

FARM AND ORCHARD

Notes and Instructions from Agricultural Colleges and Experiment Stations of Oregon and Washington, Specially Suitable to Pacific Coast Conditions

LAND PLASTER AND ITS EFFECT ON THE SOIL.

(By Professor H. V. Tartar, Oregon Agricultural College Experiment Station.)

Land plaster, or gypsum, is a native sulphate of lime. It is a well-known crop stimulant, yet it contains neither nitrogen, phosphorus, nor potassium, the usual plant foods supplied in commercial fertilizers. In some localities it is used to a considerable extent. According to the estimates of Dr. H. W. Wiley, of the United States Department of Agriculture, about 80,000 tons of ground land plaster is used annually in this country.

Land plaster is now used in Western Oregon and Western Washington, especially in the Willamette Valley, as a fertilizer for leguminous crops. As evidence of its remarkable stimulating action on the growth of legumes, many instances are recorded where the yield of a clover or vetch crop has been practically doubled by a treatment with plaster at the rate of 50 to 60 pounds per acre. This fertilizer has also been used with success by a number of market gardeners on general truck crops.

The reactions that take place in the soil when land plaster is applied have been studied by numerous investigators. Physically, it is known to exert a beneficial effect on heavy clays by flocculation, though in this action it is far surpassed by lime. It has also been considered that land plaster has the power to neutralize soil acids, but experiments made in the laboratory have indicated that it does not have such an effect and hence cannot be used as a substitute for lime in this regard. Originally, benefits derived from applications were attributed to its "fixing" action on certain compounds of ammonia converting them into more stable forms for the use of plants.

Many years ago, however, it was observed in comparing analyses of clover grown on plots treated with plaster with those of the same plant grown on untreated plots, that the plastered clover contained more potash, one of the most essential elements of plant food. A later investigator states: "It is found that the lime of the plaster is fixed in the soil while a corresponding quantity of potash goes into solution." At the present time it is generally considered that the benefits of land plaster are due to its action in liberating potash from some of the more insoluble materials of the soil.

In connection with some soil studies a test has been made on a number of typical Oregon soils, including Willamette Valley clay loams, red hill soils of the foothills, and Eastern Oregon silt loams, as regards the liberation of soluble potash by land plaster. In every instance it has been found that the plaster releases potash from these soils and hence acts as an indirect potash fertilizer. This fact, together with the fact that plaster encourages the growth of certain nitrifying organisms in the soil which are beneficial to plant growth, probably explains its beneficial action on Oregon soils.

In some localities in the United States where plaster has been used for a long period of years it has been claimed that the soil does not respond to its application as readily as formerly. In other words, the supply of plant food material liberated by the action of the land plaster appears to become depleted. Analyses indicate that our Western Oregon clay loams contain an almost inexhaustible supply of potash and if it can be rendered more available through moderate applications of land plaster without the accumulation of any injurious products in the soil, it would seem no objection can be raised to its use. One particular field, a sandy loam used for truck gardening, has come to our notice which has had applications of land plaster for 25 years at the rate of 200 pounds per acre and still responds readily to this treatment.

SOIL INOCULATION WITH BACTERIA.

Experiments at Oregon Agricultural College to Demonstrate Its Value to Leguminous Crops.

(By Dr. E. G. Peterson, Bacteriologist, Oregon Agricultural College.)

The Department of Soil Bacteriology at the Oregon Agricultural College has in process a series of investigations, in the inoculation of soil with bacteria, which it is hoped, from results so far attained, will clear up some of the mystery which now surrounds this vital problem of soil fertility. Experiments to date very strongly indicate that the presence of the right variety of organisms affects the crop very markedly in two ways: in the general quantity and luxuriance of the growth, and in the quality of growth. The point often overlooked but which in reality is most significant is the qualitative variation caused by the bacteria of the soil. This qualitative variation is expressed usually in a marked rise in the percentage of nitrogen present in the plant tissue as a result of the presence of artificially introduced soil bacteria.

The first fact of importance noted in the investigation of the subject was that leguminous crops were characterized by having on their roots what are called tubercles or nodules varying in size from a pin-head to a pea. It was further noted that the general health and luxuriance of the plant was in direct proportion to the abundance of these nodules. Very poorly growing crops were found to be deficient in root nodules, moderately successful crops were found to contain an average number of nodules, while very healthy growths occurred only in association with numerous nodules.

This coincidence led to an investigation of the nature of the nodule or tubercle. It was at first thought to be of the nature of a disease, but

this was soon seen to be erroneous because of the fact already stated, i. e., the coincidence of tubercles and health of the crop. The rise of bacteriology as a science near the middle of the last century gave impulse to the investigation of soil processes from the standpoint of bacteria. It was, as a result of this investigation, found that the nodules were the result of bacterial action. In soil which is rendered sterile by excessive heating or by the application of antiseptics, but which contains all the food materials for plant growth except nitrogen, it was found that if the soil were not allowed to become contaminated the legumes failed to grow beyond a certain point. If the same soil were later contaminated or mixed with earth from a field which had grown certain legumes, it was found that growth was luxuriant. This suggested that the process was caused by live organisms of some sort.

If one of the nodules from the root of a legume is cut open and the contents examined by the aid of a powerful microscope it will be discovered to contain millions of bacteria. It is now known that these bacteria extract from the air the nitrogen which they build or help to build up into plant tissue. Exactly how they do it is to quite an extent unknown.

Only legumes have the power to utilize atmospheric nitrogen and these only by the co-operation of bacteria. Each legume is thought to have a special kind of bacterium, although they are all very closely related, undoubtedly. The chemical reaction of the soil very materially affects the action of the organisms. They will not thrive in acid soil. Consequently soil which is acid should be limed before a crop of this nature is grown.

Soil which has never grown legumes before or which has not grown legumes for three or more years may profitably be inoculated with legume bacteria as a preparation for growing the crop. This inoculation may be accomplished in one of two ways: either by scattering soil from a leguminous field to the field to be seeded, or by using a "pure culture" of the bacterium. This "pure culture" is simply a growth of the bacteria on media or food of some kind. The culture is sent out in bottles which are tightly corked to prevent entrance of any other organisms, and are to be used if possible within 20 days of their receipt. Bacteria do not grow well in bright or diffuse light and soil bacteria do not thrive at a very warm temperature. Consequently these cultures should not be exposed to light or high temperature for any considerable period of time. Direct sunlight will kill them if continued for a sufficient period of time.

The details in the application of the pure culture to the seed are as follows: The seed (sixty pounds or less for each bottle of culture) should be soaked in water for two hours. The water should be drained off and a pound of granulated sugar per bushel of seed should be added. Allow this to stand for ten hours or more. A small quantity of cold water should be added to the culture bottle and shaken vigorously until the culture is well broken up. The contents of the bottle should next be mixed thoroughly with the seed. This step is especially important. Plant the seed as soon as it is dry enough to handle. Do not allow the seeds to become thoroughly dry or the bacteria will die.

Usually a small plat should be reserved for uninoculated seed in order to test the efficiency of the inoculation. The results of experiments to date indicate that this method is practicable and of great benefit under the conditions stated. It is the intention of the Department of Bacteriology of the Oregon Experiment Station to send out these cultures. A set of instructions will accompany each shipment and those who take advantage of the opportunity will be asked to report the results of their work.

Raises Young to Eat.

The paradise fish, one of the new wonders of natural history, raises its young to eat. The habits of this peculiar fish are also strikingly similar to those of a great many parents who show little more consideration for their offspring. The female drops her eggs carelessly anywhere she may be and the male gathers them up and places them in a bubble nest, which he blows, and awaits the hatching. When they are sufficiently grown he eats them, keeping them housed up until he needs them. Some of the little ones escape, of course, and as they are prolific breeders, the specie is perpetuated.

Subjects for Big Stick.

"My great-grandfather was clever at blowing rings of smoke," began the first Ananias, as he helped himself to the crackers in the corner grocery. "Horseshoes were scarce in those days, so when he wanted to play a game of quoits he would blow rings of smoke and cover the peg every time."

"Very clever, indeed," said the second Ananias, with a smile, "but my great-grandfather was also an artist at blowing smoke rings. One day a cyclone came along and blew out his keyhole in the front door, but great-grandfather just lit his pipe, blew a smoke ring and made a new one."

Young Pulletts.

The April hatched pulletts should now be laying. They certainly are if they have been given the proper feed and care.

If you have any little potatoes the hens can make good use of them. Boll them up soft and feed a ration now and then.

GENERAL NEWS OF NATIONAL HAPPENINGS

Washington, April 6. — Violating several precedents, LaFollette today introduced a resolution in the senate for a new investigation of the Lorimer bribery charges.

It is contrary to precedent to reopen a case of this kind once decided. It is also contrary to precedent to name the members of the investigating committee on the resolution appointing it. It is a further violation of precedent to appoint only new members of the senate on such a committee.

LaFollette proposed that the committee be composed of Works, of California; Townsend, of Michigan; McLean, of Connecticut; Kern, of Indiana, and Pomerene, of Ohio. Of these the first two are insurgents, the last two Democrats and McLean is a regular. It is understood they were selected at an insurgent conference.

The resolution recites the action of the senate last session, when a resolution to declare the seat of Senator Lorimer vacant because of alleged corruption of the Illinois legislature which had elected him, was defeated. The resolution recites:

"It appears from the published reports of the proceedings of the said Illinois state senate committee, that witnesses who were not called and sworn by the committee of this senate appointed to investigate said charges, have appeared before the said committee of the Illinois state senate and on being interrogated, have given important material testimony tending to prove that \$100,000 was corruptly expended to secure the election of William Lorimer to the United States senate."

The fight will begin at the outset, for the Lorimer senators will move to refer the resolution to the committee on privileges and elections, of which Dillingham, a Lorimer man, is chairman, in the hope that it will be smothered there.

Washington, April 5. — President Taft transmitted to congress a message urging early action on the reciprocity agreement with Canada. He said that he sent this message in deference to popular sentiment and in duty to the great masses of the American people. The message follows:

"To the Senate and House of Representatives: I transmitted to the Sixty-first Congress on January 26 last, the text of the reciprocity trade agreement which had been negotiated under my direction by the Secretary of State with the representatives of the Dominion of Canada. This agreement was the consummation of earnest effort, extending over a period of nearly a year, on the part of both governments to effect a trade arrangement which, supplementing as it did, the amicable settlement of various questions of a diplomatic and political character that had been reached, would mutually promote commerce and would strengthen the friendly relations now existing."

"The agreement in its intent and its terms was purely economic and commercial. While the general subject was under discussion by the commissioners, I felt assured that the sentiment of the people of the United States was such that they would welcome a measure which would result in the increase of trade on both sides of the boundary line, would open to the resource products of our own consumers on advantageous conditions, and at the same time offer a broader outlet for the excess production of our farms and many of our industries."

"Details regarding a negotiation of this kind necessarily could not be made public while the conferences were pending. However, the full text of the agreement, accompanied by correspondence and data, explaining both its purpose and its scope, became known to the people through the message transmitted to Congress. It was immediately and enthusiastically received by the careful labors of the commissioners met with widespread approval. This approval has been strengthened by further consideration of the terms of the agreement and the present message before the Sixty-second Congress, after the full text of the arrangement, with all the details in regard to the different provisions, had been laid before it, as they were before the American people, passed a bill confirming the agreement as negotiated and as transmitted to Congress."

"This measure failed of action in the Senate. In my transmitting message of January 26 I fully set forth the character of the agreement and emphasized its appropriateness and necessity as a response to the mutual needs of the people of the two countries, as well as its common advantages. I now lay that message and the reciprocity trade agreement as part of the present message before the Sixty-second Congress, and again invite earnest attention to the consideration therein expressed."

"I am constrained, in deference to popular sentiment and with a realizing sense of my duty to the great mass of our people, whose welfare is involved, to urge on your consideration early action on this agreement. In concluding the negotiations, the representatives of the two countries bound themselves to use their utmost efforts to bring about the tariff changes provided for in the agreement by concurrent legislation at Washington and Ottawa."

"I have felt it my duty, therefore, not to acquiesce in relegation of action until the opening of the Congress in December, but to use my constitutional prerogative and convolve the Sixty-second Congress in order that there shall be no break of continuity in considering and acting upon this most important subject."

Washington, April 4.—The Sixty-

Williams Gets Ambition.

Washington, April 7.—John Sharp Williams, the new junior senator from Mississippi, has succeeded in a lifetime ambition. He has the seat in the senate which was occupied by Jefferson Davis, the president of the Confederacy. The desk still bears the bayonet marks made by the Union soldiers during war times in an effort to destroy it. The bayonet stabs were filled with putty, but are easily discernible.

second congress met in extraordinary session today. What the session will bring forth, or when it will adjourn, were matters of conjecture here.

The Democrats took possession of the house and put Champ Clark in the speaker's chair. In his speech accepting the honor he warned the Democratic members that the eyes of the country were upon them; that the party was on trial, and that it had an opportunity for the first time in 16 years to prove its worthiness for a still higher expression of confidence.

Throughout the day the shadow of the coming presidential fight hovered about the capitol, and there is no question but that the maneuvers for political advantage will play an important part in the affairs of the house and senate in the next few months.

William J. Bryan, of Nebraska, and Governor Harmon, of Ohio, were leading figures on the floor of the house. Had Governor Woodrow Wilson been present, the list of generally accepted Democratic presidential possibilities would have been complete.

The senate's opening was sedate as usual. And while the leadership of the upper branch remains in Republican hands, the change in the personnel was almost as marked as in the house. Aldrich, Hale, Beveridge and others of both the regular and progressive factions were missed.

President Taft's message, dealing with Canadian reciprocity, will be read in congress tomorrow. The Democrats of the house, however, have formulated an ambitious program, which includes the revision of schedules of the Payne-Aldrich tariff laws.

Republican leaders of the senate have announced there shall be no tariff legislation. They declare they are not alarmed at the threat of the Democrats to hold back reciprocity until action is secured on tariff bills. This difference promises soon to bring the two branches into conflict. A legislative deadlock is predicted, and the length of the session seems to depend on how long the Democratic house will bombard the Republican senate with general legislation bills.

From a political standpoint it is likely that one of the most important things the Democratic house will do will be to order an investigation of the departments and branches of the government service. The Democrats say there have been no such investigations for 20 years, and that a saving to the people will result.

The house session was devoted to the work of organization. The adoption of the new rules was put over until tomorrow. The Republicans will make their first fight on these. They resist the action of the Democrats in increasing the membership committees without increasing the percentage of minority representation.

The Republican insurgents in the house indicated their purpose to act independently by declining to vote for Mann for speaker, and by giving their support to Cooper of Wisconsin.

The insurgents gained a member when Aikin of New York, elected as an "independent Democrat" and heretofore carried on the Democratic rolls, cast his lot with them and chose a seat on the Republican side.

Berger of Wisconsin, the only Socialist in the house, voted "present" in the speakership balloting. He also chose a seat on the Republican side.

The drawing for seats attracted interest. Because of their large majority it was necessary for 30 Democrats to pre-empt a strip of seats on the Republican side. Four of these are committee chairmen, while four others are members of the all-powerful committee on ways and means and committee on commerce.

When the Republicans found it necessary to invade the Democratic side, their section was known as the Cherokee strip. Burleson, of Texas, today christened the Democratic section on the Republican side as the "Panhandle."

STEEL TRUST BID LOWEST.

Corporation Gets Contract for Building Six Panama Emergency Dams.

Washington — The United States Steel corporation was the lowest bidder for the construction of six emergency dams to be erected on the Panama canal. Bids for this work were opened at the Isthmian canal commission offices here.

The steel company's bid was \$2,238,987, while the bid of the McClintock-Marshall Construction company, of Pittsburgh, were \$400,000 higher. The third bid by the Pennsylvania Steel company was \$165,000 higher than the lowest bid. Two of the emergency dams will be located at the Miraflores locks, two at Gatun and two at Pedro Miguel.

Taft Defers Tariff Board Bill.

Washington—President Taft has decided to concentrate his attention upon reciprocity with Canada, and it was indicated at the start that he will not attempt to secure a permanent tariff commission at the special session of congress.

He told callers he had come to the conclusion that the proper time to ask congress for a permanent tariff board would be at the beginning of a regular session.

Initiative Decision to Be Published.

Washington—Senator Brown of Nebraska, secured an order in the senate to print, as a public document, the decision of the Supreme court of Oregon in the case of Frank Kiernan against the City of Portland, involving the legality of the Oregon initiative and referendum act.

WAR WOULD BE FOLLY.

For Japan to Attack United States Would Be Suicide.

San Francisco—In an address before the Commonwealth club, Baron de Estournelles de Constant, the distinguished French scholar who has been advocating the cause of international conciliation during an extended tour of this country, declared that "war with Japan would be not only a crime, but folly, with no end, no result, except revolution and ruin."

The text of his address was "War or Peace With Japan."

"Let us suppose," he said, "that the United States, following an unfortunate inspiration, attack Japan and are victorious; this victory would be of no use. Japan would remain inaccessible and even stronger than before, standing upon her rights against an unjust aggression. She would be supported by the national feeling of her people and the exalted solidarity of Asia; no civilized nation could abstain from approving her resistance."

"But, supposing now the reverse, and in a moment of complete folly that Japan attacked the United States. This attack would be, for Japan, a suicide."

"Let us suppose, with the most pessimistic alarmist, that Japan, starting a policy of imperialism and megalomania, would try to monopolize the Pacific ocean, claiming Asia for the Asiatic. It would be the beginning of her decadence and the end of her power."

"Acting against the United States, taking by surprise or by force the Philippines, the Hawaiian islands, she would open, at the same time the era of a general re-education against Europe. She could not stop; she would threaten Great Britain, Siam, as well as Shanghai, France, Saigon, as well as Hanoi, Germany, Netherlands, Russia, Australia, too—that is to say, all the world. It is very much to do for one nation."

"And where would she find money for experimenting in the Pacific this Napoleonic policy of a universal blockade? And what would become of her industry, of her agriculture, of her commerce, of her art, of her economic leadership in China? It would be the miserable collapse and not the triumph of Japanese imperialism."

"Let us stop this alarmist nonsense and these pessimistic appeals to new expenses for armaments and to empty glory."

"The empire of the sea exists no more; the Pacific ocean will belong to all, as well as the sky belongs to aviation and not to one nation only."

"Let us be confident in the wisdom of the Japanese people and of the Japanese government."

SOCIALIST IS LOSER.

Non-Partisan is Elected Circuit Judge in Milwaukee.

Milwaukee, Wis. — The Socialist-Democratic party in Milwaukee city and county was defeated in Tuesday's judicial and school board election.

Incomplete returns from the city show that Circuit Judge Halsey, non-partisan, who was opposed by John Kleist, Socialist-Democrat, has been elected by a plurality estimated at 10,000 votes.

The election was the first real test of the Socialists' power in Milwaukee since they swept everything in the city a year ago and carried several assembly districts and selected a representative in congress last fall.

Women were permitted to vote for school directors only and were handed separate ballots upon which to mark their selections. It is estimated that fully 5,000 women voted.

In several towns outside of Milwaukee Socialists were successful. They captured two aldermanic positions and two county supervisors in Superior and one alderman and a justice of the peace in Racine.

Wausau and Beloit went "wet." Fond du Lac and Janesville elected Democratic mayors and Oskosh elected a Republican.

Roslyn Miners Resume.

Spokane—The independent mines at Jonesville, in the Roslyn coal mining district in Central Washington, have resumed work, but the men formerly employed by the Northwestern Improvement company are still out and demand a closed shop. Hearing that the workers in the independent mines were to resume work, several hundred miners marched from Roslyn to Jonesville to force the independent employees to reconsider their action. A show of force by the deputies was sufficient to quiet the strikers.

Woman Is Mayor of Hunnewell.

Hunnewell, Kan.—Mrs. Eliza Wilson was elected mayor of Hunnewell at an election held here Tuesday. She was opposed by O. M. Akers, former postmaster. Mrs. George Osborn, candidate for police judge, ran close to Mrs. Wilson, but was defeated in the final count by only four votes.

The women of the town are celebrating their victory. Mrs. Wilson declares there will be many reforms during her administration.

Oregon Plan Rejected.

Concord, N. H.—The state senate Tuesday killed by a vote of 12 to 10 the bill which recently passed the house, adopting the Oregon plan for instructing the legislature as to popular choice for United States senators.

ROOSEVELT IS GUEST

Oregonians Throng Portland Streets to Meet Noted Visitor.

Distinguished American Greeted With Affectionate Familiarity By Waiting Thousands.

Portland, April 6.—No such greeting has Portland ever given any individual as that which was extended by the populace to Theodore Roosevelt yesterday.

Once before Portland welcomed him when he came here as president of the United States. Then he was received with all due pomp, ceremony, dignity and enthusiasm.

But there was a delightful informality, a spontaneity, about the Roosevelt reception yesterday that leaves the occasion altogether unique and without precedent.

Portland, for the most part, took an afternoon and evening off and joined in a series of informal demonstrations which must have served to make it clear to Colonel Roosevelt that he is held in high regard by everybody hereabouts. It was not the mere cheering and applause that revealed the public mind and heart, but the evidences of intimate regard that were manifested on every hand.

It was "Hello, Teddy" and "Hurrah for Teddy" everywhere along the crowded streets where he appeared. None thought of shouting "Hurrah for Roosevelt." And to have the populace calling one by his first name unrestrainedly is significant in itself.

"Teddy in 1912!" shouted hundreds of his admirers, as he was taken through the crowded streets in a big automobile, attended by members of the reception committee.

To this significant exclamation he gave no fuller acknowledgment than to the other greetings that came from the crowds. There was a nod and a baring of teeth in that irresistible Roosevelt smile for everyone. The only ones who received especial attention were women with children, veterans of the Civil or Spanish-American wars and groups of workmen outdoors for a few moments from their toil to see him pass.

It was a strenuous day—not arduous, or fatiguing, or wearing, or vigorous—but strenuous. The overworked Roosevelt adjective alone applies. Into the nine hours that he spent in Portland there was crowded event upon event with but little interval for rest.

The hour and a half of respite from public demonstrations that the committee provided was spent not in rest, but in attending to private matters. Seemingly that famed reservoir of reserve energy is as remote from diminution as ever.

Exactness as were the demands made upon his time, the genial colonel enjoyed it all immensely. He said as much before leaving the city late last night and his manner was more expressive than his words. In at least one event he was presented with a feature altogether new in his experience, and he said he will always remember it as a special event in his travels.

It was the jungle dinner given early in the evening in his honor at the Commercial club. Here the large banquet hall was made over into the replica of an African jungle.

It was intensely realistic, with an array of grinning Africans in jungle-town full dress, monkeys climbing about in the rank jungle foliage, lions roaring, hunting horns sounding and all the atmosphere of a Roosevelt hunting camp in the land of the rhinoceros.

"It is the first time in my experience that I have been provided with real entertainment rather than being left to furnish the entertainment myself," the colonel said delightedly.

Oyster Bay Goes Democratic.

New York—Following up his victory of last fall, when Martin W. Littleton, Democrat, defeated for congress W. W. Cocks, Republican, the Democrats in Nassau county, Long Island, the home of Theodore Roosevelt, were successful in two of three biennial township elections. In North Hempstead the Democratic ticket rolled up a plurality of about 3,800, and in Oyster Bay township it was about 165. In Hempstead the Republicans apparently have won by a narrow margin of about 50 votes.

Levee Breaks; Grain Destroyed.

Colusa, Cal.—The levee of reclamation district No. 108, south of Colusa, broke near the Yolo county line and the district is filling with water from the Colusa Basin. A heavy wind caused waves which battered away the embankment. Twenty-five thousand acres of growing grain that would have made a heavy yield will be ruined. Probably not more than 1,000 acres will remain out of water. Dredgers are trying to stop the flood.

Japan Cuts Duties for Britain.

London—The new Anglo-Japanese commercial treaty which was ratified at Tokio provides for large reductions in the rates of the new Japanese tariff on the chief British textile and metal imports in Japan. Specialties in Japanese manufacture will continue to be admitted to the United Kingdom duty free. The treaty will remain in force 12 years.