THE BRAHMA CLUB OF AUSTRALIA

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PRESIDENT'S REPORT

Hi to all members,
What a devastating year it has been for rural Australia! Its impact has been felt by regional areas and will soon be effecting most metropolitan centres if there is not widespread rain this summer.

In my district there has been some thunderstorm activity recently but fall have been isolated and in most cases just dust and a few spots. The shortage of grain and hay has resulted in some extraordinary price hikes. Grain prices have risen by as much as 70% and hay has doubled in price in the last six months. While the widespread drought has caused the shortage of feed, manufacturers and merchants are taking advantage of the demand to set their prices.

I've always relied on a ride on mower to cut the grass but I recently bought a push mower with a catcher, as there is not much to mow, except where I water from a bore supply. I've found the mower catcher easier to harvest the grass clippings in the grain mix for the angora goats instead of lucerne chaff. I calculated the mower will have paid for itself four months after purchase, in the savings from not buying chaff.

My hatching results this season have been anything but encouraging, with my favourites, the large lights; I can only describe as disappointing. The large golds and large buffs have done fairly well and the large blacks have given a reasonable result. These latter three colours have not been as genetically fixed as the lights, so a few months has to pass to measure their success.

How are other members fairing with their breeding season? Carol, our Secretary, would live to hear from you to include any stories or articles that you may want to submit for our newsletters.

How many members use the standard when selecting their chickens as they develop? The process of culling can be made easier by referring back to the Australian Poultry Standards even at an early age of the chicken's development. Accurate decisions can be made by using the "interpretations of the standard" in regard to defects such as crooked or malformed keel, bent legs, crooked toes, deformed beak and abnormal or roach skeletal structure of the back.

The degree of defect may vary and it is tempting to let some individuals pass in the hope it may improve. It doesn't! All these decisions can be made even before you open the standards book further to the Brahma section. As the chickens develop to about 8 – 10 weeks you can ask the question – is it a Brahma? Has it got the correct leg colour? Has it got a pea comb? If the answer to any of these questions is no, it would be inappropriate to sell them off as Brahmas, or in fact be discovered on the show bench, even though they would have merits in the breeding pen.

With the current cost of feed it would be an advantage to cull early to save money and ultimately save space for your better chickens.

I would like to encourage all the members who are not familiar with the standard to obtain or borrow a copy to study. It will unify our efforts in the Brahmas progress and assist the membership in any future discussion we may have at club meetings.

I wish all the members, and their families and friends, a happy and safe Christmas and a prosperous New Year.
Best wishes,
Andrew.

PRESIDENT OF VICE

(Vice President)

Hi Everyone,
Well that time of the year is fast approaching us all with Christmas just around the corner. Most of us of us have finished or are just setting the last of our Brahma eggs. I hope everybody has had a successful spring and managed to breed plenty of Brahma for our Annual Show next year.

This year I have had a lot of trouble with feather pecking. Having bred a lot of chickens in a short time, compared to last year the problem has doubled, and I have lost a small percentage of chickens. On the whole I saved the majority and if I noticed one in trouble, I applied a few drops of Betadine to the broken skin, followed up by Medi Pulv powder, and that forms a hard scab very quickly. Also a little rescue remedy as well, to calm the poor chicken, I then placed them into a separate pen for 24hrs. Somehow the others left them alone after this.

If anyone else has some helpful hints on feather pecking, I, and I am sure other members would appreciate a few tips on the subject.

I have heard a whisper that the Brahma Club is in for a pleasant surprise when we all venture to Wyong for next years show, as we were all extremely impressed with the Central Coast Poultry Clubs Pavilion last year, I believe that don Jones and his crew have been busy in adding an extension on to the club rooms. Well done Don and The Central Coast Poultry Club. This means that we all have to bring along as many Brahma to next years show as we possibly can.

In mentioning Don Jones, another club member is the clubs Patron Khris Abuid, who is so very patient and helpful in putting our Newsletters together. All clubs of any description rely on a few people, and as we are a small Poultry Club, Khris is invaluable. Thanks Khris.

Another whisper I heard was that Carol's Uncle John, was in the fertilized egg business when she was young. He had several hundred young layers, called pullets and 8 roosters, whose job it was to fertilise the eggs. Her Uncle kept records and any rooster or pullet that didn't perform well, went into the stew pot and was replaced.

Now this took an awful lot of time, so her Uncle got a set of tiny bells and attached them to his roosters. Now he could sit and fill out an efficiency report, by listening to the sounds of the bells.

Her Uncle's favourite rooster was old Brewster, a very fine specimen, but his bell had not rung all morning so her Uncle went to investigate. Several roosters were chasing pullets and their bells were ringing. However, Brewster had his in his beak so it couldn't ring. He'd sneak up to a pullet, do his job and walk on to the next one.

Her Uncle John was so proud he entered him in the local show. Brewster was an overnight sensation. The judges awarded Brewster two prizes:

1) the NO Bell Prize
2) the Pullet Surprise

That's all the news from down here in South Gippsland. Have a safe and happy Christmas and a Prosperous New year.
Regards
Bryan

SECRETARY'S REPORT

Hello to Everyone again, also welcome to our new members,
I hope everyone is having a good breeding season, plenty to show at next years show at Wyong. Don't forget we need to really pass the 200 entries if we can this time. We have got 2 judges for our 3rd Annual Show. They are Bruce Pattinson and Dallas Smith.

Both Khris and myself are looking forward to seeing everyone again, especially on the Saturday night for the get-together at the Tennis Club. Also, another reminder that the AGM is on the Saturday afternoon. If you know you can't make it but you want or need something brought up p[lease contact me so that it can be put onto the Agenda.

At the last AGM we had discussed ideas for fundraising for our club. A couple of ideas presented by Dale and Skye Baker were Fruit and/or Veggie baskets, although these are really good ideas it is unfortunate that if someone from interstate won the prize they would have troubles with Fruit Fly restrictions.

We have contacted a Victorian Club member who may be able to get a Darrell Lee Chocolate Basket together for us as one of the prizes. It has also been suggested that we go with live Brahma's again, both Standard and Bantams as it proved to be such a winner last year. Can we have some offers of Standard and Bantams? Another suggestion has been for plastic waterers and feeders. Also if any of your friends have any ideas on fundraising prizes please come forward with them as soon as possible.

Now moving onto our Newsletter, our editor needs more imput from members. Anything that may be of help to other breeders who come into the fancy from scratch (remembering that not everyone who starts with a breed wants to buy show stock) There are people who wish to create their own lines from scratch, but any help is also appreciated by these breeders to create their own line.

This issue and the next has a two part article of hatchability analysis which has been taken from the internet (with due credits). There is also another article about sexing chickens and scaly leg.

I am continually being asked for contacts for fertile eggs and stock, if you have stock or eggs available could you please let me know (for those on the net email). Members may have noticed a website address on the frontcover of the last Newsletter. If members let Khris or myself know we can place ads on the website for those who do have stock available from time to time.

That's about it for me. Khris and I wish you all a Very chicky Christmas and a Happy New Year, may it be a safe and happy time for us all, and look forward to seeing you all soon.

Regards
Carol

Members: please note the new email address on the front cover.

COMBS By Lance Hicks

At the risk of causing mild offence to our Patron (Khris Abuid, who reckons you can't have hair and brains too) I wish to write about combs.

The Brahma Standards that I have read, have all called for our birds to have triple or "Pea combs. The best explanation of what that is, it's variations and the genetic information which shows how to produce it, is by Dr. Clive Carefoot, one-time President of the Poultry Club of Great Britain, in his book "Creative Poultry Breeding".

He writes "*A pure pea comb has the appearance of three small single combs parallel with each other, the middle one being larger. All are small compared with the standard single comb. The triple or pea comb mutation from the standard single was shown to be incompletely dominant and denoted P by Bateson (1902). The impure pea comb has a larger well developed, thicker irregular central comb, whilst the side combs may be quite inconspicuous and resemble side sprigs.*

The interaction of rose and pea combs causes the walnut comb, which is low, solid and moderately small, with several surface conformations and variations. An unusual feature of the walnut comb is that it often has a shallow transverse groove separating the rear third from the front two thirds. In newly hatched chicks there are frequently small bristle like hairs which help in the detection of the walnut comb." Dr. Carefoot makes the point that " *frequently the comb of the female is not given sufficient examination before the breeding pen is mated.*"

Until he was re-educated, our Vice President, Bryan Jon, reffered to all female combs, except the blade comb, as "insignificant". The positive identification of comb type in hens and pullets isnot easy or certain; and at this stage of the re-creation of the Brahma in Australia it is reasonable to expect every bird to have the perfect, pure pea comb. However we must notdespair. Instead, look at our member and good friend Don Jones, then look at another of our members, his graddaughter, the beautiful Jessica Bunn. Clearly a lot of improvement can be made in two generations. And so it is with our chooks.

This is how in regard to combs.

If both birds of a pair have walnut combs, then half of their chickens will too. About a quarter of the chicks will have rose combs and should be culled, but the other quarter will have the correct , pure pea combs.

If both parents have impure pea combs: (ie. Pea/blade combs), then half of their chickens will to. About a quarter of the chicks will have blade combs, and if they have yellow, feathered legs, can be used to breed Cochins. The other chicks will have the correct pea combs.

If your rooster has an impure pea comb; that is a pea/blade comb, and only the hens that were available to him had walnut combs, then you would expect to breed a lot of rubbish – and so you would. But in about a quarter of the chickens the P gene from the hens walnut comb, and the P gene from the impure pea comb of the rooster would have combined to produce pure pea combs on the chickens.

Of course not all pure pea combs, even those produced from pure pea comb to pure pea comb matings, are perfect as pea combs; that comes from further breeding and careful selection. Still it is marvelous what can be achieved in two generations – just ask Don!

SCALY LEG

This is seen as crusty like growths on legs with raised scales. It is caused by a small parasite that burrows under the scales do not leave scaly leg untreated as it can cause severe problems to the bird if left for a long time. I once saw a case where the scaly leg had grown enough to force the poultry club ring on the back of the birds leg to dig into the good flesh at the front of the leg which must have caused the poor thing a great deal of suffering.

Scaly leg often seems to crop up amongst feathered legged breeds so pay particular attention to any of these you may have. Scaly leg is NOT a sign of old age!! Many people seem to think that a bird with scaly leg is just old. Old birds can have nice legs too if you keep them free of this parasite.

Scaly leg can take a long time to correct and the birds legs will never look as nice as if they had never had the problem so prevention is far better than cure. It can affect any bird but is unlikely in waterfowl due to their aquatic nature. It can be treated in the following ways.

I usually take the bird to the house and soak its legs in warm water for a while to remove any dirt. You will find that this will soften some of the crusts that may become loose and detach. DO NOT pull at the crusts or they may come away taking the birds skin with it and you end up with a bleeding mess. But any that can be SAFELY removed can be gently eased off. Don't scrub the legs, you would find this painful and so does the chicken! Dry the legs and apply one of the following.

Scaly cream: This is available from pet shops for treating budgies with scaly face. This works well for small numbers of birds. Rub it well into the legs and repeat every few weeks. For larger numbers of birds benzol benzonate available from chemists can be applied to the legs on a regular basis.

As it is caused by a mite a quick spray on the legs with a lice/mite spray will also work, but only to a degree as treatment really needs to get well down under he scales.

For the more organic amongst you I have had very good results using Eucalyptus oil. This works like a penetrating oil and after a few minutes of use you will find some scabs becoming very soft and fairly easy to remove. Treat every few weeks. massage well into the legs. I have yet to try Tea tree oil but think that this mixed with Eucalyptus oil would prove useful due to its healing properties.

I use Eucalyptus oil as a preventative against scaly leg. and it seems to work.

Some old time fanciers still recommend using things like paraffin or old sump oil petrol creosote and other things that today can be considered hazardous to health not just the birds but yours as well. I'm not for a moment suggesting that they didn't work, they obviously did, but there are really far better and less risky treatments available to the Poultry fancier of the 21st century

NEW TIP!!

Now for a little extra tip, which I have only found out about recently, I've tried this and it really works well. If you buy a bird with really bad scaly leg, get some Protocon ointment. Protocon is a sticky yellow sulphur based ointment sold for use in horses. Slaver this stuff all over the bird's legs, work it in well. Then wrap some paper tissue around the bird's legs. Then, cover this paper tissue with duck tape, use it as a sticking plaster. (The paper tissue will act to stop the duck tape not sticking and is nicer for the bird) leave the bird with the plaster on for 1 week. After this gently removes the plaster and tissue, you will find the scabs usually come off fairly clean. You may have to repeat the process but I have been astonished at how well this has worked.

Do remember that when treating scaly leg with various lotions it can sting if the skin gets broken. So do be gentle when treating for this complaint.

MEMBERS LETTERS

A letter from a new member seeking advice.

Dear Ma'am,
Would any of your club members have any advice on when to start chicks on meatmeal – pollard and bran – bread and milk – grits (shell) also any secrets on growing chicks to the best of their growth.
Thanking You
Bob Mundy
PO Briagalong
Vic 3860

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Following on from other members and how they got started in breeding Brahma's, this is from Mark Collins. Some photo's of his birds are at the end of this Newsletter.

Our father was given a pair of Light Brahma bantams from a friend; this pair was not of good quality. They were not thought of for breeding purposes and were just left to run free range around the yards.

It was not until we had read about there being a shortage of good stock that we realized that with a bit of effort we could get something of standard up and running. Breeding from our original pair, and from them with a lot of culling out, we obtained some rather decent stock. The problem with the comb was still an issue and by not having decent photo's to look at it was hard to get any ideas.

With a lot of phone calls and searching we found a person who had some stock, from who we obtained a pair to breed with. The cock had an exceptional comb and was a dark colour, the hen was light coloured and had great markings. From these birds we put the dark cock over our Light hens and vice versa. This gave us the comb we wanted, then the next season, we kept to trying to establish a pure Light and Dark lines from which we have today.

From all the reading and articles researched, our type is good and leg colour and feathering we think is exceptional. We had no trouble with the leg feathering, our chickens that are hatched come out with prominent feathering on their legs.

We have them housed in pens on sawdust and shavings, there is one cock to about four hens where possible. The hens lay everyday and we use either a clucky when we have one or they go into an incubator. We find the hens to be excellent mothers when chicks are hatched. Fertility rate is high and the chicks are born quite healthy and rarely do we lose any stock while they are growing. The chicks are fed on a ration of bread, milk and chick starter and grower. We find this feed keeps them growing quicker and stronger. The larger birds are fed on our own mix of grains and greens. We worm every six months, but we find that this breed is quite resilient when it comes to diseases. That is not to say that we do not have our ups and downs and like normal lose chooks for no reason at all.

We are currently working on different colours and lacings, which we will keep the club up to date with. We as breeders agree with the comments of the judge froom the show in which he said that the vulture hock should be kept as this defines the breed. All breeds are unique in some way and this breed is, and the vulture hock is part of this, and does certainly set the bird apart from the others.

HATCHABILITY PROBLEM ANALYSIS

The following is taken from the website of The University of Florida's dept of Food and Agricultural Sciences Webpage. The article takes up quite a bit of space, so it is being reproduced over 2 newsletters. I hope members find information in it useful for their breeding both now and in the future.

Introduction

When a problem occurs in hatchability, usually it can be categorized as a hatchery, egg handling, or breeder flock problem. If the problem has originated within the breeder flock, it is probable that it happened at least 4 weeks earlier, assuming 3 weeks of incubation and 1 week of egg storage. This delay in identifying a problem is costly and may even make it impossible to determine the cause if the effect is of short duration. It is necessary to identify the problem as early as possible, using candling at 1 week of incubation and constantly monitoring unhatched eggs, to minimize the delay in taking corrective measures. Analysis of hatch debris does not yield definitive diagnoses; however, it is a useful tool for determining the most likely areas for further examination.

It is of utmost importance for hatchery, egg handling, and breeder farm personnel to work together as a team to produce top quality chicks and to identify problems when they occur. Very accurate and complete records of the breeder flock (including egg production, mortality, morbidity, egg weight, shell quality, hatchability, feed consumption, and antibody titers) and the egg history from the nest through the hatchery are essential in providing clues to most hatchability problems. Personnel should be trained in recognizing problems, identifying causes, and implementing appropriate corrective measures.

The objective of the following outline is to suggest possible causes, and corrective measures when appropriate, for some of the signs of trouble observed when decreased hatchability occurs.

General Comments

The magnitude of the effects of deviations from recommended incubation conditions (temperature, humidity, turning frequency, ventilation, and egg orientation) is a function of the severity of the deviation, the length of time of the deviation, and the age of the embryo at the time of the deviation. The manifestation of abnormalities and the embryonic age at which mortality peaks occur due to nutritional factors usually depend upon the severity of the nutrient deficiency, how long the deficiency has existed, or how long an adequate diet has been fed to the breeders following a deficiency. Therefore, depletion rate, repletion rate, egg deposition efficiency, interference from inhibitors, and yolk formation time are factors that contribute to the effects manifested in embryonic abnormalities and mortality.

Troubleshooting: General Problems

1. ***Sign:*** **Eggs candle clear; broken out eggs show small white-dot germinal disc; no blood. Infertile.** ***Causes:***

    1. Immature males. Males may need to be photostimulated 2 weeks earlier than females.

    2. Males with abnormal sperm; females with abnormal egg (germinal disc). This occurs most often in very young or very old breeders.

    3. Too few males, resulting in infrequent mating; too many males, resulting in fighting or interference. Ratios of 1:12 to 1:15 for light breeds and 1:10 to 1:12 for heavy breeds are suggested.

    4. Extreme weather conditions.

5. Old breeders. Spiking with young males may help if the problem is with the male.

6. Breeder flock disease. This is often indicated by rough, misshaped, or thin-shelled eggs.

7. Excess body weight, especially in broiler breeder males (>4,800 g, 10.6 lb).

8. Nutritional deficiencies or excesses; severe feed restriction.

9. Feet and leg problems, especially in males of heavy breeds.

10. Certain drugs, pesticides, chemicals, toxins, or mycotoxins.

11. Parasites, such as mites.

12. Inadequate floor space.

13. Decreased mating frequency, or no mating, is commonly seen in many of the conditions listed above; this may often be the direct cause of infertility.

14. Inadequate lighting (intensity or day length).

15. Improper artificial insemination procedures (if artificial insemination is used).

2. ***Sign:*** **Eggs candle clear; broken out eggs show enlarged germinal disc; no blood. Fertile. Some are termed "blastoderm without embryo."** ***Causes:***

    1. Eggs stored too long. They should be stored <7 days.

    2. Eggs held under poor conditions, temperature too high or too low. Fluctuating temperatures. Temperature should be 60° to 65°F (15.6° to 18.3°C).

    3. Fumigation improper -- too severe or done between 12 and 96 h of incubation. Incorrectly spraying or foaming eggs with disinfectant.

    4. Eggs damaged during handling and transport by jarring, temperature shock (temperature increased or decreased too rapidly), etc.

    5. Eggshell sealed -- respiration inhibited.

    6. High temperature in early incubation.

    7. Very young or very old breeders.

    8. Heredity, inbreeding, chromosome abnormalities, or parthenogenesis.

    9. Breeder flock diseases.

    10. Failure of a basic organ system to develop normally.

    11. Egg wash temperature too high.

    12. Egg-borne infections (e.g., salmonella).

    13. Drugs, toxins, pesticides, etc.

    14. Infrequent or incomplete egg collection.

3. ***Sign:*** **Eggs candle clear; broken out eggs show blood ring or small embryo that died before 3 days of incubation; no dark eye visible.** ***Causes:***

1. Eggs stored too long or under improper temperature.
2. Fumigation improper -- too severe or done between 12 and 96 h of incubation.
3. High temperature in early incubation.
4. Low temperature in early incubation.
5. Eggs damaged during transport by jarring, etc.
6. Breeder flock diseases.
7. Old breeders.
8. Embryological development accidents.
9. Inbreeding, chromosome abnormalities.
10. Severe nutritional deficiencies, e.g., biotin, vitamin A, copper, vitamin E, boron, or pantothenic acid.
11. Frequently associated with a high incidence of infertility.
12. Drugs, toxins, or pesticides.
13. Contamination.
14. Embryos less developed at oviposition, i.e., pre-endoderm or very early endoderm formation.

4. ***Sign:*** **Dead embryos; 3 to 6 days of incubation; yolk sac circulatory system present, embryo on left side, no egg tooth.** ***Causes:***
    1. See causes 3.a-n.
    2. Lack of ventilation, or sealed shells, carbon dioxide >1%.
    3. Improper turning -- <1/h or >6/h; improper turning angle.
    4. Vitamin deficiencies -- vitamin E, riboflavin, biotin, pantothenic acid, or linoleic acid.
5. ***Sign:*** **Dead embryos; 7 to 17 days of incubation; each embryo has egg tooth, toenails, feather follicles (8 days), feathers (11 days).** ***Causes:***
    1. Improper incubator temperature, humidity, turning, ventilation. Low humidity increases abnormalities of aortic arches (13 days).
    2. Contamination.
    3. Nutritional deficiencies -- riboflavin, vitamin B_{12}, biotin, niacin, pyridoxine, pantothenic acid, phosphorus, boron, or linoleic acid.
    4. Lethal genes (>30 have been described).
6. ***Sign:*** **Dead embryos; >18 days of incubation.** ***Causes:***
    1. Improper incubator temperature, humidity, turning, ventilation.
    2. Improper hatcher temperature, humidity, ventilation.
    3. Contamination, especially from molds (aspergillis, etc.).

4. Fumigation too severe or too prolonged.
5. Eggs chilled in transfer, or transferred too late.
6. Broken shell -- pre-set, during incubation, or at transfer.
7. Nutritional deficiencies -- vitamin D, vitamin A, folic acid, or pantothenic acid, riboflavin, vitamin E, selenium, vitamin K, biotin, thiamin, vitamin B_{12}, calcium, phosphorus, manganese, or linoleic acid.
8. Embryonic malposition; embryo fails to move into proper hatching position (see #21).
9. Embryological development accident. Failure to change to lung respiration and all intra-embryonic circulation, and/or to retract the intestinal loops and yolk sac. These and other changes are critical at this time.
10. Heredity -- lethal genes, chromosome abnormalities.
11. Twinning.
12. Hatcher opened too much during pipping and hatching.
13. Poor shell quality.
14. Breeder diseases.

Troubleshooting: Specific Problems

1. ***Sign:*** **Not pipped. Full-term embryo, large yolk sac; yolk sac may not be fully enclosed by abdominal wall, may have residual albumen.** ***Causes:***
    1. Inadequate turning, resulting in decreased embryonic membrane development and nutrient absorption.
    2. Humidity too high during incubation or after transfer.
    3. Incubator temperature too low.
    4. Hatcher temperature too high.
    5. Eggs chilled (e.g., at transfer).
    6. Nutritional deficiencies.
    7. Heredity.
    8. Embryological development accident.
    9. Breeder diseases.
    10. Inadequate ventilation.
    11. Prolonged egg storage.
2. ***Sign:*** **Pipped. Full-term embryo, dead in shell.** ***Causes:***
    1. Low humidity or temperature for a prolonged period.
    2. Low humidity during hatching.
    3. High temperature during hatching.

4. Nutritional deficiencies.
5. Breeder diseases.
6. Poor ventilation.
7. Inadequate turning during first 12 days.
8. Injury during transfer.
9. Prolonged egg storage.

3. ***Sign:* Shell partially pipped, embryo alive or dead. *Causes:***
    1. See 8.a-i.
    2. Excessive fumigation during hatching.
    3. Eggs set small end up.
4. ***Sign:* Chicks hatch early; tendency to be thin and noisy. *Causes:***
    1. Small eggs.
    2. Differences among breeds.
    3. Incubator temperature too high.
    4. Incubator humidity too low.
5. ***Sign:* Chicks hatch late. *Causes:***
    1. Large eggs.
    2. Old breeders.
    3. Eggs stored too long (40 min. increase in incubation time/day of storage, .5% to 1.2% decrease in number hatched/day of storage).
    4. Incubator temperature too low.
    5. Weak embryos.
    6. Inbreeding.
    7. Incubator humidity too high.
6. ***Sign:* Slow, protracted (drawn-out) hatch. *Causes:***
    1. Mix in the incubator of eggs stored for long and short periods (1.2% loss of hatch/day of storage when all eggs set at the same time; only .5% loss/day when eggs stored for long periods are set earlier to allow a longer incubation period).
    2. Mix of eggs from young and old breeders.
    3. Mix of large and small eggs.
    4. Improper egg handling.

5. Hot or cold spots in incubator or hatcher.

6. Incubator or hatcher temperature too high or too low.

7. Room ventilation system improper; high positive pressure or low negative pressure. Such pressures may alter incubator or hatcher ventilation.

7. ***Sign:*** **Trays not uniform in hatch or chick quality.** ***Causes:***

    1. Mix of large and small eggs.

    2. Mix of eggs from young and old breeders.

    3. Mix of eggs from different strains or breeds.

    4. Some eggs stored much longer.

    5. Lack of uniform ventilation in setter or hatcher.

    6. Disease or other stress in one or more breeder flocks.

    7. Variation in egg storage procedures among flocks.

8. ***Sign:*** **Sticky chicks; chicks smeared with albumen.** ***Causes:***

    1. Low incubation temperature.

    2. High incubation humidity.

    3. Improper turning. This results in reduced embryonic membrane growth and reduced nutrient absorption.

    4. Old eggs.

    5. Very large eggs.

9. ***Sign:*** **Chicks stuck in shell, dry; chicks with shell fragments stuck to down feathers.** ***Causes:***

    1. Humidity too low during egg storage, incubation, and/or hatching.

    2. Improper egg turning.

    3. Cracked eggs or poor shell quality.

10. ***Sign:*** **Premature hatching; bloody navels.** ***Causes:***

    1. Incubator and/or hatcher temperature too high.

11. ***Sign:*** **Small chicks.** ***Causes:***

    1. Small eggs.

    2. Low humidity during egg storage and/or incubation.

    3. High incubation temperature.

    4. High altitude. Hatcheries at high altitudes (>1,500 m or 4,920 ft) may need to adjust for low humidity, carbon dioxide, and oxygen. Atmospheric pressure <600 mmHg (~1,830 m or 6,004 ft) reduces growth and metabolic rate, increases loss of water from the egg.

5. Thin, porous shells.

12. ***Sign:* Unhealed navel; dry, rough down feathers. *Causes:***

    1. High incubator temperature or wide fluctuations in temperature.
    2. Low temperature in hatcher.
    3. Humidity too high in hatcher or not lowered when hatching complete.
    4. Inadequate breeder nutrition.

13. ***Sign:* Unhealed navel, wet, odorous; mushy, large, soft-bodied, and lethargic chick. *Causes:***

    1. Omphalitis (navel infection). Contamination from dirty trays, unsanitary machines or hatchery, dirty eggs, inadequate egg sanitation or fumigation.
    2. Low incubator temperature.
    3. High incubator or hatcher humidity.
    4. Inadequate ventilation.

14. ***Sign:* Weak chicks. *Causes:***

    1. High hatcher temperature.
    2. Poor hatcher ventilation.
    3. Excessive fumigation.
    4. Contamination.

Partridge Cockerel
Andrew Rathbone

Partridge Cockerel
Andrew Rathbone

Light Cock
Andrew Rathbone

Black Hen
Andrew Rathbone

Buff Columbian Hen
Andrew Rathbone

Partridge Hen
Andrew Rathbone

Dark Hen Pattern
Mark Collns

Second Dark Hen Pattern
Mark Collins

Pair of Bantam Dark Brahma
Mark Collins

Bantam Light Cock and Dark Hen
Mark Collins

Bantam Light Cock
Mark Collins

Bantam Light Hen
Mark Collins