The Pigeon Genetics Newsletter, News, Views & Comments.

(Founded by Dr. Willard .F. Hollander)

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April 2020

The Topic this Month as promised is the BRONZE Family! Like so many other traits, it is one with many different opinions. We hope that in this Issue , we will have helped you sort all of the information, such that a clear picture has emerged.

Kite Bronze

We begin with placing the various expressions of bronze in order as we believe they should be. The number one base bronze seems to be **Kite (K).** It is a bronze that we see as somewhat of an **undercoat**. It commonly expresses in areas of the feathers where there is a weak expression of the Base pigment such as the inner vanes at about mid-way along the feather shafts. here it seems to shine through in a variety of strengths depending upon the base pigment , and the modifiers that are also present.


Bob R.

Below you can see two expressions of a dilute phase Black/Dun with two different expressions of dilute bronze. The first is indeed Kite (K) undercoat, but the second is an overcoat that may be due to another bronze found in Lahores , Indian Fantails, and a few other Breeds noted a few years ago by Gene Hochlan. One can well imagine these two combining to appear as Brander..


Lahores bred by **Nilesh Rajput**

Comment from a member : **Ash Hammett**.

"Just because a Blue pigeon of any pattern displays some reddish tinge in the coarse spread areas of the plumage doesn't mean it is some kind of bronze, kite or otherwise, or recessive red either. Sometimes the reddish tinge shows up because of the arrangement of a few pigment granules. That's all recessive red is anyway, right? the granules are turned... extended... hence the symbol "e" for extension. It's still a blue pigeon. " - Ash Hammett.

Editors: { The reddish tinge has to be phaeomelanin pigment granules of one sort or another regardless of how they are laid down. How we see them and what genes are responsible in allowing us to see them and in what clarity, are all aspects that must be considered. Kite bronze pigment granules seem to be specific as opposed to being integral with base pigment granules, thus any gene that de-pigments base pigment will allow us to see the bronze more clearly. Recessive red is a colour modifier of base pigment granules, and as such changes how we see base pigment granules by masking them. Dominant Red IS a base pigment allele and it does have a specific pigment granule shape that is extended or elongated into a 'tic tac' shape, and deposits are different thus due to light reflection ash colour, they also can be modified/masked by recessive red.}

Comment from **Joe Power** : Kite Roller (**redishness as opposed to Bronzy**) -
Hope all is well. Below are photos of a Kite Roller hen I bred and gave to Link Martin, who took the photos. As you can see this bird has super reddish color, even under her tail. This is the expression desired for great color. Kites that tend to go bronzy rather than this reddishness will produce almonds that are extremely dark as young birds. That pretty much means that they are only going to have a year, possibly two, as a show bird. Getting away from kites that are bronzy is quite difficult.

I learned to use a kite to recessive red or yellow mating every year. This helps to keep more red in them which also helps the almonds in getting a great color expression of almond. I hear quite a bit about deroys and 'ticking'. But in the English Short Face Tumblers I bred, as well as both my roller and Komorner Tumbler families (based on E S F), I seldom had more than an occasional darker feather in my deroys. I think, but have never tested to be sure, that those deroys that have this darker ticking are more than likely out of a family where the kites are very bronzy. Part of this bronzy expression has to be tied to an extreme amount of dirty. Dirty surely helps the almond family but too much is not how I want mine to be.
Editor's note: **{** Birds can only be hetero or homo for Dirty factor , it cannot get any more or any less than those two states. Homozygous Dirty is acclaimed by ESFT Breeders as required, so not certain what you are experiencing , but do not believe it is controlled by dirty factor, at least not alone.**}**
Joe continues:
I never found smoky in any of the E S F almond families I worked with. Really can't see it doing any good. It would lighten the blue/black expression which would not be good. (see July, & Sept. 2019 for more.)

Editors { Note the bronze being expressed on the outer ends of the shield feathers and under tail cushion feathers. The extension and redness in the flights is most likely due to hetero recessive red plus homozygous Kite. The bronze tarnish on the outer edges of body & shield feathers however looks like Brander.}

The common statement of many is that they have never actually identified or seen a typical Kite in either the heterozygous or the Homozygous state. This most likely is due to the fact that, # (1) they did not know just where to look , and (2) the gene is often combined with other bronze traits as well as hetero recessive red. The hetero and homo states express on the head, neck and shield feathers of juveniles, but this disappears as the bird moults to adult feather and the base pigment **increases**. The reason seems to be that this bronze has specific colour granules interspersed with the base pigment granules and is overshadowed when the base pigment is strong. It is visible only in the under colour areas where the base pigment continues to be less pronounced. We often see it expressed along side of a print grizzle trait or with the Undergrizzle (Ug) trait, again due to those areas having less base pigment expressed. De-pigmenting genes have little or no effect on Kite bronze .

Wherever a modifier that de-pigments is present, any Kite bronze that is present becomes more visible. That is a fact not lost on knowledgeable Stipper / Almond breeders who capitalize on that characteristic to colour in the white break of the stipper gene and cause the bird to be predominantly an Amber colour like the inside of an almond shell, thus the name Almond.

Both Breeders of the Stipper 'Sprinkles", and Dominant Opal have just the opposite problem as they do not wish to see any hint of bronze after the stipper or Opal gene de-pigments the base colour. They therefore must try to avoid Kite or any other bronze traits in order to get the desired whitened expressions.

Now let's take a look at another bronze that seems to depend upon Kite and certainly hetero recessive red to give it a full bodied colouration!

Brander Bronze

Ratul Hasan Sahed , Exclusive Pigeon Fan Club Jatrabari - homo Brander het (e).

Photo : **Felice Esposito** NPA Australia Facebook Group. Homo Brander hetero Recessive red.

Below some straight Branders that do not have recessive red :

(1) **MM Rahman** PBC of Bangladesh Sooty Het. Brander, (2) **Ali Monsur - Sooty Homo Brander & het (e)**.

(1) 

(2) 

Below - (3) **Awful Alamin** - variety of hetero Brander expressions with & without Sooty , no recessive red. {All three photos probably include hetero or homo Kite }

(3) 

We like to think of The **BRANDER BRONZE** as an **overcoat**. This is where it gets more tricky to demonstrate just how it can be recognized starting with the juveniles. We think the best way is to say that it is a much more red expression as if smudged over the outer surface of each feather as opposed to basally and **will not disappear after the moult** . If anything , it will intensify..
(1) This photo is from the Leipseg Show in Germany, dark Brander on a Saturated T-Pattern base. (2) is a youngster Brander on dark saturated T-pattern - photos - Joe Power. }

The best expressions of Brander depend upon both Kite and heterozygous recessive red to cover as much base pigment as possible . The areas that give the most resistance are the sub-terminal tail band and the tips of the flight feathers due to the condensed smooth spread granules and the manner in which they are laid down in these areas. Coarse spread is totally masked by the red phaeomelanin. Sooty will resist Brander unless the modifier recessive red is also present. This fact further proves our point in the Jan. Issue regarding the idea that Sooty is condensed smooth spread and not coarse spread pattern pigment accumulation. Baby Branders are usually very dark in the nest with black beak, tarsus and toes. They have been found to be homo Dirty, and homo Sooty and very often carrying Undergrizzle..}

{Photo **Dihantha Reiad**} (Ug)? , Classical (G)? **Silas Riaz Shog Kabootar Parwari**.

Comment from **Bill- Editors { my notes failed me , I think Bill Peterson}** :
Brander is thought to be a bronze of its own. I'm still not 100% convinced that it is but cannot rule out the possibility. People find when they continually infuse kites with recessive red, the kites begin taking on more **red or bronze**. It is a strange phenomenon but it may explain something in what we see in those birds like bronze show tipplers, which are considered to be brander bronze. We know that they are t - pattern blues, dirty and sooty and they are het recessive red. You can argue whether they began as kites or branders. What does a brander look like if it is not het e? Like a dark kite. They get called things like "too dark brander". I had some very black kites from Link Martin show rollers. They were homozygous

dirty and sooty, tails were very black, the birds nearly looked to be spread but were not, they were t-pattern kites. In breeding them back to reds, they began to take on more **red or bronze**. I only played with them for two years and could see the difference. Tim Kvidera noticed the same in bronze show tipplers, that the kites were getting more and more **red or bronze** as time went on. What if we did this for 20 years or 50 years? Would we see something that people would call brander? My suspicion is that yes, we would but I have no proof, nor am I likely to have that much time to prove it. :) **Bill**.

Comment from **Dr. Lester .P. Gibson**-
I did not find Grizzle but all my Branders carried Undergrizzle . I could not breed one good brander that did not have Undergrizzle as part of the complex. Had people send me Brander bronzes that they claimed did not have Undergrizzle but all of them did - **Paul Gibson**.

Mick Bassett explains breeding proper Brander in the English Show Tippler: Edited for clarity. "**The English Show Tippler**. On Breeding the Brander Bronze, basically the exhibition colour is Bronze, which is Brander Bronze + Res' Red, but that is useless without (homozygous) Brander and a (Recessive red that moults to partial white) These are needed as Stock birds to maintain the depth of colour, sheen and black flight tips and tail bar markings. Brander x Red = 100% Bronze (+Red) all other matings including Bronze x Bronze only give a percentage of Bronze offspring. At least with the English Show Tippler, (and other European Brander Bronze breeds) breed type and balance comes first. The Dutch High Flyer Schornstenfegeer (a separately bred variety within the Breed) and Ditto for the Danish Tumbler are the only other western European Breeds bred this way. The type of Recessive Red is peculiar to the Brander Bronze, it is self in the Nest and moults up to 95% white (always retaining some colour, usually around the head, neck and under the beak) As far as I know?, it is not what is usually thought of as 'Agate'. I have never known 'any other colour', at least with the English Show Tippler, to be produced, except once I had, a 'Sulphur' (Dilute Bronze) and she acted like a Bronze in Breeding and produced excellent offspring. Her markings, considering she was a dilute, were exceptional, as was her type.

The English Show Tippler has Reds that are usually a rich Red colour, Schornstenfegeer usually much paler and the markings that remain, less distinct, I have little experience with Danish. Bronze Berliner and Bronze German Show Tipplers are not colour bred the same way and I know that at least the German Show Tippler is not compatible in colour at all with the English Breed, (crosses do not work, you 'loose' the typical English Black markings and clarity of Colour and Sheen and you cannot get it back).Only the 'Darks' are Brander's, the Bronze (Exhibition colour) is Brander Bronze + Res' Red, which is why all three 'colours' are important in the breeding process to produce exhibition colour. Note* on the Brander, a Greenish sheen (unwanted in an exhibition bird) is of no matter, it is linked with the dark colour/extra pigment, it has seemingly no effect on the correct colour Bronze offspring produced.

It would be nice if someone could find out what the Res' Red actually IS LOL, as it varies somewhat according to Breed (and obviously the colour 'wants' {requirements }of the Breed) In the English Show Tippler where a certain lustrous Bronze tone with a Purple Sheen is wanted, the Reds are correspondingly rich in colour. All start in the nest a self {solid}red (with washy tail) and moult progressively whiter but the red can darken to look almost bronze! The give-away is always the pale beak, a Bronze never has a pale beak! so you always need to keep in mind what the bird LOOKED like. In the Dutch Schorstenfegeer, the Reds seem much paler, a more washy colour, the Bronze in this Breed (and the Black markings) can be excellent but there is no particular insistence on a 'Purple' Sheen as the ideal, (and the Type, size and temperament is very different!) the same with the Danish Tumbler in Bronze/Brander. This wanted (selected) depth of colour and purple sheen seems peculiar to the English Show Tippler breed. My personal opinion is that it would be wrong (for the English Show Tippler) to insist too heavily on 'perfect' Black Markings' as I do not think they are compatible with the particular Bronze colour tone and Purple sheen which is idealised in the EST. The phrase, "'as dark and distinct as possible'" would fit the description better and allow for the maintenance of the Ideal ESTippler colour."

recessive red moulted to white , a Show Brander, photo <u>enhanced</u> Show Brander - **Mick Bassett**.



(1)  (2)  (3) 

(4)  (5) 

(1)Amit Rathor (Print G. ?) (2) T-pattern Brander Print - **Bassett** photo. (3) **Anis Pigeon Loft** - Sooty T- Pattern homo Dirty Dark Brander. (4) & (5) **Grzegorz Springel -** Brander young with (Ug) and Dirty factor, will moult solid like the adult.

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Khaal ~ A Breed of Pigeon in India and surrounding areas that has not been genetically analyzed fully yet but every indication is that the bronze is Brander.

 **Jith Peter**.

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Brander bronze on a Homozygous Print Grizzle Tippler - **Brooklyn Finest** , NY U.S.A.

Tippler Bronze

TIPPLER BRONZE is suspected to be Brander and is seen expressed in Tortoiseshells. It however is not the only bronze that causes a Tort phenotype as **Kite** combined with T-pattern Print Grizzle or Tiger grizzle will also create Tortoiseshells. Other studies with Print Grizzle (Paul Gibson), seemed to suggest that Tippler bronze is indeed a recessive and that it caused whitening of the shield feathers in particular. This perhaps is due to the fact that the grizzle effect intensified after the first moult preventing the bronze from expressing. I believe that Tom Ah DeMunnik has noted something similar with his Show Tippler black whitesides - future Issue.

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Toy Stencil Bronze

The next Bronze trait is one that also has differing opinions as to just what is actually involved. This is **TOY STENCIL**. It is considered a bronze that only expresses as a RED pigment in two of its three component genes.

Photo - **Mick Bassett**.
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The components are Ts1, a dominant autosome, and Ts2 a partial dominant. The illusive ts3 gene is thought to express as a green sheen on coarse spread granules and is a recessive. The Ts1 expresses a deep red bronze in both the hetero and homo state. However it will be altered to a white expression if Ts2 and ts3 are added to form the total complex. Ts2 expresses a lighter tone of the red pigment in the hetero , but it is rarely seen segregated from Ts1. Some breeders, a number of years ago, postulated that the trait should be called "Modena Bronze" and that it was different than Toy Stencil, however all subsequent testing proved this theory incorrect. Homozygous Ts2 takes on an Oyster shell gray tone and again is rarely seen. The ts3 gene as we said, is a recessive and thought to express as a dark green sheen on coarse spread pigment. It is required in order to produce the very white patterns of coarse spread pigment in the full complex. The fact that there are three components makes the Ts complex interesting but difficult to follow when introducing it into another breed, but many have mastered it!

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Cauchois bronze , the French Pigeon Breed expresses a coarse spread bronze that in Testing proved to be the Components of the Toy Stencil factor Ts1 and/or Ts2. However it has strong bronzing in the flights which is not typical of Ts1or Ts2! Photo sample provided by Shoibal Sabbir .

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Romanian Rust colour Highflyer not believed to be Brander and thought to be Ts1 with other specific traits. Note here a rich shield bronze that also expresses in the flights, and it is expressed not only in the tail feathers but also over the head, neck breast and rump of adults. Photos by **Octavian Sarafolean** , more on this trait in a future Issue. (Also see Issue Sept . 2018 for more)

Below we see a somewhat similar trait in the Shakh Sharli Breed.

Shakh Sharli Bronze

Dilute Brander ? - Paul Sulja

Shakh Sharli bronze : This bronze has very similar expression to Brander right down to the base coloured flights and sub-terminal tail bands. The bronze covers the entire bird otherwise with the strongest expression on the shields. The attractive add-on is that the very outer edges of every feather may be laced with white in some strains. Dilutes are a soft pastel sulphur. Spread and non-spread vary in expression , but the bronze does print on spread birds.

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Roller Bronze

ROLLER BRONZE is believed to be a similar trait to **Ts1** that affects the coarse spread pattern areas. It has been said (P.G.) that it only expresses when hetero recessive red is involved.

(no photo available)

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Lebanon Bronze

Dilute Lebanon Bronze - Photo : Layne Gardner - Breeder : Roger Hansen

The **Lebanon bronze** : Paul Gibson stated in 2008 that he could not find any specific bronze because any bronze in combination with Ash-Red , gave the same phenotype. Hollander had broken them down to be Ash-Red , checker, Kite bronze and Sooty. The consensus seems to have been to refer to Lebanon bronze as (kl) 'kite lebanon' , a "nebulous bronze" to be treated as a possible recessive that is lost in the first cross to wild type and that is dependent upon ash-red to express. The 'moon-like' spots on the sub-terminal tail band area were first thought to be frill stencil especially as the flight ends also expressed white , but this was later seen as the combination of ash-red and bronze. Gibson noted the same effect on ash Archangels and Rollers. Blue series birds that express the white in flights and tail band are most likely frill stencil.

Residual Kite-Bronze

Residual Kite on Stipper - Jijo Thomas

Stipper , not a bronze , but the gene combined with 'Kite or Brander' will result in the white stipper breaks being covered in with residual bronze often enhanced by hetero recessive red. This lingering residual bronze effect is most desirable and sought after for show purposes. The ONLY area of a Classical Almond phenotype where the stipper white break is desired is in the flights and tail, and that is because it is there that condensed smooth spread resists bronze but does not resist the breaking action of the stipper gene.

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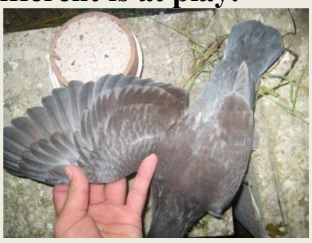
Indigo , not a bronze , but a trait that de-pigments and reveals any otherwise hidden bronze. Most likely always **Kite bronze, although it only reveals bronze on the course spread areas and not in the basal vanes of the flights, suggesting something different is at play.**

Blue Bar hetero Indigo Vicki Colpits .



blue check hetero Indigo Ryan Harvey.

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The **recessive opal** gene and the **Dominant Opal** gene both tend to de-pigment base pigment of the entire bird including both smooth and coarse spread pigment granules in varying degrees. This allows the bronze contained in or with these granules to be seen as a slight bronze cast. Like the Indigo and the Almond , this is a residual expression of Kite bronze that lingers but in the case of Dominant Opals in particular, is most undesirable. Like the stipper gene, the tail band and flight ends are de-pigmented but less dramatically, and do not express any bronze.

Dom. Opal with residual Kite - Ryan Ward.

This summary gives rise to the fact that it still is not at all clear just what is going on with the phaeomelanin of the Bronze Family. There seems to be a base that we call KITE that is a dominant undercoat with the symbol (K). It seems to have bronze pigment granules that are intermingled with the pigment granules of base colour. It appears that it plays a significant role in a second member of the family we call BRANDER Bronze . The third member is made up of two types of bronze that we call Toy Stensil - Ts1 , and Ts2 plus ts3 to complete the (Ts) complex. All other bronze expressions seem to be residual expressions of either Kite , Brander , or a combination of the two. Your breeding results could help sort this out .

reduced and rubella : This one often fools me, particularly rubella , as it looks somewhat like dominant Opal in some specimens. Here are three photos from **Eugene Jordan** of his rubellas. You can see that the gene de-pigments the blue series checker pattern leaving a rich bronze in what seems to be primarily the coarse spread pigment areas. Then the flights and tail band are de-pigmented but not expressing bronze as we have seen in all other de-pigmentation cases. This causes me to believe that this is indeed residual Kite (K) bronze.

(1) hen, (2) her mate , and (3) their son.

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Nebulous Bronze

General meaning : Vague or indistinct bronze expression.

The Gimpel /Archangel colouration, consists of a Coppery bronze covering the head , neck, breast and underbody, and is accompanied by a kite bronze in the flight feather inner webbing thus three separate bronze traits. The main body colour, not actually a bronze but a copper colour, referred to as a 'nebulous bronze' and when in combination with black wings was given a symbol of (gp) meaning 'gimpel pattern' by Dr. Lester P. Gibson. The overall bronzing was found to be actually three expressions . The breast marking of bronze is symbolized as (Ka1, kite archangel 1) a dominant, then the head and neck as (ka2, kite archangel 2) a recessive, and the flights (K) the dominant Kite factor. This kite can be seen basally in **all** wing shield patterned feathers and seems to contribute to the rich shiny black wing shield with a beetle green sheen after the first moult. No bronzing other than kite in the flights and undertail is desireable.

The Bronze-like expressions of the Gimpel Pigeon , the Atlas Pigeon , and various other Breeds appear to be similar if not the same gene. They may give a Copper tone in the Intense phase , a Golden tone in the Pale phase , and a sulfur tone in the dilute phase. Various portions of the
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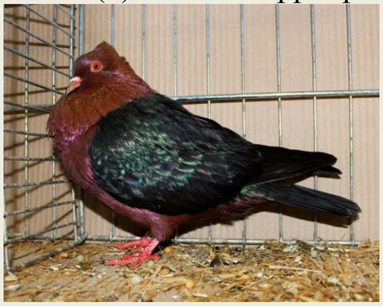
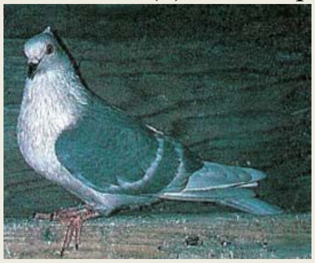
bird's head , neck , breast and underbody may be affected by a gene specific to that region. We mentioned above that Ka1 affects the breast crescent region and underbody, ka2 affects the head and neck region. When BOTH are present, the bird expresses the colouration evenly throughout the body well under to and including the vent region. This gene is not considered an actual member of the 'BRONZE' family as it will become 'silver' when affected by dominant Opal and reduced whereas no other bronze trait will do that.

(1)hetero Ka1Intense and Pale, (2) Homo Ka1dilute **Riyad Khan**. (3) Intense Copper photo

(1)  (2)  (3) 

Mick Bassett. (4) Dom. Opal reduced **PG**., (5) ka2 **Mohammad HL**, (6) **Shirazi Pigeons**

(4)  (5)  (6) 

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Atlas Bronze (Ab) The Atlas bronze is probably closely akin to Ka1 and ka2 but the birds are always homo Smoky , and the head is a lighter shade of the base colour as opposed to bronze. It is bred in Red and yellow , and has been nick-named "Buffy" , and Tuffy , the latter to denote its pugnacious attitude. Photo: Layne Gardner , breeder **Zeman Werner** March 2018 Issue.

Now , if we go back to the first photo of a Brander by **Ratul Hasan Sayed** , we will note that there is one tail feather that is only half bronzed , the other half is normal base pigment. This sort of genetic hit & miss is often seen in Stipper/ Almonds and "Varigation" of the stipple gene is accredited as the cause. But is it !? This photo is clear indication that stipper alone may not dictate Variegation in pigment
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distribution. Interaction of bronze traits seem to play a role and since bronze plays such a profound role in the Almond pigeon, it seems quite plausible that it is the interaction of the two genetic traits that causes the extreme diversity in variegated colour expressions . If we were to apply the white break of the stipper gene to this example the tail band areas would whiten but the heavily bronzed areas would stay bronze , while the non-bronzed area of the tail feather vane may remain gray , or blue / black. This is certainly an aspect to be studied further. Close-up of the tail feather below :

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That is about it for the Month of April! We certainly hope that You and Your Family and friends the world over are safe and free from the terrible pandemic that is ravaging the Globe at this time! We cannot express strongly enough our heartfelt concern as we realize that even if you are not directly affected by the Virus , you most likely are being subjected to hardships when it comes to all 'normal' aspects of your lives. Just getting in supplies of food and other necessities is becoming a problem.

This may sort itself by the Month of June and hopefully if everyone will take it seriously and stop travelling about as if nothing was wrong, the medical specialists will be able to restore health to those who are very ill, and that no more new cases will spring up. Please stay at home with your Family and help us all ride this one out!

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Next Issue we will explore the Sooty Factor (So) .

Special thanks to all those who have agreed to allow us to use their photos to help demonstrate what we mean in the written portions of this Newsletter. We urge each of you to consider everything that we have offered , and do not hesitate to send along your opinions and ideas !

KEEP SAFE , Stay at Home as much as absolutely possible , may God Bless !