

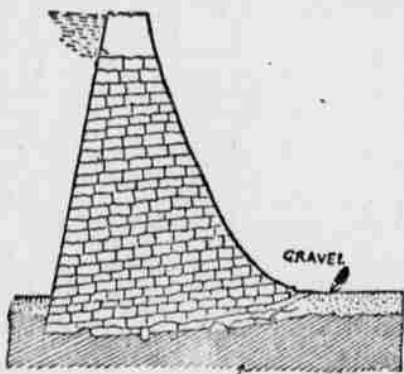


Building a Dam.

I expect to build a dam on a creek for a saw mill. Dam will be about 100 feet long at top to raise the water ten feet. 1. What would be the cheapest way of building the dam? 2. Will you give a plan of such a dam? 3. What size of turbine would be necessary to run a 48-inch circular saw?

Ans.—The accompanying sketch shows a cross-section of the style of dam that would be required for this purpose. Dams are sometimes constructed by a curbing of wood, masonry, or cement, the interior being filled with dry stones. Such a dam is called a rock-fill dam. If stone is plentiful, the dam may be built entirely of masonry. The top should be laid either with plank or cement.

As the illustration shows, the dam is laid on bed-rock, the bed rock being blasted out sufficiently to secure a key and a solid footing generally. With a ten-foot dam the base should be ten feet wide. On the upstream side, the batter or slope of the dam is about 1 in 4, and on the downstream side the upper part of the batter is about 1 in 3 and the lower part 1 in 1. The dam throughout its length should curve upstream, so as to present a concave sur-



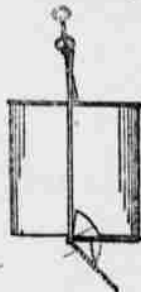
DAM FOR SAW MILL POWER.

face to the pressure of the water. The masonry work should be constructed of rubble with cement mortar, and all the work should be very thoroughly done.

A necessary provision in connection with a dam is sufficient wasteway for water not utilized for power. The common form of wasteway is a tunnel through the dam sufficiently large to provide for the maximum amount of water that would be required to pass through it. In addition sluice gates should be provided, by which the flow of water would be controlled. The water to be utilized for power may be carried to the wheel by means of a flume. A fifteen-inch turbine wheel would provide from 8 to 10 horse power, which would be sufficient to run a saw of the size mentioned.—Montreal Star.

For Feeding Stock.

A bucket of peculiar construction, designed especially to be used by farmers and dairymen in feeding slop to stock and in the handling of fluid substances is the invention of a Michigan man. It serves in a sense as a dipper.



NEW BUCKET.

The arrangement is such that it can be filled by forcing it bottom downward into a receptacle of fluid substance, the hinged portion of the bottom being opened to permit the bucket to be filled and closed to hold the contents until carried to the place of feeding. The contents can thus be discharged into a trough without wasting it and without the liability of spilling it upon the clothes of the operator. The hinged portion of the bottom of the can is operated by a rod extending above the top, which terminates into a handle. As the bucket is carried by the latter, pressure is always maintained upon the bottom to keep it closed. When it is desired to discharge the contents the handle is pushed downward.

Salt for Live Stock.

Why salt should be regularly supplied to stock is thus put by a famous English authority: Because in the blood of animals there is six or seven times more sodium than potassium, and that the composition of the blood is constant. To keep animals in good health a definite amount of common salt must be assimilated. The excess of potassium salts in vegetable foods causes by chemical exchange an abnormal loss of common salt. This is proved by the fact that the craving of an animal for common salt is most noticeable when the food contains a large proportion of potassium salts, such as wheat, barley, oats, potatoes, beans and peas. The addition of salt to animal

food increases the appetite, promotes the repair of tissue by its searching diffusion through the body, and stimulates the rapid using up of its waste products. Boussingault's experiments showed that salt increases muscular vigor and activity, and improves their general appearance and condition.

The Right Way to Pack Fruit.

If the fruitgrower simply tumbles his apples into the barrel without sort-ing and without arrangement, in order to get the greatest number into the barrel, heads it up and ships to market, he will discover when he gets his check that his fruit has been sold for the lowest price. The only way to get the top prices for fruit is to sort it according to grades, arranging in barrels or boxes in layers, placing each apple in by hand, and selecting for the top layer fruit of the same color. The top layer should be made up of apples all of the same size if possible, and the fruit should come just to the top of the staves. Then the heading should be carefully placed on top and gently pressed down until it slips into the chine. This can be done better by the use of a block placed under a lever.

Nitrate of Soda.

The value of nitrate of soda applied to barnyard millet at the New Jersey experiment station was stated by the experimenters as follows: Amount applied, 160 pounds per acre; yield untreated acre, 7.63 tons; treated acre, 13.38 tons; gain by use of nitrate, 5.75 tons; per cent of gain, 75.4; value of gain, at \$3 per ton, \$17.25; cost of nitrate per acre, \$3.60, net gain per acre by use of nitrate over cost, \$13.65. The crop was seeded on June 16 on well-fertilized land at the rate of three-fourths bushels of seed per acre, after a crop of oat and pea forage had been harvested, which averaged six tons per acre. The nitrate was applied soon after the plants were well rooted and capable of absorbing food rapidly.

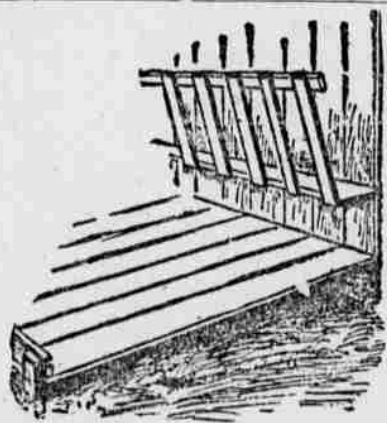
Pig Money in Waste Land.

The woven wire fence is revolutionizing the hog industry in the whole country, and when farmers learn to utilize every bit of waste land for pasture for their hogs the herds will be healthy and the cost of production will be decreased many dollars. It won't do to allow the pigs to lie in the shade of the corn cribs or to allow them only a run of pasture. Feed a little corn all of the time that the pigs are running in the pasture. The grass-grown pig does not appear so attractive with his working clothes on, but when he is well developed and ready to be fitted he makes the pampered pet look like 30 cents. He makes a fine appearance and is a credit to his owner and feeder.

Cow Stall.

The stall as shown here is four feet over all, but can be made less. Cow when eating will stand with her hind feet just behind the 2 by 4, leaving the droppings behind it.

When she lies down she will be compelled to lie in front of the 2 by 4



COW STALL.

with her head under the feed rack. It is not necessary to have a gutter in a stall of this kind. There should be short partitions, however, to keep the cows from turning around.

For building, use 2 by 4 for bottom feed rack; bottom of rack 3 feet above floor. Strips of 1 by 4, 6 inches apart form the rack, and should slope back 60 degrees. From 7 to 8 feet from front of stall place 2 by 4 on edge; if set in dirt use stakes.

Farming Notes.

Remember the importance of the kitchen garden.

Some genius has figured out that a bee will on a busy day draw sugar from 120,000 different clover heads.

When mustard is a serious pest the fields are sprayed with a solution that kills the weed, but does not harm the crop.

The government spent \$10,000 this last spring planning ways to destroy the green bug in Kansas, Oklahoma and Texas.

Preaching economy doesn't amount to much. You must practice it, but there is such a thing as being too economical.

The Clairmont ranch, near Englewood, in Clark County, Kan., consisting of 21,000 acres of fine land, will be cut up into small farms.

One hundred and thirty-nine cows, comprising the best of thirty-six Illinois herds, produced an average of 301 pounds of butter fat last year.

TAKING COLOR PHOTOGRAPHS BY FLASHLIGHT



The first color photograph ever made by flashlight has been successfully taken at Effingham, Ill. For years color photography has been the goal that photographers have been striving to attain, and during the past two or three years some successful experiments have resulted. But it was only during the last six months that the first successful color photograph by flashlight was taken, and the news that it had been done came as a sensation at the recent convention of the National Association of Photographers held at Detroit, Mich.

So far no method of printing photographs in colors has been discovered, but it is predicted that this will shortly be done. Meanwhile the flashlight photograph taken by Prof. Raymer at Eff-

ingham appears to be about the latest development in the progress of photography. The picture itself shows some nine colors, with the various shades and tints absolutely true to nature. The subject of the photograph, a young woman, is seated in an oak chair, and even the delicate grain of the oak is faithfully reproduced. The young woman wore a red dress, with red gloves, and a yellow straw hat, with various kinds of flowers, and the result was as perfect as though it had been done by a painter.

Prof. Raymer is of the opinion that it will be some time before the process will be so perfected as to permit of printing the photographs. He states that the principal difficulty in taking flashlike color pictures is the large amount of flashlight powder which must be used. The present pictures themselves can never be transferred to paper, although this problem is now agitating the entire photographic profession.

CATTLE STEALERS IN AUSTRALIA

Cunning Black Rascals Who Are a Pest to Ranchmen.

In Australia the ranchmen have to contend with native cattle stealers who are so cunning and skillful that their forays result in constant loss to the farmers. They do not drive the cattle away in droves like the old Scottish bordermen and the Texas outlaw, but creep silently up to the herd and slay a number by throwing sharp spears into their flesh. When they have killed several of the animals they cut off only the parts they wish for immediate use and leave the carcasses to rot on the

pear impossible while intelligence remained.

The same thing happens in a less marked and conspicuous way to a great number of people, its most common manifestation being forgetfulness of proper names. A name ordinarily familiar and just about to be spoken will vanish from the mind at the instant and be to the one about to utter it as if it had never been. His consciousness grasps at it in vain, and, as it were, beats against a blank wall. It is always a disagreeable experience, this momentary failure of the memory, and sometimes extremely embarrassing. Often it happens when the victim is



ABORIGINAL AUSTRALIAN CATTLE-STEALERS.

plains. Next day when they want more meat they do not scruple to kill more cattle. In hurling their spears, which are from 7 to 10 feet long, they employ a throwing stick with a sort of sling. This enables them to throw the spears with great force incredible distances, driving the spear entirely through the animal. The mounted police are constantly on the lookout for these marauders.—Our picture is from the London Illustrated News.

MYSTERY OF LOST MEMORY.

Not an Uncommon Occurrence for Persons to Forget Names.

A young Parisian actress who had for weeks held the title role in a popular play, recently, it is said, was, while on the stage, suddenly afflicted with forgetfulness and was utterly unable to repeat the lines of the last act, though she had successfully passed through the three preceding ones, says the Indianapolis Star.

It is not an uncommon happening with stage people, lecturers and others, and seems more likely to occur when the matter memorized has been so often repeated that forgetfulness would ap-

pear to greet an old acquaintance, or when it is desirable to introduce two men, each of whom he knows well.

Doctors do not clearly explain this occasional defect in the mental powers, but those who experience it know that it occurs when they are especially weary or overworked, and they may therefore assume that it is a form of brain fog and as readily accounted for as a lameness of arms or legs. That it is most often displayed in connection with proper names is perhaps due to the fact that these are each held in the memory by separate and arbitrary action and not through association, and are therefore most easily lost. But whatever the cause, the multitude of persons who forget names will have a sympathetic comprehension of the state of mind of the French actress when she helplessly sought to find the words of her play.

Genetel Restraint.

Judge—You'd better be careful or I shall commit you for contempt of court. The Lady—Don't be 'ard on me, yer worship. I'm a-doin' me best ter conceal me feelin's.—The Sketch.

MYSTERIES OF SONG SLANG.

Onions Are Akin to Sentiment in the Music Hall World.

How many people would guess the meaning of a "Spanish onion song?"

This strange phrase—one of the many to be found in the professionals' dictionary of slang—is used to denote the music hall ballad, and owes its origin to the fact that no self-respecting member of its race would be without a pathetic reference to "dear old mother" or "somebody's sweetheart far away." Now, pathos draws tears, and so do onions. The rest is obvious, says the Cleveland Plain Dealer.

These ballads are also known by the name of "Give me your kind applause songs," a title which is also applied to ditties whose duty it is to draw attention to some misdeed on the part of the imperial government.

Artists, too, always allude to the last song they sing as their third song, though in many cases it may be their second or their fourth.

"Breathers" are so called because the unfortunate artist who sings them has no chance to breathe unless, perhaps, he surreptitiously drops a stray note here and there and thus draws a few molecules of air into his lungs. These songs—of which "The Irish Christening" is an example—always have at least five long verses, which are run one into the other and sung without a break of any kind.

A type of song which is designed with the express purpose of deceiving the audience is the "cod ballad." With great ingenuity the composer begins his verse in a highly sentimental tone, when, just as the audience is commencing to search for its pocket handkerchief, a sudden turn is given to the words and every one realizes that he has been tricked. The whole thing is, in fact, veriest parody. "Mingle your eyebrows with mine, love," is a case in point.

At the present moment the music hall world is searching high and low for concerted numbers, which form 9 per cent of the seaside. These are merely solos, rewritten to form trios, quartets or quintets for Pierrots and outdoor theatrical troupes, while "extra business" is added to suit requirements.

Motto songs, which are increasing in popularity every day, will also, it is expected, help to pass the hours for the loungers on "those yellow sands." These ditties always point an excellent moral.

The "production number" is a term which needs some explanation. It means that the song is elaborated or "featured" with chorus girls and is "produced" on a more elaborate scale than the ordinary number. It also requires special scenery, with effects.

Soubrette songs give the idea of songs always sung by soubrettes. They must, however, fulfill certain other requirements. The chorus, as in other songs, do not remain the same, the couplet in every case being differently worded.

Cherry History.

It is still asserted in school books that cherries were introduced to England by the "fruiterer" or green grocer of Henry VIII.; also, that they were not common for a hundred years after that time. This is an error. Mr. Thomas Wright found the name in every one of the Anglo-Saxon vocabularies which he edited. So common were they and so highly esteemed that the time for gathering them became a recognized festival—"cherry fair" or "feast." And this grew into a proverbial expression for fleeting joys. Gower says the friars taught that "life is but a cheryefayre," and Hope "endureth but a throwe, right as it were a cheryefeste." There is more than one record of the purchase of trees for the king's garden at Westminster centuries before Henry VIII. was born. But Pliny contradicted the fable, as if in prophetic mood. After telling that Lucullus first brought cherries to Rome (from Pontus, in 680 A. U. C.), he adds that in the course of 120 years they have spread widely, "even passing over sea to Britain."—Cornhill Magazine.

Dollar Bills by Weight.

"Dollar bills are worth almost their weight in gold," a bank president said the other day to a depositor.

"Yes, I suppose they come in handy for change and are easy to carry," the depositor replied absently.

"No; I was speaking literally," the bank president said. "We got into an argument in the bank here the other day as to how much a dollar bill weighed. A twenty-dollar gold piece weighs 540 grains. We found that twenty-seven crisp, new one-dollar bills weigh the same as a twenty-dollar gold piece. We tested some bills that had been in use and found that it took but twenty-six of them to balance the gold piece. I suppose that twenty-six used bills gather an accumulation of dirt in passing from hand to hand that weighs about what one new bill does."—Kansas City Star.

Not to Be Expected.

"Have you any idea how many pounds the shipments of tea received in this country in a year would total?"

"Of course not. I'm not a tee-total'er."—Kansas City Times.