Visible Indicators of Health in the Head and the Throat.

Many of the factors that influence the health of our birds are hidden to the naked eye and it is only through veterinary examination that these things are revealed. However, there are external signs that reflect whether or not various internal systems are working well. The informed fancier must learn how to identify and interpret these signs. This article deals with indicators of health involving the head and throat.

Tonsils.

After opening the bird's beak, an important structure to look at initially are the bird's tonsils. The tonsils are a visible part of the bird's immune system and, as such, can react to potentially harmful organisms. Pigeons have two tonsillar areas in the mouth. One is small (about the size of a match head) and is located on the floor of, and just inside the opening (glottis) of, the windpipe (trachea). The second is comparatively large and includes approximately two-thirds of the bird's soft palate. It is divided into two segments with a groove running down the centre. Flyers are familiar with the bird's fringe (spicules) along the base of the soft palate. The tonsils form a triangle within the soft palate with the fringe forming the lower edge of the triangle. In health, the area is just discernible from surrounding tissue, being a slightly redder colour.

When stimulated, the tonsils become inflamed. They become inflamed in response to disease and in pigeons the two usual problems are wet canker or respiratory infection. When inflamed, the tonsils become redder and swollen and so contrast more with the surrounding tissue.

As the tonsils on the palate swell out, if both sides do so uniformly, the central groove becomes deeper. If one side enlarges more than the other, the groove will deviate to one side, with the swollen segment pushing across onto the other side. This swelling may cause the fringe to disappear. If associated with respiratory infection, then, as the swelling subsides, the fringe will reappear. However, if the tonsillitis is due to canker, sections of the fringe and, indeed, the tonsil itself will be lost permanently.

Wth longer-term tonsil inflammation, small abscesses form, which appear as small yellow dots scattered through the tonsillar tissue. Microscopically, these consist of clumps of white blood cells, called lymphoid aggregates, and other inflammatory changes. Tonsillar abscesses are almost invariably associated with wet canker. When the disease is active, i.e. the trichomonad count is high, these abscesses are yellow and bulge out from the tonsillar tissue, and the immediately surrounding tonsillar tissue forms a red zone of inflammation. At this stage, as a consequence of the wet canker flare-up, the birds cannot perform. As the condition resolves and the tonsil is no longer inflamed, the abscesses gradually lose their colour, changing to white and then becoming a translucent plaque on the tonsil. At this stage the condition is no longer active and cannot affect race form. The spots may, however, take weeks or even months to disappear. Teams containing birds with white spots in their tonsil therefore tell us that they have had a wet canker flare-up in the past and alert us to the possibility of repeat flare-ups with the stress of racing ahead. Where individual birds are developing new yellow spots in the tonsil, the fancier should, if racing, organize an immediate crop flush or, alternatively, instigate treatment with an effective anti-canker medication and seek veterinary advice.

Similar changes can be observed in the tonsil on the floor of the windpipe. However, they are indicators of respiratory disease.

Mucus.

The level and appearance of mucus in the throat can also give an indication of the bird's health. In health, the throat should appear wet but with no accumulation of mucus apparent. The level of clear mucus can marginally increase in birds that are 'just not right'

and is more often than not associated with stress-producing circumstances, such as problems with the loft environment or a recent flaw in the birds' management. Rather than reach for medication, correction of the underlying problem is the more appropriate course of action. When bubbly clear mucus starts accumulating at the back of the throat, particularly if the throat appears red and inflamed, this is indicative of inflammation in the area. This is almost invariably associated with wet canker. The fancier should monitor the birds for other signs associated with wet canker, as discussed in earlier articles, and seek veterinary advice. The mucus becoming white, coloured or turbid often indicates secondary bacterial infection and is usually due to *E. coli.*

Wth respiratory infection, thick, white slime can accumulate in the throat. This slime, however, does not form in the throat, but rather moves into the throat from neighbouring respiratory structures, namely the sinuses and trachea. Pigeons have several hollow cavities in the bones of their skulls, called sinuses. These are lined by a sensory membrane, which produces mucus in response to irritation. They open into the slit in the roof of the mouth called the choana. Wth inflammation of these sinuses, i.e. sinusitis, as in a human with a cold, mucus forms but then drains through the slit into the mouth. Mucus that forms in the trachea is coughed up into the throat. Sometimes these birds can be heard to cough or may have the mucus component to their 'grunt'. Such mucus will sometimes run in a thread from the top of the trachea, which may appear red and inflamed to the roof of the mouth. Dutch veterinarians believe this mucus to be associated with *Mycoplasma* and state that it is very common, affecting 90% of lofts there.

Mycoplasma is a difficult disease to diagnose in the live bird. Only certain labs culture *Mycoplasma,* and it is an expensive procedure. Blood tests are used to diagnose the conditions in chickens. In Australia, the condition is usually diagnosed by suggestive changes found either grossly (white mucus lining the upper 20 - 30% of the trachea) or microscopically (lymphoid aggregates scattered in increased numbers throughout the respiratory system and increased level of mucus-producing glands in the upper trachea, visible at autopsy). A tentative diagnosis can also be based not only on the signs shown by the birds, but also by response to treatment. Some European veterinarians state that the problem is so common that a loft is assumed to be infected unless it has been treated before racing or recently during racing, and feel that, although it does not clinically affect the birds' health, it has a big affect on race form. Wth severe respiratory infections, mucus will accumulate at the beak margins where it becomes air dried and yellow.

When assessing the level of mucus, the birds should not be examined after feeding or exercise as some mucus found normally in the upper crop can, during this time, move into the throat. Similarly, this mucus can be massaged into the throat.

Colour.
The lining (mucus membrane) of the throat should be rosy pink in health. It becomes pale with anaemia (low red-blood-cell count) and low blood pressure, which occurs with poor health. Wth a normal red-blood-cell count and blood pressure, the blood vessel at the back of the throat should be turgid and pulsate with the beat of the heart. Wth respiratory problems, the lining will become pale blue due to the blood not containing enough oxygen. The tongue in health should also be rosy pink. A purple tip can indicate respiratory problems. Some birds, however, do have a naturally pigmented tongue tip and so it is a matter of knowing your birds so as not to become confused.

Defects in the tongue outline usually indicate an earlier pigeon pox infection. Yellow plaques on the tongue or throat are either a viral vesicle (Circo, Herpes, Pox) or trichomonad ulcer. As a general rule, if a line is drawn through the base of the beak, a yellow plaque in front of this will be viral and behind it will be canker. Trichomonads are fragile organisms and the environment from the base of the beak forward is too hostile for them.

Windpipe shape.
A bird that is breathing with ease can relax the muscles of the windpipe and its opening will

appear narrow and elongated. If the bird is having trouble getting its breath, several mechanisms are available to it to provide more oxygen. It can contract the muscles of the windpipe, which dilate it and gives the opening a rounded shape. The healthy pigeon has a glottis (windpipe opening), that is narrow, elongated with sharp edges and with small spicules along the side. The more rounded the glottis, the more distressed the bird. To provide more oxygen, the bird can also breathe faster and deeper. This will cause the glottis to move, in the process elevating the tongue tip . In health, the tongue will lie flat on the floor of the mouth and the glottis will appear still but I am cautious to attach too much significance to a tongue that is elevated in profile with the beak open, placing more significance on other signs. Obesity and egg laying can cause these signs, but also space-occupying abdominal lesions and respiratory infections, particularly of the airsac. The shape of the glottis also varies between families and, as a general rule, cocks have a slightly more slit like opening.

The slot in the roof of the mouth should be free of debris and slightly open. Birds that are breathing with ease should, when in the hand, have their beaks tightly closed. If it is difficult to see whether there is a slight space, the beak can be held closed while monitoring the birds for signs of distress.

Sinuses.
As mentioned earlier, within the skull of the pigeon are several small cavities called sinuses. One of these encircles the eye in the shape of a doughnut. The sinuses interconnect through very narrow ducts, which means they are poorly drained. With respiratory infection, fluid can accumulate in the sinuses, causing them to bulge, leading to swellings around the eye. These swellings can physically squash the tear duct (which carries tears from the eye to the inside of the choana), causing tears to overflow the eyelid margin and wet the face. When checking for bulges, the head should be looked at not only from the side but also from the front and top.

Eyelids.
Pigeons have, in addition to the two eyelids that we have, a third eyelid (nictitating membrane). All eyelids are lined by a membrane called the conjunctiva. When inflamed, this becomes red and swollen. This is usually associated with respiratory infection. When infection is mild, the third eyelid can have trouble fitting behind the main eyelids because of the thickened membrane covering it. Severe infection is the classic 'one eye cold'. However, not all red watery eyes are associated with respiratory infection. Some older birds, particularly if heavily wattled, develop loose-fitting eyelids, leading to air drying of the conjunctiva and irritation. This is compounded by the bird attempting to relieve the irritation by rubbing the eye with its wing butt.

The eyelids, particularly in pieds, are a site for U.V.-induced tumours. Goblet cell cysts also occur. Goblet cells produce a mucus that enables the tears to stick to the eyeball surface, in the process preventing the eye drying out as the bird flies through wind. A mammal's eyeball with air passing over it at the speed a pigeon flies would dry out.

Ceres.
Birds produce a white powder, which covers the eye and nose ceres. They fail to produce this when sick and so the ceres become dull. In addition, with respiratory infection, they become stained with discharge. Inflammatory material that forms in the sinuses drains underneath the nose cere and then through the slot in the roof of the mouth into the back of the throat. As this material flows under the nose cere, the cere acts like a sponge, absorbing this material, which stains it various shades of brown depending on the volume of material present. Not all 'less than white' ceres, however, indicate a problem. Rain can wash off the white powder covering the cere, exposing the red blood below to give the cere a pink hue. Also, young hens can lose this white powder through excessive billing.

Eye.
In health, the eye should have a quick blink, a responsive pupil and a rich iris. A bird in which one eye becomes pale usually has a uveitis. The uvea is the iris and its support

structures. It floats like a web within the fluid bag that is the eyeball. It loses colour in one of two situations:

1. **A physical knock to the eye** - This causes the uvea to flap within the eyeball, in the process damaging itself or,
2. **A blood-borne generalized disease, which inflames it** - The only diseases in which this occurs with any frequency in pigeons are pigeon pox (including vaccination) and some forms of respiratory infection. A loss of colour in both eyes usually indicates severe illness. Anaemia or the drop in blood pressure associated with severe disease means that there is less blood flowing through the eye, giving it a washed-out appearance.

It is surprising, perhaps, just how much information can be gained by a look at the head followed by opening the beak and looking down the throat. Many fanciers seem to do this almost routinely when first handed a bird and it is important for this not to simply become a habit where important signs are overlooked.