

VALUE OF RESERVOIR

Probably Most Important Adjunct to Windmill Plant.

In Many Instances It Can Be Made Source of Profit in Winter Months for Producing Ice—Size and Shape Are Essential.

Probably the most important adjunct to a windmill plant is the reservoir. Indeed, a means of storing water which is delivered at a small rate of flow should be resorted to in every instance where the flow is less than 600 gallons per minute. The reason for recommending a reservoir for flows up to this amount is that, with small streams used direct from the pumps, the loss in conveyance in ditches is excessive and the loss in the application of the water to the land is large, since a small stream will saturate a spot and a large amount of water will sink into the soil in this one place. Instead of spreading over a large area and moistening the surface. Further, much more labor is required to irrigate with a small stream than with a large one.

If climatic conditions were favorable and resources not limited, there would be an advantage in having a reservoir which would hold all the water pumped from the time irrigation stops in one season until it begins in the next, for it is during the winter months that the greatest winds occur. Operation during the winter months would require only a large reservoir and the draining of pipes during calm, cold days or, better still, a frost-proof housing for the pump and piping. In many instances a reservoir can be made a source of profit during the winter months by producing ice.

The size and shape of a reservoir are important. A circular reservoir contains about 12 per cent. less water than a square reservoir of equal area, and the surface of the water is less exposed to winds when the reservoir is partially filled. An oblong rectangular reservoir with one of its short sides toward the prevailing wind may have a smaller shore line exposed to wind, but it has a greater shore line, varying from 12 per cent. up, depending upon the ratio of sides to ends, and in view of the fact that the seepage of water through the banks is approximately 20 per cent. of the loss in the bottom of equivalent area it is desirable to reduce to a minimum the length of embankment. What has been said concerning shore line applies to the wave cutting of banks also. Round reservoirs in all sizes are more simple to construct. In orchards rectangular reservoirs conform better to the layout of plants, which are usually in squares or rectangles; but this does not offset the many advantages of the round ones.

The reservoir should be of sufficient size to hold the water pumped between irrigations. If the period between irrigations is ten days, and the pump delivers 60 gallons per minute on an average, the quantity pumped would 864,000 gallons, or 115,590 cubic feet. The reservoir at Cheyenne lost about 10.5 per cent. of its capacity in ten days, but this is not representative of earth reservoirs, which may lose 50 per cent. in ten days. Assuming the loss to be 25 per cent., the capacity required would be 86,625 cubic feet, just a little less than two acre-feet. The reservoir should have some additional capacity to provide for the water pumped during a few days of irrigation postponed for any reason.

Buckwheat For Poultry.
Buckwheat is both stimulating and heating, which renders it an excellent grain for winter feeding, but it being of a fattening nature, should be fed in moderation.

It contains more protein (egg-producing material) than does corn, but the percentage of digestible matter is not so great, buckwheat having about 62 per cent. and corn 81 per cent. Buckwheat contains 7.8 per cent. of protein and 54.8 per cent. of carbohydrates and fat, having a nutritive ratio of 1.7, and corn 6.3 per cent. of protein and 75 per cent. of carbohydrates and fat, and has a nutritive ratio of 1.12.

This proves that buckwheat is a slightly better egg producer than corn, being more evenly balanced, but it must be fed in larger quantities to gain that effect.

Use of the Weeder.

The weeder is a very useful tool in the cultivation of potatoes when properly used. It should be run crosswise of the rows after each cultivation as long as the size of the plants will permit. It helps to pulverize the surface and destroys any of the weeds in the rows where they cannot be reached with the cultivator, thus making hand hoeing less necessary. Some growers continue to use the weeder lengthwise of the rows after the plants are too large to permit running it crosswise by removing some of the teeth from directly over the row.

Dairy Management.

Don't be afraid to use disinfectants about the cow stable. To be sure milk soon absorbs the odor of these things, but milk has no business standing around the stable a minute after a cow is finished.

The man who does not get more than two dollars returns from every dollar's worth of feed his cows consume has not yet learned the first lesson of good dairy management.

ELECTRIC POWER FOR FARMS

Much of Future Work of Irrigation Will Be Done by Pumping—Electricity Most Suitable.

In many sections of the western states a demand has recently sprung up for power on the farms, which is so large and the nature of which is so attractive from a load standpoint that it promises to justify its satisfaction a very large expenditure on the part of service companies. I refer to the use of electric power for irrigation purposes, writes Herman Russell in Field and Farm. All over the west water is being pumped electrically from wells, rivers, lakes and ditches for irrigation use. Large government and private company undertakings are now supplying water in this way for thousands of acres. Individual farmers, wherever electric power can be obtained, are installing pumping outfits and irrigating their own land, thereby saving the cost of water rights and maintenance charges, while obtaining water at a very reasonable cost when they want it and where they want it—a condition not always reached with gravity systems.

It is clear to any one who has studied the irrigation development in the west that much of the future irrigation work will be done by the aid of pumping and that electricity is the most suitable power for this purpose. Suitable gravity systems have been quickly seized and developed to their practical limits, and the combination of natural conditions that go to insure the successful gravity system, such as a sufficient supply of water at suitable elevation and within easy reaching distance of good farming lands, is at best very limited. Most of these have been or are already being developed.

The electric development for irrigation pumping is proceeding in two ways: Either a large pumping plant suitably located is installed and all the water for a given acreage is pumped at this point to a higher level and then distributed by gravity—the power used being electric, with either steam or hydraulic generation; or, electric power is furnished from a central plant to the individual farmers, who supply their own water, taken from streams, wells, gravity ditches or lakes, as the case may be. In either case electric power does the work, the difference being simply one of application. A few years will see installations of various kinds.

Dairy Breeds All Have a Place.

The battle of the dairy breeds still goes on, but the views regarding the utility of the breeds and their adaptation are becoming more sane. It is now coming to be more and more recognized that there is a place for all the breeds of dairy cows and that the place is not quite the same for each. Thus, the Ayrshire does particularly well in climates a little stern. The Holsteins do well where much milk is wanted. So on of the others. Each will best fill a niche that is a little different from that filled by the others.

Gathering Tomatoes.

Pick the tomatoes before soft. Handle carefully. See that they are not bruised. Remove stems which will injure other tomatoes by puncturing. Make two or three grades. Throw away, feed to chickens or make cat-soup of the culls. Pack in clean packages, well filled and not topped off. Honest packing pays.

POULTRY NOTES.

Eggs should be regularly collected at least twice daily.

A light placed in roosting quarters will keep the ducks quiet at night.

Grain should be fed the poultry at night, as it remains in the crop the longest.

The man who said "that the best poultrymen on most farms are the women," knew what he was talking about.

Keep the hens in the best possible condition, clean houses often, feed carefully of good, clean feed, spray for mites and lice, and you will be as apt as anybody to get eggs.

It is now time to be thinking of getting the poultry houses ready for winter.

The houses should be thoroughly cleaned and then coated with a thick whitewash.

If your fowls would sooner roost outside than in their houses, there is something wrong. Search your pens and if lice prove to be the cause the house should be fumigated and sprayed with a liquid lice killer.

If your poultry houses are reasonably tight it would be a good thing to burn some sulphur to get rid of the mites and lice. The tighter the house is the more thorough will be the effect of the fumes of the sulphur.

For a drinking vessel use a tin can. Make a hole one-quarter of an inch from the top, in the side, fill with water, put a saucer on it and quickly invert both; water will stand in the saucer and will feed down as fast as the chicks drink it.

Ducks that are kept for breeding purposes should not be fed on a fattening ration, so as to weaken them by too much forcing. The breeders should be kept separate from those that are fed for market.

Clean, dry quarters with plenty of fresh air is as important as the kind of ration to feed laying hens in winter.

Do not suffer your ducks to shift for themselves, picking up what food they can steal from the cows and swine, and then expect them to be fit as a fiddle as breeders when February comes.

Ribbon Effects



By JULIA BOTTOMLEY.

NOTHING is prettier in ribbon arrangements than a bow and ends in simple or in elaborate designs. But one may not always arrive at the desired effect by the use of bows. A shape may be modified or changed in appearance by building it in one direction or another with ribbon arranged in loops. Flower forms may be copied or simulated, and nothing is more fashionable than small, compact roses and foliage made of ribbon.

These examples are given here of ribbon in unusual arrangements. In the first a cap-like shape covered with big velvet poppies is lengthened at the back with wired loops of heavy satin ribbon. These bows redeem the shape, lifting it from the commonplace into one of those which the French have described as "the fleeting profile" shapes. They are full of style. The loops in this instance are made overloops of boned wire sewed to the shape at the back.

GIRL'S OUTING COSTUME



This pretty costume, designed especially for boating or sailing, is of white linen trimmed with bands of blue and white striped linen. The skirt is made with a group of plaits at each side, above which it is ornamented with buttons, and is encircled about knee high, with an inserted band of the striped linen.

The blouse has a bib-like plastron of the material ornamented with buttons. The sailor collar and cuffs are embroidered with anchors and trimmed with the bands of striped linen. The odd cravat and the girdle are of black liberty.

Stenciling Hints.

When stenciling a design for a wallpaper frieze, draw the diapered pattern on heavy paper so as to allow the skeleton design to hold firmly together after the sprays have been cut out from stencil plates. Cut out each piece of the drawing with a sharp knife, and lay it on a rough piece of the cardboard so that the edge of the knife is not turned.

Prepare each piece to resist the action of the color by sizing or by shellac dissolved in methylated spirits.

Mix the color with one-third picture copal varnish and two-thirds turpentine, using only a small portion at a time, as it is very volatile. Then dab the color all over the surface of the design with a stencil brush. You will then be ready to apply it to the walls.

A pretty drooping brimmed round hat, having the brim edge finished with a shirring of velvet shows plaits of ribbon and velvet bows poised together about the round crown. This forms a sort of rosette, in which the plaited ribbon sets, and the result makes one thing of a flower. In fact, each velvet and ribbon decoration is much like a huge pansy in shape. The pretty hat, which is of king's blue felt, needs no other decoration.

A hat for a miss faced with changeable taffeta gathered in the underbrim, is bound with a puff of velvet. A collar of ribbon about the crown is finished with a very full plaiting or shirring of ribbon at the left front. Such a hat is ideal for a miss of 16 or more years, and is quite within the range of amateur millinery to make.

JEWELS FOR DAY AND NIGHT

Precious and Semi-Precious Stones Very Much in Evidence on All Occasions.

With low-cut necks narrow velvet collars set with three or five graduated ornaments of paste set in old silver metal are smart and becoming with both afternoon and evening gowns.

Earrings do much to break the line of a long neck with a collarless gown. Lovely new ones are shown in Parisian diamonds, colored stones and baroque pearls.

A good looking set of earrings has a bowknot and dangle of diamonds with baroque drop; another set that screws on has three baroque pearls one above the other, connected by jeweled chains with amethyst drops.

A shield-shaped corsage ornament of Parisian diamonds and French emeralds, with a shoulder catch to correspond, gives a brilliant finish to a low-necked evening gown.

The woman of bonny neck should purchase one of the high dog collars of rows of seed pearls crossed by narrow side bars and a square central bar of Parisian diamonds.

For traveling or sports the watch bracelet is growing in favor. One of the new ones has a flexible woven strap and buckle of gold wire set with a red enamel watch studded in pearls.

On a gray suede wrist strap is a small watch of gold rims studded with alternate rubies and pearls or sapphires and pearls. Cheaper for hard wear are tan or gray suede bracelet with a small open-faced gold or silver watch.

A fascinating ornament of French jewelry that can be used for the hair or corsage is a pair of Mercury wings set to form a hollow that can encircle the hair knot.

Black Waist.

The black chiffon blouse over white or over a silk in Persian colors is even more popular now than at the end of last season, when it was hailed as a novelty. The veiled effect is more pleasing and satisfactory in a waist than a skirt, since it gives a color effect which cannot be obtained by platings or bands. There is a beautiful messaline, woven in the designs and colorings of the famous India shawls, which is used extensively in combination with black for waists. The plain black silk waists are worn a great deal. The smartest of them have a narrow round yoke of white lace, which gives them a dressy appearance, relieving the somberness of the black.

A New Tie.

A fetching new tie that gives a touch of color to a dark or white costume is made from bias satin or velvet formed into inch wide folds. These are ended with bunches of tiny flowers and leaves, while a similar bunch holds the leaves together in front.

NATIONAL CAPITAL AFFAIRS

Large Cities Show a Healthy Growth



WASHINGTON.—The census returns on the large cities of the country are now complete. The figures show that most of them have had a healthy growth during the ten years since the last count was made, but some of them have fallen out of the places they occupied then and their places have been taken by other cities. Of the many that have tried, in the past ten years, to climb into the 100,000 class, only five have succeeded. Among the ten largest cities there has been only one important change of position. Baltimore has lost sixth place to Cleveland. Baltimore's population, as officially stated, is 558,485, while Cleveland has 560,663. The gain in Baltimore over 1900 was 9.7 per cent.

A comparison of 29 cities in the 100,000 class shows that the aggregate population is 13,596,819, as against 10,376,012 in 1900 and 7,904,140 in 1890.

The fact is noted that the high rate of increase is not confined to any one

geographical section. Of seven cities whose rate exceeded 40 per cent., two, Newark, N. J., and Bridgeport, Conn., are eastern; one, Atlanta, is southern, and four, Detroit, Denver, Kansas City and Columbus, are western. Of the two cities with the lowest rate, one is eastern and the other is western.

The rates of increase for Atlanta, Detroit, Denver and Kansas City are phenomenally high, but most extraordinary is the high percentage for New York, which exceeds the average of 28 cities by 11.4 per cent., and is itself exceeded only by the rates of seven cities.

Fifty-four cities of between 25,000 and 100,000 show an aggregate population of 2,723,498, as against 1,901,766 in 1900, a gain of 43.3 per cent., which the census bureau pronounces "phenomenally high." Thirty-one of these cities show a higher rate of increase for the past decade than for the previous one. No decrease is noted in any one of the cities.

Of the larger cities the gain of St. Louis during the decade was greater proportionately than that of Boston, its nearest competitor, while Kansas City is in twentieth place on the face of the returns. Kansas City has jumped ahead of Providence, R. I., and Indianapolis, Ind., Providence falling behind Indianapolis, which it led in 1900.

Uncle Sam's Health Zone Far Spread



THE activities of the public health and marine hospital service, to which is entrusted most of the general work of guarding the country against contagion from abroad and preventing its spread at home, form the topic of a paper by Surgeon General Wyman in the public health report.

The document was prepared for the American Public Health Association which recently met at Milwaukee. This organization is composed of representatives from Canada, Mexico and Cuba, as well as from the United States, and the paper was regarded as of special interest to them.

Beginning with "the utmost circumference of the influence of the organization," Doctor Wyman tells of the protective measures at foreign ports. He shows that medical officers of the bureau are located in most of the seacoast cities of Asia and South and Central America, and at some of those of Europe. The service also is liberally represented in Hawaii, Porto Rico and the Philippines.

In addition to keeping themselves and the home office informed regarding the prevalence of cholera, yellow fever, smallpox, typhus and plague, these officials are required to inspect American-bound vessels and to issue bills of health, without which the vessels might not enter American ports.

During the last fiscal year they inspected 16,766 vessels and examined 1,433,134 passengers. On board ship the regulations of these officials follow the immigrant, requiring proper cleanliness and ventilation, and when the vessel arrives in the United States it is met by another set of health service officers on duty either to enforce quarantine rules or to assist the immigration officials in their work.

In the latter capacity the public health men last year examined 1,280,000 immigrants, certifying 30,000 of them as defective either mentally or physically.

The paper also abounds in facts relative to the work of the bureau in preventing the spread of infectious diseases from one state to another under the quarantine law, making special reference to the work in connection with recent yellow-fever epidemics and the plague infection on the Pacific coast of a few years ago.

The maintenance of the service costs the United States \$2,000,000 annually.

Political Pot Is Boiling Furiously



REPORTS coming into Washington from all over the country tell how the seething political pot is furiously boiling. In New York, Indiana, Nebraska and Missouri the politicians are especially busy.

The New York state Republican convention was a triumph for Colonel Roosevelt. He was the temporary chairman, defeating Vice-President Sherman. That was the first rout of the regulars. He won a spectacular fight for the adoption of the platform of the progressives; he put through his slate and the close of the convention found the Roosevelt forces in complete control of the situation. Henry L. Stimson of New York city, Roosevelt's man, was nominated for governor.

In his speech distinguishing between a leader and a boss, he said "a boss drives, while a leader leads." He then proceeded to "lead" the convention to do everything that he wanted it to do.

The platform as adopted contained a plank endorsing the administration of President Taft and that of Govern-

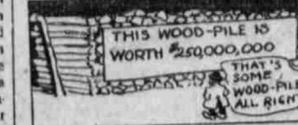
nor Hughes and commending the wisdom of the president in choosing Hughes for the supreme court bench.

The keynote of the Indiana campaign was sounded by Senator Beveridge in a speech at Indianapolis. He was merciless to the interests, which he says have been controlling legislation for years. He defied the corporate interests to pollute the voters of Indiana. He favored the revision of the tariff by a genuine tariff commission. He gave Roosevelt credit for inaugurating the conservation movement.

Mayor J. C. Dahlgren of Omaha, candidate for governor of Nebraska, responding to rumors about his early career, gave out a statement that he shot his brother-in-law in Texas for deserting his sister, fled the state and assumed the name in Nebraska of Jim Murray. The man he shot did not die. The only law he knew, he says, was the law of the pistol and the quick hand. "I got to be pretty tough, I admit it," he says. "The country was full of maverick cattle and no one was a better hand with the rope, chasing down these strays and putting the branding iron on them."

Missouri Democrats opened their campaign at Joplin, with Bryan, Folk, Francis, Reed and Stone as leaders and orators. Addresses were delivered afternoon and evening and the crowds were greater than the capacity of the meeting places.

Our Wood Fuel Bill Is \$250,000,000



FIREWOOD valued at \$250,000,000 is used every year by the people of the United States, according to the latest estimate of the forestry service. Our forefathers used considerably more wood, but coal to a great extent has supplanted it as a fuel.

Little attention has been paid to the amount of wood used for fuel purposes. In 1880 the census estimated that at that time there were nearly 146,000,000 cords, valued at approximately \$322,000,000, or \$2.21 a cord, used for fuel annually.

The population then was a little over 50,000,000. Since then the population has increased to over 86,000,000, but the use of wood for fuel has decreased not only in per capita consumption, but also in total quantity. A little more than 20,000,000,000 cubic feet of wood in all forms is used in the United States each year, or about 7,000,000,000 cubic feet, or about 86,000,000 cords, is firewood.

Of the total estimated consumption of firewood 70,000,000 cords, or 81.4 per cent., was used in towns and cities with a population of from 1,000 to 30,000; 1,615,000 cords, or 1.9 per cent., in cities of over 30,000 population, and the remainder, or 2 per cent., in mineral operations. In these four classes of consumption the average value per cord ranged from \$2.61 for the firewood used on the farms to \$6.88 for that used in the cities.