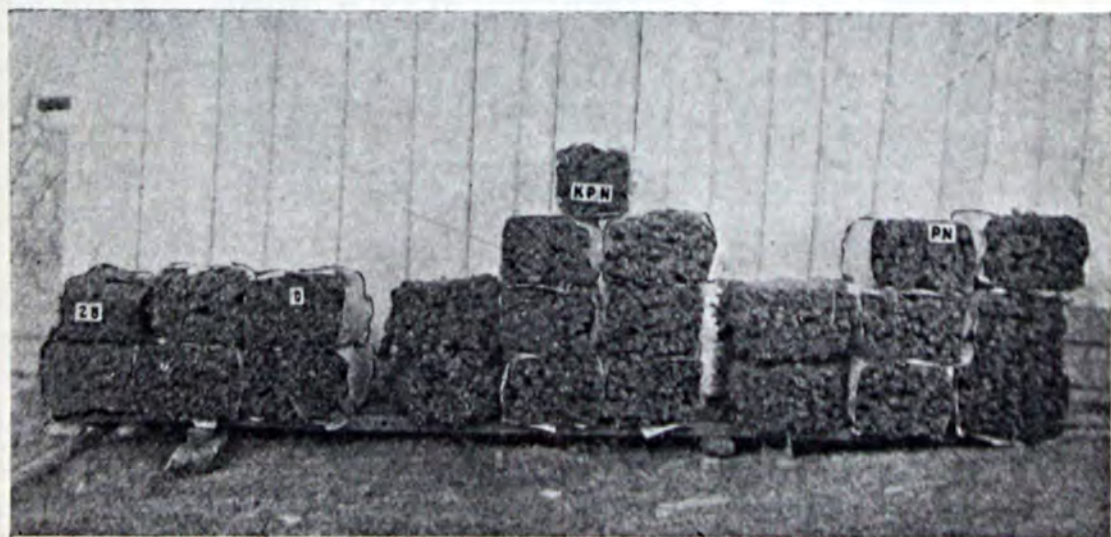
Because the individual farms are very small in Connecticut, there is no opportunity for rotating crops. Live stock is conspicuous by its absence—there is a lack of natural barnyard manure in most sections of the state and growers have learned to rely upon heavy applications of commercial fertilizer.

High analysis fertilizers are used.

Here, then, is a state in which an intensive one-crop system on small individual farms has resulted in almost complete adoption of commercial fertilizers.

Let us, for the purpose of comparison, contrast the annual yield per acre in Connecticut, over a period of 25 years, with the annual yield per acre in Pennsylvania.

Pennsylvania and Connecticut



Comparative yield from 3 plots on farm of C. E. Bailey, Painted Post, N. Y. 276 lbs. of sulphate of potash increased value of crop \$44.00 per acre and gave larger percentage of wrapper tobacco.

can fairly be compared because the tobaccos grown are similar. Both states grow cigar tobacco—mostly binders and wrappers.

In Pennsylvania we find that the majority of the growers depend upon diversified farming—seldom is tobacco grown two successive seasons in the same field. Wheat, grass, clover and corn are used with tobacco in a five-year rotation. Live stock feeding—especially winter feeding of steers—is carried on in Pennsylvania in direct contrast to the lack of even a semblance of live stock in Connecticut. Pennsylvania depends less upon commercial fertilizer than does Connecticut.

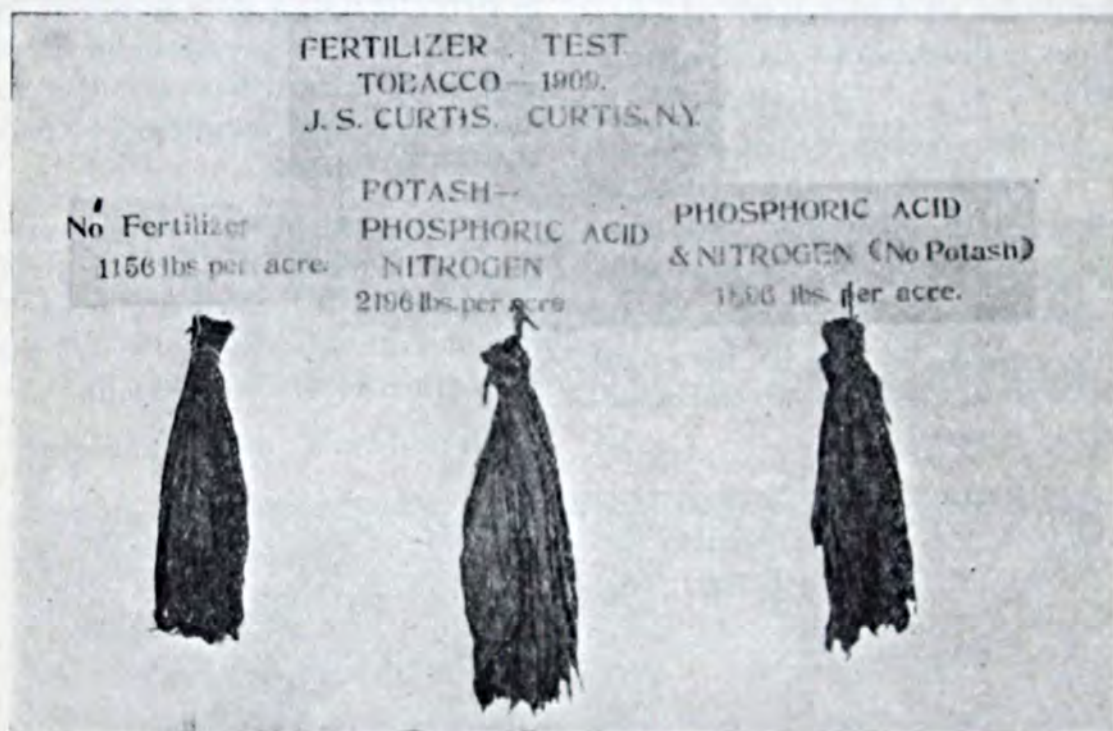
A survey of the U. S. Government report of yields in these two states from 1889 to 1916 shows that the

never been above 1,500 pounds and until 1910 the average yield rarely exceeded 1,200 pounds.

We are interested here only in investigating the effect of commercial fertilizer (as in Connecticut) as compared to the effect of rotation of crops and the use of barnyard manure (as Pennsylvania). From the above figures it would seem that commercial fertilizers increased the yield more than did manure.

Where a live stock system is in vogue, and much of the product of the farm is returned to the soil in the form of manure it is often erroneously supposed that no additional outside fertilizer will be needed.

Presuming that all of the liquid manure and all the dung is saved



Results from farm of J. S. Curtis, Curtis, N. Y.

Note increase in quality and yield from sulphate of potash.

average yield in Connecticut has seldom been below 1,500 pounds per acre since 1899 (at which time the use of high analysis fertilizers first received real public endorsement). On the other hand the average yield in Pennsylvania has

(which it never is), then the amount of the fertilizing material is equal in most cases, to from 60 to 90 per cent. of the value of the food consumed.

Average fresh barnyard manure (mixed) contains: (turn to page 58)

The Greatest Business in the World

An exclusive interview with

Henry C. Wallace

Secretary of Agriculture

By Jeff McIver

WITH the first issue of BETTER CROPS I sent a postal card asking our readers to indicate the subjects on which they would like to have more information.

I confess I was surprised at the results. An overwhelming majority wanted articles on agricultural economics. It was apparent that farmers and agriculturists were developing a lively interest in the *business* side of farming.

IT struck me at once that our Secretary of Agriculture, Henry C. Wallace, would have some interesting things to say on this subject. I knew he was putting in "farm hours" directing his Department in the endeavor to put agriculture on a more profitable basis.

What could he tell us about the business side of farming? In response to my request, the Secretary granted a brief interview on this subject for the benefit of BETTER CROPS' readers.

Secretary Wallace said, as he cast aside for the moment the many problems with which he is concerned: "It is only of late years, after all, that we have come to think of farming in business terms. A generation ago the farm was primarily a place where the family made its living. Today, however, the farmer as well as his products, is a

very direct and personal factor in commerce. His needs and desires play a large part in shaping the course of trade in America.

"Naturally, it is only logical that the production of food and clothing materials should be the greatest business in the world. Human beings have no more insistent necessities than for these things. Moreover, few materials used in everyday life have so frequent a need for replenishment. Food is consumed every day and only once. The supply must be replenished for every person and every animal, every day. Textiles are likewise subject to a very heavy consumption rate as compared with other classes of materials, so that the world is seldom more than a season or two ahead of potential cotton or wool famine. The business of producing all these things always has and always must

loom large in the eyes of mankind.

"We have had an enormous urban development in this country and the tendency is for the city to lose something of personal contact and personal knowledge of the farm. A generation is now growing up in our cities which will arrive at manhood more or less lacking in understanding of the whole agricultural situation. This is not a desirable trend of things and every effort should be made to promote those contacts which lead to better appreciation of each other's problems. Such efforts should take particular account of the younger generation. The boys of today will be running the country's business tomorrow, and it seems probable that the future must deal with some problems of economic adjustment which we have so far been fortunate to escape."

With this as a background I made inquiry and found that the Department of which Secretary Wallace is directing head, possessed a wealth of material to show something of the position that agriculture holds in the fabric of national existence. For instance, there are $6\frac{1}{2}$ million farms in the United States. A fourth of all the gainfully employed persons in the country are agricultural producers. Nearly a third of our entire population live on farms. The average investment in land, buildings, equipment, etc., according to the last census, was more than \$12,000 per farm. Here is an industry, therefore, with ten million workers and a capital investment of 78 billion dollars.

Furthermore, the capital invested in farm buildings, equipment and livestock alone, leaving land entirely out of the figures, would buy all the railroads in the country and part of the mines besides. The total value of crops and livestock produced annually in the last ten years has aver-

aged around 16 billion dollars. This compares with the combined earnings or proceeds of all manufacturing, mining, railroad and public utility industries, in their year of highest profits (1917), of roughly 20 billion dollars.

Without question the American farmer is one of the most efficient producers in the world. Our farmers are cultivating approximately 300,000,000 acres of land—about five times as much as the German farmers, five times the French, fifteen times the British, and six times the Argentine. On the other hand the American farmer produces 4.4 times as much foodstuff per man as the Italian farmer, 2.5 times as much as the French farmer, 2 times the Belgian, and 1.5 times the German farmer. Every American farmer and farm laborer, on the average, is feeding nine other people than himself in this country and one more person living in foreign lands.

Here is another very significant deduction. The farming population of this country, although only about 30 per cent of the total, is carrying more than 35 per cent of the child population. The farm community as a whole is carrying two million more children under ten years of age than the city community of an equal population. The farm is charged with the duty of educating this excess of youth and turning it over to the cities at the producing age.

There is a challenge in the final statement made by Secretary Wallace, a challenge to everyone: "It is quite an important matter, especially as the process of urban development goes on, that the whole community should have adequate appreciation of the business of farming. I hope every channel of contact may be developed, with particular reference to the younger generation, which will lead to mutual understanding and respect between urban industry and agriculture."

Better Crops' ART GALLERY *of the month*



Our readers will recognize at once Secretary of Agriculture, Henry C. Wallace. On another page of this issue he has some interesting things to say to BETTER CROPS readers.



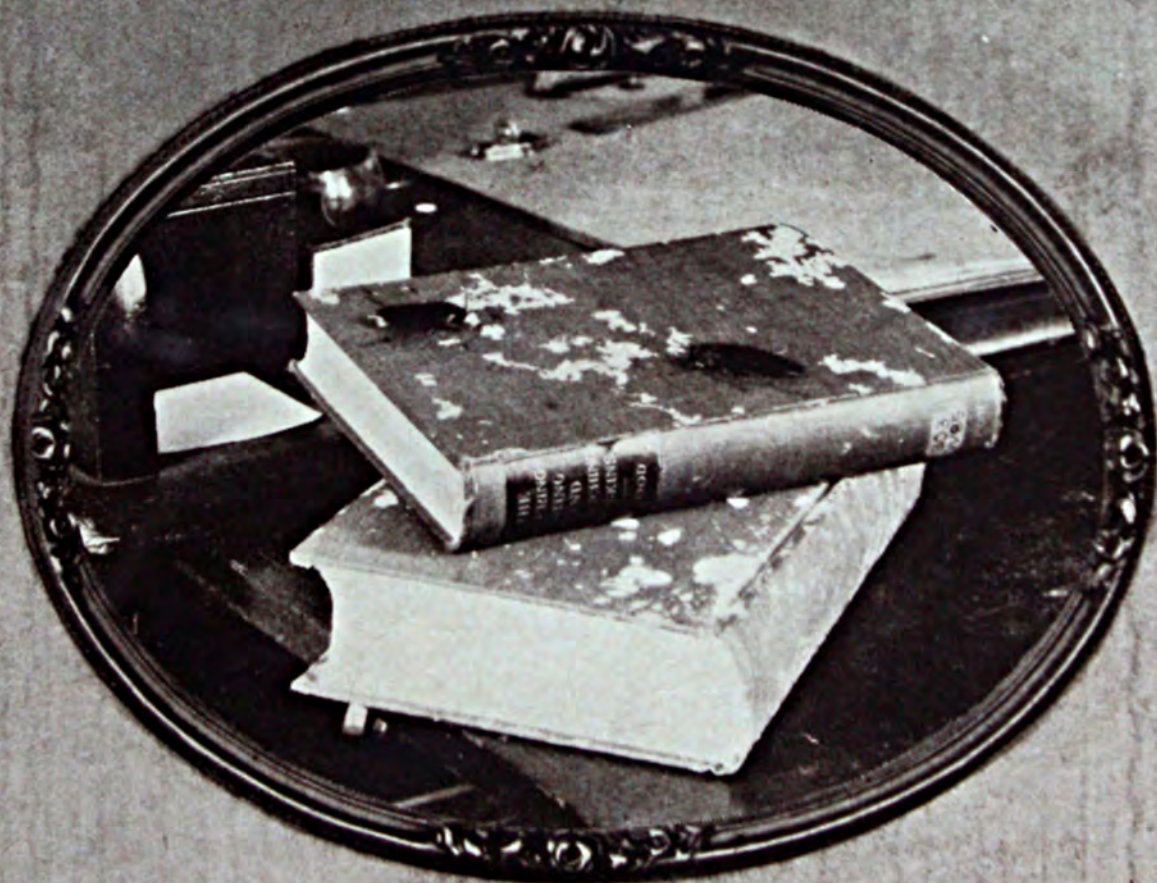
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Here is Mrs. Clara W. Deer. She was the first to sign the Ohio Farm Organization's petition asking Congress to reduce Federal taxes by the amount of the surplus in the Federal Treasury, when the Lower Taxes and Less Legislation prairie schooner reached Cleveland. This schooner is touring the State.

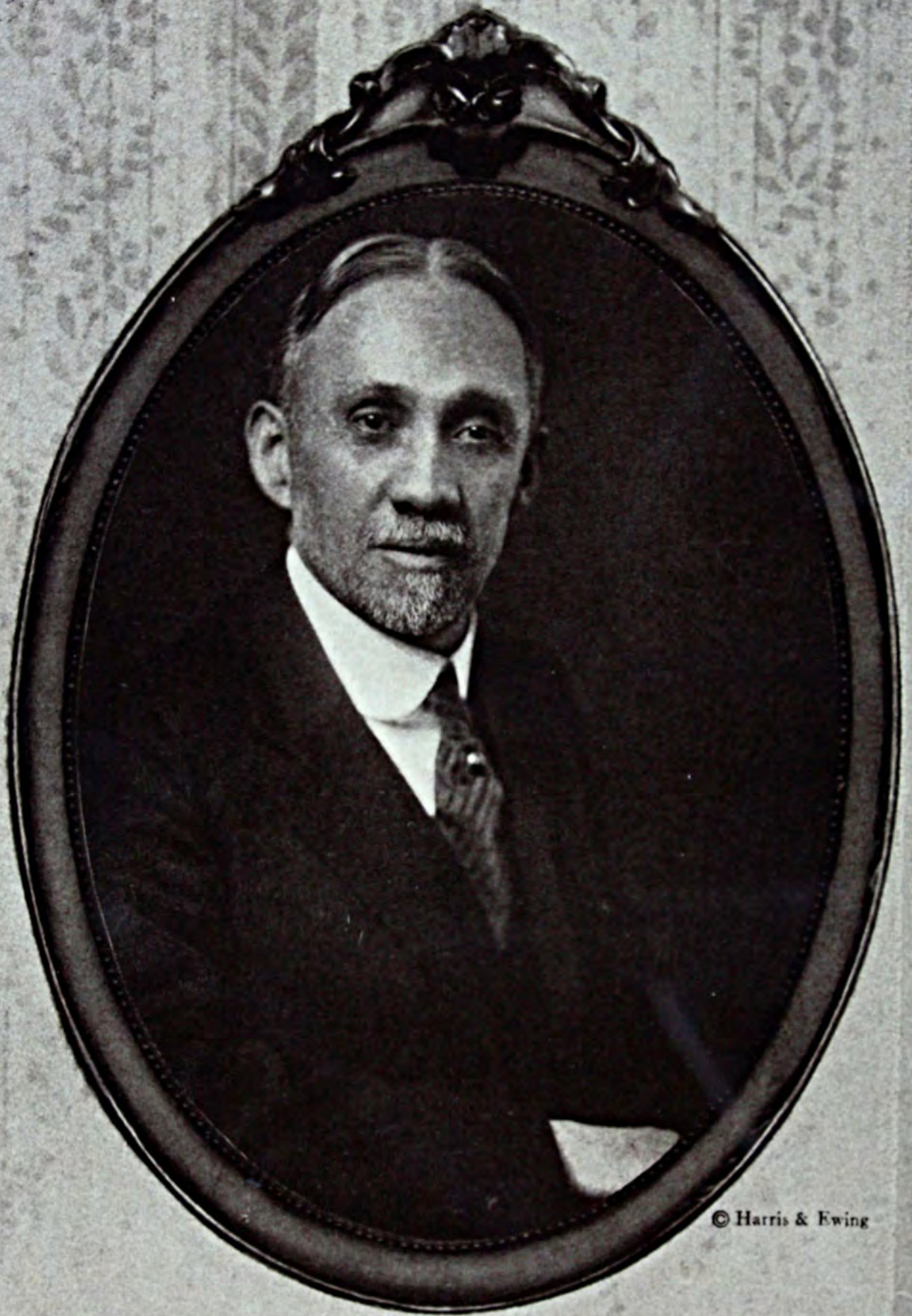


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An encouraging sight! Farmers of Koskiusko Co., Ind., listening to Director G. I. Christie of Purdue Univ. Exp. Station, Lafayette, Ind., explaining the advantages of using scientific farming methods.



Caught in the act! Scientists in the Bureau of Chemistry, U. S. Dept. of Agriculture, have found that roaches ruin many hundreds of books by sucking out the filler which is used to stiffen the cover. Now they're looking for a way to stop this damage.



© Harris & Ewing

Dr. B. W. Kilgore is Director of the North Carolina Experiment Station and Extension Service and Dean of the School of Agriculture. Due largely to his wise leadership, North Carolina has finally taken her place as one of the leading agricultural states of the Union.

Selling the Idea of a County-wide Cow- Testing Association

❧ *A big undertaking that was
put over by cooperative effort.*

By *Wallace Sullivan*

County Agent, Hanford, California

IT is very difficult to get dairymen to adopt new methods or practices, and especially so if it requires an outlay of cash from which there is not an immediate return in cash. This is true with any other line of farming or any business, for that matter.

In Kings County, California, dairying is one of the principal industries, there being seven or eight hundred dairymen milking about 24,000 cows. A large percentage of these dairymen do not read or understand English, so that the ordinary approach in getting new methods adopted would not work. If improvement was to be brought about in this big industry, it was necessary to get the individual dairyman to study the individual herd and to know the production of the individual cow in each herd. The only practicable way that this could be done on a large scale was to organize a cow testing association so that records of milk and butter fat production could be kept of each cow systematically.

The big problem was then to get a large number of these dairymen

interested in such an organization and to put up the money necessary to employ testers and purchase equipment necessary to do the work.

A project was drawn up outlining a plan whereby it was thought that the matter could be brought to the attention of the dairymen so forcibly that they would join. The plan provided for the cooperation of all the agencies directly or indirectly interested in dairying and assigned to each specific duties.

The County Agricultural Agent and the Farm Bureau took the leadership of the campaign. The creameries in the county, there being eight, were given the job of making a dairy survey, securing the names of the dairymen, number of cows, location, method of milking, kind of bull used, etc.

THE eight banks in the county agreed to write each of their dairy customers a personal letter advising him that he should join the cow testing association, also to talk to dairymen and urge them in every way to join.

The commercial organizations were enlisted to help in the campaign. The subject was discussed at their membership meetings so that the business men in the towns were informed on the subject. They printed literature and posters on the subject which were widely distributed.

The newspapers in the county signed the project and published hundreds of articles and stories on cow testing.

The California Dairy Council conducted an essay contest in the high schools and grammar schools, so that hundreds of school children wrote essays on the value of cow testing.

The State College of Agriculture and the State Department of Agriculture and other agencies cooperated by furnishing speakers for dairy meetings which were held in every part of the county.

In this way the cow testing association idea was sold to the whole county and business men as well as dairymen knew something about cow testing and that it was a thing that would be good for the county as a whole and the dairymen in particular if it could be brought about.

WHEREVER the dairyman went, whether it was at the bank, store, farm bureau meeting, church or anywhere, some way or other the fact that he should join the cow testing association was brought to his attention. He would see it on posters on his barn, read it in the papers, and his children from school would remind him that the cow testing association was the best way to make more profits out of his business.

The educational campaign was immediately followed up by committees going into the field and get-

ting the dairymen to sign a membership agreement. Thirty-five hundred cows have been signed up and others will follow. Three testers have been equipped and started to work making a record of production on each cow.

THE organization of the association is not the end but the means to an end. It must be successfully operated and the individual members must make practical application of the information gained to their herds if those who have put their money into it are to profit thereby.

The Dairy Department of the County Farm Bureau has the control of the finances and the business management. They divide the cows, sign up into units so that each unit is handled by one tester. They receive all dues, purchase all equipment, and employ the testers. The secretary of the County Farm Bureau serves as secretary-treasurer of the county organization, keeping all records. As soon as a unit is organized a meeting is called of the members and they select a committee of three who has charge of the activities of the local unit and act as an advisory committee to the dairy department executive committee.

The county agent is charged with the work of supervising the testers, assisting in summarizing the herd books and advising the dairymen in culling, breeding and feeding.

By using this plan of operation additional units can be organized without the usual trouble of an overhead organization.

To prove that this is getting results already ten carloads of cull cows have been shipped out of the county to slaughter-houses and have been killed, thus (*turn to page 70*)

The Electric Fan

By Dr. Frank Crane



SOME time ago, while sailing the tropic seas, I had in my stateroom an electric fan, which ran continuously night and day. ¶One morning as I lay in my berth looking at it, as it automatically turned from side to side and stirred the atmosphere of the room with its cooling breeze, it came to me how amazingly the forces of Nature have taken over the menial work of man. ¶I thought of the untold thousands of ladies and gentlemen using their wrist power to fan themselves, and of other thousands of servants pulling swinging fans to cool the brows of the gentry. ¶Here was a mechanical device doing the work of twenty servants, doing it without any effort and doing it vastly better. ¶By virtue of finding out the secret laws that govern electrons men have succeeded in compelling the uncomplaining and tireless force of Nature to be an efficient servant in the house. ¶It is an immensely better servant than any human being could be because in the first place you never feel sorry for it, it does not drain your pity, in the second place it does its work better, and in the third place it is cheaper. ¶I remember when I was a boy how sorry I used to feel for the horse drawing the carriage on a summer day, when he would pant and sweat and give signs of exhaustion. But we never feel sorry for an automobile. We had to let the horse walk slowly up hill, but when you come to a hill in your tin Lizzy you let her go full tilt. ¶It seems to me the ultimate design of Nature is to do all the dirty work for mankind just as soon as men are clever enough to find out how to use her. ¶In the millennium there will be no laboring class as we understand it now, no coolies, ryots, or other groaning and sweating burden bearers. ¶Electricity, and perhaps other yet to be discovered forces, will hew all the wood and draw all the water, and the entire race of human beings will be released for more intelligent and more interesting work. ¶We are already well started on the way toward this goal. ¶The vacuum cleaner sweeps the floor and dusts the cushions better than any hired girl. ¶The patent dish washer puts Mary Jane to shame. ¶The steam dredge does the work of a hundred Bohunks and never says one swear word. ¶The compound engine down in the hold of the steamer is more efficient than five thousand rowers and doesn't eat half so much. ¶The Pennsylvania Limited has taken thousands of stable boys, hostlers and stage coach drivers away from their smelly occupations, washed their faces, put them in uniforms and raised their level of living one hundred per cent. ¶The telephone has replaced the tired legs of millions of messenger boys. ¶The sewing machine has silenced the Song of the Shirt in thousands of dark attics. ¶Even the electric drill of the dentist has shortened the hours of your crucifixion, and his novocaine needle enables you to endure that with comparative ease. ¶If we can only get as full command of the spiritual laws as of the physical laws, there is no reason why, in time to come, we may not all find this world rather a decent place to live in.



One way it's done NOW

Fighting MR. BOLL

By Ted Butlar

BETTER CROPS' Washington Correspondent

WHEN Mr. Boll Weevil, as he is familiarly called by his unwilling providers in the South, swam or flew or rode across the Rio Grande in 1892, he came into what must have seemed to him an unending sea of food just to his liking. Cotton fields stretched to the North, East and West. But although this persistent and prolific bug found food in plenty he found ingenuity arrayed against him. In the thirty years since his entry into the United States he has spread over practically the entire cotton belt, but now, after he has reached the peak of destructiveness, the tide seems to be turning against him. Powdered calcium arsenate has been found effective to a considerable degree, and now the airplane is being used to distribute the poison over wide areas in a

short time and at a reasonable cost.

During the past two years Mr. B. R. Coad, of the United States Department of Agriculture, who has charge of the cotton experiment station at Tallulah, Louisiana, has been experimenting with all sorts of poisons for the boll weevil and other cotton pests and has been trying out many kinds of dust distributing machines. Most spectacular and, perhaps, the most promising have been the results obtained in the distribution of calcium arsenate dust with airplane. The War Department has furnished planes and pilots for this work.

THAT good results can be obtained in fighting cotton insects



Another way it may be done SOON

WEEVIL from the SKY

*Read this article before
you form your opinion.*

from the air was shown convincingly this summer on plantations where more than 3,000 acres of cotton were available. Some of the fields were dusted and some of them, directly across the road, were left as check fields. In this section in addition to the boll weevil there was a heavy infestation of the cotton leafworm, an insect which cannot stand the winters of the cotton belt but which flies up each season from the countries to the south and occasionally produces a lot of damage in limited areas. The benefit from dusting on these plantations came from the control of this pest as well as the old warrior weevil. On the fields which were dusted during the summer 750 pounds more of seed cotton were grown to the acre than on the adjoining fields

where no dusting was done. Mr. Coad estimates that the various dustings with airplanes cost approximately \$5 an acre. At the present price of cotton the gain in yield is worth \$95, a profit of \$90 for each acre dusted. Demonstrations elsewhere with the use of calcium arsenate dust applied in other ways, by ground machines, have shown that it pays to use the poison except on poor land. It costs just as much to poison a poor crop as it does to dust fields that promise an abundant yield.

AT present it is not possible to give exact figures on the cost of protecting cotton by dusting with planes. The machines are owned by the War Depart- (turn to page 47)

C Here is the article that received first honorable mention in the prize essay contest.

What Fertilizers Have Done for Georgia

By Paul W. Chapman

Supervisor of Agricultural Education
College of Agriculture, Athens, Ga.

DURING the past eight years, from 1915 to 1923, Georgia has used 13 per cent. of all the fertilizer sold in the United States. In 1917 Georgia used more fertilizer than any other state in the entire country; and in the annual sales of the last ten years Georgia has never ranked lower than third among the states in the total tonnage purchased.

The cost of the 6,455,978 tons of commercial fertilizer that Georgia has used on her last eight crops has been considerable, but is a small item when compared with the \$2,058,088.00 that these crops have returned to the farmers of the state.

According to the 1920 census Georgia has more farmers living within her boundaries than any other state in the union—except Texas. And the money from her cotton and corn, her fruits and truck crops has put food in the mouths, clothes on the backs, and roofs over the heads of more than two million farmers and their families. It has built new schools and

churches in every one of her one hundred and sixty counties. It has built miles of hard surfaced roads, and paid for a quarter of a million cars and trucks. And not only has this money benefited the 74 per cent. of the state's population that live on farms, but it has kept in motion the wheels of commerce, business, and industry. The proud spirit of Atlanta is the reflection of success that the business of the Georgia farmer has brought to this enterprising metropolis.

Fertilizers made this two billion dollars!

Without fertilizers Georgia's acre yields would be too low to pay for seed and cultivation.

WHEN hard times came in 1921 the state's fertilizer purchases in one year dropped from 978,000 tons to 535,638. And while prices at the end of that season were very much out of line still it is interesting to note that, with the decrease in the amount of fertilizer used, the value

of the crops produced shrunk from \$325,000,000 to \$177,986,000. That year many farmers were unable to buy fertilizer and planted their crops without anything under them—as we say in the South. That year I traveled over every county in the state and saw thousands of acres of corn that didn't put on an ear; and cotton that never matured a boll.

The Year Book of the U. S. Department of Agriculture tells us that our cotton production that year dropped forty-eight pounds of lint to the acre. A number of persons would immediately say that this was due to the infestation of the boll weevil. There can be no doubt that this was a factor, but during the past season we have had more weevils than ever before and still the gin records to date show that our yields will be back to normal. The reason is that with the fair returns for last year's crops the Georgia farmer was again able to buy fertilizer. No crop in Georgia can be made without it.

Fertilizers have done wonders for Georgia, in that they have made possible the present development of the "empire state of the South." Yet they can do more. Our acre yields are very low.

ONLY the Carolinas use more fertilizer than Georgia. Yet this is surprising when one realizes that they are states relatively small in area, while Georgia is the largest state east of the Mississippi. Their applications are much heavier than ours, and we can profit from their example. In 1921 when our fertilizer tonnage was reduced to about one-half of the normal amount, the return per acre from our corn crop

was only \$7.95; while North Carolina realized \$15.05; and South Carolina \$12.06.

Martin V. Calvin, Statistician for the Georgia Department of Agriculture, recently in an article addressed to the farmers of the state placed emphasis on this point in the following words:

"WE have not been using high-grade commercial fertilizer intelligently, that is,—liberally. We have been practicing false economy without thinking so. We should use not less than 350 pounds of high-grade fertilizer per acre under corn. Four hundred would be better. We ought to use 400 to 600 pounds of high-grade goods per acre under the best variety of cotton."

Just how much more we may expect from the more generous use of fertilizer is difficult to say—but today we know that Georgia is prosperous. We have made a good crop and it is bringing a good price. This is evidenced on every side. It is reflected in material things and in the spirit of our people.

That's what fertilizers have done for Georgia.

Our readers will find on page 54 of this issue the announcement of a prize essay contest offered by the Potash Importing Corporation of America exclusively to BETTER CROPS readers. Under the circumstances we have decided to postpone announcement of the second BETTER CROPS contest until this one is finished.

Making the Best of a Scanty Supply of Moisture

By M. R. Lewis

Associate Prof. of Agricultural Engineering
Moscow, Idaho

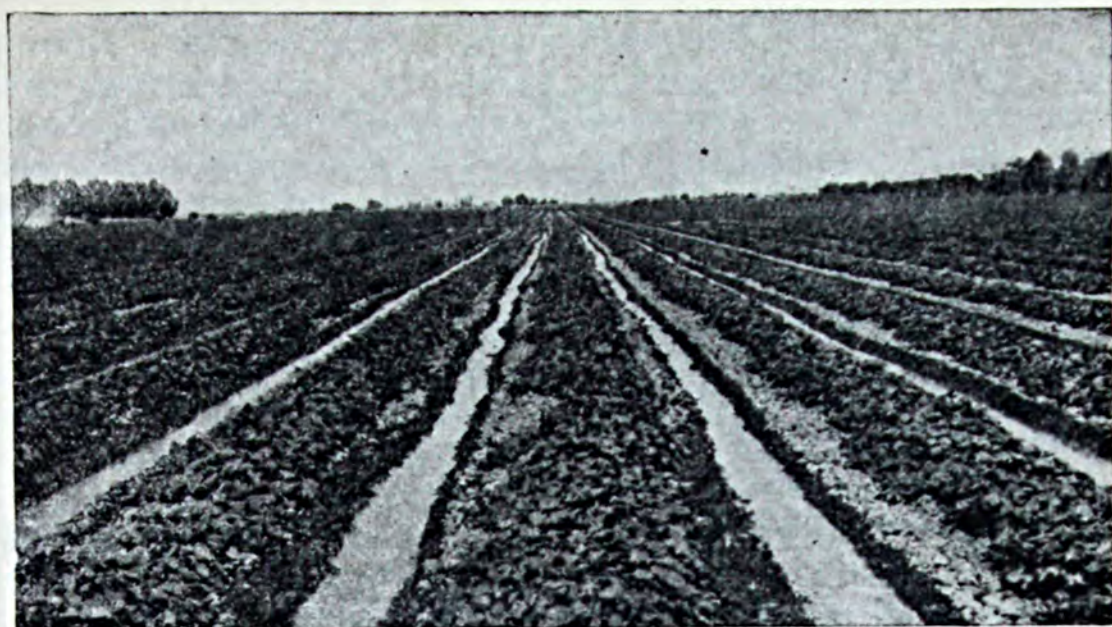
OUT in the west where skies are blue and clouds are rare the engineer has come to the aid of the farmer and supplied the life-giving water through canals and ditches. This artificial rain, technically known as irrigation water, costs real money, generally more than the land itself. Therefore it behooves the owner of this expensive water supply to make the best possible use of it.

There are many ways in which the water slips away unless the greatest care is taken. The largest single loss is by seepage from the canals and laterals. This loss can not be controlled by the individual farmer. Next comes the loss by deep percolation from the fields on the coarser soils. This loss is more or less controlled by proper preparation of the land and careful irrigation methods. Saving the water which is lost in these ways helps the community by decreasing the evil effects of waterlogging and by increasing the area of land which may be irrigated from a given water supply. However, under the more usual methods of water distribution

and accounting the benefit to the individual farmer is not immediate. Since, as the much abused scientific management shark has abundantly proved, it requires an immediate and definite reward to induce the workman to put forth extra effort some more prompt and personal return must be forthcoming to induce the farmer to save water.

On projects, for instance those of the U. S. Reclamation Service, where an intelligent effort has been made to secure the best use of the very large investment in irrigation works, part or all of the water used by the farmer is paid for on a quantity basis. On such projects a definite saving in the annual water bill is secured by the irrigator who saves his water. Under such conditions every effort should and generally is made to secure the greatest possible yield from each unit of irrigation water, but on most irrigation projects some other method of securing the cooperation of the farmer in getting the maximum yield from each cubic foot of water must be found.

There is one method by which



© Underwood.

This vast canteloupe crop in the Imperial Valley, California, was made possible by irrigation

every farmer can get more out of his available water supply, whether provided by Providence in the shape of rain or by his own efforts in the irrigation canal. This method is by keeping up the fertility of his land.

Roughly a fertile soil will produce twice the crop with the use of the same amount of water that an unfertile soil will produce. Much experimental work both in the laboratory and field has demonstrated this fact. The following results of work done at the "Duty of Water Experiment Station" of the U. S. Dept. of Agriculture at Twin Falls,

Idaho, are typical: Two plats of approximately three-tenths acre each were planted to sugar beets. Plat No. 1 had never been fertilized in any way while plat No. 2 had been supplied with barnyard manure three times in the preceding two years. Sub-plats No. 1 of each plat were given four heavy irrigations of a depth of nine inches of water each; sub-plats No. 2 of each plat received four medium irrigations of six inches and sub-plats No. 3 of each plat received four light irrigations of three inches each. The following table gives the results of the experiment in detail.

PLAT No. 1

Sub-plat	Total Irrigation feet depth of water	Yield in Pounds	
		Per acre	Per acre foot of water
1	3.47	17,480	5,040
2	1.85	20,660	11,170
3	1.02	18,930	18,550

PLAT No. 2

1	3.06	35,700	11,670
2	2.09	40,300	19,280
3	1.03	32,800	31,840

In this case the beets on the well-fertilized soil produced approximately twice the tonnage per unit

of irrigation water which was produced by those on the non-fertilized soil. (turn to page 51)

Corn Rheumatism is Cured *with* Potash

By *Albert A. Hansen*

Purdue Experiment Station, Lafayette, Indiana 4

C, *A simple test and a simple remedy for a common disease.*

A SHORT time ago I had the pleasure of hearing a lecture by Dr. E. V. McCollum, discoverer of vitamins and nutrition expert extraordinary. Among other remarkable statements he declared that over fifty per cent. of our children suffer from a disease called rickets, that rickets is the result of faulty nutrition, and that the trouble can be avoided or cured by the simple expedient of adding a small amount of cod-liver oil to the child's diet.

Unknown to many of us, the plant world also has nutrition diseases with remedies just as simple as the control of rickets. Prominent among the crops that suffer in this wise is corn, but, fortunately, G. N. Hoffer and J. F. Trost have recently discovered how to diagnose and cure nutritional trouble in corn. Their work with plants is similar in many respects to the work of McCollum with animals. This team of plant nutrition experts is part of the botanical staff of the Purdue University Agricultural Experiment Station and their work is being conducted with the cooperation of the Office of Cereal Investigations at Washington, D. C.

Perhaps the most valuable result of their research is the discovery that much of the dwarfing and poor yielding of corn is due to faulty nutrition, the same as rickets in children, and they have found a simple method of diagnosis and an equally simple prescription to cure the trouble. In the case of corn, however, the seat of the trouble is in the joints, so perhaps we can better call it corn rheumatism, instead of corn rickets. And corn rheumatism is a common disease throughout the length and breadth of our land wherever the soil has been overworked with corn.

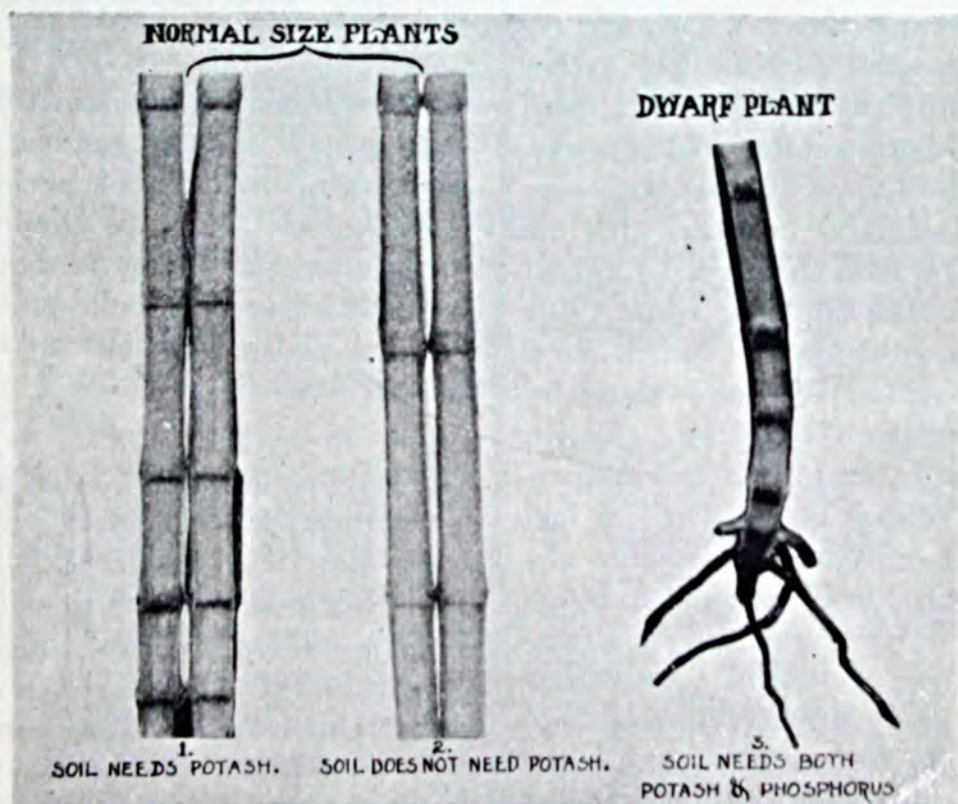
HAVE you ever experienced trouble in the shape of poor yields from corn plants that seemed to reach normal height, but refused to ripen ears properly? Next time you have difficulty of this character, slit a few of the corn stems lengthwise and the chances are you will find that the interiors of the joints are considerably darker than the remainder of the stem tissue. The darkened areas are due to an accumulation of iron and other metals

that break down the tissues of the joints, thereby wrecking the food transportation systems of the corn plants and the backward ears are a direct result. Now comes the most valuable part of this interesting discovery. According to the results of extensive field and laboratory tests conducted by Hoffer, Trost, and their associates, the nodal accumulation of metals is due purely and simply to a lack of available potash in the soil and the trouble can definitely be prevented by the addition of potash. In other words we have here a perfectly simple field test to detect the need of available potash in the soil.

PERHAPS in addition to ripening ears slowly (or not at all), the corn in some parts of your county is also

considerably stunted and a lengthwise section of the stem reveals the tell-tale darkened joints. Well and good—once more Dr. Hoffer has prescribed the remedy. In this case the trouble is clearly due to a lack of both available potash and phosphorus in the soil. Again we have a simple test to reveal the need of both phosphorus and potash, as indicated by these dwarfed plants.

Many farmers and experimenters have attributed these common difficulties to sour soils, but extensive field tests have failed to support this theory. On the other hand, the application of potash, either as salts or in manure, to soils that have habitually produced normal-sized, dark-noded, low-yielding corn plants has invariably corrected the trouble. Potash is the cod-liver oil that cures the "rheumatism" (turn to page 49)



☐ Corn plants 1 and 2 were grown in the same soil under similar conditions, except plant 2 was given potash at the rate of 250 pounds per acre. Plant 1 was normal in size but the yield was low, due to the slow maturing of the ears, while the yield of plant 2 was normal. Note the dark nodes (they are purplish-brown in color) in the longi-section of the stem of plant 1, indicative of the need of potash. ☐ The dwarfed, low-yielding condition of plant 3 combined with the darkened nodes indicates the need of both potash and phosphorus

Why Do Our Boys Leave the Farm?

By J. S. Malone

County Agent, Tulsa, Okla.

BECAUSE their name is not Smith, I prefer to call them the—Smiths. As I sauntered into one of the cattle barns at the State Fair at Oklahoma City whom should I meet but Mr. and Mrs. Smith? I know the Smith family well. Their farm is in an adjoining county to my own.

I first met them at their county fair several years ago. The father was an officer in the local fair. The mother was interested in household exhibits and all three boys were enthusiastic club members with fine exhibits of corn and hogs. I judged the livestock at their county fair three successive years and it was a pleasure to see the interest shown by each member of the family, all with some individual interest in some particular branch of the fair. A fertile, well equipped farm with plenty of purebred livestock, and comfortable farm home occupied by a family of five intelligent, industrious people make a fine picture of harmony and contentment that I like to remember. I had many talks with father and mother Smith and with each of the boys.

"Our boys are so interested in the farm," said father and mother Smith. "They have an agricultural instructor in the high school and the county agent makes frequent visits

to the farm. We hope our boys will take up farming as a business. Each of them has a good start in purebred livestock." The boys all said they liked the farm.

Two years ago I made my last trip to their county fair and was surprised to find the oldest son was not there. "He is teaching school," said the father, and in his voice was considerable pride and just a wee bit of pathos. "He graduated from High School," was the mother's explanation, "and thought he would teach a year." She said they were sorry to have him away from home but were hoping he would return at the end of the year and take up farming again."

THE first question I asked when I met them at Oklahoma City the other day was about the boys. Their youngest boy is at home; the oldest is still teaching, and the other son has joined the army. We were just talking it over: "It is hard for us to understand," they said, "why our boys wish to leave the farm. We have given them every encouragement. They have had livestock of their own and other opportunities to make money. Their education has been pretty well colored with agriculture. They always seemed so interested in every undertaking

on the farm, but when they get old enough they leave. The oldest boy is only twenty-one. It is true the youngest son is still at home and is as interested as can be in his purebred pigs. We sent him to the Annual Rally for club boys at the A. & M. College this summer, but both of the older boys were apparently as much interested as he and we are afraid that in a few years he will leave us to manage the farm by ourselves."

Thus I found them at the State Fair—a middle-aged couple sitting on a bale of hay, reflecting upon the work of a lifetime, almost accusing themselves that their fine, manly sons are not to be farmers. Much of the toil and thought of mother and father has been directed toward a certain goal, which includes three adjoining farms with their three sons, whom anyone would want as neighbors, as the operators.

With longing hearts and appealing questions they put it up to me. What could I say? What would you have said? I did what I could to console them. Perhaps the youngest one would realize his responsibilities as well as his opportunities and stay by the farm. "With parental wisdom you have taught your sons to think," was my explanation. "They have been thinking for themselves and possibly they are right. Any parents should be proud of the sons you have. Certainly you have done your part by them. Barring accident, success is sure to come to them even if it is not on the farm."

From the viewpoint of Mr. and Mrs. Smith, this is a sad case. The boys have had the education and experience necessary to fit them for the business of farming and the parents need (turn to page 52)

Jeffisms

Come down to earth;
no race can be won on
stilts.



How to become well-
to-do: become *hard*-to-
do.



If you must entertain
—entertain anything but
doubts.



An iron constitution
will not help you if you
are rusty on facts.



After some men I know
get a few more degrees
they will be almost up to
zero!



To some people insur-
ance is a sure-fire propo-
sition.



The only place a wood-
en head is a money maker
is on a merry-go-round
steed; and he goes round
and round and gets no-
where—and the boss gets
the money.



Great oaths from little
achings spring.

Jeff

Where Once Algonquins and the Bears Held Sway

*☪ Pioneer life is disappearing.
What will take its place?*

By K. D. Scott

County Agent, Warren, N. Y.

IT is something awesome to consider—the bleak, freezing barrenness of these mountains during winter weather. There are weazels and a few whitened rabbits and some squirrels, with beaver and muskrat in the streams. Barring the deer, practically our only natural life is rodent life, equipped with fur and winter's hoard to withstand the zeroness of 35 below! Small wonder that the Pioneers were often overcome by the exposure and privations they experienced. Think of the horror which incapacity must have held for them. We have isolated families now which often might freeze to death, but for the timely help of neighbors.

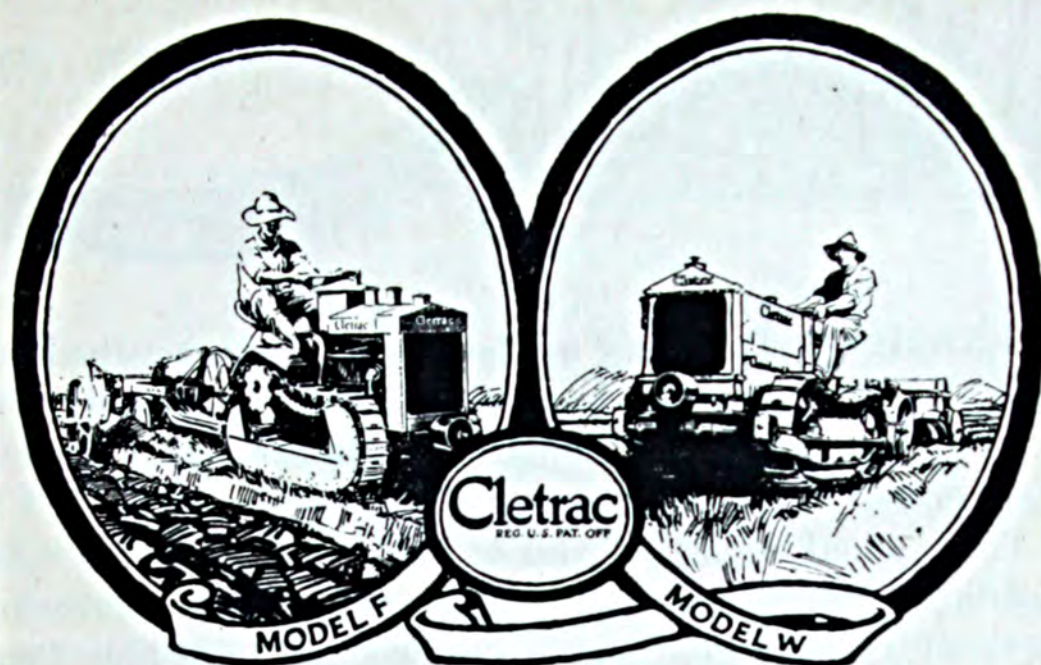
I have in mind now a beauty spot which any man might choose to settle on if he saw it first in the verdant green of spring. In at the northern end of Brant Lake and back a mile or so from the water's edge, but commanding a view of lake and rocks and woods, the beauty of which must have struck the Pioneer when he first saw it and built his cabin there. For there it stands today, built solid of the logs, first cut to clear that opening between the cabin and the precipice of granite which forms a natural, unbreakable fence around the northern boundary. This log cabin

seems utterly alone amidst miles and miles of rugged country.

Last spring right in the crucial planting time, the father in this cabin broke his leg, and added to the pain he suffered was the worry of the spring's work all undone. Within three days his mind was set at rest. Fifteen neighbors, their own planting still unfinished, came from several miles around, and before night the miracle of two weeks' work was done, and the potatoes and oats were all run in. Just this much altruism goes to show that the spirit of mutual aid will overcome the risks of isolation even in these days.

Think of this man's lot, however, and the anguish and anxiety of his good wife and the three little ones, if, as in pioneer days, there had been no party line and no neighbors in on it when the doctor was called!

Our activities in taming the wilderness and lumbering off the forest make us feel near to the pioneer spirit and condition. Much has been done to make our lives secure. Our children ramble through the woods where once Algonquins and the bears held sway. Wild life and many elemental risks have been subdued, but in spite of all improvements and of our relatively tame do- (turn to page 52)



Plowing at the rate of 6 to 10 acres a day, Cletracs make quick work of the biggest fields

Bigger Profits for the Farmer

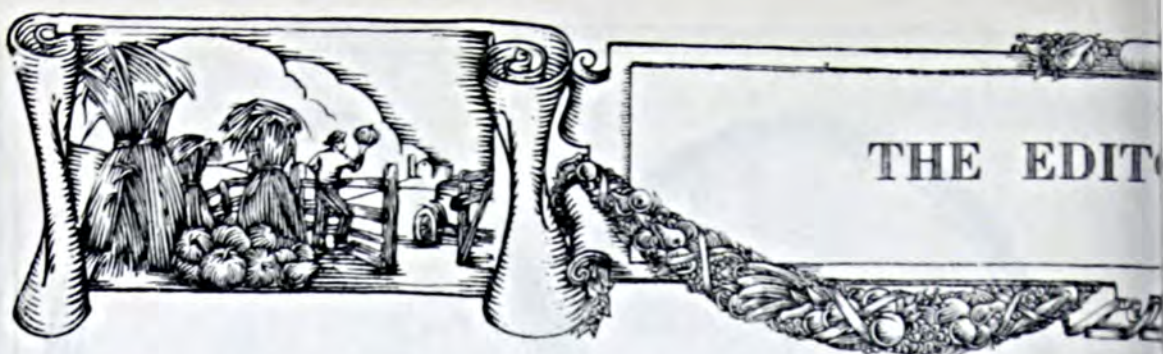
Not only do Cletracs enable farmers to plow many acres in a day, but they also make every acre turned over produce more, and greater yields mean bigger profits to the farmer.

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



IS FARMING Perhaps I am letting my hopes get the best of
A SCIENCE? me, but I cannot help believing that the day
will come when agriculture will be regarded as
a science by everyone.

The annual report of the U. S. Director of the States Relations Service shows that in 1922 farmers throughout the country conducted 15,235 fertilizer and 4,035 lime demonstrations and that 105,000 farmers modified their methods of soil management.

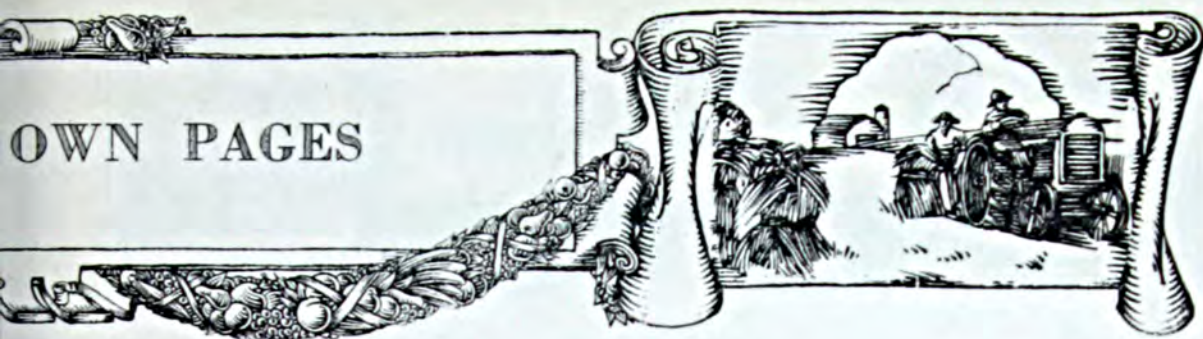
This is a wonderful tribute to the work of county agents and experiment stations. I doubt if many of the farmers who conducted these demonstrations thought of them as "scientific work." Probably some of them would object to its even being called that. The point, however, is that consciously or unconsciously they used scientific methods and by so doing marked themselves as progressive farmers.

No one, I hope, will misunderstand me when I say that many farmers today regard farming as a trade. The big distinction between a trade and a science is that, in the former, there is no place for experimentation, while in the latter there is constant experimentation.

Like all of us very human beings, the farmer tends to follow the well-worn path of tradition—to *repeat* each year what he did the year preceding. If farming were a trade, like brick-laying for instance, this would be all right. One brick-laying job is like another and to experiment might have fatal results.

But no two farmers are faced with exactly the same problems. Each farm differs to a greater or less degree from every other. To get the most out of his own farm each farmer has to find out the facts about his soil and crops, then analyze these facts and finally experiment until the best practical solution is found.

This may sound like an imposing program but in reality it is not difficult. With the help of county agents, experiment



stations and other advisors, many thousand farmers are already doing just this thing.

Why bother about science? Simply because it is one of the chief ways of making farming profitable—a thing we are all anxious to see accomplished.

Farmers are rightly suspicious of the kind of science that is dogmatic in its methods and barren in its results. Their confidence must be won by showing that scientific methods (call them by any name you will) are the surest road to profit. If the farmer understands that you are trying to increase his profits, he is likely to go a long way to follow your advice.

We who have contact with the farmer should constantly strive to get this viewpoint before them—that, unless they get out of their soil sufficiently large crops to pay overhead and leave a profit, they can never make money, and that the difference between large and small crops is largely a matter of elemental science.

END OF With this issue BETTER CROPS fulfills
VOLUME ONE Volume One of its career. Those of us who
are associated with it feel that it is now firmly
established in its field. It is becoming more and more to be
recognized as the mouthpiece of scientific agriculture; its col-
umns are an open forum for the presentation of scientific farm-
ing knowledge.

The largest room in the world is that room called "Improvement"—and no one realizes more fully than "old Jeff" just how large is the room for improvement of BETTER CROPS.

But we do not expect a colt to draw a plow. Strength—real strength—comes with age and exercise. BETTER CROPS is young—it is growing—each month it becomes more interesting.

Yours to a cinder,

Jeff McIvermid



Right You Are!

Dear Jeff:

I am very much afraid that your article on economical wives will bring a veritable hornet's nest about your ears. However, as my own home has not as yet been disrupted by it—the principal reason being that my husband hasn't read the article, being away from home—this letter has no sting—for you. Some of your remarks and suggestions, however, made me realize one fact more strongly than ever. Nowhere else, except on the farm, can a husband's and wife's interests be so absolutely one. I said "can," you notice. I am very well aware that their interests don't always coincide, even there. But the farm life offers the greatest possibilities for ideal partnership.

Every summer my husband's work takes him all over the northern section of the state, through both the fertile valleys and back-hill districts. His job has to do with better crops, too; a crop, by the way, that I do not find mentioned in your magazine—trees. All over the country people are trying to get better and more crops of trees, and also to take better care of what they already have. My husband's work has to do more directly with this latter side of the problem. He, with myself and the children, was calling on fire wardens, and while the men talked, the wives usually talked too. The fire wardens are usually farmers whose farms are either in a thickly wooded section, or overlook thick woods, very often the house being perched on top of

a frightful hill. I confess I expected to find very little interest on the part of these back-hill farmers in forests and trees; and my surprise was great when we found by far the majority of the men *and* their wives had a keen appreciation of the necessity and value of the work. And in many cases the women were even more interested than the men.

It means something for a busy farmer to take on the duties of fire warden. He may have it easy, perhaps not a single fire in a season; but on the other hand, a bad fire is extremely likely to come at just the busiest time for him. It must be extremely exasperating to be called to fight a fire in the middle of the spring plowing, or in the rush of haying or harvesting; and yet whenever the men spoke of the difficulties of such a time, the wives almost invariably began to tell how splendidly the men worked, and how quickly the fire was brought under control!

I seemed to have switched off the track quite a bit. But I know that many, a great many farmers' wives feel the same sense of interest and cooperation toward the other items of farm life. I've known of women who argued passionately in favor of planting alfalfa; and also were quite excited over pure-bred Berkshires. Whether all this interest and cooperation results in an increase in financial gains, I can't say. Probably some of the county agents could tell us that. But not all gain can be measured by dollars and cents, and the mental, moral, physical, yes, and spiritual increase from such a partnership is surely worth something.—G. T.



Making It Clear

Dear Jeff:

I am writing to correct an impression left by a letter of mine published in the November BETTER CROPS. I trust you will give it space. Some of my friends pointed out that the letter sounded like I did not believe in farm organizations. Any person who does not believe in farm organizations or any other sort is a hermit or a bolshevik. In our Dairy Extension work here in Michigan, we accomplish the best results working through organizations. During the past year the number of Cow Testing Associations has increased two hundred per cent., and we know a dairy farmer gets the most direct benefit through joining such an association. It is easy also, to see the value of cooperative marketing organizations, provided they are properly managed.

I do not believe, however, that we can accomplish the results we had hoped in our national farm organizations unless we hold our membership. I still hold my membership in the largest one of these, but we cannot get away from the fact that members are not sticking. And until we get a class of farmers who will go into one solid organization and stick, we will not accomplish the best results from that organization.

All the organizations in the world will not make farming profitable for the farmer who raises 10 bushels of wheat per acre (in Michigan), or who milks a scrub cow. If he waits for organization or legislation to help him he is on the wrong track. That man is either going to change his methods, get off the farm, or starve.

Yours for the *real* farm organizations,

J. G. Wells, Jr.,
Michigan Agricultural College.

What Makes the Farmer a "Soil-Robber"?

Dear Jeff:

T. Mulder of South Dakota is not the only farmer who has been a soil robber and owned up. And I have heard speakers accuse such farmers of injustice to the country and to posterity in so depleting our food-producing resources.

No doubt the man who has farmed without restoring fertility to his acres by spreading manure and growing legumes, has been drawing on his capital, but I hate to hear him called hard names for doing what conditions forced him to do—produce food at the least possible cost per unit.

Crops now cost more to raise per bushel or per ton, because of depleted fertility. This is hard on the farmer who sells at present market prices, but when our run-down acres will no longer produce enough to supply our people, he will turn to fresh, virgin lands, or the consumer will pay enough to let our farmers include the expense of replacing fertility in the prices they receive. Then our lands will be restored to their pristine fertility.

Soil robbers? No, rather manufacturers of food, who, caught in a fierce competition, have been unable to provide a reserve and sinking fund out of receipts barely sufficient to cover operating expenses, and have seen depreciation eating up their plants. In time, users of their products will pay enough to permit repairs and renewals out of current income.

Or, maybe, more efficient managers will take over the plants, adapt these farms to new crops, and with new methods assist nature in inexpensive ways to manage the restoration.

Very truly yours,
W. W. Clark, Stevens Point, Wis.



Co-operation With County Agents

The Agricultural Service Bureau of the American Agricultural Chemical Company was organized before the first County Agent made his appearance in the United States. The primary object of the Bureau has always been research. Through the years, valuable data have been gathered regarding soil and crop conditions in various parts of the country, and this information has been made freely available to all.

The coming of the County Agent meant the gaining of a

valuable ally in our research work. We met him on common ground, for we were both seeking the same thing—facts about the soil and crop needs of his county.

In five Northern and Middle-West States alone, our Agricultural Service Bureau has worked with no less than 154 Counties Agents in conducting the co-operative fertilizer tests. The valuable information gained from these and other tests is yours for the asking. Consult our Agricultural Service Bureau regarding your soil problems.

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"DOUBLE A" QUALITY
FERTILIZERS



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

Lincoln County merchants and farmers have formed a county-wide association for promoting the planting of oats, corn crops, and truck. They are negotiating for fertilizer enough for the county to be purchased at one time. We are creating the spirit of cooperation.—*E. F. B. Sargent, Lincoln, Mississippi.*

One of our growers of certified corn had considerable trouble in getting laborers enough to harvest his crop before a frost. Everything pointed to the fact that most of his seed would be left in the field and caught by the frost. Due to this condition a party of business men was organized and taken out to the corn field. The party was divided and placed under an old corn picker as captain, and the rivalry between the teams resulted in about 600 bushels of corn being picked. All it cost the farmer was dinner and supper for the men.—*Murray E. Stebbins, Valley, Montana.*

We will put on a great educational fair at the county seat, showing benefits from use of lime, fertilizers, legumes and livestock farming. Tobacco cooperative making money for farmers and a great crop of bright tobacco made this year. The sale of fluid milk has increased 20 per cent. in the last year. Cattle are being tuberculin tested and milk sold on a butter-fat basis. White Plymouth Rocks are forging to the front by reason of their merits. Guernseys same. Durocs same. Labor a serious problem.—*T. D. Burfoot, Chesterfield, Virginia.*

The cotton crop is very short. Many farmers will be able to meet

payments for all of this year's expenses, but very few old debts will be paid. I think farmers have learned their lesson. They will not plant all their land to cotton again. As an evidence that they are more inclined to diversified farming, they are putting in more fall oats than ever before and the demand for pure-bred poultry increases daily, showing that they will not depend on one crop system any longer.—*W. M. Wiggins, Winn, Louisiana.*

Largest crop of early celery in history of county, and it's looking fine. Big new cooperative marketing association formed.—*B. F. Whitner, Jr., Seminole, Florida. Post Office, Sanford.*

A cooperative cheese factory was established at French, New Mexico. The factory is farmer owned and an experienced cheese man from Wisconsin secured to operate the factory. The company incorporated under the laws of New Mexico. They opened the factory with a price of \$1.96 a hundred pounds of whole milk, and have been operating since September 1.—*Colfax, New Mexico.*

People by public subscription put the work of County Agent back into Knox County after the Court had discontinued it against the protest of the people. More interest being manifested in county agent's work than there has been in my six years' experience here in Knox County. Best season in years. Cattle doing fine. Cold weather but no damage.—*H. M. Cantrell, Knox, Texas.*



IT has been said that the educated man is he who follows the standards of truth and beauty, who employs his learning and observation, his reason, his expression for purpose of *production*, that is, to add something of his own to the stock of the world's ideas.

The line of least resistance for the fertilizer manufacturer is to compound various ingredients without respect to their chemical properties and their relation to the soil and crop. The past two decades of increasingly intensive farming have been exemplary of the dangers of soil exhaustion, with the accompanying toxic conditions.

The ingredients making up I. P. THOMAS FERTILIZERS are specially selected to accomplish results, to minimize losses resulting from adverse weather and to furnish plant nutrition by which we mean assimilable, productive plant food.

I. P. THOMAS FERTILIZERS are sold to the farmer that he may *profit* from their use.

In Every Fair Bargain, Both Parties Gain.

I. P. THOMAS & SON CO.
Philadelphia, Pa.



South Increases Use of Fertilizer

J. N. Harper, Director of the Soil Improvement Committee of the Southern Fertilizer Association, has issued a comparative statement of the fertilizer tonnage for the Southern States for the periods of July 1, 1920, to June 1, 1921; July 1, 1921, to June 1, 1922; and from July 1, 1922, to June 1, 1923. These figures were compiled from the report fur-

nished by the commissioners of agriculture and represent the tax tag sales.

With the exception of Louisiana, Tennessee, South Carolina and Virginia, cottonseed meal sales are not included. In these states the records are not kept in such a way as to make it possible to separate fertilizer proper from cottonseed meal.

States	Period Covered	1920-1921	1921-1922	1922-1923
Alabama.....	July 1-June 1	179,621	293,540	435,674
Arkansas.....	July 1-June 1	24,255	33,630	80,704
Florida.....	July 1-June 1	222,735	314,216	360,653
Georgia.....	July 1-June 1	556,397	522,031	666,328
Louisiana.....	July 1-June 1	38,803	64,687	107,390
Mississippi.....	July 1-June 1	48,590	129,240	205,505
North Carolina.....	July 1-June 1	678,559	909,401	1,073,563
South Carolina.....	July 1-June 1	617,246	498,595	674,360
Tennessee.....	July 1-June 1	63,416	95,824	102,447
Texas.....	July 1-June 1	19,417	25,096	76,329
Virginia.....	July 1-June 1	389,184	421,572	437,176
		2,838,223	3,307,832	4,220,129

Call for Fertilizers Grows in Charleston

Charleston, S. C.—The bumper tobacco crop in the South Carolina tobacco belt and the generally high purchase prices which have prevailed since the opening of the season have created an optimistic atmosphere in fertilizer manufacturing circles here. Not only does the success of the tobacco crop indicate heavy sales for the winter and early spring, but it means increased collections on old accounts. The success of the crop is having a good effect on business

in all sections of the State.

Charleston's principal industry is fertilizer manufacturing. In anticipation of a heavy demand during the early months of 1924, purchases of raw materials by manufacturers and brokers have been big. Charleston imports nitrate of soda from Chile in big quantities, while potash from Germany is also received. For the manufacture of sulphuric acid, Texas sulphur has almost replaced Spanish pyrites.—Special to Business Section *Public Ledger*.

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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
Southern California Fertilizer Co.
Spreckels Bros. Comm. Co.
Western Meat Co.
San Francisco—
A. M. Bloomer Co.
California Fertilizer Works
Getz Bros. & Co.
Growers' Fertilizer Co.
Meyer Wilson & Co.
Mountain Copper Co., Ltd., Fert.
Dept.
Pacific Bone, Coal & Fert. Co.
Pacific Guano & Fertilizer Co.
Potash Importing Corporation
Western Meat Co.

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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—
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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.
Virginia-Carolina Chemical Co.
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—
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.
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Norfolk—
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New York—
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Armour Fert. Wks. (East. Hdqrs.)
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National Aniline & Chemical Co.
Nitrate Agencies Co.
Virginia-Carolina Chemical Co.
Zaldo & Martines Exchange Co.

NORTH CAROLINA

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F. S. Royster Guano Co.
Swift & Company
Durham—
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Greensboro—
American Agricultural Chem. Co.
Armour Fertilizer Works
Henderson—
American Agricultural Chem. Co.
Lillington—
Farmers Cotton Oil Co.
Harnett Oil & Fertilizer Co.
New Bern—
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Raleigh—
F. S. Royster Guano Co.
Tarboro—
F. S. Royster Guano Co.
Washington—
Pamlico Chemical Co.
Wilmington—
Acme Manufacturing Co.
Nitrate Agencies Co.
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—
C. C. Cate & Co.
Portland State Co.

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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

Anderson—
Anderson Phosphate & Oil Co.
(Continued on next page)

(Continued from preceding page)

Charleston—

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

Columbia—

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

Portsmouth—

G. Ober & Sons Co.

Richmond—

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Fighting Mr. Boll Weevil from the Sky

(from page 25)

ment and are not well adapted to the work in hand, but Mr. Coad believes the work can be done in this way much more cheaply and more effectively than by ground machines. At the same time that the cotton pest problem is being worked on, tests are being made to see if the same air method can not be used in fighting pests of other crops, the alfalfa weevil, for instance, the potato beetle and orchard insects.

While these doughty, flying entomologists were learning to control the weevil and some of his henchmen, they discovered a surprising fact which is of fundamental importance in dusting crops for the control of insects. It had always been thought necessary to do the dusting at night or in the early morning so that the dew on the plants would cause the fine particles of poison to stick, but in using the airplane they found that the dust would stick well when applied in the daytime. The theory is that the swiftly rushing plane produces static electricity by friction with the atmosphere and that the dust particles in the hopper become charged with positive electricity. When the dust is thrown out in the stream of air which is moving at a speed of from 125 to 135 miles an hour each particle is charged still more because of friction. Now, the plants growing in the earth carry a negative charge of electricity and, since opposite charges attract each other, the dust particles are attracted to the plants as soon as they drift or are blown near them. In a way these particles of poison may be said to be tied on to the plant by hands of magnetic force, but of course they are not strong enough

to prevent rain from washing them off.

Naturally the investigators thought it would be a fine thing if the dust from all sorts of dusting machines could be made to cling to the plants in this way so that the poisoning could all be done in the daytime. They have set about devising apparatus to do this trick, if possible. High-frequency, high-voltage generators are being made to put on the dusting outfits and an attempt will be made to charge the powder in the hoppers with electricity generated artificially and not as a by-product of motion as in the case of the plane. The mule, of course, who pulls the ground duster, usually does not move fast enough to produce a great deal of friction with the atmosphere, unless it is with a backward motion of his hind legs.

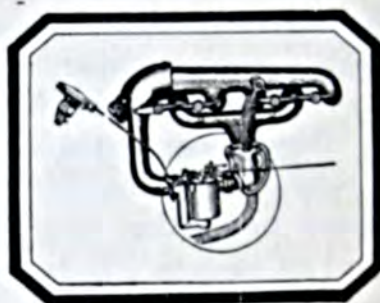
It is interesting to know how the investigators first got the idea that the planes were discharging electrically-charged dust. One day a dusting plane flew over a bank of fog and threw out a load of dust which settled down on the cloud. Almost immediately the fog dissolved below it or, rather, was precipitated in the form of rain, a result similar to that produced in the making of rain by throwing out electrically-charged sand from planes into vapor clouds. The idea promises to be of more value in dusting crops than in bringing rain to thirsty land.

One thing that is greatly needed, according to Mr. Coad, is a plane specially designed to do the work rapidly, without waste of material and without undue danger to the pilot. The War Department machines are driven by 120-

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horsepower Liberty motors, and travel in the air at a speed of 90 miles an hour, which means that they land at a speed of 70 to 75 miles, a rate which keeps the pilot busy dodging woods, buildings and fences. Also such speed makes vision rather bad and causes the loss of much of the dusting material at the ends of the fields. The planes now used are made to move fast, but not for carrying loads, the capacity being only 350 pounds of calcium arsenate in the hoppers which have been built in or hung on the fuselage. It requires only 3 minutes to discharge this small load, which means much time lost in going back to the landing field for more poison.

Mr. Coad says they need planes designed for this particular job, and he has succeeded in getting some airplane manufacturers interested in the problem. He thinks that a plane for this bug-killing business should be designed to travel at 50 to 60 miles an hour and to carry a ton of calcium arsenate or other poison dust. A plane of this type could be landed at a speed of 20 to 25 miles an hour, a safe speed, vision would be good and, if the plane is properly constructed, it would have power to "zoom" up quickly at the edges of the fields so as to prevent wasting poison on adjoining land where there is no cotton.

Even if the airplane is generally adopted for dusting cotton on large plantations and by associations of smaller growers, it is probable that for a long time much of the dusting will have to be done by ground machines of one kind or another. But the plane will always have the advantage of doing the job in a hurry and of being able to travel over the fields no matter how recent the rains or how muddy they may be.

Last summer a field at Tallulah, badly invested with the ravenous leafworm, had been dusted in the afternoon, when a heavy rain came up and washed off all the poison. It was necessary to poison again, and very quickly, to save the plants from being stripped of their leaves. The landing field was on well-drained land and the next morning a plane was run out and loaded. In spite of the small quantities of dust that could be carried in the hopper, within 46 minutes 111 acres of cotton had been dusted and saved from the pest. Ground machines could not have gone into the fields for another day or so and their progress would have been infinitely slower.



Corn Rheumatism is Cured with Potash

(from page 31)

in the joints of corn. Likewise, when the plants are stunted and the interior shows dark-colored joints, numerous field tests have rarely failed to bring the yields back to normal after the application of potash and phosphorus.

As a result of the work of Hoffer and Trost, the long-looked-for simple field tests to detect the need of potash and phosphorus on corn land have at last been discovered. Now let the county agent get busy with his knife, slit the stems of dwarfed and poor-yielding corn and examine the interiors for darkened joints. And when the shady joints are found, the potash or potash and phosphorus remedy is perfectly simple to prescribe.



The Harvesting of the Crop

*Is the final test of the
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One of the difficult problems you have in the growing of any crop is to determine the kind and amount of fertilizers to use for the most profitable yield.

Through our Agricultural Service Bureau, which is in touch with the fertilizer practice on the best farms from Maine to Texas, we are in the position to give our customers the benefit of our experience and observations as to the kind of fertilizers to use on your soil. Consult our Agricultural Service Bureau about your soil and crop problems. This service is free. Address

Agricultural Service Bureau

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Savannah, Ga.
Shreveport, La.
Wilmington, N. C.
Winston-Salem, N. C.

Scanty Moisture

(from page 29)

Much other data could be cited to show that a given amount of water will produce much greater yields on fertile soils than on unfertile ones. Where the rain which falls on good and bad land alike is relied on for soil moisture the effect of greater fertility is naturally thought of in connection with the yield per acre of land. Where the water is bought and paid for indefinite quantities the yield of crop per unit of water is often the more important factor and it is then realized that increasing fertility makes for decreasing water requirements per crop unit.

In either case the rule is *Maintain Soil Fertility* if you expect the most profitable results from farm operations.

Irrigation of Potatoes

Bulletin 173 summarizes the results of twelve years' experiments in the irrigation of potatoes, under conditions where the rainfall for the growing season, April 20 to October 1, is five and one-half inches and the average evaporation is about twenty-four inches for the period. The main experiments were conducted on the Willamette silty clay loam, which has a usable moisture capacity of nearly two acre inches to the acre foot.

* * *

In Central Oregon experiments, sulfate of potash increased the yield per acre inch from twenty-four and one-half bushels on untreated to

thirty-nine bushels on treated land. In the Eastern Oregon experiments, irrigation of five to nine inches depth an acre has given the best results; and in several of the potato-producing sections, the best yields have frequently been obtained with six to eight inches total depth, applied in two or three doses.—*Extract from Biennial Report, Oregon Soil Investigations, 1918-1920.*

The Effect of Fertilizers Upon Cyclamen

Inasmuch as repeated inquiries have been made concerning the most essential fertilizers in the growth of cyclamen, Flint has investigated the effect of different fertilizers on both plant and blooms.

Varying applications of potassium sulphate gave more blooms with each increase where dried blood and acid phosphate were kept constant. Where all three were varied in the same proportion, the growth of the plant was improved with each increase, but the number of blooms was reduced. From these tests the following mixture seems best:

1 cubic foot of heavy garden loam.

$\frac{1}{2}$ cubic foot of sand.

1 cubic foot of well-decayed cow manure.

1 $\frac{1}{2}$ cubic feet of leaf-mold.

To 1 cubic foot of this mixture add 80 grams of dried blood, 40 grams of potassium sulphate, and 20 grams of acid phosphate.—*Annual Report of Director of California Experiment Station.*

Where Once Algonquins and the Bears Held Sway

(from page 34)

mestic life, all is by no means well with us, as the following facts do show.

Here we produce many of the necessities that go to make life possible, and although no great quantities of our food stuff products get away to town, yet there is enough and some to sell. We have no famine here, although most all our farmers must needs sell every little product and by-product that can possibly be spared, and right there's the rub. A recent investigation of the weights and measurements of school children in Warren County disclosed the amazing fact that here in this holiday and health resort 16.8% of the children attending rural schools—children of lumberjacks, farmers, and river drivers—are ten pounds or more under weight. Experts declare that this is simply due to malnutrition and bad air. Some crimes we cannot cure, but insufficient feeding of the young is one which should qualify the responsible individual for a cosy corner beside the eternal fires of Hell. While if it is the fault, not of the individual but of the economic system, it is certainly time we "civilized" farmer folk consigned the system to a safe though damned place. That sounds like destructive criticism, but wait—the affirmation of the new-old plan is ready for you just around the corner!

We can make society what we like, secure or insecure. We can have plenty or we can lack. Whether we are in forest or in fertile vale, it just depends upon the degree of decency and good will we have developed. We can solve most of

our problems quite simply by changing over to the spirit which possessed the fifteen (may their tribe increase) who labored for him of the broken leg. We must develop the "bee" spirit as an everyday human function instead of requiring catastrophes and accidents to bring it out.

Why Do Our Boys Leave the Farm?

(from page 33)

these boys on the farm. The trend of young men from the farm to the city does not worry me. Those who go to town must be fed and this insures a better market for those who remain on the farm. In all fairness it should be stated, however, that there are ups and downs in every business and when the great fundamental industry of farming is at its least attractive point one should remember that there are better days coming and it is a good time to stay with the farm.

Missiles and Mignonettes

I feel that something good comes out of every issue of the magazine you send to this office and trust that you will keep the good work going.—*T. C. Cravens, County Agent, Martinsville, Indiana.*

BETTER CROPS well worth your endeavor.—*E. L. Blordin, Huntingdon, Quebec.*

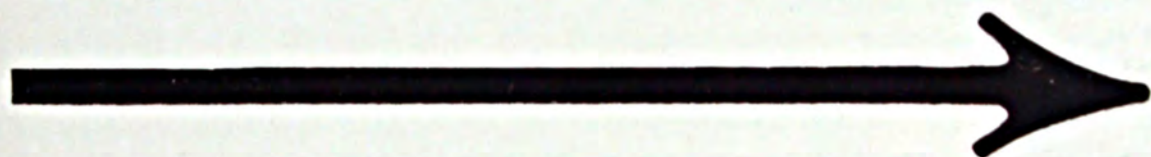
I believe your little publication is very much worth while.—*S. H. Dadisman, Director of Agricultural Education, University of Wyoming, Laramie, Wyoming.*

Thanks very much for the dandy little magazine, BETTER CROPS. It sure is up to the minute.—*R. B. Wyand, Hagerstown, Maryland.*

I think that the new publication, BETTER CROPS, is a fine idea, and I am strong for it.—*R. A. McGinty, Colorado Agricultural College, Fort Collins, Colorado.*

Your Opportunity
for

\$50



See announcement on next page

\$50 in GOLD for

The Potash Importing Corporation
of America

Announces a

\$50

Prize Essay Contest

open only to readers of BETTER CROPS

FOR the best essay submitted on the subject of "Potash Pays" we will give \$50 in gold.

On the opposite page you will find the conditions of this contest fully explained. It is being announced only in this publication so that contestants are limited to readers of BETTER CROPS.

Special arrangements have been made with the editors of BETTER CROPS to publish the prize-winning article and such other manuscripts as are suitable for publication.

Any reader of BETTER CROPS who has some definite facts that show the benefits of the use of potash should take advantage of this opportunity and submit them. Photographs are very desirable but are not absolutely necessary. Send in whatever material you have. This is your opportunity.

The following 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

BETTER CROPS Readers

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 and inquiries for
further information to*

Contest Editor

Potash Importing Corporation
of America

81 Fulton Street

New York City

A Fine Example of Farm Bureau Work



Dear Jeff:

Here is a big piece of educational work that the Orleans County Bureau did this year. Our exhibit received 2nd prize at the New York State Fair. Wayne County scored 96 per cent., 2 points above us. This fruit, 208 different varieties, was selected from members of our spray service (800 members). In the plate display (408), we scored perfect.

Such an exhibit sets a standard for our farmers to work towards. Orleans County raises more acres of apples per square mile than any


equal area in the world. Our Sept. 1st estimate this year, which is a light year, is 27,120 barrels of late apples.

800 of our 1,200 Farm Bureau members receive the Farm Bureau spray service recommendations. 85 per cent. of these growers follow it to the letter. Thus the Farm Bureau in this county directly supervises the spray of slightly over 25,000 acres of apples.

Very truly yours,

H. G. CHAPIN,

County Agent, Albion, N. Y.



NEWS FROM THE FARM BUREAU

Annual meeting Jan. 8 to 11—200 attended—best meeting ever held. Chester^{*} Gray, of Missouri, principal speaker. Excellent addresses on Fundamentals of Farm Problems, Co-operative Marketing, Taxation-Legislation, and Transportation. Good construction program for coming year. Farmers believe Farm Bureau Federation holds solution of problems. State-Wide Egg Marketing Association and Beet Growers Marketing Association and Potato Growers Marketing Association in process of formation. Farmers not foolishly sanguine nor insanely optimistic but determined to win by better grade products, marketed more orderly. They want a bigger slice of the consumer's dollar. **BETTER CROPS** is good — sane — clean and worth while.—*Harry L. Keefe, President Farm Bureau Federation, Thurston, Neb.*

New Jersey has just completed membership drive, signing up on a three-year basis. Total about 7,000 odd—86 per cent. signed for three years, fourth annual meeting held at Trenton, Jan. 15. Most successful of any, spirit fine, interest well grounded. Everybody busy but no hint at radicalism. New Jersey probably sanest farm bureau in the East.—*L. A. Cooley, Secretary, New Jersey Farm Bureau, Trenton, N. J.*

Wyoming Federation of the American Farm Bureau Federation held its annual meeting at Laramie, Wyoming, Jan. 14, 15, and 16. Elected H. J. King, of Laramie President; Walter Warren, Riverton,

Wyoming. Vice-President; T. J. Brough, Lyman, Wyoming, Secretary, for the ensuing year. Had good meeting, will make marketing problems their major work for 1924.—*Waller Warren, Fremont, Wyo.*

Rabun County, Georgia, has successfully proved herself to be equal to any section of the United States in the production of late cabbage and other vegetables. The acreage in these crops will be increased considerably in 1924. The farmers will buy their seed and supplies cooperatively for the first time. More attention will be given to the problem of securing proper fertilizers than has heretofore been given.—*A. H. Johnson, Vocational Agricultural Teacher, Rabun, Ga.*

Today, Jan. 17, 1924, starts annual township Farm Bureau Meets. Hold 16 all together. Mr. Olds, Mr. Hiram Andre, and Secretary principal speakers. Also election of delegates to annual State Meet, which starts Feb. 7. A plan is being made by which we are going to put on a membership drive with our own men. This drive will start some time in March. Also plans are being made to handle seeds by the bureau.—*Cecil R. Clapp, Secretary, Kalamazoo, Mich.*

Our Bureau purchases for members and others from \$50,000 to \$80,000 worth of fertilizers and spray materials each year. By doing things and saying things as a body people listen.—*J. L. Templeton, Treas., Lawrence, Ohio.*

Some Paying Points on Tobacco Fertilization

(from page 14)

Water.....	71.00%
Nitrogen.....	0.49%
Potash.....	0.43%
Phosphoric Acid.....	0.32%
Miscellaneous Matter.....	27.76%

We have seen that tobacco requires an extremely liberal dose of potash to make big yields—that tobacco is one of the heaviest feeding plants, as regards potash, that grows. We have seen that the tobacco plant uses nearly three times as much potash as nitrogen.

Table II shows the amount of the three essential plant foods contained in a 1,600-pound crop of tobacco, as compared to the plant food contained in ten tons of average fresh barnyard manure, and in $\frac{1}{2}$ ton of ordinary 4-6-10 commercial fertilizer.

It will be seen from the table below how hopeless it is to attempt through the return of farm manure to replace in the soil the potash taken out by a single crop of tobacco. Even an

application of 1,000 pounds of 4-6-10 commercial fertilizer (a common formula) contains a hundred pounds less actual potash than such a crop removes.

During the period of 1916 to 1921 fertilizer experiments were conducted at Ephrata, Pa., to determine the value of cotton seed meal, acid phosphate, and sulphate of potash added to manure. These experiments were first conducted on duplicate and later on triplicate plots in order to reduce the possibility of error. The tobacco used in all these experiments was the Slaughter strain of Pennsylvania Seedleaf.

Table III below shows the fertilizers used and yields obtained.

These striking results in point of yield are exceeded, however, by the improvement in quality and burn shown by the tobacco from the plots where cotton seed meal, acid phosphate and sulphate of potash were

TABLE II

Plant Food Contained in 1,600-lb. Tobacco Crop		Plant Food in Ten Tons Fresh Mixed Manure	Plant Food in $\frac{1}{2}$ -ton Popular Fertilizer Mixture 4-6-10
Nitrogen	76 pounds	98 pounds	40 pounds
Phos. Acid	16 pounds	64 pounds	60 pounds
Potash	200 pounds	86 pounds	100 pounds

TABLE III

Treatment, Pounds per Acre	Average Yield, 1916-1921, Pounds
No. 1—10 tons manure—1,220 lbs. cotton seed meal—300 lbs. 16% acid phosphate—224 lbs. sulphate of potash.....	2,270
No. 2—10 tons manure—500 lbs. cotton seed meal—300 lbs. acid phosphate—224 lbs. sulphate of potash.....	2,190
No. 3—10 tons manure—300 lbs. acid phosphate—200 lbs. sulphate of potash.....	1,985
No. 4—10 tons manure.....	1,770
No. 5—No fertilizer.....	1,230

added to the manure. It was also shown that the large amount of nitrogenous fertilizer material used



No fertilizer

in treatment No. 1 does not pay on the productive soils in Lancaster County.

It is positively necessary to supply potash, nitrogen and phosphoric acid to the soil in which successful tobacco crops are grown, through the use of commercial fertilizers.

Many successful tobacco growers have learned the wisdom of feeding the crop with an abundance of the right plant food, and because they use liberal amounts of high analysis fertilizers they are often criticized by others on the ground that much of the surplus plant food they supply to the soil leaches away.

Except in the case of nitrogen in soluble forms there is no danger

that the plant food in chemical fertilizer will wash away. The loss of potash and phosphoric acid through leaching is negligible, except in the very sandiest of light sandy soils.

The potash and phosphoric acid may be applied at any suitable time, and will so be absorbed by the soil that they are held there almost permanently until needed by the plant.

So far we have been discussing only *volume* of yield—but *volume* is, or should be, secondary to *quality* or *grade*. In fact, a happy combination of satisfactory yield in pounds, and a grade that will bring a high market price is just the com-



Complete fertilizer
(including sulphate of potash)

bination for which all tobacco growers are seeking.

By far the greater proportion of tobacco raised is for smoking. The requisite of a good cigar-type tobacco, or a smoking tobacco, is that it burn well, hold its glow, and give an aroma that is pleasant to the senses. Buyers, whether at auction, or at private sale, are looking for leaf that will make up into the best brands—that will pass the most scrutinizing tests for aroma, glow and burning qualities—for upon these requisites are the price and grade based.



Incomplete Fertilizer
(phosphorus and nitrogen)

What makes "good burning" tobacco?

Scientific tests have been made during recent years to determine what effect various fertilizing ingredients have upon the burning qualities of the leaf.

The most outstanding fact revealed by these experiments is that *the burning quality of tobacco depends upon an abundance of potash in the leaf, with a minimum of chlorine.*

Tests begun in 1903 by the Ohio Agricultural Experiment Station at its Germantown Test Farm prove this quite conclusively.

Here a series of tests on Miami Valley Clay Loam have been carried on for a period of over ten years. (The detailed descriptions of these experiments are contained in Bulletins 161, 172 and 206 of the Ohio Agricultural Experiment Station.)

These experiments included plots upon which a three-year rotation of tobacco, wheat and clover was conducted.

Table IV shown herewith illustrates the plan of fertilizing and the yield of tobacco for the year 1912.

In order to determine the influence of fertilizers on the burning quality of tobacco grown on these plots, cigars were made from the tobacco grown. These cigars were made as uniformly as possible by an experienced cigar manufacturer. A

Wisconsin binder and a Connecticut seed leaf wrapper were used with the filler which was all of the same variety, Zimmer Spanish.

Since these cigars were made up of the same binder and wrapper, and the filler was of the same variety of tobacco, grown on differently fertilized plots, it is safe to assume that

any variations observed in the smoking quality of the tobacco from the several plots may be considered to be due largely to the factors introduced by the use of different fertilizer materials.

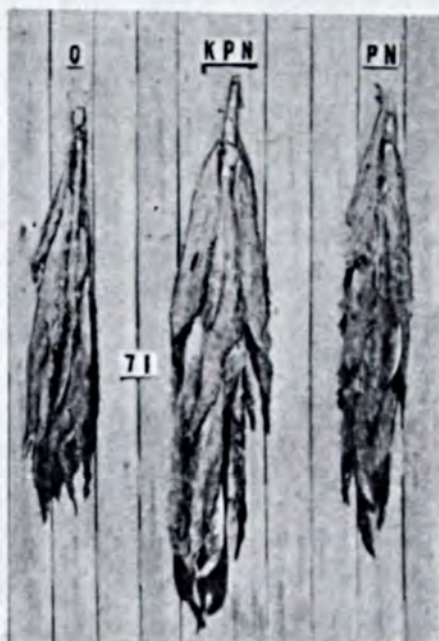
In Table IV are shown the results of the tests made. These figures are the average of not less than three trials for each lot of tobacco tested. The statements made for flavor and aroma are based upon the judgment of different observers who participated in the smoking tests.

The "burning test" is simply a

test of the "fire-holding" capacity of the cigar, and since good burning quality is considered to be one of the essential factors in determining the excellence of cigar or smoking tobacco, it is an important test.

The cigars are "smoked" by a machine which closely approximates the manner in which the average man smokes.

As shown in Table IV, the cigars made from tobacco from Plot 23 "held fire" for 8 minutes and 11 seconds. The ash was light and very



Here is a good example of how sulphate of potash improves quality of leaves. In this experiment it also gave an increased profit of \$30.30 per acre.

firm, the flavor excellent and the aroma excellent.

This, according to the table, was the best showing of all.

Plot 23 was fertilized with:

Acid Phosphate.....480 pounds
Sulphate of potash.....190 pounds
Nitrate of soda.....240 pounds

Total.....910 pounds

Which is equivalent to:

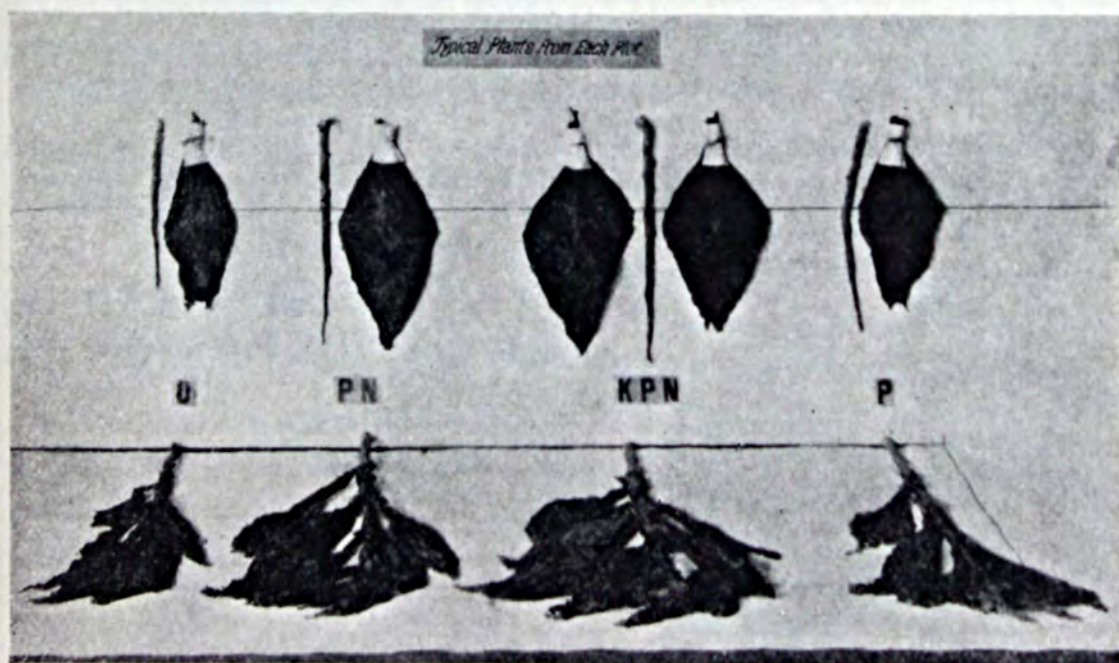
Phosphorus, per acre... 30 pounds
Potash, per acre..... 75 pounds
Nitrogen, per acre..... 38 pounds

Now, notice Plot 8, in Table IV. Here was a plot that presumably was a duplicate of Plot 23, except that the potash was derived from *Muriate of Potash* instead of *Sulphate of Potash*.

Cigars made from tobacco grown

To compare these two plots, examine Table IV shown following:

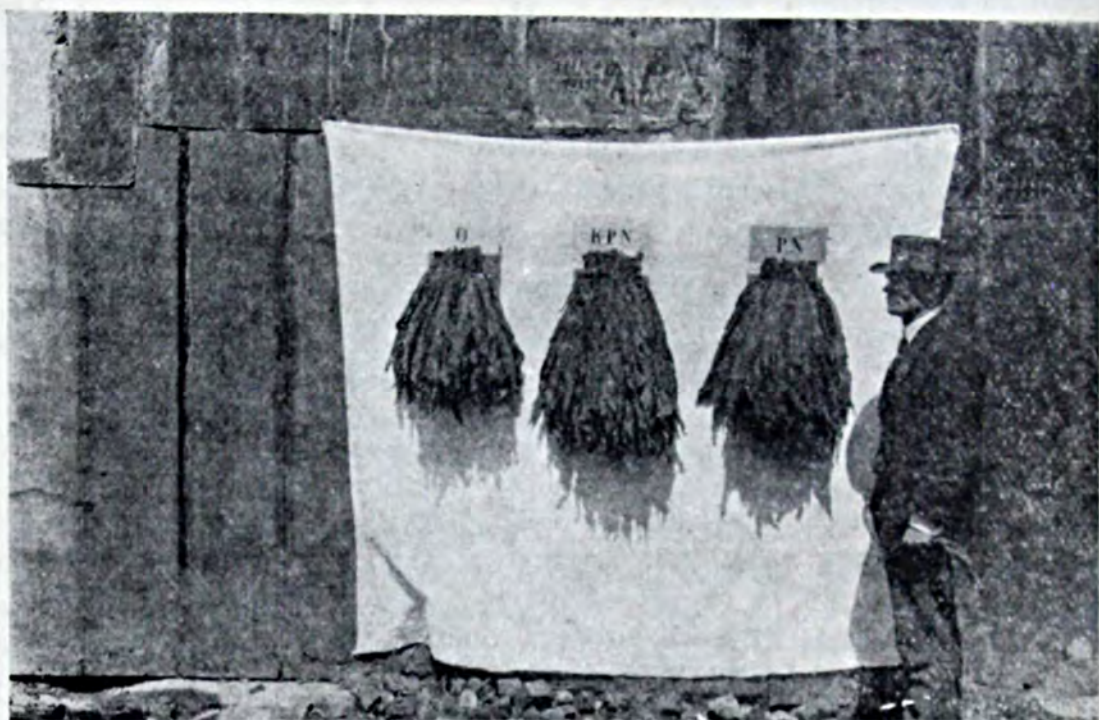
Plot No.	TREATMENT	Fire Holding Capacity	Character of Ash	Flavor	Aroma
8	Acid Phosphate, 480 pounds..... <i>Muriate</i> Potash, 180 pounds..... Nitrate Soda, 240 pounds.....	4 min. 52 sec.	Dark charred firm	Good but strong	Fair
23	Acid Phosphate, 480 pounds..... <i>Sulphate</i> potash, 190 pounds..... Nitrate Soda, 240 pounds.....	8 min. 11 sec.	Light very firm	Excellent	Excellent



Tests made on farm of J. B. McKnight, Crofton, Ky.

The third plant from the left shows how sulphate of potash improves the size and quality of leaf. Compare it with other plants which did not receive potash.

POTASH - THE ESSENTIAL PLANT FOOD



Test on Tobacco by W. L. Crouch, Tullahoma, Tenn.

Plot No. 1	Plot No. 2	Plot No. 3
No Fertilizer	Complete Fertilizer (with Sulphate of Potash)	Incomplete Fertilizer (without Potash)

A Profitable Investment for Tobacco

WHEN Mr. Crouch used no fertilizer he got a yield of 800 lbs. per acre, which sold for \$92.50. When he used a complete fertilizer, including sulphate of potash, he increased the yield 700 lbs. per acre and improved the quality to a point where he got a return of \$191.00 per acre—\$98.50 more per acre than the unfertilized plot.

Remember that the average yield of tobacco takes 200 pounds of potash from the soil per acre. See that this loss is replaced by using Genuine German Sulphate of Potash. *It pays.*



**POTASH IMPORTING
CORPORATION OF AMERICA**

**81 FULTON STREET
NEW YORK CITY**

GERMAN POTASH IS BEST FOR TOBACCO

on Plot 8 "held fire" for only 4 minutes and 52 seconds. The ash was dark and charred, the flavor "good, but strong," and the aroma only "fair."

Here are two plots that prove quite conclusively the advantage of a fertilizer which derives its potash from *Sulphate*.

WHAT is the difference between *sulphate* of potash and *muriate* of potash? Sulphate of potash contains from 48 to 51 per cent. of actual potash, while muriate contains from 50 to 53 per cent. actual potash. There is, as you see, but a slight difference in these two on the basis of actual potash content.

The real difference is that Muriate of Potash contains a large percentage of chloride, while the sulphate is nearly free of chloride.

Bulletin 285, of the Ohio Agricultural Experiment Station, which describes the burning tests, says, in regard to chlorine:

"——the average time of burning for the tobacco from plots which received muriate of potash is approximately half that obtained for plots treated with sulphate. An inspection of the chlorine results from the tobacco from the muriate-treated plots, in contrast with that from plots receiving no chlorides, is sufficient explanation for the differences found. The addition of chloride to the soil is reflected by the chlorine content of the leaf, which in turn affects the burning qualities.

"The tobacco having a low

chlorine content had a good fire-holding capacity while a contrary result was obtained for practically all of the tobacco having a high percentage of chlorine."

J. B. Killebrew, A.M., Ph.D., in his book "Tobacco Leaf" says, in regard to sulphate of potash, "The form of potash used seems to have as much effect as the quantity used. Carbonate of potash gave distinctly unfavorable results compared with sulphate, which is now used for tobacco by all scientific farmers.

W. W. Garner, of the Bureau of Plant Industry, U. S. D. A., in Bulletin 105, among other conclusions, reaches the following:

1. The fire-holding capacity is dependent primarily on the content of potash combined with organic acids

2. A large amount of magnesia tends to injure the capacity for holding fire.

BUYERS of tobacco are learning more every day about flavor and burning quality. In fact, at this time some of the largest buyers refuse to bid on auctioned leaf unless it has a certain potash content in the leaf, as shown by chemical test and unless the potash was derived from sulphate.

The time is coming when tobacco will be sold on the basis of scientific smoking tests and chemical analysis. In the meantime those growers who look ahead are getting higher prices for their product, by proving to the buyers that in burning quality their leaf stands high.

Dangerous Agriculture

(from page 11)

camp outfits, for no one in the neighborhood dared to provide food or shelter. The armed men built a new vat to take the place of those dynamited, left guards about it, and then visited every cattle owner, riding a formation known as "threes," two ahead and one some distance in the rear. Every man was told to bring his cattle

continue until this battle against the tick is won. It is almost won now."

Game wardens have to deal largely with men carrying firearms, most of them gentlemen and sportsmen in every sense of the word, but there are others who have little regard for life, animal or human, and these latter make the warden's life, at



Forest Service employees fighting a forest fire

on a certain day or armed men would be there to get them. The result has been that all cattle were dipped regularly every 14 days until the ticks were cleaned out. Also in that balky Georgia county there is now no live Texas fever tick.

Dr. R. A. Ramsay, a kindly, mild-mannered man has charge of tick eradication. "We do not like to carry on the work with guns," he said, "but it was a question of using guns or getting out, and we must

times, like the policeman's in the song, a most unhappy one. Last year a warden in Iowa was shot in the back and killed and one of his attackers has been given a life sentence. In duck hunting waters there have been a number of running gun fights between law-breaking hunters and wardens. In some regions the wardens, as laws now stand, may be prosecuted in an unsympathetic community for injuring law breakers who resist arrest. In

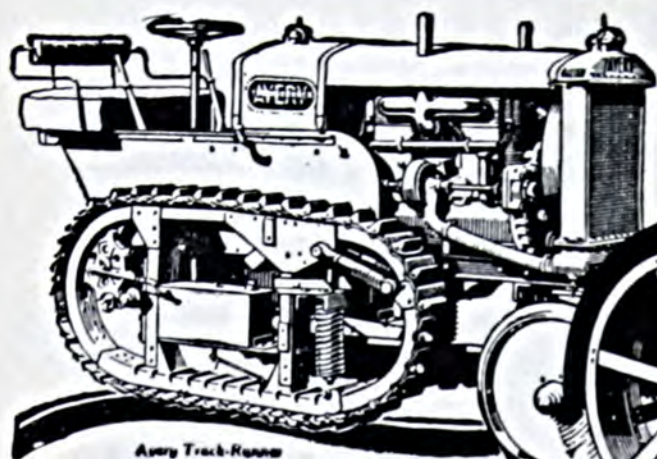
southern Maryland they have been equipped with Springfield rifles, provided by the War Department. One disadvantage of these law enforcers is that the regulations of the Biological Survey forbid them to draw first. I wonder what the life insurance companies have to say about game wardens who have to take second chance!

THE chances the forest ranger takes are with the elements, but none the less real. They fight fires that rush with the wind, they navigate dangerous streams in frail canoes, they travel at night over uncertain roads, and they do their own cooking. Listen to the story of ranger Pulaski, a descendant of the famous Polish soldier of Revolutionary fame: an area in Idaho was being swept by flames; all available men from lumber camps, mines, ranches, farms, were drafted to help. A group of men with Pulaski were cut off by the fire, the only refuge being an abandoned mine. Here they tried to shut out the heat and smoke with wet blankets hung in the entrance, but the air became so thick and hot the men went panicky. The ranger saved them from a disastrous rush into the burning timber by pulling his gun and keeping them in the mine until the fire had burned on its way.

The means of fighting forest fires is sometimes as dangerous as the destroyer itself. Fast work must be done at night, the felling of trees, sometimes with dynamite. In winter the ranger may not be worried

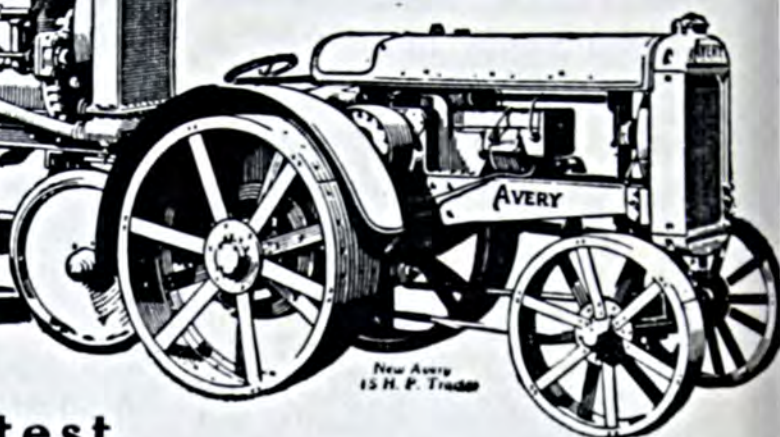
about fire, but he has the deep mountain snows, there are avalanches and blizzards, and usually he is alone. A broken leg under such circumstances is not the small matter it is when caused by an encounter with a careless automobile driver on a city street where an ambulance will come clanging in a minute or two. In warmer weather water takes its toll. Two rangers started over a lake for a distant station with supplies for two months. A squall filled the heavily laden canoes with water. One ranger drowned; the other swam to shore, made a 50-mile trip back to town without compass or matches and returned with the party that went to drag the lake for his partner. Rangers have a code which demands more than does the employing Government. Not all the ranger heroes are fiction characters. Here is one who brought a sick woman over the mountain to a hospital; another is said to have acted as minister and undertaker.

OUT in the range country where it may be supposed most all the cattlemen now appreciate efforts to keep cattle in good health it was not always so, if it is now. There is a veterinarian, once an inspector, who saw to the dipping of cattle and sheep for scabies, who has on the wall of his office at least 5 guns taken from irritable ranchers who tried to bluff the representative of the law. If they are still in the business the chances are their animals are free of this disease and they are pleased with the result.



Avery Track-Runner

The New and Improved Avery Line

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

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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.

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Avery
"Road-Razer"Avery
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Thresher. Built in "Yellow-
low-Baby," "Yellow-
Kid" and "Yellow-Fel-
low" sizes.Avery Header Thresher.
Harvests and threshes
the grain in one opera-
tion.

Selling Cotton Cooperatively

(from page 9)

Mr. Aaron Sapiro who, prior to undertaking this work, had the record of organizing fifty-seven successful cooperative marketing associations to his credit. The basis of these exchanges is that the farmers agree, or "sign up," in advance, to turn over to them their entire product for a period of years—usually five. This product the exchange markets as a unit to the best mutual advantage, and experience has demonstrated that the farmer is benefited to the extent of several cents on every pound of cotton he raises, and why not? The farmer, acting as his own selling agent with a few bales to dispose of, knows little of the wiles of trade. He is not in close touch with the price-making markets of New York and New Orleans, though his buyer has them on the wire every few minutes. The handicap under which he labors is readily seen and taken advantage of by the local buyer. Under the cooperative arrangement his bale or bales, many or few, are put into the common "pool"; his cotton is graded and classified by competent experts and is sold as a unit along with others of the same grade by expert salesmen who are just as close to the markets of the world as is the buyer. On a settlement he receives just his pro rata share of the proceeds.

But the cooperative exchange does more. Upon receipt of his cotton he is allowed to draw approximately 60 per cent. of its value. This is a necessity because the average cotton farmer is a poor man. His crop of cotton is, perhaps, his sole support. He has expended his entire capital in growing it and must have immediate relief. This he re-

ceives in the 60 per cent. It is stated on good authority that fully 80 per cent. of a cotton crop is mortgaged by the grower in advance. This the exchange also takes care of for him, attending to all the banking details, rendering strict account of its trusteeship.

In practical operation, each farmer in an organization or "pool," as soon as he receives a bale of cotton from the gin, turns it over to the local representative of the marketing organization and, through the local bank, draws on the central association for the 60 per cent. which, under the terms of his contract, is due him at that time. A sample of his bale, or bales, is sent to the sampling room at headquarters. Each bale is tagged to maintain its identity, and a similar tag goes along with the sample.

In a single room there are often as many as several hundred thousand such samples, each representing a bale. The local central headquarters sells the cotton on the sample taken to spinners, merchants, jobbers, exporters—to any buyer who wants. The interests of the seller are identical with those of the owner. He is an expert on a salary, and his wits are just as keen as those of any buyers who throng his doors.

The farmer having received his 60 per cent. to relieve his temporary embarrassment or to satisfy his mortgagee, can afford to wait. He knows the organization can do better than he, and when the "pool" is closed, he gets his final settlement.

As a safeguard every local organization coming under the supervision of the central American Cotton Growers' Exchange has at least one representative on its board, who is

"The Farmer's Trade Paper"

IS WHAT ONE
FARMER CALLS

FARM AND HOME

In a letter to the editor, expressing his views of FARM AND HOME, Mr. F. G. Davis of Harrisonburg, Va., an old subscriber, writes:

"What I like best about FARM AND HOME is its splendid balance. It seems to sense the needs and desires of its readers and supply them in just the right proportions. In Talks with the Editor we get a series of worthwhile editorials—meaty and unbiased—the kind that set an individual to thinking and the kind that inspires one to action. Its feature articles are not only seasonable, well illustrated and informative, but they cover subjects of vital importance and practical benefit to farmers.

"In my opinion the most interesting and helpful things you publish are the experiences of your readers. While these run from just a few lines on up to a fair-sized article, they are well packed with practical suggestions. Every phase of agriculture is covered—from seed selection to marketing.

"Every trade or profession has its own publication and I believe that FARM AND HOME can best be described as the farmer's trade paper, because it teaches him how to get the most from his farm and how to sell that most to the best possible advantage. Not only the farmer himself, but the housewife and even the children come in for their full measure of attention. FARM AND HOME fiction is wholesome and full of human interest—the kind we can give the children to read with the assurance that it contains nothing that is not clean and inspiring. The advertising columns fairly bulge with worthwhile offerings from the market places of the world and spread them down for our inspection, so to speak.

"Above all, however, FARM AND HOME is a real service magazine. Not a publication that comes to my notice carries with it the sincerity of purpose, the anxiety to serve which is so evident in every issue of your valuable publication."



To County Agents
interested, we shall
be pleased to send
FARM AND HOME for
one year free if they
will send us their
names and addresses.

FARM AND HOME

The National Magazine of Rural Life

PHELPS PUBLISHING CO., Publishers
SPRINGFIELD, MASS.

appointed by the governor of the state where it is located. In some states there are three members so appointed. In all, however, the state appointees are in the minority—the average number of directors being eleven or thirteen. In the national, or central organization, one member of the board is appointed by the Secretary of Agriculture, one by the Federal Trade Commission, and one by the Interstate Commerce Commission. It is required under the law that at least one of these three shall sit on the executive committee of the board of directors, whose number is five.

In apparent contradiction to Mr. Thompson's remarks to President Coolidge, these exchanges, or cooperative "pools," are financed, largely, by the government through the War Finance Committee, at whose head is Mr. Eugene Mayer, Jr., and the advances made have run into a great many millions of dollars.

The last report available states that there are nearly three million bales of cotton "signed up" by farmers to the various cooperative organizations, as follows:

	Bales
Oklahoma.....	525,000
Texas.....	600,000
Arkansas.....	270,000
North Carolina.....	400,000
South Carolina.....	500,000
Georgia.....	268,000
Alabama.....	169,000
Arizona.....	50,000
Mississippi.....	200,000

Considering that the present cotton crop is but slightly over ten million bales, the "sign up" record as a result of but two or three years of co-operative work is, indeed, a credible showing. The cooperative marketing of cotton promises, soon, to equal in importance the similar work of the highly organized mar-

ketings of raisins, apples, wheat and tobacco.

To illustrate the rapid growth of the cooperative idea, Mr. Harold C. Booker, Secretary of the South Carolina Cotton Growers' Cooperative Association, writes, last September (1923), that this exchange was incorporated in June, 1922, and by October of that year had received 20,000 bales. He further reported the total bales handled in the 1922-1923 crop amounted to 124,000, and that this was marketed at a price much nearer the quoted market than anything their farmers had ever before been able to obtain.

But, Mr. Reader unfamiliar with cotton, please do not run away with the notion that all of the uneconomic abuses that have fastened themselves to cotton as a result of two generations of "go as you please" have been eradicated. Less than a third of the crop is now being co-operatively marketed. With the remainder the grasping middleman still has his hooks into the bale from which he extracts such ample "samples" that this so-called "City Crop" amounts, at the end of a season, to a great many million dollars—at the expense of the farmer. The same disgracefully mutilated bale is still shipped to the mills of the North and to Europe; the same uneconomic methods of compression to different degrees of density at different points are practices as before—and this refers alike to cotton that is co-operatively marketed and to that which is not.

But granted that all of the now-existing uneconomic methods in the handling of cotton have been eradicated—abuses said to cost the country a hundred million dollars every year—will the cotton spinners give you and me the benefit of the saving in reduced prices for the goods we buy from them?

The Crucial Moment

(from page 6)

spring from your lips—you are at the fork in the road. The line between cowardice and heroism is as a thread—a touch breaks it. If you utter the undying phrase, "I haven't begun to fight!" the pen of the biographer goes down on the paper and etches in words of fire the enthusiastic phrase that you have uttered—the world shall know that you did not waver, that your unconquerable spirit refused to shudder in the face of danger—you are one with the ages, and are of the immortals.

That inside your mind all was confusion; that despair struggled hourly with resolve; that the flaming words you uttered were more of a prayer than a defiance, the world will never know unless you tell it. Your secret is your own. And you have the satisfaction of knowing that every man who ever suffered doubt, who ever wavered on the line, was *your kinsman*—a brother in the test tube. To him, also was the acid applied—the world scratched him and found pure gold.

THAT last ounce of resolve breaks the thread between failure and success. That last clenching of the fist as you shout, "I'll not give up—this is my work—I started it—and I'll finish it or die in the attempt" is what puts you over into the field with the immortals. Your niche in life may seem small when compared to what is granted other men. Your accomplishments may seem trifles when laid side by side with the achievements of those whom the magazines and newspapers eulogize in such glowing terms. But, brother, your work is as important as any in the universe. You have a

mission to fulfill. *And you can fulfill it!*

—If you have the reserve power to use in that *crucial moment* when the fire of enthusiasm has died, and the desperate battle between doubt and resolve is going on in your mind!



Cow-Testing Association

(from page 22)

eliminating them entirely from the industry. It is too often the case that cull cows from one dairy are sold to another dairyman, in which case the industry as a whole is not improved.

Aside from the fact that a county-wide organization divided into testing units can be operated at a lower cost, there are many other advantages. A select group of dairymen in charge can exercise better judgment in selecting testers. It is easier to make up a carload of cull cows for shipping or pool orders for carload lots of dairy feed, etc. It is easier to hold meetings and tours; dairymen, like other people, like to belong to a big organization; it adds enthusiasm and interest to the work.



Missiles and Mignonettes

I do not know which I like best about BETTER CROPS—the editorials by you or the "breezy" articles of some of the field men which you print. Anyway I find great enjoyment in reading BETTER CROPS.—Leonard E. Allen, County Agent, Plattsburgh, N. Y.

Your little magazine is very good. Every member of our force reads it, which is quite a recommendation, I believe, since we get tons of agricultural matter each month.—Bentley B. Mackay, Asst. Agricultural Editor, Louisiana State University, Baton Rouge, La.

BETTER CROPS is a better book each issue.—P. T. Meyers, Lander, Wyoming.

Plant Competition for Food

Burd and Martin have shown that the absolute amounts of nitrogen and potassium absorbed by barley plants from a given mass of soil are relatively independent of the number of plants but that phosphate absorption depends upon dry-matter production. The figures obtained thus give a very definite indication of a limited supply of nitrogen and potassium in the soil available for the uses of the particular plants under the specific environmental conditions, and emphasize the importance of quantitative relations of soil fertility. The importance of these relations has lately been somewhat disregarded by the investigators because of the stress placed on physiological balance.

Experiments with a fertile soil show that the reinforcement of the nitrogen, potassium, and phosphate supply of such a soil does not necessarily increase the crop but that it has a marked effect on absorption by the plant. This manifests itself by increased absorption of the element added as well as by diminished absorption of other elements. Thus, phosphate applications apparently reduce and nitrate applications apparently increase potassium absorption. These phenomena are also being studied with an infertile soil. Similar results for such a soil would shed important light on the reasons for the inadequacy of present fertilizer practice and suggest means for its improvement.—*From annual report of director of Agricultural Experiment Station of University of California.*

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Captain Kidder

comments on this
month's issue

This guy, Penhook, has dug up some interesting dope on tobacco fertilization. That stuff about the machines that smoke cigars was new to me. The tobacco industry owes Penhook a great debt. He smokes more cigars than any man I ever met. No wonder he's an authority on the subject.



Somebody pulled a bone last month in attributing the amusing story, "Tiling Above the Ground," to "F. H. Ley." The man who wrote it is F. H. Lacy, County Agent of Poughkeepsie, N. Y. Perhaps the mistake occurred because Jeff couldn't decipher his signature. I used to get called down on that score myself so I generally type my name under the signature and then there can be no kick.



Poor Mr. Boll Weevil. They don't give him a minute's rest these days. Now that they've discovered a way to bombard him from aeroplanes, there can't be much joy left in life. Well, this method of spraying ought to solve the labor problem. It'll be a lot easier to hire aeroplane operators than to get hand labor to work in the fields.



Nobody can accuse Albert Hansen of being a Polly Anna. First he tells about poison plants and now about corn rheumatism. It's a tough life these plants lead, but they can thank Heaven that they're not liable to colds in the head. If potash was as effective for human rheumatism as it is for the corn variety, what a fortune there would be in the business!



I notice that this month we have from Mr. Gapen the first installment of a serial

thriller that goes "The Perils of Pauline" one better. Looks as if Pauline should have gone to work for the Department of Agriculture. Those of us who thought a job in the Department was about as thrilling as a lesson in swimming would be to a middle-aged goldfish will change our minds after reading this article.



I'm glad I wasn't a judge in the BETTER CROPS prize essay contest. If they got many more essays as good as Chapman's in this issue, picking the winner must have been as difficult as putting a blister on a porcupine.



There are some fine letters this month from BETTER CROPS' readers. One of the best ways to judge a magazine or newspaper is by the letters that it gets from its readers. Letters like those that Jeff has printed this month show better than anything else the interest readers are taking in BETTER CROPS. Keep it up, friends! This magazine is a forum for you. The more you use it, the better.



Speaking of these letters, I hope after reading Mr. Clark's very fine letter you will turn to the Editor's Own Pages and read what Jeff says about making farming more profitable. Perhaps you will disagree with him, but danged if I don't think there's a lot in what he says. This is a mighty big subject, however, and I'd be glad to have you write me personally on how you think farming can be made more profitable. Perhaps I can persuade Jeff to print your letter if you make it short and snappy.

Captain Kidder

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PRESIDENT COOLIDGE says:
 "Cheaper fertilizers must be
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 doing our share toward this
 program is amply proved by
 the following:

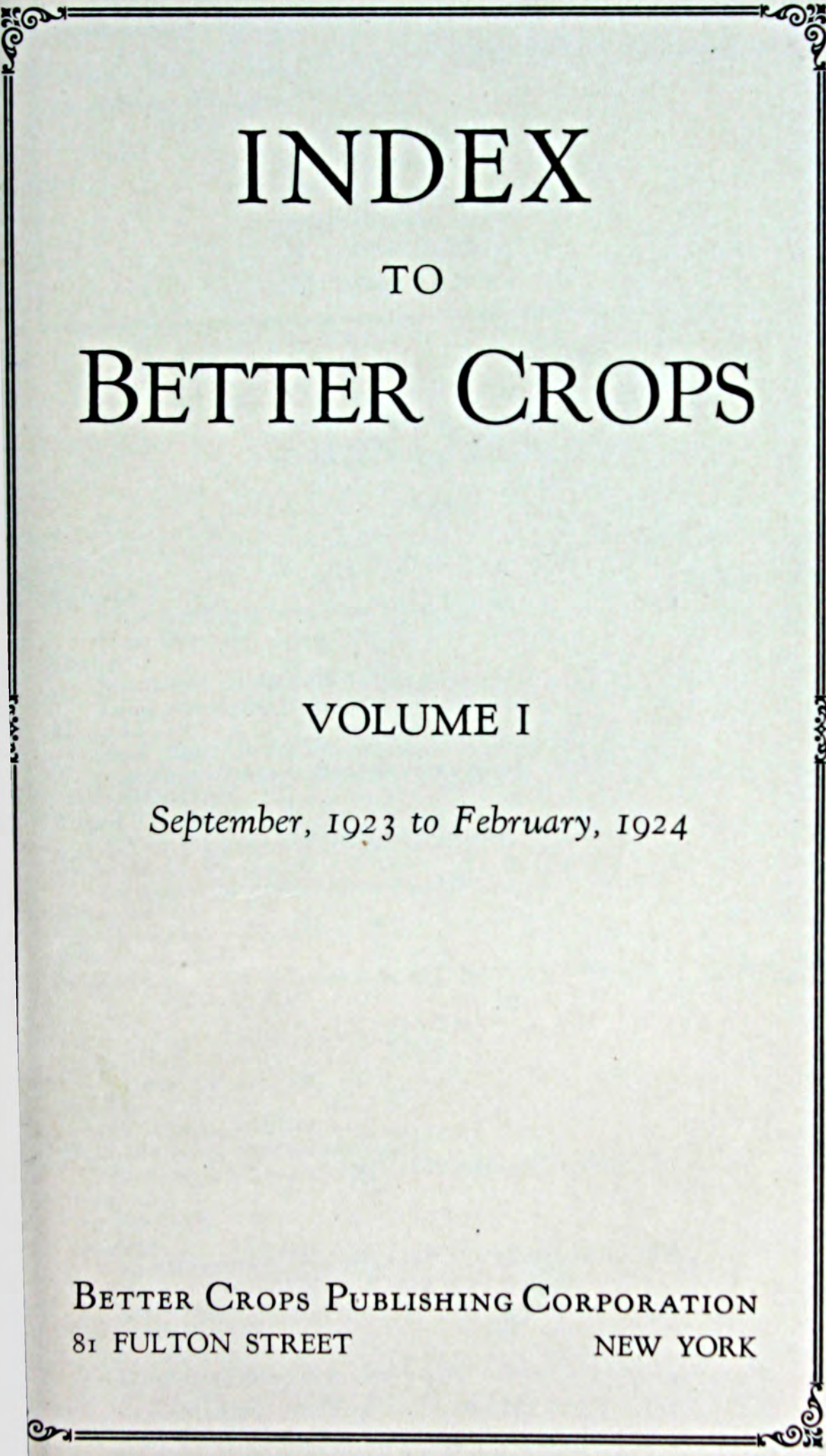
**Average Unit Cost of Fertilizer
 Materials (Southern Ports)**

	1913	Present Market
Acid Phosphate 16% (Bulk)	42c. per unit A. P. A.	59c. per unit A. P. A.
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INDEX

TO

BETTER CROPS

VOLUME I

September, 1923 to February, 1924

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INDEX

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Note. The following abbreviations are used throughout this index to indicate the type of articles:

A	Article (unsigned)
C	Correspondence
EP	Editorial paragraph
FN	Fertilizer note
N	Note (brief)
SA	Signed article

INDEX



A

	Page	Mo.
Alabama		
What fertilizers have done for my state		
F. E. Boyd; SA.....	41	Nov.
Alfalfa		
Soil should be right for alfalfa crop; N.....	37	Sept.
Tiling above the ground. F. H. Ley (Lacy); S.A....	33	Jan.
Almonds		
How the California Almond Growers' Exchange		
achieved success through cooperation. Charles J.		
Brand; SA.....	24	Jan.
Alvord, Charles H.		
Why I use a car in making my rounds; SA.....	15	Nov.
Anderson, H. W.		
New facts in orchard spraying; SA.....	30	Jan.
Arkansas		
Heavy sale of fertilizers; FN.....	40	Sept.
Armstrong, D. A.		
\$576.86 profit from one acre of strawberries; SA.....	32	Nov.

B

Bacon, C. A.		
Liming the soil; SA.....	29	Dec.
Bananas		
In Georgia. Photo.....	4	Jan.
Bank, Federal Intermediate Credit		
Farmers borrow \$1,000,000,000. Herbert Myrick; SA.	28	Sept.
Banking		
See Bank		
Barberry		
Getting rid of the barberry. Harrison Fuller; SA..	10	Dec.
Bellew, Si		
See Si Bellew says		
Blackwell, C. P.		
Biographical note.....	66	Jan.
What fertilizers have done for my state; SA.....	8	Jan.

	Page	Mo.
Boll weevil		
Fighting Mr. Boll Weevil from the sky. Ted Butlar; SA.....	24	Feb.
Poisoning the boll weevil. Jeff McDermid; EP.....	31	Sept.
See also Cotton		
Boyd, F. E.		
What fertilizers have done for my state; SA.....	41	Nov.
Brand, Charles J.		
How the California Almond Grower's Exchange achieved success through cooperation; SA.....	24	Jan.
How 4200 walnut growers market cooperatively; SA..	12	Dec.
What is cooperation? SA.....	12	Nov.
Brewer, Herbert C.		
6 awards for county soil-fertility programs; SA.....	30	Dec.
Britton, T. L.		
Why I use a horse in making my rounds; SA.....	14	Nov.
Browne, Dr. C. A., Chief of Bureau of Chemistry, U. S. D.		
A. Photo.....	17	Jan.
Butlar, Ted		
Fighting Mr. Boll Weevil from the sky; SA.....	24	Feb.

C

Cadlock		
See Wild radish		
Campbell, Walter G.		
Photo.....	17	Oct.
Captain Kidder.....	72 Dec., 72 Jan., 72 Feb.	
Carroll, J. S.		
The first County Agent in the United States; SA....	42	Sept.
Chapman, Paul W.		
What fertilizers have done for Georgia; SA.....	26	Feb.
Christiansen, A. L.		
Verses.....	22	Nov.
Christie, G. I.		
Photo.....	19	Feb.
Christie urges normal Indiana wheat acreage; N.....	43	Oct.
Circular letters		
Do they hit the mark? R. F. Fricke; SA.....	11	Nov.
Clark, W. W.		
What makes the farmer a "soil robber?" C.....	39	Feb.
Cocklebur		
Cocklebur sprouts are deadly. Albert A. Hansen; SA	28	Jan.
Collingwood, H. W.		
Why the fish failed; story.....	24	Oct.
Coolidge, Calvin		
Message to Congress. Jeff McDermid, EP.....	36	Jan.
Coolidge, Calvin, Jr.		
Photo.....	19	Nov.
Cooperation		
Verses. A. L. Christiansen.....	22	Nov.
Cooperative marketing		
The curb market at Athens, Georgia. J. W. Firor; SA	24	Nov.
How the California Almond Growers' Exchange achieved success through cooperation. Charles J. Brand; SA	24	Jan.
How 4200 walnut growers market cooperatively		
Charles J. Brand; SA.....	12	Dec.
Is cooperation a failure? George W. Hinman; SA...	34	Sept.

	Page	Mo.
Cooperative Marketing— <i>Continued</i>		
What can cooperative marketing do for the farmer? Dean Robert Stewart; SA.....	10	Jan.
What is cooperation? Charles J. Brand; SA.....	12	Nov.
Selling cotton cooperatively. Richard Hoadley Tingley; SA.....	7	Feb.
Cooperators' Society, English		
Is cooperation a failure? George W. Hinman; SA...	34	Sept.
Corn Crib, "rat proof, weevil tight"		
How one County Agent met a big problem. M. F. Gaddis; SA.....	14	Dec.
Corn rheumatism		
Cured with potash. Albert A. Hansen; SA.....	30	Feb.
Cotton		
Cotton: the fabric of civilization. Richard Hoadley Tingley; SA.....	8	Oct.
Cotton acreage 37 per cent. fertilized; FN.....	40	Sept.
Cotton seed selection would increase yield. Herbert Dallam Martin; SA.....	41	Dec.
Fighting Mr. Boll Weevil from the sky. Ted Butlar; SA.....	24	Feb.
Poisoning the boll weevil. Jeff McDermid; EP.....	31	Sept.
Selling cotton cooperatively. Richard Hoadley Tingley; SA.....	7	Feb.
What fertilizers have done for my state (Alabama). F. E. Boyd; SA.....	41	Nov.
County Agents		
First County Agent in the United States. J. S. Carroll; SA.....	42	Sept.
How to increase the value of County Agent work. R. R. Smith; SA.....	15	Dec.
Si Bellew says: "It's tough to have to be a County Agent.".....	23	Nov.
Six awards for county soil fertility programs. Herbert C. Brewer; SA.....	30	Dec.
Two men in a county. Jeff McDermid; EP.....	36	Nov.
W. F. Gahm's winning program for county soil fertility improvement; A.....	26	Jan.
County Agents, articles by		
Circular letters: do they hit the mark? R. F. Fricke; SA.....	11	Nov.
Curb market at Athens, Georgia. J. W. Firor; SA...	24	Nov.
How one County Agent met a big problem. M. F. Gaddis; SA.....	14	Dec.
How to increase the value of County Agent work. R. R. Smith; SA.....	15	Dec.
Save that million! Hi Fedderson; SA.....	7	Dec.
Selling the idea of a county-wide cow-testing association. Wallace Sullivan; SA.....	21	Feb.
The slacker hen; the four-leaf clover; the C. A.'s mistake. J. Robert Hall; SA.....	29	Nov.
Tiling above the ground. F. H. Ley (Lacy); SA.....	33	Jan.
Why do our boys leave the farm? J. S. Malone; SA...	32	Feb.
Why I use a car in making my rounds. Charles H. Alvord; SA.....	15	Nov.
Why I use a horse in making my rounds. T. L. Britton; SA.....	14	Nov.
\$576.86 profit from one acre of strawberries. D. A. Armstrong; SA.....	32	Nov.

	Page	Mo.
County Agents, news from.....	45	Oct.
48 Nov., 45 Dec., 51 Jan.,	41	Feb.
Cow-testing association		
Selling the idea of a county-wide cow-testing associa- tion. Wallace Sullivan; SA.....	21	Feb.
Cranberries		
The most profitable crop per acre; A.....	26	Sept.
Crane, Dr. Frank		
Fatigue; SA.....	24	Sept.
The bunk about wage slaves; SA.....	23	Jan.
The education that is needed; SA.....	30	Oct.
The electric fan; SA.....	23	Feb.
The root of gambling; SA.....	23	Dec.
Strictly business; SA.....	30	Nov.
Crop prices		
The most profitable crop per acre; A.....	26	Sept.
The pendulum swings again. Jeff McDermid; EP....	31	Sept.
\$576.86 profit from one acre of strawberries. D. A. Armstrong; SA.....	32	Nov.
Curb market		
The curb market at Athens, Georgia. J. W. Firor; SA	24	Nov.

D

Dangerous agriculture. C. E. Gapen; SA.....	10	Feb.
Dean, William Harper		
Photo.....	18	Nov.
Deer, Mrs. Clara W.		
Photo.....	18	Feb.

E

Economical wives		
Are economical wives economical? Jeff McDermid; SA.....	5	Jan.
A reply to Jeff's article. G. T.; C.....	38	Feb.
Ewing, Samuel L.		
An open letter from E. K. Howe.....	21	Jan.

F

Farm, leaving the		
Why boys leave home. Willis D. Gallup; SA.....	14	Oct.
Why do our boys leave the farm? J. S. Malone; SA..	32	Feb.
Why people leave farms; A.....	27	Sept.
An answer to Jeff's question by C. B. Young; C.....	47	Nov.
Farm Bureau, news from the.....	57	Feb.
Farm income		
Farming on a business basis; Jeff McDermid; EP....	36	Oct.
Increasing the income of the average farm; A.....	45	Sept.
Farming in Japan		
Photo.....	12	Oct.
Farming, organized		
762 eggs pay plasterer for day's work. Llewellyn Trapp; SA.....	7	Sept.
Farm organizations. J. G. Wells, Jr.; C.....	39	Feb.
Farming, trade or science		
Is farming a science? Jeff McDermid; EP.....	36	Feb.

	Page	Mo.
Farm management		
Solving the farm problem. A successful manufacturer's view; A.	10	Oct.
Farm's best crops. E. A. Trego; SA.	26	Nov.
Farms, southern		
How to increase the efficiency of southern farms. Dean C. B. Williams; SA.	8	Dec.
See also Soils, southern		
Fedderson, Hi		
Save that million! SA.	7	Jan.
Feeds		
Feeds, fertilizers and lime worth \$50,000,000 purchased annually in Pennsylvania; FN.	52	Jan.
Fence posts, preservation of		
Save that million! Hi Fedderson; SA.	7	Jan.
Fertilizers		
Another plant disease conquered; A.	21	Sept.
Call for fertilizers grows in Charleston, S. C.; FN.	43	Feb.
Christie urges normal Indiana wheat acreage; N.	43	Oct.
Color of a fertilizer; FN.	45	Nov.
Commercial fertilizers do not injure soil; N.	37	Sept.
Coolidge's message. Jeff McDermid; EP.	36	Jan.
Cotton acreage fertilized 37 per cent.; FN.	40	Sept.
Effect of fertilizers upon cyclamen; N.	51	Feb.
Enough fertilizer for county to be purchased at one time (Lincoln Co., Miss.); N.	41	Feb.
Experiments with sulfate of potash in central Oregon; N.	51	Feb.
Feeds, fertilizers and lime worth \$50,000,000; FN.	52	Jan.
Fertilizers do not replace soil management; N.	36	Sept.
Fertilizers used by tobacco farmers in Dane County, Wis.; N.	45	Dec.
Florida fertilizers must show content; FN.	39	Sept.
Fourteen standard fertilizers for Florida; FN.	39	Sept.
Heavy fertilizer sale in Arkansas; FN.	40	Sept.
How to increase the efficiency of Southern farms. Dean C. D. Williams; SA.	8	Dec.
How Southern soils are run down in productivity. Dean C. B. Williams; SA.	8	Nov.
Increased sales of fertilizers in Duval County, Fla.; N.	51	Jan.
Is lime a plant food or is it a tonic? J. C. Penhook; SA.	23	Sept.
Market gardener found fertilizer made profit; FN.	37	Sept.
Open letter to Samuel L. Ewing from E. K. Howe (with tables).	21	Jan.
Pennsylvania plant food cost six millions last year; FN.	40	Sept.
Plant competition for food; A.	71	Feb.
Plant food, percentage composition of—formulas for general use; table.	49	Oct.
Potash, tables showing consumption of fertilizers in the United States for ten years, amount of potash required to provide an average of 5 per cent. in these fertilizers, etc.	22	Jan.
Profitable fertilization. Professor Paul Wagner; S.A.	12	Jan.
Putting the peat bogs to work. Don C. Shannon; S.A.	7	Nov.
Six awards for County soil fertility programs. Herbert C. Brewer; S.A.	30	Dec.
Soil should be right for alfalfa crop; N.	37	Sept.
Some paying points on tobacco fertilization. J. C. Penhook; S.A.	12	Feb.
South increases use of fertilizer; F.N.	43	Feb.

Fertilizers— <i>Continued</i>	Page	Mo.
The three brothers. Dr. W. Jervitz; story.....	14	Sept.
Toiling the hay in the bruley. Irving Price; story....	16	Jan.
Tobacco stems poor substitute for mineral potash. S. O. Izlar; S.A.....	21	Nov.
Use of various fertilizers: discussed at meeting of fertilizer salesmen; A.....	49	Dec.
Vetch combined with fertilizers for corn crop on sandy soil; N.....	45	Oct.
What fertilizers have done for my state (Alabama). F. E. Boyd; S.A.....	41	Nov.
What fertilizers have done for my state (South Carolina). C. P. Blackwell; S.A.....	8	Jan.
What fertilizers have done for Georgia. Paul W. Chapman; S.A.....	26	Feb.
Why the fish failed. H. W. Collingwood; story.....	24	Oct.
Winning program for County soil fertility improve- ment; A.....	26	Jan.
5-8-5 gives good results on sweet corn; N.....	38	Sept.
250 bushels of potatoes per acre; A.....	33	Dec.
\$50,000 to \$80,000 worth of fertilizers and spraying materials bought through Farm Bureau, Lawrence, Ohio; N.....	57	Feb.
Fertilizer notes..... 39 Sept., 45 Nov., 49 Dec., 52 Jan.,	43	Feb.
Fertilizer salesmen meet college scientists. Meetings in Virginia, Maryland, New York and Pennsylvania; FN.	49	Dec.
Firor, J. W. The curb market at Athens, Georgia; S.A.....	24	Nov.
Florida Fourteen standard fertilizers for Florida; FN.....	39	Sept.
Florida fertilizers must show content; FN.....	39	Sept.
Ford, Henry Si Bellew says: "Henry Ford is a smart man".....	19	Sept.
Fricke, R. F. Circular letters: do they hit the mark? S.A.....	11	Nov.
Fuller, Harrison Getting rid of the barberry; S.A.....	10	Dec.

G

Gaddis, M. F. How one County Agent met a big problem; S.A.....	14	Dec.
Gahm, Walter F. Winning program for County soil fertility improve- ment; A.....	26	Jan.
Gallup, Willis D. Why boys leave home; S.A.....	14	Oct.
Gapen, C. E. Dangerous agriculture; SA.....	10	Feb.
Garner, Dr. W. W. Photo.....	18	Jan.
Georgia What fertilizers have done for Georgia. Paul W. Chapman; SA.....	26	Feb.
Gore, Howard M. Assistant Secretary of Agriculture; A.....	16	Dec.
Photo.....	17	Dec.
Grain harvest, Russian Still below normal; A.....	32	Jan.

Grain rust. See Rust	Page	Mo.
Gundy, A. T.		
Native hays of Wyoming most nutritious; N.....	43	Oct.

H

Hall, J. Robert		
The slacker hen; the four leaf clover; the C. A.'s mistake! SA.....	29	Nov.
Halvorson, Halvor L.		
Is there such a thing as overproduction? SA.....	16	Oct.
Hansen, Albert A.		
Beware of water hemlock; SA.....	24	Dec.
Cocklebur sprouts are deadly; SA.....	28	Jan.
Corn rheumatism is cured with potash; SA.....	30	Feb.
In this common weed death lurks (snakeroot); SA...	52	Oct.
Hay		
Native hays of Wyoming most nutritious. A. T. Gundy; N.....	43	Oct.
Toiling the hay in the bruley. Irving Price; SA.....	16	Jan.
Head, Walter W.		
A real banker farmer. Jeff McDermid; EP.....	37	Oct.
Hinman, George W.		
Is cooperation a failure? SA.....	34	Sept.
Hogs		
Keeping hogs clean pays dividends. D. A. Armstrong; SA.....	33	Nov.
Hook, W. A.		
How I teach the principle of terracing; SA.....	28	Nov.
Howe, E. K.		
Open letter to Samuel L. Ewing (regarding potash)...	21	Jan.

I

Irrigation		
Making the most of a scanty supply of moisture. M. R. Lewis; SA.....	28	Feb.
Indiana		
Christie urges normal Indiana wheat acreage; N.....	43	Oct.
Izlar, S. O.		
Tobacco stems poor substitute for mineral potash; SA.	21	Nov.

J

Jeffisms.....27 Sept., 15 Oct., 15 Nov., 15 Dec., 32 Jan., Jeff McDermid	33	Feb.
Are economical wives economical? SA.....	5	Jan.
Avalanche of suggestions.....	21	Oct.
A real banker farmer; EP.....	37	Oct.
Buses eliminate one teacher schools; EP.....	30	Sept.
Coolidge's message; EP.....	36	Jan.
The crucial moment; SA.....	5	Feb.
Dirt farmer in the Senate; EP.....	32	Sept.
Do you like your job? SA.....	5	Sept.
Farming on a business basis; EP.....	36	Oct.
The greatest business in the world. Henry C. Wallace, Secretary of Agriculture, interviewed by Jeff McDermid.....	15	Feb.
Have you a weakness? SA.....	5	Oct.
Is farming a science? EP.....	36	Feb.

Jeff McDermid— <i>Continued</i>	Page	Mo.
Mail order king's idea; EP.....	36	Nov.
Money makes money sometimes; SA.....	5	Dec.
Most men have markers; SA.....	5	Nov.
No substitute for work; EP.....	37	Dec.
The pendulum swings again; EP.....	31	Sept.
Plowing by radio; SA.....	28	Oct.
Poisoning the boll-weevil; EP.....	31	Sept.
Rotation of men; EP.....	36	Dec.
Two men in a County; EP.....	36	Nov.
What about wheat? SA.....	8	Sept.
Why people leave farms; A.....	27	Sept.
Jervitz, Dr. W.		
The three brothers; story.....	14	Sept.
Johnson, Magnus		
A dirt farmer in the Senate. Jeff McDermid; EP...	32	Sept.

K

Kainit		
Used successfully to kill wild radish or "cadlock."		
John M. Trueman; SA.....	39	Nov.
The color of a fertilizer; FN.....	45	Nov.
Kidder. See Captain Kidder		
Kilgore, Dr. B. W.		
Photo.....	20	Feb.

L

Lacy. See Ley, F. H.		
Lewis, M. R.		
Making the best of a scanty supply of moisture; SA..	28	Feb.
Ley (Lacy), F. H.		
Tiling above the ground; SA.....	33	Jan.
Lime		
Is lime a plant food or is it a tonic? J. C. Penhook; SA	23	Sept.
Liming the soil. C. A. Bacon; SA.....	29	Dec.

M

Malone, J. S.		
Why do our boys leave the farm? SA.....	32	Feb.
Martin, Herbert Dallam		
Cotton seed selection would increase yield; SA.....	41	Dec.
Marbut, Dr. C. F.		
Photo.....	18	Oct.
McDermid, Jeff. See Jeff McDermid		
Meadows, W. R.		
Photo.....	19	Oct.
Mulder, T.		
Robbing the soil in the Northwest; C.....	39	Jan.
Myrick, Herbert		
Farmers borrow \$1,000,000,000; SA.....	28	Sept.

N

Newton, Isaac		
First head of the United States Department of Agri-		
culture. F. M. Russell; SA.....	21	Dec.
Photo.....	20	Dec.
Newton, Amanda A.		
Photo.....	19	Oct.

Nitrogen	Page	Mo.
How southern soils are run down in productivity. Dean C. B. Williams; SA.....	8	Nov.
How to increase the fertility of southern farms. Dean C. B. Williams; SA.....	8	Dec.
Potatoes: 250 bushels with proper fertilizers; A.....	33	Dec.
Profitable fertilization. Professor Paul Wagner; SA.	12	Jan.
Some paying points on tobacco fertilization. J. C. Penhook; SA.....	12	Feb.
The three brothers. Dr. W. Jervitz; story.....	14	Sept.
What fertilizers have done for my state. F. E. Boyd; SA.....	41	Nov.
Why the fish failed. C. H. Collingwood; story.....	24	Oct.
See also Fertilizers		

O

Orchard spraying		
New facts in orchard spraying. H. W. Anderson; SA.	30	Jan.
Overproduction		
Is there such a thing as overproduction? Halvor L. Halvorson; SA.....	16	Oct.
What can cooperative marketing do for the farmer? Dean Robert Stewart; SA.....	10	Jan.

P

Patterson, I. R.		
Photo.....	19	Dec.
Peat Bogs		
Putting the peat bogs to work. Don C. Shannon; SA.	7	Nov.
Penhook, J. C.		
Is lime a plant food or is it a tonic? J. C. Penhook; SA	23	Sept.
Some paying points on tobacco fertilization; SA.....	12	Feb.
Why is it?.....	13	Oct.
Pennsylvania		
Pennsylvania plant food cost six millions; FN.....	40	Sept.
Phosphoric acid, phosphorus		
See articles listed under Nitrogen		
See also Fertilizers		
Plants, poisonous		
Beware of water hemlock. Albert A. Hansen; SA...	24	Dec.
Cocklebur sprouts are deadly. Albert A. Hansen; SA.	28	Jan.
Snakeroot: In this common weed death lurks. Albert A. Hansen; SA.....	52	Oct.
Plant diseases		
Corn rheumatism is cured with potash. Albert A. Hansen; SA.....	30	Feb.
Grain rust: Getting rid of the barberry. Harrison Fuller; SA.....	10	Dec.
New facts in orchard spraying. H. W. Anderson; SA.	30	Jan.
Sand drown: Another plant disease conquered; A...	21	Sept.
Poisonous plants. See Plants, poisonous		
Popenoe, Wilson		
Photo.....	18	Dec.
Potash		
Another plant disease conquered; A.....	21	Sept.
Call for fertilizers grows in Charleston, S. C.; FN....	43	Feb.
Color of a fertilizer; FN.....	45	Nov.
Corn rheumatism cured with potash. Albert A. Hansen; SA.....	30	Feb.
Effect of fertilizer upon cyclamen; N.....	51	Feb.

Potash—Continued	Page	Mo.
Experiments with sulfate of potash in central Oregon; N.	51	Feb.
How to increase the efficiency of southern farms. Dean C. B. Williams; SA.....	8	Dec.
How southern soils are run down in productivity. Dean C. B. Williams; SA.....	8	Nov.
How to increase the units of potash in mixed fertilizer, Table.....	49	Oct.
Kainit used successfully to kill wild radish or "cad- lock." John M. Trueman; SA.....	39	Nov.
Open letter to Mr. Samuel L. Ewing from E. K. Howe.	21	Jan.
Pennsylvania plant food cost six millions; FN.....	40	Sept.
Percentage composition of plant food: formulas for general use.....	49	Oct.
Plant competition for food; N.....	71	Feb.
Potash hunger in tobacco crops; FN.....	52	Jan.
Profitable fertilization. Professor Paul Wagner; SA..	12	Jan.
Putting the peat bogs to work. Don C. Shannon; SA.	7	Nov.
Some paying points on tobacco fertilization. J. C. Penhook; SA.....	12	Feb.
The three brothers. Dr. W. Jervitz; story.....	14	Sept.
Tobacco stems poor substitute for mineral potash. S. O. Izlar; SA.....	21	Nov.
Use of potash discussed at meetings of fertilizer sales- men; FN.....	49	Dec.
What fertilizers have done for my state (Alabama). F. E. Boyd; SA.....	41	Nov.
What fertilizers have done for my state (South Carolina). C. B. Blackwell; SA.....	8	Jan.
What fertilizers have done for Georgia. Paul W. Chapman; SA.....	26	Feb.
Why the fish failed. H. W. Collingwood; story.....	24	Oct.
250 bushels of potatoes with proper fertilizers; A....	33	Dec.
See also Fertilizers, Fertilizer notes		
Potatoes		
250 bushels per acre with proper fertilizers; A.....	33	Dec.
Irrigation of potatoes; N.....	51	Feb.
Powers, Dr. Frederick B.		
Photo.....	19	Jan.
Pratt, V. E.		
A little chat with the publisher.....	12	Sept.
Price, Irving		
Planting 25,000 trees in one day; SA.....	27	Dec.
Toiling the hay in the bruley; SA.....	16	Jan.

R

Radish, wild		
Kainit used successfully to kill wild radish or "cad- lock." John M. Trueman; SA.....	39	Nov.
Reforestation		
Planting 25,000 trees in one day. Irving Price; SA..	27	Dec.
Roberts, Walter F.		
Keeping hogs clean pays dividends; SA.....	33	Nov.
Rot, brown		
New facts in orchard spraying. H. W. Anderson; SA.	30	Jan.
Roycrofters		
Planting 25,000 trees in one day. Irving Price; SA..	27	Dec.
Photo.....	26, 28	Dec.

Russia	Page	Mo.
Grain harvest still below normal; N.....	32	Jan.
Rust, Grain		
Getting rid of the barberry. Harrison Fuller; SA....	10	Dec.
New facts in orchard spraying. H. W. Anderson; SA	30	Jan.
S		
Sand drown. See Plant diseases		
Scott, K. D.		
Where once Algonquins and the bears held sway; SA..	34	Feb.
Seed selection. See Cotton		
Shannon, Don P.		
Putting the peat bogs to work; SA.....	7	Nov.
Si Bellew says		
Candidates pitch hay in white collars.....	23	Oct.
Henry Ford is a smart man.....	19	Sept.
It's tough to have to be a County Agent.....	23	Nov.
Smith, R. R.		
How to increase the value of County Agent work; SA	15	Dec.
Snakeroot. See Plants, poisonous		
Soil experts, with the.....	36	Sept.
Soil fertility programs		
Six awards for County soil fertility programs. Herbert		
C. Brewer; SA.....	30	Dec.
Winning program for soil fertility improvement.....	26	Jan.
Soil, in the Northwest		
Robbing the soil. T. Mulder; C.....	39	Jan.
Soils, southern		
How southern soils are run down in productivity.		
Dean C. B. Williams; SA.....	8	Nov.
See also Farms, southern		
Spinach		
Requires abundance of plant food; N.....	36	Sept.
Spraying. See Orchard spraying		
Stanley, Dr. Louise		
Photo.....	19	Nov.
Stewart, Dean Robert		
What can cooperative marketing do for the farmer? SA	10	Jan.
Strawberries		
\$576.86 from one acre of strawberries. D. A. Arm-		
strong; SA.....	32	Nov.
Sullivan, Wallace		
Selling the idea of a County-wide cow-testing associa-		
tion; SA.....	21	Feb.
T		
Terracing		
How I teach the principle of terracing. W. A Hook;		
SA.....	28	Nov.
The three brothers. Dr. W. Jervitz; story.....	14	Sept.
Tiling above the ground. F. H. Ley (Lacy); SA.....	33	Jan.
Tingley, Richard Hoadley		
Cotton: the fabric of civilization; SA.....	8	Oct.
Selling cotton cooperatively; SA.....	7	Feb.
Tobacco		
Another plant disease conquered (sand drown); A....	21	Sept.
Call for fertilizers grows in Charleston, South Caro-		
lina; FN.....	43	Feb.
Fertilizers used by tobacco farmers of Dane county,		
Wis.; N.....	45	Dec.

Tobacco— <i>Continued</i>		Page	Mo.
Potash hunger in tobacco crops; FN.....		52	Jan.
Some paying points on tobacco fertilization. J. C. Penhook; SA.....		12	Feb.
Tobacco stems poor substitute for mineral potash. S. O. Izlar; SA.....		21	Nov.
Toiling the hay in the bruley; Irving Price; SA.....		16	Jan.
Trapp, Llewellyn			
762 eggs pay plasterer for one day's work; SA.....		7	Sept.
Trego, E. A.			
The farm's best crops; SA.....		26	Nov.
Trueman, John M.			
Kainit used successfully to kill wild radish or "cadlock"		39	Nov.

W

Wagner, Professor Paul			
Profitable fertilization; SA.....		12	Jan.
Wallace, Henry C.			
Interviewed by Jeff McDermid; SA.....		15	Feb.
Photo.....		17	Feb.
Walls, E. P.			
A wool market that pays; SA.....		7	Dec.
Walnuts			
How 4200 walnut growers market cooperatively. Charles J. Brand; SA.....		12	Dec.
Warburton, Clyde W.			
New director of extension work; A.....		16	Nov.
Photo.....		17	Nov.
Water hemlock. See Plants, poisonous			
Wells, J. G., Jr.			
Organized farming; C.....	47 Nov.,	39	Feb.
Wheat			
What about wheat? Jeff McDermid.....		8	Sept.
Wheat: comment on article in BETTER CROPS by C. F. Woodward; C.....		39	Dec.
Wheat acreage in Indiana; N.....		43	Oct.
Where once Algonquin and the bears held sway. K. D. Scott; SA.....		34	Feb.
Whitney, Professor Milton			
Photo.....		20	Jan.
Why I use a horse in making my rounds; T. L. Britton; SA.....		14	Nov.
Why I use a car in making my rounds. Charles H. Alvord; SA.....		15	Dec.
Why the fish failed. C. H. Collingwood; story.....		24	Oct.
Wild radish. See Radish			
Williams, Dean C. B.			
How to increase the efficiency of southern farms; SA...		8	Dec.
How southern soils are run down in productivity; SA.....		8	Nov.
Woodward, C. F.			
Criticism of article on wheat; C.....		39	Dec.
Wool			
A wool market that pays. E. P. Walls; SA.....		7	Dec.
Wyoming			
Native hays most nutritious. T. A. Gundy; SA.....		43	Oct.

Y

Young, C. B.			
Why people leave farms; C.....		47	Nov.

18

19

20

21

22

23

24

25

26

27

28

29

30

31

32

33

34

35

36

37

38

39

40

41

42

43

44

45

46

47

48

49

50

51

52

53

54

55

56

57

58

59

60

61

62

63

64

