

## FOR THE FARMER.

### More Brain Power on the Farm.

About the best use a farmer can make of himself is, to devote the present long winter evenings to an increase of his mental activity. Farms differ in their productiveness, mainly according to the amount of intelligence that is brought to their cultivation. Brain-power may be increased by a thorough knowledge of the present condition of the farm, and its worth as a machine for making money. What crops have paid, and what have been raised and sold at a loss? What per cent. has it paid on the capital invested? In the case of the gain, what secured it? Was it the manure applied, or the frequent tillage, or the extra amount of rainfall? In the case of loss, was it the want of fertilizers, was the crop choked by weeds, or was the seed poor, and the crop damaged by the planting? This accounting for failures is as profitable as bragging over big crops, without making any record of the process of obtaining them.

Brain power may be increased by planning improvements. There may be several acres of peat-swamp or bog-meadow, producing only brush and bog hay, hardly worth cutting. There is a good outlet, and it can be drained three feet or more deep. Cipher out the cost of drainage, and of making it produce three tons of clover or timothy to the acre. Would not the sight of the waving heads of the grass be more pleasing than the cat-tails, flags, and skunk-cabbages, that now waste their sweetness upon the desert air? There may be an acre of swale, underlaid with hard-pan, over which ferns, weeds, and aquatic grasses run riot during the whole summer. Is it not time the bottom was knocked out of it, by tiles laid three or four feet in the ground, and the superfluous water compelled to go through these, instead of creeping lazily over the surface? It can be made the best grass land on the farm. Why not make it so, and handle the dollars that come from maximum crops? Brain power can be increased by reading and digesting the instructive contents of agricultural papers.—[Wm. Clift, in American Agriculturist.]

### The Hired Man.

Curiously enough, the term "hired man" is only applied to a man that works on a farm, as though other men were not hired. There are many grades of hired men. A good one is cheap at high wages, and a bad one or an indifferent one is dear if he works for nothing and boards himself.

Usually, farmers do not seem to realize the important position that such a man holds, nor is sufficient caution exercised in filling it. In the first place, the hired man is brought continually into contact with the boys on a farm. He has seen considerable of the world, at least more than they have, and his daily walk and conversation exert a material influence over them. Many a farmer's lad has received his first lesson in iniquity from such a teacher, yet the fathers of these same boys have wondered at their deviation from the paths of rectitude.

When the farmer has but one assistant it is obvious that much must be left to his discretion, and that the employer's success depends largely upon the information and zeal of the man that is employed. He should certainly be interested to an extent beyond the question of wages. Notice your man. Does he allow a barn door to be slammed off its hinges by the wind? Does he care for the stock as though it is his own? Is he economical in the use of your implements, seeds and time? Is he a careful driver? Does he leave stock exposed to cold and storms? Does he drink or gamble, and is the language he uses such as you want your children to hear?

Such questions are deserving of consideration; indeed, they are of vital importance to one who has the welfare of his family and the success of his business at heart. But I am not writing in disparagement of these men; on the contrary, I believe the good qualities of some are never fully appreciated, and that not enough difference exists between the wages paid the worthy and the worthless hired man.

### How to Grow Onions.

On my farm I keep a heavy stock of pigs and sheep, and make a large quantity of rich manure. By this I mean, that the pigs and sheep are fed on malt sprouts and other food, particularly rich in nitrogen, phosphoric acid, and potash. Notwithstanding this fact, I find great advantage from using, in addition to the farm manure, a liberal dressing of superphosphate and nitrate of soda. I am not a business man, or I should probably keep these facts to myself, and let some men, whom I have in my mind, go on floundering in their ignorance and prejudice. It would serve them right. They think they know all about manures, when in fact they know nothing. They put on commercial manures costing one hundred dollars per acre, when they could get the same effect for less than half the money. Market gardeners sow from one to two tons of commercial manure per acre, costing fifty dollars per ton. They think that it pays. I do not deny it. I only claim that they are working in the dark. It might have paid the Chinaman to set fire to the sty, when he wanted roast pig. But we have discovered cheaper and better methods of preparing food for the table. And we have discovered cheaper methods of manuring our land, than applying one hundred dollars' worth of commercial manure per acre. Try this experiment the coming spring. Get two tons of 'blood and bone fertilizer,' costing one hundred dollars. Sow it broad-cast on an acre of

land prepared for onions. On an adjoining acre, sow at the same time:

500 lbs. superphosphate, at 15c. per lb.	\$ 7.50
600 lbs. nitrate of soda, at 25c. per lb.	15 00
	\$22 50

If it does not produce as great a growth of onions as the two tons of raw bone manure, I am greatly mistaken. On my own farm we sow the nitrate two or three times during the growth of the onions. I never saw a finer growth of onions than we had last year and produced in the same way. There was not one scallion in a hundred thousand.—[Joseph Harris in American Agriculturist.]

### Farming in Norway.

A correspondent of a London paper writes: Of the one hundred and twenty-three thousand square miles which Norway contains, only three thousand five hundred are pasturage, and only nine hundred and eighty are under the plough. The consequence is that not only corn, but also butter and meat, have to be imported in large quantities. From what has been said it will be inferred that the country is more pastoral than agricultural. Yet one sees very few cattle when passing through the country in summer. The reason is that at that season, as in Switzerland, the peasantry drive their cattle up to the mountains and themselves live in "saeters," or picturesque huts of solid timber. Much of the agriculture in Norway is of the most primitive character, small wooden ploughs, held by boys and drawn by men, being still commonly used in many parts of the country. The principal crops grown are oats, barley, rye, and potatoes. Flax and hemp are also successfully grown in southern parts. The chief grain region is the valley of Lake Mjosen, where the growing of wheat has sometimes been attempted, but not with marked success.

The hay crop, though by no means heavy, is widely diffused, and it is gleaned in what would generally be deemed impossible places—on narrow ledges a thousand feet above the sea and in deep valleys where there is very little sunshine. The hay is dried in a peculiar fashion. It is not spread over the field, but is hung out, as in some parts of Switzerland, on fences or hurdles. Rows of posts are set up in the fields, and from these lines of cord or wire are stretched at a distance of one foot or eighteen inches from one another. On these lines the hay is hung, and it remains there in wet weather as well as dry. In wet weather the moisture drips to the ground. In fine weather the sun beats on the outer layers and the wind passes through the interior, and whatever the state of the weather the hay is left there till it is ready to be housed.

The hay is transported from the upland regions by a novel contrivance known as the "hay telegraph." A rope or wire, sometimes one thousand feet in length, slopes down from the top of a precipice to the bottom of the valley. A bundle of hay is suspended from a ring through which the rope or wire passes, and is shot down to the bottom with lightning speed. Bundles of brush-wood and fire-wood are sent down from the higher ground in the same way. The scythe generally used in mowing the hay is much smaller than that in use in England. In the Valdres route, however, near Odnæs, I noticed some attempts at what would be called scientific farming. In one field a mowing machine was at work, and in another the hay had been spread out in the English fashion and was being turned over by a revolving rake drawn by a horse. Both machines were evidently of recent importation, and attracted the attention of the natives much more than of the foreigners. Whatever may be said of the Norwegians, it must be admitted that they are ingenious in devising contrivances which at once save their labor and take full advantage of the peculiar conformation of their country. Their timber-shoots are another instance of their laborious ingenuity. They make wool-ways and slides which extend over hundreds of feet from the tops of the hills to the seashore.

### AN INTERESTING RELIC.

An Iron Tobacco Pipe made nearly Two Hundred Years Ago.

Last November while a farmer was grubbing in a field near Prairie du Rocher, Ill., his hoe turned up what first appeared to be a piece of iron, but when all the earth had been scraped off, the find turned out to be an iron pipe for smoking purposes. The farmer brought it up to the city a few days ago, and presented it to Mr. Charles Vincent, a liquor-dealer doing business at Carondelet. Mr. Vincent is a great relic-hunter, and on close examination the pipe was found to be one used by French officers and made in the year 1700. It is of the same pattern as the clay pipes now in use, the pipe and stem being all of one piece. This pipe was found within the inclosure of the old Fort Charters, which was occupied by the early Indian wars, from 1690 to 1720. Curiosity-seekers are now calling upon Mr. Vincent in large numbers to handle and gaze upon such an interesting relic. The pipe is in very good condition, and has been cleaned and burnished up, and now Mr. Vincent and his friends take turn about in smoking the pipe of iron. At the end of the stem there are a series of grooves in the iron, in order that twine or thread may be wound around so that the stem can be held between the teeth without discomfort to the smoker. Modern thread has been put in the grooves and found to work just as well as if the grooves had just been made. The bowl and stem of this ancient pipe is not clumsy and heavy, as some persons would suppose because it is made of iron. On the contrary, the pipe is very light, and if the clay pipes were no thicker they would be quite fragile indeed. Several cash offers were made to the owner, but all were refused.

## Scientific Gossip.

Dr. Berberich, of Berlin, has made a new determination of the orbit of Barnard's comet from three normal positions deduced from observations extending over three months. The sidereal revolution is now found to occupy 1,958.9 days, or 5,363 years.

Mr. Demcker asserts that the Russian Calmucks, like their brethren in China, are rapidly losing the warlike and aggressive spirit of their ancestors under the levelling system of government to which they are subjected in the Russian as well as the Chinese Empire.

For the improvement of heavy soils Heiden, Voigt, Gumbz, and Wetzke recommended lime for the first dressing. They say also that the first season should be potatoes; for the second, oats; for the third, tares of peas, and for the fourth potatoes again.

The Dutch Government has issued the first part of their official report of the Kratoa eruption. It deals with the history of the island prior to the occurrence, and the events of the catastrophe itself. The second part will deal with the scientific results of the investigation.

The Royal Academy of Turin announces the foundation of a prize of the value of 12,000*l.* for the most useful and striking discovery in anatomy, physiology, pathology, the exact sciences, geography, or statistics (fracted from 1883 to Dec. 31, 1886). The members of the Academy itself are not eligible for the prize.

A valuable practical fact receives additional support from experiments on the influence of sunshine upon the vitality of the germs of microbes, as conducted by M. E. Duclaux. He cultivated *Tyrophiz scaber* in milk and Liebig's extract and found that the light of the sun is fifty more destructive than its heat, thus fully confirming its hygienic properties.

A theory of solution has been brought forward by Mr. W. W. Nichol, of the Royal Society, Edinburgh. Solution of salt in a liquid results from the attraction of the molecules of the liquid for a molecule of the salt exceeding the attraction of the molecules of the salt for one another. Saturation ensues when these attractions are balanced. The theory explains variation of solubility with rise of temperature.

M. A. Casali detects chloral hydrate in milk by this method: He shakes up the milk repeatedly with twice its volume of ether and strong potassa lye, lets the whole stand for some time in a stoppered vessel, draws off the clear ethereal solution, and again shakes up the residue repeatedly with ether. The ethereal extracts are mixed and distilled. The chloral hydrate or the products of its decomposition will pass over and can be recovered in the distillate.

The Society of Naturalists of St. Petersburg have received permission to send several of its members to join the Russian representatives on the Afgan Boundary Commission, with the view to the scientific exploration of Central Asia. The British commission, which is now on the ground, has with it a geologist, a naturalist, and several topographers. There is, then, a good prospect of something accurate being made known to the world at large regarding a region of which very little has been described with precision.

In concluding a lecture on labor and wages in America, before the Society of Arts, London, Mr. D. Pidgeon attacked the doctrine that tariffs on imports influence wages, arguing that the movements of American and British wages during the last twenty-three years have been determined by some common cause which cannot possibly be due to the tariff, because in the two countries presenting the analogous phenomena of wages the tariff was operative in the United States alone and had practically no existence whatever in Great Britain.

M. Fordez proceeds in this way to detect lead in the tinning and enamels of utensils. Having carefully cleaned the vessel to remove dirt and grease, he touches any part of the interior with a drop of nitric acid, and evaporates any excess of acid by the application of a gentle heat. To the pulverulent spot he applies a drop of a solution of iodide of potassium (five parts of the salt to 100 parts of water.) If lead is present a yellow spot of lead iodide is produced. The stannic acid formed by the action of nitric acid upon pure tin gives no similar spot.

The formation of toxic alkaloids in cholera patients was the subject of a paper by M. A. Villiers, read lately before the Academy of Sciences, Paris. Taking the bodies of two cholera victims soon after death Villiers was able to determine the presence of an alkaloid clearly characterized by its alkaline and chemical reactions. It was found chiefly in the intestines, though also in small quantities in the region of the liver, but it was completely absent from the blood and liver. It is thought that its study may yield important results for the treatment of cholera.

A French scientist has been studying the effects of altitude upon vegetation, and concludes that for each augmentation of one hundred yards there will be, as a general average, a retardation of four days; that is, other circumstances being equal, a crop planted at the sea level will appear about ground four days before a similar crop planted 300 feet above it.

Mr. Charles H. Erwin, of Painted Post, N. Y., has found by an experience that ice water, or water but a few degrees warmer than ice water, sprinkled upon cabbages during the heat of the day will kill the imported cabbage worm. He found that such an application in the hot sun caused them to quickly let go their hold upon the leaves, roll to the ground and die, while the cabbages suffered nothing, but looked all the fresher for the application.

## TRICKS OF MACHINES.

### Interesting Experiences of a Machinist.

"There are times," said a well-known machinist, the other day, "when nearly all machines get cranky. The trouble is often a simple one, and is not infrequently owing to the machinist not knowing his business. But that is not always the case. The very best mechanic in the world, gets hold of a nut sometimes that is difficult to crack. A machine, no matter of what kind, may work perfectly for months, and then some day something goes wrong with it. The machinist looks at it, examines it, perhaps even takes it to pieces and puts it up again, but of no avail; the machine remains like a balky horse, which nothing will make go. At last the machinist gets tired and goes home, sick of pottering with the troublesome thing.

"He comes to work the next day, perhaps having forgotten the previous trouble, touches a handle here, drops a little oil in half a dozen places, turns on the steam, and off she goes without a murmur, as if nothing had ever happened. No, I can't explain it—either could he. The only conclusion to be drawn is that he omitted, on the occasion of the stoppage, those little necessary touches of handles, turning of wheels, and droppings of oil. But there are other cases of a slightly different nature.

"For instance, I had an order a little while ago to make a paper-cutting machine from a certain pattern. I made it. When it was put to work it was found that it cut the paper with a curve instead of straight. Now, of course I could remedy that by a mechanical application, and did. However, I also went to work and made another machine exactly like the first in every respect. The second machine is perfectly successful. Yet, if you take the two machines to pieces, and place every piece of each machine along side of the other, I'll venture to say there's not a hair's-breadth of difference in them. I can't account for the difficulty with the first. I only know how to overcome it, and I did overcome it.

"Now, here is a case of a trouble I had with an instrument, a mechanism of which I was not very well acquainted with. A short time ago my telephone wouldn't work. I couldn't converse through it at all. The only thing I heard was a terrible buzzing noise. I called up the operator at the central station, but he couldn't account for it, and sent a man around. He came and looked at the instrument, got connected with the central, and went away.

"Presently I wanted to use it again, but I found the trouble was as bad as ever. A second man was sent around to discover the cause. After a while he found out that the connection with the ground wire had become disturbed. The wire was loosened, and only formed just sufficient circuit to convey sound. The shaking of my engines and machinery caused a vibration, which made the buzzing sound. The man re-connected the ground wire, the circuit was completed and strengthened, and I now have no more trouble with the phone.

"Almost all the troubles with engines, machines and complicated instruments of all kinds, are caused by just some simple matter such as this. A thoroughly competent man may overlook the cause, and another may walk up and 'spot' it, instantly."

"Watches are so small, and their mechanism is so delicate, that it requires a careful inspection to find the cause of any trouble," said a jeweler. "The causes of sudden stoppage are very various, but among the most frequent is want of oil. A drop of oil in a watch will last for eighteen months to two years as a lubricator. At the end of that time the works become dry, and considerable wear ensues. Still, the watch may run for five years before it stops. If a watch is brought to me I cannot always say instantly what is the matter, though I often have to make some statement to satisfy a lady or inconsiderate man.

"Sometimes I have had a watch to 'cure,' and have taken it to pieces, but do all I would I could not get it right. Then I lay it on one side, and go to work on something else. When I come back to the watch it is just as likely as not that everything will slide into place as easy as possible. Of course, the reason of my trouble has been a little nervousness. I have been tired or anxious, or my eyes or fingers have been.

"Sometimes I have repaired a watch and hung it on the rack for a few days, before returning it to its owner, in good working order. Then perhaps in two or three days, he brings it back, stopped again. That is sometimes a poser, but in such a case I put the watch in my pocket and carry it round with me for a few days. Hanging a watch on the rack, which is perfectly still, and of even temperature, is not a fair test. By carrying it in my pocket I often discover the trouble, which is generally a very simple one."

"Ever had any bother with my engine?" said Ed. Murray, an engineer on the Pennsylvania Railroad. "No, I can't say I ever did, but I've heard old Jake Finlay, who used to run the express between Philadelphia and New York, tell a queer story of a trouble he got into once. He was considered a good engineer, and was undoubtedly a thoroughly capable man. It was one winter, a good many years ago, he was running his usual engine on the evening express. He reached Trenton safely, and stopped there twenty minutes for refreshments. The rest was over, the passengers all seated, the line signaled 'clear,' the bell rang, and old Jake took off the brake and turned the steam on. The engine gave a sort of a feeble kick, and the big driving-wheels revolved half a dozen times, but didn't grip the rails, and the train didn't move.

"Jake thought the train was too heavy so he backed up a little to gain an im-

petus. Then he put the steam full again, to go forward, but the old engine just kicked again, but the train never moved. Jake got mad at last, and got out of the cab to look for the trouble. He shouted to the fireman to turn on steam. His order was obeyed, and without the slightest trouble the engine glided out of the station as if she were on a soaped board. Jake was so worried that it preyed on his mind, and about six months after he resigned his position.

"I haven't the least idea what was the matter, but I guess Jake had forgotten something he ought to have done, and the fireman being just told to let her go, went through the proper business. Jake thought the engine was bewitched, and died in that belief."—Philadelphia Times.

## ROMANCE OF THE BLACK HILLS.

A Plucky Englishman Made Suddenly Rich, and Remembers his Friends.

Early in 1875 a party of eighty-five venturesome men was organized in Ames, Iowa, to go into the recently discovered mining region near Deadwood, Dak. John Johnston, a young man recently arrived from England, and Mr. Cronen, then only 17 years of age, were of the party. These two were thrown much together and became fast friends. They and two others took up a 200-yard mining claim in the neighborhood of the Nigger Hill mines near Spearfish, and at once began work. Their claims soon proved to be wonderfully rich in what was called "bastard quartz," but there was no money in that for the miners. Mr. Cronen now laughingly says that his stay covered a period of some fifteen months, and when flour began to sell at \$2 a pound, with other provisions in proportion, and not a dollar came from the mine, he began to look about him for a chance to get out. An opportunity did present itself, and he prepared to leave. He made his English friend a present of all his right, title, and interest in the mine, and at once started for the confines of civilization, where there was more food and less "bastard quartz." His course gradually led him east, and he at length became an operator in the Western Union Telegraph office in Chicago. Then he married, and settled down.

The plucky Englishman stuck to Nigger Hill and Spearfish despite all hardships and disasters. A short time after Cronen's departure he found himself the only one left in the Black Hills country of all the party who started out from Ames. His confidence in the country was so great that after the first pinch he succeeded in adding to his territory until he was the proprietor of about 480 acres. He afterwards became the proprietor and principal editor of the *Dakota Register*, a weekly paper published in Spearfish, but for years he was no richer than the other humble members of his new profession. About sixteen months ago the discovery was made that the despised "bastard quartz" contained from sixty to eighty per cent. of pure "tin."

Mr. Johnston had not, during these years of struggle, forgotten his young friend, for a correspondence was kept up between them. On two occasions he had visited Chicago, had become acquainted with Mr. F. Randolph, Cronen's desk-mate at the Western Union office, and cordial relations sprang up between the three families. Early last week Mr. Johnston arrived in the city accompanied by his wife. Seeking out his two friends, he quietly announced that the first important installment of his fortune had come to hand. The hopes of ten long years had begun to be realized, and while he was already a rich man, the foretaste was but an indication of what could be expected in the near future. A small interest in the mining property had been sold for \$160,000 cash, and the principal proprietor was on his way to England. He wished his friends, Cronen and Randolph, to share with him the first pleasures of affluence. As one step in that direction he presented the former with a delayed Christmas gift in the shape of a certified check for \$3,000. He also invited the two telegraph operators and their wives to accompany himself and Mrs. Johnston on their voyage across the ocean. The invitation was accepted, and the desks of Cronen and Randolph are supplied with other men.

### Modern Egyptian Houses.

The towns on the Egyptian shores of the Red Sea stand along the borders of the khors which come from the mountains back of them, and find their way through many shallow channels to the sea. These channels, which are dry three-fourths of the year, are the passage ways or streets of the villages. The houses stand on the slightly higher ground between the channels; they are scattered about in perfectly irregular manner. The better class of houses are thus constructed: First a framework is made of boughs and branches of the acacia trees. Then a wattling of straw is woven closely amongst the boughs of roof and sides, so as to make a waterproof covering for the interior. Around the houses of the chief men inclosures of similar construction are made to keep prying eyes from peering into the sacred precincts of the harem within. The huts of the poorer people are mere tent-shaped structures covered with skins of animals or with coarse matting.

A good story is told of a Scotch tailor who was often very dry in the morning, and could not, as a rule, raise the wind to get more than one dram. This being the case he liked to hold it in his mouth as long as he possibly could. One of his neighbors, knowing this, met him and was determined to make him speak. "It's a fine morning," "Umph," "It's a fine morning, I was saying," "Confound your impudence, ye've made me swallow my whisky."