

Hole and No Hole in Rollers

There have been numerous writings on the subject of the hole that is sometimes seen in our performing Rollers. There are also many fanciers that believe the faster, tighter Rollers will not show the hole. This series will cover both of these opinions. I'm going to start this subject out with something that was written around 1875 by Mr. Ludlow, the famous artist, judge and fancier of England, for Fulton's Book of Pigeons. Following is what Mr. Ludlow had to say about the Roller pigeon: "Rollers are those which at every exhibition of their rolling powers pass through an unaccountable number of backward revolutions or somersaults, in such quick succession as to appear like a falling ball. Most fanciers are satisfied if they come through the kit as a ring, but when they appear in a solid form, it is known their convolutions are performed with still greater velocity. A good Roller should fairly roll 20 feet. There are lots who descend by a series of treble or more somersaults to a greater distance, but the most perfect complete a long descent in one spinning bout." (Ludlow)-----

This next article was written in 1978 by Clyde Davis, Kokomo, Ind.

ROLLING STYLES TO LOOK FOR IN ROLLERS (Clyde Davis)

Since the death of W.H. Pensom there has been a gradual change in the roller fanciers, and their attitudes. They seem to live in fear of losing sight of the true Birmingham Roller, as they believed was known only to Pensom himself. I cannot deny the fact that Pensom was an outstanding authority of the rolling pigeon in his time, but his time was in the past. We must look to the present to ensure the future, and by that I mean, "we must pick up the torch and carry on", but there are so many who do refuse to carry on by living in the past with Bill Pensom's ideas and teachings, like little children not knowing which way to turn except backwards, as if they were lost. I am speaking of the younger generation, who are the future ones to see that the sight of the true Roller is never lost.

I am getting just a little sick and tired of reading so many articles that are constantly repeating things that were said 40 years ago. They have been saying for many years that there can not be a rolling Standard, but I have come up with one here in my area, and it has worked very well for the past few years. I feel the sooner everyone learns the rolling Standard, and how to judge it, the sooner we will have good competitions that everyone can see eye to eye upon, and the improvements of our strains will increase to such high levels of quality that we could shock the old timers before us. I would like to say a little bit about the breeding of Rollers, and the way it should be done. It seems to be a very disgusting problem to very many fanciers when they breed maybe 50 pigeons, and only a small percentage are recognized as deep Rollers.

When starting your family you must breed deep Roller to deep Roller, never using non-Rollers or Rollers that start one month but quit the next, and never roll again. To set one thing straight on my expression "deep", I feel that 30 feet is a good deep Roller for an average, give or take a couple of yards. If one was to breed Roller to Roller, he will produce Rollers. If this procedure is carried out for at least three generations, you have got a thoroughbred Roller. You then should produce deep rollers every time without the problem of non-Rollers. You then should select your matings as close related pairs by means of first cousins, half brother and half sister, full brother and sister, etc., you are now inbreeding.

Inbreeding is not a means of modifying any characteristics, it is only used to maintain dominant, and purify what one has started with. The only need for crossing would be to change, add, or modify certain characteristics but at the same time nothing is dominant, you are only adding new genes, and new faults, which could sometimes take a lifetime to correct. So, one must always be very discreet when choosing his method of breeding. You should also remember to pick the age for your birds to start their development of the roll, and breed them together or as close as possible to that point so that it will become a family trait in your birds to have the same development stage in the future generations.

I personally prefer the age when they have just dropped their seventh primary flight in the year that they are born, but prior to the seventh flight when they drop their first primary, I pull their tenth, and when they drop their second primary I pull their ninth, and then third I pull their eighth, but do give them time to grow their tenth, ninth, and eighth if they are dropping faster than they are growing. This is the way I produce safe early developers. This system derived from knowing the fact that a young bird, if rolling deep at the same time when he is dropping his eighth, ninth, and tenth flights, they become extremely dangerous to a point that they might hit the ground, or they may be irritated to another point that they could become discouraged to ever want to roll again. If your family has failed you before or after this point by such problems as too many rolldowns or maybe retarded features, you had the wrong birds to start with. It is very important that you start with the best, and if possible a family from a fancier who practices close breeding.

The above method of breeding is the way I have found it most successful, and you do not have to know a lot or anything about genetics. There are a few things to remember when starting such a method as this, and that is that the deep Roller is recessive to the non-Roller, and your early developer is recessive to the late developer. It's up to you to make your choice on how you want them.

For the past few years there has been a great influence from the English fanciers, and their birds, in the U.S. They are trying to give us the impression that they are maintaining the best Rollers in the world, but opinion on the matter is to the contrary. The U.S. has produced better Rollers to what would be their highest expectations.

There seems to be an impressive new type of performance brought on by the English fancier, but I could not call them Rollers. A better name more suited for their type would have to be Spinners. They feel that any bird that can spin at great velocity, about three or four seconds and not lose altitude, is the ideal type. I have studied rolling styles for many years, and the only ones I have ever seen that come close to this ideal have not been able to produce the familiar "hole", as seen in true Rollers. They have always said that the smaller the hole the better the style, but I am pressed upon to disagree, and should say the hole must never be smaller than a half a dollar, and no larger than 2 inches. The Roller style is an act of high velocity, traveling downwards at great speed, for a distance of no more than 50 feet, but the meaning of spinner would be an act of high velocity, and appearing as if it were standing in midair going nowhere. So it seems that we are breeding two separate varieties of pigeons, Rollers or Spinners.

As it has been said for so many years by so many esteemed fanciers, their opinions concerning a rolling Standard can not be put on paper, as they felt it was too confusing or too complicated to put across to the novice fanciers. One would have had to be acquainted with one or more knowledgeable fanciers that could teach and explain in person the styles, and qualities of style, to be seen in the air, while standing in his backyard, even then you would have to be most fortunate, but like most of us, to travel half way around the country would be a bit of a problem, so then you might feel that the experience that you have missed would leave you less than knowing what to look for, in your birds, if you have never seen it. So, I have given much thought to this problem, and have attempted to put it down on paper as simple as possible. I have broken down the rolling styles into five basic types. These are not the only ones to look for from the best to the worst. I have lettered them in frames from A to E, with A being the best to E as the worst. They are all turning a good velocity, and undoubtedly they will help you in knowing what to look for.

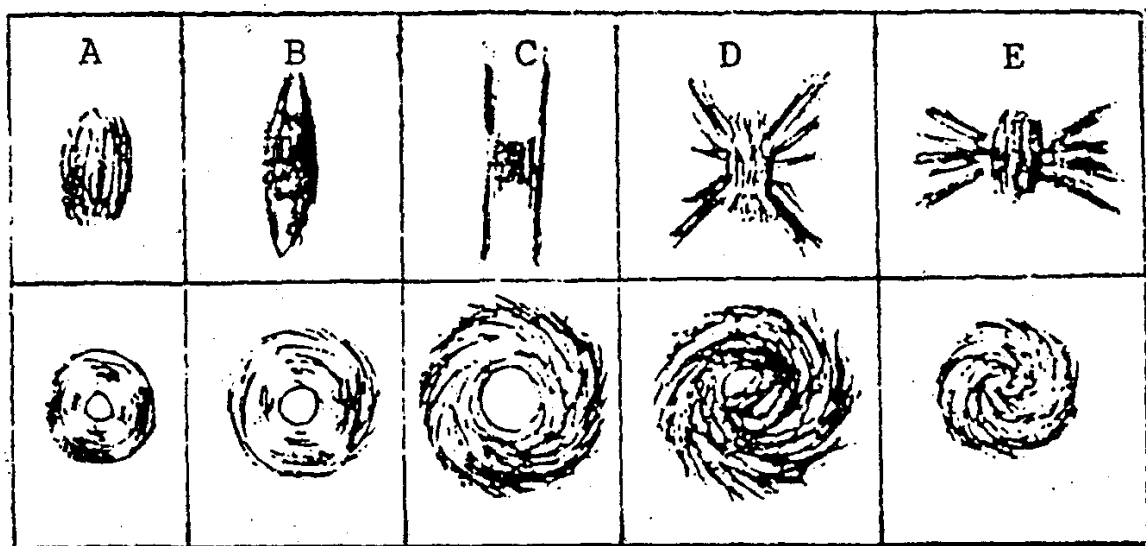
Frame "A", in a side view, shows a very small ball turning at great velocity, and you will note a small hole in the center about the size of a half a dollar, traveling at such great speed in velocity you would probably see, from a front view, a small as well, and because of the rapidity of the roll, the wing tips have become practically transparent to the naked eye. This style of roll should be found losing altitude approximately the speed of gravity, because of his non-friction, streamline style. I should also mention if this should ever come in contact with the ground while rolling, it would probably be found dead instantly or severely injured.

Frame "B", is much like frame "A" as far as the quality of style in rolling, but the velocity is not as great as that of "A" so you should be able sight a little more wing action than of "A". Frame "C", from the side view, would appear in a much larger ball than that of "A" and "B". You will also see a larger hole in the center of about two inches in diameter, and from a front view you should get a good description of the letter "H".

Frame "D", is a very common type. They are usually considered the deep rollers. They can be found rolling 50 to 100 feet in what most fanciers try to claim as a good in style. This is not to say they are always deep, but their abilities are not limited to the depth of their roll. This is the type that I feel is most misunderstood, because from the side view, is one was to look hard enough, he might see one or more holes, and also the ball would be about the size of frame "B" but from the front view, because the wings in a 45-degree angle while rolling, you should see the figure of a letter "X". I should not fail to mention that the speed of descent, during the roll, is not as fast as frames "A", "B", and "C", so you can see the wings are giving the bird more friction while dropping, also this type could easily survive hitting the ground more than once, because of his lack of speed in velocity and descent.

Frame "E", is probably the most common type of all five frames. The type should be said the one that is turning in a style of a Tumbler, but at the same time has developed the speed in velocity of the roller. My name for this variety is what I call the Spinner. You can never witness the hole, in the center of the ball, from a side view. You should also note that the size of the ball is much smaller, much like frame "A". from the front view, you should find that the wings are stretched nearly straight out, giving the bird a much dominant drag to the descent during the roll. These are commonly found in the lofts of the so-called dual purpose Rollers.

In review, on looking back to the five frames below, I should mention that frame "A" is the most outstanding performer anyone could ever hope to see. And so rare that you may never see it. I should also mention that frames "B" and "C" could never be found in the lofts of anything less than the highest quality Rollers, of a fancier who has devoted much time to the breeding of performance only.



This next excerpts was written by W.H. Pensom in the book, "Acrobats of the Air" around 1941.

What a Birmingham Roller Is

A Birmingham Roller is not necessarily one that is deep to the extreme, but one displays in its performance a likeness to a cricket ball spinning to earth in a straight line; the old saying put it, "Like a ball and straight as a boat line". The bird on starting generally raises its wings, claps, spread its tail slightly downward, and finishes in a similar manner; any deviation from a straight course cannot be classified as a true roll. The true Roller shows no separate movement between each revolution but continues in an unbroken spin; incidentally, such phases as "inconceivable rapidity: and "lightning whirl" refer to the rapid manner in which each somersaults is executed and not, as one might suppose, to the descent from the start of the roll until the finish.

A fair impression of true rolling is obtained by rotating the forefinger in small circles, closely together, downwards; or better still, in a similar style to the action of an unwinding Yo-Yo. A rolling pigeon can only be so termed from its display in flight and if each movement is discernible then that bird can only be styled a "tumbler" until perfection is attained. On the other hand, should the performance be continuous but lacking in speed and tightness, the bird could be called a "roller" but an imperfect one. Such birds as the latter are capable of turning any distance of from fifteen yards whilst a true roller very seldom spins deeper than fifteen yards, and neither will it twizzle.

The term "spinning" applies to a bird making several lightning somersaults, seemingly without losing altitude. W.H. Pensom

Pensom wrote these next two excerpts in 1945 in the book "The Birmingham Roller Pigeon" by W.H. Pensom and Others.

What is a Birmingham Roller?

Lewis Wright says that the true Birmingham Roller "turns over backwards with conceivable rapidity through a considerable distance like a spinning ball," and this sentence provides an excellent standard for the performance of a Birmingham Roller.

During my experience, I have always found a total ignorance regarding this standard, and yet it is quite plain in its interpretation. Let us examine the set and precise performance of the standard roll. During the flight bird makes a series of backward somersaults so rapidly that it is impossible to count the revolutions. Each revolutions is so close to another that the bird rolls or wraps itself like a small ball as it revolves at terrific speed in a straight line downwards. A side view of the bird in action will reveal the presence of a small hole, about the size of a two-shilling piece, and unless this small hole can readily be seen the birds is not a first class roller and should be valued accordingly, insofar as its breeding qualities are concerned.

The depth of the roll is very important, probably the most important feature of the performance. I do not hesitate in saying that a distance of fifteen yards is the physical limit of a first class bird, if it values the pleasure of living. This is deep, in fact very deep, and more than a dozen birds of this nature can not be flown without serious casualties among them.

The best and most spectacular depth is one of six to eight yards, if a fancier wants to get the best results from his efforts. Twenty birds rolling in the correct manner, with six to eight yards as their limit, will give such an exhilarating exhibition of concerted acrobatics that the imagination can not describe it. Such performance is by no means impossible and should be the aim of every fancier devoted to the Birmingham Roller.

The Champion (By W.H. Pensom 1945)

What is a champion? I will try to explain. First, a champion is the greatest of all performers, a bird difficult to obtain but not beyond the reach of any fancier who cares to produce one. As a performer, its qualification have no bounds. It can roll perfectly for any distance up to a maximum of about eight yards. It can regulate depth at will, rolling one yard, two yards or more at its own pleasure, according to its mood and the circumstances under which it is flying. It can tumble a number of times; it can perform as a "mad tumbler," spin, and "twizzle". Its ability as a flier leaves nothing to be desired. In a kit of champion can adjust its performance to meet the requirements of the others. If they tumbles, the champion tumbles. Such a bird does not have to be followed with the eye; he can be picked out at any time, and in comparison with him other Rollers are left at the post.

The Small Hole

by Herb Sparkes

After reading the last two NBRC bulletins and after reviewing the rules for NBRC kit competitions. I would like to offer the membership the following for their consideration. The performance and development of true Birmingham Roller is very often misunderstood and hopefully I can shed some light of this subject.

Kit flying competitions should measure the abilities of the fancier. To carefully release a given number of birds, see them mount, maintain a tight grouping and perform in unison is a credit to the fancier that trained them.

Hopefully this kind of quality management will allow the individual champion to reveal itself in time.

In his copious writings, Bill Pensom was quite zealous in his endeavor to raise his standards of the individual fancier by pointing out the distinction between mediocre performer and the true spinning champion. In fact, Bill did not feel that birds of lesser spinning ability should be called Birmingham Rollers at all but should be called tumblers. Well, there is quite a large area of gray between a champion spinner and a tumbler and this area is the source of most confusion. I grew up and spent many hours with Bill Pensom and can tell you that not every bird that was called a Birmingham Roller was a champion. In an article by Ray Perkins in June of 1942, Ray quotes Bill and says, "to be worthy of the designation of the Birmingham Roller, that the bird should roll straight down like a falling ball with inconceivable rapidity." In my years of experience, I can find no fault with this description for the Birmingham Roller. Ray further quotes Bill and says that at the axis of the rolling bird a small hole can be seen, and when visible is the mark of the champion performer. I feel that Ray has clearly marked the distinction between the true Birmingham Roller and the champion.

I have bred and seen many birds that fit the description of the true Birmingham Roller, but only a few that can be called champions. The reason for this should be obvious, the small hole is simply not visible when the bird is properly viewed from the side. This brings me to the point of the article. The NBRC rules for competition states that every bird in the kit of twelve MUST show the hole from the side. This is admirable standard, but I have been flying rollers for just less than 30 years, and I have never flown twelve birds in the same kit that could show the small hole from the side at the same time.

I watched Bill Pensom's kits literally hundreds of times and when a bird showed the small hole, it was practically a local event. I fear that the NBRC rules gives the impression that rollers that show the small hole are fairly commonplace. It is possible that in the world's best roller lofts that birds they can spin and do deserve the title of Birmingham Roller are commonplace, but birds that show the small hole, i.e., champions, are not. I feel this rule forces the novice and the judge to see something that simply isn't there. If the novice sees a bit of daylight through a fairly rapid spin, he will think he is seeing what is termed the small hole. I have seen hundreds of birds that show some daylight through the spin, but this is not the small hole.

Only the most extreme examples of high velocity spinning coupled with perfect type will reveal it. Further, when a bird does show the small hole, who is in the proper vantage point to see it? I can unequivocally state that there will never be a time in history when twelve birds will roll in perfect style, show the small hole, and the judge of such an event will be in a position to guarantee that every bird did in fact show the hole. To watch a roller flying at 300 or 400 feet in a kit, and to properly see the small hole, you would have to be at 300 feet yourself. The time that I have been in the proper vantage point to see it have been very rare indeed.

In 1972, Bill McRae and I had the pleasure to visit a fancier in the Black Country of the Midlands of England where our birds originated. Mr. Norman Pearson was our host, and he indeed have the most unusual loft location. His loft was right on the edge of a 200 feet cliff and had he owned a bird that showed the small hole on that day, we surely would have seen it because the birds literally flew at eye level and yet were more than 200 feet in the air. To state it one more time, you cannot see the small hole even when it is there if you are 300 feet or more directly underneath the kit when it attempts a full turn.

In my earlier days as an NBRC member it was a practice of the club to score a full turn for young bird kits when every member of the kit (20) performed in unison regardless of the quality or extent of performance. This is not adhered to in England and I feel it is to their detriment. Requiring young birds to spin in order to score towards a turn forces competitors to cultivate early developing rollers. This, of course, is not in the best interest of the breed when it is common knowledge that the best spinners develop later in life. Old bird competitions are another matter.

In conclusion, I would like to caution the novice fancier not to look too hard for the small hole. Look instead for extreme velocity in the spin and study the body type of those individuals that appear to spin with the highest number of revolutions per second. The appearance of extreme velocity is less deceiving to the eye than the search for the small hole. When you DO have a bird that shows the small hole and when you are in the proper vantage point to see it, you will.

**In the 1979 Roller Special. David Kowalski wrote an article entitled
"Aerodynamics and True Spinning Type."
These next excerpts were taken from this article.
Aerodynamics and True Rolling Type
by David Kowalski**

The Hole In the Side

The other angle of viewing the roll from the side. When reduced to geometric terms, the rolling pigeon is actually a revolving triangle. One side of this triangle is formed by the back of the neck and head as they are thrust backward to meet the second side of the triangle, the tail. Each of these two sides hinges on the critical "base" of the figure which is the bird's back. (fig. 3)

The pigeon's back is actually a number of vertebrae fused together to form one solid bone. The back of the pigeon does not flex during the roll or at any other time. The neck and the tail actually hinge upward toward each other from their respective points of attachment at each end of this backbone. During the revolutions of the roll, the head is continually pressing backward trying to meet the upturned tail. Counteracting this tendency to touch is the equally strong centrifugal force radiating outward in all directions from the center of the gyrations. Therefore, this rolling triangle is slightly open at one point, but the basic figure is maintained until the bird can no longer resist the forces acting on it. At that point, the pigeon snaps out of the roll and returns to the kit or else it continues gyrating, though at a lesser speed, and plunges to its death.

At rest, and even during straight ahead flight, the pigeon's center of gravity, its physical "balancing point," is somewhere below and behind the point of attachment of the wings to the body. When the bird starts rolling, however, this center of gravity shifts upward to the top of the back, or even slightly higher, to that imaginary point around which the pigeon rotates.

Going back to the image of the triangles, this center of revolution is approximately at the center of the triangle. As the triangle rotates around this imaginary midpoint, the visual effect of a hole is created. The size of the hole is determined by the size of the triangle which is most closely related to the length of the back. Although this hole is not often seen it is there, nevertheless when any above average bird performs.

Whether this "hole in the side" is actually seen by the viewer is complicated by the presence of the ever

beating wings. The wings are attached to the leading point of the base of this triangle where the neck hinges to the back. As they beat up and down, they are continually flashing back and forth across the hole in the triangle. Whether the wings distort the image of the hole that is created is dependent upon those wings are feathered. The critical factor here is the length and width of the secondary flights and also the quality of that bit of feathers between the secondaries and the body. These feathers are sometimes called the tertiary flights. Excessive secondary and tertiary feathering will obscure the hole.

One of the current points of controversy in the Roller fancy is whether the hole in the side is actually the mark of ultimate velocity. This controversy has formed around the general statements that the highest velocity Rollers do not or even should not, show the hole in the side of the roll.

Before addressing this question, it is important to distinguish between rolling "style" and velocity. My definition of style includes cleanness of outline of the small hole in the side and also clarity of the external circumference of the falling, spinning ball. These are the next two basic ingredients of style and, on the face of it, they can be distinguished from velocity of the revolutions.

Among Rollers, one can find a number of combinations of style and velocity. A slower Roller of a certain minimum velocity could show a hole if its lack of secondaries permitted the feature to be seen. On the other hand, A pigeon with more "cover" would not show a clear hole, or any hole at all, but still capable of higher velocity revolutions than its more "stylish" loftmate due to greater chest muscling and more aerodynamically efficient flight feathers.

However, the final answer to this question is only possible when one compares pigeons capable of equal rolling velocity. the only difference would be that one has a longer and wider secondaries and tertiaries. Longer, wider secondaries increase the overall wing area. During the roll, the amount of wing area contributes directly to the degree of air resistance and air turbulence which slows the roll. The pigeon with longer, "drag" inducing secondaries which obscure the hole in the side.

Hole and No hole In Rollers

Part IV

Simulating The Visual Effects of a Roller Pigeon

by Dick Reimann

The appearance of a Roller pigeon in action is an often discussed and sometimes confused issue. Pensom carefully distinguished between various degrees of tumbling and actual rolling. (1) He was fond of the following quote attributed to Lewis Wright, "Tumblers often make two, three, or more revolutions without stopping, and lastly there is the true Birmingham Roller which turns over backwards with inconceivable rapidity through a considerable distance like a spinning ball." (2) This a truly delight description because it challenges the imagination. What does "inconceivable rapidity" mean in the context? Clearly, the revolutions must be too fast to count which would make them a continuous blur. Further analysis requires going beyond normal human eye perception with either high-speed photography or simulation. The photographic approach is very difficult because it requires a skilled photographer, careful analysis of numerous expensive photographs or movies, and of course a "true" Birmingham Roller. Consequently, the following simulation technique is offered as a substitute aid for understanding.

First, imagine how the bird appears as it goes through its act. Photographs confirm Kowalski's description (3) that "the bird thrusts its head sharply backward towards to upturned tail and vigorously flaps its wings one or more times for each full revolution." The following rather crude sketch of a "black self" Roller against a white background at the instant of uplifted wings is labeled "A" (see page 14). If you momentarily ignore the rotation, an instant later the wings would be in a downward position as shown in sketch "B". If the instantaneous scenes are averaged over time, the composite picture labeled "C" emerges. Note that the wings are now semitransparent to indicate their rapid motion. It is like waving your hand in front of your face with the fingers spread and effectively seeing "through" them. The spin may be added easily by means of a variable-speed drill with a sanding disc. Simply tape a drawing similar to "C" on the disc and see what happens as the speed is increased.

The current controversy of whether or not a closed "hole" appear in the side of a Roller can be examined with this model. If you place your unlabeled sketch so that the axis of the rotation at the center of the disc is within the bird's body at point "X" as shown below, no hole will be seen -- the center of rotation will remain black as the view spins. However, if the axis of rotation is slightly outside the body at point "O" as suggested by Kowalski, a hole is clearly seen when the drill is run fast enough to produce a blur. Consequently, the theory is offered that the hole in the side is due to rotation about an axis slightly above the bird's back. Care must be taken not to confuse an actual bird's stray markings with this hole which should always show the prevailing color of whatever background it viewed against.

Restraint should be exercised when interpreting these results. For an actual Roller, the axis of rotation is probably very close to the center of mass or else the bird would wobble when performing. If this is true, a heavy bird with a deep keel and short neck should have its center of mass nearer to "X" than "O" and should not show a hole. However, according to Lewis Wright's definition, it could still be a true Birmingham Roller if its spin is fast enough. This theory also predicts that a spinning shallow-keeled bird with a long neck would have a better chance of showing the hole since its center of mass is consistently higher. In the language of mathematics, a hole in the side is a sufficient but not a necessary indication that the bird is a true Birmingham Roller. In either case, the blur is the important thing while the hole might simply be a matter of personal preference. Of course, the theory would be disproved if

there are many heavy, deep-keeled spinners with short necks which do show the hole.

Another interesting aspect of this model is the angular speed at which the image becomes a blur. A strobe light has been used to determine that complete blurring begins at about 6 full revolutions per second or 360 RPM (revolutions per minute). Numerous experienced Rollermen have witnessed this demonstration and feel that 10 rev/sec or 600 RPM corresponds to the appearance of an excellent Roller. Concern was expressed whether the view would change if the model were more life sized. However, a larger sketch on a 20-inch diameter breeze box fan driven by a variable transformer gave similar results when viewed at a meeting of the Idaho Roller Club. Also the accuracy of the sketch is not critical. If you do not have access to a strobe light, a hand drill can be used, the revolutions counted over a 10 second time interval and the gear ratio taken into account. Alternatively, turn a bicycle upside down, rotate the pedals a measured period of time and note the gear ratio. A ten speed works best because of its gear ratio. For me, a simple sheet of paper attached to the rear wheel next to the hub blurs into a continuous circle for 16 revolutions of a pedal in a 10 second time interval. Since one complete turn of a pedal caused a 3.75 revolutions of the wheel, this translates in $16 \times 3.75 / 10 = 6$ rev/ sec in good agreement with the strobe results. It is hoped that your observations will confirm this.

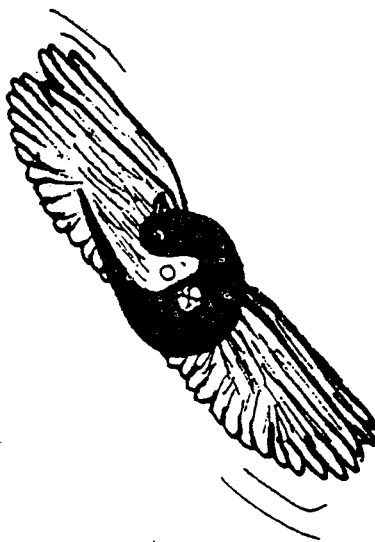
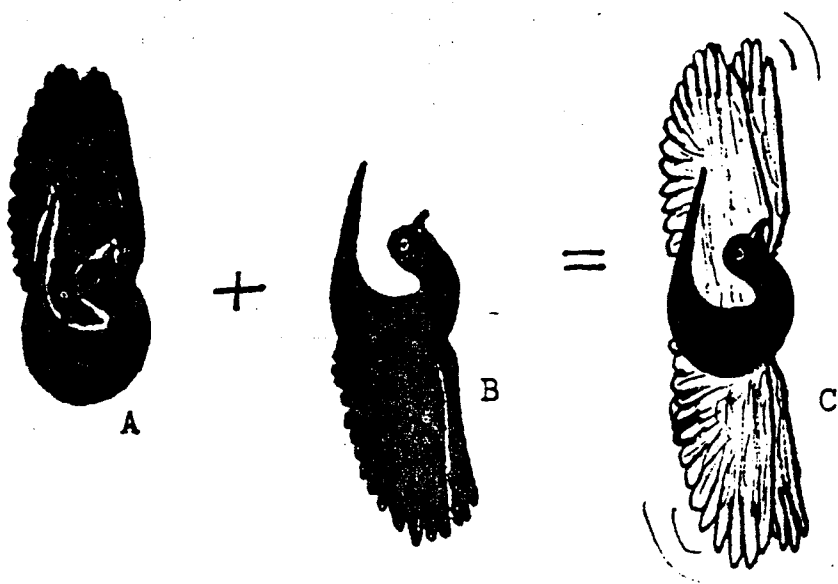
Although these models might be amusing, they pale in comparison to the real thing. Carefully interpreted photographic analysis is needed. A recent reprint of an article by McRae (4) describes the results of motion pictures taken at 36 frames per second of a "very mediocre solid Roller." He determined the angular velocity to be 27 rev/sec and felt that a truly "high class Pensom Roller" might execute 40 to 50 rev/sec. The simulation, as discussed above, clearly does not agree with McRae's results which seems excessive. Even 27 rev/sec is 1620 RPM which is beyond the top speed of typical electric hand drills. Whether the bird could survive such stress is doubtful. The equation that describes centripetal acceleration "a" is given by:

$$\begin{aligned} a/g &= (2\pi f)^2 r/g, \text{ where } g = \text{acceleration due to gravity} \\ &= 32 \text{ feet/sec/sec} \\ &= 1.23 f^2 r \quad \begin{array}{l} f = \text{Angular frequency in rev/sec} \\ r = \text{radius from axis to point of interest} \\ \text{measured in feet.} \end{array} \end{aligned}$$

For example, if the bird's eyes were 1.2 inches = 0.1 foot from the axis of rotation and it was spinning at 10 rev/sec, then $a/g = 12.3$ or $a = 12.3 g$'s of acceleration. Points further from the axis of rotation would experience proportionately greater acceleration. In contrast, $a/g = 90$ for $f = 27$ rev/sec! According to one popularizer of physics, "a typical fighter aircraft is designed to withstand accelerations on the order of 8 or 9 g's."

(5) This fact makes the claim of 27 or more rev/sec even more questionable. Obviously, collaborating experiments are needed to settle this issue.

The above analysis is not meant to detract from one's enjoyment of a true Birmingham Roller's phenomenal performance. It is so complex that we will probably never "understand" it well enough to lose interest in it. Instead we should appreciate it all the more.



Sketches By Dick Reimann

Hole and no Hole In Rollers

Epilogue

In the Jan-Feb. 1983 IRA bulletin No. 48 Pages 12-13
Carl Hardesty had this to say about The Hole.

The Hole (by Carl Hardesty)

Much has been said and written about the hole that should be seen from the side view of the ideal roll. It has been said that the position from which a person viewing the spin has a lot to do with it. Let's examine the prospect. Realize first that what we see when we see the hole is daylight on the other side and the fact that we are looking through a tunnel which as long as the pigeon's width and not much smaller than a half a dollar. Using a tube about as long as the width of a Roller and about as round as a half a dollar (3 to 4 inches long and 1 inch diameter) examine the below diagram and note that at too steep of an angle, we cannot see through the tunnel.

In bulletin #38 Dick Reimann's article on the center axle, I see no good reason to repeat but would like to add that I agree with his findings.

Another possible explanation could be feather rising on the back while in the spin. This would either shrink or completely block the view of daylight on the other side. Much has been said for the H position and well said at that. Imagine if you will, that the wings are fans attached to the roll and if they rotate in a full swing from the top to bottom. They will only block the viewing area for a minimum amount of time and if the roll is of excessive speed, then wings should pass the viewing area (or hole) at a rapid pace and become transparent thus allowing us to see the hole.

The last example of why we do not see the hole is the most common I feel, and in its slightest degree is the reason the hole appears to shrink. If the tunnel area does drop in a straight line as in Fig. #1 then the hole can remain visible, but if as in Fig. #2 the roll is out of balance (much like an auto tire) then the viewing area is moving and changing the viewing angle constantly thus eliminating the clear view. At high speed, this slight out of balance spin is not very easily detected. But the end result is a non-existent hole or a very small one. Common sense tells us that the back would break if we bent the head to the rump or tail in a donut shape. Even if we insist the hole has shrunk to nothing and it may well appear to do so, I don't believe it possible, so please don't say come to my place and see it.

Taking the wings away (a full stroke at high speed should give this effect) and rolling in a straight line at excessive speed almost has to create a visible hole fig. #1 below, it is all the attached circumstances and conditions that deprive us of this beautiful sight. Don't make excuses for the hole not being there but rather improve the quality. I have seen Rollers spin with breath taking speed with the wings going transparent and still no hole, it was a great spin but not a perfect one. If we stop trying to get the best then what we have is second best.

This next article was written by Hans Roettenbacher
in the Sept-Oct 1983 IRA bulletin #52

**The hole is not a hole--just an open space surrounded by a Roller
by Hans Roettenbacher (1983)**

The first time I read Carl Hardesty's article on "the Hole" (Bulletin #48, pages 12-13) I thought, "this guy is needing someone." Then I read it a few more times just to make sure. I don't think he's kidding. What he says is not all funny for the Roller fancy. He sums up his personal experiences and observations with: "...I don't believe it possible, so please don't say come to my place and see it." The lad has been disenchanted and turned off. He has seen too much disparity between what he read or was told he should see and what he has actually seen. So, to explain the difference, he prepared some sketches to substantiate the conclusion he had already reached.

He declined future invitations to come and see it. But we just can't cast the lad adrift believing the his psuedosolution to a non-problem is valid.

I certainly agree that if the hole were configured like a piece of pipe 3 to 4 inches long and one inch in diameter, right in the middle of the bird's back, we'd still be waiting for someone to report its existence. The reason it's been reported for so long is because it has been observed by so many Roller fanciers everywhere. The thing is routine and normal for the birds. It's the only way they can spin comfortably.

The hole is there, alright. It isn't in the middle of the back-- that's bone plate, no joint there-- and it isn't a "tunnel" 3 to 4 inches deep and one inches diameter. The base of the hole is that tight little rump where the tail feathers are rooted. It's right above the vent where the caudal vertebrae are, which the only flexible part of the back. That spot is known as "the joint." It's not a very exciting joint but that's the way things are sometimes. It also isn't 3 to 4 inches across. Should be less than two-- it ain't a Roller. The rest of the hole perimeter comes from the tail on one side and the neck and face on the other side. In a static position, that configuration wouldn't make a round hole. Things have to get in motion to do that. If you were to sketch it in the static position, it would look like a bagel with a humongous hernia. Or, you could envision it as a eccentric cam revolving around a fixed axis. Both of those, the herniated bagel and the eccentric cam would look terrible revolving around a fixed point at a slow speed. But that's not what happens.

What happens is exactly what happens when you go to a theater (theatre) to see "Star Wars." When the movie starts, you know damned well that the screen is actually dark half the time because of the shutter action with each frame advance by the projector. But your eyes don't respond fast enough to pick up the dark intervals while the light interval linger on your retina. If your eyes responded fast enough to register every dark interval too, you'd come out of the movie with a terrible headache and crossed eyes. So, you see, there's a definite advantage to being slow on the update in some things. But only some.

What happens during a normal spin is that the body bulk of the bird around that open space over its rump fast enough and smoothly enough so that the corners get rounded off and so that the hole appears to be in the exact center of the bird's body. Appears to be! It really isn't, obviously. Terrible thought! We can't even trust our eyes! Well, that's life. Things aren't always what they appear to be.

To make it even worse, the hole isn't even one inch in diameter either. It's closer to two. I can't understand why some Roller fanciers insist upon smaller holes. What kind of a complex is that? I mean... after all!

For obvious reasons, the holes can't be seen when the kit is directly overhead--especially not when it isn't doing anything. But when you see birds spinning fast and smoothly, without hesitations or jerking around, you can be sure the hole is there. When they're doing it right they make it look so easy and the never seem to get tired from doing it that way.

Carl, I hope you will reconsider your position and agree to accept invitations to come and see it. I don't think any Roller fancier would extend such an invitation just to make a damned fool of himself. Well, maybe I should take that back. Anyway, have at least one more go at it!

This was Carl Hardesty's reply to Hans Roettenbacher. (Nov.-Dec. 1983)

I realize you understand what you think I said, but what you think I said may not be what I meant" In bulletin #52, pages 21-22 Hans Roettenbacher was referring to my article in bulletin #48, pages 12-13. One thing about Hans, its straight for the jugular, no beating around the bush. Good honest criticism is good for all of us. Now to the points at hand. I am not sure I understand everything that you feel we disagree on so I would restate of my beliefs.

First of all, I didn't see anything that we don't agree other than the fact that the width of the back rotating around would be the length of the viewing area as we see through the hole.

I in no way believe that the pigeon rolls so tight as draw the hole up to nothing. I agree that the edges of the triangle are rounded off by the excessive speed of the roll (when it is there) and this forms the round hole, but my best spinners throw a hole about the size of an inch, not 2 inches as you claim. And Hans, anyone who has ever had chicken for dinner should know that the back is bone plate. I, in no way meant that the back bone was flexible. Really Hans, give me a break even if I am a roll down! What I was referring to when I said "...I don't believe it possible, so please don't say come to my place and see it." The IT I was referring to is the spin so tight that the hole is no longer there. As for my being disenchanted and turned off, I don't think so, I have had a banner year, raised and flew some real cracker jacks. Roger Baker who I consider a close friend and one of the last of the old timers to still value the quality of spin first and the turn second (it seems many of our fancy feel if the birds don't work turns there is nothing else) was by to see my birds fly and share a lot of Roller talk. I value any conversation with Roger even though we disagree on some things because there is a lot to be learned from the man. I think Roger will tell you after watching my birds that I have no reason to be disenchanted. Hans, I don't know what else I can say except that maybe I should take a course in writing because something got lost in the translation.

In 1987 Carl Hardesty wrote an article in the APJ entitled
Standards of performance Rollers
 by Carl Hardesty (1987)

Standards for what ever they are worth are in my mind only if they help establish a better product. For years, the hole in the side and the H position of the wings seen from the front, back, or underneath have been the accepted teachings as per quality for grading a spin. I for one follow my own goals and that being straight and as fast as possible. That summary of my standard is only the result of the after product, for I have never seen, to my knowledge, a fast spin that was not without extreme tightness. The straightness of the spin I would liken to a yo-yo or as the old saying goes, "being able to spin through a 6" drain pipe" or the wheels of a train as they move along the tracks.

The point being STRAIGHT, yes straight as a level line with no twisting and turning (changing wing action). Now, if the angle of fall is not perfect, it is no matter to me and what I mean by angle of fall is while one might draw a straight line at 180 degree another might do the same at say 160 or 200 degrees angle of fall but all being straight. And before I make myself misunderstood, try to see a large circle in the sky and the spin starting in the center of the circle and while yet straight fall at different angles, of course 270 or 90 would be the flight of the bird or one spinning in 60 mile an hour wind which ever you like.

Fluid is a great way to describe a perfectly well balanced straight spin. The twisting and turning in the spin is anything but straight and balanced and I believe is the effort of the pigeon to break free from the roll but

unable to do so by compelling urge to roll.

Control is spoken in terms like rolldowns, bumpers and stable but the twisting and turning is also, I believe, the effect of lost control. While yet different type of control or confidence, it is still there. Some birds will show very little loss of this control and other struggle to overcome it for up to a year or more and last but least some never do.

Speed is just as important and in my mind goes hand in hand with tightness of the tuck in the roll. It is for this reason I no longer look for the hole in the side of my best spinners although I do on occasion I see it. What I look for is the outer circumference of the spinning pigeon and the smaller the better.

A good standard for tight is the appearance of a softball spinning at great speed and falling. I have seen tightness as small as a baseball or I call them snowball spinners. The tightest of all spinners don't show a hole in the side because they are drawn up past this point. The hole in the side most likely will be seen in the spin the smallness of a softball. These spins I have been talking about--it should be understood that the wings are not seen from the side view because of the great speed and tightness of tuck. Any time you can see the wings from a side view we are not talking about a fast quality spin. The wings from the front, back and underneath viewing are, I believe, the most misunderstood. I have seen so many rollers in the H position, it is not worth telling all. An example would be a cock that Jerry Boehmann has flown in our area the last year or so. I can't ever remember this pigeon ever spinning in the H position but I can remember a great outstanding quality performance by this cock known as whiteside and I can recall on one occasion he dropped about 10' looking like a snowball and other times I have seen him go 40' looking great, but never the H position or the hole, at least while I was there.

What value is the H position? And do the wings stroke while the pigeon is in the spin? If they do stroke what kind and how much? Is the hole and the H position the end of the rainbow for performance? I for don't think so! Yes I have seen some truly outstanding spinners with the wings in the H position and some with the wings looking like knife points, but where is the merit of this performance other than personal preference. I don't believe the Rollers that Bill Pensom and the other old timers were flying of as high standard as some of the best we have today. I believe this was confirmed by Bill Barret in the tape that Rick Schoening produced for us. If I remember correctly, The English fanciers regard the hole as an old standard which has outlived its usefulness. Bill Pensom and the other old timers did a great service for us in bringing these fine pigeons into this country and developing them to the standard they were able to come to in their lifetime.

But... That standard was not the most possible quality level these pigeons are capable of! I believe only in these last 10 years or so have a few selected fanciers started to produce this standard or quality. This new family of performance Rollers being several generations removed from the old imported birds require a higher standard quality grading system. Those old standards were fine in their day as were the birds and the fanciers, but today is today and then was then. In my travel I have noticed one thing and that being that those that hand onto the old ideas produce the quality of old gathering up as many as possible of the old birds as close as possible to the original birds, standing still if you will. The other side of the coin being the fancier that doesn't care is his birds have this number bird or that one in the background but they perform to the greatest quality standard, this is where I have found the most outstanding spinners.

When I speak of these quality levels it should be noted that we should not expect to produce a great number of these spinners that are of the best quality. Every bird we raise and fly should be examined to our satisfaction as to keeping, culling and breeding. One spin does not a champion make! It is the long run that makes a keeper and breeder. In the second year of flying (if they are good enough to keep that long) is when the test really starts. Will the pigeon still be frequent enough? Has the quality dropped off a little? Out of 10 spins how many are still pleasing? These are the questions we should ask ourselves as we continue to evaluate our flyers. The group of young birds we started with after one year has decreased in size greatly if

we cull vigorously, now into the second the culling continues and the group of birds from that year is even smaller and yes, as we continue to fly them we are still evaluating them year in and year out. When evaluating Rollers their condition should always be taken into account. Are they molting? Are they a little under the weather? The older birds should have a lot of consideration before culling because they didn't last that long in the kit by spinning sloppy and just flying. Think what could possibly be wrong and that you yourself have done wrong that cause a problem for the bird.

Yes, these are some high standards and we should not expect our birds to perform at this level day in and day out. But it does give a means to be able to correctly evaluate a spin to its quality level. If we only have one bird that on occasion spins of a high quality, it is no reason to cull the rest but it does give us a guideline as to what is possible. Our goal is to put as many as possible into our kit and continue to build year in and year out. Don't look for a great kit of birds in one year's breeding, it takes time and effort. If the wings can be seen from the side view it does not mean the birds is a cull but if it looks big as a basketball... cull it! Remember... STRAIGHT...Fast... and have a lot of patience. All persistent wing changers after not more than one year should be culled, many a lot quicker. Have you noticed I haven't said a thing about depth, well... it is only and I mean important when the quality is there first. Go for it... now build a kit that comes up to the standard... yes, a real performance standard for Performance Rollers.

The Hole In The Roll by Bill Barret (1987)

The hole itself is no more than an optical illusion. A great deal has been said and written about this hole in the middle. To give the impression that there might be a hole when you are looking at the pigeon. Bare in mind, more often than not, the pigeon is not falling in the correct position, to view it sideways, anyway, to see the hole in the middle. The hole in the middle is no more than an optical illusion. Taking into consideration. You are talking about a revolving ball that is moving faster on the outside than it is in the center. This in effect gives you an illusion there's a hole there. But, it doesn't exist. When you look at the structure of a pigeon. You ask yourself a question, " How could this pigeon draw itself up and leave a space in the middle." What you call a hole. It is impossible.

