In this issue—A. B. Genung—C. E. Gapen—C. E. Baker—Jeff McDermid—Robert Stewart
If you owned Niagara

If you owned it you would have endless water power forever at command.

Water power continues through the years—but "land power" dwindles each season. The fertility of the soil constantly grows less—every crop that is sold has taken its toll of the plant food from every acre.

What are you doing to improve the fertility on the farms of your county? Yields may be seriously limited because the fertilizer used contains little or no potash.

There is only one reason why you should recommend the use of potash—it pays! Make a test in your own district. You may see a big increase in yield—better flavor—improved keeping and marketing qualities.

If you buy mixed fertilizer insist upon a formula that is high in potash.

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POTASH
PASS IT ON!

"Pleasure divided" says a Hindu proverb, "is pleasure doubled."

After you have read this copy of Better Crops, pass it on to your friends and let them enjoy it too.

Yes, I know a lot of you are doing that already, but are you sure the people you give it to also pass it on. Each copy should have at least five readers.

There ought to be something in every issue that you will want your neighbors to read. If there isn't, send me your suggestions, and I'll try to make good.

Better Crops is not a farm journal. It is edited for the people who work with farmers. That doesn’t mean, however, that farmers won’t find it interesting. On the contrary, we find that progressive, thinking farmers all over the country are getting benefit from its pages.

Well, it’s your magazine. Why not make it work for you?

Just to show you that I’m ready to help, I will send a copy of this issue to half a dozen of your friends if you will send me their names and addresses. Your name will not be mentioned unless you authorize us to do so.

I’m waiting.

Yours to a cinder,

Jeff McIvermid
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.

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Editorial Office: 461 Eighth Avenue, New York
County Agent, E. Carnes, of Spartanburg County, South Carolina, discussing strong and weak points of a pig club member's Duroc hog.
Be Patient
with Ignorance

By Jeff M. Vermeid

"Patient endurance is Godlike"
Longfellow

Into the life of each leader of men creeps the period when his endurance under the stresses of life reaches the breaking point; when the ignorance and stupidity of his fellows stings him into exasperated frenzy—the world seems full of muddle-headed dumbbells who can neither follow out clear instructions, nor originate plans of their own and carry them through to fruition.

To the world's supply of epigrams on the subject of patience, I would like to add this: Be impatient with thyself, but patient with others. Some months ago I wrote, in these pages, I believe, that "dissatisfaction is the father of progress," but I neglected to add that the dissatisfaction must be with one's self—not with the world and its men and women. Be dissatisfied with your own achievements—that way lies progress; but be extremely patient with the failings of others, for that way lies human sympathy, and a man devoid of human sympathy is less a man than a beast or a machine.

I have had some experience with men. I classify them into three groups: first, those who do the things, and do it right without being told; second, those who will do what they are told to do, and do it right; and lastly that large, worthless group who will neither do anything without being instructed...
nor do it well even when explicit, detailed instructions are issued.

It is well to remember as we consider the need for patience that the Declaration of Independence contained one glaring fallacy, which, unexplained, has been the root and source of much misunderstanding. I refer to that clause which states unequivocally that "all men are created equal." All men are not created equal, except that all men deserve equal treatment in the eyes of the law. All men are not created mentally, physically, morally nor financially equal, and I doubt whether they ever will be so created. Neither are all men created free—many are born slaves to ignorances, prejudices and passions impressed upon them by heredity—patterns woven into their souls which all of the decades of a human life can never erase. Only to future generations can we look for improvement of sufficient importance and significance to warrant our attention.

If this is so, and I believe it is, then how necessary is patience! The man who first said, "If you want a thing well done, do it yourself," was an impatient man, gnawing viciously at the cords which bound him to other less efficient men. He lived at a time when men could go through life as individuals, not dependent upon the efforts of others. He knew naught of modern existence, nothing of present day organization. He lived and died in a period before the railroads, telegraphs, radios, newspapers, and modern commerce brought us all closely together and demanded that we learn to get along with each other. The man who today believes that to get a thing well done he must do it himself will never be a leader nor a teacher of men. And he will not accomplish much, for no one man can accomplish much—it takes a group of men working sincerely together with a common purpose and aim to create significantly.

"Patience," said Disraeli, "is a necessary ingredient of genius," and Franklin adds that "he that can have patience can have what he will!"

Because all men were not born equal, there is much stupidity in this world. We bump up against it every day. It is exasperating, to say the least. And when we find stupidity combined with conceit—a common mixture—we then have the ultimate in bitter mixtures—it is a dose hard to swallow.

I remember going down to South Chicago with a famous horticulturist one day a few summers ago—a man whose name means a great deal to scientists of this and other countries, and whose books are textbooks in most of the agricultural colleges. We had to take a South Halsted Street car, and as we both were upon foreign ground, we asked the conductor to let us know when we reached Delta Street. We had no idea how far Delta Street was from the point where we boarded the car, and were dependent upon the conductor for aid. His announcements of the streets were upon a par with most such attempts at the English language as are indulged in by street car conductors, and as we bored on and on into the wilds of South Chicago it occurred to me that it might be a good plan to remind the man that he had promised to let us know when we reached Delta Street. We had no idea how far Delta Street was from the point where we boarded the car, and were dependent upon the conductor for aid. His announcements of the streets were upon a par with most such attempts at the English language as are indulged in by street car conductors, and as we bored on and on into the wilds of South Chicago it occurred to me that it might be a good plan to remind the man that he had promised to let us know when we came to Delta.

I timidly inquired, "We haven't reached Delta Street, have we, conductor?" He looked at me with a sneer and spat out, "Oh! we haven't, eh! Well, Delta Street is only three miles back, young feller! Only about thirty fi' blocks! Why'n't you watch whatcher doin'? Don't you know enough t' get off where y' want t' go?"

My timidity vanished in a flash and my ire, inherited from an ire-ish ancestor, started to mount and soar. I was about to give the conductor a piece of my (turn to page 62)
CI got several good chuckles out of this article which David Jay wrote in answer to a suggestion of mine. You'll like it, too.

Why I Use a Car

By David Jay
County Agent, Chariton County, Missouri

WELL! Well! I'll bet you were never a County Agent or you would never have asked the question—"Why Does a County Agent Use a Car in Making His Rounds?"

Why not just as well ask "Why does a cat use its claws in catching a mouse?" or "Why does a man take a pail with him when he goes to milk?"

Pshaw! I often tell folks my car is just as essential and important to me as a pair of shoes. I always keep it handy and "wear" it every place I go.—Why? Well, the main reason is—I want to get there and get back, and not be very long about it.

I'll admit there may be a few good County Agents who can stay in the office most of the time and get the "local leaders" to do the work, but when a County Agent gets to be this good he is usually asked to quit—and, I mean resign—or he does quit and seeks a job some place else.

When I first lit on the job here in one of our corn belt states one fine spring day after a period of prolonged rain I cast my eye out over the land—I mean water-scape and wondered if the designer of the popular universal American car had had in mind any such roads (?) to be traveled or cruised, or whatever it is when you are transported from place to place in your county.

Well, I soon found out that the above-mentioned designer had "builded better than he knew" for with one of his tin Lizzies I have never failed to get back when I started any place,—although I will have to admit that sometimes it was in the wee small hours of the morning after several hours of clawing out mud with my fingers so a chain could be adjusted or maybe I had to tear a piece off or out of some roadside fence to use in prying out of a mud hole.

Oh yes, in these ten years of experience I don't see how there could be any conceivable condition of road I have not practiced on with my flivver,—wide roads, narrow roads, slick roads and rough roads, ruts up to the axles,—sometimes just plain ruts and other times corrugated ruts—and, by the way—I believe the corrugated rut takes the cake when you really want to shake up a torpid liver.

And then there is the deep snow, drifted and crusted.

And s-a-y, boy! Did you ever try to negotiate a north sloping hillside road in March when the top layer was thawed out and the icy ground was (turn to page 41)
A much enlarged photomicrograph of a group of nematodes which attack the stems and leaves of clover and produce crown rot. It is a typical threadlike nema.

THE NEMA—

By C. E. Gapen

U. S, Department of Agriculture

The nematode does not hop, skip, nor jump. He is not that kind of a "toad." He differs, at least in some of his species, in another important way from the dignified Bufo Americanus, the common garden toad, in that he is really able to produce warts, whereas Bufo, in spite of the popular notion, is unable to do so. A nema of a certain kind produces galls or knots, similar to warts, on the roots and tubers of many field, garden, and orchard plants. It is probable that all farmers and gardeners have seen the effects of these pests on roots, for the gall nema attacks probably five hundred different kinds of plants, including field crops, truck crops, ornamentals, orchard trees, and weeds. Other kinds attack other plants, insects, fishes, animals, and man. Only a few days ago one of Uncle Sam's investigators discovered that there are some nemas parasitic inside of others; in this case the one attacked by the parasite belonged to a predatory species which devours "bad" nemas and is a friend of the farmer.

But before going farther, let us find out what a nema really is. This organism has been known for a long time, and one man in the United States Department of Agriculture has been studying them for nearly forty years, but it is hard to describe it with exactness in a few words. The tendency is to speak of them as "worms" because they are of the same general shape as worms; and those infesting crops, potatoes
Cowpea plants with roots injured by the gall nema. Note how these swellings or knots differ from the ordinary nodules produced by beneficial bacteria.

Friend and Enemy

"The Nema is small but he's mighty important. You will find some interesting and surprising facts about him in this article.

for instance, are often called eelworms. The word "nema" comes from a Greek word meaning thread. So the nema, which has been given this convenient short name in recent years, is a threadlike organism. It is highly organized, having eyes, spots, organs of hearing, mouth parts, smelling organs, a nervous system, but no circulatory system. It has a tube running through its entire length as worms have, but it is not divided into sections or segments as are worms. Some of them lay eggs and some give birth to living young.

Most of the nemas, and their name is legion, are so very small as to be practically invisible to the naked eye, but they range in size from a two-hundredth of an inch in length to about six feet, and from the diameter of a very fine hair to that of an ordinary lead pencil. According to Dr. N. A. Cobb of the Bureau of Plant Industry, one of the leading nematologists of the country, it is probable that the world is thoroughly sprinkled with these organisms. They are to be found in great numbers in the soil and in the streams, lakes, and oceans, particularly in the hot and temperate regions, in plants, in insects, and in practically all animals. Many of them are of great economic importance to farmers, and medical men and veterinarians have found numbers of them which are factors in causing very serious diseases, for examples, the hookworm disease, trichinosis, and the horrible de-
formities of elephantiasis are the result of nema infection of a peculiar kind.

The abundance and wide distribution of the nemares are shown by a fanciful picture of the world with only these organisms visible, which is one of Dr. Cobb's methods for helping the uninitiated see the importance of this little-known class of living things. They are so numerous, he says, that if all other matter were transparent the familiar forms of many things would be indicated by clouds of visible nemas. There are so many in the soil that the blanket of productive earth would be made apparent by the billions which live in each acre of land. The plains, hills, and mountains could be discerned. They would make the rivers, lakes, and all bodies of water in the warm and temperate regions visible. The infested parts of thousands of kinds of vegetation would show up, as would insects, animals, and many humans. Clouds of slowly wriggling nemas would mark out the soil and the living world upon it in much the same way as pictures are reproduced in magazines by means of many fine dots. Investigators believe that a large fraction of insects and animals have at least one species of the parasite upon them. Some have the misfortune to be harrassed by a score or more.

In this knowledge of the presence of such a horde of invisible or hidden enemies there is something to inspire terror. If certain of them should multiply greatly we might suddenly be wiped off the earth or slowly starved to death as a result of crop failures. But, fortunately, there are some species which are decidedly beneficial. It seems hardly possible that any of these little animated threads could be classed as predatory animals, yet there are some which are decidedly bloodthirsty. They prey upon different species of their own race and in that way help to keep down the numbers of some that attack crops. One predatory nema, under continued observation, was seen to suck the life fluid from eighty victims in one day in much the same way as a weasel would go through a hen house. It is unfortunate that this bloodthirsty benefactor of the farmer should be

A test of resistant varieties of cowpeas. The center row was of a variety not resistant to the gall nema.
After careful consideration of a number of excellent manuscripts submitted in the prize essay contest conducted by the Potash Importing Corporation among the readers of Better Crops, the judges announced a tie. Accordingly an award of $50 in gold was made to each of the winners, Prof. A. L. Patrick of Pennsylvania State College and Dean Robert Stewart of the College of Agriculture, University of Nevada. As we had reserved space in this issue of Better Crops for only one essay, it was necessary to decide by lot which should be printed first. The two names were placed in a hat and the first one drawn was Prof. Patrick’s so we present his article to you now. Dean Stewart’s essay will appear next month.

POTASH PAYS!

By Austin L. Patrick

Pennsylvania State College

The effect of potash fertilizer on general farm crops where no manure is applied is brought out very clearly by a study of the results of America’s oldest continuous fertilizer experiment. This experiment was begun in 1881 and has continued ever since.

The soil for the most part is the Hagerstown silt loam and owes its origin to the weathering of limestone. It is very similar to much of the soil in the Blue Grass Region of Kentucky, the Central Basin of Tennessee, and the Lancaster Valley in Pennsylvania. Chemical analysis show that this soil is high in potash containing approximately fifty thousand pounds per acre to plow depth. If this potash were available it would supply plants with all of this constituent needed for hundreds of years.

The crops in this experiment are grown in a four-year rotation of corn, oats, wheat, and hay (clover and timothy). The corn and wheat crops receive the fertilizer and any increase of hay or oats is due to the residual effect of the fertilizer.

The following table taken from the Pennsylvania Experiment Station Bulletin No. 175 shows the average annual yield per acre of
Pictures of the Old Pennsylvania Fertilizer Experiment

Yield of hay on no treatment plot.

Yield of hay on plot seven showing the result of Phosphorus and Potash treatment.
each crop covering a period of forty years.

A study of the above table shows plainly that where potash was applied in addition to phosphorus fertilizer the potash has increased the acre yields as follows: corn 8.5 bushels, corn stover 733 pounds, oats 5.2 bushels, oat straw 346 pounds, wheat 3.2 bushels, wheat straw 351 pounds, and hay 1,091 pounds.

Figuring the increases in dollars and cents it is found that after deducting the cost of the fertilizer the sum of the annual acre value for all crops (four acres) amounted to $20.40 more than did the crops on the untreated plots. If we further deduct the value of the increase due to the phosphorus fertilizer alone from this we still have an increased value of $10.13 which must be attributed directly to the potash and these figures are obtained after deducting the cost of the potash fertilizer.

There are numerous other experiments that are being conducted by the Pennsylvania and other stations that show far greater returns from the use of potash fertilizer than do the "Old Pennsylvania Plots." These plots were chosen to illustrate the importance of potash fertilizer because they have been running for so many years that the results can not be questioned. They show beyond a shadow of a doubt that potash fertilizer pays under the described conditions in spite of the fact that abnormally large acre applications were made.*

*NOTE:—Where phosphorus was used! 48 pounds of phosphoric acid was applied per acre and 100 pounds of potash is the amount of that constituent added per acre.
Like a fresh breeze in a stuffy room—that's the way Mr. Genung's manuscript struck me when I first read it. Here is an article that looks unflinchingly at both sides of the present agricultural situation. It will appeal to everyone who respects sound thinking and plain speaking.

LOOKING AHEAD

By A. B. Genung
Economist, U. S. Department of Agriculture

Shortly after the great San Francisco fire, one of that city's substantial business men landed in New York on his way home from Europe. He was met by a bunch of staggering telegrams. His factory and his home had been wiped out. It meant loss of half a lifetime's work.

Reporters who visited the old gentleman at his New York hotel, on the evening of his landing, found him in shirt-sleeves, busy with both telephone and telegraph.

"Yes, it means heavy loss to me," he told them. "I haven't got much tangible property left on top of the ground. It sets me back pretty near to the early days of struggle. But I've learned this afternoon that the insurance will come through O. K. and that I still have good lines of credit. I've just wired my son to start immediate negotiations for materials and construction contracts. One year from today we'll have a better plant than ever, right where those ruins are smoking now.

"Will I rebuild my home? I should say I will! Stone for stone! "Game loser, you say? No more so than every one of our people. This is a terrible calamity. But no calamity known to man can shake our faith in the future of San Francisco. When do you think a man ought to show his courage? When things are the blackest—that's when! We'll pull through this business and we'll be stronger than ever. You watch!"

Out in the Corn Belt I heard a middle-aged farmer say about the same sort of thing one day last year.

He was in debt. His equity had been pretty well wiped out—not by fire, but by the withering, shriveling blast of the deflation period, with collapsed prices and land values.

"Yes," he admitted quietly, "I'm hit and hit hard. Most of the neighborhood is in the same fix. Our work for three years—my wife and boy and myself—has not brought in enough to pay our taxes.
and interest. And we've worked all right, early and late.

"But I don't need to tell you how things are, you see it all over the country.

"Am I going to stick on the farm? Yes.

"I'm not fitted to work in town. We're country-minded people and this is a good farm. These are hard times, discouraging times. I'm glad the boy isn't old enough to go away to work yet, for he'd certainly want to, in the face of conditions now.

"The reason I'm going to stick to my guns is because I believe the tide will turn by and by. It don't stand to reason that things will go on this way many years. I can swing the thing, with good luck, and some day that boy will be mighty glad to be the owner of this place. I've seen hard times before. They don't last forever. If a man ever ought to have his backbone with him, it's now. That's one of the few things I still have left—my nerve, and if it ever weakens a little sometimes, my wife is on hand with a brand that don't weaken.

"We'll stick. You come back here ten years from now and you'll say we were wise."

This sort of spirit turns the calendar back almost to the day of indomitable pioneers, who conquered the land and then held it in spite of everything. Agriculture has, indeed, been through the fire, and the end is not yet. It is going through times that try the temper, not only of individuals but of whole regions. The surviving men and methods will inherit a new era of prosperity that lies somewhere out there ahead of us, just as surely as to-morrow's daylight follows night.

What is it that has happened, anyhow? What is back of the agricultural depression? Where do we stand now? What is ahead?

The whole situation is primarily a wartime product—a statement actually less trite than it sounds. Its roots go down into the maladjustment of national and international production occasioned by four years of war. Its fruit is manifest in the wild gyrations, inflation, and later precipitate fall of prices.

Relative prices are the immediate lever which move men into or out of farming, and which prompt farmers to produce the particular things they do. The price level underlies and constantly reshapes the whole economic situation.

The period from about 1897 to 1914 had been one of gradually rising prices. It was a period of general prosperity and healthy expansion, in both agriculture and industry.

In 1914, came the war. The war period inevitably developed into one of climbing prices. It is not necessary here to go into the complex causes thereof. From 1915 to 1918, prices of commodities in general doubled.

Then, following the Armistice, came the real orgy of inflation. Spurred by a flood of emergency orders from Europe, all lines of business expanded. Men borrowed all the money they could lay hands on to build factories, to buy materials, to buy land, etc. Credit was inflated until the supply of phantom "dollars" seemed unlimited. Prices automatically rose higher and higher.

The spring of 1920 saw the peak. Suddenly the brakes came on. Deflation began. Like a ball tossed up the slope of a roof, prices paused and then began the downward plunge. Within a few months, agriculture was flat on its back. Nor was industry in much better shape for a time.

The urban community had an ace in the hole, however. While industry had been devoted solely to making war materials, the Nation had run behind in supply of houses, railway equipment, automobiles, textiles, etc. Wartime shortages of such basic equipment made themselves felt presently; urban in-
Industry felt the stimulus; wheels began to turn, labor became busy, industrial wages rose. So the cities swung into a business boom which has lasted two years and has not waned yet.

Meanwhile, agriculture, which had expanded to meet European war needs, suddenly found its foreign market lifeless. In the fall of 1920, prices of farm products collapsed. Deflation hit agriculture first and hardest. Nor did the farmers' market have domestic shortages to take up the slack, except in the case of cotton and wool. Demand for the fibre did revive to a considerable extent as cotton and wool prices have reflected.

So things have bumped along since the war, like a wheel out of balance. Prosperity in the cities, depression on the farms. Industrial wages high, workers moving away from farms to town; prices of farm products at a persistent disparity with urban prices and charges; hardship and discouragement in the open country.

Where do we stand now? About where farmers stood in 1870, following the Civil War. We have gone through the same sort of wartime expansion, inflation, skyrocketed prices; and later through the same post-war slump, marked by sharp disparity between agriculture and urban industry and by general distress throughout the former. Of course, things differ in many respects now from the Civil War period, but there is enough similarity to make the comparison highly significant.

What is ahead?

That is, of course, anybody's guess. About the most one can do is to weigh the apparently favorable factors against the apparently unfavorable ones, then call the turn as he sees fit.

Let us get the dark part of the picture out first where we can have a look at it.

Prices of several major farm products are, and have been for three years, below the point of profits. Farmers are up against a high wage level; up against high prices and charges on the manufactured things they have to buy; up against increasing taxes and other unavoidable cash expenses. The whole agricultural industry has been brought into low favor, accompanied by a shift of farm population to town, and a disposition of capital likewise to seek urban fields. Values of all classes of farm property have shrunk; a heavy burden of farmer indebtedness has been built up which is a dragging anchor on the whole situation. In a very few words, that is the dark side, and let nobody doubt that it has been, and in many regions still is, genuinely dark. "Dark" is not really the word—black is the word.

Ahead, furthermore, is always this question of the trend of prices. The history of the post-Civil War period was a story of falling prices for fourteen years, and a generally declining price level way into the late nineties. Prices of farm products were much of the time at an unfavorable disparity with other things, though that was quite largely explainable by the impetus given to production by the opening of the West and development of modern farm machinery. However, a falling price level is unfavorable to an industry having so slow a turnover as farming and weighted so far into the future with financial obligation. A man may buy a farm and assume a debt that he expects to pay off ten or fifteen years hence. The debt must be paid in dollars. If meanwhile, prices fall, it becomes much more difficult to acquire the number of dollars necessary to pay the debt. He is constantly ridden by the pressure of falling values, while all his fixed expenses such as taxes, interest, and debt payment have to be met in dollars (turn to page 55)
The Plant Wizard of California. Above is an exceptionally fine photograph of Luther Burbank, the world famous horticulturist and plant wizard. He is pictured here at his Santa Rosa home, with his newest development of the flower world—a new Lilac, the flower of romance. Mr. Burbank recently recovered from severe illness and in March observed his 75th birthday.
Heads fighting forces against plant pests—Dr. C. L. Marbatt, Chairman of the Federal Horticultural Board, U. S. D. A., directs administration of plant quarantine laws designed to keep out destructive plant insects and diseases.

This young chap doesn't fear black sheep for pals. He looks as if he were enjoying their company.
The Department of Agriculture is working steadily at the job of surveying and sampling all of the agricultural soils of the United States. This picture shows how samples are taken. Already the total area covered by detailed surveys amounts to more than 400,000,000 acres and the area covered by the reconnaissance or preliminary surveys is more than 350,000,000 acres.
Changing the Shape of Sweet Potatoes

By Lyman G. Schermerhorn
New Jersey Agricultural Experiment Station

This article is reprinted by permission of Prof. Schermerhorn and New Jersey Agriculture in which it first appeared. It has attracted considerable attention and has been reprinted in The Literary Digest and several other publications.

The great variation in the fertilizer and manuring practices in the sweet potato sections of New Jersey and requests from the Ocean County and Atlantic County Boards of Agriculture in 1921 led the vegetable departments of the New Jersey Agricultural Experiment Station to start extensive plantfood studies. These have been continued over a period of three years.

The objects of these experiments have been to study and determine (1) the best sources of nitrogen, (2) the influence of potash, (3) the best combination of fertilizer ingredients, and (4) some of the factors that influence the shape of the sweet potato. The investigations were conducted on the farms of G. L. Purzner of Germania, N. J., and George Newman of Toms River, N. J.

It will be the aim in this discussion to show only the influence of potash on sweet potato production in New Jersey. The complete results will be published by the experiment station in bulletin form in the near future.

Dr. E. B. Voorhees calculated that 200 bushels of sweet potatoes, not including the vines, remove from the soil an average of 30 pounds of nitrogen, 10 pounds of phosphoric acid and 45 pounds of potash. T. E. Keitt, of Clemson College, S. C., has shown in several analyses that the yellow Nausemond, which is accepted as the Yellow Jersey, removed on the basis of a 214-bushel yield per acre, .213 per cent of nitrogen, .0519 per cent phosphoric acid, and .39 per cent of potash. From these figures it is apparent that the sweet potato removes more potash than nitrogen and more nitrogen than phosphoric acid. Experimental results secured by the writer during the past three years bear out the relative importance of each ingredient as shown in the above analyses.

In this experiment twenty-one balanced plant-food combinations were compared. In the analysis of each combination the total plant-food amounted to 16 per cent. The three fertilizer ingredients, nitrogen, phosphoric acid, and potash, were each actually used in amounts varying from 2 to 12 per cent. Each mixture was applied at the rate of 1,000 pounds per acre, 600 pounds being applied under the rows about ten days before planting and the balance about three weeks after the plants were set in the field.
Desirable chunky potatoes produced by 1400 pounds of 3-8-8 per acre. Average size 5.4 by 2.19 inches. Yield per acre 152.6 bushels of firsts and 50.9 bushels of seconds.

The yields and average analyses on the seven high, seven medium, and seven low-yielding plots are shown in table (1).

In the results shown in table (1) it should be noted that as the potash decreased, the yield of marketable tubers decreased, and as the potash is increased up to 8 per cent, there is a decided increase (turn to page 61).

Undesirable lengthy potatoes produced by 1400 pounds of 3-8-0 (no potash) per acre. Average size 6.98 by 1.66 inches. Yield per acre 73.1 bushels of firsts and 67.7 bushels of seconds.
Consider Others

By Dr. Frank Crane

In some people ambition is merely another name for selfishness. They are ambitious as a hog is ambitious. (It is all right to want to get on, but not if it implies stepping on somebody else. ("I Want What I Want When I Want It," is funny as a song on the vaudeville stage. It is pretty coarse stuff when you hear it at home. (Wants are essential to getting on, but if they are not accompanied by discipline and self-control they are but wild winds and unchecked fires. (There are those who are as full of wants as a vacuum is full of nothing. They shove others aside, step on their feet, hurt their feelings and bowl them over. They want their own way regardless of the comfort of others. (Among the ignorant this appears as brutality: among the educated and clever it is called by more respectable names, but it is just as bad. (The tyrant king, the arbitrary employer, the intolerant fanatic, the insolent political boss, the domineering parent, the overbearing husband, the martinet school teacher, all of these by and by accumulate hate and ill-will enough to demonstrate that their efficiency is a form of suicide. (Real Success means gaining the cooperation of others. (To sow gratitude and loyalty and affection brings a crop of able assistants. You can never tell when they will do you a good turn. (No man of sense needlessly creates ill-will. Even a wounded rat will bite and a crushed bee will sting. (The best part of any man's business achievement is the kindly feelings he has created in others. Pushing and goring and jolting is not efficiency. It is plain rudeness. It is stupid. (The first and greatest rule in business is: Consider Others. (Most of the joy of life comes from the way others treat you and from their feelings toward you. And as with anything else, if you want that, you must pay for it. Pay for it in courtesy, thoughtfulness, generosity, toleration, charity and love. (This sort of coin is good, not only in Sunday School but in the workshop and the store. (You get what you give in this world. Reaction is equal to action. (Consider others and they will consider you. (Brush by, knock 'em down, crowd ahead, kick, gouge and elbow your way to the front, and somebody will be there to hand you a few choice knocks that will take the joy out of life. (It is a good thing to count the cost, to estimate not only how much money and fame you are going to make, but how much hate you are going to acquire, how many enemies you are going to raise up, and how many of your fellowmen will be glad when you are dead. (Print it in large letters and hang it up on your wall: CONSIDER OTHERS.

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IT is the general opinion that farming is in a bad way throughout the nation. What shall we do to save American Agriculture? This question seems to be the paramount one in the minds of many of our leading men of affairs including the President and his advisors. Certain types of farmers and certain types of farming are in a bad way, but more frequently reports are made of cases where certain individuals are making a pronounced success of farming even during the worst periods of agricultural depression by the application of hard work and business principles to farming.

S. H. WELLS of Logandale, Nevada, is such a farmer. Logandale is a small farming village located in the Moapa Valley lying on a branch of the Union Pacific Railroad connecting with the main line between Salt Lake City and Los Angeles.

Wells is a blacksmith by trade and a farmer by profession who became interested in the wonderful possibilities of the Moapa Valley in 1904 at the time of the establishment of the Union Pacific from Salt Lake City to Los Angeles. It appeared to him that the valley with its mild climate and its location mid-way between two large cities offered excellent opportunities for the growth and marketing of such products as asparagus, nuts, figs, pomegranates, alfalfa, grain and dairy products.

He located there and assisted in the organization of the Moapa Improvement Company. In 1905 as superintendent of that organization he shipped the first two carloads of cantaloupes out of the valley to Utah points.

The Moapa Improvement Company successfully continued to handle the fruit, vegetables and cantaloupes produced in the valley until 1908. In that year two other companies were organized, the Moapa Fruit Land Company and the Moapa Investment Company and were planting a heavy acreage of cantaloupes. It was then decided in order to eliminate competition that the individual farmers should incorporate and as the Moapa Valley Farmer's Association join with the other three companies in organizing the Utah Moapa Distributing Company. Under such an organization things moved along very satisfactorily and financially successfully to the farmers for several years.

The acreage in cantaloupes increased rapidly until 1914 and 1915 when between four hundred and five hundred carloads were shipped out annually. The growth and development of the industry seemed to be destined to parallel the growth and development of the cantaloupe industry of the Imperial Valley of California which had commenced to develop at the same time and
has now reached a shipment of over eleven thousand cars annually.

By 1915, however, the profits of the marketing had become so large that it attracted the attention of a group of business men in Salt Lake City who bought the controlling interest in the Utah Moapa Distributing Company and it was then run like any other commission house which is interested only in the profits from the marketing end of the game.

Japs and Koreans were brought in by the "business men," land was leased and they commenced to raise cantaloupes by such methods. The white farmers became discouraged and careless and the reputation for Moapa cantaloupes was destroyed, the market disappeared and the cantaloupe industry in the Moapa Valley achieved its death blow.

In 1917 an effort was made to revive interest in the cantaloupe industry by getting the farmers together in a new organization to be known as the Moapa Valley Farmers Association, but the growers would not unite and support the movement so it failed.

In 1919, Mr. Wells decided to let the rest of the valley work out its own salvation and to build up his own business under his own name. In this he has been extremely successful, especially considering the past three years of prevailing agricultural depression. In 1918, for example, he shipped out six hundred and thirty crates of asparagus through the commission company, as usual, for which he received $800.00. In 1919 he shipped six hundred and twenty-six crates under his own label for which he received $2,079.00 and his market has improved ever since even during 1920, 1921 and 1922!

The asparagus is harvested in March and April. It is marketed under his own trade mark in Salt Lake City, Utah, Pocatello, Idaho, Great Falls, Montana, Lincoln and Omaha, Nebraska and St. Paul and Minneapolis, Minnesota. It is practically all sold F. O. B. his own station. The returns in 1925 were $325.00 per acre.

Wells has a farm of one hundred and ten acres devoted to a very diversified system of farming. He has fifteen acres of asparagus, thirty acres of alfalfa, thirty acres of small grain, twenty acres of corn, ten acres of Bermuda grass pasture and five acres devoted to fruit, garden, etc.

The alfalfa grows luxuriantly and is cut five times each year. The yield is about eight tons per acre of cured hay. He feeds most of it to registered Guernsey cattle. The rest is baled and sold locally at from $15.00 to $20.00 a ton. The cream from the dairy herd is shipped to Salt Lake City and San Bernadino, California. The returns from the dairy herd are used to cover family living expenses. His Bermuda pasture takes care of three head of cattle per acre per season from March to October.

He also raises full blooded Duroc hogs. The sows farrow twice each year, in March and September. The pigs weigh from one hundred and seventy-five to two hundred pounds when marketed at the age of six months. (turn to page 45)
APPLE SCALD

You can prevent this disease if you follow these directions carefully.

APPLE scald is the most serious disease of apples during storage, causing greater annual losses than all other storage disease combined. Nearly everyone is familiar with the brown discoloration found on many varieties, such as: Grimes, York Imperial, Rome Beauty, Rhode Island Greening and Baldwin, from mid-winter on. This is often thought to be the beginning of a rot. Upon examining the fruit more closely, however, it will be found that this browning is only skin deep. The person who has this class of fruit for sale will argue that the fruit is still in first class condition beneath the skin. This is true, to a certain extent, but the disease continues to advance, soon involving the surface of the entire apple, rots enter and the fruit becomes worthless.

The disease is exceedingly treacherous. In cold storage it may not show at all upon the fruit at the time it is removed. In a few days after being placed in a warm temperature it may be badly scalded and its salability greatly destroyed by the presence of the disease. Due to this behavior the disease is usually attributed to the warming of the apples after their removal from storage but this is not the case. In the farm storage the disease usually appears any time after early November. It is
Typical Grimes apples from the series protected by treatment described in this article. The apple remains bright and free from scald throughout the storage season.

**and its Prevention**

By C. E. Baker

Purdue University Agricultural Experiment Station

often most severe on the top portion of fruit packed in bulk.

Dr. Charles Brooks of the United States Department of Agriculture, together with his associates, has studied this disease for several years, and has given us the cause and the remedy for the trouble.

When the apple is harvested it is a living organism and decidedly immature. An apple as it comes from the tree, is hard, sour and unpalatable. But as it is still living it is capable of further development and like other living organisms it carries on the process of respiration. In other words it breathes. Oxygen is absorbed and carbon dioxide, together with various other organic compounds, is given off. As these processes take place the apple becomes more mature or "ripened." The acid gradually disappears, the starches are changed to sugars and the apple becomes soft and edible. Storage is resorted to to check these processes and to prolong the life of the apple but even at storage temperatures these life processes go on slowly.

Among these waste gases given off by the apple are the fruit esters; the organic compounds that give the aroma to the fruit. It is an accumulation of these products about the fruit that cause it to scald by poisoning (turn to page 47)
Behind the Scenes with
the **Crop Board**

By Frank George
U. S. Department of Agriculture

"**Go!**"

Half a dozen men sprang across the line in the center of the room and raced to the telegraph and telephone instruments that lined the walls.

"Wheat 782,000,000 bushels; corn 3,021,000,000 bushels; cotton 10,081,000 bales; oats ———," and so on down the long list of commodities reported as to size of crop by Uncle Sam's Crop Reporting Board.

The figures are being dispatched to newspaper offices all over the country; to commodity exchanges and boards of trade in the leading market centers. By radio the message is flashed from the Government station at Arlington, picked up by scores of broadcasting stations, and relayed to every section of the country by radio-phone.

Twice a month during the growing season this scene is enacted at Washington headquarters of the United States Department of Agriculture. The day and hour of the release of the various reports are fixed months in advance. On the designated days the Crop Board meets behind locked and guarded doors, in a room in which telephones are disconnected and even the windows are locked and glazed to prevent anyone outside from obtain-
ing advance information of the Board's findings. A system of tabulating the reports has been so ingeniously arranged that even the members of the Board do not know the composite result of the Board's report until a few minutes before the release of the figures to the newspaper and other representatives in an adjoining room.

Back of the stage, unseen, more than 215,000 crop reporters all over the country play the leading part in this semi-monthly drama. It is upon their individual reports that the findings of the central body at Washington are based. Their reports regularly mailed to the Secretary of Agriculture are tabulated piecemeal and kept sealed in a safe in the Secretary's office until crop reporting day when they are delivered to the Board in closed session and further tabulated by a staff of expert computators also locked up with the Board members.

The majority of the reporters are farmers who report for their own farms. Other reporters including farmers, local merchants, bankers, and other business men report for entire communities. Every township and district in the country is covered by a representative of the crop reporting organization so that a most comprehensive report on the various crops is made available. Similarly, reporters are assigned to cover entire counties, and in turn State statisticians, the only paid field representatives of the organization, report for an entire state. The reports of the State stations are dispatched by telegraph in code to the Board after it has assembled.

In tabulating the reports a system of checks and counter-checks is followed, the various reports for the same territory being weighed one against another to form a true picture of the crop free from personal bias. More recently, mechanical means of measuring acreage and counting crops have been devised as additional checks. Airplane photography, for example, was experimentally employed for the first time last year, and gave promise as a reliable method of measuring acreage.

A so-called crop-meter is to be used by the State statisticians this year to measure the linear distances of fields bordering on country roads. The device is a (turn to page 56)
Dutchman’s-breeches
—a recent addition to the Poison Plants

By Albert A. Hansen
Purdue University Agricultural Experiment Station

BERT SCOTT owns a farm among the beautiful hills near Madison in southern Indiana, a section bordering on the Ohio River and famous throughout the middle west for the beauty of its scenery. Whenever Mr. Scott allowed cattle to graze among the hills during early spring, his animals became ill and occasionally one of them died. His suspicions centered upon a handsome little plant known as Dutchman’s-breeches that grew profusely on the death-dealing hills, particularly on northern exposures and in shady places, but no one could tell him whether or not the plant was dangerous. He noted that the trouble apparently ceased about mid-May when the last of the white blossoms had faded and gone.

Mr. Scott’s experience was similar to that of a number of other southern Indiana farmers, but neither the Agricultural Experiment Station nor the United States Department of Agriculture could help him because there was no data available regarding the poisonous properties of the plant in question. The experience of Indiana farmers was repeated in the highland sections of Virginia, where so many animals died in the mountain pastures that Prof. H. S. Stahl of the Virginia Polytechnic Institute decided to find out what was the source of the trouble. He entered the mountains and found that about four or five species of spring-flowering plants were suspected by the natives of being the cause of the trouble. The heavy hand of suspicion pointed most persistently at a species known locally as little staggerweed, so Prof. Stahl gathered specimens and sent them to Washington, where they were identified as common Dutchman’s-breeches.

The Department of Agriculture became interested in the situation and decided to conduct some feeding experiments in cooperation with the Virginia Agricultural Experiment Station. The result of these experiments proved conclusively that Dutchman’s-breeches is poisonous to cattle. An alkaloid of a highly toxic nature that is apparently new to science was discovered in the tops and bulbs of the plant and the poisonous constituent was named cucullarine. The recent announcement of the results of the feeding experiments solved a mystery that has been a
serious puzzle to several generations of farmers in the highland sections of Virginia and Indiana.

Dutchman's-breeches, sometimes called white hearts and ear-drops, is a familiar wild flower in rich, rocky or hilly woods from North Carolina to southern Canada and westward as far as Minnesota. The delicate foliage and oddly shaped but strikingly beautiful blossoms have made the species a favorite in wild flower gardens. The common name refers to the peculiar form of the pendulous blossoms, which much resemble in shape the picturesque pantaloons that are so much in vogue in the Netherlands. A characteristic feature is the granular-scaly bulb that separates into a number of tiny bulblets, each capable of reproducing the plant. Dutchman's-breeches is frequently confused with squirrel corn, a close relative found in similar situations. The flowers of squirrel corn, however, are not two-spurred, hence do not resemble the breeches of a Holland, and the bulbs are rounded, yellow grains the appearance of which is responsible for the common name. Experiments have demonstrated that although squirrel corn contains the dangerous cucullarine, the plant is but mildly poisonous as compared with its relative, Dutchman's-breeches.

The experience of farmers in Virginia and Indiana indicates that the danger is greatest during early spring and little trouble need be expected after the middle of May. This is probably due to the fact that the stored-up food in the bulbs gives the plant an early start. In the absence of other green vegetation during the early spring, grazing animals are almost forced to eat the Dutchman's-breeches in well-infested pastures, although the experiments demonstrated that the plant is unpalatable and is not ordinarily consumed in sufficient quantity to cause trouble if other feed is available. This suggests that the best way to handle the problem is either to (turn to page 41)

A patch of Dutchman's-breeches. The plant is commonly found on rich soil in shady situations.
HIGH YIELDS
MAKE
LOW COSTS

PART TWO

By H. C. Brewer
Soil Improvement Committee
National Fertilizer Association

In the first installment of this article Mr. Brewer presented the proposition that “the most successful growers are those who produce at the lowest cost per unit. Their yields are usually above the average, often far above it.” He then proceeded to show from a number of surveys how this principle works in general and as applied to a specific crop, such as corn. In this concluding installment he discusses its further applications.

WHEAT

That these facts apply equally to all crops as well as to corn and, therefore, must be considered as constituting a fundamental principle of profitable agriculture is demonstrated by the information at hand.

A “Forty-Bushel Wheat” Club was organized in Ohio last year, memberships in which will be awarded to farmers who succeed in producing 40-bushels or more of wheat on each acre in a 10-acre piece. Such a yield, declare the specialists in charge, should make wheat growing profitable even with prices at the 1923-24 levels. “High yields mean lower costs per acre.”

Experiments at the Worthington, Indiana, Field, showed, according to Professor A. T. Wiancko, of the Experiment Station, that “an expenditure of $6.78 per rotation at present prices has produced crop increases averaging 5.5 bushels of corn, 7.1 bushels of wheat, and 1,115 pounds of hay. The expenditure of a moderate additional amount of money produced increased yields that materially reduced the cost of production per unit of product.

Professor Rex E. Willard, of North Dakota Agricultural College, makes the following statement based on observations and records of growers made in the State.

“Yield per acre is the biggest factor that determines the cost per bushel. While the cost of producing a small crop is less per acre than of a large crop, the reduction in cost is nothing like as great as the yield.

“The following figures show approximately the average cost per acre and per bushel for yields ranging from 2.5 to 19 bushels per acre.
June, 1924

<table>
<thead>
<tr>
<th>Yield</th>
<th>Cost Per Acre</th>
<th>Cost Per Bushel</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5 Bushel</td>
<td>$ 8.33</td>
<td>$3.33</td>
</tr>
<tr>
<td>7.0 *</td>
<td>11.46</td>
<td>1.64</td>
</tr>
<tr>
<td>10.0 *</td>
<td>12.52</td>
<td>1.25</td>
</tr>
<tr>
<td>13.0 *</td>
<td>14.12</td>
<td>1.09</td>
</tr>
<tr>
<td>19.0 *</td>
<td>16.96</td>
<td>.89</td>
</tr>
</tbody>
</table>

The urgent economic necessity of high yield rates is emphasized in the advice given Ohio farmers last fall by Director C. G. Williams, who said:

“If a farmer’s soil and climate conditions are not such that he can count upon some 15 to 20 bushels per acre as a 10-year average, with yields of 30 to 40 bushels per acre such years as the present, it will be in order to seriously consider reducing his acreage of wheat, or cutting it out altogether.”

Then questioning the existence of an adequate reason for low yields, at least in Ohio, he says:

“Given a climate and soil fairly well suited to wheat growing, and wheat is not as particular as some crops in regard to soil; a proper preparation of the seed bed; seeding at the right time; a good variety and liberal fertilization of the right sort, there is little excuse for the low yields many wheat growers are getting.”

POTATOES

Garrett, Indiana, was the scene last year of an interesting contest between a boy, John Shutt, and his father to see who could grow the most potatoes per acre, and the cheapest per bushel. They grew their crops on adjoining pieces of land and for the most part handled them in about the same manner. There were, however, two important differences. Where the father used common seed, John used certified seed. Where Mr. Shutt used no fertilizer, his son used 475 pounds of a 4-8-6 fertilizer. When the crops were dug, Mr. Shutt had 75-bushels per acre at a cost of about $1.13 per bushel, while John had 227.6 bushels at a cost of 36c a bushel. Apparently John’s expenditures for better seed and fertilizer reduced his bushel cost by 77c and gave him 152 extra bushels.

The New Jersey Experiment Station has published the results of investigations to determine the effect of varying amounts of fertilizer upon the rate of yield, as follows:

<table>
<thead>
<tr>
<th>Application</th>
<th>Bushels Per Acre</th>
</tr>
</thead>
<tbody>
<tr>
<td>No fertilizer.</td>
<td>166</td>
</tr>
<tr>
<td>800 lbs. 4-8-3</td>
<td>214</td>
</tr>
<tr>
<td>1200 lbs. 4-8-3</td>
<td>236</td>
</tr>
<tr>
<td>1600 lbs. 4-8-3</td>
<td>247</td>
</tr>
<tr>
<td>2000 lbs. 4-8-3</td>
<td>259</td>
</tr>
<tr>
<td>2400 lbs. 4-8-3</td>
<td>274</td>
</tr>
</tbody>
</table>

This wheat at the Miami County, Ohio, Experiment Farm, has given a 100 per cent. increase in yield over a period of years through proper fertilization. That is practically cutting every dollar of expense in two.
A Two Way Profit in Cabbage

These photographs show two plots of cabbage at the Washington County, Ohio, Experiment Farm. That at the left had no fertilizer; that at the right had 600 pounds of a 5-10-4 fertilizer and 16 tons of manure. The yields, for seven years have averaged respectively, 14,165 and 23,397 pounds per acre. Ninety per cent of the fertilized crop had been harvested by July 6 last year, compared to only 31 per cent of the unfertilized crop. This is only one instance of the fact that a higher rate of yield usually brings about higher quality, and earlier maturity.

High Yields in the Orchard

It is just as necessary to produce maximum yields in the orchard as elsewhere. These photographs of work done by the Michigan Experiment Station show the effect of proper fertilization upon the yield of apples.
June, 1924

While a decision as to the most profitable application would necessarily have to be made with due regard to prevailing conditions, there can be little question regarding the efficacy of proper fertilization in reducing the cost of production per bushel, by producing large yield increases.

G. W. Handy, West Hartford, Vermont has made tests in conjunction with the Windsor County Farm Bureau to ascertain the effect of high yield upon production costs. Two different applications of two different fertilizer analyses were used, 1,200 and 2,000 pounds respectively of a 3-10-6 and a 4-8-10 fertilizer being employed. The extra 800 pounds of the 3-10-6 increased the net profit by $27.32. The extra 800 pounds of 4-8-10 increased the net profit $25.14. In this case it was an additional expenditure for fertilizer that increased the yields, reduced the cost of growing each bushel, and produced an important increase in the profits on the crop.

The New York Experiment Station made a study of the factors influencing the yield of potatoes on 330 Long Island farms. Where the expenditure for manure and fertilizer was less than $30, the yields averaged 159-bushels per acre. Where the expenditure was from $30 to $40, the yield was 180-bushels, and when over $40 was expended, the average yield was 198-bushels per acre. The statement accompanying publication of these figures pointed out that "of the factors studied, the amount of seed used and the value of manure and fertilizers used per acre were the most influential in relation to yield."

TOBACCO

A survey of 241 Kentucky burley tobacco farms, showed that the average acre yield was 1,079 pounds, the average acre cost being $169. The lowest yield, 452 pounds per acre, though produced at a cost of only $148 per acre, was grown at the highest cost per pound, 32.8 cents. The highest yield 1,339 pounds cost only 10.9 cts. per pound.

The results of a five year experiment on bright tobacco at Chatham, Virginia, are equally striking. The five year average yield of unfertilized tobacco was 190 pounds per acre, the proceeds, $12.59. The average yield of tobacco receiving 800 pounds per acre of a 3-8-3 fertilizer was 670 pounds; the proceeds, $94.27. The yield with 1,400 pounds of the fertilizer was 934 pounds per acre, the proceeds being $135.58. Professor T. B. Hutcheson, Virginia Experiment Station commenting on the fertilizer practice of the State, says, "Experiments show that no other one factor influences the economy of production of tobacco more than the fertilizer used."

PEAS AND TOMATOES

The Cornell (N. Y.) Experiment Station has published the results of investigations made of the canning pea and tomato industries of that State.

It was found that 81 growers averaging 1,392 pounds of peas per acre, made a net return of 31c per hour of man labor; 101 growers averaging 2,138 pounds made a net return of 83c per hour; and 80 growers averaging 2,988 pounds per acre, made a net return of $1.59 per hour, an increase of over 500 per cent in rate of labor income over that of the group producing at a rate approximately half as large.

Much the same was true of the tomato growers. Thus, 47 farmers averaging less than eight tons to the acre, made a labor income of 20c an hour; 47 growers averaging from eight to eleven tons, had a return of 62c an hour; and 31 growers averaging over 11 tons per acre, made a return of 91c an hour, an increase of 450 per cent in the rate of return.

All of the foregoing evidence of the influence of (turn to page 43)
WHERE ARE THE PROFITS? In one of our recent issues, there was a review of a bulletin issued by the University of Nebraska Extension Service on "Planning and Analyzing the Farm Business." It showed how one farmer kept accounts of his farm and was able at the end of a year to analyze the weak and strong points of his business. We ought to have emphasis laid on this sort of work. Farming is a business. Farmers want to show profits like any business man. How is it possible to plan intelligently unless you have accurate records of profit and loss? What would the business world say of the man who carried his accounts in his head? It would call him slovenly and inefficient and eventually a bankrupt. The same terms apply to the farmer who thinks he hasn't got time to be bothered with bookkeeping.

When a man hasn't got the habit of keeping records, it is no cinch to get him started. However, the U. S. Bureau of Agricultural Economics reports that some 16,000 farmers are keeping books and as a result 7,000 of them have changed their farm operating plans.

Drive ahead to get the farmers in your county to keep accurate and uniform records of their business. Figures speak more powerfully than all the demonstrations, bulletins and meetings in the world. Encourage the farmer to find out for himself on his own farm what is profitable and what is not. Thus we shall be one step nearer the goal of putting farming on a competitive basis with other successful business efforts.

SOME BOUQUETS FOR OUR READERS

Say, friends, have you been reading the plans of the county agents that we have been running in Better Crops for the past three months? To me it's mighty inspiring to see that so many of the boys have got a definite
and a practical plan laid out. A good plan, you know, is half the battle. What pleased me even more is to see how many of the county agents are putting emphasis on boys and girls club work.

There is a crop worth cultivating. We won't reap it this year nor the next but in another five or ten years, we shall be amply repaid for this work.

If anybody wants to know what use county agents are, I suggest you show him these plans and ask him who else would undertake this vital work.

A GOOD DEFINITION Just recently the United States Chamber of Commerce had a Convention. They undertook a new definition of the word "business." It is a fine definition. Remember that farming, too, is a business, and see if you don't think this is an inspiring thought.

"The function of business is to provide for the material needs of mankind and to increase the wealth of the world and the value and happiness of human life."

PICTURES TELL THE STORY Everyone of you is working to raise better crops. Why not send us the pictures of your results so that we can show them to the rest of the family? Particularly where you are conducting experiments. I would like to have good photographs of the results obtained from various methods used. Just give me a brief outline of the plan and results. We will pay for all photographs accepted, and return those we do not use if accompanied by sufficient postage. The results you can show may be of great help to the other fellow.

Yours to a cinder.

Jeff McIlvain

33
Here's some interesting news for you. Through the courtesy of Mr. David W. Long, Soil Specialist of the Soil Improvement Committee of the Southern Fertilizer Association, we are going to publish a series of maps especially prepared by him. These maps show where fertilizer experiments are being conducted in North Carolina, South Carolina, Georgia, Alabama, Florida, Virginia, Mississippi and Tennessee. The first two are published in this issue and the others will follow in succeeding months. In each case the map has been approved by the director of the state experiment station or one of his associates.

WHERE FERTILIZER EXPERIMENTS ARE CONDUCTED IN SOUTH CAROLINA

SOUTH CAROLINA

State Experiment—Clemson College.
Chiefly kind and quantity of fertilizers on cotton.

Pee Dee Branch Experiment Station—Florence.
Kind and quantity of fertilizers on cotton, corn, oats, legumes and tobacco.

Coast Experiment Station—Summerville.
Kind of fertilizers on corn, cotton and legumes. Time of applying fertilizers on cotton.

Field Tests—Greer, Gaffney, Lancaster, McCormick, Trenton, State Park, Allendale, and Laurens.
Kind and quantities of fertilizers on cotton, corn, oats in rotation with legumes.

Field Tests—Bennettsville, Hartsville and Darlington.
Kind and quantities of fertilizers for cotton.
NORTH CAROLINA

State Experiment Station — Raleigh.
Most economical fertilizers for cotton and corn in a three year rotation with legumes.
Liming effects in rotation with legumes, supplemented with acid phosphate.
Acid phosphate vs. rock phosphate for corn with legumes turned under.

Mountain Branch Station — Swannanoa.
Quantities of fertilizer for corn, wheat and red clover grown in rotation.
Comparison of sources of phosphoric acid.
Determination fertilizers formulas for Irish potatoes, corn, wheat in rotation with red clover.
Fertilizer for apples.

Piedmont Branch Station — Statesville.
Kinds and quantities of fertilizers for cotton, corn, wheat in rotation with legumes.
Sources of phosphoric acid.
Sources of nitrogen.
Effect of potash on wheat.

Fertilizers for peaches and apples.

Edgecombe Branch Station — Rocky Mount.
Kinds and quantities of fertilizers for cotton, corn, oats and vetch in a three year rotation.
Sources of phosphoric acid.
Plant food deficiencies of regional soils.
Effects of varying amounts of phosphoric acid, nitrogen and potash for cotton under boll weevil conditions.
Fertilizers for sweet potatoes.

Coastal Plain Branch Station — Willard.
Kind and quantities of fertilizers for cotton, corn, oats, and vetch when grown in a three year rotation.
Plant food deficiencies of regional soils.
Sources of phosphoric acid.
Fertilizers for muscadine grapes.

Blackland Station—Wenona.
Kind and quantity of fertilizers for corn, oats, and Irish potatoes.
Lime tests.

(turn to next page)
Field Tests—Mathews, Ashboro, Wadesboro, Polkton, Aberdeen, Raleigh, Salemburg, Roseboro, Fayetteville, Marshville, Newbern, Grantsboro and Edenton.
Kind and quantity of fertilizers for cotton.

Field Tests — Marshville
Wenona and Baysboro.
Effect of potash on corn.

NORTH CAROLINA

Field Tests — Mocksville and Salisbury.
Effect of potash on wheat.

Field Tests—Greenville.
Effect of gypsum and sulphur on alfalfa.

Field Tests—Pantego.
Determination of plant-food deficiencies.

Field Tests—Monroe.
Effect of lime on red clover.

HAMMOND'S Cattle Comfort

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

Write for Information

Hammomd’s Slug Shot
Used from Ocean to Ocean

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

Sold by Seed Dealers and Merchants.

Send for Pamphlet Worth Having

HAMMOND'S PAINT & SLUG SHOT WORKS
Beacon, N. Y.
Dear Jeff:

I have been receiving your BETTER CROPS with very much interest. There is a problem that is confronting the raising of live stock in some sections. It is an established fact that cattle can be moved from a poor soil to a strong soil and make astonishing improvements, and this will also be reversed. Cattle moved from a soil, strong, that is, in mineral matter will be able to grow vegetable matter quickly and make a decided loss when moved to a soil of weaker available mineral matter.

It is also a proven factor that cattle will make better gains on some roughages than on others. This seems to be due more or less to the compactness of unavailable food material in the woody parts of the plant, in which the food material has changed to an insoluble state and is not available to the animal. Animals are able to graze green grass and make good gains while this same grass, dried in the form of a roughage, will not give as much a gain, because the plant has changed its physical state and some of the plant elements have become unavailable.

It is also a noted fact that some plants have larger mineral contents than others and the same plant will vary in mineral content when grown on different soil types. Nitrogen is the element in soils, as we know, that produces or stimulates a rapid development; thus making a quick plant growth, which is not as compact as a slowly matured plant, the stems being usually more porous. Plants also seem to contain more nitrogen that is available to the animal, in proportion to the nitrogen factor, but as yet this is not a proven fact. The most satisfactory roughage, as we will concede, is a nitrogen bearing roughage or legume. Legumes, as we know, vary in their mineral content as well as in relation to the soil they are grown in; also, it seems as though there probably is a nitrogen ratio somewhere that might be a factor. This nitrogen ratio may be handicapped by the physical nature of the soil, as to compactness or undesirable mineral content.

It appears to me that here is some food for thought in regard to the available nitrogen factor of the different soils to the growth and development of live stock on feed grown on these soil plots. I am intensely interested along this line and am sure it is of economic importance to the care and feeding of live stock; the transportation of live stock from one place to another in order to get satisfactory gains. I have my own opinion, but this opinion needs to be backed up by experimental facts and data.

Perhaps there is some data available along this line in which potash may be the determining factor to stimulate the available nitrogen content of the soil.

Very respectfully yours,

DR. K. U. JONES,
State Veterinarian,
A. & M. College, Mississippi.
The New and Improved Avery Line

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

AVERY
Tractors, Trucks, Motor Cultivators, Threshers, Plows, etc.
Practical Literature on Vegetable Growing

Through the courtesy of Prof. Schermerhorn of the New Jersey Agricultural Experiment Station, we are publishing this month a list of books and bulletins on vegetable growing. It was compiled for the use of New Jersey growers but we believe will be of value to vegetable growers everywhere.

BOOKS

   A book treating of the methods used in various parts of the United States which is very good for New Jersey conditions.

   This explains principles clearly, but takes up crops from the viewpoint of the market gardener.

   The best book on the culture of vegetables under glass.

   This book contains digests of Experiment Station work and latest methods used throughout the United States.

CIRCULARS AND BULLETINS

Asparagus—Farmers Bulletin 829—U. S. D. A.
Asparagus Growing in New Jersey—Circular 99—New Jersey Experiment Station.

Common Diseases of Beans—Circular 50—New Jersey Experiment Station.

Cabbage Maggot Control—Circular 138—New Jersey Experiment Station.

Celery Growing—Farmers Bulletin 1269—U. S. D. A.

Diseases of Celery—Circular 112—New Jersey Experiment Station.

Common Diseases of Cucumbers and Melons—Circular 68—New Jersey Experiment Station.

The Striped Cucumber Beetle and How to Control It—Farmers Bulletin 1322—U. S. D. A.

The Handling and Precooling of Florida Lettuce and Celery—Department Bulletin 601—U. S. D. A.

Onion Culture—Farmers Bulletin 354—U. S. D. A.

The Pepper Maggot—Bulletin 373—New Jersey Experiment Station.

Handling Spinach for Long Distance Shipment—Farmers Bulletin 1189—U. S. D. A.

Lettuce Growing in New Jersey—Circular 155—New Jersey Experiment Station.
<table>
<thead>
<tr>
<th></th>
<th>1922</th>
<th>1923</th>
<th>Gain or Loss</th>
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<tr>
<td>TOTAL FERTILIZER USED</td>
<td>310,885</td>
<td>303,120</td>
<td>-7,765</td>
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<tr>
<td>TOTAL ACID PHOSPHATE</td>
<td>192,645</td>
<td>171,954</td>
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<tr>
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<td>109,050</td>
<td>119,497</td>
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<tr>
<td>MIXED FERTILIZERS IN &quot;OHIO STANDARD DOZEN&quot; LIST</td>
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<td>+28,460</td>
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<td>MIXED FERTILIZER ABOVE 14 PER CENT TOTAL PLANT FOOD</td>
<td>44,430</td>
<td>74,954</td>
<td>+30,524</td>
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<td>MIXED FERTILIZERS BELOW 13 PER CENT TOTAL PLANT FOOD</td>
<td>34,380</td>
<td>16,941</td>
<td>-17,439</td>
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High-Analysis Fertilizer Popular

Writing under that heading in the January issue of The Agricultural Student, W. A. Harper, Ohio State University, 25, presents the following table, showing the surprisingly rapid progress being made away from low analysis fertilizers, and particularly, toward the 12 selected analyses included in the "Ohio Standard Dozen."

Discussing the decrease in the total sales in 1923, Mr. Harper points out that "there were considerable increases in the amounts of ammonia and potash sold," the increase in the case of ammonia, being about 28 per cent, and in that of potash, nearly 46 per cent. The same is true of the phosphate carriers, applied alone. While there was a decrease of nearly 20,000 tons in 1923, there was a falling off of only 2½ per cent in the total phosphoric acid sold. These facts undoubtedly indicate a pronounced response by farmers to the efforts made to interest them in the advantages of using high-analysis fertilizers.
Dutchman’s-breeches
(From page 27)

keep grazing animals off the dangerous pastures until mid-May, or else supply hay or other feed in addition to the pasturage. It is said that the danger is greatest following rain when the bulbs are readily pulled out of the ground to be consumed together with the foliage, and the animals thus get a double dose of the poison.

Animals poisoned during the course of the feeding experiments first trembled and paced about nervously with the head held high. As the trembling increased in intensity there was frothing at the mouth and finally convulsions set in. The poisoned animals fell, the legs became rigid, the head was thrown back, the eyes became glassy and the victims moaned as though suffering terrible agony. The first symptoms appeared on the second day after feeding commenced, after about five pounds of the plant had been consumed. The indications are that if poisoned animals are removed from the infested pasture as soon as the symptoms are first noted, they will recover if not allowed to partake further of the dangerous plant.

The peculiar scaly bulbs of Dutchman’s-breeches, characteristic of this plant. They are dangerously poisonous.

Why I Use a Car
(From page 7)

underneath? Well, just take my word for it and don’t attempt it. Yes, I got up the ones I tried but it was with the combined help of a team of horses and three husky men pushing and the motor spinning like it would break its little heart.

Now seriously friends—"Why do I use a Car?" Well really it is serious because I have to do enough
work to earn some silvery shekels so I can buy the simple necessities for a growing family. In the old days I used to know a County Agent who used a horse and buggy. I've heard him tell, how he would start out on Monday morning and travel around his county all week and would probably get back to his office by Friday night and be ready to do up his office work on Saturday. Nowadays that system would not work, because folks have found out the County Agent is in a county to be used and a lot of folks write letters to him nearly every day in the week and his Executive Board says he must keep up his correspondence every day, so he won't lose any supporters and some dear old lady away over in the Northeast corner of the county wants her hens culled "next Tuesday," and the very same day Jake Niffenstocker wants his soil tested and it happens that a "night meeting" has previously been arranged in the southwest corner of the county.

It also may happen that the very next day a "Specialist" from the College is expected in the county for a series of soy bean demonstration meetings arranged so as to reach all parts of the county in two days time. This trip will probably cover at least fifty to seventy-five miles a day including three or four stops.

So, my friends I know why I use a car. It's because my present salary does not justify expenditure for a flying machine—but say,—if they get 'em so they'll start and stop easy, stand without hitchin' and go whenever you crank 'em up I believe the County Agent will take to them like a duck takes to water.

Now I would like to know how a County Agent can get along without a car in this present generation. If there is such a one let him speak up. I am sure his experience would be at least enlightening.

Now to really come down to brass tacks on this subject, I often tell folks that as a County Agent I have had to do everything except preach a funeral or perform a marriage ceremony. So it is with my car: it is called upon to do a little of everything.

If I rode a horse or used a motorcycle I know I could not perform many little services that I do now. For instance, in initiating a new cooperator into the mysteries of spraying his fruit trees for the first time I have found that it was very helpful for me to put a ten gallon can of lime sulphur and a few pounds of arsenate of lead in the back part of my car and go out prepared to actually get the man started right. I have sometimes set a wheelbarrow sprayer on the running board of my car and taken it into a new neighborhood and given a real demonstration in spraying.

Then again I often throw in a few bags of soy beans or some other good seed which I want some men to try in a neighborhood where these legumes are unknown. I know one County Agent in a Southwest Missouri County who built a model of a good practical poultry house and carried it on the back end of his car all summer so that everybody could actually see just how it was constructed.

Often you may find a farmer who has a real demonstration on his farm, for instance, the effect of putting in ground lime-stone or fertilizer on a field and you can load in two or three "doubting Thomases" in your old car and take them over to this field and convince and convert them right on the spot.

Oh I don't see how we could get along without the FO—excuse me—without a car in making our rounds so we can do up our office work every day, put in a day out in the county and attend a night meeting in some community at night.
High Yields Make Low Costs

(From page 31)

high and low rates of yield upon production costs is but a beginning what might be set forth. It is sufficient however, to establish two facts:

1. The farmer producing at a low rate of yield cannot make fair returns except possibly under the most favorable circumstances.
2. The farmer producing at a higher-than-average rate of yield practically always make a fair income, even under most unfavorable circumstances.

THE INFLUENCE OF QUALITY UPON COSTS

Usually high quality accompanies high rate of yield. That is to say, a farmer planning to raise his rate of yield, has the right to expect an increment in the value of his crop, in addition to the value of the extra quantity, because of the higher quality. The instances following will suffice to illustrate.

The average of 10 year’s results at the Delaware Experiment Station, showed that fertilized wheat weighed six pounds per bushel more than unfertilized wheat. The difference was as high as 13 pounds in the poorest yield. In 1919, the kernels from the unfertilized plots were so small and shriveled that it required 1,456 of them to weigh an ounce, compared to only 800 kernels from the fertilized plot.

Bringing out more clearly the relation between yield and quality, the Ohio Station quotes the case of unfertilized wheat which yielded at the rate of 8.45 bushels per acre, and of fertilized wheat yielding 34.15 bushels. Of the former, 49 per cent consisted of shriveled kernels while, the high yield tested 94 per cent plump kernels.

The significance of quality in relation to costs is found in a report made by the Kansas City office of the Federal Grain supervision, to the effect that of the 7,669 carloads of hard red winter wheat inspected during 1919, 1920 and 1921, almost 68 per cent was marked down one

Truck Crop Yields Important

Sixteen hundred pounds of a high-analysis, complete fertilizer applied to spinach in this test conducted at Richfield, N. J., by the N. J.

Experiment Station, increased the rate of yield from 108 crates to 507 crates per acre. It is not difficult to figure from that the most profitable system.
High Quality Accompanies High Yield

These photographs are a striking illustration of the apparent effect of fertilizers, not only upon the rate of yield, but also upon quality. The wheat at the left was unfertilized and yielded 2.7 bushels per acre. Note its shriveled condition. The plump wheat at the right was fertilized and yielded 19.4 bushels.

grade or more on account of low weight per bushel. One grade difference in test weight reduces the price at least two cents a bushel.

H. J. Waters, formerly President of the Kansas State Agricultural College, now editor of the Weekly Kansas City Star, has stated the case for high rates of yield as concisely and effectively, perhaps as it can be put. He says:

"It is a mistaken notion that, when prices are low because of overproduction, the remedy is to take less pains and let the yields of our acres and animals run down. Such practice leads to but one end—bankruptcy. The truth is, the lower the price of the product, the greater the need for high efficiency in producing it. When prices are high, even mediocre yields are profitable, but such yields are always unprofitable when the prices are low. No agriculture can be prosperous in the face of declining yields and rising production costs. The surest way to cut production costs is by increasing the yields of our acres and our animals. Twenty years hence, the farmer who has systematically produced high yields through periods of low prices and high prices will be out of debt and be the leading man of his community."

One of Aroostook’s Famous Fields
It belongs to the W. R. Christie Co., of Presque Isle, Maine, who had about 1,000 acres in potatoes last year. Their average yield was about 410 bushels per acre, although on the 40 acre piece pictured here, it ran slightly over 550 bushels. Fertilizers are generously employed by Maine growers, a ton to the acre being perhaps the most common practice. The high rates of yield and the low bushel costs resulting are evidence of the wisdom of their methods.
He Applied Business Methods to Farming
(From page 21)

The grain feeds one crop of hogs and the corn produced feeds the other. The hogs are always sold F. O. B. and the price received in 1923 was eight and nine cents per pound.

Wheat and barley are grown and yield about forty bushels per acre, and are fed to the hogs and the dairy cows. The corn is used for silage and grain. The yield of silage is about fifteen tons per acre and the grain about fifty bushels. He fills a seventy ton silo with part of the corn and the remainder is hogged down.

The remaining five acres include the barnyard, house, garden, orchard and vineyard. In the orchard he has four varieties of apples, four of peaches, two of pears, two of plums, apricots, figs, pomegranates, pecan nuts, and English walnuts. In the vineyard he has six hundred and forty vines and six varieties of grapes, also blackberries, and Loganberries. Around the house he has ten varieties of roses, also fan palms, date palms, oranges and olives.

In the opinion of Mr. Wells, permanent prosperity will come to the farming class only through organization and cooperation rather than through legislative enactment. But cooperation in marketing cannot be expected to solve all the farmer's problems by any means. His observations locally are that farmers are suffering more from lack of business methods in farming and lack of capacity than from bad commission men or bad markets. The farm must be put on a commercial basis. A farmer must be a good business man. Capacity is just as essential to the farmer as to the dairy cow. If he produces only what he consumes he hasn't anything to sell. There is no one so far from market as those who have nothing to sell, especially of the kind the public wants. It is pretty hard to help that class of farmers through organization or cooperative marketing. The farmer must also produce the things the public wants to buy. Mr. Wells is firmly of the opinion that the farmer of the future must be educated for his business as much as is the doctor or lawyer. The old idea that any one can farm is a mistake and is largely responsible for bringing farming to its present level.

"Agriculture," says Mr. Wells, "is the greatest science of all, and when the brainy boys of the country are educated for that profession farming will come into its own."

Wells has achieved success during the prevailing agricultural depression by practicing a system of diversified farming with an appreciation of good business methods, close supervision and personal attention to all the work of the farm. Everything shipped from his farm is a finished product put up in an attractive form ready for consumption. The market price of corn, wheat or barley has no interest to him for he has none of this raw material for sale. The question of freight rates also has been largely solved for he ships only the higher priced concentrated finished product on which the higher rates can be paid. The raw bulky material is entirely consumed on the farm.

The farmer of today who is making money is of his type. That is, the man who is actually living on his family size farm, closely supervising all farm work, and not attempting to farm from a town office.

Our readers have come across in wonderful style in response to our request for a sound agricultural program. Watch for the July Better Crops which will contain some of the best suggestions received.
The Greater Harvest Getter

FERTILIZER SOWER

WILL successfully distribute Lime and Fertilizers in any quantity desired from 100 to 6,000 lbs., under all circumstances, damp or dry. No Clogging; Light Draft; for two ordinary horses. Other machines of equal capacity are heavy draft for four horses.

The use of fertilizer has become a necessity to modern agriculture. Farmers of the Eastern States have realized for years the profit to be made from the use of fertilizers, and now the Western farmer is rapidly learning to look upon fertilizer as an "investment" rather than an "expense."

The American farmer is learning that by taking everything from his soil and returning nothing, he is headed straight for agricultural bankruptcy, and that every dollar spent on good fertilization is better invested than a dollar in the savings bank.

But fertilizer, to be most efficient, must be mixed with brains. It must be properly applied.

For many fields and many crops, a broadcast distributor offers the best solution of the problem of how to make the application.

There is no distributor on the market that can equal the New Peoria. It took years of actual experimenting in the field to finally produce this high-grade distributor. It bears little resemblance to the makeshift box-wheels-and-axle contrivances commonly found on the market.

We also manufacture Fertilizer Drills in all sizes.

For Catalog and Prices Address

Peoria Drill and Feeder Co.
Peoria, Illinois, U. S. A.
Apple Scald and its Prevention
(From page 23)

the tissues, as it were. If the fruit could be thoroughly ventilated these poisonous gases could be removed but in tight packages this is impossible. It was found, however, that these gases could be absorbed in fats and oils and thus prevent injury to the fruit. As ordinary animal or vegetable oils soon become rancid and injure the quality and flavor of the fruit they cannot be used, but an odorless, tasteless mineral oil has been prepared that will not injure the fruit. When the apples are wrapped in paper containing this oil scald is largely prevented. To be efficient the wraps should have an oil content of 15%-20% by weight as smaller amounts will not control scald. Untreated paper or paraffin wraps are of little value in scald prevention.

Due to the numerous inquiries regarding scald and its prevention, the Experiment Station of Purdue University instigated a series of investigations to demonstrate methods of scald control. Experiments are being conducted in both a commercial cold storage plant and in a farm cool storage cellar, using various varieties most subject to scald. The results reported herein deal wholly with Grimes under farm storage conditions.

There are three main factors in scald prevention in the farm storage: ventilation, maturity of the fruit and oiled paper protection.

During the present season complaints have been received from operators of farm cool storage houses where the fruit was stored in bulk regarding scalding of apples, especially near the roof of the storage or in the upper layers of fruit. Investigations usually determined that the ventilators had been closed for some time due to the cold weather. Such lack of ventilation helps to bring about the condition most favorable for scald development. It should be remembered in this connection that during the coldest weather it may be necessary to ventilate the storage house in the warmest part of the day, being governed entirely by the temperature. Thorough ventilation is the first essential.

The maturity of the fruit is another important consideration. Immature fruit is more susceptible to scald than properly matured fruit. In our experiments, fruit picked one week before it was "tree ripe" and not wrapped was practically worthless by late November due to scald injury. By January the rots which follow scald had entirely ruined the fruit.

Oiled paper protection, however is the greatest factor in scald prevention. Three lots of Grimes were picked early in September about the time they were being picked commercially. One lot was packed without protection, another lot wrapped individually in commercial oiled wraps and the third lot packed with shredded oiled paper, scattering it through the package among the apples. By the middle of November the untreated apples were badly scalded and by January they were very severely scalded and rots were beginning to develop. The wrapped apples remained free from scald to the end of their storage period, being as bright and smooth as the day they were picked. The lot packed in shredded oiled paper remained in practically as good condition as did the wrapped lot.

This is perhaps the most interesting feature of our farm storage investigations. The use of the oiled wrap in scald control is an established fact but the use of the
Jeffisms

The greatest cynic I know is a man who makes his living by writing messages of cheer.

Epitaph for a great man: he tried to do too much—and did it.

For all our acts there are two reasons—a good reason and the real reason.

Every real accomplishment is the result of three processes: Imagination, desire, creation.

The man who honestly seeks to follow Truth is bound to appear inconsistent.

Efficiency is persistence plus politeness.

shredded oiled paper is a new development. The purpose of the farm storage generally is to hold the inferior quality of apples until the better fruit is off the market and dispose of them throughout the winter months. The value of such apples will not justify the cost of wrapping. If, however, the shredded oiled paper may be used as successfully as our results indicate, insurance for these inferior grades of fruit may be provided at a cost of only a few cents per bushel. When the difference in value between clean and scalded fruit is taken into consideration the expenditure is an excellent investment. If the fruit is stored in barrels, paper lining for the inside of the package may also be used.

Scald is no longer a necessary evil. It can be prevented. We spray and fertilize our trees, harvest a fine crop of fruit and then often risk great losses from scald in storage. Why not go one step farther and protect our fruit from this universal storage trouble by using oiled paper? Growers in the Pacific Northwest have learned the value of the oiled wrap. They consider it the cheapest insurance against the disease. It works like magic for them. Let's give it a chance to work for us.

Picking the fruit a little more mature, storing it as soon as possible, at the coolest temperature that can be secured in the farm storage, and continuous thorough ventilation throughout the season, are contributing factors of great value in the prevention of storage scald.

Next month we have a real treat in store for you in the form of a report on cooperative marketing by County Agent D. B. Morris who was chosen to make a survey of this subject on the west coast. A keen analysis of the subject by a careful observer.
Genuine German Potash Salts
can be secured from any of the following distributors:

**ALABAMA**
Birmingham—
Grasselli Chemical Co.
Virginia-Carolina Chemical Co.
Montgomery—
American Agricultural Chem. Co.
Armour Fertilizer Works
Capital Fertilizer Co.
International Agricultural Corp.
F. S. Royster Guano Co.
Virginia-Carolina Chemical Co.

**ARKANSAS**
Little Rock—
Arkansas Fertilizer Co.

**CALIFORNIA**
Azusa—
Geo. W. Fuhr
Covina—
Sun Fertilizer Co.
Glendora—
Frahm & Manning
Los Angeles—
Agricultural Chemical Works
American Agricultural Chem. Co.
Hauser Packing Co.
Mutual Orange Distributors
Pacific Guano & Fertilizer Co.
Southern California Fertilizer Co.
Western Meat Co.
San Francisco—
A. M. Blumer Co.
California Fertilizer Works
Growers' Fertilizer Co.
Meyer Wilson & Co.
Pacific Bone, Coal & Fert. Co.
Pacific Guano & Fertilizer Co.
Potash Importing Corporation
Western Meat Co.

**CONNECTICUT**
Bridgeport—
Berkshire Fertilizer Co.
Hartford—
Olds & Whipple, Inc.
Middletown—
Rogers & Hubbard Co.
New Haven—
American Agricultural Chem. Co.

**FLORIDA**
Bradentown—
Gulf Fertilizer Co.
Clearwater—
Gulf Fertilizer Co.
Daytona—
Cornellius 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.

**GEORGIA**
Albany—
Armour Fertilizer Works
Swift & Company
Virginia-Carolina Chemical Co.
Athens—
Empire State Chemical Co.
Georgia Phosphate Co.
Hodgson Cotton Co.
Atlanta—
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 & Fertilizer Co.
Virginia-Carolina Chemical Co.
Baxley—
R. L. Lewis Co.
Columbus—
International Agricultural Corp.
Cordelia—
Read Phosphate Co.
La Grange—
Swift & Company
Macon—
F. S. Royster Guano Co.
Pelham—
Pelham Phosphate Co.
Savannah—
American Agricultural Chem. Co.
G. Ober & Sons Co.
Mutual Fertilizer Co.
Read Phosphate Co.
Reliance Fertilizer Co.
Savannah Guano Co.
Southern Fertilizer Co.
Swift & Company
Virginia-Carolina Chemical Co.
Toccoa—
Swift & Company
Valdosta—
Georgia Fertilizer & Oil Co.
Vidalia—
Vidalia Chemical Co.

**ILLINOIS**
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Darling & Company
Swift & Company
National Stock Yards,
St. Clair County—
Swift & Company

**INDIANA**
Hammond—
Swift & Company

**LAKE HAMILTON—**
Gulf Fertilizer Co.

**ORLANDO—**
Gulf Fertilizer Co.

**TAMPA—**
Gulf Fertilizer Co.

**TERRA CEIA—**
Gulf Fertilizer Co.

**WINTER HAVEN—**
Gulf Fertilizer Co.
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  Maybank Fertilizer Co.
  Planters Fert. & Phosphate Co.
  Read Phosphate Co.
  Virginia-Carolina Chemical Co.
Chester—
  Swift & Company
Columbia—
  American Agricultural Chem. Co.
  Armour Fertilizer Works
  Darlington Guano Co.
  F. S. Royster Guano Co.
  Swift & Company
  Virginia-Carolina Chemical Co.
Greenwood—
  T. M. Miller Co.
North—
  J. E. Culler Co.
Spartanburg—
  American Agricultural Chem. Co.

TENNESSEE

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

VIRGINIA

Alexandria—
  American Agricultural Chem. Co.
Danville—
  G. Ober & Sons Co.
Lynchburg—
  Pocahontas Guano Co.
Norfolk—
  American Agricultural Chem. Co.
  Baugh & Sons Co.
  Farmers Guano Co.
  International Agricultural Corp.
  Priddy & Co.
  Robertson Chemical Co.
  F. S. Royster Guano Co.
  Swift & Company
  Virginia-Carolina Chemical Co.
Portsmouth—
  G. Ober & Sons Co.
Richmond—
  Old Buck Guano Co.
  Virginia-Carolina Chemical Co.

WASHINGTON

Seattle—
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Tacoma—
  Stock & Plant Food Co.
  Marine Products Co.
  CANADA
  British Columbia
  New Westminster—
    Triangle Chemical Co., Ltd.
  Vancouver—
    Canadian Explosives, Ltd.
    Victoria Chemical Co., Ltd.
    Quebec
    Montreal—
      Arthur Lavigeur, Ltd.
      Wilson, Patterson & Gifford
    Quebec—
      George Tanquay, Ltd.
      New Brunswick
    Bath—
      C. E. Gallagher Co.
    Hartland—
      Hatfield & Co., Ltd.
      Home Mixed Fertilizers, Ltd.
    St. John—
      Gunns, Ltd.
      Wilson, Patterson & Gifford
    St. Stephen—
      Dominion Fertilizer Co.
    Nova Scotia
    Wolfville—
      T. L. Harvey Co.
    Ontario
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    Hamilton—
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    Toronto—
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PERHAPS the nema which is of the most immediate concern to agriculture is the gall nema, the one which produces root-knot of a great number of important plants, and on more than five hundred plants when all are totaled up, including the weeds. It is probable that there are many more. The effects produced on the roots of some plants are startlingly like those produced in humans affected with elephantiasis. The roots become clublike, bulbous, or very badly knotted. This trouble is particularly bad in the South where the temperature is favorable, and in greenhouses in all parts of the country. The infection spreads most readily in sandy and loamy soils which are light and easily penetrated by the slowly undulating threads. In this type of soil it is also easier for water to carry them from place to place as it moves through the openings between the soil grains. Where irrigation is practiced in the Northwest and in California, nemas have often become very bad because so easily spread. Heavy clay soils have such fine pores that the nemas are greatly impeded and they may not spread to any great extent in very close soils, unless other conditions are particularly favorable.

It must not be concluded that the gall nema is found only in the South and in greenhouses. It does damage in all except the most northern States and in seasons specially favorable it has been known to do damage as far north as Idaho. However, it is most abundant in the sandy lands of the Atlantic and Gulf Coastal Plain regions from Maryland to eastern Texas, and in the lighter irrigated soils of California. But it is found here and there to a serious extent in other parts of the South and West where soil conditions are particularly favorable and even in heavier soils with much organic matter and on which susceptible crops have been grown year after year.

The crop losses from this cause in some cases have run as high as 80 per cent, according to investigation by G. H. Godfrey of the Department of Agriculture. On all the sandy lands in one county in South Carolina the loss of cotton one year was estimated at 4.4 per cent. In one year the cotton root-knot loss was estimated at 4.1 per cent. On this basis the loss to the cotton crop in one year in the cotton areas known to be infested was figured to be about 200,000 bales and 100,000 tons of seed. Losses on truck crops have been shown to be even greater. Root-knot has become a limiting factor in melon production in some parts of southern California. In some places potato production is endangered. Nurseries, including principally those growing figs, peaches, grapes and walnuts, are meeting heavy losses owing to restriction placed on all stock infested with the gall nema.

A LARGE list of plants is now known to be susceptible to this organism. Among the field crops are alfalfa, clover, cotton, cowpea (except the resistant varieties, Iron, Brabham, Monetta, and Victor), field pea, flax, pumpkin, soy bean (except Laredo), sugar beet, sugar cane, sweet potato, tobacco, and vetch. Potatoes, tomatoes, melons, beans, beets, strawberries, cucumbers, and a dozen more truck crops are susceptible. In the list of ornamentals are begonias, clematis, coleus, hollyhock, dahlia, rose, peony, violet, sweet pea, and several others. Trees which are damaged
by the nemas are almond, catalpa, cherry, European elm, fig, mulberry, peach, pecan, Persian walnut, and weeping willow. The old world grapevine is also subject to attack. The plants mentioned are the highly susceptible ones which should not be grown on infested fields or transplanted from soil that may contain the parasite.

Weeds are usually an indication of poor farming, but they are an added source of danger to crops when it is known that in addition to sapping the soil of valuable fertilizing elements and water, they may increase the number of nemas in the soil, even though growing in fence rows. Most of the common weeds are attacked, some of them severely.

The farmer’s misfortune is alleviated to some extent by the fact that some important crops are not on the nema’s bill-of-fare. Nearly all the grasses, corn, barley, wheat, rye, winter oats, milo, kafir, sorghum, and some other crops of less importance are in this class. The existence of these plants gives the farmer a loophole to use in his fight against the enemy. By growing one or more of them for a year or several years he can cut down the infestation, for when there are not suitable plants easily accessible the nemas will starve to death. But at the same time these crops are grown care must be taken to keep down weeds, otherwise they will provide colonies of the pests with which the land will be seeded the following season. These little colonies throughout a field or around it, will soon repopulate it when a susceptible crop is grown, for the females lay eggs at a rate suggestive of the corn planter.

In addition to rotation with these free crops, it is possible for the farmer to make headway in other ways in spite of some degree of infestation with nemas. By judicious use of fertilizer plants can be given additional vigor which will enable them to overcome some of the drain. It is also possible in some cases to develop resistant varieties, an important method. In previous paragraphs mention has been made of varieties of cowpeas and soy beans which are not

In the potato the gall nema works in an area near the surface. Such infested potatoes should never be used for seed.
attacked by the parasite. The spread of the disease often may be prevented by taking care that plants are not transplanted from infested soil, by not using implements that have come from nematode-infested fields. Sometimes the pest is brought into fields in garbage, manure or in refuse of diseased plants. Florists and nurserymen have in many cases been responsible for its spread by sending out plants with root-knot.

It is not possible to cure plants once infested. The plan should be to get the organisms out of the soil or at least to keep down their numbers. The methods have already been suggested. In the case of seed beds and green-houses steam sterilization is effective. The Department of Agriculture has a bulletin which gives detailed advice on the control of root-knot. To gardens free—and this applies particularly to the southern vegetable garden—one of the best plans is the use of a grain-chicken yard-garden rotation. The grain is not subject to the attack, and during the time the chickens are on the land they keep down all plant growth. The chicken yard also should be spaded up, as a result the nemas are starved out.

The root-knot nema is the worst one from the farmer's standpoint, but there are others of importance, and some of them in extremely interesting ways. There is one which attacks the grasshopper and which is thought to be a great factor in keeping this insect from getting beyond control and becoming a dangerous menace to our food supply. This particular nema makes the "hopper" sterile. It sometimes reaches a length of twenty inches or more and is the thickness of a heavy thread. Now Dr. Cobb and his assistants are working on the problem of infesting grasshoppers in regions where they appear to be free of the parasite. Other insects which have their own particular nemas are also being studied. Among them is the cucumber beetle. One cockroach was found to have a dozen different kinds. There is reason to believe it possible to fight pests with these parasitic nemas just as they are now being fought in many instances by the use of insect parasites. And we must not forget the predatory ones which prey on those of their kind that are damaging crops.

New discoveries are being made at frequent intervals, and it is to be hoped that within a few years the scientists will be able to provide practical means for controlling many of the destructive sort and for enlisting the help of the friendly ones.

**Progress of High Analysis in Indiana**

"Less tonnage but more plant food" seems to be the slogan of Indiana farmers according to a statement recently made by Mr. E.G. Proulx, State Chemist and Seed Commissioner.

Mr Proulx writes "It is interesting to note that in 1920, Indiana used 230,184 tons of fertilizer and that this fertilizer contained 37,565,127 lbs. of actual plant food, while, in 1923 Indiana used 195,702 tons of fertilizer, which contained 39,803,825 lbs. of actual plant-food. So, you can see that we are actually buying more plant-food today than we did in 1920 although the tonnage has materially decreased. This certainly shows the advancement we are making in high grade fertilizers. The average of all fertilizers sold in Indiana last year would figure a formula of 1.1% nitrogen, 4.2% potash and 12.3% available phosphoric acid. I really do not believe that any state can beat us on these figures. I was much surprised to see how potash has continued to increase. Part of this is due to the fact that many of the home mixers mix a half ton of potash salt with a half ton of acid phosphate."
BETTER PREPARATION — BETTER CROPS

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

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

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

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

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

OLIVER CHILLED PLOW WORKS
Plowmakers for the World
South Bend, Indiana
Although at this writing plans have been made to adjourn Congress early in June, it is quite apparent it will be a physical impossibility to give final consideration to but a fraction of the bills introduced with the idea of bringing some sort of relief to agriculture. The only major bill upon which a final vote is assured is the agricultural export corporation measure, and this was only made possible by reaching an agreement on May 20 limiting debate on the bill to 15 hours.

Scores of agricultural bills were scheduled to get caught in the legislative jam during the closing days. Even though the number of bills drafted to bring relief to the farmer mounted to well above the 500 mark several weeks before the close of Congress, new ones were being introduced right up until the last moment. Night sessions held by the agricultural committees of both branches of Congress made it possible to consider but a small number of the total and many of those reported out by committees will never see the light of day on the floor.

During the closing days of Congress considerable time and attention was given over to the subject of cooperation among farmers, and numerous bills were introduced with the idea of fostering the cooperative effort. Although none of these bills came up for final vote they have paved the way for furthering consideration at a later date. It appears quite certain that one of the leading ideas to receive the attention of Congress at the next session will hinge on the proposition of enacting into law some measure looking to the formation of a Federal cooperative bureau.

One of the recent bills introduced provided for the establishment in the Department of Agriculture of a bureau of interstate cooperative association. A commissioner appointed by the President would administer the bureau, and rules were laid down whereby cooperative associations organized on a non-profit basis could be affiliated. Associations incorporated under the bill would be assessed a percentage of their surplus savings for the purpose of establishing a creditor's guarantee fund for the purpose of refunding and reestablishing failing associations. Another bill of the same water would set up an interstate farm marketing association to act more or less as a Federal over-head organization for individual cooperative associations.

One of the first and only agricultural measures to receive the signature of the President after being passed by the Senate and House was the resolution appropriating $1,000,000 for the relief of drought stricken farmers in New Mexico. No sooner had this resolution been signed than officials of the Department of Agriculture completed plans for early administration of the fund. Liberal provisions are incorporated in the bill for the re-
payment of funds by New Mexico farmers.

After word had been received that the dreaded foot-and-mouth disease of livestock had broken out in California after being brought into this country from abroad, Congress immediately passed an emergency appropriation act giving the Federal Bureau of Animal Industry $1,000,000 with which to combat the livestock scourge and keep it from spreading to other sections of the country. When it became evident that further funds were necessary an additional fund of $1,500,000 was made available. Late reports received in Washington are to the effect that the prompt action of Federal and state authorities was instrumental in confining the disease to a few quarantined areas with hopes of early eradication. The last outbreak of the foot-and-mouth disease occurred in 1914, when it spread to several markets in the middle west and caused losses running into the millions of dollars.

A resolution directing the Interstate Commerce Commission to make freight rate changes which will assist the movement of agricultural products passed the Senate. A similar resolution got the approval from the House committee on interstate and foreign commerce, but had to await its turn on the calendar before being voted upon.

Development of agricultural resources in one of our insular possessions, the Virgin Islands, is provided for in a bill which got under the wire shortly before the scheduled adjournment. Of the proposed commission of three members to study this proposed development one would be an expert in trade, manufacturing, shipping, and transportation; one would be an expert in agriculture, including fruit growing, stock raising and marketing; and one would be qualified to advise on matters affecting labor, housing conditions, and home economics.

Alfalfa Successfully Grown in Connecticut

Some new and valuable data concerning the growth of alfalfa in New England have just been released in Bulletin 115 of the Storrs (Conn.) Experiment Station.

A few years ago there was great doubt as to whether this crop could be grown successfully in New England. Now the above-named Station says: “That alfalfa can be grown and will produce good yields in Connecticut has been demonstrated repeatedly.”

The Connecticut Station began work on this crop in 1914 by securing and testing twenty-five strains of alfalfa seed which seemed best suited to northeastern conditions, and included studies of soil treatments, methods of seeding, liming, and the use of fertilizers.

Summarizing the data which are related to these factors, the following results have been obtained.

“Grimm has proved the hardiest of the several strains tested. Northern-grown seed had given the best results.”

“Reponse to very large applications of lime have been obtained.”

Alfalfa in Connecticut needs both phosphorus and potassium.

Mixtures of acid phosphate and muriate of potash produced the crop most cheaply.

“Muriate of potash used alone or in combination with acid phosphate has resulted in less winter killing and much larger yields.”

Manure has produced good crops of alfalfa but not so cheaply as the above combination. “Grasses and weeds were more in evidence on the manured plots.”

“Much less seed was required when drilled than when broadcast by hand.”

“The mixing of grass seed with alfalfa gave much smaller yields than the pure alfalfa seedings but insures against complete crop failure.”
which require increasing labor in the accumulation. It is conceivable that we might have ten years yet of declining price level.

Now what about the lighter portion of the picture?
In the first place, according to the 1920 census, about one-third (2,117,000) of the country's farms are operated by full owners free from mortgage. Another third of the farms are worked by tenants and the presumption is that the bulk of these places are out of debt. These millions of unmortgaged farms represent a backlog of reserve resources in agriculture. They are what steady the ship and carry it through storms under reefed sail. The farmer out of debt is in better shape to withstand bad times than any other member of the productive community.

In the next place, even a period of generally falling prices does not mean that every year is a bad one nor that every product is unprofitable. Amidst the general distress of 1923, some farmers did well; some sheep men, some corn growers, some truck growers and in the Southwest many cotton growers had a good year. People still have to eat and wear clothing. Even Europe must still have some of our cotton and pork, and occasionally quite a little wheat and tobacco.

But the really big factor, coming along steadily, inevitably, like a rising tide, is the increase in our population. This increase amounts to about 1,400,000 people each year. The equivalent of a new Nevada annexed every twenty days, year in and year out! In about nine years this will be a nation of 125,000,000 people, presumably with over 70,000,000 actual urban dwellers and fully 90,000,000 non-farming population.

This rapidly increasing population is the ballast that will eventually right the ship. It will swing the pendulum of prices back in favor of the farmer as certainly as day follows night.

Oldtimers remember well the agricultural depression that culminated in the early nineties. They remember how the West several times used its corn for fuel.

The severity of that depression and liquidation was like a scorching flame. It burned out the mass of "marginal" production, the overhead of obsolete equipment, and finally thousands of low-standard individuals who had flocked West and taken up land in the homestead rushes. It was a harsh process. But after the smoke had blown away the men who survived gradually saw spread out before them a marvelous world market for cotton, pork, and grain, plus machinery of transportation and trade such as no group of producers had ever enjoyed before. The story of agricultural prosperity from about 1897 to 1913 is perhaps the best chapter of that kind in our history.

We are going through another severe depression. The general process of liquidations may continue for several years. But by and by the turning point is bound to be reached. The pendulum will swing back. The men who are running the farms in that day will gradually find spread out before them the most marvelous consuming market ever known outside pre-war Europe. No national group of farmers has ever enjoyed a domestic market of such purchasing power as this will be. The difference between this coming era and the nineties will be that it will concern primarily a domestic market, with
all the advantages of free trade, shorter hauls, controllable competition and diversified demands.

This prospect on the demand side is likely to coincide with tried-by-fire conditions on the production end. These lean years will eliminate much unproductive land and many unproductive operators. What will be left will be a relatively strong, efficient body of producers. They will be possessed of great economic leverage.

The men who will be here when the smoke blows away will be of the same stuff as those hardy spirits who rebuilt San Francisco overnight; the same stuff as that Corn Belt farmer who has kept his courage through three years of bankruptcy prices, all the time thinking ahead for his son.

Behind the Scenes with the Crop Board

(From page 25)

combination of twelve separate meters, one for each crop, and is operated by the speedometer gearing of an automobile. When the driver comes to a field of wheat, for example, he pushes the wheat button on the crop-meter and the linear length of the field is recorded; the next field may be hay,—he pushes the hay button, the wheat meter is automatically disengaged, and the length of the hay field is recorded.

At the end of a run of 2,000 miles or more within each State where the device is used the meter for each crop shows the total number of feet of each crop passed. These records kept for identical routes year after year will be a valuable guide in helping to determine relative changes in crop acreages. A similar device for use of reporters on railroad trains but operated by hand records the total number of fields planted to various crops.

The crop reporting system developed by the Department of Agriculture is acclaimed the most efficient method of crop reporting in the world. A group of prominent statisticians and economists recently invited by Secretary Wallace to examine the system heartily endorsed the methods and personnel of the Board, and declared that with the safeguards erected so-called "leaks" of the Board's reports were extremely unlikely.

As regards the efficiency of the system a comparison of the Board's forecasts on cotton with the actual cotton crop as disclosed several months later in reports of ginnings shows a remarkable degree of closeness. In the past nine years the Department's December estimates on only one occasion have shown a variance of more than three per cent as compared with the ginnings report the following March. A November estimate was published for the first time last year, and was within one per cent of the March, 1924, ginnings report.

Naturally, as the growing season progresses and unusual weather factors cannot intervene, a closer degree of efficiency in forecasting the crop is achieved. The Crop Board is continually seeking to improve its methods, although it is obvious that the 100 per cent efficiency aimed at in forecasting crops affected by a multitude of conditions including weather, insects and plant diseases, is humanly impossible.

"Have the Farmers Met to Death?" asks David Long and proceeds to answer the question in a lively article in July Better Crops. There's food for thought in it.
Here are the plans of some of the County Agents for the coming season

Have 220,000 acres range land in County. Native pastures here as in most other places poorer than when grazing was started. Grass the greatest of all crops, the most neglected of all! Have just begun deferred grazing demonstrations which will allow the grasses to reseed. Our growing season is our fall, winter and spring—summers dry. Stock are taken off pasture by March 15, grasses then grow and seed. Stock put back in summer and fall, harvesting mature grasses and trampling in seed. Pasture rotated.—M. B. Boissevain, Marin, Calif.

Had a real community meeting, (attendance 2010) in every township of the county in April; dealing with problems of each particular locality. Boys' and girls' club work in every township, will double the soybean acreage—will study the "Farmer's Cow." Everybody cooperate!—Alfred Hessler, Fountain, Ind.

Production projects:—Four litter clubs, soybean feeding, corn contesting—five acre corn contests for men—1 acre contest for boys. Community welfare work—Boys' and girls' clubs, county picnic and Products Show.—H. D. Van Matu, Rush, Ind.

Emphasize boys' and girls' club work with stress on dairy, calf, sow and litter, sewing and corn. Also seed selection and variety tests on corn. Millinery work, bindweed eradication, fair, etc.—E. Bruce Brunson, Cheyenne, Kan.

1. Organize ten communities and build a program of work for each. 2. Junior club membership campaign in April. 3. Put on 40 poultry culling demonstrations and one two-day poultry school with banquet on closing night. 4. Junior club camp at Bena with 150 in attendance. 5. County Agricultural Fair. 6. Introduce 40 pure bred bucks and 100 pure bred Jerseys.—Robt. F. Spence, Rockcastle, Ky.

Hold a Dairy Alfalfa Campaign with 55 meetings, Organize three cow testing associations. Hold a dairy, a poultry, a horticultural and a muck men's tour. Demonstrations of land clearing, reforestation, sand blow control. Marl excavating. Arrange for 25 poultry demonstration farms. Promote growing crops and livestock which removes the least plant food from the soil, liming of soil, growing more legumes.—C. P. Milham, Ottawa, Michigan.

Just starting a new Cow Testing Association with 44 herds and 401 cows. It will stretch from Pleasant Valley in the east part of Carlton County to Wright in the west end of the county. These farmers who live among the stumps are progressive and will get there yet. —S. A. Aldrich, Carlton, Minn.

Test all cattle in county for T. B. —work to begin April 28—30 veterinarians will test 45,000 heads in two weeks. Complete organization of three Cow Testing Associations, two of which are ready to hire
testers. Assist 300 boys and girls in getting started with their club work projects. Distribute 10,000 lbs. Certified Grimm Alfalfa-seed. Use phosphate on 50 experimental plots of alfalfa and clover.—A. G. Mereness, Murray, Minn.

Our interests are equally divided between the home and farm. Crops and A. H. work is principal part of adult work. We have 150 boys and girls in various clubs. I will have 75 or 100 in my work. A. H. clubs lead by large majority—I have 22 boys and girls in dairy club work. —E. L. Garrett, Lafayette, Mo.

Establish six or eight adult cotton demonstrations. Organize 10 cotton clubs with membership of 100. Hold two schools on millinery. Hold three demonstrations on pruning and spraying. Conduct farm tour. Get 56 farmers to keep cost account records.—M. D. Amburgey, Pemiscot, Mo.

Continue T. B. eradication campaign and potato seed treatment campaign. Organize a poultry culling campaign. Organize potato and cabbage industry. Find good seed corn. Carry on organized spray service for 500 growers. —E. D. Merrill, Monroe, N. Y.

17 farmers are going to improve one acre of their pasture by applying two tons of lime and 400 lbs. 16% acid phosphate. By August 1st we will have all cattle in county tested for tuberculosis.—J. S. Hoddinott, Belmont, Ohio.

Get a car of certified northern potatoes, Petosky Russet. 1500 acres more trumbull wheat next fall. More protein per crop acre; more nitrogen per soil acre—our farm crops-soil program.—J. P. Schmidt, Seneca, Ohio.

Three corn variety tests testing five varieties over three year period. Fifteen oats variety tests, testing Miami against local varieties in ten townships. Thirty-six corn fertilizer tests, demonstrating value of fertilizing corn. All townships entered. Sweet clover broadcasted for soil improvement purposes. C. G. Fieldner, Williams, Ohio.

Carry out a “live at home and feed the livestock policy” by first emphasizing cow—sow—hen—gardens with plenty of feed. As Dr. Bradford Krapp says this is our “insurance policy” plus several cash crops.—C. C. Porter, Washington, Okla.


A series of real live poultry meetings during the month of April. Gathering our spring crop of maple syrup, last year we had to our credit about 50,000 gals. County wide campaign for the eradication of tuberculosis. Oats variety demonstrations, etc. —G. P. Miller, Susquehanna, Pa.


We expect to look after our “Ton Litter” contestants and thereby hold our present title of World’s Champion. Our prospects are only fair at present but I think that we will better it in the near future. E. R. Endsly, McLennan, Texas.
Offering $1,000 in prizes to farmers who produce the greatest number of pounds of lint cotton, and greatest number of pounds corn on not less than three acres of land in 1924.—J. B. Snider, Titus, Texas.

Bud from five to ten thousand pecan trees, encourage the planting of grafted trees on farms and city yards. There will be over a thousand trees set out. Establish Standard Bred Poultry on every farm through the medium of boys' and girls' poultry clubs. Hold at least one regular Club Fair. Establish better system of diversified farming. —N. E. Scudder, Uvalde, Texas.

Test cows in and around town for T. B. Organize a County Board of Agriculture which will assist in working out a long time agricultural program.—J. W. Rogers, Greenville, Va.

Calf club—250 members. 400 farmers put in alfalfa—seven last year. Enlarge our branch of Wisconsin Cheese Federation. Complete area T. B. test in County. —H. M. Knipfel, Clark, Wis.


Mange and lice control in cattle—improved corn—more of it. —B. S. Tedmon, Jr., Platte, Wyo.

Have secured seed for 25 new plots of alfalfa. About 1300 lbs. Encouraging growing of clover and soys. I hope to complete the organization of one new cow testing association. Promoting boys' and girls' pig, calf, clothing and food clubs. Planning to hold girls' club camp June 16, 17, 18, 19. Expect 80 girls to attend.—C. W. Dack, Winneshiek, Iowa.

Special Fertilizers to meet special soil conditions are a step in advance in the Fertilizer Industry.

"Sunrise Brand" Fertilizers are used by the most exacting trade with the knowledge that only the best materials go into the manufacture of our fertilizer.

LONG ISLAND PRODUCE & FERTILIZER COMPANY

RIVERHEAD, N. Y.
Manufacturers of "Sunrise Brand" Fertilizers
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 getaway 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.

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 Co.
64 East 25th Street
Chicago, Ill.
Dept. B. C.
TABLE 1
Yields of Sweet Potatoes Resulting from Various Fertilizer Mixtures

<table>
<thead>
<tr>
<th>Source of Results</th>
<th>Analyses</th>
<th>Yield per Acre</th>
<th>2-year average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>per cent.</td>
<td>Firsts</td>
<td>Sec'd</td>
</tr>
<tr>
<td>7 High-Yielding Plots</td>
<td>3.4-5.2-7.1</td>
<td>171</td>
<td>99.3</td>
</tr>
<tr>
<td>7 Medium-Yielding Plots</td>
<td>5.2-4.9-4.7</td>
<td>138.2</td>
<td>101.2</td>
</tr>
<tr>
<td>7 Low-Yielding Plots</td>
<td>6.9-5.5-3.4</td>
<td>96.6</td>
<td>102.4</td>
</tr>
</tbody>
</table>

The influence of potash may be further shown by the results secured in other fertilizer comparisons conducted in 1922 and 1923. Table (2) shows that the formula carrying 8 per cent of potash gave an increase in yield of 99.5 bushels of marketable tubers over the one carrying no potash and an increase of 54.5 bushels of marketable tubers over the one carrying 4 per cent of potash. The average increase would have been much greater if the season of 1923 had not been so dry. In that year all yields were very materially reduced.

Another series of fertilizer comparisons conducted in 1923 in Ocean and Atlantic counties gives some more very marked evidence of the importance of potash in sweet potato production in New Jersey. The results are shown in table (3).

The results in table (3) are taken from one year records. In Ocean County the increase in yield of the 3-8-8 formula over 3-8-0 was 88 bushels of marketable tubers, and in Atlantic County 128.5 bushels. The mixture used in Atlantic County carrying 4 per cent of potash shows an increase of 76.7 bushels of marketable tubers, and the one carrying 6 per cent an increase of 90.6 bushels of marketable tubers per acre over 3-8-0.

The results indicate that 8 per cent is the most economical proportion of potash under the conditions of these experiments.

In 1921, when digging the sweet potatoes on the fertilizer triangle, it was noticed that there was apparently a difference in the shape of the tubers produced under the different treatments. In order to make a study of this factor, ten average hills from each plot were selected by the author and taken to New Brunswick, where they were graded into firsts, seconds, and "pigs." The lengths and diameters in each grade were then measured. When the other plots were dug in Atlantic County samples were taken in the same manner as before and graded and measured.

From the measurements it appears that the shape of the sweet potato tuber is apparently influenced by the kinds and amounts of fertilizer ingredients used. This
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.

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Little Rock, Arkansas

Send for booklet—“How Arkansas Farmers Have Increased Their Bank Accounts”

discovery is significant when it is remembered that the quality of the sweet potato in northern markets is measured by shape as well as by size and results in cooking. The potato that usually sells best is a “chunk” and its proportions are 4.5 by 2.5 inches. The potatoes should be medium in size, round rather than oblong, and dry and mealy when cooked. These characteristics are greatly influenced by the soil and sources of plant-food used in growing the crop. Table (4) shows the influence of potash on the form of the tubers. The results are based on the average proportions of the tubers from the plots receiving 0, 4, 6, and 8 per cent of potash. The illustrations make the contrast more striking.

<table>
<thead>
<tr>
<th>Fertilizer Analyses</th>
<th>Length</th>
<th>Diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>inches</td>
<td>inches</td>
</tr>
<tr>
<td>3-8-0</td>
<td>6.98</td>
<td>1.66</td>
</tr>
<tr>
<td>3-8-4</td>
<td>5.6</td>
<td>2.06</td>
</tr>
<tr>
<td>3-8-6</td>
<td>5.39</td>
<td>2.24</td>
</tr>
<tr>
<td>3-8-8</td>
<td>5.4</td>
<td>2.19</td>
</tr>
</tbody>
</table>

Be Patient with Ignorance

(From page 6)

inflamed mind, when my friend, the horticulturist, spoke up and in a patient, calm, passionless voice said, “My dear fellow, we asked you to let us know where to get off, as we are strangers in your City. Of course we are ignorant. If we were as brainy and intelligent as you, we too might be running a street car!” and we stepped off. It took a few moments for the delightful sarcasm to sink into the dull, grey mud of the conductor’s mental equipment, then his mouth opened, his jaw dropped to his chest, his face started to flush and he began to cast about in a limited vocabulary for words of sufficient sting to voice his retort. But by that time he and his South
Halsted Street car were nearly out of sight, and we crossed over to get the next car back.

STUPIDITY mixed with conceit! A bitter mixture, and one calling for all the composure, forbearance and patience that one has—more, in fact than most of us can muster together at the moment we meet it.

And yet "patience is a virtue." In fact it is more than just a virtue—it is a necessity, if we are to get along. Those of us who instruct others, who carry messages to folks who need our aid, must have forbearance when faced with not only their ignorance, but with their conceit. All men are not equal mentally. All do not act alike, think alike, nor reason alike. We must be ready to make allowances for the stupidity which every day confronts us; and when the other fellow makes a fool mistake after we have taken the pains to give the clearest instructions of which we are capable, we must have patience and not resort to biting sarcasm.

And I must write no more—I remember that Henry Ward Beecher said, "There is no such thing as preaching patience into people unless the sermon is so long that they have to practice it while they hear. No man can learn patience except by going out into the hurly-burly world and taking life just as it blows. Patience is but lying to, and riding out the gale!"

The radio means more to the farmer than to any other class of people. It is not only a source of pleasure but it is an aid in making money. Read "Picking Dollars out of the Air," by F. M. Russell of the U. S. Department of Agriculture in the July Better Crops.
RUNNING TRAINS ON MILK

By H. I. PHILLIPS, in the New York Sun

Milk has been used to run a railroad train. In an experiment conducted on the Rock Island Railroad 1,000 pounds of “hard milk” was used instead of coal and the engine ran perfectly. The “Soft Drink Special” drew five coaches and 200 passengers.

It was the first time in the history of railroading, and in the history of milking for that matter, that a railroad locomotive was put on a milk diet and expected to continue obeying orders. The locomotive seemed to like it. In fact, the railroad company thinks it may have a hard time weaning it.

The Rock Island experiment will be read of with anticipation throughout the country. Passengers will welcome a chance to get whipped cream instead of cinders. Anybody would rather get a lump of hard milk in his eye than a lump of hard coal.

Milk diets for locomotives may revolutionize railroading. It will no longer be a question which lines have the best rolling stock, but which have the largest herds of blooded milch cows.

Railroad systems will have to draw their executives from the agricultural colleges and create new offices such as “Vice-President in Charge of Bovine Maintenance and Dairy Supervision.” And, of course, a “Third Assistant General Manager in Charge of Maintenance of Whey.”

BULLETIN ANNOUNCEMENTS

Train No. 861 two hours late. . . . Sour milk.
Train No. 85 fifteen minutes late. . . . Cow shortage.
Twentieth Century Limited stalled. . . . Somebody put water in the milk.
Train 67 unavoidably suspended. . . . Must wait until the cows come home.
Notice—The management announces, beginning Thursday, the operation of a new train, the Whipped Cream Flier.

NOTATIONS

The company will not be responsible for trains souring on long trip.

f—Runs during fresh milk season only.
g—Except during milkless weeks.
h—Runs on condensed milk only.
i—Takes on egg beater, cream separator and electric milking device at Albany.
j—Has herd of Guernseys attached.
k—Stops at Chicago for change of engines and milkmen.
m—Will stop at Cleveland to take on milk and food inspector.
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 office; these are maintained for your service.

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This year see that plenty of Genuine German Potash is applied to YOUR muck soils. Use either Muriate or Sulphate of Potash, at the rate of 100 to 200 pounds per acre, but be sure you get genuine German Potash—IT PAYS.

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