AGRICULTURAL PAPERS.

A SERIES PREPARED ESPECIALLY FOR THE "RECORD-UNION."

Presenting Instruction Contained in Lectures from the Chair of Agriculture, State University.

[NINETEENTH PAPER.]

(5.) Power (possessed by soils) of appropriating solid matters from their solutions. That soils have the power of fixing or taking solid matters from solutions has long been known. It was no new fact, even several centuries ago, that sea water when filtered through sand lost much of its saltness. Were the soil incapable of removing matter from the liquids which pass through them, much nutritive matter would be lost to the plant world. For then the rains must inevitably carry all of the soluble matter, except what was directly imbibed by the roots of plants, out of the reach of succeeding plants, and the greatest part of the matter thus carried down would pass off through the drains and be lost. Johnson explains the removal of solid matter from solutions by saying that the adhesive power of the soil, or material through which the liquids percolate, overcomes the cohesive power of the particles in the solution, and hence extracts solid matter from the liquid in proportion, other things being equal, to the amount of surface exposed by the extracting body. The main difference, physically, between a solid and a liquid is that in the one particles making up the solid body have such a great cohesiveness for one another as to prevent free motion among themselves; while in the liquid bodies the cohesive force is so small that the particles move freely among themselves. If, for instance, salt, which is solid, be

DISSOLVED IN WATER

A certain degree of cohesiveness is overcome by the solvent. If now the saline solution be filtered through sand or charcoal, either of which can be wetted, and both of which present a comparatively large surface to the liquid, it is easy to perceive how they can, by their attraction for the particles of salt, overcome the remaining slight cohesive force existing between them, as well as the adhesive force of the water, sufficiently to cause particles of salt to separate out and adhere to the surface of the sand or charcoal. We thus see that this fixation of solid matters by the soil is a physical rather than a chemical phenomena; and that, since it depends upon the surface attraction of the soil particles for those of the solid matters of the liquid, the more porous a body is the larger amount of matter it will extract from solutions. We can readily understand, therefore, that the extractive power of fine sand and clay must be very great. The absorptive power of clay for water has been mentioned as being sufficient in pure clay to bear off the papillæ of the tongue. The particles of clay being much finer than those of sand, its fixing power is correspondingly greater, but when once saturated it takes longer to redissolve the fixed matters from the more adhesive clay than from the sand. By the fixing or

ADHESIVE POWER

Of the soil all color, odor and taste may be removed from the most offensive liquids by filtering through a sufficient depth of earth. It is well known that a few yards of soil intervening between a well and a sink or cesspool will often quite effectually purify the liquids of the latter before they reach the well, and by this means often maintain the purity of the well water for a considerable time. Had not the soil the property of neutralizing the offensiveness of these liquids, each such sink or cesspool would be a hotbed of disease and a perpetual agent in the spread of epidemics. (6.) The productiveness of a soil is very closely connected with its deportment toward liquid water. The ability to imbibe liquid water is known as the capillary power of the soil. It is caused by the same force which causes the ascent of liquids in a capillary tube, i. e., the attraction or adhesiveness between the surfaces of the capillary tube and the liquid. The capillary power or capillary coefficient of soils represents their ability to absorb and retain liquid moisture. In all porous bodies for most liquids this power is inversely proportional to the size of the pores. The interstices between grains of coarse sand are large, and hence matter readily runs or percolates through. Such soils cannot, of themselves, retain the moisture for any length of time, and we have already seen that their hygroscopic coefficient is also low. On the other hand, clay, which we know is made of very finely divided particles of mineral water, and since the amount of surface exposed depends upon the fineness of the soil particles, it must have a correspondingly greater number of and more minute pores; thus, therefore, a high capillary power. Not only is this the case, but clayey soils, as is well known, retain moisture with the greatest tenacity. The writer has seen blocks of clay taken from

WELL-CULTIVATED SOILS

At a depth of one and a half feet, and which had not been saturated with water for six months, and yet the clay seemed to be completely saturated. There is an evident relation between the mechanical composition of soils and their capillary powers. If glass tubes containing different grades of soil be suspended with the lower end projecting into a vessel of water, the liquid will immediately begin to rise in the tubes by the capillary force of the soil. But the rate of ascension and total hights reached will be found to vary very greatly with the different soils. Suppose we have a tube filled with coarse sand, one with alluvial soil, and another with fine clay. The water in its ascent in the tube containing sand will outstrip that in either of the other tubes; in fact, it will rise several times as rapidly. It will, however, only reach a hight of ten or twelve inches in the tube and then will cease rising. The capillary power of the sand has been exhausted, and if the surface of the sand is more than twelve inches above the water level it will not have been moistened by the capillary water. The water in the tube containing alluvium rises much slower than that in the sand, but to a considerably greater hight; while that of the clay, which rises slowest of all, goes on after the ascent has ceased in the other tubes, and the water finally reaches a foot or more higher in the clay than in the alluvium. It is a curious fact that if either of the soils be tamped and thus compacted in the tube the rise will be much more rapid, but will not reach to such a hight as before. If the surface of the tamped soil be reached by the ascending capillary water the evaporation, upon exposure to the sun's heat, will be much greater from the tamped than from the loose soil. It has been determined that in a

GOOD ALLUVIAL,

Well tilled and well drained soil, the capillary water will rise to a distance of from three to four feet. Let us draw some general conclusions from the above facts. First as to sandy soils: Are they ever desirable, and for what crops best suited? We have seen that the capillary water ascends in sand only to a hight of one to two feet, and also that the hygroscopic coefficient of sand is very low. Therefore, in localities where the permanent water of the subsoil is at a greater depth than one to two feet below the surface, and where summer rains are not frequent, sandy soils are most liable to failure of crops from drought and excessive heat. And when artificial irrigation is used, where the underground method is made use of, the tile or pipe must be laid near enough to the surface so that the hygroscopic moisture at least will reach the surface. If the capillary water reaches the surface the evaporation will be much greater than from clayey soil, and hence a larger amount of water must be supplied. If surface irrigation is resorted to, the water will percolate through the sand, and a large portion of it will drain off and be practically lost. The sand will be saturated with moisure for a short time, but as soon as the hydrostatic water has left the surface the moisture diminishes very rapidly, and by a double drain, as it were—(1), rapid evaporation from the surface; (2), the water of the lower strata quickly drains off—in a very short time, depending on the coarseness of the sand, its depth, and the distance to permanent water, the field is depleted of water and must be flooded again. Thus we see that by this method also a much larger amount of water is required to irrigate a coarse than a finer soil. If now it is desired to grow

SURFACE-ROOTED PLANTS,

As the cereals, corn, etc., it may readily be seen, other things being equal, that our sandy soils are not desirable; and, in fact, those crops will not do well in sandy soils except they be constantly irrigated. There is, however, a class of crops which is adapted to such soils. It is made up of those crops which extend their roots to a long distance in the soil, and which more or less shade the ground. Alfalfa is a well known example of this class of plants, and it is often successfully grown where almost anything else would succumb to the drought. If, as we have said before, sandy soils be mixed with humus or fine mineral matter, the hygroscopic and capillary coefficients are often so largely increased as to effectually protect the surface roots from the heat of the sun. With clay and alluvial soils, whose hygroscopic and capillary coefficients are so much greater than those of sand, and sufficiently great to secure moisture from a depth of three to four feet, we are not so dependent on artificial irrigation. In such soils the irrigation tile may be laid to greater depth than in sandy soils, thus increasing the depth to which food roots may descend, and also the drainage and tilth of the soil. Soils may either be too leachy, as coarse sand, in which case the rain and irrigation water runs right through and leaves the surface almost dry; or they may be too compact, as heavy clays, which are often so much so that the water often stands on their surface until removed by evaporation. Such extreme soils are almost valueless, especially in our California climate. The remedy for leachy soils is to incorporate vegetable and fine mineral matter with it, and to plant deep-rooted

LARGE FOLIAGED PLANTS.

For too compact fine soils, constant tillage and thorough drainage is the best, if not the only remedy. A perfect state of tilth in clayey soils can only be secured by intelligent and persevering cultivation. Clay soils tilled out of season are injured rather than benefited. A few hundred pounds of lime sowed broadcast over clay soils, and thoroughly mixed in, will do more, and in fact will quite effectually reduce the adhesive clay soil to a state of tilth. The effect produced by the second season is quite perceptible. The soil then, instead of drying in hard cakes, which are parted by fissures, crumble up to fine powder, and in the future the soil will work more like a sandy loam than like pipe clay. This remedy is so simple, so available and so cheaply applied as to be worthy of trial by every farmer who has even an acre of refractory soil. It is the capillary water of the soil which furnishes most of the water of evaporation. During dry seasons, in soils where the capillary water reaches the surface there is a continual ascent of moisture from the subsoil to the surface; for each particle of moisture which is evaporated and passes into the atmosphere must be replaced by another, and which is drawn up from the sub-strata of the soil. This constant upward current of water during the greater portion of the year tends largely to the retention of the soluble inorganic salts within reach of the plant roots. Those mineral and organic substances which are held in solution by the soil water are

TO A LARGE EXTENT

Fixed by the soil from the descending rain and irrigation water. This fixation often occurs at so great a depth below the surface as to be practically out of reach of the plant. But during the warm and growing season when rapid evaporation is going on, they are redissolved in the ascending currents of capillary water, and are carried up and deposited in the soil, where they are immediately available to the plant roots. Those materials which are not used by the season's crop accumulate in the soil, where they remain until rain falls, when they are again washed down in the subsoil to remain until evaporation again sets in, when they are again placed at the disposal of the plants by the ascending currents of capillary water. We see then, that one of the functions of capillary water is to act as a carrying medium between the subsoil and the soil, and to keep a supervision, as it were, over the nutritive matters of the soil; to keep the roots of plants bathed in a current of moisture and in contact with their inorganic food. The circulation of water through the soil by capillary action increases the food supply by increasing the soluble effects of the liquids of the soil upon the inorganic materials of the soil. The capillary action of the water in the soil depends mainly on the temperature and the state of the atmosphere, and, secondly, on the nature of the soil. When the atmosphere is saturated with moisture, that is, contains all it can retain, the evaporation from the soil must cease. When this is the case the capillary water of the soil remains stationary, or, perhaps, has a slight descending motion, if the drainage be good. This is the condition of things during rains or heavy fogs.

IN ORDINARY SUMMER WEATHER

The atmosphere is less than one-half saturated, and hence evaporation goes on comparatively rapidly. The temperature, too, largely influences the amount of evaporation. Other things being equal, the evaporation increases with the rise of the temperature; but if the atmosphere be extremely dry, a rapid evaporation may even take place from fields of ice and snow. When the atmosphere is saturated with water vapor the soil absorbs water from the atmosphere. The rapidity of this absorption depends upon the nature and fineness of the soil, and of the amount of moisture contained in it. The absorptive power of the soil is thus seen to decrease the loss of moisture by evaporation, and this it is which accumulates much of the plant-food from the atmosphere. In experiments made upon different grades of soil, by thoroughly saturating with water, allowing the excess to drip off, and then computing the per cent. gained in weight, it was found that the relative amounts absorbed increased with the fineness of the soil. Quartz sand retained about one-fourth of its weight of water, light clay soil took up 40 per cent., heavy clay 61 per cent., fine limestone retained 85 per cent., garden mold 89 per cent., humus 181, and fine carbonate of magnesia took up 256 per cent. of its weight of water. This gives us the relative amounts of water needed to saturate the different soils. The saturated soils were now subjected to evaporation for four hours, and the rapidity of evaporation was found to be inversely proportioned to the quantity absorbed.

IN FOUR HOURS

Quartz sand gave up 87 per cent. to the heat of the sun; light clay soil parted with 52 per cent. of its water; heavy clay with 49 per cent.; fine carbonate of lime with 28 per cent.; garden mold with 24.3 per cent.; humus 25.5 per cent., and fine carbonate of magnesia lost only 10.8 per cent. We see that the sand not only retained less moisture, but it yielded almost all of it up to the atmosphere in the short space of four hours' exposure to the sun. We need no extended practical experiments to show us that of all soils it is the least desirable for hot climates. Also, when we know that water will rise to a much less hight in it than in most other soils, we see that we cannot hope to crop deep sandy soils to surface-rooted plants without plentiful irrigation. Clay soils absorbed relatively twice as much water as did the sand, and gave up less than one-half of its water to the atmosphere in the fixed time. Fine limestone and garden mold retained almost their own weight of water, and gave up less than one-third of it in the four hours; humus absorbed almost twice its weight of water and lost only 25 per cent. by the evaporation, and the fine carbonate of magnesia gave up only 10 8 per cent. of the 256 per cent. it absorbed. We thus see that the finer

THE SOIL PARTICLES,

And hence the more surface exposed, the more water is absorbed by them, and the longer time is required to extract it by evaporation. Experiments were also made upon different grades of the same soil, and it was generally found that in those soils whose bulk was increased by grinding the imbibing power was also increased; but that in those like peat, humus, etc., in which the bulk was reduced by grinding, the amount of water absorbed by them was also reduced. The imbibing power, then, depends on the amount of surface exposed, and if the nature is such that the material is compressed and rendered more compact by mechanical grinding, as in peat, mold, etc., the absorptive power is lessened by such action. An excessive retentive power is as injurious, though not so difficultly remedied as is a too leachy quality. Pure humus or clay not only absorbs and retains an excessive amount of water, but are, when dry, only slightly and slowly influenced by the summer rain; and when once saturated they become soggy and "cold." With soils, as with many other things, a happy mean is about the most profitable and satisfactory.

THE QUIET HOUR.

Answers to May 6th.

1341. (1) Dora, Ora. (2) Hesther, Esther. (3) Ealetta, Stella, Ella. (4) Daum, Aum. (5) Dawn, Awn. (6) Nopal, Opal. (7) Dawk, Awk.

1342. Rain.

1343. Sunflower.

1344. Bateau.

1345. (Answer not received).

Answers to April 8th.

1325. Buffalo.

1326. Cymer, year, make, area. (Down) Cry, ma, year, make, aria.

1327.
D R U G S
R I V E T
U V U L A
G E L I D
S T A D E

1328. Cupid.

1329. Smothering, mothering, etc.

1330. "That reminds me of a little joke."

Rose—1344, 1346, 1348. Rose says: Although I have been indulging in a vacation from puzzling, I have not lost sight of the Q. H., and ought to have answered and acknowledged those puzzles written for me by H. E. P. and my friend H. H. I do not think the answer to the former has been given (Pharisee and Sadducee). To H. H. I would say:

"Spinning wheels" and "hand looms"
Are hidden away in unused rooms;
For gone are the days when fingers deft,
Spun flax and wool for warp and weft,
And in huge old looms, wove with care,
"Home-spun" cloth for the household's wear.

Answers to Correspondents.

Gus—Oh, yes; the answer is right.

Evelyn—We have published the result of the contest. Now please make your award.

Hattie Heath—Please let us have the summer address. We have a good reason. Book is forwarded; title, "John Inglesant," a romance. Think you will appreciate it better than the volume originally intended. Don't let absence prevent contribution. Correct, 1342, 1343, 1344, 1346.

J. H. C.—List filed. It is a good one.

M. M. C.—The prize for the best list on the word "Mexican" is a valuable oil painting from the studio of one of our best artists.

Mrs. M. J. Miller—List received of 264 words, and 47 Greek and Latin proper names. Yes, it is an aid to spelling culture—decidedly.

Laura A. Perkins—List received of 405 words.

New Tangles.

1349. Charade, by H. H.:

A first we eat, whole can't be beat,
So the Yankees say,
And none in the land can understand
How to last a first as they.

1350. Diamond, by Quest:

A letter; a worthless fellow; a woman's name; influence; pertaining to a State or nation; a kind of a bird; conical; a stripling; a letter.

1351. Half square, by Hattie Heath:

Here, and there; a fine kind of clay; crude tartar; to be highly excited; a word much used in chemistry; surrounded by; a letter.

1352. Enigma, by Rock:

I am composed of nine letters.
My whole is a useful invention.
But its mistakes make one often vexed.
But its rapidity annihilates space and time.
And its convenience compensates for its errors.
My 3, 2, 5 is a limb.
My 6, 7, 1 a rodent.
My 9, 4, 7, 1 decidedly warm.
My 7 and 8 you must find out by the others.

1353. Elongation, by Marius:

An obstruction; a poet and singer among the ancient Celts; in heraldry, caparisoned.

1354. Increasing word, by Alter Ego:

In full body; the fruit of forest trees; one who has the right to command.

1355. Enigma, by M. A.:

I am composed of three. Whole I am a vegetable infusion; curtail and add it to the beginning, consumed; again, to corrode.

1356. Riddle, by Augusta Blake, dedicated to Hattie Heath:

A conveyance is my first;
My second we love dearly;
My whole is trampled under foot,
And often flogged severely.

1357. Rebus, by Captain N. Frank:

ST ING
C O

1358. Diamond, by Quiz, for H. H.:

In sand; a plant; a kind of mistletoe; a plant; in sand.

1359. Beheading, by Rose:

Behead a nail which shoemakers use,
To find a fable which oft will amuse,
And which, like pill all sugar coated,
For its "true inwardness" is noted.
Once more, and by all 'tis allowed
To mean land either tilled or plowed.
Twice curtail, and now we see,
One whose life is wild and free.
A native of a far-off land,
Who wanders o'er the desert's sand.
Once more curtail, and see it rise,
Upon the Southern evening skies.

THE CLEVER DIPLOMATIST.—When Talleyrand's friend Narbonne, the Minister who had incurred the King's displeasure, was once walking arm-in-arm with him, and reciting some verses, Talleyrand, suddenly perceiving, at a short distance from them, a man who was yawning, interrupted his friend, saying: "Narbonne, not so loud;" and he pointed to the yawning man. Relating one day some infamous trait in the character of one of his colleagues, his hearers interrupted him, exclaiming: "The man who could commit an act of that kind is capable of assassinating." "Assassinating? no," said Talleyrand, calmly; "poisoning? yes." Being asked on a certain occasion to define his notion of an agreeable man, the Bishop of Autun replied: "A man who agrees with me." Lastly—for these stories could be collected almost *ad infinitum*—when a troublesome acquaintance, who had continually pressed him for alms, thought he had clinched his case in one instance by remarking, "I must live, you know." Talleyrand complacently replied, "I do not see the necessity."—[London Society.

PHYSICIANS use Kidney-Wort in regular practice and pronounce its action perfect,

THE HOUSEHOLD.

CODFISH BALLS.—Take equal quantities of mashed potatoes and boiled codfish minced fine; to each half pound allow an ounce of butter and a well beaten egg; mix thoroughly. Press into balls between two spoons; drop into hot lard and fry till brown.

FILET DE BŒUF CHATEAUBRIAND.—Take a large or double tenderloin steak and broil it; have some Parisienne potatoes, saute with butter, which put around the dish. Have some good butter melted, and a little parsley cut fine; add the juice of half a lemon, mix thoroughly and pour over your steak.

EXCELLENT POUND SEED-CAKE.—One pound of butter beaten to a cream, one pound of sifted lump sugar, one pound of good flour well dried, eight eggs, the whites beaten separately, and carroway seeds to taste. Mix the ingredients and beat all well together for one hour. Put the batter into a cake-baking tin, lined with paper and buttered. Bake in a moderate oven.

LEMON TOAST.—Beat the yolks of three eggs and mix with them half a pint of milk; dip slices of bread into the mixture, then fry them a delicate brown in boiling butter. Take the whites of the eggs, beat them to a froth, add to them three ounces of white sugar and the juice of a small lemon. Stir in a small teacupful of boiling water, and serve as a sauce over the toast.

TO MAKE STEAK TENDER.—Put three tablespoonfuls of salad oil and one tablespoonful of vinegar, well mixed together, on a large flat dish, and on this lay the steak. Salt must never be put on steak before it is cooked. The steak must lie on this tender making mixture for at least half an hour to a side; the toughest steak will succumb to this, and be perfectly tender when cooked.

JELLIED CHICKEN.—Boil a chicken in as little water as possible until the meat can easily be picked from the bones. Manage to have about a pint of liquor when done. Pick the meat from the bones in fair-sized pieces, removing all gristle, skin and bone. Skim the fat from the liquor, add an ounce of butter, a little pepper and salt, and half a packet of gelatine. Put the cut-up chicken into a mould, wet with cold water; when the gelatine has dissolved pour the liquor hot over the chicken. Turn out when cold.

STEWED TONGUE.—Cut up a slice of bacon as for larding; sprinkle the pieces with salt, pepper, chopped parsley and a little allspice. Lard an ox tongue with these, and lay it in a saucepan with two slices of bacon, four small bunches of parsley, two sprigs of thyme, two carrots cut into small pieces, two small onions, a few cloves, salt and pepper. Cover with stock to which has been added a glass of sherry. Simmer five hours, keeping the saucepan well covered while serving. Strain the sauce over the tongue.

FORCE MEAT BALLS.—Take some lean veal and pound it in a mortar and then rub it through a sieve with a little butter. Put in a sauce-pan a little chopped parsley and onion, add some bread crumbs and milk, and stew gently until the onion is cooked (everything must be chopped very fine), put through a sieve and let it get cool. Then add the yolk of three or four hard-boiled eggs, season with pepper, salt, and add the yolks of a couple of raw eggs; roll into small rolls and add to your soup fifteen minutes before serving.

CHAMPAGNE JELLY.—Take two ounces of gelatine, and dissolve it in a quart of water; put this in a sauce pan with the juice of two lemons and three oranges, two whole eggs, two whites of eggs, a few egg shells and three quarters of a pound of sugar, mix well, and add another quart of water. Put the sauce-pan on the fire, stirring occasionally to make clear. When it boils put the pan on the side of the stove, and let it remain without boiling for fifteen minutes, then remove it and run the jelly twice through a flannel strainer, adding to it a pint of champagne. Pour into one or more molds and set on the ice to harden. Turn out of the molds and serve on cold plates.

PLUM PUDDING.—Pick and stone one pound of raisins; prepare two pounds of dried currants; chop one pound of beef suet very fine, and one pound of mixed peel; one ounce of mixed spice. Mix in a basin one pound of flour, one pound of moist sugar, one pound of eggs well beaten, half a pint of milk, four ounces of bread crumbs. Add all the ingredients and mix into a firm dough. Well butter a mold, dust it with flour, then fill it with the pudding mixture; tie it over with a cloth, put it into plenty of boiling water, and boil fast for eight hours or longer. When required turn out carefully, and serve with a gill of brandy burning in the dish.

Les Mondes states that M. Virlet d'Aoust has proposed to M. Dumas, the President of the International Commission upon the Transit of Venus, a plan for preventing the disturbances of irradiation. It consists of an eclipsing disc or diaphragm which is connected with clockwork so as to move through the field of the telescope with the same rapidity as the planet. The luminous phenomena being thus withdrawn from the eyes of the observers, he thinks they could better appreciate the precise moment of contact, so that Halley's method could be practically applied and an approximation of the solar parallax obtained which would be much more satisfactory than was possible at any previous transit.

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M. M. B. Goodwin, an editor in Chardon, Ohio, says he was not expected to live, being bloated beyond belief, but Kidney-Wort cured him.

Anna L. Jarrett of South Salem, N. Y., says that seven years suffering from kidney troubles and other complications was ended by the use of Kidney-Wort.

John B. Lawrence of Jackson, Tenn., suffered for years from liver and kidney troubles and after taking "barrels of other medicines," Kidney-Wort made him well.

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LIVER COMPLAINTS,
Constipation and Piles.

It is put up in Dry Vegetable Form in tin cans, one package of which makes six quarts of medicine. Also in Liquid Form, very Concentrated, for those that cannot readily prepare it.

It acts with equal efficiency in either form.

GET IT AT THE DRUGGISTS. PRICE, $1.00

WELLS, RICHARDSON & Co., Prop's,
(Will send the dry post-paid.) BURLINGTON, VT.

AUCTIONS.

SPECIAL SALE

—AT—

AUCTION

Of that well-known and important FRUIT FARM, known as

Lewelling's Orchard,

ALAMEDA COUNTY,

ON MONDAY, MAY 29, 1882,

At 12 M., at our Salesroom,

No. 321 Montgomery street
SAN FRANCISCO.

WE WILL SELL THE ABOVE WELL-KNOWN Orchard, "LEWELLING'S," comprising 117 acres of land in full orchard production, and the improvements and personal property thereon. The net income annually is $14,000 and upward, as per documentary evidence in our possession, and will increase largely. For full particulars, apply at our office.

Cobb, Bovee & Co

REAL ESTATE AGENTS AND AUCTIONEERS,

No. 321 Montgomery street,
SAN FRANCISCO. m18-1sct

AUCTION.

SHERBURN & SMITH

Will sell at auction, in front of their Sale-room, No. 323 K street, on

SATURDAY,.....MAY 20, 1882,

At 10:30 o'clock A. M.,

A LARGE LOT OF HOUSEHOLD GOODS,

COMPRISING:

Solid Walnut Bedroom Sets, Cottage Bedroom Sets, Spring and Top Mattresses, Feather Pillows, Sofas, Lounges; Extension, Oval Leaf and Square Tables; Carpets, Crockery and Glassware, Knives, Forks and Spoons. This will be a large sale to close out.

m19-2t SHERBURN & SMITH, Auctioneers.

BELL & CO., Auctioneers,

—WILL SELL ON—

SATURDAY,.....MAY 20, 1882,

At 11 o'clock A. M. sharp,

At Salesroom, 916 J st. (bet. Ninth and Tenth),

In part, as follows:

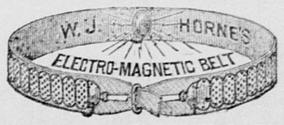
One Bay Mare, weight 1,600 pounds; one Spring Wagon, one Set Carriage Harness (new); seven Assorted Bedroom Sets, Walnut Bedsteads, Spring and Top Mattresses, one Walnut Extension Table, one Fairbank Counter Scales, one Wardrobe, one Wardrobe Bedstead (Walnut), one Center Table, one Ice Chest, one Parlor Set, seven pieces; nine Wool Pillows, one Bed Lounge, two Single Lounges, two Cook Stoves and Fixtures, and a large lot of Brackets. Sale Positive.

m19- [B. C.] BELL, Auctioneer.

THE CROWNING TRIUMPH

—OF—

ELECTRIC SCIENCE.



HORNE'S PATENT ELECTRIC BELT leads the world in grand improvements, scientific construction, constant electrical action. Most popular, powerful, cheapest, durable and effective in curing diseases. Thousands of well known citizens, merchants, mechanics, ministers, laborers, bankers, physicians, editors and Senators cured of diseases which defied all medical skill. This BELT received the highest Award and Medals at the California State Fair, 1880 and 1881. The only medals ever awarded by the State to Electric Belts. Send for HORNE'S ELECTRIC HERALD. Testimonials of highest character and valuable information free. W. J. HORNE, Proprietor and Manufacturer, 702 Market street, San Francisco, Cal. Agents wanted. m16 2p3m&sw3mS

AMUSEMENTS.

COMING! COMING!

Look out for us! Look out for us!

THE

EQUESCURRICULUM

—AND—

EQUINE PARADOX!

Will exhibit at the CIRCUS LOT,

Corner of Sixteenth and K streets,

—ON—

FRIDAY AND SATURDAY,

May 19th and 20th.

Don't Fail to See the

BEST TRAINED HORSES

In the world; together with

20 TWENTY STAR PERFORMERS. 20

Admission, 50 cents; Children, 25 cents.

N. B.—GRAND MATINEE AT 2 P. M. SATURDAY. m16-5t

THE EIGHTH ANNUAL PICNIC

—OF THE—

HEITERKEIT SOCIAL CLUB

—WILL BE HELD AT—

EAST PARK GROVE,

SUNDAY.....MAY 21, 1882.

GRAND PRIZE FOR GENTLEMEN, $7. FOR Ladies, $5.

No disreputable characters allowed on the grounds.

Gents' Tickets, 50 Cents. Ladies Free. m15-1w

SPRING RACES!

—AT—

Sacramento, Cal

The Capital Turf Club

WILL HOLD THEIR SPRING MEETING

—ON—

JUNE 14, 15, 16 and 17, 1882.

$3,000 IN PURSES AND STAKES.

Trotting and Running

FIRST DAY.

1. RUNNING STAKE, free for all, three-quarters of a mile dash; $20 entrance, $10 forfeit; $100 added; second to save stake.
2. RUNNING STAKE, free for all, mile dash; $25 entrance, $15 forfeit; $150 added; second to save stake.
3. RUNNING STAKE, half mile dash, for two-year-olds; $20 entrance, $10 forfeit; $75 added.

SECOND DAY.

4. TROTTING—Purse, $250; for three-year-olds; mile heats
5. TROTTING—Purse, $250; three minute class; for horses in the district.
6. TROTTING—Purse, $400; 2:30 class.

THIRD DAY.

7. RUNNING STAKE, for three-year-olds, mile and a quarter dash; $10 entrance, $20 forfeit; $150 added; second to save stake.
8. RUNNING STAKE, free for all, dash of two miles; $50 entrance, $20 forfeit; $200 added; second to save stake.
9. RUNNING STAKE, free for all, one mile and repeat; $25 entrance, $15 forfeit; $150 added; second to save stake.

FOURTH DAY.

10. TROTTING—Purse, $300; 2:45 class.
11. TROTTING—Purse, $500; 2:25 class.
12. GENTLEMEN'S BUGGY STAKE, free for all horses actually used as roadsters, to be driven by owners; $10 entrance; $50 added; two miles out; winner to receive whole amount.

All the above trotting races are three-in-five, unless otherwise specified; five to enter and three to start; National Association rules to govern. Pacific Coast Bloodhorse Association rules (old weights) to govern Running Races. In Trotting Races, 10 per cent. entrance to accompany nomination.

Entries to all of the above Races close June 1, 1882.

Trotting Purses divided at the rate of 60, 30 and 10 per cent.

ADMISSION, 50 CENTS; LADIES FREE.

CHRISTOPHER GREEN, President.
W. P. EMERY, Secretary. m16 StoodTuThS

FOR SALE.

Great Bargains

—BY—

CADWALADER & PARSONS

Real Estate Agents,

SACRAMENTO.

The CENTENNIAL HOTEL, a two-story frame, built in 1876; 22 rooms, furnished, adjoining the Depot grounds at DIXON, Solano county. Bar, Billiard Room and Dancing Hall attached to the house. House in good order and now doing a good trade. Satisfactory reasons given for selling. Price, only $2,000.

Good GRAIN FARM, 2 3-4 miles west from Pleasant Grove, Sutter county; 160 acres; very cheap; $1,800.

160-acre FARM, 6 miles southeast from Sacramento city; now producing grain, fruit and berries in abundance. This land is high and rolling, abundantly watered, and is a desirable and profitable investment; $7,000.

m18-2p10t

FINE PHOTOGRAPHS!

—FOR—

$1 PER DOZEN,

At BEALS' GALLERY, 415 J street. m9-3ptf

MRS. G. N. LEVY,

FORMERLY OF 1008 EIGHTH STREET, IN this city, begs leave to inform her Sacramento friends and acquaintances who contemplate visiting San Francisco during the summer season, that she is prepared to accommodate them with the best of table board and lodging, at 1403 Van Ness avenue, between Bush and Pine. a29-2p1mTuThS

SAN FRANCISCO AGENCY.

THE GENERAL AGENCY OF THE

DAILY RECORD-UNION,

—AND THE—

SACRAMENTO WEEKLY UNION

IN SAN FRANCISCO

—IS AT—

No. 8 New Montgomery Street,

PALACE HOTEL.

m15 2ptf

IMPORTANT SALE.

BUSINESS AND RESIDENCE PROPERTY—Must be sold. The substantial three-story Brick Building, No. 53 Front street, adjoining store of George M. Chesley, and know as "Leggett's Ale House." One of the best locations in the city for Wholesale or Manufacturing Purposes. Lot, 150 feet deep to the alley in rear. Building, 21x100 feet; lately provided with new basement floor and metal roof. Also, Lots 1 and 2, F and G, Fifteenth and Sixteenth streets, upon which is a Frame Dwelling renting for $10 per month. These lots are high and dry, and located in a fast-improving and desirable neighborhood. Proposals for the purchase of the above will be received for 30 days by CADWALADER & PARSONS, Third and J streets, Sacramento, or CHARLES STEWART, 1421 Hyde street, San Francisco. No reasonable offer will be refused. If not sold at private sale, it will be offered at public auction and sold to the highest bidder. m13-2p1m

LACE Buntings!

—AT—

12 1-2 cents

PER YARD!

—AT—

S. Lipman & Co.

Fifth and J sts., Sacramento.

AGENTS FOR THE

Fazar Glove-fitting Patterns!

a11-3ptf

—ON—

30 DAYS' TRIAL,

We will send on 30 Days' Trial

DR. DYE'S CELEBRATED

ELECTRO-VOLTAIC BELTS

A