

# FARM NOTES.

(Work of the United States Department of Agriculture.)

GUY ELLIOTT MITCHELL.

"What is the most important thing in American agriculture?" repeated an official of the Department of Agriculture in answer to a query—a man who would make an excellent Secretary if the present incumbent were not about all that honest men could desire. "You want to know what is the backbone of agriculture in the United States—in the world? One word is the answer: Legumes. How so? Because the legumes—the clovers, the cowpeas, the soy beans, ordinary peas, beans, vetches, peanuts, alfalfa and the like—have the wonderful power (and they alone in the vegetable world possess it) to absorb nitrogen from the air and fix it into the vegetable kingdom. And nitrogen is the most elusive and by far the most expensive of the fertilizers or foods required by all plants. Were it not for the clovers and their various cousins, the world's population, perhaps not of this generation, but surely of the next generation, would face absolute starvation. In the United States ten years without these remarkable plants would make the poorer half of our farm lands so unproductive that it would not pay to plant crops, and the entire burden of raising food would devolve upon the other half. With these richer valleys and prairie lands, it would simply be a question of a few more years when they, too, would become exhausted."

### As Old as History.

The old Romans and the Greeks knew that the clovers were great soil fertilizers, but they did not know why, and it has only been within comparatively recent years that the science of agriculture has discovered that the clovers and their allied species are the homes of billions of minute bacteria which, by some still unknown process, enable the plant upon whose roots they live to absorb large quantities of nitrogen or ammonia direct from the air. If you will pull up an ordinary clover plant you will find a number of little nodules on the roots.



Roots of Garden Peas Showing Nodules.

These are formed by, and are the homes of, the bacteria, each one containing millions of individuals. If clover or alfalfa seed are sown in soil devoid of these bacteria, they will make practically no growth. This condition led the Department of Agriculture several years ago to take up the study of artificial inoculation of the seeds of legumes or the soil intended for the planting, and the results have been most remarkable. It was found that not only could new soil be easily inoculated, but that sickly crops already growing weak for want of bacteria could be stimulated by the application of bacteria-infected water and other simple means. Dr. George T. Moore, who recently resigned from the Department through criticism of his alleged connection with a private company exploiting the sale and production of this bacteria, while in the Department, made an exhaustive study of the subject for several years, and finally developed a plan of the greatest importance to the American farmer, by which a nitrogen "starter" is prepared in "vest-pocket" size, which can be mailed to any point, and by following simple directions developed into a vast mass of bacteria for the inoculation of entire fields.

### Short Story Book on Bacteria.

Farmers' Bulletin No. 214, by Dr. Moore, is a 50-page story of the legumes and their bacteria. It is a wonderfully interesting little romance, and ten million copies could well be printed and one placed in the hands of every farmer in the United States. Its teachings hold out untold possibilities for American agriculture, and the process of acquiring vastly increased



Roots of Soy Beans Showing Nodules.

yields of forage crops is so simple as to excite the wonder of even the closest students of farm science. Do not the following short paragraphs, taken from this bulletin, create a desire to know more on the subject?

H. W. Dunlap, of Holland Patent, N. Y., having more of the liquid culture than could be used for some seed he was inoculating, mixed it with a light loam and spread it upon a part of a field already in clover. "The difference in color and size of the plants later on indicated perfectly where the soil had been distributed."

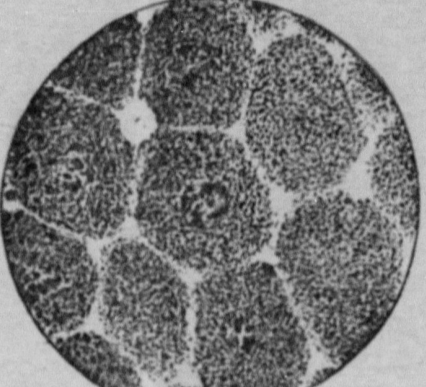
Mrs. J. A. Wells, of Bryn Athyn, Pa., tried watering pea vines a month with culture liquid, and "the treated vines were fully twice the size of the others."

U. J. Hess, of North Yakima, Washington, reports on a 4-year old alfalfa field—"The crop, which had been short, pale and spindly, took on a darker color and a rank growth, and yielded, I think, about three times as much as formerly."

### Seems Too Easy to be Effective.

The method described of inoculating seed to secure these wonderful results is ridiculously simple. Place the seed in a gunny sack, immerse the bundle in the fluid, previously prepared with no greater trouble, and allow to drain; then spread out to dry? This is all there is to it, besides planting.

The Department of Agriculture had a small amount of money set aside last Spring for the manufacture of these "starters," which were distributed free to farmers throughout the country, but the supply was soon entirely exhausted. It is probable that the supply for next year will be exhausted early, since applications for next Spring are already coming in. The cost, however, of each package is



A Few Cells from a Clover Nodule. Magnified 1,000 Times to Show the Bacteria. small, and yet it may mean much to the farmer who receives it and follows the simple directions. This Farmers' Bulletin No. 214, can be obtained from members of Congress or Senators, or from the Secretary of Agriculture. Since the public is paying the bill for printing documents containing such information, every farmer member of the body politic is entitled to send for one of these little booklets.

### UNCLE SAM'S FARM STORIES.

The press proofs are out for a pamphlet containing nine little stories for farmers, to be issued by the Department of Agriculture as Farmers' Bulletin No. 227, a collection of Practical Farm Experiments.

"Top Dressing Grass Land" is the first story, covering the results of experiments at several of the experimental stations, and conclusions as to the best proportions of nitrogen, phosphate and potash as fertilizers for grass lands.

### King Corn.

There is another story on the "Extension of the Corn Growing Area," which shows that the corn crop is invading some of the States where it had been supposed that corn would not grow well. It is rather surprising, for instance, to find that Montana, while it does not grow very much corn, gets a bigger yield per acre than three-fourths of the so-called corn States.

### Peanuts as Forage Plants.

"Peanuts for Forage" is rather interesting reading. The peanut is one of the most valuable of the legumes—a cousin to the clover—and the crop, while a money-maker, both for the peanuts and for forage, constantly improves the soil. The Arkansas station, without special fertilization or cultivation produced 143 bushels to the acre.

### To Prevent Freezing of Fruit Trees.

"The Winter Killing of Fruit Trees" is a timely romance, calling attention to the necessity for providing against the colds to come in the snappy nights of December and January. Corn grown in the orchard is considered one of the best possible crops to prevent trees from winter killing, and dressings of barnyard manure tend to prevent trees from freezing.

A short treatise on Cranberry Culture can be recommended for those who live near swamps.

### Combating San Jose Scale.

The Lime-Sulphur-Salt Wash, which is described in story No. 6, is the insecticide in one form or another, which for years has been relied upon by the fruit growers of the Pacific Coast states in combating San Jose scale and other scale insects. The various formulas are given, and the satisfactory results noted from the use of this wash for the destruction of the San Jose scale. The possibility has been demonstrated of keeping this destructive insect in check by an occasional treatment. The materials for the washes are not costly, can be obtained anywhere, and are easily prepared and applied.

The next short classic is "Destroying Prairie Dogs," a description of a treatment of considerable value to the Western states, but of little interest to the farmers of Boston.

### Clean, Pure Milk.

Next in this series comes "Clean Milk," something which we all agree should be, but which the people of the Department of Agriculture say is a condition often observed in the breach. Here are a few homely suggestions:

Keep the cows clean, and do not compel them to wade and live in filth.

Stop the dirty practice known as "wetting the teats," drawing a little milk in the hands before and during milking, leaving the excess of filth milk to drop into the pail.

Expose pails in the direct sunlight, which is a good sterilizer.

Keep out of milk pails, cans, etc., all sour milk. Using them for this purpose infects them so badly that no amount of washing is likely to clean them. Bacteria are invisible, and millions can find lodgment in the thin film of moisture that remains after dishes are apparently clean.

Whitewash the barn at least once a year.

### Air in the Poultry House.

The last of the series is a short essay on the Construction and Ventilation of Poultry Houses, compiled from a number of American and English bulletins and Journals. The idea here set forth is that if eggs are to be obtained from hens during the season when eggs are

high, the hens must not be allowed to shift for themselves. No animal responds more quickly or steadily than the hen to good treatment and good food, and while she is probably the most wonderful piece of farm machinery to be found, she can not well be expected to grind out eggs the year round without a good house, a clean floor, a comfortable sleeping place, and good food.

This is a free bulletin, and can be obtained from Senators or Congressmen or Secretary Wilson.

### Quarantine for Milch Goats.

The Bureau of Animal Industry is in earnest in its intention to introduce European high-bred milch goats into this country for the purpose of crossing them on common American nannies. Purchases have been made by a government agent of Swiss and French goats, which are heavy milkers—giving as much as six quarts and eight quarts a day each—and to receive the shipment the Department of Agriculture has leased a small island in New York harbor for quarantine purposes, as it is, of course, highly important to introduce and breed only from goats which are free from any of the contagious diseases found in the herds of all European countries.

Much interest is manifested in "the Government's goat introduction" throughout various parts of the United States where goats are raised to some extent, and a large number of individuals who have milch goats of good frame, but which give only a small amount of milk are anxious to secure the assistance of the Department of Agriculture in improving their flocks and gradually building up a strain of fine milch goats. There are at present only about 4,000 or 5,000 milch goats in this country, according to the Department of Agriculture, which give even an average of a pint of milk a day. In most cases the milk is entirely consumed in raising the kids.

### Some New Free Farm Bulletins.

Some of the most popular Farmers' Bulletins of the Department of Agriculture which have recently been brought up to date and reprinted are:

- No. 51—Standard Varieties of Chickens.
- No. 57—Butter Making on the Farm.
- No. 59—Bee Keeping.
- No. 112—Bread and the Principles of Bread Making.
- No. 175—Home Manufacture and Use of Unfermented Grape Juice.
- No. 208—Varieties of Fruit Recommended for Planting.
- No. 214—Beneficial Bacteria for Leguminous Crops.

Any of these can be had without cost upon application to your Senator, Member of Congress, or to the Secretary of Agriculture.

### Boom-Rat, Ball-Hooter and Catty-man.

These fearsome creatures soon become divested of their terrors when you know them. The Bureau of Forestry has just printed a short "story" reciting a number of the peculiar and grotesque terms used by foresters and loggers—terms which were evidently at one time slang, but are now, at least among woodsmen, regular "dictionary" words. If a man stays long enough in a logging camp he will learn that while there is a distinction between a "ball-hooter" and a "boom rat," and between a "bull cook" and a "cattyman," they all refer



A Group of Loggers.

to the logger himself. On the other hand, the logman's "alligator," "dog," "pig," and "road donkey" are entirely inanimate. The "alligator" is a log boat, the "dog" a short piece of steel, the "pig" is a sled and the "road donkey" is an engine. Other tools which might, unseen, be taken for animals are the "blue jay," the "rooster," the "goose-neck," the "snake" and the "knydill." Anybody who really wants to learn something of this branch of natural history might address a note to Gifford Pinchot, Forester, Washington, D. C., and ask for Bulletin No. 61, Bureau of Forestry.

### The Farmers Becoming Wise.

A group of Western farmers organized recently and made quite a "killing" on the wheat market, which leads to the comment by the Nebraska State Journal that "it is interesting to note that while the East is speculating in both an intellectual and a financial sense upon the prospects for Western crops, the farmers of some parts of the West appear to have themselves gone into the speculating business. The appearance of farmers in the speculative ring in the guise of 'lamb' is nothing new, but the reports have it that certain farmers of the spring wheat country have played the market with some success as 'bulls' this season. Mr. Clews, the Wall Street banker, says:

"If all the reports of damage to wheat by black rust had substantial foundation the millers would have before them a season of short supplies. The reason of the doubt as to the foundation of these reports of rust is said to be partly in the fact that the Red River farmers have learned the market jobbers' trick of looking wrong and telling of spoiled crops, then selling while the price is up. This practice is not to be commended on ethical grounds, but if anybody is going to profit out of a cry of woe, we should, of course, rather see him a grower of the grain than a market manipulator in a city exchange."

## DAIRYING IN PORTO RICO.

INDUSTRY CANNOT BE SAID TO HAVE BECOME FINE ART.

Butter is Made by Very Crude Methods—American Butter Imported of Poor Quality.—Chance for American Trade.

Although our town and city people have their troubles with the milkman and the ice man, they are but small ones compared to those of the people of Porto Rico, according to a recent investigation by the Department of Agriculture of the dairy industry in that island.



Delivering Milk in San Juan, P. R.

How would you like to have all your milk which you buy, ready boiled? In Porto Rico it is not sold off within seven or eight hours, it is boiled a second time. Some of the milk supply, however, is sold freshly warm, as an evidence of its goodness; but the Porto Rican knows he is getting the real thing only when the cow is brought to his door and milked for him. Since the American regency, kept milk is coming into some little use.



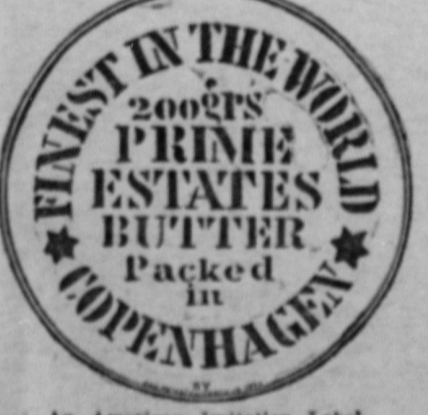
Taking Milk to Town.

The Porto Rican dairyman is described by the government report as being in ignorance, and his operations are most crude. He ties the hind legs of his cows to prevent kicking, following this plan because his father did it before him, without regard to whether his particular cow ever tried to kick over a milk bucket in her life.

### Butter Made From Boiled Scum.

Porto Rican creameries are likewise curiosities. The butter "comes" only following a long and vigorous shaking of the cream in a fruit jar, one reason being that much of the cream is the scum of boiled milk.

When the government officials visited Porto Rico they found American butter at a decided discount. Not the best, but the poorest butter comes from the United States. The Danish butter commonly sells for from 50 to 60 cents a pound, whereas some American butter retails as low as 14 cents. The Porto Ricans scout any intimation that good butter can come from the United States. Certain American manufacturers, in order to get rich quick in Porto Rico, have engaged in the business of palming off spoiled butter or else as Danish butter. One New York concern has been furnishing a mediocre quality of butter in small tins which are made to imitate closely a well-known brand of Danish butter.



An American Imitation Label.

As can be seen from the illustration of this brand, the letters "N. Y." are so small as to be hardly noticeable; one storekeeper insisted that they stood for Denmark.

### Not Yet Invaded by Ice Trust.

Ice, too, has until very recently been an expensive luxury on the island, and the people know but little of how to keep perishable foods. In one case a Spanish merchant received butter in five pound boxes. These he stored on a shelf in the store where the temperature was often 90 degrees F. As this butter was needed for sale, one box at a time was placed in such a small ice chest as might be found in the humblest dwelling in the United States. It was supposed that if the butter was cold and hard when sold nothing more could be desired.

There is no reason, however, why within a few years American butter makers should not control the butter market of Porto Rico; but a market cannot be had for the asking, since unscrupulous American shippers have given American butter a very black eye.

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### SIZZARDS VERSUS BLIZZARDS.

More Damage to Life and Property from Roasting than from Freezing.

The damage caused by hurricanes, cyclones, hailstorms, blizzards and floods, totals far into the millions in value each year, yet the devastation caused by a single general hot wave of any great duration is likely to be greater than the aggregate of all the other atmospheric disturbances for the year. Of all adverse weather conditions, those accompanying periods of long-continued high temperature are the most detrimental to man's mental, physical and financial welfare. Estimates, of course, can be made of the injury caused by long-continued heated spells to growing crops, and these alone make an astounding figure. Taking one state as an example—Iowa—we find that on account of a hot wave which visited that section in August, 1894, the crop loss amounted to over \$50,000,000, a value nearly twice as great as the loss caused by the Galveston hurricane in 1900.

The suffering undergone by the millions of humanity day after day in these hot-wave periods cannot be estimated. Statistics may be secured as to the number of sunstrokes, but no data are obtainable regarding the sick whose deaths are hastened by the abnormally-heated atmosphere.

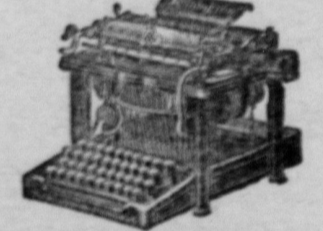
Cotton and corn seem to be most affected by the burning, hot temperature. The mere lack of rain during hot waves is but partially responsible for the damage done, as it is found that the cooking, firing effect of the intensely-heated atmosphere is the source of much irretrievable damage. When affected by drought alone most crops will, when the welcome rainfall comes, instantly revive, but when the life properties of plants are injured by the excessive heat, no amount of rainfall and sunshine can repair the damage. Taken as a whole, the harvest returns for years during which hot waves were unusually severe, show a production of one-fourth less in quantity while the quality is also quite inferior to the standard. However, during the years immediately following such seasons the yield often times reaches a maximum for the decade. The theory is advanced that the hot weather of one summer has the effect of making the ground mellow and putting it in an ideal condition for the reception of seed the following year.

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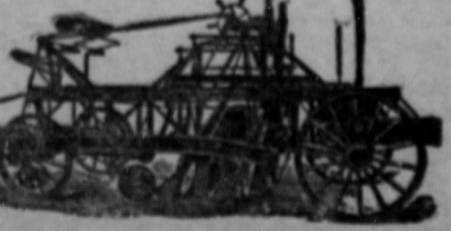
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