

What's that noise?

Strange breathing noises in the sport horse should always be investigated. **Paul Smith MRCVS** analyses possible causes and treatment options

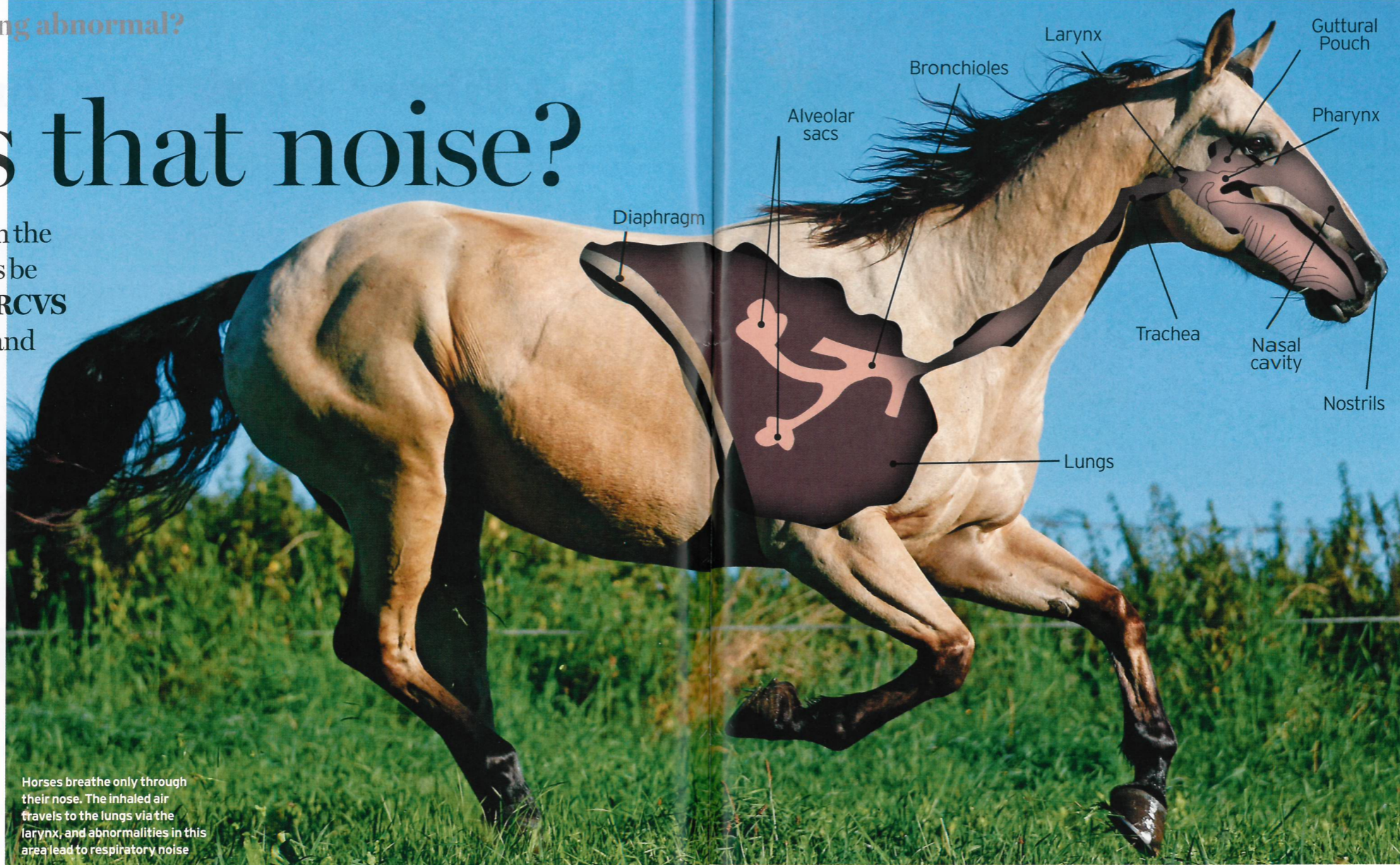
WE have long recognised that horses that make abnormal respiratory sounds during exercise often perform poorly. In 1883 a vet from Edinburgh, William Robertson, wrote in his book *A Textbook of the Practice of Equine Medicine* that grunting, coughing, roaring and whistling should all be regarded as constituting unsoundness; detracting from a horse's commercial value and in many instances rendering them unfit for specific purposes.

Horses are obligate nasal breathers, which means that, unlike humans, they lack the ability to breathe through their mouths. During each breath air is inhaled through the nostrils and flows via the nasal passages to an area at the back of the throat known as the pharynx. From here it passes through a cartilaginous valve at the entrance to the windpipe called the larynx, before entering the lungs (diagram, right).

During exercise the airflow through a horse's upper airways can increase dramatically, from less than 100 litres per minute at rest to over 4,000 litres per minute during strenuous exercise. In fit, healthy individuals the nostrils, pharynx and larynx all open widely to accommodate this increased airflow. However, certain conditions can lead to obstruction of these airways during exercise, causing abnormal respiratory noise and reduced performance. It's important to be able to recognise which noises are normal and which aren't.

In the resting horse breathing is virtually inaudible, but at exercise it isn't unusual to hear snorting or blowing sounds as the horse exhales. This noise is termed "high blowing" and is considered to be normal. It's caused by vibration of the nostrils and is most common at the canter.

Very unfit or overweight horses may also have increased respiratory noise when exercised and are often referred to as being thick-winded, but this tends to resolve with training as the animal becomes fitter.



Investigating the issue

TO determine the significance of any exercise-related noise it is important to try and characterise its nature:

- At which gaits does the noise occur?
- Is it continuous or intermittent?
- Does it occur as the horse breathes in (an inspiratory noise), when it breathes out (an expiratory noise), or both?
- Does the horse slow down or pull up abruptly when it occurs?
- Does the noise stop as soon as the horse finishes exercising?
- Does the horse take a long time to recover after exercise?

The answers to these questions can give valuable clues as to the nature of the problem, but a firm diagnosis usually requires investigation. A visual assessment of the upper airways can be performed with the aid of a flexible camera, an endoscope, which is passed through the nostrils and nasal passages to the pharynx and larynx.

Finding the source

CAUSES of respiratory noise that may be identified include paralysis of the larynx,

displacement of the soft palate, epiglottic entrapment, cysts, tumours and infection.

The most common cause of upper respiratory tract obstruction is laryngeal paralysis. In mild cases it causes a whistling noise during inspiration, but in more severe cases a "sawing wood" or roaring sound is produced. These noises are caused by paralysis of one side of the larynx, usually the left, which results in failure to open properly during exercise.

The nerve that supplies the left side of the larynx is one of the longest in the horse, taking a circuitous route from the brain, down the neck and into the chest before returning to innervate the muscles operating the larynx. Consequently, it is very susceptible to injury or degeneration and larger horses, over 16hh, are most commonly affected. By comparison laryngeal paralysis is rarely seen in ponies, although it can occur secondary to liver disease.

Animals, such as racehorses, that perform maximal exercise may show poor performance and exercise intolerance as they have difficulty inhaling enough air through the restricted airway. However,

horses working at a lower level, such as pleasure horses, may make a noise but the obstruction to airflow may be insufficient to compromise performance. In these cases, allowing the horse to work with less head and neck flexion can sometimes resolve problems associated with exercise intolerance.

Three potential causes

- **Laryngeal paralysis:** (pictured, top right) although this is incurable, there are several surgical procedures that can be used to help open the airway in horses where performance is being affected. In mild cases a Hobday operation is used, which involves removal of a piece of laryngeal tissue to enlarge the airway and increase airflow. In more severe cases "tie-back" surgery is performed, which uses special sutures to hold the paralysed portion of the larynx back in a more normal position, opening the airway.
- **Displacement of the soft palate:** (above right, middle) this condition particularly affects racehorses. The soft palate is a long thin piece of tissue dividing the pharynx into two sections, the

oropharynx (the back of the mouth) and the nasopharynx (the back of the nose). Together with the larynx, the soft palate works to coordinate swallowing and breathing. During exercise it lies beneath a cartilage flap, called the epiglottis, directing air through the larynx and into the lungs.

Occasionally the soft palate can become displaced over the top of the epiglottis; on expiration air is forced under the exposed soft palate, which billows like a sail and blocks the airway. Displacement of the soft palate causes a gurgling or choking sound and affected horses will often slow down or pull up abruptly, swallow to replace the soft palate to its normal position and then continue to exercise unaffected.

Because displacement of the soft palate tends only to occur at exercise, diagnosis can prove difficult. However, the increasing availability of portable endoscopes that can be worn by the horse while it exercises is proving very useful.

Medical management includes the use of a dropped noseband or tongue tie, as both reduce retraction on the



Laryngeal paralysis: incurable but manageable



Displacement of the soft palate causes a gurgling sound



A rogue fold of tissue is seen in epiglottic entrapment

larynx, which may predispose horses to the condition.

A variety of surgical treatments are available but most only carry a modest success rate. These include removing part of the soft palate; "firing" the soft palate to cause scarring and stiffening; or a "tie-forward", which pulls the larynx forward allowing more of the epiglottis to cover the soft palate.

- **Epiglottic entrapment:** (above) this happens when the epiglottis becomes trapped beneath a thin fold of tissue at the back of the throat. Epiglottic entrapment is associated with the production of an abnormal respiratory noise, which can be either inspiratory or expiratory, and some horses will cough when eating. Treatment involves either cutting or removing the rogue fold of tissue and can be performed under standing sedation.

It is beyond the scope of this article to discuss every possible cause of respiratory noise. If your horse starts to make an abnormal noise either at rest or when ridden it is important to get them investigated thoroughly. **H&H**

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Pictures by imageBROKER/Alamy and Patrick Pollock MRCVS Glasgow University