POPULAR LECTURES.

Economy of the Vegetable Kingdom.

Thirteentl. Lecture delivered before the University of Cal Bifornia College of Agriculture, on Friday, February 5th, by Prof. C. E. BESSET.

Our Timber Trees.

To the student, as well as to the practical man, the timber producing trees of the Pacific man, the timber producing trees of the Pacific slope furnish a topic of great interest. A well grown tree is a grand object, interesting to every one, from the dreamer who only asks of remnants, so to speak, of every one, from the dreamer who only asks of it that it throw its shade over him, to the lumberman who asks it to yield him the boards, planks, joists and shingles so snugly packed away within its shaggy bark; doubly interesting to the lover of nature, who studies its forms and dwells upon its beauty as if it were an animate thing, who loves it as a fellow creature, and who mourns as for a friend when some ruthless hand fells it. Wonderful machines trees are, pumping up day after day tons of water, which they allow to steam through the millions of breathing pores in their leaves; sending their roots down into the darkness of the earth among the rocks and roots, and bringing up from thence the materials with which they build tall shafts which out-top all other living things. They are nature's master-pieces. Go and stand beside the gigantic Sequoias of the Calaveras or Mariposa groves, the Auracarias of Norfolk island, or the monstrous gum trees of Australia, and you are with the largest living things on earth.

What thing of life can claim even half the antiquity of some of the trees now growing? Our largest redwoods were seedlings one thousand years ago. Run back if you can over all the changes our English speaking race has seen during the time these redwoods were growing.

Thirty one centuries ago the Big Trees of California burst their seed coats and began their long reaching toward the skies, began adding cell to cell for the construction of spires which should withstand the storms of more than three thousand years. Thirty-one hundred years ago,

Twelve Centuries Before Christ,

When the names of which old Homer sung were still fresh in the memories of men. Our people, our civilization, and our religion have

risen since these giant trees began existence. But what shall we say for the great dragon

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of the matter. areas, it usasle, represent dolof the matter. Arees, it usasle, represent dollars and cents, but if unfit for use, their commercial value is nothing. Now the uses which give value are many; without attempting to enumerate all, they are such as the following: they may furnish food, medicines, timber, gums, balsams, perfumes, spices, dyes, ornaments, etc. But few trees are so poor as not to furnish one or more of these. With us the great demand is that our trees furnish timber. The question of the lecture then, shall be,

What Trees Furnish us with Timber?

A convenient division of timber trees is into soft wood" and "hard wood" varieties; and under these names timber men and lumber under these names timber men and lumber dealers buy and sell the woods found in the market. To the soft wood division belong all the pines, redwoods, firs, spruces, cedars, arches and other cone-bearing trees, as well as the poplars, cottonwoods, lindens, whitewood and a few others. In the hard wood divisions are found the oaks because chestnuts. visions are found the oaks, beeches, chestnuts.

hickories, walnuts, elms, ashes, laurels, cherries, maples, locusts and many others.

Among the soft wooded trees the pines stand as of the greatest importance. There are many species which are abundantly distributed throughout the northern half of the globe, and in every country one or more species seem es-pecially adapted to meet the wants of civilized

The Scotch pine, Pinus sylvestris, called also the Scotch fir, is a tree found in Europe and Northern Asia. It is a fine tree, growing best in the mountainous districts, where it attains the height of upwards of eighty feet, with a diameter of from four to five feet. Its lumber is known in England under the names of red and yellow deal, and is largely used for many purposes.

many purposes.

The white pine, Pinus strobus, called also Weymouth pine, is a native of the Northern United States. In Maine, Vermont, New Hampshire, New York, Michigan, Wisconsin and Minnesota, vast acres were formerly cover-ed by this pine. It is a tall, slender tree, often in the dense forests attaining a hight of two hundred feet, with a diameter of but four to five feet. Its wood is for the Northern States what the Scotch pine is for the countries of Europe. It is white, easily worked, reasonably strong and durable, not given to warping or checking, and besides, it takes paint well, all of which qualities at once commend it to the builder and manufacturer.

its Uses are Almost Numberless

Yellow pine, Pinus australis, is found growing in the Southern Atlantic States, especially in Georgia and Florida, where it forms extensive forests. This is the pine of the South, replacing the white pine of the North. It is not as large a tree as its Northern relative, attaining an average hight of less than one hundred feet. Its wood is yellowish in color, dense, heavy and gummy. When dry it becomes very hard, and is then quite difficult to work. Although used in the South for almost all kinds of work, it is especially fitted for use as flooring, and for this purpose it is largely brought to the Northern markets. It is even used somewhat in California for this purpose; a large cargo was landed a short time ago for the Palace Hotel, in the city.

The sugar pine, Pinus Lambertiana, of California, may be said to be the Western representative of the foregoing trees. It is botanically a very near relative of the white pine of the East, which it resembles very closely in everything excepting size, being a giant as compared with its Eastern congener. Place two boards side by side, the one from the white pine, the other from the sugar pine, and it would be a most difficult thing to tell which was which. If California had no other conifers, sugar pine would be used for as many purposes. Yellow pine, Pinus australis, is found grow-

ras which. If California had no other conifers,
ugar pine would be used for as many purposes. It is not much used in large or heavy pice

as the white pine, but you are so fortunate as to have three or four others having different qualities, so that the use of sugar pine is somewhat restricted. On account of its light-

somewhat restricted. On account of its lightness, firmness, strength, ease of working, freedom from warping, and readiness to take paint, it is largely used for doors, sashes and blinds.

The redwood tree, Sequoia sempervirens, is the great lumber producing tree of California. It is not a pine, but is more nearly a cypress, having cones and leaves much more nearly resembling the latter than the former. It is peculiar to this coast, and even here it appears restricted to certain favorable leavilles.

A Former Gigantic Race of Trees,

A Former Giganiic Race of Trees,
Which extended throughout the northern
hemisphere, climatic and other changes
having destroyed them long ago in all
countries but California. Beyond the Sierras
here and there we find the fossil remains of
gigantic trees; and we can trace them away
Eastward, even into Northern Asia. Here
alone in favored California has the climate remained stable senughto permit their continuance mained stable enoughto permit their continuance to the present. But even here there has been some change; for now the redwoods are some what restricted to certain districts, while know from fossil and other remains that they once covered portions of the State where now none are to be found. On the tops of the Coast Range mountains are roots and pieces of stumps of ancient redwood forests. They represent a dying race, which specially favoring conditions have given a little longer lease on

conditions have given a little longer lease on life.

The Douglas spruce, Abies Douglasii, is a native of the Rocky Mountains, Sierra and California regions. A beautiful tree, it was long sgo taken to Europe as an ornamental tree for the parks and gardens. Here it is chiefly interesting on account of its timber, which is much sought after by railroad men. Its durability when in the ground makes it very valuable for ties and posts, for which it is much used. It is also brought into the market as boards and planks under the name of spruce lumber. spruce lumber.

Oregon pine and Oregon fir are names applied to a very valuable timber brought to our market from Oregon and Northern California. The name pine is not properly applicable to this tree, as it belongs to the botanical genus, Abies, the spruces and firs. The wood is firm, light, very strong, elastic and durable. It is used for many purposes, the most important of which is ship building. Ships have been made of this timber throughout, and upon trial have been found as strong as if made from the oaks and other hard woods.

"Soft Wood Ships,"

As they are called on account of the lightness of their materials, sink less into the water under a given weight of cargo, than do those made of ne heavier woods. Masts and spars of this timber after bending

nnder heavy winds for days or weeks, as soon leased from the strain straighten up again

ere are many other soft wood trees of this n which are now somewhat used, and h no doubt could be utilized if we knew as to their strength, durability and other ities. Among these are several pines, yeline, P. ponderosa; nut pine, P. sabiniana; terey pine, P. insignis. Several additional belong to the genus Abics—the spruces firs might be added to the list—as also the arrhor vital of Orecon. Thereto the server t arbor vited of Oregon, Thuja; the west-larch, Larix; western red cedar, Juniperus; fornia white cedar, Libocedrus; and some rs. Of other soft wood trees than the con-

rs. Of other soft wood trees than the con-..., California has none worth mentioning, and with the exception of the tulip tree, Lirio-dendron, of the Eastern United States, none of them are greatly to be desired. With so many valuable soft woods at her command, California has but little need of more, and yet it canno

No Tree on this Coast

Furnishes a timber which can exactly replace the wood of the tulip tree, the whitewood or yellow poplar of the Atlantic States.

Among the hard wood trees the oaks occupy the same relative position as do the pines among the soft wooded ones.

British oak, Quercus sessiliflora and Q pedunculata, is known wherever British ships have gone. This tough, heavy, durable wood has always been a favorite with British ship build-ers, and the superiority of the British navy, no doubt, is largely due to the fact that these oaks have always been easily obtained. So important have they been considered, that long ago great plantations of them were made and carefully guarded. Hundreds of the British vessels now floating were made from the oaks which

Careful, Thoughtful Hands Planted,

Perhaps two centuries ago.

The live oak, Quercus virens, of the Southern Atlantic States, is for American shipping what British oak is for England. Unfortunately for is, as a native it grows somewhat south of the points where the most of our ships are built, and so it has never been used as much as it might have been, had it been a native of the whole country. California cannot as yet boast of an oak equal to either of the foregoing, posbecause we hardly yet know anything ut the native species.

Our common evergreen oak, Quercus agrifolia, so common in and about Oakland, thus far has been considered useless as a timber tree. Posby proper preparation it may yet be

Tan-bark oak, Quercus densiflora, growing in Central California, is now coming into use for the manufacture of wagons and agricultural implements. Under proper preparation is becomes hard, tough and durable.

Canon oak, Querous chrysolepis, found in the ravines and canons of the mountain ranges, is tough and durable, and is said to be of value in ship building. It has, however, been but lit-

The wainut of Europe, Juglans regia, is a tree of considerable value in the countries where it grows. In the United States, westward to the Missouri river, it is replaced by the black walnut, Juglans nigra, a tree of a thick, heavy growth, producing a valuable dark colored wood, much used for furniture and inside work wood, much used for furniture and inside work in houses. Its near relation, the butternut or white walnut, J. cinerea, is a smaller tree, producing a lighter colored wood, valuable for the same purposes as the former. In California a species nearly allied to the black walnut is found rather sparingly. Its wood is valuable, and is used to some extent as

substitute for the former species. It would

Plant Freely,

Plant Freely,

Not only of the native species, but also of the European, which makes a rapid growth here, and of the black walnut, which, though not a rapid grower, can be made to do well.

The hickory is one of the finest of the trees of the Northern United States. In its bearing it is not very unlike the pines; its straight stem is surmounted by a more or less conical top, often at a very great hight from the ground. Its wood is white, hard, heavy and tough, and when properly protected quite durable. As it is subject to the attacks of certain

Weed Exiles Issues.

Wood Eating Insects,

greatest value being found when employed in sticks or pieces but little more than an inch in diameter. For axles and spokes of wagons and carriages, for handles for tools, and for the carriages, for handles for tools, and for the smaller parts of agricultural implements it is valuable. California has no native hickory, hence it is found to be quite difficult to grow it here. Possibly in the foot hills it might be grown. It is an experiment worth trying, to make a plantation of hickories in some of the

make a plantation of hickories in some of the eastern counties, for the State has no wood whatever which can exactly replace it.

The elms are found in great abundance throughout most of the States east of the great plains. Some of the species are quite valuable, though the liability to warp is a serious objection. Europe has a fine elm, the Eastern States have two valuable ones, but California has none. Some of the elms are found to grow quite well in some localities in this State, and no doubt cou'd be grown in sufficient quantities no doubt cou'd be grown in sufficient quantities to meet all the demands for elm lumber.

The Ash.

Here again we find, first a species in Europe, which is replaced in the Eastern States by the American white ash, a tall, majestic tree, producing a white, light, tough and durable timber. On account of these desirable qualities it is largely used in the manufacture of agricultural implements. For very many purposes it is preferable to hickory; as it is not so heavy while it is very nearly as strong, and possesses, besides, the additional advantage that it is made free from the work of the powder posting insects. In Western California and in Oregon a small sized ash occurs in sufficient abundance to be used in manufacturing somewhat. to be used in manufacturing somewhat.

The Maples, of which there are many species, are divided into two groups—the hard maples, and the soft maples, referring to the character of the wood. The hard maple, or as it is also known as the sugar maple, of the Eastern States, occurs as far west as the Missouri river. In favorable localities it becomes a large tree, one hundred feat in hight with a dispreter of one hundred feet in hight, with a diameter of from two to three or more feet. When dry its wood is hard, and capable of receiving a high polish. The soft maples, of which there are several Eastern species, have a much softer and less durable wood. It is, when kept dry, valuable for furniture, and is largely used for that purpose. In Northern California and for that purpose. In Northern California and Oregon a maple occurs which may be considered as the western representative of the soft maple of the East. It is used considerably.

There are three timber trees peculiar to California which are well worth mentioning; they are the

Galifornia Laurel, the Madrona and the Man-

The California laurel (Oreodaphue Californica) is peculiar to this slope of the continent. Its wood is valuable, and no doubt when we have learned more fully how to use it, it will be of more value still. The Madrona furnishes a hard, heavy, light colored wood, which is, or can be made to be quite valuable. The Manzanita grows usually as a shrub from which it is difficult to get large pieces of timber. Occasionally, however, it is of sufficient size so that good blocks several feet long and from four to air inches thick may be secured. This wood is six inches thick may be secured. This wood is very beautiful, much resembling mahogany, but being much heavier and harder. It can be made into many small articles of use and ornament and no doubt by proper care and culture it might be grown into a much larger tree.

Among the important woods of this coast not belonging to California, are those recently brought into use from Mexico. The most important one is what is known as Prima area.

portant one is what is known as Prima vera or white mahogany, a white wood resembling in many of its characters the hickory of the East. It is used extensively in the manufacture of fine furniture, and also for street cars, as

of the furniture, and also for street cars, as well as for many other purposes.

Summing up the whole matter we find that California is better supplied with coniferous soft woods than perhaps any other country on the globe, having no less than twelve which are more or less valuable. It has, however, but few soft woods aside from the conifers which are of any value. are of any value. It is decidedly wanting in valuable hard wood trees.

In order that the native woods of this coast be of greatest use there is great need of

Thorough and Exhaustive Tests,

As to their strength, their durability and their As to their strength, their durability and their working qualities. There is no doubt in my mind but that when they are known we shall find that many of the trees which we now pass by as valueless are in reality very useful. I am glad to be able to announce that such tests as those of which I have spoken will be made this year at the university. Only a few days ago the arrangements were completed for beginning the work. In this work I trast you are all interested, and I further trust that you will give it a hearty support as a worthy work will give it a hearty support as a worthy work

of a great and growing university.

I have thus thrown hautily together a few of the facts connected with this subject in order the facts connected with this subject in order to call your attention to the sources of our timber supply—the kinds of woods we have, those we lack, and the need of a further development, so to speak. of our own woods.

Trusting that the matter presented has not been altogether devoid of interest, that it may receive further thought from your that you may receive further thought from your that you may

receive further thought from you, that you man help to develop this portion of California' resources, thereby adding to its wealth and its material prosperity, thanking you for your at-tention and patience, I bid you good night.

COAL IN NEVADA,—Learned experts declared that there was no coal in Nevada, but they are now shown to be wrong, for coal is found at various points in the State, and in due time good producing mines of it will be developed and made available as the cheap fuel of the future. It is found at Crystal Peak, near the western border of the State, also away out in the eastern section. Nearer home, we have the Virginia and the Black Diamond companies actively developing their mines the other side of Carson river, in El Dorado canon and a little beyond. Both produce a very respectable article of coal, which burns well and is made practical use of both in stoves and in the pro-COAL IN NEVADA.-Learned experts declared article of coal, which burns well and is made practical use of both in stoves and in the production of steam. We noticed a few days since, in Virginia, a huge lump of the coal from the Virginia coal company's mine, in El Dorado canon. It was brought in a few days ago as a specimen by a gentleman who picked it from the dump while passing, and put it in his buggy. This coal is of the laminated brown lignite variety, strongly biuminous and burn-lignite variety, strongly biuminous and burnbuggy. This coal is of the laminated brown lignite variety, strongly bituminous, and burning to clean white ashes. There appears to be plenty of it and each underlying stratum shows improvement. Where it can be cheaply transported by means of a railroad, and furnished in quantity, that coal will be found to be a valuable commodity in the way of cheap fuel.

PROSPECSOUS AND PUTREFACTION-The pres-PROSPECIOUS AND PUTREFACTION—The presence of phosphoras or some one of its compounds has been observed to be one necessary condition for the development of putrefaction. The more phosphorous the more
rapid the putrefaction. The bad odor is supposed to be owing to the escape of phosphoretted hydrogen, and to the same compound is
attributed the luminosity of putrescent matter
under some circumstances. On passing the
gases evolved from putrefying matter through
argentic nitrate, no phosphorous compound of
silver was found, although the gases were completely decdorized by passage through the silver solution.

The Department on Fertilizers.

(From the Pacific Rural Press.)

The Department of Agriculture could not have chosen a better subject for "a leader" in their report for February and March than that of fertilizers; and in no instance has this subject been handled more judiciously. There is not among all the subjects connected with practical and theoretical agriculture one that occupies a more prominent position than this and it is probably for this reason that so much quackery has been spent upon it. So utterly profitless has the treatment of this important subject become, that farmers probably would not have expected any more from the Department in this case than a little fatherly advice about using more manures, with a confusing chemical analysis thrown in here and there. Instead of this, however, the Department

very properly devotes the entire report to a thorough disgnosis of the case, without attempting to prescribe. With this view it issued circulars of inquiry, not only to all the States and Territories, but to all the counties there-of. Answers were received from 1,096 counties to the following questions: What fertilizers are used in your county? What proportion of such fertilizers are farm yard manures? Home made composts? Commercial fertilizers? Are the latter deemed profitable? Is green manuring with clover practical? If so, is the full crop, the second growth, or only the stubble turned under? Please state the practice and its results in soil improvement. Specific and significant facts desired rather than general news.

The following table, which gives the practice and its results in soil improvement.

The following table, which gives the pro-portion of farm yard manres and other fertil-izers presents the average of the returns of each State:

States.	Farmyard Manure	Other fer-	States.	Farmyard Manure	Other fer-
Maine New Hampshire Vermont Mussachusetts Rhode Island Connecticut New York New Jersey Pennsylvania	P.ct 73 84 85 75 78 81 68 69	25 22 19 32 31	Louisians	P.ct 70 65 80 77 97 85 73	P

Virginia... North Carolina.

Georgia..... Florida Alabama.... Mississippi.....

It will be seen by the above table that the manure of farm animals is the main reliance in fertilizing; especially in California, where the percentage of farm yard manure is ninety-eight,

percentage of farm yard manure is ninety-eight, with two per cent. only of other fertilizers.

As might be expected the correspondents in heir reports speak discouragingly of the use of commercial fertilizers. They are free to admit that these articles have a positive value in supplying lacking material for plant-growth; but the general opinion is, that the genuine articles are held at too high prices, and that such as are held at moderate prices have been cheapened by fraudulent manipulation. In no case as reported are they supplying the place of farm yard manure; they are only used as additions, after that has been exhausted. The principal advantage derived from the use of comcipal advantage derived from the use of com-mercial fertilizers is bastening maturity; and where time is the great consideration, as with garden vegetables, they are still used with profit. Still it will not do to pronounce a general condemnation of them, even for farming purposes, for in some localities and on certain purposes, they are still considered almost indis-crops, they are still considered almost indis-pensible. While a majority of returns from New England, including all from New Hamp-New England, including all from New Hamp-shire, report adversely in regard to the use of commercial fertilizers, Oxford, Penobscot and Cumberland counties in Maine, report favora-ble results from their use; particularly, gypsum on young grass in the spring. Among these commercial articles gypsum seems to have been most successful in retaining the confidence of the farming community, while guano is in the poorest repute of all.

According to this report home-made composts are growing in favor. Farmers have learned that it is better to buy the commercial ingre dients for composting, and do their own com pounding, than to procure the ready-made article, for, in the first place, they know what they are buying, and when it is bought they can combine with it whatever they find available and what is required by the peculiar circumstances of the case. In most cases, however, composts are formed without the use of any commercial Where liquid manure is saved in ngredients. llars and vats under stables and pens, this is combined with swamp muck, sawdust, dirt from he road and other absorbents, producing valuable fertilizers.

In the neighborhood of Philadelphia and other Eastern cities thousands of loads of street sweepings are annually hauled to the farms and mixed with stable manure in the proportion of two to one, forming a compost that is highly valued. Cotton seed is largely used in the cotton growing States as an ingredient in composting; while on the coast in the northern Atlantic States, marine fertilizers, such as muscle-mud, sea weed and fish refuse, are util-

zed in the same way. The Departmental Report introduces the subject of green manuring as follows: "Returns show that the practice of plowing under clover as a green manure is gaining in all sections where clover is grown to any extent. That it proves one of the cheapest and most effectual means of improving soils, and at the same time one of the most valuable fertilizers for growing one of the most valuable fertilizers for growing crops, and especially for wheat and corn, is made evident by very general returns, in which testimony, as will be seen below, is largely fortified by definite facts, as ascertained by experiments continued for a series of years. A very few report that this process of manuring is not reactive for the series of the income. ed for the reason that some other is con

practiced for the reason that some other is considered more profitable; but only two report that it is positively injurious. Juniata, Pa., reports that it is 'considered worse than useless,' and Duplin, N. C., as follows:

"'Our farmers are adverse to green manuring with any crops, believing it a positive injury rather than a benefit to the land. A few years since the Bear Marsh agricultural club instituted a series of experiments with the cow pea as a manurial crop, and in every instance where the peas were plowed under green the land failed to produce as good a crop as when the peas were allowed to mature and fel off on the land. In 1868 a gentleman from Pennsylvania purchased a farm in this vicinity, and in Seppurchased a farm in this vicinity, and in Sep-tember turned under the growth of weeds, etc., green, and to this day the portion so treated has never produced so good a crop as the re-mainder of the field."

mainder of the field."

With these exceptions the reports are invariably in favor of green manuring, though in different localities different crops are used for the purpose. Where clover is especially valuable for hay, as in New England and some of the Northwestern States, buckwheat is used as a substitute; and where little clover is grown, as in the South Atlantic and Gulf States, the cow

pea is extensively used. In some places sedge hay, from the salt marshes, is raked into the furrows and plowed under, with extremely sat-isfactory results. Clover, however, is the crop most extensively used for green manuring. And in regard to the use of this we find in the reports a marked diversity of opinion and dif-ference in practice. reports a marked diversity of opinion and difference in practice. In some counties heard
from the whole of the first crop is turned under, in full bloom, and the land is fallowed until seeding time for wheat; or the second crop,
and most frequently only the stubble, is turned
under just in time for wheat. In others the first
crop is taken off, and if the second does not
fill it is all plowed under. In others still, the
approved method is to plow under the first
crop in June, replow the 1st of August, and
about the 1st of September sow wheat or rye.

It is evident, therefore, that in the use of
green manure a diversity of methods is allowable, perhaps advisable; it is also evident that
this is the cheapest and most available means
for fertilizing farm lands, especially in the

for fertilizing farm lands, especially in the newer portions of the country. By this means our land will really fertilize itself if we will only give it a chance. But in California alfalfa. only give it a chance. But in California alfalfa-is manifestly the crop to be used for this pur-pose. The reader of the report, of which this is but a brief synopsis, must, we think, be im-pressed with the impracticability of striving for uniformity in the adaptation of this, or any other principle of agriculture. Farmers should, therefore, consider that though the principle of green manuring may be applicable to all por-tions of our State, different localities require different modes of treatment. This has been made apparent to the farmers of different counties in the same State, New York, for instance, which is as nothing compared with California in diversity of soil and climate.

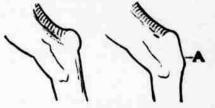
The subject with its bearings offers strong incentives for observation and practical experiment by the farmers of California.

Curb or Colic in Horses.

[From Pacific Rural Press.]

MESSES. EDITORS .- Your correspondent McJ. makes an inquiry respecting an ailment in horses. He thinks his own young horse has curb. His account of it is a little indefinite. One might think, by his saying it was above the fetlock, he referred to the ankle joint as the seat of the malady, while curb is a diseased

state of the parts of the hockjoint.



The above two diagrams from "Mayhew's Complete Horse Doctor," here figures the distortion in question at the point A. By contrasting this with the other outline which delineates a natural leg with a "clean hook," a person will be able to recognize the mischief; and once seeing it, it is never forgotten. It is a disease of young horses, and results from severe exertion or over-exertion. Mayhew de-picts a horse with his rider, the former in an attitude both barbarous and classic, of balan-cing on his hind feet; and refers to this position as an active provocation to the disease. Yet this or that kind of exertion is of small consequence in itself; but when you add to stress of exertion fatigue and sudden change of temperature, which is always from higher to lower, curb and colic, as well as many other of the maladies of horses are likely to follow within a period of a few minutes to a few hours. Sub-acute inflammation (sometimes acute) of tendon or tendinous sheath of the synovial membrane, sometimes both of the hock joint constitute curb.

Do not blister or use harsh applications. Rest and time are remedies. Mild stimulating line-ments applied with the hand, combined with careful rubbing with the hand accelerate resto-

Many valuable horses are annually lost for the lack of a little useful knowledge timely employed. Without detailing the diagnosis and pathology of colic, I desire to set before the numerous and I notice appreciative readers of the Parss, a safe and easily administered remedy for this sudden malady. When I say remedy, I mean all that term is held to com-prehend, save one; it cures; it does not merely help, or paliate, or soothe, or mitigate—it cures. Under it the pang lets go in half to three-quarters of an hour's time and the sub-Many valuable horses are annually lost for ject is soon restored. But it does not cure so effectually that the disease may not return under like provocation.

Of several cases that have come under my

or several cases that have come under my studied observation, permit me to relate one only as illustrative and instructive. Riding horseback one dark, autumnal night about ten o'clock, my horse laid down in the muddy road. In a few minutes a man with a lantern came up and proffered aid. I soon discovered to be a state was suffering from proving the line of the company bears was suffering from proving of the company of the my beast was suffering from paroxysm of colic.
To have gone on would have been at first cruel
and soon impossible, for the tendency of horses is, in this distress, no sooner obeying your call to get up than they lay down again and roll

Medicine on hand, I took as I judged about one grain and a half of sulphate of n like a pinch of snufi between the thumb and finger and spread it over the animal's tongue, rather far back in the mouth. There is no concern that the medicine may not be swalowed; it is immediately absorbed into the od, for the creature cannot spit it out, nor avoid getting the happy effect of it. In half an hour the animal was free from pain and I went home.

It is a piece of inhuman folly to urge horses to move about during a fit of the colic, as is sometimes done. They should have their free-dom and access to a soft bed. Two grains of morphine would not be a dangerous dose for a

PRESERVING CAST-IBON PROM RUST .- Girders, angle irons, and other similar large masses of iron are often placed in exposed situations, where damp, air, steam, and acid vapors have access. If the iron be put up in the round it was recedily restricted. vapors have access. If the iron be put up in the rough, it very speedily rusts, and under favoring conditions the corrosion scon reaches a dangerous point. Contractors generally agree to supply such irons painted in three coats of minium, which, if honestly done, would to a certain extent protect the metal; but, as a rule, only one thin coat is applied, and the slightest abrasion exposes the iron. A new and peculiar mode of treating iron is the following; the metal is heated until, if touched with oil or fat, it frizzles, and then is plunged into a vat of mixed oil and grease. This mode of treating cast iron is therefore far superior to any "painting," as the cleaginous matter actually penetrates the pores, and prevents oxidation for a very long time, while it does not prevent painting, if desirable, afterward.

Tus Virginia City Enterprise says: It is the opinion of leading ranchers that the crops this year will be equal to any since the settlement of the State.