FARM·FIELD AND GARDEN

DISPOSAL OF DRAINAGE WATER

The topic brings up a question which has frequently occurred to enterprising land drainers, and attempts have been made to use open gravel strata found in some localities beneath the surface for the disposal of drainage water. There are instances of successful work of this kind, but it has been confined, as far as I know, to the drainage of small areas, perhaps not larger than 20 acres, by means of tile drains, the water from which has been relieved of all sediment by passing through the soil, writes a drainage expert, Mr. C. G. Elliott. In the early practice of drainage in England, Elkington found in some localities that he could dispose of soil water by means of boring made to gravel below. It should be said that his peculiar art, for which he became noted, consisted in tapping underground water which saturated the soil above it, bringing it to his drains, and leading it away by gravity to a proper outlet.

One difficulty in disposing of water through wells is in ascertaining the capacity and permancy of such an outlet. If a bed of coarse gravel can be found which has some free communication with a surface or underground stream, and drainage water be delivered to it free from sediment, it may be utilized and serve as a lasting and efficient outlet. Many of these underground gravel beds, however, are in basins which have a considerable reservoir capacity with only a small free outlet. When the reservoir becomes filled, its capacity is limited by the size of its discharge.

If, for instance, we discharge into it 6 cubic feet per second and it can care for only 3 cubic feet per second, we have an outlet which is inadequate and soon becomes useless. This condition is apparently encountered in many of the irrigated sections which depend upon the reservoir of dry gravel or soil underneath the surface to take care of such waste water as may pass through the porous soil in the process of irrigating to the lower depths. This gives perfect relief until the quantity of water which finds its way into these depths exceeds their capacity, when the work must be supplemented by artificial drainage.

DISCHARGE BASINS.

The theory is, and it is well sustained by practice, that where water is pumped from a well which is supplied by an undercurrent or vein the same quantity may be discharged into it without raising the water surface of the well. How much more such a well will take is a matter of mere conjecture and must remain so until results are obtained by actual trial. I have personal knowledge of a common house well which received and cared for a 2-inch stream of waste water from pumping works for four years and was continuing to do so at last account, but the well was within 200 feet of a stream and was sunk to river gravel. Streams are known which disappear in sand beds or rock crevices and emerge at a lower level.

These instances, as well as the fact that wells have been occasionally successfully used for small systems of underdrains, indicate that underground outlets may be used if they can be found. As is well known, the results of sinking wells in some localities is to bring water toward the surface with such force as to preclude their use for the reception of surface water. What is known as the dry well sunk into open gravel is the one best suited for the purpose.

The problem assumes a more perplexing nature when we consider the disposal of surface water in large quantities. The uncertainty of the capacity of any subterraneous outlet until it has been ascertained by costly experiment, lends but little encouragement to such undertakings. Especially is this true when we attempt to relieve a tract of considerable area from rainfall which is at times excessive. Lagoons and swamps, by reason of their location, usually gather water from a considerable area outside of their recognized boundaries, making an outlet with variable flood capacity of prime importance. In fact, it is a problem which taxes the skill of engineers to the limit by reason of the varying quantity of rainfall and those climatic conditions which occasionally bring about unforseen contingencies greatly affecting land drainage.

DIFFICULTIES MET.

Could an outlet of sufficient capacity be secured by means of wells, the difficulty of screening or filtering the water so completely that the receiving gravel in the wells would not become clogged by sediment would be a formidable one. Considering a small lagoon of 500 acres only, it might be necessary to remove 1 inch in depth of water each 24 hours for a time from the surface. This would require the filteration and removal of 1,500,000 cubic feet of water 24 hours, or 17½ cubic feet per second. There are locations where at times this capacity might be required, but of course it is a flood example and should be considered as such.

The rational treatment of such cases where it is desired to utilize underground outlets is to first ascertain if a water-receiving bed can be reached at a practicable depth, and by various tests determine if these wells will care for any considerable quantity of water. A single line of tile might be discharged into a test well and the effect noted. If the result should be encouraging, other wells could be sunk to the same stratum at several points on the tract which could be made the outlets for small system of underdrains, the object of the work being to discharge all drainage water through underdrains into as many separate and scattered outlets as practicable.

The service will be more likely to be lasting and efficient if this can be done and the water will be filtered in the best possible manner. Drains which are laid in clay subsoils discharge nothing but clear water after they have been laid a month or two and the clay has settled compactly about the tiles. Where the subsoil is loose or sandy, however, there will always be some silt carried by drainage water, especially after a heavy rainfall.

TURKEY RAISING.

Have your stock of turkeys on the place by the middle or last of January. Never have hens and gobblers of the same flock; make a change so they will not be all related. Inbreeding is the cause of lameness and puny turks. As turkeys are shy and apt to hide, keep watch of them sufficiently to make them select their nests near the house or in some retired clump of bushes. Let them lay and set on the ground.

Take care of the eggs and handle them carefully; turn from one end to the other every few days. Set 17 to 21 eggs under a turkey hen and if there are any left set them under a chicken hen at the same time. Let the turkey hen have all that are hatched at once, but do not mix them, for if there is one or two weeks' difference in their ages the older ones will run over the younger ones.

Place the young turkeys with their mothers in a quiet place near the old nest. Feed them with curds or bread soaked in milk. Season the food with black pepper once a day at least. They will not eat much the first day. Feed four or five times a day. Let everything be quiet and let them go. Keep other fowls away from them. Give them plenty of range, as they will not bear confinement. They are the easiest poultry raised and will pay for themselves in bugs destroyed. In the fall feed whole grains and change as for other fowls.

WHEN TO PICK FRUIT.

There is an opinion held by many growers that apples keep better if they are picked before they are ripe, and as a result the fruit is often picked and packed before it is fully grown. Tests in cold storage show that fruit that has not been allowed to become fully grown on the trees is usually damaged to a considerable extent by scald, and that it is also shrivels somewhat. For the best results the fruit should be ripe, but not what is termed "dead ripe." If overripe it does not keep well in cold storage, and should not be used for exhibition purposes.

SOLDIERS WHO LIVED LONG.

It is not always true that war shortens life. The sole survivor of the Greek war of independence is said to be 105 years old, and the last survivors of wars have often reached a much greater age. Sir Joseph Fayrer, one of the king's physicians has spoken to a man who fought in the battle of Buxar, which took place in 1764, William Gillespie, who saved the colors at Preston Pans, and is on the roll of Chelsea pensioners, died in Dumfries at 102, and the last survivor of the capture of Gibraltar lived to be 115. Thomas Wimms, who died in 1791, near Tuan, in Ireland, had fought in the battle of Londonderry in 1701, and Phoebe Hessel, the Amazon, who received a bayonet wound at Fontenoy in 1745, lived to be 108, receiving a pension from the private purse of George IV. until her death. A veteran of Culloden drew a pension for sixty years, and died aged 106, and a man whose horse was shot under him at Edgehill in 1642 died ninety-four years later, aged 113. There is now no survivor of Waterloo, but Madame Givron, of Viesville, Hainault, saw the ground drenched with blood, and Napolean riding "as if in a dream."

SUBMARINE INVENTIONS.

A remarkable invention has been adopted by the English admiralty, the effect of which is to increase the efficiency of British submarines. At present the radius of submarine attacks is restricted, owing to the difficulties of ventilation and the carrying of fuel, but experiments warrant the belief that the new submarines will be able to travel immense distances with disastrous effects on the ports of an enemy. The existing submarine fleet of Britain is not, however, rendered obsolete. On the contrary, it can easily be adapted to utilize the new discovery. The inventor is a British officer well known for his brilliant capabilities. The most remarkable feature in his design is its extreme simplicity. Details of the invention are, of course, withheld by the admiralty.

A SCHOOL OF HAPPIMESS

SHORTLY TO BE STARTED IN BRITISH CAPITAL.

No Happiness Is Attainable for Man Short of Perfect Obedience.

A London journal informs us that a Dr. Paul Valentin is about to start a school of happiness in that city. Nothing could be more popular, provided the public felt sure Dr. Valentin could deliver the goods, for of all things people are after in this tear-stained world, happiness is the chief. There are a great many excellent persons, it is true, who say that they are not after happiness, but that they strive to do right as their supreme aim. An irrepressible doubt suggests that perhaps they do not fully understand their deepest motives. Picture to these people, as the ultimate result of their struggle for goodness, a Dantesque Inferno with all its horrors of suffering, and it is a question if they would be so ambitious. The fact is, they are striving to be good in order that they may be supremely happy under the very profound and just impression that the only way to be happy is to be good. They discard all other kinds of happiness such as worldly gain, sensuous gratification, or even intellectual accomplishment, which give a measure of happiness, in order to attain that inner satisfaction of the omnipotent

MORAL CONSCIOUSNESS.

With the sense of having done right men have been known to be happy amid the most adverse outward circumstances. Without that sense, men have been known to be most miserable with every worldly want supplied.

This fact is no more or no less mysterious than the pleasure one has in feeling physically well. A certain harmonious interplay of the bodily functions we call health. A certain harmonious interplay of the spiritual functions we may call moral health. When a man acts in accord with moral law, he is morally well, and the supreme satisfaction he feels is happiness. And as the moral law is the most insistent, most peremptory, and takes precedence of all else, no happiness is attainable for man short of perfect obedience.

To the Christian consciousness the moral law is but the expression of the will of God, and the will of God is but the expression of the infinite love. It was this conviction that led St. Augustine, at the beginning of his Confessions, to exclaim: "Thou hast made us, O God, for thyself and we shall not rest until we rest in Thee."

INFINITE PROGRESSION.

It is this high goal aimed at by St. Augustine that makes men unhappy, although they know it not. There is something infinite about man that can be satisfied only by the best. All his trouble comes from not knowing what the best is. When a child he thinks the best is making mud pies, or playing soldier, and when a man, making a fortune or ruling a kingdom. But he is only happy for a time; he is happy in spots. Soon the inner restlessness drives him on, a divine discontent possesses him. His most fatal error is to suppose that he ought to be contented. In reality his nature demands progression, and every attainment is but a stepping-stone in an unending series.

In a sense, then, man cannot be happy in this world, for it is too small for his infinite ambition. In another sense he can, and the simple secret is to work steadily toward the ideal. To make a little advance from time to time is a necessary element of happiness. Often we are shut out from health, from worldly fortune, two most desirable blessings; but no man is shut out from learning some valuable truth each day, or making some moral conquest, however small. He shall be like the ancient Pilgrims of Israel of whom the Psalmist said: "They go from strength to strength, every one of them to appear in Zion before God."—The Week's Progress.

PERSONAL POINTERS.

Interesting Gossip About Some Prominent People.

The ex-Empress Eugene still cherishes a true Spaniard's taste for strong perfumes, her favorites being lemon, verbena, and sandal-wood.

The oldest man on earth is said to be Izai Rodafsty—135—of Moscow, Russia, and the oldest woman Mrs. Nancy Hollifield—117—of Battle Creek, Michigan.

King Edward is the first King of Great Britain and Ireland who has ever ttravelled on an Irish railway. When George IV. visited Ireland in 1821 there were no railways.

Sir Donald Currie, even as a child, made up his mind to be a great owner of ships some day, and by way of preparing himself for his future responsibilities he made a fleet of toy boats which was the envy and despair of his boy friends.

The German Emperor uses as a paper-weight on his writing-desk the summit of one of the highest mountains of Africa. Dr. Buchner, an African traveller of some fame, broke the piece of rock from the highest point of Mount Kilima-Njaro, which is on German-African ground, and presented it to the Emperor.

Queen Alexandra has a favorite teapot, which is often in use when the Queen is at Sandringham. It is exceedingly curious, very old, and is said to be of priceless value. The teapot is in the shape of a stout Dutchman sitting astride a barrel of wine. The old man's cap serves for a lid, and a gold tap lets out the favorite five o'clock beverage.

Signora Rina Monti recalls the golden age of learning for Italian women. She is the first woman in modern times to be appointed to a University chair in Italy. She has the chair of zoology and comparative anatomy at Messina, and that of professor extraordinary of comparative anatomy at Bologna.

A London girl, Miss Nora Stanton Blatch, two years ago entered Cornell University, N. Y., to take up a course of instruction in engineering, being the only woman amongst the graduates so studying. So thorough has been her training that she included forge work in it, and actually took her place at one of the college blacksmith's twenty forges.

King Alfonso had a little adventure, rather unusual with Sovereigns, the other day. His Majesty was walking in the Prado, when a bullock broke from a herd that was being driven and, tearing away at full gallop, showed every disposition to use its horns among the pedestrians and equipages. There was a regular stampede, but the King showed his spirit, and, drawing his revolver, brought the beast down with two or three swiftly-delivered shots.

Mr. Auberon Herbert is a younger son of the third Earl of Carnarvon. He is of a gentle, philosophic nature, for whom nobody has an unkind word. Every year he gives a free tea lasting three days, to which thousands gladly flock, at his place near Bournemouth, England. The first two days are for tradespeople and farmers, and the third for the gipsies, but anyone who likes can go. The tea is served in a beautiful glade in his grounds, and there are music and dancing, while the patriarchal-looking host goes round among his guests seeing that they are having plenty of refreshment and enjoyment.

Lord Brampton tells the following story of the days before he became Mr. Justice Hawkins. His first brief was to defend one of two men charged with coining; and when they were placed in the dock he overheard a brief colloquy between them. Coiner No. 1. told his comrade that he was to be defended by a very good man. Coiner No. 2 said he also was defended. He did not know the gentleman's name, "but"—indicating Mr. Hawkins—he added, admiringly, "he's a smart 'un. When I handed over the fee he put the thick 'un"—i.e., sovereign—"between his teeth and bit it. He's the chap for my money!"

The yearly expenses of the Sultan of Turkey have been estimated at no less a sum than $30,000,000. Of this $6,500,000 alone is spent on the clothing of the women, and $400,000 on the Sultan's own wardrobe. Nearly another $6,500,000 is swallowed up by presents, $5,000,000 goes for pocket-money, and still another $5,000,000 for the table. It seems incredible that so much money can possibly be spent in a year by one man, but when it is remembered that some 1,500 people reside within the palace walls, and live luxuriously and dress expensively at the cost of the Civil List, it appears a little more comprehensible.

The Czar of Russia is said to be very superstitious and to have great confidence in relics. He wears a ring in which he believes is embedded a piece of the true Cross. It was originally one of the treasures of the Vatican, and was presented to an ancestor of the Czar for diplomatic reasons. The value which its owner sets upon the ring with its embedded relic is shown by the following fact. Some years ago he was travelling from St. Petersburg to Moscow when he suddenly discovered that he had forgotten the ring. The train was stopped immediately and a special messenger sent back in an express for it, nor would the Czar allow the train to move until, eight hours afterwards, the messenger returned with the ring.

Irishmen with a full brogue found a friend in Mr. G. T. Cline, who has just died at Chicago. He was a millionaire recluse and miser, but had the one "vice" of spending money to hear Irishmen talk. He would purchase drink for them, and so set their ready tongues wagging more furiously than ever. After the World's Fair Mr. Cline bought a hotel of seventy-five rooms, and lived there alone. He occupied only one room, but had all the others furnished. Under his bed he kept eight violins, among them an Amati worth $1,500. He played the violin almost constantly day and night during the last ten years. Mr. Cline must have had a rare soul for music when he would lavish pence on an Irishman's tongue and play his fiddle to stave off the pangs of hunger, for he allowed himself only $3 a month for food.

Jim Dumps had scarcely slept a wink,
All night he'd toss about and think.
But that's all past—he'll ne'er endure
Insomnia. He's found a cure!
Tis "Force." At night, when lights are dim,
It soothes the nerves of "Sunny Jim."

"Force"

The Ready-to-Serve Cereal

makes one chummy with good sleep.

Wouldn't Believe at First.

"I wouldn't believe it till I tried it, but 'Force' is a cure for insomnia. I used to stay awake night after night. Now I eat a big bowlful of 'Force' just before going to bed, and sleep and I have become good friends again." "L. L. EVANS."

W—A

HOW TO DO IT.

"I noticed," said the druggist to his assistant, "that a gentleman came in with a prescription, and that you took it and gave him the stuff in about three minutes. What do you mean by that?"

"It was only carbolic acid and water," replied the assistant. "I simply had to pour a few drachms of acid into the bottle and fill it up with water."

"Never mind if you had only to do that," the druggist declared. "Don't you know that every prescription must take at least half an hour to dispense or the customer will think he isn't getting anything for his money?

"When a prescription for salt and water or peppermint and cough syrup is handed to you, you must look at it doubtfully, as if it were very hard to make up. Then you must bring it to me, and we will both read it and shake our heads. After that you go back to the customer and ask him if he wants it to-day. When he says he does, you answer that you'll make a special effort.

"Now, a patient appreciates a prescription that there has been so much trouble over, and when he takes it he derives some benefit from it. But don't you do any more of that three-minute prescription, my boy, if you want to become a first-class druggist."

As riches and favor forsake a man, we discover him to be a fool, but nobody could find it out in his prosperity.—Bruyere.

How?

By soothing and subduing the pain, that's the way

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