

United States Department of Agriculture Special Page

Bulletins and Special Articles Issued by the Government, of Interest to the Northwest;
Suggestions Covering a Wide Range of Activities; Results of Federal Investigations, Etc.

U. S. Controls Sources of Fertilizer Elements

PRESENT agricultural practice prescribes the use of three chemical elements as a "soil amendment," a "stimulant for plant growth," or a "plant food," as it is variously put. These three elements when applied to the soil in which a crop is growing have been found by practice to afford an increased crop yield. They are phosphorous, potassium, and nitrogen, spoken of by the respective trade terms of phosphoric acid, potash and "ammoniates."

In the commercial fertilizers phosphoric acid is found in the form of calcium phosphate, which is bone phosphate or rock phosphate, usually treated with sulphuric acid to render it soluble. Potash is found as a salt or salts of potassium, either sulphate or chloride, and the "ammoniates," as the inorganic salt of ammonia, ammonium sulphate, the inorganic salts of nitric acid, sodium nitrate, and inorganic compounds of nitrogen, calcium cyanamid, or the organic compounds of nitrogen, contained in animal or vegetable refuse matter, cottonseed meal, abattoir tankage or fish scrap.

The usual commercial fertilizers contain these three elements and have the designation of "complete fertilizers." These are sold under various brand names, the various brands frequently being recommended for particular crops. The proportion of the three essential ingredients is varied; as a usual thing that of the phosphoric acid is considerably higher than the other two, which are present in about the same proportion.

The Nation's supply of these three common ingredients of fertilizer may be summarized as follows: Of phosphoric acid there is an abundant supply in the large deposits of phosphate rock in Florida and Tennessee, and the enormous deposits of Idaho, Montana and Wyoming.

Of potash, now obtained exclusively from the German mines, there is little known in this country outside of the desiccated residues in Searles Lake, Cal., and the giant kelps of the Pacific littoral. In the latter there is much more than enough to supply the present demands of the fertilizer trade of the United States, the present annual consumption of potash being about 1,250,000 tons, of varied composition. At present the kelps are not supplying any of this, since it has not been determined by actual experimentation on a commercial scale that they can be used economically as a source of potash. Estimates based on costs of similar operations indicate that they can be so used.

Of "ammoniates" there is a large source in the ammonia produced as a by-product in the distillation of coal for the production of gas or coke, or both. This source is but partially developed, as by the methods most commonly practiced in this country this possible by-product is not recovered. The amount of ammonia now going to waste is almost large enough to supply all of the "ammoniates" now demanded by the fertilizer trade. The abattoirs supply a large amount of tankage and dried blood of high fertilizer value; but of these possible by-products there is still an enormous loss through lack of organization and co-operation in the small-scale slaughter of animals for food.

The Stay at Home.

The fates decree that here we be,
And ne'er abroad to roam,
But take our rest for seasons best
Vacation spend at home,
But what the odds, when, oh, ye gods!
With joys the time we fill
Of home-made kind, and pleasure find
In shady Hammockville?

Though we may miss the ocean's kiss
In briny waves' embrace,
Or have no share in mountain air
For nerves and brain to brace,
Or lose delights in foreign sights,
There yet is left us still
A shady nook, a favorite book
Out there in Hammockville.

No anxious hours to pass are ours
In preparation's work;
No clothes to get, no plans to fret,
No vain regrets to lurk!
But time to seize in drowsy ease,
Expenses only nil,
A rare-five time, where contented chime
Out there in Hammockville,
—Baltimore American.

Florida is strictly enforcing the acid test on grapefruit intended for shipment out of the state.

Co-operating for Better Milk

THAT the quality of the milk sold in our large cities depends largely upon the sort of treatment it receives from the time the farmer leaves it at the way-station until it is received at the big urban milk distributing market has been clearly established by a recent Federal investigation of the milk supply of Pittsburgh. It was also made clear that the excellence of a city's milk depends importantly on constructive co-operation between the milk wholesalers and the railroads in the proper refrigeration of the cans after they are delivered for transit. As the result of this study and efforts on the part of the Department's representatives to bring the railroads and the great milk wholesalers of the cities into co-operation, Pittsburgh is now getting the bulk of its milk with a much lower bacterial count and in much better condition.

Instead of getting milk that on an express or freight car got so warm in an eight or nine hours' trip from the country station to the city that the cans frequently blew up or "geysered" and spread milk all over the car, the Pittsburgh housewife is now getting a product that is put into a modern refrigerator car at the country station and is kept chilled until actually delivered to her ice box.

Bacterial Counts.

Examination of milk received at Pittsburgh showed bacterial counts as high as 22,800,000 organisms per cubic centimeter. The temperature of the milk in the baggage cars ran from 46 degrees, Fahrenheit, up to 73 degrees, with most of the samples well above 65 degrees.

These temperatures were in many cases far higher than the temperatures of the milk as taken on at the pick-up way stations. In fact some cases of as much as 15 degrees increase of temperature were found, between the time the farmer delivered his milk to the railroad and the time of its arrival in Pittsburgh. At these temperatures much of the milk worked rapidly, which led to the frequent geysers from the cans.

The milk situation in Pittsburgh was fairly typical of that of many large cities. Some of the milk came from nearby dairies, but a large proportion of it had to travel eight or nine hours, from distant dairies in Ohio, before it was delivered. Investigation of the milk at its source showed that the farmer was delivering a good article at his shipping point but that in transit the milk rose in temperature as much as 15 degrees while being carried in ordinary baggage cars.

Co-operation Promises.

The Federal representatives then went to the leading milk dealers of Pittsburgh and from them secured promises of co-operation in consolidating shipments so that the railroads, instead of having to pick up small quantities at way stations several times a day, would have to handle only one or two pick-ups of important quantities. The railroads then pointed out that they could not supply refrigerator cars, keep them iced and refrigerate milk for the same freight rate at which they were carrying milk as ordinary baggage. The milk dealers agreed that some increase was justifiable, and offered to pay 15 per cent more. The railroads thought that a 25 per cent increase was just. After a number of conferences the Department's representatives succeeded in getting the dealers and the railroads to accept a 20 per cent increase. The Interstate Commerce Commission, after representation by both sides, agreed to a new tariff allowing this 20 per cent increase.

As soon as the tariffs were adopted the Pennsylvania Railroad stated its readiness to refrigerate 7000 gallons of milk a day. The Baltimore & Ohio Railroad notified the Department that it would at once build refrigerator cars and, as soon as they were constructed, would inaugurate a refrigeration service covering milk from Painesville and Akron, O., and intermediate stations. The Lake Shore & Michigan Southern also agreed to operate a refrigeration service from Andover, O.; Oil City, Pa., and intermediate stations. The Erie Railroad and the Pennsylvania & Lake Erie also accepted the new arrangement.

Under this plan the long haul milk

will be picked up directly in refrigerator cars and railroad collecting centers will be established where milk shipped for a short run on branch lines will be collected and put at once into refrigerator cars bound for Pittsburgh.

Better Supply Assured.

The results of this service will, in the opinion of the Federal experts, undoubtedly give the people of Pittsburgh a better milk supply than they have had heretofore. The experts, however, regard as of greater moment to the people of the United States the discovery that such a matter can be handled co-operatively between the railroads and the shippers where an impartial and accepted referee can arrange the conferences.

It was also interesting to note that the somewhat hostile attitude between the railroad men and the milk shippers, as the conference progressed, finally gave way to cordial friendliness and confidence, and a realization of the existence of a common interest. It is believed that this agreement will point the way to the settlement of many difficulties in the handling of perishable products, through conference rather than through resort to legal process.

To carry on the service the railroad companies and milk dealers are building large ice houses in the dairy sections for the purpose of storing ice for the coming winter, to take care of the refrigeration during the next season.

The smaller dealers are at the present time able to have their milk remain in the refrigerator cars until time to deliver in the city, while heretofore it was necessary for them to meet the milk trains upon their arrival at Pittsburgh during the night from 10 P. M. to 2 A. M., and in order to hold the milk, remove same to their dairies and refrigerate it. The refrigerator cars save such rehandling of the milk and then make possible a further reduction in the cost of refrigeration in Pittsburgh, said to be in excess of the added rates.

Ophthalmic Mallein for Diagnosis of Glanders

THE Department of Agriculture, in professional bulletin No. 166, recommends the use of ophthalmic mallein for the diagnosis of glanders. This test, it is held, is more accurate, easier of application and gives results more quickly than the other methods. At the same time, the use of this test does not interfere in doubtful cases with subsequent serum or subcutaneous mallein tests.

In considering the good results obtained and the advantages of this method of testing, a concentrated mallein has been prepared for this purpose by the Bureau of Animal Industry, and this was made available to a number of practicing veterinarians who desired to give this method of testing a thorough trial. It has also been employed by inspectors of the Bureau of Animal Industry in their field work, and reports are accessible regarding its action for diagnostic purposes on more than 18,000 cases.

The results from all sources were uniformly satisfactory. Practicing veterinarians who have given this method a trial have reported very favorably on the results, and the tests conducted by the bureau inspectors on several thousand animals were also satisfactory. The method has been applied here in Washington whenever possible, and recently in some immunizing tests of glanders conducted by the Bureau of Animal Industry there was a good opportunity to repeatedly employ this test. In all these instances the results were uniformly good. In cases of glanders there appeared a marked purulent conjunctivitis, and the reaction at times was so severe that the animal could not open its tested eye.

The success of the test, the Department's specialists find, depends upon the degree of concentration of the mallein. The bulletin gives full details as to the preparation of concentrated mallein, its application and the effect of the ophthalmic test in healthy and glandered animals. The bulletin is technical and is designed primarily for veterinarians and state livestock sanitary authorities.

For Good Butter Cool the Cream Thoroughly

ONE of the most common causes of poor-quality butter is the lack of immediate, thorough cooling of the cream after separation. The dairy division of the United States Department of Agriculture has made a careful investigation of conditions on a large number of dairy farms, and the data obtained show that, if properly cooled, cream of the best grade can be produced with but little extra labor or expense. The principles involved are very simple and are easily understood.

A liberal use of ice which has been stored in winter to be used the following summer, is one of the requirements for the solution of the poor-butter problem. Farmers who are already successfully delivering good products to the creamery have usually provided for themselves a convenient source of supply for the ice, suitable houses for storing the ice and icewater tanks for the immediate cooling of the milk or cream. In parts of New England, although the dairymen often hold cream on the farm four days in the summer and seven days in the winter, they deliver practically all their product while sweet. After it reaches the creamery it is pasteurized and shipped a distance of from 50 to 300 miles, and may still be sold in these remote localities in the form of sweet cream.

The expense connected with the liberal use of ice in this connection is so small and the result so satisfactory that details have been compiled for the consideration of those interested in dairying and are now issued in the form of a new Farmers' Bulletin (No. 623) entitled: "Ice Houses and the Use of Ice on the Dairy Farm." The bulletin should be useful in dairy sections where natural ice is obtainable. Plans and specifications for ice houses are given.

In its general summary the bulletin makes the following 10 suggestions:

- (1) Wherever ice is abundant the cost of harvesting and storing is usually very small.
- (2) If a stream of water is available, a small ice pond can generally be constructed on the farm by building a dam.
- (3) In building an ice house care should be taken to provide for proper drainage and ventilation. The drain should be efficiently trapped to prevent air from entering the house through the drain.
- (4) The efficient insulating of ice houses is of the utmost importance, consequently great care should be exercised in the selection and installation of the insulating material.
- (5) About 40 cubic feet of space should ordinarily be allowed for a ton of ice. A cubic foot of ice weighs about 57 pounds.
- (6) Under general conditions about 1 pound of ice will be required to cool and keep 1 pound of cream in good condition until delivered to the creamery when deliveries are made three times a week.
- (7) When storing ice about 50 per cent more should be packed than is actually needed. This amount allows for a heavy shrinkage and for household uses.
- (8) The dairy farmer should provide annually one-half to one ton of ice per cow for cooling cream only and one and one-half to two tons per cow if whole milk is cooled, depending upon the locality and other factors.
- (9) If a cake of ice is kept floating in the water surrounding the cream cans when the ordinary cooling cans are used, the temperature will remain at about 40 degrees F.
- (10) Good ice-water tanks can usually be constructed for from \$5 to \$20.

Success.

There are no "lifts" in the House of Success;
But the stairs are long and steep,
And the man who would climb
To the top, in his time,
Before he dare walk, must creep.

Of carpets there're none in the House of Success;
But the floors are hard and bare,
And you're likely to trip
And slide and slip,
In the pitfalls here and there.

There are no lounges or easy chairs,
Nor places to rest your spine,
But after you've won
To the roof—there's the sun
And, ah! but the view is fine!
—The Optimist.