

Greeder and Greazier.

Murder of the Faithful.

A Word to Grooms and Stablemen on Feet Air that Horses are Needlessly Forced to Breathe

There are so many stables in existence and long constructed without the slightest reference to the comfort of the horse in regard to the most vital of his necessities, the air he breathes, that we would be obliged if you would give place in your columns for a few facts that are known to almost every intelligent man, so far as they affect them, but which are never thought of as equally affecting God's most useful gift to mankind, the horse.

Air is taken into the lungs, and the oxygen absorbed by them to generate animal heat, and then expelled. This is done to relieve the organs of the body of the old worn-out and useless particles of matter. At every inspiration a portion of the oxygen in the air is absorbed by the lungs to purify the blood. The amount varies somewhat, being greater when the temperature is low than when it is high.

In the mutual action between the air and the blood, in a horse, in twenty-four hours the air loses two hundred and fifty ounces of oxygen, and receives from the blood one hundred ounces of carbonic acid. Whenever the blood is presented to the air in the lungs the oxygen leaves the air and is absorbed by the blood, and when the carbonic acid or poison in the blood comes in contact with the air in the lungs, it leaves the blood and unites with the air.

In this way the blood is relieved of its impurities and becomes pure, which is the essential principle of life. Oxygen is also received into the blood through the skin. Carbonic acid is also expelled from the skin into the air. For a horse to enjoy good health in the highest degree it is necessary that the impure or venous blood be properly changed. This is effected in the lungs by the action of the air. Therefore it follows that the elements when breathed should be pure, or contain twenty-one per cent. of oxygen and seventy-one per cent. of nitrogen.

The volume of air expelled from the lungs is somewhat less than that which is taken in. The quality and purity of the air is affected by every breath, the quantity of oxygen diminished, the amount of carbonic acid increased. Of the twenty-one parts of oxygen in the inspired air eighteen parts only are expelled. If one-fourth part of the volume of air received into the lungs is decomposed at one beat of the heart it might be supposed that if the expired air be again received into the lungs one-half the oxygen would be consumed.

But it does not follow if the air is thus re-breathed that the same changes will be effected in the lungs, for air that has been inspired does not part with its remaining oxygen as freely as when it contains the proper amount of life-sustaining element, and thus the changes in the impure blood but imperfectly take place. Pure atmospheric air is best adapted to a healthy action of the animal system.

As air cannot be maintained pure under all circumstances, the question may be asked to what degree may the air be vitiated and still sustain life. A high authority says that air with more than five per cent. of carbonic acid is unfit for respiration, and as air once breathed contains over eight per cent. of carbonic acid, it clearly shows that it is unfit to be breathed again.

A horse in a state of rest inhales sixty-five cubic feet of air per minute. There is necessity for the presence of fifteen to twenty times the amount of pure air actually taken into the lungs, from the circumstance that the expired air mixes with and vitiates the surrounding air that has not been inhaled. Horses that are active require more air than those that are idle, because the waste of the system is greater.

A horse that has been in the country or in the open air suffers more when placed in a small or badly-ventilated stable than one that is accustomed to confinement. In crowded stables which are not ventilated, the air is vitiated, not only by the abstraction of the oxygen from the air, but by excretions from the skin and manure.

Air that has become impure from the abstraction of oxygen and the excess of carbonic acid expelled from the lungs, and from the excretions from the skin and manure, have a deleterious effect on the body of the horse, and prevents change in the blood. For this reason pure air should be freely and constantly admitted into stables, and the vitiated air permitted to escape.

This is of greater importance than warming. Plenty of oxygen taken into the lungs in pure air generates animal heat. On entering a badly-venti-

lated stable of a morning, where a large number of horses are crowded together, the groom throws wide open the doors for a while to admit fresh air before he can endure the impure atmosphere. The foul and impure air is stilling to him. What, then, must the poor dumb beasts suffer who are confined in such an atmosphere?

Stables constructed with a view to security rather than to ventilation, and usually are imperfectly aired. Nine out of ten of the larger livery stables, when closed for the night, have not an opening on the first floor large enough to admit a man's hand, let alone any of God's pure air. On the upper floors there is not the same attempt at security from without, and here there is generally a better admission of air.

The effect of pure air on the health of horses was clearly shown during the epidemic last year. The horses in the badly-ventilated first floors were generally affected more than those in upper storeys. Horses confined in stables not well ventilated have their lives shortened and the seeds sown for lung diseases and other maladies as fatal. Animals that breathe vitiated air very generally have tubercles. The purity of the blood is influenced by the condition of the lungs. When the air cells of the lungs have become partially impervious to air from the pressure upon the lungs of tubercles the blood will not be purified even if the air is pure.

In the Black Hole of Calcutta one hundred and forty-six Englishmen were shut up in a room eighteen feet square, with only two small windows on the same side to admit air. They were there ten hours after their imprisonment only twenty three were alive; the others had died from breathing impure air. The twenty three who escaped were soon attacked with inflammation of the lungs, caused by breathing vitiated air. In the majority of stables, every fifteen by twenty feet is occupied by five horses. These five horses require as much pure air as thirty-five men.

Confine thirty-five men in a room, fifteen by twenty feet, over night with only a few square feet of air in proportion as is usually admitted to these five horses, and what would be the consequence? Every man would be sick and faint to prostration. What then must the faithful, noble horse endure? And what must be the aggravated suffering of these poor creatures who are in the middle of long lines of stalls in large livery stables, where only a few breaths of air are admitted around the cracks and crevices of the doors.

By the time this air has passed a half-dozen horses nearest the entrance, the oxygen is so thoroughly absorbed, the proportion of carbonic acid so great, and the air so used up that it is completely vitiated before it reaches the poor creatures at a short distance. In burning wood, coal, &c., the oxygen of the air unites with the flame and produces heat. So in the animal, the oxygen is consumed in the lungs and assists in producing animal heat.

Those horses always in the open air and exposed to all weather consume so large a proportion of pure air, that, without artificial covering even in a state of inactivity they are enabled to resist a great degree of cold, owing to the production of animal heat by the oxygen of the fresh air they breathe. In crossing the American plains between Missouri and New Mexico, we saw large Missouri mules that had never been under shelter, and among three hundred there were many that had been crossing and recrossing the plains twice each year for twenty-five years, and were still apparently as strong and useful as any that had been more recently taken from breeding farms.

Among the Indian ponies it is not unusual for warriors to show captures made over twenty winters previous, that were matured when taken and still good. The squaw ponies, or those used by the squaws in packing the tent poles from place to place, are often very old but still useful animals. There is no doubt that these Indian ponies, exposed and ill-used as they are, live much longer lives than our domestic horses. There is equally little doubt that their longevity is promoted by the abundance of oxygen in the pure air they breathe.

A great mistake is made by our grooms in keeping fresh air out of stables, under the mistaken impression that they are adding to the comfort and warmth of the horses.

During the winter season, and especially where horses are blanketed, the temperature of a stable should never by artificial means be kept above forty-five degrees Fahrenheit, or less than half of the temperature of the blood of the horse. The groom should bear in mind that the lower the temperature the greater the consumption of oxygen, and the greater the production of animal heat.

It is not well to have a horse in a draft, but a

draft with plenty of air is better for him than foul, used up, poisonous air. If we take the animal from a state of nature and deprive him of the pure air that God intended him to breathe, let us show too much humanity to willingly cause one of mankind's greatest helps to suffer needlessly.

Let some of our gentlemen who stable at ill-ventilated livery stables (or small private stables, for there are plenty of them as badly visit their horses after midnight, or in the morning early before the arrival of the groom, and see how painful to breathe and stinging to themselves is the air their favorites are forced to endure. The most that we can do for the horse is at best but a poor return for his faithfulness to us. Let us then look more to his comfort, and spare him suffering where we can.—*Turf, Field and Farm.*

Keeping Pumpkins for Stock.

In answer to a correspondent, who says he will have a good many pumpkins this season but does not know how best to save them for feeding stock, the *Western Rural* remarks:—

If you have a barn cellar, you may save them without difficulty, until about the first of January, by making scaffolds one above the other, three feet apart, and filling them with the pumpkins. If there is danger of freezing, they may be covered thickly with hay at the front and top. Those intended for feeding early, or before severe freezing weather, may be piled where they will not get wet, and put where they may be protected with litter and corn-stalks, to prevent ordinary frost from injuring them.

We should prefer liberal feeding during the fall, rather than attempting to keep them far into the winter. They are not only valuable for feeding milch cows and fattening stock, but for fall feeding; boiled and thickened with meal, are the best feed for swine of any we have ever used.

There is always a demand for the seeds at fair rates. Last spring they were scarce, and seedsmen charged high prices. They will undoubtedly be so next spring. As the seeds are injurious to any stock if fed in large quantities, you will have a two-fold inducement this season for saving the seed.

The seeds are most easily saved by splitting the pumpkins and scraping out the seeds. Separate them from the stringy integument as much as possible, and dry them by the most convenient method. An ordinary fruit-drying house with a heat of not more than 130° is excellent. If you have a smoke-house you may easily arrange this for the purpose, being careful not to smoke and thus discolor the seeds. This discoloration will not impair the seeds for planting, but unless they are perfectly bright, you will find difficulty in selling them.

After they are dry, a slight rubbing in sacks, and subsequent winnowing will fit them for market. If the price at which they are selling does not suit you one year, they may be safely kept; indeed at three or four years old, they are better for planting than at one year old; and kept dry and from the air, they remain good for years.

Raising Calves.

The following is the manner of raising calves practised at Shaker village, Merrimac county, U. H. S. and communicated to the *Country Gentleman*:—

We take pleasure in forwarding to you our manner of raising calves, hoping that the information may prove useful to all who are interested. We take the calves from the cows when six days old, and feed them on two quarts of new milk three times a day, until they are four weeks old. The fifth week we gradually reduce the quantity of new milk and add skimmed milk, increasing the quantity by the close of the week, to three quarts at a feeding. All the new milk given to the calves should be taken from their mothers.

From the time they are five weeks until they are three months old they are fed on porridge prepared as follows:—half a pint of oat-meal, one gill of cracked wheat, boiled one hour in six quarts of water; in cool weather a day's allowance may be cooked at a time. To two quarts of this add two quarts of skimmed milk, making four quarts three times a day. The milk should be gently warmed to about the temperature of new milk, taking care not to scald it, as it will produce colic. If calves incline to scour, one or two raw eggs beat in their milk will generally effect a cure. We give four quarts of the mixture at a feeding until they are ten weeks old, then gradually diminish the quantity during the next two weeks, when they are weaned and turned out to pasture.