

## AGRICULTURAL

### MAINTAINING SOIL FERTILITY.

The average farm is growing poorer, for the reason that while the owner has been making a living for his family and accumulating, he has been doing so at the expense of the soil and only giving back to it about one-fourth as much as he has taken off. He has been disregarding the laws of reciprocity and compensation, which cannot be violated without direful consequences. How shall he use his land and return this other three-fourths. This is one of the most important problems in farming; and a want of soil management is the reason so many farmers are toiling hard and living in indigent circumstances. Shall we go into the markets and buy commercial fertilizers to make this three-fourths loss good? Then we must rob our families. The only practical way to maintain soils under all conditions is by tillage, rotation of crops and liberal fertilizing. There is no more need for idle soil than of idle men. Before fertilizers can be profitably used there are some conditions to be fulfilled. First among these are the water conditions. Some soils contain fertility sufficient to produce good crops but fail to do so, because the elements of fertility are sealed in water. Neither the plant food already in the soil nor that applied can be used to advantage on land where stagnant water remains within reach of plant roots, and where the free movement of air is prevented. Good natural or artificial drainage is essential. The purpose of drainage is two fold; to get the excess of water out of the soil and admit of the access of air which is so important in rendering available the plant food already in the soil. Some soils have in them the three very essential elements of plant growth, nitrogen, potash and phosphoric acid, but in such combinations and so locked in the soil, that they are not available. Such soils need air slaked lime. Sometimes black humus lands are so full of acidity that they will not produce a crop. Underdrainage, and lime will correct this. On clay soils it is desirable to change the physical condition of the soil to prevent baking in dry weather and sinking in wet weather. Lime is one of the best substances for this purpose. It should be applied at the rate of two to ten pounds per acre, according to the stiffness or acidity. The application may be repeated in six to ten years. Next in order comes tillage. As a rule our lands are not plowed deep enough. The good effect of deep plowing and subsiding may not fully appear the first year, but will most certainly the following year. The advantage arising from deep plowing and subsiding is that an increased amount of soil is made porous. The water after a heavy rain sinks, preventing washing of the surface soil, and admits plowing sooner after rain and needed moisture is stored against the day of drought. If it is desired to have a grain crop on a given field every year (giving the soil rest by changes of crop) follow corn with wheat, and on the wheat in the spring plow the clover under and plant the corn again. Plant foods applied to lands may be divided into two classes; first, coarse manures, such as clover, barnyard manure, straw, peat, etc., second, concentrated manures, commonly known as commercial fertilizers. Barnyard manures differ in value with the kind of feed, kind and amount of bedding, etc. Horse manure with the same kind of feed is richer than cow manure and the liquid is richer than the solid manure. Coarse manure contains more nitrogen than potash or phosphoric acid and also contains a large amount of organic matter, which by decay produces the black matter in the soil called humus, which is of the highest agricultural value for improving the mechanism of the soil and also in preventing the loss of nitrogen in the effect of course manures extend over a period of years, generally three to ten years, and differ from commercial fertilizers since their effect is generally spent the first year. Unless stable manure is well kept it should be hauled out as made and spread upon the field as hauled. Of all coarse manures perhaps clover is the best. If the full crop is turned under, or all the cut crop is fed upon the farm and returned in the form of manufactured manure to the field it will supply all the nitrogen necessary for the crops, and it must be remembered, nitrogen is the most expensive element of plant food and absolutely essential to plant growth and development. But it must not be forgotten clover is a one-sided fertilizer. It adds no potash or phosphoric acid. If we are not liberal in returning the clover to the soil and aiding it by the use of straw, stalks and all the other manure we can procure and save upon the farm, we will find we are exhausting or have exhausted our soil to the extent that it will not produce a profitable crop. In this case we must go into the market and buy commercial fertilizers in order to restore to the soil wanting elements. But commercial fertilizers are expensive and we must know just what the soil needs. It would be wise to make experiments—with potash or phosphoric acid by themselves and also in combination. We should know the demands of the crop we desire to raise, and should apply fertilizers in such form as the crop will be able to readily use. Whenever possible depend upon clover and barnyard manure to supply nitrogen. It is possible to keep soil in constant use and yet increase its fertility. But this demands good management and constant vigilance.

### HOME DAIRYING.

One of the most satisfactory ways of making the home dairy pay, is by securing private customers, writes a farmer's wife. If the dairy is simply an adjunct to other farming operations this method of disposing of one's dairy products often makes a good market for poultry and surplus fruit and vegetables; but one must be careful to make the butter-making a first consideration. The dairy work will not wait your pleasure. Only the most painstaking of dairymen can retain a dairy private trade. There is no reason why the farmer's butter should not be a source of family income, yet as it is usually

made it hardly pays for making. Ten years ago when we were trying to make a start on the farm we thought the cows might be made to help out, but we were without experience. We were laughed at for relying wholly upon books to teach us the art of butter-making. We desired a dairy room and quickly made it of sod, plastering the dirty walls neatly and arranging the north and south windows to fall from the top. The south window was shaded as was the door which opened to the east. We now proceeded to improvise the creamery we were too poor to buy. We built a huge box with double walls, the space between them being filled with chaff. The box was divided into three compartments, one of which opened from the top, the other two from the front, with double doors. In the compartment that opened from the top, we set the milk (I neglected to say we lined each compartment with galvanized iron) in ice water. We used the tall round cans, and the tank held four of them, twenty gallons of milk. The central space in that box was used as a refrigerator for the butter, and the end opposite the tank for ice, so that we need not visit the ice house at each milking time. Our milk was skimmed at twelve hours, allowed to sour slightly, and then churned. We churned five times a week, twenty pounds of butter at a churning. The butter was washed in a granular state, salted one ounce to the pound, and set aside for a few hours when it was again worked, printed into neat pound prints, wrapped in cheese cloths, and placed in the refrigerator until wanted for delivery. We carried it to town in a bed of ice and it looked much more tempting on a hot July day, than that which some of the farmers ladled from their jars with a spoon. We went from house to house leaving sample pounds of the golden product wherever there was a likelihood of our securing custom. In a short time we could not supply the demand for our butter at 25 cents per pound for the winter months, and 20 cents in summer. There were occasions when butter brought more in the market than we had contracted for, but during the greater part of the year butter was not worth over 10 or 12 cents per pound. A few of our customers availed themselves of the cheap butter for cooking, but they were soon made to understand that our winter supply of butter would not exceed that of the summer. An ice house was quite as home-made as our other accessories, it being just a dug out. Our ice kept well but we had to use the greatest care in packing, keeping the blocks square so that they might fit neatly and leave no air spaces. We took care that different members of the family did not go hacking about when a piece of ice was wanted. We gave a great deal of attention to the ventilation of our ice house. We were quite successful with our dairy for eight years. Some of our first customers were with us until the pressure of other work, together with the average hired man's distaste for milking, caused us to give up our customers and the butter business.

### ANÆTHESIA FOR ANIMALS.

#### Surgical Operations, Branding, "Ringing" and Firing Are Now Done Under Chloroform.

The use of anaesthetics for alleviating pain is no longer to be confined to the lords of creation. Humanitarians have come forward with the declaration that the lower animals shall not be subjected to the knife or the red-hot iron without first being reduced to unconsciousness, when they may be operated upon at pleasure. Mr. John Moore, of Manchester, England, is authority for the statement that operations done without chloroform are "veritable and revolting acts of cruelty and butchery."

Hitherto the objection to the employment of chloroform for the purpose of aiding operations in animal surgery has been the expense. Veterinary surgeons have not thought it worth the cost to secure the poor dumb creatures from pain. But the objection can now no longer be maintained as an inexpensive form of the drug is available, and an economical method of administering it has just been discovered. The quantity of the drug required is very small. The apparatus consists of a sort of mask, lined on the inside with an absorbent cotton material. When fitted on the face the animal succumb gradually to the influence of the anaesthetic, but once he feels the effect he is aroused with difficulty, and then only after a considerable period. Horses require more chloroform than other animals, and the cost in their case is estimated at five cents a head.

The danger of over-dosing is very small. A horse cannot be killed by chloroform inhalation under ordinary circumstances. For sheep, which are subjected to most painful mutilations, chloroform can be easily employed. The operation is better performed the flow of blood being not so great as when chloroform is not used, and fewer hands are required.

The firing of horses, "ringing" of bulls and swine and branding of cattle are now successfully done with the aid of chloroform. In each instance the results have been more satisfactory than when the animals were cut up and mutilated in cold blood. A writer on the subject in the London Lancet says: "The rough-and-tumble butchery of the prechloroform era of veterinary surgery has little to commend it when compared with the precise methods and accurate results obtained by scientific exponents of veterinary surgery, such as can be arrived at by the aid of chloroform. If owners of horses and farm stock and of pets once realized that chloroform for their animals meant not only immunity from pain, but also insured better results and less risk of failure or accident, there is no doubt that they would insist on its use."

### The Rand Water Famine.

The South African newspapers are full of amusing incidents in connection with the Rand water famine. Soda water at five shillings a bottle is in general use for culinary and washing purposes. The demand for Florida water, bay rum, eau de cologne and other liquids of like character is unprecedentedly great, and anything that can be pressed into the service of the toilet commands a fancy price. A mixture of ammonia and lavender water is said to yield satisfactory results, and even vaseline and benzine are by no means despised.

## FAMED MASHONALAND.

### VERITABLE GARDEN OF EDEN IN SOUTH AFRICA.

Traces of Ancient Cities Wonderfully Preserved—Immense Buildings and Walls With Mortar—The Phœnician Temple, the Wonder of Archaeologists—Unheard of Quantities of Gold.

The most wonderful and interesting sight in the whole of South Africa, and perhaps of the whole world, from a scientific point of view, is the large ruins of Mashonaland.

There is every indication that South Africa was at one time the center of the world's civilization; that science, archaeology and art were first rocked in their cradle of infancy in interior Southern Africa.

The ruined cities of Mashonaland tell a silent story of a once mighty race that flourished in that country 5,000 years ago. These ruins surpass in magnitude the ruins of ancient Egypt and Rome. They are more unique and wonderful than anything ever found in any other part of the world.

There is no knowledge of these people. It is not known whether they were whites or blacks. Not a trace of them, outside of their once habitation has been found.

These stately ruins tell a silent story of a once powerful race of people, but 5,000 years has completely obliterated them from the minds of mankind.

The Zimbabwe ruins are located in Latitude 20:16:30 degrees south and Longitude 31:10:10 east, on a high plateau of Mashonaland, 3,300 feet above the level of the sea. They form the capital of a long series of ruins, stretching up the whole length of the western side of the Babi River. These old ancient cities are built on granite and out of granite. For miles upon miles these mighty ruins may be seen in one unbroken line. They are nearly all built in a circular form. Inside of the ruins a dense mass of

### TROPICAL VEGETATION,

creepers and monkey ropes hang in an entanglement to the tall trees, which form a small jungle, making it impossible to penetrate. The walls themselves are nearly free from vegetation, owing to the absence of mortar. No lichen, moss nor creeper could thrive on them, and the few things which have penetrated into the crevices are of a succulent character, which have formed their branches to the shape of the interstices. To this fact is mainly due the wonderful state of preservation in which the ruins are now found.

The most prominent feature of all the ruins of Zimbabwe is the large circular ruin, with its large round tower, that stands on the edge of a gentle slope of a small hill. This stupendous ruin covers a large area of ground, something like 130 acres. The walls of this ruin are 45 feet high, 10 feet in thickness at the base and 5 feet at the top. These walls have been built with remarkable symmetry. The granite was hammered into shape, and is exactly of the same size.

There are three entrances to this building—the principal one, only three feet wide, faces the hill fortress and the north. It has an old curvature in it, whereas all the other entrances are straight. Below the main entrance runs a very substantial granite wall. This wall is covered inside with a thick coating of cement, evidently made out of powdered granite. The presence of this peculiar concrete made without any mortar was used for flooring, steps and altars of this ruin, and also for all others found in Mashonaland.

The labyrinthine character of the interior is very intricate. Entering from the main portal, one is plunged at once into a series of intricacies. The great and astounding feature is the long, narrow passage leading direct from the main entrance to the sacred inclosure, so narrow in part that it is impossible for two persons to walk abreast, while on either sides rises a stupendous wall, built with such evenness of courses and symmetry, that as a specimen of the dry builders art, as it is without a parallel in any part of the world. The large blocks, some of them weighing 50 to 80 tons, and enormous in size, are similar in shape to those used in ancient Egypt, and in Grecian and Roman masonry.

The actual approaches to the sacred phallic inclosures are most carefully guarded and defended with buttresses on either side, into which a form of portcullis has been fixed, with two grooves, one running down each side, but the aperture was at some time walled up, presumably done at

### AT A TIME OF DANGER.

There is the same marked neatness and fine workmanship in these walled-in sections that is found in all the masonry work of this unknown ancient race.

The huge columns (monoliths), 60 and 70 feet in height, hewn out of one solid piece of rock, stand out prominently near the sacred edifices of these remarkable structures.

The large, round tower of the Zimbabwe is built entirely out of small granite stones. Each stone is cut similar to the modern brick, but all are of the same size. This tower was built entirely without any mortar, and has stood the storms of 50 centuries. The symmetry of this magnificent piece of work is astonishing. This tower was built on nothing. The foundations simply go down about a foot below the surface. It has been preserved through all the ages, on account of its solidity. The rest of this building is divided off into small inclosures, containing several altars with phallic designs worked on them with wonderful accuracy and distinction. There are also three remarkable monoliths in it of a very large size.

The valley below the circular ruin and also the fortress on the hill are a mass of ruins. Sloping down to the valley below the great circular ruin a narrow passage conducts one through a mass of magnificent ruins. The great double walls are the wonder of all who have seen them. They

tower up to a height of over 90 feet. A small passageway runs through them, permitting the passage of a single person. These walls are 18 feet in thickness at the top and 10 feet at the base. The outer walls are profusely decorated with phallic designs; phalluses are numerous with figures of these ancient people represented in their peculiar phallic worship.

Turning to the Phœnician temple there is a marked similarity between it and the Zimbabwe ruins. Similar work is also found at Cabiri and Hadjar Kern, Malta. Hence it would appear that the same influence that had governed the building of these ruins in South Africa was also dominant at Malta and Sardinia.

These people, whosoever they were, built their edifices on soil rich with gold. Inside of all the ruins gold mines are found, some worked to a considerable depth, but the average working of the mines is about 25 feet in depth. They were well versed in the treatment of ores and the manufacturing and tempering of iron.

For 300 miles these gold diggings, yet rich with the yellow metal, may be seen. All have been worked to some extent. It is supposed that King Solomon secured this gold for the great temple from these diggings. Some experts have even asserted that the slaves of King Solomon erected these ruins of Mashonaland. But the indications are that they existed long before the time of Solomon. It was this region that gave Rieder Hagarad his basis for the story of "King Solomon's Mines."

As these ruins of a prehistoric race have stood the ravages of time so will they stand for many thousands of years yet to come. They are to-day as well preserved and as strong as the first day when they were built by the unknowns.

The Portuguese who first settled on the Mozambique East African Territory told wonderful stories of the great African Emperor, Monomatapa, who lived about three centuries ago at the great Zimbabwe ruins. The reports of the Portuguese settlers were that this Monomatapa was the possessor of untold millions in gold; that he had nuggets of pure gold as large as a man's head. These stories were repeated from trader to trader, until the name of Monomatapa became a byword with all the merchants of India, Arabia, Persia, and Egypt. The expression of those days was

### "AS RICH AS MONOMATAPA."

So great was the fame of this Emperor of interior South Africa merchants and traders from distant Arabia, Persia and Egypt risked their lives to visit Africa. Each of them who had seen the habitation of this Monomatapa told fabulous stories of things that they had seen. This great ruler, according to their statements lived in a magnificent place with the walls all-lined with gold, and that every article in use in the Emperor's apartments was made out of pure hammered gold. The most remarkable thing about their stories was the fact that each one who had risked the journey to the interior of Africa came back to their native land laden with a large supply of gold.

An effort has been made by several scientific men of Europe to find the burying ground of the builders of these ruins, but, as stated, not a trace of any remains has thus far been found.

There is not a more charming place in the whole world than the Zimbabwe district of Mashonaland. It is a veritable Garden of Eden. The whole surrounding is such that it makes a perfect paradise. The climate is magnificent, the soil rich, the growth of trees and flowers magnificent, while the tread of ferocious animals seldom desecrates the abiding place of ancient genius.

This country is now under the rule of the British South African Chartered Company. Since the ancients were there many rulers have governed that fair land, but none of them were so fierce and brutal as the great Lobengula, King of the Matabeles. He was one of the most brutal and fiendish Kings that called African empires to council. But the Mashonas, whose home Zimbabwe is, are as gentle as a woman, courteous and kind to strangers.

The reign of Lobengula is no more. The forces of the British Chartered Company, under the guidance of Dr. C. S. Jameson—the same Jameson that invaded the Transvaal—made war against the Matabeles and conquered them, killing their great King, Lobengula.

The relics of these unknown people, who flourished centuries ago, will, when thoroughly known, become the wonder of the student of archaeology. They will rival in interest the renowned ruins of ancient Rome and Egypt. The world at large will be interested in knowing from whence these people came and where they went.

Every stone laid in these ruins, every character cut into the stones, every tool found in these structures points strongly to the fact that they were the forefathers of the Phœnicians. That their art first gave birth to the more artistic touches of the Greek. The writings found on the altars of the Zimbabwe ruins are similar to those found on the ruins in Egypt.

The echo of fifty centuries is heard in distant South Africa. Truly, South Africa is a wonderful country, with her untold wealth in gold and diamonds, her magnificent flora, her peculiar races of people and peculiar animals, but the most wonderful of all are the great and unique ruins of Zimbabwe, Mashonaland.

### A New Lock.

What is regarded as a new and valuable combination of mechanisms in lock construction is the subject of a recent patent. The knob is without dial, hexagon, in shape, presenting in appearance an ordinary knob, with a small push button device in the centre. The tumblers of this lock are described as being arranged in such a manner as to be capable of some 100,000 combinations by rotating the knob about its axis to each one of the five angular positions, the latter being determined by the sides of the hexagon-shaped knob coming approximately vertical. When unlocking, the first and second fingers loosely grasp the neck of the knob, and between each of the positions, as the knob is revolved, a number of pushes is given to the button in the centre of the knob, numbering anywhere from nothing to nine, as the combination may be set. The locking is accomplished by a twist of the knob and a pull, and the arrangement of the mechanism is such as admits of it being worked as well in darkness as in the light.

## LONDON'S 'BUS DRIVERS.

### They Are Said to Be the Best in the World at Handling the Reins.

The majority of the streets in London, at least those on which the principal traffic of the city proper centres, are narrow, and the navigating of the 'buses along these highways, which are always crowded to distraction with every description of vehicle, large and small, is a feat in driving which would turn the hair of an ordinary 'bus driver gray in a day and drive him crazy in a week. But his London prototype does not lose any sleep of nights worrying about it. To him the safe conduct of his 'bus along his route is work of the most ordinary kind.

It is generally acknowledged that these 'bus men, who undergo a course of long years of most careful training, are, when put to it, the finest drivers in the world, but, at the same time, their revery-day task is made comparatively easy for them by the punctilious observance of the rules of the road, practised by every Englishman who drives in London, be he lord or commoner.

There is never the slightest trouble caused by the misunderstanding of these rules by an ignorant driver; the most ordinary costermonger who drives his little donkey cart in the crowded section of the city is perfectly familiar with them, and never evinces the slightest inclination to rebel against their dictates by not pulling up out of the way when a coach or four-hand signals its intention to drive by.

The first time a stranger mounts the steep steps at the back of a 'bus and takes a seat on the roof for a ride along Fleet street or the Strand, or a trip down Cheapside, his attention is riveted for the greatest part of the journey and his breath frequently taken away in watching the manoeuvres of the 'bus driver.

The way these men keep their horses under control and steer their clumsy vehicles in and out of the constant crush of wagons and all manner of vehicles is exciting and wonderful. Look ahead of you and the street seems packed, with only a small opening which to the eye of the uninitiated appears scarcely wide enough for a 'bus to go through, and yet the driver goes ahead unhesitatingly, and presto, change, in a minute you are through the crush, and have never even scraped the wheels of the wagon on either side of you.

If, however, one of these wagons had suddenly turned into the narrow passageway through which you have passed, the driver bent on getting out before the 'bus, there would have been a crash and a smashup, an accident which very likely would happen under similar circumstances a dozen times a day in an American city. But between the drivers of the wagons and the 'bus drivers, and all other drivers in London, perfect confidence exists, the 'bus driver, knowing that he has the right of way, going ahead without fear, while the driver of the cart or wagon, being fully aware that he must stand aside so that the lumbering public conveyance can go through, does so without a murmur or discontent at the few minutes of lost time which he is bound to suffer.

### STORY OF THE ORLOFF GEM.

#### How It Found Its Way Into the Magnificent Crown of the Czar of Russia.

The wonderful stone, so named after its first European purchaser, Count Orloff, has had a most extraordinary history, which must add something to the value of the stone, intrinsically almost fabulous. It was originally the eye of an idol in Trichinopoli. It was stolen, according to the accepted account, by a Frenchman, who escaped with it to Persia, where he sold it for the equivalent in our money of \$8,000, to a Jewish merchant.

The Jewish merchant sold it to an Armenian named Shafra, who had traveled in Russia, and conceived the idea of taking the diamond to that country and selling it to the Empress Catherine for a great sum. Shafra paid him \$50,000 for it.

Having secured the stone, the next question with Shafra was how to get it to Russia, or rather how to conceal it when he was searched by robbers, as he was sure to be on the road.

The journey was a long and perilous one, and thieves abounded everywhere. Shafra thought of swallowing the stone when he should be taken by the robbers, but was obliged to give that plan up, as the diamond was too large to swallow.

He pondered long over the difficulty, and began to feel he had a white elephant on his hands, when a happy thought occurred to him. He procured a sharp lance, made a cut in the fleshy part of his left leg, and thrust the diamond into the wound. He sewed up the cut with a needle and a silver wire. He healed, leaving the diamond embedded fast in his leg, quite out of sight.

Then he started for Russia. On the way he was seized by robbers again and again, and thoroughly searched. Being an Armenian, and suspected of going to Russia to trade, the thieves marveled greatly at finding nothing of value on his person.

He arrived in Russia at last, and, after extracting his diamond, visited the Empress. He was willing to sell it for about \$150,000, but the Empress had not so large an amount available in cash for the purchase, and Shafra preferred to go on to Amsterdam, the seat of the diamond-cutting industry, where he had the stone polished.

Here Count Orloff, an extremely wealthy Russian saw the diamond, and was filled with a determination to secure it for the Russian crown. He did secure it, but Shafra exacted from the Russian Government \$400,000, an annuity of \$20,000 and a title of nobility. He died a millionaire.

The Orloff diamond weighs 195 carats, and is about the size of a pigeon's egg. It is smaller than the Koh-i-Noor, in the possession of the English Queen, which is supposed to be worth \$3,750,000.

The men in Japan do most of the sewing, and they push the needle in and out in a direction from them instead of toward them.