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PROFESSIONAL CARDS.

Of Interest to Inventors.

C. A. Snow & Co., one of the oldest and most successful firms of patent lawyers, whose offices are opposite the United States Patent Office in Washington, D. C., and who have procured patents for more than 17,000 inventors, say that, owing to the improved conditions in the United States Patent office, patents may now be more promptly procured than at any previous time in their experience of twenty-five years.

LOCATION OF ROADS.

BETTER GO ROUND A HILL THAN CLIMB OVER IT.

A Level, Winding Road Is Always Better Than a Straight, Hilly One. Especial Care Should Be Given to Proper Drainage of a Highway.

In the Year Book of the department of agriculture is printed an excellent article on the construction of country roads, written by M. O. Eldridge, assistant in the office of road inquiry. He deals with the present work to be conducted with a view to future improvement, location of roads, grades, drainage and other important details of modern road building. Mr. Eldridge says:

Many roads of this country were originally laid out without any attention to general topography, and in most cases followed the settlers' path from cabin to cabin or the boundary lines of farms regardless of grades or direction. Most of them remain today as they were originally located and where untold labor and expense have been wasted in trying to haul over them and in endeavoring to improve their deplorable condition. It is a great error to continue to follow these primitive paths with public highways. The proper thing to do is to call in a good road engineer and have the location so changed as to throw the roads around the ends or along the sides of the steep hills and ridges instead of continuing to go over them, or in raising the road up in dry, solid ground instead of splashing through the mud and water of the bogs and creeks in the lowlands.

If a road goes over a hill when it might go around, the labor and expense put upon it are absolutely wasted, and the sooner its direction is changed the better. If a road is not rounded up and surface drained, it should be, not only for present use as an earth road, but as a preliminary for macadamizing. If it is not underdrained in all wet spots, this should be the first work done. Nothing indeed will pay better for present use than putting in tile or stone drains.

In laying out a road straightness should always be sacrificed to obtain a comparatively level surface. Although this is one of the most important principles connected with road building, it is one of the most frequently violated. There is no objection to an absolutely straight road, but graceful and natural curves conforming to the lay of the land add beauty to the landscape, besides enhancing the value of property.

Good roads should wind around hills instead of running over them, and in many cases this would not increase their length, as it is no farther around some hills than over them. Moreover, as a general rule, the horizontal length of a road may be advantageously increased to avoid an ascent by at least 20 times the perpendicular height thus saved. For instance, to escape a hill 100 feet high it would be better for the road to make such a circuit as would increase its length 2,000 feet. The reasons for this are manifold, the principal one being that a horse can pull only four-fifths as much on a grade of 2 feet in 100, and gradually less as the grade increases, until with a grade of 10 feet in 100 he can draw but one-fourth as much as he can on a level road.

The greatest load that can be hauled over a road is the load which can be hauled up the steepest hill on that road. The cost of haulage is therefore necessarily increased in proportion to the grade, as it costs 1⅓ times as much to haul over a road having a 5 per cent grade and three times as much over one having a 10 per cent grade as on a level road. As a perfectly level road can seldom be had, it is well to know the steepest allowable grade. If the hill be one of great length, it is best to have the lowest part steepest, upon which the horse is capable of exerting his full strength, and to make the slope more gentle toward the summit to correspond with the continually decreasing strength of the fatigued animal.

All things being considered, the horizontal grade of a road should never be greater than 3 feet to 100.

Water being the greatest enemy of the road, it should flow freely off the surface. This is accomplished by preparing the bed so there may be a fall from the center to the sides of 6 inches, never exceeding 9 inches, on a road 30 feet wide. For a road 18 to 20 feet wide 3 to 4 inches is enough. A ditch should be constructed on either side of the road to carry away easily and quickly all water from the road and vicinity. These ditches should have a continuous fall throughout their entire length, and their size should depend upon the amount of water they are expected to carry. Water should never be allowed to flow across a roadway. Culverts, tile drains, or if nothing better can be had a hollow log should be provided for that purpose.

In order to have good roads it is just as necessary that water should not be allowed to attack the substructure from below as that it should not be permitted to percolate through it from above.

Underdrains are easily and cheaply made, and when properly constructed with the best tools and materials available will last for ages. They should be about four feet deep and carefully graded at the bottom so as to have a fall throughout their entire length of at least six inches for each 100 feet. Tile drains should be used if possible, but if they cannot be secured large, flat stones can be carefully placed so as to form an open channel at the bottom. Slim fagots of wood or brush bound together in bundles and laid lengthwise at the bottom will answer fairly well. The ditch should then be filled with field stones or gravel. The drains should be protected by straw, sod or brush to prevent the soil washing in and clogging them.

SURFACE OF ROADS.

Only the Hardest Stone Should Be Used For Top Layer.

The advantages to be derived from good stone roads are so manifold that all other materials should be discarded where tough road stone is available for their construction and maintenance. But it is greater economy to use earth or gravel than to go to the expense of macadamizing roads with too soft, too brittle or rotten material. Many use this because it is easily prepared. A road should never be surfaced with anything short of trap rock or serpentine. Inferior material may often be used with impunity for the first layer, or foundation, but even this should be selected with great care.

The evils resulting from improper construction of stone roads are even greater than those from the use of improper material. Macadam never intended that a heterogeneous conglomeration of stone and mud should be called a macadam road. Neither did he intend that the name should be applied to roads constructed of large and small stones mixed together and spread upon the surface. The surface of a road built in this manner is constantly disturbed by the larger stones, which work to the surface and which are knocked hither and thither by the wheels of vehicles and the feet of animals. Such methods of construction cannot be too severely condemned.

The first course of foundation of the macadam road can be made of the coarsest stones from the crusher, provided that they are of uniform size and that each stone shall weigh not over six ounces and will pass through a 2½ inch ring. Where the road is to be eight inches thick this foundation should be four inches after rolling. If the road is to be of greater thickness than eight inches, the foundation should be composed of two courses separately rolled.

After having thoroughly rolled this foundation apply enough ground stone or coarse sand to fill the interstices. This should be wetted and thoroughly rolled until a hard and uniform surface is obtained.

Upon this foundation the surface material should be placed, wetted and thoroughly rolled. The stones of which this surface material is composed should be if possible crushed to a size of one inch in diameter; but if that is not possible they should never be larger in diameter than 1½ inches. Ground stone screenings should then be spread upon the surface, wetted and rolled as before, until a hard smooth surface is the result.

STATE AID FOR ROADS.

What the System Has Done For the Farmers of New Jersey.

Road building by state aid is steadily increasing in New Jersey, says Engineering News. The principal construction has been in the direction of roads four, six and eight inches deep, as experience has shown that properly drained earth is a sufficiently good foundation for any road superstructure, and all that is wanted is enough "metal" on the surface to stand up under the wear until the roads have to be resurfaced. This happens when the roads are subjected to two or three inches of wear. To cheaply maintain the surface an application of coarse sand or gravel and loam containing oxide of iron will keep the surface in good condition and make a soft cushion for the feet of horses.

The authorities of New Jersey have decided on roads 10, 12 and 14 feet wide in the country and 16 feet wide

TEANECK ROAD, NEW JERSEY.
[From L. A. W. Bulletin.]

in the towns as the limits for state aid. If the citizens wish wider roads they must do the remaining work at their own cost. The roads are now costing from 20 to 70 cents per square yard, depending on the locality, availability of stone, etc.

Before the advent of stone roads the leading highways, not graveled, were almost a bed of sand, and teams carried 40 or 50 baskets of produce to Philadelphia markets with difficulty. Farmers shipped produce mainly by railways and boats as being the cheaper method.

The farmers now cart to market instead of sending by boat and return with from three to five tons of manure, and thus effect a large saving. When carting an average load of 150 baskets, the farmer saves by the use of his own team about $10 per day. He also saves a commission of 10 per cent, or about $6 on 150 baskets, by marketing his own produce.

No Room For Toll Roads.

When the country was poor and sparsely settled and there was little travel, it was perhaps necessary to transfer to private enterprise a function of the state and allow tolls to be levied in return for the construction of highways. That day is long since past. The state should take its own—of course on just and equitable terms, but it should proceed to do it without delay.

A Steamship's China and Silver.

Helen C. Candee gives an interesting view of "Housekeeping on an Ocean Steamship" in Ladies' Home Journal, thus describing the vessel's china and silver: "There are 1,000 spoons for soup, the same number for tea and half that number for coffee and dessert. The heaviest fork drawer contains 1,000 dinner forks, and next to that is the same number of breakfast forks. For raw oysters there are 300 forks provided and for fish about the same number. Knives follow closely the same figures, 1,000 each of dinner and breakfast sizes, 600 for dessert and 60 for fruit.

"The pantry is lined with shelves which are fitted with racks in which stand high piles of china, secure from the motion of the stormiest sea. The plate warmer holds many of them, but there are enough left to stock a china shop. There are 1,200 cups and saucers for coffee, tea and bouillon. There are over 400 water tumblers and other glasses in smaller proportion. The plates of the popular size number 2,200, and the soup plates are only 450."

A Hotel In a Graveyard.

One of the largest hotels in Central America, and by far the largest in Balize, Honduras, is surrounded by tombstones. It was erected about 30 years ago in order to meet a want which had long been felt by tourists.

As this old and abandoned cemetery was located in the center of the town and afforded an excellent site for a hotel the necessary permission was obtained from the proper authorities, and in less than a year a large and handsome hotel of wooden material occupied the greater part of the ground which had for very many years been used as a place of interment.

In digging the foundation hundreds of skulls and bones were discovered, all of which were carefully collected and interred in the new cemetery. Numerous tombstones surround the hotel, which it has not been thought necessary to disturb. In the hotel is a room in which divine service is conducted by a local preacher every Sunday.—Kansas City Star.

An Easy Remedy.

In speaking of the peculiarities of the colt Limerick, Ben Kenney told me that he cured him of the annoying habit of throwing his nose out and shaking his head by simply trimming all the long hairs out of his nostrils, says a writer in The Horse Review. The wind blew the hairs back in his nose and tickled him so that he couldn't keep his head still. Kenney said that he believed long hairs in the nose were just what caused so many horses to shake their heads when trotting against the wind. It is a new one on me, but it looks sensible and is worth remembering.—Trotter and Pacer.

Not Absolute Confidence.

Aunt Jane—I suppose in the confidence that love begets you have told Henry all about yourself. There may come a time when you will be sorry you have been so frank about yourself.

Ethelrosa—But you see I have always taken care to tell him what wasn't so.—Boston Transcript.

Food Value of Hen's Eggs.

A subject for continual discussion between poultrymen, and especially writers on poultry, is the difference, supposed or real, between white and brown eggs. On this question a bulletin of the government's agricultural bureau says, and this ought to settle it:

"It has been said by some that the brown eggs are richer than the white ones. This statement is not borne out by a chemical analysis, and the physical examination proves that the main points of superiority, though extremely slight, are possessed by the white eggs. The minute differences that are found between the two groups are exceeded by variation between the varieties within the same group. We can therefore state as a conclusion, both from a chemical and a physical point of view, that there are practically no differences, so far as the food value is concerned, between the white shelled and brown shelled eggs."

Let There Be Light.

Light in the poultry house is an absolute necessity, and the inmates must have it to be in a healthy and cheerful condition. Fowls will not thrive in a dark and cheerless place any more than plants will.—Maine Farmer.

FARM AND GARDEN

A POTATO REPORT.

Yields of Noteworthy Varieties, Including New Introductions.

For the past three years the New Hampshire station has been pursuing work in the interest of potato growers, and it now issues a report covering the results of experiments with 104 varieties, including the new introductions.

RED AMERICAN WONDER.

The claim that the Sir Walter Raleigh closely resembles Rural New Yorker, of which it is a seedling, but is more uniform and yields practically no small tubers, also that it is of better quality and a few days later, was borne out by its behavior at the station during two seasons.

Red American Wonder (numbered 99), also called American Wonder, a commonly grown and very popular potato in the northern part of the state, is pronounced a fine variety. This was one of the heaviest yielders of 1898. It is a main crop variety of good size and fine appearance; vines dark green, very regular and erect, making a very uniform row, almost square top throughout, strong and vigorous. The crop was practically all salable. Yield, 369 bushels per acre.

White Beauty (101) is described as a medium late variety of introduction. It belongs to the Burbank and White Star class. The vines were very strong and heavy, dark green, standing 2¾ feet high and 3 feet broad. The yield was at the rate of 397 bushels per acre and only about 6 per cent were small.

Fillbasket, a white skinned main crop variety, oblong, somewhat flattened and usually smooth, proved a heavy yielder at the station, producing at the rate of 346 bushels per acre, a very small per cent of which were small. The vines were strong, erect and vigorous.

Seventeen varieties giving the largest average yield in order of productiveness were:

	Yield per acre.	Bushels salable.
Reeve's Rose	400	338¾
White Beauty (1st year)	397	371
Vaughan	373	310
Red Amer'n Wonder (1st year)	368	359
Late Puritan	351	319
Sir William	341	302
Seneca Beauty	339	323
Harvest Queen	334	306
Sir Walter Raleigh	322	314
Fillbasket	320	301
Woodhull's Seedling	317	264
Dewdrop Rose	316	258
Breck's Chance (1st year)	306	272
Prolific Rose (1st year)	306	255
Orphan	305	289
White Rose	303	258
Wilson's First Choice	302	289

Commenting upon these, Late Puritan and Fillbasket are mentioned as good croppers; Sir William wants clay loam; Seneca Beauty is a fine pink variety; Harvest Queen, desirable; Sir Walter Raleigh, very choice; Woodhull's Seedling, White Rose and Wilson's First Choice, fair croppers; Dewdrop Rose, a fine Rose type; Breck's Chance, large red; Prolific Rose, medium oval; Orphan, a long potato, fine.

Some points heretofore advanced in potato culture, which the experiments reported by Professor Rane seem to confirm, are:

The yield from planting the seed or bud end is generally greater than from

WHITE BEAUTY.

the stem or butt end of the tuber. The eyes on the seed end are the first to germinate, and hence are especially important when an early crop is desired.

Exposing unsprouted tubers in a warm place before planting hastens growth, but if continued until sprouts form (which are rubbed off), the yield may be considerably reduced.

It is better to place in a hill one large piece than several very small ones of the same aggregate weight.

The net yield of salable potatoes increases with every increase in the size of seed piece from one eye to the half potato. The half potato affords a larger net salable crop than the whole potato on account of the excessive amount of seed required in planting entire tubers.

The next session of the farmers' national congress will meet at Boston Oct. 3, 4, 5 and 6. W. D. Hoard of Fort Atkinson, Wis., is president and John M. Stahl, of Chicago secretary. Each agricultural college and experiment station is entitled to a delegate, as is also each national and state agricultural society.

REARING TURKEYS.

An English Authority Says the American Idea Right to Start With.

Turkeys are generally considered to be the most delicate of poultry and very difficult to rear, says an English exchange, but Mr. W. B. Tegetmeier, who is a very great authority in such matters, maintains that the treatment of turkeys is generally misunderstood and that the cause of delicacy and mortality among them is generally that they are reared on the tainted ground of farmyards or in their immediate vicinity. In America, where turkeys are allowed to roam as they will and roost in trees, the hens make their own nests and generally, unless the season be exceptionally unfavorable, bring every chick to maturity.

Of course the chicks are sometimes attacked by rats and other vermin, but the number of birds killed in this manner is comparatively insignificant.

The plan of rearing turkeys absolutely unprotected has been followed by Sir Walter Gilby at Elsenham, Essex, for some years past and with the greatest success. The birds excel both in plumpness and in flavor, and the huge amount of meat on them is probably due to the fact that they use their wings in flying, and therefore the muscles of the breast, which work the wings, are properly developed. At Elsenham the turkeys are fed with the pheasants and every morning come up to the hall to receive the house scraps, with the result that they are finer, better birds than those fattened in captivity.

Mr. Tegetmeier advised all who can do so to allow their turkeys to live an entirely natural life in the open, not shut in farmyards or even in a field near the house. Reared in the same way as pheasants, they find the greater part of their food for themselves, and under natural conditions they thrive far better than it is possible for them to do on ground which has become tainted, as a farmyard must be, even though an immensity of care and trouble be expended upon them.

WHEN CHICKENS THRIVE.

Some Kind of Meat as Well as Grain Must Be Fed.

Experiments by the New York agricultural experiment station show that chickens do not thrive so well on grain feeding alone as on some form of animal food. The same is true of ducks. The addition of animal nitrogen to the rations makes up for the grasshoppers and earth worms of natural poultry life. The tests demonstrated that poultry fed on animal and vegetable food gained weight and matured more rapidly than others and at a smaller cost of food. In one experiment it took the meat meal ration chicks 47 days to gain their first pound and 35 days to gain the second. The grain fed birds needed 61 days for their first pound and 38 days more for their second.

With the ducks the results of the tests with the contrasted rations were equally convincing. Both lots in this instance were fed with green alfalfa in addition to other foods and had plentiful supplies of sand and coarse grit. The animal meal birds soon began to develop rapidly and evenly, but the grain fed ducklings became thin and uneven in size. The latter would neglect the troughs of apparently wholesome food to chase a stray grasshopper or fly, while the meat fed ducks lay lazily and philosophically in the sun and paid no attention to bee or beetle. The meat fed ducks all lived and thrived, but one-third of the others departed this life before the fifteenth week of the contrasted feeding. The survivors then were fed on the meat rations and made rapid gains, but they never overcame the disadvantage of their bad start.—St. Louis Post-Dispatch.

Superior Eggs.

Egg raising is carried on now not only far more extensively, but far more systematically than ever before. The breeds of chickens everywhere have been improved, though more in some parts of the country than in others, and the improvement everywhere continues. There are many great chicken farms and many chicken raisers that confine themselves to special breeds. The common stock also has been improved everywhere more or less.

Without regard to their actual price at the moment, commercial eggs may vary in value as much as 5 cents a dozen. Handsome, large, selected, high grade eggs may be worth 5 cents a dozen more than ordinary eggs. These superior eggs may be the production of special breeds of stock, but the eggs of comparatively ordinary stock packed with care might bring half a cent or a cent more a dozen than the same eggs packed as they run. More and more egg raisers give attention to such details nowadays, culling out eggs that are dirty or discolored and packing them by themselves to sell, though they may be as big and heavy and good as the others, at less than regular price, but more than making this good by the added price obtained for the others, due in great measure to their sightliness of appearance. More handsome eggs may be seen for sale in retail stores now than ever before.—New York Sun.

Poultry Raising Taught In College.

At the Rhode Island College of Agriculture and Mechanical Arts at Kingston a special course in poultry culture began on Jan. 9 and continued for four weeks.

Nearly 40 applications for enrollment for the course were received, but, owing to limited accommodations, the class had to be kept down to about 20 in number. Several who could not take this course enrolled their names for the next one in 1900.

It is a curious fact that even poultry raising has been thought worthy of a special course in an agricultural college.—Scientific American.

HAULING CROPS.

What It Costs to Transport Produce Over Country Roads.

An inquiry of this kind was made in November, 1895, by the United States department of agriculture through its office of road inquiry. Ten thousand circulars were sent out to farmers in all parts of the United States asking for information in these various particulars. Replies were received from over 1,200 counties distributed throughout the United States, and the results were carefully compiled. The weight of loads hauled varied between an average of 2,409 pounds in the prairie states and an average of 1,397 pounds in the cotton states, the average weight of farm loads for the whole country being 2,002 pounds, or practically a ton.

The average haul was found to be 12 1-10 miles, varying between 5 9-10 miles in the eastern states and 23 3-10 miles in the Pacific and mountain states. The average cost of marketing a ton of crops in the United States was found to be $3.02. It was as high as $5.12 in the Pacific coast and mountain states, due to long hauls, and as low as $1.87 in the northern and eastern states, which are more densely settled and where railroads are numerous and hauls are shorter. The average cost of hauling a ton a distance of one mile was 25 cents, it being 22 cents in the prairie and Pacific coast and mountain states and rising as high as 32 cents in the eastern states.

Atmospheric Humidity.

The wet bulb thermometer for determining moisture in the air is made and used as follows: Provide two thermometers and tie a bit of the thinnest muslin neatly around the bulb of one of these and keep it soaked with water. Lift this thermometer out of the water and whirl it briskly through the air for two minutes if the air is very dry and for three or four minutes if the air is very moist. Read it quickly, and it gives the temperature of a thin layer of water evaporated under the influence of the wind produced by the whirling. The dew point of the air in which the thermometer is whirled is about as far below the wet bulb as this is below the temperature of the dry bulb similarly whirled and read rapidly. The two thermometers may be hung side by side on a short piece of string for convenience, and this is then called the "sling psychrometer."—Weather Review.

Self Control.

There is no surer safeguard against all degrees of mental soundness than a habit of self control. As men of quick blood may fall dead in moments of high excitement, so may lesser disturbances, oft repeated, unsettle the rational faculties. Machinery that is loosely set tends to jar itself to pieces, and the agitations of ungoverned emotion may gradually produce an "unstable equilibrium" of the nervous system and predispose the brightest man or woman to be entirely upset by a sudden crisis of passion, alarm, loss or ecstasy. For joy, like grief, anger, fear or appetite, requires the gentle restraint of reason. The asylums are full of admonitory cases. Wanted for each individual a good internal government, well administered.—Youth's Companion.