

pressing it together you reduce it into a putty state; the gastric juice cannot dissolve it so soon. It is just the difference between pulverized sugar and a lump of it. Take a crystal of rock salt and put it in water, and it takes a longer time to dissolve than if pulverized; and there is the same difference between leavened and unleavened bread. Almost within the last ten years there has been a revolution in making bread. The ancient leaven bread was made by the dough being left in a warm place till it began to ferment; and the chemical progress is the change of the starch first into the sugar, and the sugar into carbonic acid and alcohol; the carbonic acid and alcohol forming between the particles swells them up. But great care was required in the operation lest it be decomposed, and therefore the modern process by yeast is much more preferable. Within the past ten years, besides yeast in making bread, we have had 'baking powders' and 'self-raising flour,' and many others; and ninety-nine families in a hundred use some of these. The effect is the same as far as lightness is concerned, but foreign substances are added. Physicians know its pernicious and its dyspeptic tendencies. If the carbonate of soda were pure, there would be a great difference; but neither it nor the cream-of-tartar used are pure. Alum was used considerably in bread-making ten years ago, but not so much recently; its object is to whiten the bread. Baker's bread, generally, is lighter and whiter than home-made bread; the whiteness is produced by alum, and the poorest flour may be palmed off for superior brand. Mr. Hassen, in London, once made a thorough examination of this subject, and made a sensation almost as bad as swill milk in New York. He examined twenty specimens from different bakers, and found none that did not contain alum to an injurious extent. Besides alum, carbonate of ammonia is also used to raise the dough. Any kind of gas would answer the same purpose, even atmospheric air. But this gas, by means of heat, raises the bread in as good a way as any, but some of the carbonate is left in the system. The reason why potash is used to so great an extent in the West is the fact that there is so much wood; and there is such a demand for potash and pearlash that they manufacture these alkalis from the ashes of the wood." Professor Hendricks, in illustrating the preceding remarks, said the sour substance in the dough is the acetic acid; it is not owing to the presence of the acid, but the change which the acid has made in the bread itself.

Dr. Stevens said it had been doubted whether plaster-of-Paris was added to flour; but it is true. Several officers of the United States Army had told him that, some years ago, a quantity of bread was sent to supply the garrison on the frontier; and upon opening the bags of bread they could smell the plaster-of-Paris. High authority in England had also found it. A foray should be made against the adulterations of tea and coffee, which have become indispensable; and so with spices; and so with fermented liquors, and especially wine, and other stimulants, which are always good in their place.

STABLE MANAGEMENT OF A HORSE.

It is one thing to own a horse, but it is another thing to know how to take care of him. The Woodstock (N. B.) Journal gives a few practical hints on this subject which are worth remembering. A stable horse needs special care and attention. His feeding must be as regular as the measurement of the hours. When a change of feed is made it must be done with great care—giving a small allowance at first until the stomach becomes used to the change. He must be cleaned every day; and when we say *cleaned*, we mean all that can be conveyed by that word. A good currycomb, brush, and an oiled woolen cloth, are the utensils necessary. First take the currycomb and begin at the top of the neck, back of the ears, working the hand both ways. Proceed in this way till you have gone over the entire body and legs. Then take both comb and brush, and every other stroke, draw the brush across the teeth of the comb to clean it. An experienced groom will do this instantly. This done, take your cloth and lay the coat and remove the dust which adheres to the outside. The face and ears must also feel the brush.

Few men know how to clean a horse properly. If the above directions are followed daily, your horses will enjoy good health generally. Stabled horses must be exercised daily. This is absolutely indispensable to good

health. If the feet of your horses are brittle and liable to break and crack, they must be well oiled once a week. A horse thus treated will always be ready to go when wanted, and you will not be ashamed either to ride or drive him.

Another thing quite as important is a clean and well ventilated stable. We cannot excuse any farmer or horse owner, who does not clean his stable twice a day. A stable should be so constructed as to have a wide passage way or floor in front to feed from. Above the manger a space should be left a foot or two in width clear, and the passage-way should be the avenue for the supply of fresh air to the nostrils of the horse.

A horse enjoys a good bed, and it should never be refused him. At night take your fork and make it up tight, and you will feel amply rewarded for the humane treatment you have given your beast.

DAMAGED HAY AS CATTLE FEED.

There is nothing more common among some of our farmers than moldy hay; and many—perhaps the most—of them do not seem to be aware of its bad qualities. It is chiefly caused by putting the hay into the barn before it is sufficiently dry; it then heats in the binn, and moldiness is the result. Blue mold has a musty smell, and cattle do not like it, but will eat it when they can get nothing else. Blue molds—*aspergillus glaucus* and *aspergillus moniliferus*—belong to the fungi—a poisonous group of plants which feed upon the most nutritious part of hay, and convert it into unwholesome matter. We have known some careless farmers to feed large quantities of such hay to their cattle during winter, and they actually seemed to grow poorer under the infliction of increased quantities of such provender. Young cattle, especially, are much stunted in their growth by such feed; being more tender than old stagers, it does not seem to assimilate with their system, although they may consume large quantities of it when well salted. One tun of good sweet, well-cured hay is worth three tuns of musty stuff. Many of our farmers lose a number of young cattle every winter, simply from feeding them with musty hay; and they do not appear to be aware of the fact. At the present moment, we have no doubt, there are thousands who have great quantities of musty hay in their barns, and they are feeding it out, unconscious of its vitiated character. We have a little bit of advice to give all of them. Do what you may with such hay; you cannot restore it to a good condition; still, you may partly remove its disagreeable taste to cattle, and thereby render it more palatable to them, and they will thrive better upon it. Steam all such hay (for food) in a kettle, for about an hour, and feed it out with some turnips, boiled oats, potatoes, or—what is better—Indian corn meal. In no case feed such hay exclusively to cattle.

THE SCIENTIFIC AMERICAN AND THE HON. JUDGE MASON.—From a glance at the weekly report of the doings in the Patent Office at Washington, one is astonished at the march of invention and improvement in the useful arts of the present day. The patents issued for various useful improvements in the United States amount to several thousands annually. The country is largely indebted to the SCIENTIFIC AMERICAN, and the Patent Agency of Messrs. Munn & Co., the publishers, for the light and encouragement extended by them to the inventive spirit of the age. As a scientific and mechanical journal the SCIENTIFIC AMERICAN has no equal in any language; and the universal satisfaction given by the proprietors as agents in procuring patents has secured to them a large proportion of the entire business at the Patent Office. Besides their central office in New York, they have one in Washington, near the Patent Office, and they are also largely engaged in procuring patents in all foreign countries. So extensive has their business become, that we are pleased to see it announced that the Hon. Judge Mason, late Commissioner of Patents, has become associated with them in the business. The country could hardly have furnished a gentleman more competent for so important a position. No class of our citizens are reaping more largely the benefits of the inventions of the age than the farmers.

[We copy the above very friendly notice from the *Valley Farmer*, published at St. Louis, Mo. We recognize in it the hand of our old and esteemed friend, H. P. Byram, who is associated in the editorial management of that journal.—Eds.]

A COLUMN OF VARIETIES.

Scott Russell, in his report to the great ship company, says that Portland, in Canada, is open to her..... The cost of running the *Great Eastern* is \$10 per mile, including every expense; and if she could have regularly 2,000 passengers at \$30 a piece between here and England, she would pay a profit, on passengers alone, of \$30,000 a trip..... In China, so carefully is every material for manure husbanded, the barbers save the soap which they have used for shaving with the bits of beard and the hair taken from their customer..... It is said that linseed meal is a good food for hens, causing them to lay, especially in the winter, when it serves as a substitute for worms and other animal food. If mixed with scalded meal or shorts, or with sour milk, the hens will eat it readily..... All ground where melons are planted should be mulched before the vines begin to run. You may use old hay or straw, or even small bushes, if they will lie down flat..... Ten years ago, the average wages of plowmen in Aberdeen, Scotland, were \$80 a year, with board and lodging; now they are \$110..... If the iron manufacture of the United States continues to increase at its present rate, a very few years will suffice to stop all importation..... About the average velocity of the piston in a steam engine is 220 feet per minute; this is 2½ miles an hour..... One pound of the best coal is required to heat 5½ lbs. of water from the freezing point and convert it into steam..... In 1841 it took, on an average, from 11 to 13 lbs. of bituminous coal an hour to a horse-power. Some large engines now run with less than two pounds..... The difference of time between high water averages about 49 minutes each day..... The lightness of bread mixed with snow, in place of water, is produced by the gases which have been absorbed by the snow..... A Boston manufacturer produces annually, from grapes grown on Charles river, 20,000 gallons of wine. Connecticut makes 200,000 gallons of wine, and Ohio 80,000 gallons each year..... Strawberries have been produced at the rate of 160 bushels per acre, worth \$1,300..... There is a pear orchard in Mississippi containing 15,000 trees..... One gentleman at the South sends to the North, annually, from \$7,000 to \$10,000 worth of peaches..... The Bartlett pear is an old French variety—Bon Chrétien (Good Christian)..... The following varieties of apples are recommended by the American Pomological Society for general cultivation:—American Summer Pearmain, Autumn Bough, Baldwin, Benoni, Bullock's Pippin, Carolina June, Danvers Winter Sweet, Early Harvest, Early Strawberry, Fall Pippin, Fameuse, Gravenstein, Hawley, High Top Sweeting, Hubbardston Nonsuch, Jonathan, Lady Apple, Ladies' Sweet, Large Yellow Bough, Melon, Minister, Monmouth Pippin, Porter, Primate, Rambo, Red Astrachan, Rhode Island Greening, Roxbury Russet, Smith's Cider, Summer Rose, Swaar, Vanderveer, Wagner, William's Favorite, Wine Apple, Wine Sap..... A young orchard of 400 pear trees, owned by Mr. Chapin, produced in 1853, eight years from planting, \$450; and in 1854, \$1,000..... Judge Howell, of Canadaigua, has a Vergale pear tree 70 years old, which has not failed of a good crop for 40 years, averaging for the last 20 years 20 bushels a year, sold on the tree for \$60. This tree has produced for the New York market \$3,750 worth of pears..... When the peach crop is destroyed it is generally caused by the extreme cold in winter, about 18° below zero killing the blossom buds. It is easy to ascertain whether the buds are killed, by cutting them transversely through the middle, when, if they are alive they will be found to be green throughout; but if they are dead, a black speck will be seen in the heart..... It is estimated that the value of the tobacco crop in Connecticut averages \$300 per acre each year..... There are in France about 4,000,000 acres of land devoted to the cultivation of the grape, yielding in favorable seasons about \$140,000,000, equal to \$34 per acre..... The charter of the East India Company was signed by Queen Elizabeth on the last day of the 16th century, and this greatest of all commercial companies ceased to exist on Sept. 1, 1858..... The present is the 18th Imperial or 8th Reformed Parliament. The House of Lords consists of 462 members, the House of Commons of 654..... Europe is divided into 55 governments, 5 of which are republics and 5 absolute monarchies..... The salary of the Lord High Chancellor of England is \$50,000 per year. Lord Campbell is the present incumbent of this high office.