

CONCERNING POULTRY

EARS AND EARLOBES

By: Elly Vogelaar
Photos: Archives A E

Chickens - like all birds - don't have an outer ear. A little behind the eyes is a round hole - the external ear opening - with the ear canal leading to the eardrum, which is not visible. The ear opening

is covered by a tuft of small

feathers to

protect it from dust and other potentially harmful materials. Most of the time, when we say 'ears' we mean the earlobes. Earlobes are folds of skin below the ears proper, sometimes called 'deaf ears'. But although chickens don't have an outer ear, they have a well-developed ear and can hear very well.



Above: Note the little bunch of feathers that cover the outer ear.

Left: Even Naked Necks do often have that small ear-tuft.

Below: These Gournay bantam chicks seem to have almost 'human-like' ears.... But that is just an optical illusion; within a few weeks the head will be fully feathered and the funny ears will disappear.



HEARING

Communication between chickens takes place mainly via signals provided by displays and sounds. Chickens are able to express over 30 different sounds, such as warning and predator alarm calls; contact calls; territorial calls; laying and

nesting calls; mating calls; threat calls; submissive calls; distress, alarm or fear calls; contentment calls; and food calls. This means that they also have a very good sense of hearing. It is commonly held that the hearing of a chicken embryo begins on incubation day 12. The real 'communication' between hen and chick starts about 24 hours before hatching out; when the chick chirps, the hen will answer.

Chicks are able to recognize their mother's voice out of a lot of other sounds at a distance of 20 meters. Calls produced by hens range from 250 cpm (the broody hen 'cluck') to about 3000 cpm (the distress call). Studies confirmed hens can hear sounds as high as 8000 cpm. Research has found that hearing in hens cover a range from 60 to 11950 Hz, with the highest sensitivity from 815-2000 Hz, which is their normal hearing range.



Photo above: courtesy Martin Marcel.

One peculiarity of poultry is that they have organs for perceiving vibrations. These are located predominantly on the legs, but also on the skin. They feel vibrations of the ground and in the atmosphere, which help them recognize enemies very quickly. You can notice it if you quietly approach your hen house in the darkness. Immediately you can hear the warning sounds of the rooster.

When mammals (thus also people) age, the delicate hair cells in the cochlea, that detect sound, are slowly killed off, but hearing in birds can regenerate. A reason to envy a chicken!

EARLOBES

The earlobes are fleshy structures growing from below the ear opening, behind the jaws, downwards to the wattles. Same as the comb and wattles, they are covered with a thicker epidermis (upper layer of the skin) than the feathered body parts. The dermis contains many blood vessels. These skin features develop according to the influence of sex hormones, mainly testosterone.

Right: Appenzeller Spitzhauben cockerel.

Earlobes are often hardly developed and almond-shaped in the old pheasant-like breeds and Game Fowl; medium sized in Asiatic and Asiatic-related breeds; rounded and rather large in Mediterranean breeds.



The accumulation and purifying caused by selection by breeders over a long time have improved the regularity in form and size of earlobes, especially the white ones, from the medium large oval earlobes of the Leghorn to the perfectly round ones of the Rosecomb bantam and the immense earlobes of the Minorca.



Also the earlobes tend to grow larger when the birds age. Thus the size and form can vary a lot, and the same holds for the colour of the lobes.



Above: The form of red lobes is not always that much 'purified'... These earlobes are attached to the wattles.

Photo: Sigrid van Dort.

COLOUR OF EARLOBES

The poultry fancier has decided that the earlobe must be all white or all red, making the colour a breed characteristic. Variations from standard colour are a mayor fault at the exhibition, thus uniformity of colour has been rigidly selected for during a considerable period. For this reason most breeds are quite constant for earlobe colour.



The two main colours are red and white. Crossings of the two result in predominately white, or predominately red earlobes. Not just mixed, but white in the centre with a red border or red in the middle with a white border. All other colours are caused by pigment influences.

Left: White in the centre with a red border.

Below: Orpingtons have red ear lobes.

Red - The red colour is due to the absence of any pigment compounds and, like the comb and wattles, is due to the vascularisation of the skin there; one sees the colour of blood when seeing red ear lobes. The degree of redness is somewhat dependent upon the health of the bird. The earlobes of the Malay and Asil breeds are very dark red to almost brownish.





Left: White ear lobe at a La Flèche cockerel.

White - For some breeds of poultry, especially those classified as Mediterraneans, the colour of the earlobe differs from that of the rest of the skin of the face. In such cases it is of a pearl white colour and although the histology of the tissue has not been studied, the colour appears to be due to a deposition of white material (purine compounds) just beneath the epidermal layer. White earlobes are almost a pearly white, more than just 'pale' lobes!



Right: White ear lobe at a Vorwerk bantam cockerel.



Yellow - There is a relation to skin colour and lobe colour, so due to the yellow pigment some yellow legged breeds -for instance Leghorns - are prone to show yellowish lobes.



Left: Leghorn cocks with yellowish ear lobes. In old cocks the lobes can get rather large or sometimes strangely bubbled.

Blue - Although the earlobe is perfectly white in the many breeds, it sometimes can have a bluish tinge, as for instance in the Bassettes. The Silkie however has real blue earlobes. This blue pigment is caused by the combination of purine pigment layered over fibromelanosis (dark skin). The azure or greenish lobe colour in young pullets - for instance in Dutch Bantams - will become white when the pullets mature.

Right: A Silkie has blue ear lobes.



Purple – ‘Gypsy’ birds that have a dark comb and black face, have ‘black’ ear lobes. We don’t know much about the genetics of gypsy. It may be a number of things... perhaps even polygenic. Due to these genetics red earlobes appear purple or even blackish. Sumatras and Ardenner Fowl have such a gypsy face, but this is different from the black skin of Silkies. The black of the Sumatras seems to be on the surface while the black skin of the Silkie goes deeper into the dermis and other tissues. As far as we know the genetics are still unravelled, but this trait can be easily lost, having seen the many ‘red faced’ Sumatras. There are also ‘intermediate’ types, so the genetics may be complex, or there may be even more than one type.



Right: At the Ajam Cemani not only the earlobes are totally black, but the whole bird is, even the bones and flesh.

INHERITANCE OF EARLOBE COLOUR

In the early 1900’s the Dutch poultry specialist Houwink described many crossings and apart from the results on comb, leg colour, feather colour and such, he also documented the earlobe colour of the F1. When crossing red and white earlobes he noticed that the red and white don’t ‘mix’ but the white appears in the middle. There are no definite conclusions; sometimes the white colour is dominant (in Minorca crossings) other conclusion is that probably the red earlobe colour is dominant, but always this dominance is incomplete. He also stated that maybe some of the used birds were – probably - not pure in earlobe colour.



Left: This is F1 from White Faced Black Spanish being crossed with Black Sumatra. The F1 had nice white lobes and no white in face. Photo: Dan Honour.

Right: In the White-Faced Black Spanish breed the white colour is extended to cover the entire face.

D.C. Warren wrote in 1928: “Earlobe colour has a complex factorial basis. Breeds having the same earlobe colour – or even individuals of a single breed or strain - may differ considerably in their genetic constitution with respect to this character. Although the earlobe is one of the conspicuous



furnishings of the head of the chicken, we find little mention of it in genetic literature. Numerous crosses have been made involving differences in earlobe colour but practically nothing has been written upon the inheritance of its colour variations. The variability of the F1 and F2 generation and the complex nature of its factorial basis have probably been the conditions which have discouraged the undertaking of genetic investigations of this character. The data already presented indicate that sex-linked factors are involved in determining earlobe colour in some breeds, but evidence supporting this view is not found in all matings. In some cases results would lead one to expect evidence for autosomal factors for colour of the earlobe. For instance, from crosses of the Single Comb White Leghorn and Jersey Black Giant breeds there is evidence for the existence of at least three factors influencing earlobe colour; one sex-linked and two autosomal”.

Even today we still don't know much more; it is obvious that the genes that allow for purine pigment (white) to show, are clearly polygenic - so a combination of different factors, some possibly dominant and some possible recessive.



Above: Red Caps have red ear lobes and lay white eggs.

This is all due to Genetics and there is no genetic relationship between eggshell colour and earlobe colour. First of all, earlobe colour is a polygenic trait and the polygenes will not be all on the same chromosome. Secondly the eggshell colour genes are also on different chromosomes. With all these genes involved on different chromosomes, there simply is no genetic linkage / relationship between earlobe colour and eggshell colour.

The studies of D. C. Warren, carried out in 1928, proved that the autosomal factors for earlobe colour showed no linkage with those for any autosomal character, the crosses could be tested, and there was also no evidence of any linkage between the factors for earlobe colour and egg colour.

EARLOBE COLOUR VERSUS EGG COLOUR

It's a widespread belief that hens with red earlobes produce brown eggs, while hens with white earlobes produce white eggs. This is not an absolute rule though; for instance the Redcap and the Dorking (red ear lobes) and the Sumatra (dark ear lobes) lay white eggs and the Araucana breeds (red lobes) lay eggs in colours ranging from green or blue to pink or lavender tinted. Many white lobed breeds lay light tinted eggs instead of pure white. When crossing breeds with white earlobes to red lobed breeds, it is very hard to breed a clean white shell after crossing; you can breed the white earlobe before you breed the tint out of the shell.





BREEDING (LARGE) WHITE EARLOBES

In some white lobed breeds, such as Hamburg, Rosecomb bantams, Minorca, Spanish, i.e. the size of the earlobes is a characteristic. These old tips from 1920 might still be useful: Dr. E.D. Geiger wrote: "In Minorcas, a good-sized lobe should be sought after, but an extremely large lobe tends to produce white in the face of cockerels. A bit of red in lobes is better than white in the face of cockerels or pullets".

Rev. F.W. Sturgus wrote: "The desire of all Minorca fanciers is to breed a large almond—shaped lobe of good texture. When two good specimens are mated together the resulting progeny are not large—lobed, but distinctly medium in size, and this is much more markedly the case where two strains are crossed. Experience shows that mating together the related medium—lobed progeny throws the large lobe in a proportion of the next generation. This case shows that one who always brings in new blood, rarely breeds large lobed specimens, while one who inbreeds gets them more readily".

Cyrus M. Lewis wrote in 1980: "The female influences the size of the earlobe a great deal. The use of a big white earlobed male, may skip a generation, but by using the male back on his daughters will often produce the large lobes again".

Danne Honour (2009) writes: "The earlobe trait depends on a multitude of factors, but there are several things to help guide you. It is quantitative or cumulative and in general breed the best to the best selecting toward the direction (Red or White) you want to go. There may be some genes that are sex-linked also, thus the male is more important. Whatever the males' lobe colour, by keeping his daughters (they inherit his Z Chromosome), then again use a good coloured lobed male. Using a white lobed male on red lobed females, tend to produce more white lobes than the reverse mating, but this is more so in first crosses. An intentional cross may take several years to work out earlobe colour variation.

It is interesting to note that many crossings with White Faced Black Spanish and a non-white earlobed breed, results in white earlobes and red faces".



Photos:

Above: Almond shaped earlobes in a Hamburg cockerel.

In the middle: Round earlobes in a Rosecomb bantam pullet.

Below: A Minorca cock with oversized earlobes, and as you can see these extremely large lobes produce white in the face.

Right: Blisters in a white ear.

EXTRA CARING FOR WHITE EARLOBES

White ear lobes are more easily (and more visibly) damaged than red ones. The earlobes get crusty if the males can reach each other through the pens. The pecking leaves hard crusty scabs, which will reduce the show value of a bird. Chickens of a white lobed variety



should also be kept sheltered from frost and strong winds, as these will in almost all cases make a white lobe rough with a tendency to become tingled with red. Damages are often caused by blisters that appear spontaneously; they can burst open and give nasty scabs.

Right: Nasty scabs in a Rosecomb earlobe.

During the years all sorts of remedies can be read in poultry literature to heal the blisters and other soar or red spots before entering the bird at a show. The most important is not to wait till the day before, but start with a week or even a fortnight before the show and applying something to heal. These are given suggestions: 1. Wash with a soft piece of sponge with pure soap in tepid water, after which it should be dried with soft towel and lightly smeared with Zinc Oxide (a skin protective substance known for its soothing qualities). 2. Use a cosmetic cream or oil once or twice a day on the show birds to heal them up. 3. Regularly powder the blisters with talc, it makes them dry out and they will cure nicely.



Some extra information

The earlobes of a Rosecomb are large, prominent, flat, and absolutely round with semi-circular edges and fitting closely to the head. Smooth, of uniform texture all over, not having a blown up appearance or hollow centres. The velvety white covers the complete earlobe, including the rounded edges.

Left: But as you can see in the picture, the back side of the earlobe is red!

Chickens with beards do have earlobes, but you just cannot see them as they are covered by the beard, especially when having a full 'three-cornered' beard, which is composed of feathers turned horizontally backwards from both sides of the beak and from the centre vertically downward, the whole forming a tri-lobe effect.

Right: This Bearded d' Uccle bantam pullet has small red earlobes hidden behind its beard.





Left: Often young Dutch bantam females have bluish earlobes. It pretty much goes away by the time they are old enough to start laying.



Right: Earlobes are often hardly developed in Game Fowl. This is a Shamo cockerel.



The famous 'ear tufts' in the Araucanas are feather covered peduncles protruding from the head in the area of the ear opening or the ear lobe. Thus these tufts are NOT growing from the earlobes! The Araucana has earlobes just as other chickens, and they are red coloured.

Left: Araucana eartufts.



Photo: Dirk de Jong.

Photo right: Rony Duchesne.

Sources:

- Inheritance of earlobe color in poultry - D. C. Warren, 1928.
- All Breeds of Poultry; Origin, History, Description, Mating and Characteristics, by Frank L. Platt.
- Poultry Senses - Clive Dalton. <http://www.lifestyleblock.co.nz/>
- The Social Behaviour of Domestic Birds - J Mench, LJ Keeling, 2001.
- The Emergence of Hearing in the Chicken Embryo, by Timothy A Jones, Sherri M Jones, and Kristina C Paggett.
- Studie over Hoenderachtigen en Watervogels- Prof. Dr. A.E.R. Willems en ET. Brandt, 1971.
- Buff coloration in poultry - Danne J. Honour, 2008.
- Earlobe Color-D.J.Honour, 2009.