### WEEKLY OREGON STATESMAN, TUESDAY, MAY 9, 1905.

# **DESCRIBE SALEM AREA**

# pepartment of Agriculture Issues Pamphlet Valuable March ...... 42.9 To This Section

Treats Extensively Upon Meteorological Conditions, Character of Soil and years, and was confined to the region September ..... Mechanical Analyses of Same-Also along the Columbia river and the coast. Supplemented With Maps and Tabu. Not until many years after the first November ...... 47.4 lated Data of Interest to All-Valuable to This Section as Advertising. tlers to make their homes there.

A pamphlet has recently been issued ent boundaries of the state, including by the United States department of ag- all the country north of latitude 42 dericulture, which is of great interest and of the state-and west of the Rockies, vast importance to the people of Salem comprising the present states of Oreand surrounding country, embracing an gon, Washington and Idaho, and parts and surrounding country, miles. This of Wyoming and Montana. The popu-area covering 284 square miles. This lation of all this territory was but 13,pamphlet is issued in accordance with 294 in 1850. Territorial government a joint resolution adopted by the Fifty- was granted in Oregon in 1848, and in sixth congress and approved March 14, 1859 the state was admitted into the 1904, which provides for the making of Union.

A Methodist mission was established a survey of the United States by seetions and the publication of reports on the present site of Salem in 1839, of the department of agriculture, and selected as the capital. is performed by the most competent engincers.

done by The burcau of soils, and this the population in 1900 being about 413,pamphlet, which is illustrated with 000.

well supplied with tables showing the ent soils.

About a dopen copies of these reports have been received by Secretary west; the search for mineral treasures formed, geologically, the outline of the of State Dunbar. Mr. Dunbar volunteered to turn them over to The States. of the state. Oregon is not, however, state through the middle. Tertiary peman, where anybody who is interested important as a mineral producing state. enough in them to desire a copy may

procure one for the asking. They are of congress from this state, and any- though the summer months are compar- John Day lake and its sister lakes were the exposed rocks on which the weathone can secure as many copies as he atively dry. The annual normal precip- formed in the northwest. may wish, within reason, by either itation at Satem is 45.18 inches. Of the department of agriculture at Wash- tember. As the heavier rainfall occurs attest the ages of the rocks. ington, D. C. These reports show the during winter and early spring, crops | The rocks from which the soils were character of soil, of the country imme- supplied with moisture. This, together sumably took place during the Miocene is due to the presence of this mineral. for distribution abroad. The full text ---insures sufficient moisture for plant of the report is printed herewith: growth.

Location and Boundaries of the Area. The Willamette valley is located in 140 miles. It is traversed by the Wil-causing late and cold spring seasons which causes, the characteristic red The crops grown on this soil type hamette river. The valley is bounded in the valley. This probably accounts color of the soils on the hills. on the east by the Cascade mountains; and on the west by the Coast range. for a number of years. This town is valley extends from the Cascades on The latter are grown to a limited ex-The area surveyed comprises a rectan- located about two miles north of the the east to the Coast range on the tent, and the erop is not so common on gle of eight townships, two north and south and four east and west, contain- being considerably nearer the moun- so. The valley proper is comparatively ing 284 square miles, or 181,824 acres, and includes a part of Marion and Polk have sometimes done considerable dam- varies in width from a few rods to thircounties. The center of the area is about north latitude 44 degrees 50 minutes and west longitude 123 degrees. Salem, the capital of the state, is ineluded within the area.

Indians, Astoria was founded by fur companies, and fur trading was the principal industry for a number of settlement was the interior sufficiently explored to encourage agricultural set-

small extent by farming.

As usual in the pioneer life of the

Climate.

The climate of that part of the Wil-

Great variation is shown in the date

Originally the territory of Oregon was considerably larger than the pres-

June

July

1893-April 17, October 13. 1894-May 9, October 11. 1896-April 15, November 20. 1897-March 30, October 15. 1898-April 19, November 12. 1899-June 6, October 13. 1900-April 15, October 13, 1901-March 24, December 12. Physiography and Geology.

January ...... 40.7

April ..... 49.8 May ..... 55.9

August ..... 65.9

October ..... 52.3

December ..... 42.5

..... 61.3

geologically recent, and the valley it- the "prairie" or level valley soil covering each section surveyed. The and the town of Salem was incorporat- self more recent than either. The Cas- (Salem loam) and consists of a series work is carried on under the auspices ed in 1843, and was shortly thereafter cade mountains appeared at the close of rolling hills, which vary in height of the Crotaceous period, and, together from about fifty feet to 400 or 500 feet. With but thirteen settlements in the with the Sierra Nevada, formed a sea The front slopes of these hills-that is,

territory in 1838, which included the dike, which shut in an enormous lake the slopes facing the level lands, are The survey of the Salem area, which large area above mentioned, and with on the east with the Blue mountains as often too steep for cultivation, as are is treated in the pamphlet referred to, a population of but little more than an island. Siskiyou mountains in South- also the creek channel slopes, but in was made by Charles A. Jensen late 13,000 in 1850, it must be seen that the ern Oregon were formed at the same the hill area itself the slopes are rarein the year 1904, and the report has building up of the state went on very time-as the Blue mountains, and these ly too steep for agricultural purposes. but recently been issued. The work is rapidly after a start had been made, mountains, then islands, were the first Very rarely is a level area found in land areas in the west. At the begin- this type. Rock outcrops often occur

ning of Tertiary time-Eocene-the on the steeper slopes and those along maps showing the position of the Say lem area and character of the soil, is growth of grass in the hills were early forming an immense bay between this are not common, and such as do occur incentives to stock raising, which was and the Cascade range to the east, are not of sufficient extent seriously to temperature and precipitation and also the pursuit mostly followed by the first which extended from the Siskiyou interfere with cultivation. These rollthe mechanical analyses of the differ. settlers. This was supplemented to a mountains on the south to considerably ing hills are intersected by many beyond the present mouth of the Co- creeks, both perennial and intermit lumbia river on the north. This bay tent.

With the exception of a few low-lywas one of the motives for exploration Willamette valley, and remained in this ing areas along creek channels this type is well drained. It has been riod. In the Pliocene period the valley formed in situ from the decomposition was freed of its water and became ex- and weathering of the underlying sandposed land, but was again submerged stone, argillaceous and schistose rocks, subject to distribution by the members lamette valley surveyed is humid, during the Champlain period, when and a dense, close-grained basalt. All

ering effect could be noticed were found The Eocene and Miocene beds are to contain a large amount of iron, and writing to any of the Oregon senators this, only 4.34 inches fall during the very tossiliferous, containing both land a magnet could be quickly covered or congressmen, or writing directly to months of June, July, August and Sep- and water species, which indisputably with soil particles any place along the road. Often beds of iron oxides were noticed in wheel ruts after rains, and true conditions, both as to climate and during their growing season are well formed-the weathering of which pre- the universal red color of these soils

are wheat, oats, tree fruits-such

apples, prunes and peaches-and hops.

this soil as on the "prairie" and river

bottom lands. The quality, however, is

usually superior to that of the hops

grown on the lower tying soils. Hops

ject to mold or to attacks from insect

enemies to such an extent as they are

on the soils at lower elevations. On

the other hand, the reddish yellow loam

does not produce as large yields nor

quite so large a hop as does the sandy

loam along the river. When, however,

Salem Gravelly Loam.

grown on these red hills are not sub-

diately contiguous to Salem, and would with the moisture-retaining capacity of period-consist of sandstone, argilla- It nearly always shows itself in crevprove excellent advertising material the soils-especially the "prairie" soil coous and schistose rocks, and a close-lices and joints, where weathering first grained, heavy bluish basalt, the lat- begins. Washing and gullying of the soil and ter having been intruded during the extensive northwest lava flows and vol-the leaching away of plant food are of the last killing frost in spring. At canic eruptions. These lava flows are very effectively prevented by the na-

Salem it has varied from March 24 to more recent than the rocks, which are tive forest growth of Douglas spruce, the northwestern part of the state, ex- June 6, since 1893. The climate is often found capped by basalt. A com- oak, maple and alder, and the dense tending from Portland on the north to some distance beyond Eugene on the greatly influenced by the Cascade paratively large proportion of iron is greatly influenced by the Cascade paratively large proportion of iron is growth of un Storush, grass and fern. some distance beyond Eugene on the mountains, which often receive consid-south, a distance of between 130 and trable snow during the winter, thus also considerable iron in the sandstone, nating tree in the forests.

Fahrenheit and the second column the dissolved organic matter sinks into the ground more readily in these low places, causing deoxidation of the large amounts of ferric oxides in the Tempera- Precipitation. 6.15 type proper and giving rise to the yellow or gray color of the subsoil. Where some of these areas have been drained 4.17 4.61 the color of the subsoil is the typical 4.073.42 red.

1.47 These areas need artificial drainage, and in most cases this can be supplied 28 with comparative case. In their pres-.651.94 ent state they have but little agricultural value and are generally used for 3.62 8.18 pasturage.

The Salem loam is well adapted to 6.62 The following gives the dates of the latest and earliest killing frosts in Sa-lem, the first date mentioned designat-ing the last frost in the spring and the bushels per acre. It would also seem

Salem Clay.



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goods, silk and dress goods departments we have

prevailed upon these artists to remain with us dur-

ing this week. As an extra inducement we offer their

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terial here at 50 cents per yard or more.

Owing to the great demand for cutting and fitting

places. This type is well drained when so alternated that summer fallowing for Polk county, the balance being the river is down to its normal stage, and humus-consuming crops could be

but during nigh water the areas are could be done away with. sometimes flooded to a depth of several Clover would be an excellent crop for feet. This is also the case with the the red hill soils, though it is claimed Salem loam, which occupies much of that the crop cannot be grown on these the river bottom land. Owing to the soils. As the crop has not been given porous nature of the sandy loam, to- a fair trian, this conclusion is premagether with the underlying gravel bed, ture. In the first place the soil should the flooded areas soon drain off. and be given a deep plowing-in fact, subdry. The type owes its origin to river soiled, in order to break up and bring deposit during high water. The na- to the surface the heavy, close-textured tive growth consists of Douglas spruce, subsoil which has been formed by conoak, heavy underbrush and grass. tinued shallow plowing. A clover-This type forms the best truck soil, Mammoth would probably be suited to in the area, to which use it is put to the climate-could be sown with spring a small extent, but the principal crop grain, thereby avoiding a year's loss grown on it is hops. Some grain is, of the land. As elover will not do well

also raised. By far the heaviest yields without the presence of the nutrifying of hops are obtained on this type, but bacteria, it would pay even to inceuunfortunately the hops and vines are late small portions of a field with soil more subject to disease on this type from a clover field on the "prairie" than on any other in the area. The fre- land, where clover does well, provided quent fogs along the river cause con these bacteria are not present in the iderable trouble by producing a mold, | red hill soils. 'Red clover, Mammoth which seriously affects the quality of clover, Alsike clover, vetch and field

mostly timber land, including a little waste or worthless land. There are in

Marion county 2754 farms, and in Polk county 1192, practically all of which have buildings on them. There has been a heavy immigration to Northwest Oregon during the last year or two, and this will quickly increase the area of improved land, as the immigrants consist chiefly of the farming class.

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essions in wanted and de-

There is a good demand for timber, mainly spruce, in the form of cordwood, as that is practically the only fuel used in Northwestern Oregon. It is used by all the public institutions as well as by private families, and the Southern Pacific uses it altogether on its engines in Oregon. The price of second-growth spruce cut into cordwood four feet long is from \$3 to \$3.50 a cord; original growth, from \$3.25 to \$4.50, and oak about 50 cents a cord more than spruce. Some lumber is cut in the area surveyed.

These timber areas are of value not the crop, and sometimes even complete-1 peas are all excellent for such a soil. These timber areas are of value not ly destroys it. Usually, too, the crop. The clovers are especially good for im- only for the wood, but also for pasturmust be picked before the hops are en proving the physical condition of the age, and most of the farmers have tirely ripe. Insect enemies are more soil, and all of the leguminous crops are small flocks of sheep or coats. The numerous here than elsewhere. The well known for their assimilation of raising of mohair is quite a local inlatest to become plentiful enough to atmospheric nitrogen, through which dustry, and considerable capital is inendanger the industry is a worm which process they greatly enrich the soil vested in it. Small herds of dairy catbores into the roots about six inches, with this valuable constituent. As the are also common. The price of land depends, of course; below the surface, causing either the these soils are well drained-a requientire loss of the vine, or at best the site for good stands of clover-there on whether it is improved or notcrop for that year. As high as 3000 ought to be little difficulty in keeping that is, whether it is cleared of timber. pounds of hops per acre are claimed leguminous crops in good condition, The "prairie" soil, as the Salem loam is locally called, brings from \$25 to \$50 for the sandy loam, but the average once they are well started. What has been said about summer yield is considerably less. On account an acre if improved, while the hill soils fallowing and the consequent condition are held practically at the same price, of the soil applies, though to a less ex- if the land Is not very rough, although of the good prices obtained during the last five years, and especially in 1902-3 a large number of hop yards tent, to the well cultivated orchards. owing to steep slopes, rock outcrops, have been set out in the area surveyed. These are absolutely bear during the etc., the average price for the latter is whole year, and are subject to extenless than for the Salem loam. Bushy Agricultural Methods. sive washing during the fall and win- and uncleared land brings from \$10 to The original growth on much of the ter. There can be little doubt that \$14 an acre. The valley is well known for the exwinter cover crops would be beneficial to the orchards if sown during the late cellent quality of its farm products, summer or early fall. They would especially wheat, apples and prunes check the late growth of the trees in The hops are of fairly good quality, The timber areas are usually pastured, the fall, causing them to mature ear- and those grown on the higher lying A better quality of grain, especially and while this is not relied upon for lier and to be in better condition for lands, away from the direct influence the winter, while the loss of organic of the river, are or exceptional quality. matter by rain wash would be greatly The adaptation of solls to crops is checked." They would also improve the quite well recognized, as much or pernoisture-holding capacity of the soil haps more than is the case in most agby the incorporation of additional or- ricultural communities, though it seems ganic matter. If the crop proved large probable that hops could be more genin old apple orchards it could be pas- erally grown on the red hills than at awaiting the slow process of decay. tured during late fall and winter, in present. which case little would be taken from Transportation facilities are goodthe soil, but in plum or peach orchards that is, there are many railroad staor young orchards of any kind pasturtions convenient for the farmers. The ing is impracticable. Cover crops would wagon roads are, however, by no means need to be plowed under in the spring, good, and especially is this true of the and this should be done at such a time roads in the hill country. Practically as to keep the growth of the trees no gravel is used, and the soil in the stumps are grubbed and pulled. Litchecked until danger of frosts is "prairie" country soon cuts up badly, past. Clover, vetch, winter rye, field while in the hills poor grades and rock used. The land thus cleared, both in peas, buckwheat, etc., are all good crops outcrops cause trouble. Three lines of for this purpose. Of course, the prac- che Southern Pacific railroad system tice of cover, cropping orchards in wintraverse the area surveyed, running ter should be carried on with sufficient north and south, the main overland line ly, and yields excellent crops. moderation to prevent excessive accupassing through Salem and one running The practice of planting one crop or mulation of organic matter in the soil. east and another west of that place. which has a tendency to unduly devel- These lines all run directly to Portland, op the woody portion of the tree at fifty miles north of Salem, and as it is the expense of the fruit. a central market and large distributing It is not the purpose of the writer to point both by water and rail, the fardetract from the importance of keepmers get good net prices for their pro-ducts. The Willamette river, on the ing the orchards well cultivated during spring and summer, which is abso- Jank of which Salem is situated, a is lutely necessary in order to keep the navigable as far south as Corvallis, furtrees in the best condition for fruiting. nishing good local transportation facil-Especially is this important during the ities. Daily steamers run between first few years of the life of the tree, Portland and Corvallis.

in order to encourage deep rooting.

During this early period of growth tu-

ber and root crops can well be grown

Agricultural Conditions.

Generally speaking, the farmers of

as secondary crops.

second one the first frost in the fall: to be a good celery soil.

The Salem clay consists of from twelve to fifteen inches of reddish yellow loam, underlain to three feet by a clay loam or clay of the same color. The reddish yellow color even extends into the partially decomposed underly-

rived.

ture.

The Cascade and Coast ranges are

The type is located on both sides of

The first settlement in Oregon was breaks for orchards. made at Astoria, at the mouth of the Columbia river, in 1811. The first set- mal monthly and annual temperature feet. These hills occasionally reach to it is considered that sometimes an enand fur trading, meanwhile fighting the column denotes the number of degrees country along the stream.

in the list. His sons have sired 1231 in the list.

for monthly killing frosts at Silverton While geologically the Willamette northeast corner of the area surveyed, west, physiographically this is hardly age to fruit.

The winds are light in the valley,

The following table shows the nor-

tains than Salem. These late frosts narrow, consisting of a level area which teen miles in the area surveyed. Beyond this level area, which extends very seldom causing and trouble. The along the Willamette river, is a series hills and the large amount of growing of hills, varying in height from about timber on these and on the prairie fifty feet to probably 400 or 500 feet. History and Agricultural Development. lands furnish admirable natural wind- The extreme altitude in the area surveyed does not exceed 800 or 1000 feet. The altitude at Salem is about 200

tlers supported themselves by fishing and precipitation at Salem. The first the river, cutting off entirely the level tire erop on the river soils is destroyed earlier times, and these areas have loam

since been filled up to their present] hills. The slopes of the hills are generally

the front slopes facing the level valsandstone often occur on the slopes of been set out. the creek channels, but generally speak-

from rocks. Soils.

Salem clay, Salem gravelly loam and Salem sandy loam. The following ta- from \$50 to \$70 an acre. ble snows the absolute and relative extent of these soils:

Acreage of Different Soils. Acres. P. C.

Salem gravelly loam.... 13,120 Salem sandy loam ..... 3,648

Salem Loam.

Occasional small areas adjoining the creek consist entirely of gravel, being merely a river wash, but with these the yields. exceptions the soil is of considerable value.

The area is level and is intersected by an occasional water channel. Some portions of the type, near the creek and small channels, are poorly drained, but as a general thing the natural drainage is good. The origin of the loam of this type

-transportation of soil from the higher lying lands by rain and flood streams a much larger area than it does now. The natural growth is scrub oak. birch, alder and underbrush. Where not too gravelly the soil is adapted to grain and fruit, and large areas are used as pasture. Salem Sandy Loam.

The Salem sandy loam consists

about twelve inches of medium texbadly drained areas, in which the sub- tured brown sandy loam, underlain to badly drained areas, in which the sub-soil is invariably yellow or gray and a depth of three feet By a coarse sandy depths and exert different influences on Indians and negroes also are engaged kidney, bladder, female trou usually clayey in texture. These areas loam, which usually grades into sand the soil constituents. Rotation pro- in agriculture in the area surveyed. and gravel. The surface foot generally duces the destruction of weeds occur usually in swales or along natural depressions which receive the underal depressions which receive the under-drainage from the higher or lying lands. The soil in such places is only a phase of the type proper, there be-ing not sufficient difference to warrant its classification as a new type. Az would nationally be expected, the

by mold, and that in any event they soil types in the area surveyed con-Willamette river and Mill creek un-doubtedly occupied the entire level there does not appear to be much ad- and heavy underbrush, the clearing of areas along their respective courses in vantage in hop growing on the sandy which necessitated considerable work.

level with soil transported from the of wheat, it is claimed, can be produced clearing away the underbrush preparaon the Salem clay than on the "prai- tory to clearing, it reduces the labor rie" soil. Prunes, the special fruit considerably. The timber after being not to great for cultivation, excepting crop in the valley, do better on this felled is cut into posts, cord wood or type than on the Salem loam. A very poles, according to kind and use. On ley and those along the creek channels. fair price has hitherto been obtained many of these areas the stumps . are Outcrops of basalt, and, more rarely, for this fruit, and many orchards have left standing for a number of years,

The average yields of wheat and and the land is pastured in the meaning the hills themselves are quite free oats are said to be from twenty-five to time. This requires six to eight years thirty bushels and from thirty to sixty for Douglas spruce from eight to bushels per acre, respectively, when twelve inches in diameter. For larger But four types of soil were recog- the soil is in good condition. Hops stumps dynamite is used. This method nized in the area, viz., Salem loam, average about 1200 pounds per acre. of clearing is slow, and when the land The net profit for fruit is stated to be is to be cropped as soon as possible the

tle or no stump pulling machinery is

The soil of the Salem gravelly loam the case of the hill soils and of the consists of black or brown loam of the prairie soils, is in a very good condisame character as the Salem loam, intion, both mechanically and chemical termixed with gravel varying in size

7.2 inches in diameter. The gravelly loam the same piece of land year after year 2.0 varies in depth from a few inches to is much too common in the Salem area. several feet, the gravel content in-The writer was shown many fields creasing in the lower depths and the which had been sown to wheat or oats whole resting on a bed of waterworn gravel. The type is located on Mill for from ten to twenty years, with no creek, forming a strip a little more alternation of crops and no rest except than a mile wide along that stream. an occasional summer fallowing. This conitnued growing of one crop tends to deteriorate the soils and to decrease

> The soils of the area, especially the Salem clay and Salem loam, are well adapted to the production of the ce-

reals. When the yields show considerable decrease the usual practice is to let the land lie fallow for a season. In fact, it seems that about half of the

land under cultivation is in this condition. The land is then planted to the area are energetic, thrifty and

humus.

is the same as that of the Salem loam grain crops. It is admitted that sumprosperous. They have a good idea of mer fallowing brings better yields imthe value or things, and it is seldom mediately afterwards. The gain, how one sees farm implements standing -while the gravel has been carried in ever, is more than the offset by the about exposed to the weather. Fairly by the creek, which formerly occupied losses in having the land entirely idle good houses and farmyard buildings during the whole year, bringing no re- are seen, and the community in genturn on the investment, in the washing eral appears to be prosperous.

of hilly areas, which is necessarily con-The greater number of the farms are siderable on the steep slopes of the operated by their owners, a few are run hill soils in a region where the normal by managers, and a few are rented. No annual rainfall is forty-five inches, and statistics by counties were available, in the depleting of organic matter and but 82.2 per cent of the farms of the state are operated by the owners. A

few Chinese carry on truck growing, A good system of rotation would greatly improve these conditions. Dif- and some also own and successfully ferent plants have different feeding operate hop and fruit tarms. A few and The average size of farms in Macontains considerable organic matter, checks the increase of insect enemies, rion county, in which most of the area This

Chinese calles great because he cures people without operation that are given up to die. He cures with those won

ful Chinese herbs, roots, buds, bark and vegetables, that are entirely unknown to mcatcal science in this country. Through the use of these harm-less remedies, this famous doctor knows the action of over 500 different which he successfully uses different diseases. He guarante cure catarrh, asthma, lung, throat nervouspens, storma nhood, all private discases; hundreds of testimonials.

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in the list. His sons have sired 1231 in the list. First dam OLIVE E, by Priam 1798, sire of Frank M. 2:1734. Honesty 2:254. Second dam by Hawthorne 10985, sire of Little Thorre (p) 2:0714. Backthorne 2:334. Frank L. (p) 2:144. Matignon 2:1734. Tempest 2:19, Thornwood 2:1944. Capt. Thorne (p) 2:194 and filteen others, and eight dams of ten in the list. GO MA is a handsome blood bay with black points, 15 14 hands high, six years old and traces to the very best families. He is a close, compactly built horse; a trotter w th instural speed. He gets a very uniform lot of colts, all pure gaited, which may be seen at the fair grounds - COMA will make the season of 1905 at the oragon state FAIR GROUNDS at fair grounds - COMA will make the season of 1905 at the oragon state FAIR GROUNDS at

S20, With Usual Return Privilege All mares bred to co ma will be nominated in the \$5000 Oregon Futurity, which in cludes a year's subscription to the Rural Spirit. ROBT. STETSON, Keeper, Fair Grounds, Oregon. McCoy, Oregon

MAA By Caution 2:25<sup>1</sup> Sire of Francisco 2:12, Overa 2:15<sup>1</sup>/<sub>4</sub>, John Edison 2:16<sup>1</sup>/<sub>4</sub>, Kitty Caution 2:22<sup>1</sup>/<sub>4</sub>, Juniper 2:22<sup>1</sup>/<sub>4</sub>, Santiam 2:21<sup>1</sup>/<sub>4</sub>, Lady Carefol 2:25, Saltese 2:25, Baby Ruth 2:26, Electrophone 2:29<sup>1</sup>/<sub>4</sub>, and the dams of Oille M. 2:16<sup>1</sup>/<sub>4</sub>. Cantion's sire was Electioneer, sire of 162 in the list and 93 dams of 131

to each of our subscribers who will get us one new subscriber for three months, remitting us 25 cents. Here is a chance for the children to get this map with little effort. The map is 12x18 inches. Do this at once as we have only a limited number of them.



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A. D. CHARLTON Assistant General Passenger Agent, PORTLAND, ORRGON.

The surface soil of the Salem loam consists of from eighteen to twentyfour inches of brown to black loam, the color at the surface being darker on account of the presence of considerable organic matter. The surface foot is often very silty. From a depth

of eighteen to twenty four inches down to three feet the soil is a yellowish or red clay loam or clay, the texture becoming heavier with the depth. The third foot is often mottled gray and yellow. This fype occupies the level areas of the valley and generally extends some distance up the slopes the hills. Its topography is level gently rolling. The native forest growth is mainly oak and Douglas spruce, with some ash, bireh and alder. The soil is formed almost entirely from the transported material brought down from the hills by rains and flood streams. The

original materials from which the soil is formed are a close-grained basalt, and to some extend sandstone and

schist. The soil is easily tilled, but if cultivated while foo wet it forms a hard crust. A few areas occur as lowlands or