Some Raising and Training Problems in Racing Pigeon Sport (1)

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There are many topics to be talked about in racing pigeon training. Here I will focus on six major aspects, in which many sub-problems are involved. And there are several minor problems in each sub-problem. In today's lecture, I'm going to talk about two aspects first, including 17 problems and more than 60 minor problems.

According to records, the movement of racing pigeons started in Belgium in the early 19th century and has a history of more than 200 years. In the past 200 years, participants have raised and trained.racing pigeons mostly based on their experience, without theoretical and systematic guidance. It is our current task to transmit raising and training knowledge theoretically and scientifically to those who are involved in this career.

I have always been holding a wish in my lifetime, acquiring and accumulating more professional knowledge and theories in pigeon raising and training. Some people may say that there is no theory in pigeon raising and training. I do not think so. What is a theory? It is to sublimate the perceptual understanding obtained through practice into a universal truth. Therefore, the first step is to practice, and then accumulate huge amounts of data and sublimate and summarize it. It is easier said than done. For more than 200 years, only a few theories have actually been generalized and written down in racing pigeon realm. I hope that through my efforts, more relevant theories can be summed up in this field.

Today I would like to discuss something about training of racing pigeons. Through years of practice, I have been accumulating practical data little by little. I have been raising pigeons for more than 50 years, and being a member of Racing Pigeon Association for 35 years. Since 2016, I have focused all my energy on the research of racing pigeon theory. From the beginning of 2016 to the autumn of 2022, I have been raising and racing pigeons at the pigeon breeding base in Fangshan, Beijing, and participating in various local races. Today, I would like to share my experience in racing pigeon training accumulated in my practice over the years.

Raising pigeon is systematic and its success is not determined solely by any part of the system, but relies on all parts of which the system is composed. It is called Buckets Effect or Cannikin Law - if the wooden bars that make up the barrel are uneven in length, then the amount of water in the barrel does not depend on the longest wooden bar, but on the shortest one. And the same is true for pigeons. Pigeon fanciers will say training is not a big deal, like

conducting flight training of pigeons or training them above the roof of one loft. Or just taking the vehicles of associations or clubs which transport racing pigeons to train their pigeons? It's simple enough to say that, but there are a lot of problems involved when it comes to real research.

Here are two figures I would like to show you. Figure one is some statistics I obtained in the first season of 2016 based on a 150km training. Ten pigeons selected from my two lofts as the subjects and related data was recorded, including the weight of racing pigeons and their lactic acid levels measured by blood samples taken after the training.

编号.	Ring	g number	性别.	initial weight	return weight	recover weight	return lactic acid	3h later lactic acid	illustrate	
1.	东棚。			g	g	next / third day	mmo1/L.	mmol/L.		
2.	13652		ę ,	470g.	394g/-76	460/472.	4.4 mmo1/L	3.6 mmo1/L	O2/40m	flight 4H -16. 17 %
3.	08003	37.	ዮ.	416g.	414g/-2	405/415-	3.2 mmo1/L	3.6 mmo1/L	X H ₂ O	//4H+ -0. 48 %
4.	08005	65.	ዮ,	414g.	336g/-78	405/414-+69/+78-	2.1 mmo1/L		O2/40m	// 4H+-18.84 9
5.	08005	62	ð -	462g.	418g/-44	459/450-+41/+32-	2.6 mmo1/L-	3.2 mmo1/L.	x	// 4H+-9.52 %
6.	10494		ዮ,	455g.	449g/-6	438/454- -11/+5-	2.1 mmo1/L		O2/40m H2O //, 4H+-1. 32	
7.	西棚.									
8.	0800198		ዮ,	413g.	360g/-53	395/413- +35/+53-	4.9 mmo1/L	2.9 mmo1/L	O2/40m	// 3H+-12. 83 9
9.	0563273		ð -	457g.	389g/-78	445/474-+56/+85-	3.8 mmo1/L	3.8 mmo1/L	O2/40m	//3H+-17.07 9
10.	0205199-		ð -	481g.	387g/-94	458/485. +71/+98.	2.6 mmo1/L	2.1 mmo1/L	O2/40m	//3H+-19. 54 M
11.	0651964		ዮ,	443g.	357g/-86	403/415- +46/+58-	2.4 mmo1/L	2.2 mmo1/L	O2/40m	//3H+-19.41 9
12-	0800283.		ð -	436g.	436g. 366g/-70.		418/436. +52/+70. 4.0 mmo1/L.		O2/40m // 3H+-16.00	
当日天气.		晴间多云/30°C。		Wind direction/force WN(a		against the wind)2-3class		地震.	无。	
比赛距离。		150KM		flight duration		3-4 Hour		磁暴	无。	

Figure 1

After taking prolonged physical exercise, lactic acid in their bodies is generated, increasing lactic acid levels in their blood. And their weight has changed as well after flight training. The first pigeon shown in the picture weighed 394 grams after a four-hour flight, decreasing from 470 grams. 76 grams (or 16.17 percent of its body weight) have been lost,. The lactic acid level in its blood also increased from the normal level of 2.0 to 2.4 micromoles per milliliter to 4.4 micromoles per milliliter. After this racing pigeon returned back, measures were taken on it to eliminate lactic acid. Three hours later, the lactic acid level in its blood had dropped to 3.6 micromoles per milliliter. Now, let's take a look at the second racing pigeon that did not take any recovery measures. After it returned from training, the lactic acid level in its blood did not

編号.	高号。 Ring number		性别。	initial weight g	return weight	recover weight	return lactic acid	3h later lactic acid	illustrate	
1. 东枝		丰台 300km	2		g		mmol/L-	mmol/L	u .	
2-	08004	183.	ዮ	413g.	364g/-49.	390/ +26/	3.4 mmo1/L-	2.2 mmo1/L	O2/40m flight4H -11.86 \$	
3.	08002	286.	ð -	458g.	376g/-82-	421/ +45/	4.5 mmo1/L	2.9 mmo1/L	O2/40m flight 4H+-17.90	
4.	08003	333.	ዮ.	410g.	341g/-69-	373/ +32/	2.8 mmo1/L	2.1 mmo1/L	O2/40m flight 4H+-16. 83 9	
5.	08003	331.	우.	426g.	367g/-59-	405/ +38/	3.2 mmo1/L	2.8 mmo1/L	O2/40m flight 4H+-13. 85 9	
6.	08003	0800336		458g.	384g/-74	422/ +38/	2.1 mmo1/L	2.1 mmo1/L	O2/40m flight 4H+-12. 67	
7.	西棚 大铭 300km									
8.	0800508		ዮ.	433g.	389g/-44	423/440.	3.8 mmo1/L-	3.0 mmo1/L	O2/40m flight 4. 5H-10. 16 %-	
9.	0800507		ð -	439g.	415g/-24	427/427.	2.9 mmo1/L	2.0 mmo1/L	O2/40m 落地飞 5.8H-5.47 %	
10.	02051	194	ð -	435g.	397g/-38.	425/431- +28/+34-	2.6 mmo1/L	2.2 mmo1/L	O2/40m flight 5. 5H-8. 74	
11.	0563272		ð -	472g.	448g/-24		4.2 mmo1/L	2.1 mmo1/L	呼吸道 x 飞1册─5.08 ‰	
12-	contr	'ol 충 + 우	*				2.1+2.8 mmo1/L		static for 7days	
当日天气. 中-轻度		中-轻度雾霾	霾/28°C. Wind directio		n/force N to S 2-3 clas		S 地震		无	
比赛距离。		300km-		flight duration		4-6 Hour		磁暴	无	

decrease, instead, it increased to 3.6 micromoles per milliliter.

Figure. 2

On October 3, 2016, my racing pigeons took part in a 300km race organized by a local club. After the pigeons returned, I measured their weight and blood lactic acid level, and recorded the data of the two groups of pigeons. One group has taken acid elimination measures and the other has not. The relevant data are shown in the figure. In 13 seasons over the past seven years, I have adopted different recording methods, testing methods and observing ways to accumulate research data and conduct scientific analysis and made summaries based on them. The first question I would like to talk about here is training. Why is training necessary? As far as I am concerned, the only purpose of training is to win in races because racing pigeons can get good results through systematic training. However, each of us participates in the race with various intentions. Some people's goal is to win in a single short distance race, while others prefer to compete in multi-level intermediate distance races. Winning in the short distance race we mentioned just now is only one of their goals, and a lot of pigeon fanciers prestigious in short distance races, such as the Janssen brothers, Jos Soontjes, Leo Heremans who only participate in short distance races.

Therefore, the concept of short distance race has been introduced here. In *Chinese Racing Pigeon Competition Rules*, short distance race refers to the race between 200km and 400km.

What are the characteristics of the short distance race? Basically speaking, in a short distance race a pigeon normally flies within five hours. Most of these racing pigeons return back in three or four hours and ranking are determined by their results. Taking a 300km race as an example, normally racing pigeons spend three or four hours completing the whole race. The winning factor of the short distance race is the orientation ability. If racing pigeons are not oriented correctly, they can't win the race. In addition, when racing pigeons return back, they have to land and enter the loft quickly. Even if racing pigeons fly back soon, they may miss the chance to win if they still hover over rather than entering the loft. Therefore, every minute matters in a short distance race. Short distance races require racing pigeons to orient quickly and accurately, flying back and landing quickly. Targeted training is needed to enhance above abilities. In general training for short distance races, the distance is relatively short, usually between 100km and 120km, up to 150km at most. But the training frequency is relatively high, and then the racing pigeons are trained to land and enter the loft quickly after they fly back.

In addition to short distance races, there are also middle distance races. According to *Chinese Racing Pigeon Competition Rules (2019)*, the medium distance race refers to that between 400km and 600km. In particular, winning in 500km races is now the main goal of pigeon fanciers in single and multi races. In medium distance races, racing pigeons normally fly 6 to 8 hours from the opening of the cage to their returning back, requiring not only fast speed, but also good endurance. Of course, racing pigeons also need to land and enter the loft quickly when they return back. At present, medium distance races for young racing pigeons are mostly held in China, taking up a large proportion of our races. Many local associations, clubs and one lofts organize young pigeon races in autumn, which have become the most popular events in autumn season for a large number of racing pigeons and participants.

Apart from that, there are long and ultra long distance races as well, with the distances between 700km to 1500 km or even longer. Such events require racing pigeons to have good endurance. For example, completing 700km races generally needs 8 to 10 hours, and achieving 1,000 km race within the same day is nearly an impossible mission. Returning back the next morning can also get a good place. It is good endurance that enables them to accomplish ultra long distance races. In races between 700km to 1000km, or even longer distance races, racing pigeons are basically selected from adult pigeons and young pigeons within one year old only account for small portion in such races. Much difference can be found in training between adult and young pigeons. In addition to the single race (racing pigeons only take part in one race), multi races are held on a weekly basis and comprehensive results generated in multi races will be considered as the criterion for rankings. Racing pigeons only have six-day rest for their recovery, and targeted training for

different type of races is carried out accordingly.

The medium distance races for young pigeons held in autumn in China are almost most difficult races for young pigeons in the world. Let's take a look at the medium distance young pigeon races in Belgium, the kingdom of racing pigeons, which start from the last week of July every year and end in early September. They are held every other week (two weeks), and there is no requirement that racing pigeons have to race four times in competition. Participants can choose to join in races, or race consecutively. As for Haixiang young pigeon multi races held in Taiwan Province, the normal distance of each race is about 300km, and the flight speed is limited (flight time limit). According to competition rules in Taiwan, the races are held no matter whether it rains or storms. I do not think it is reasonable or scientific. In many cases, good luck plays a big part in winning the races rather than finishing the races regulated in rules.

Currently, multi races for young pigeons (including four or five races) are mostly held every week in China. For example, the four-race competition takes three weeks. Racing pigeons fly more than 2000km to 2500km, taking at least 25 to 30 hours. The flight time for four races will be more than 28 hours and that for five races will be more than 35 hours when encountering the severe weather. It is a huge task.

Young pigeons are born around March every year and they have to finish four races by the end of October. How much time do these pigeons need for all the training and races? It takes about 300 to 330 hours. How many times does a pigeon flap its wings? Six to seven million times. (Racing pigeons fly at a frequency of about four to six times per second.) To be honest, flapping wings six to seven million times to complete a race is a physical challenge for a young pigeon. Therefore, multi races for young pigeons in China today is the most difficult one in the world.

Next, I would like to talk about the first problem in training, that is, training for different characteristics. For example, there are many problems to face up to while participating in young pigeon races, including the physiological development, the disease immunity, the problem of molting as well as strips, and so on. All of above are the characteristics of young pigeons. Comparing with them, in adult pigeon races, we need to consider problems such as pairing, the estrus of male pigeons and the laying of eggs of female pigeons. Their performance may be affected by pairing. In traditional racing pigeon powers such as Belgium, the Netherlands and Germany, most of the adult pigeon fanciers in China do not have enough conditions to raise and train their pigeons on the basis of their respective gender. Good results are more likely to be achieved only if the adult pigeons can be divided into different groups according to their gender.

Apart from what has been discussed above, participants involving in races in different seasons may also encounter problems such as diverse natural environment. As for races in spring, for example, a process from cool to hot will be experienced. And racing pigeons in spring races are mostly selected from one-year-old pigeons, and adult pigeons. When everything comes back to life in spring, the male pigeons and female pigeons are in estrus. Races in autumn are just the opposite, spanning from hot to cool, involving molting problems of racing pigeons. In races in summer and winter, the following effects have to be taken into consideration, such as temperature, exertion and recovery of physical condition, cooling and insulation, etc. Each of these problems is related to training. In this way, different training methods and contents will be adopted accordingly. Even in a short distance race, so many problems have to be dealt with and solved. For different events and various goals, we have to apply different training methods.

The second problem I would like to mention is the content of training. Racing pigeon training can be divided into several small problems according to its content, the first of which is home flight training. Home flight training is one of the most basic training, that is pigeons fly around the one loft or near the home. So, how fast do racing pigeons fly? I have tested them many times. Racing pigeons are so smart that they don't flap their wings when they fly over the head. Their usual flight speed is no faster than 1,000 meters per minute. Here's a picture to show you how pigeons fly.

When young pigeons just begin their learning to fly, they neither develop well physically, nor fly skillfully. They can only fly around the loft with the range of about a few hundred meters. Gradually they mature, and their feathers have been changed well. When they are in very good physical condition, they may fly farther even out of our sight. Pigeon fanciers in Beijing call this way of home flight as "kaitangzi", or "chuquan", meaning flying for further distance away from home. When racing pigeons fly out of our sight, they will increase their flight speed once they can not see the one loft. Their flight speed will increase to more than 1200 meters per minute.

Figure 3

The picture shown here is a zero-kilometer home flight before my first training in the fall on August 21, 2018. On this day, pigeons began to fly around their home, and then they went out for further distance. They flew for a total of 90 minutes, and the actual distance reached 82.45 kilometers. The average speed is 948 meters per minute. When they flew far away from one loft, the fastest speed is 1260 meters per minute, which is a documented record of home flight for racing pigeons.



The next picture is the test record of the racing pigeon home flight on February 23, 2019. At that time, the weather was still relatively cold. When the pigeons started to fly, they just flew around the loft rather than flying away from home to farther distances. The flight speed was basically below 1200 meters per minute. Only one point recorded in the table was 1200 meter per minute. The rest ones were all at a speed of 700 meters per minute. Pigeons will not try their best to fly around their loft or home.

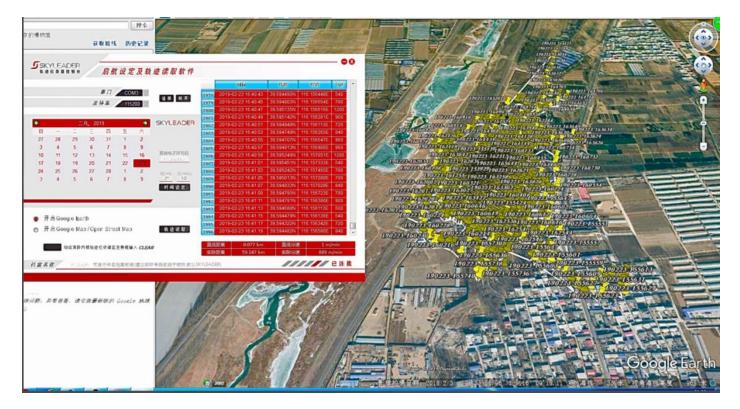


Figure 4

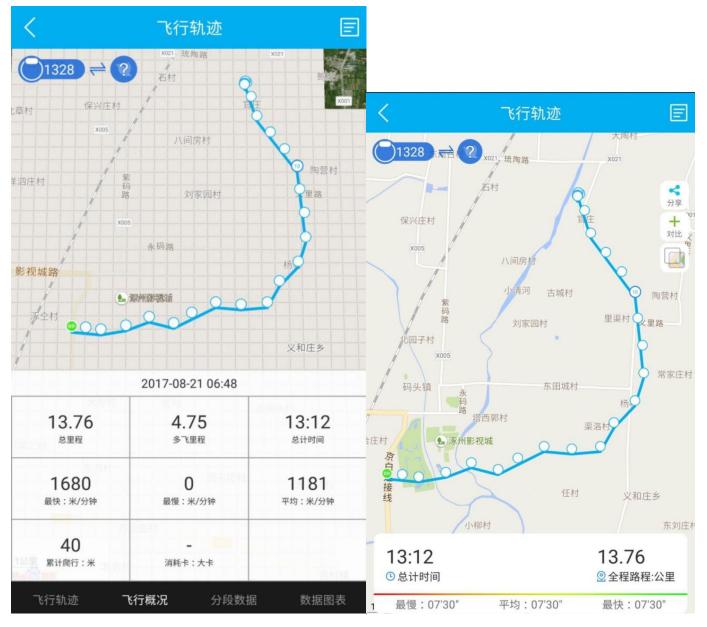


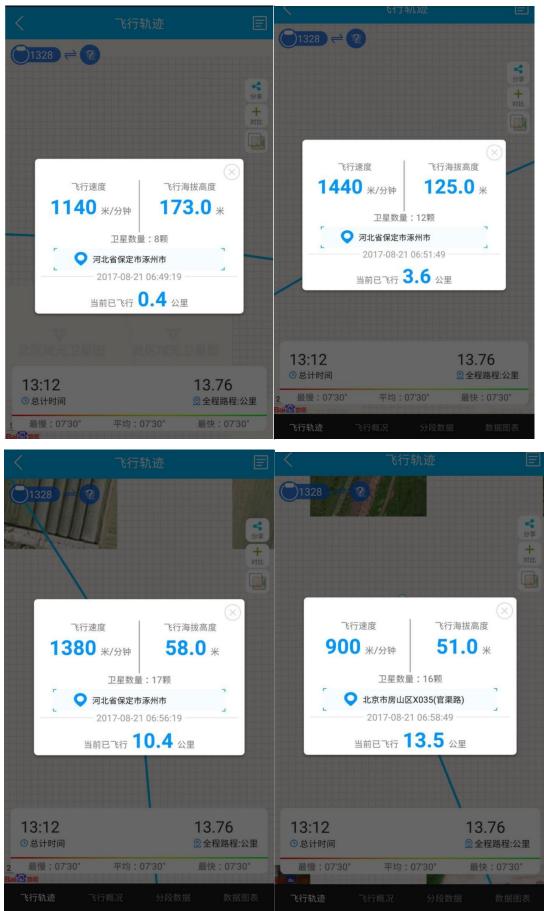
Figure 5, Figure 6

The next picture shows the flight path of a short-distance training, which is the test record on August 21, 2017. Before that, I started training with racing pigeons around August 20 every year. I took GPS on the pigeon and recorded its flight path. It took me nine seasons to take records from the fall of 2017 to the fall of 2021. There have been dozens of training records every season. Pigeons fly with GPS positioning rings and their flight tracks have been recorded. I took records of the trajectories of many pigeons in different weather conditions, and analyse the altitude and their flight speed.

Figure 7, figure 8, figure 9, figure 10

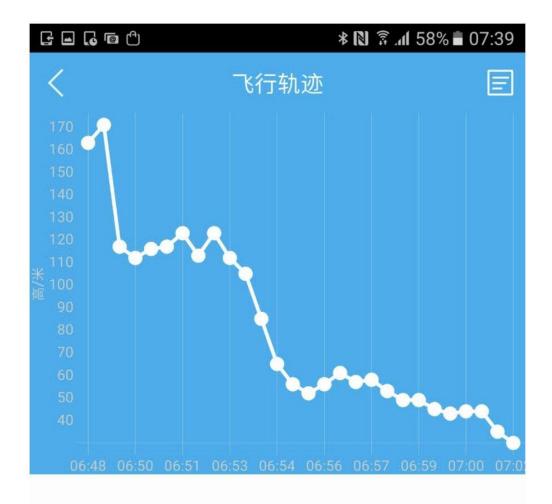
Next, please take a look at this picture. this is what happened when the pigeon was 0.4 kilometers away from the place of release after take-off. When it first took off, it flew at an altitude of 173m and a speed of 1140 meters per minute. The picture behind it shows that the pigeon has flown 3.6km, and the altitude has begun to drop to 125m, and the flight speed has reached 1440 meters per minute. And the following picture reveals that the pigeon has flown

10.4km, while its speed has maintained at 1380 meters per minute, and the height has dropped to 58 meters.



In fact, pigeons do not fly very high when cruising, only about 50 meters above the ground.

When facing the wind, they are basically below 50 meters or even less than 5 meters. Let's look at another picture. When the pigeon has flown 13.5 kilometers and almost arrived at the loft, its flight altitude has dropped to 51 meters. Nearly at the loft, it has begun to fold its wings, and its flight speed has dropped to 900 meters per minute. What I have shown you earlier is to keep the track of the pigeon's flight process by data collected in training, which demonstrates the flight altitude and speed changes during the training process. Figure. 11



1738232(*)(*)(*)最高高度平均高度最低高度

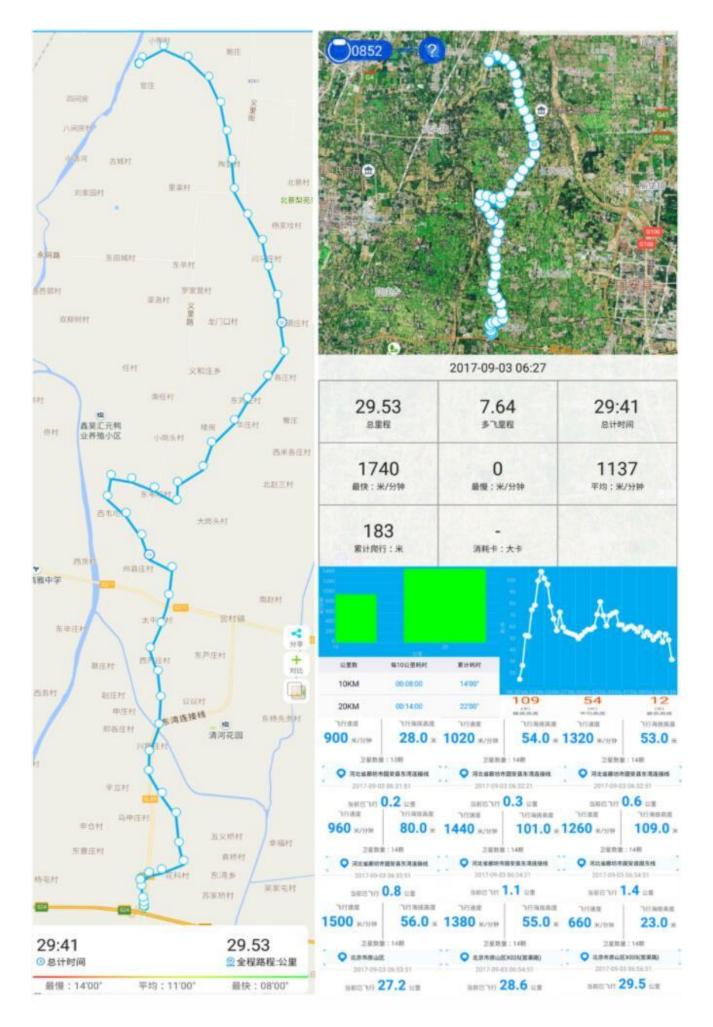
					分速
	001	2017-09-02 06:58:41	39.486168N	116.159912E	1020
	002	2017-09-02 06:58:48	39.486099N	116.158585E	780
	003	2017-09-02 06:58:55	39.486687N	116.159164E	900
THE REAL PROPERTY AND ADDRESS OF	004	2017-09-02 06:59:25	39.487991N	116.157906E	900
	005	2017-09-02 06:59:33	39.488842N	116.159119E	1140
	006	2017-09-02 06:59:40	39.489861N	116.158669E	1140
	007	2017-09-02 07:00:09	39.491566N	116.161652E	1260
	008	2017-09-02 07:00:16	39.493183N	116.161537E	1800
	009	2017-09-02 07:00:23	39.494869N	116.161827E	1500
	010	2017-09-02 07:00:53	39.501060N	116.161797E	1500
	011	2017-09-02 07:01:00	39.502445N	116.162804E	1500
	012	2017-09-02 07:01:07	39.503517N	116.161758E	1260
	013	2017-09-02 07:01:37	39.509621N	116.157608E	1380
	014	2017-09-02 07:01:45	39.511101N	116.157478E	1380
	015	2017-09-02 07:01:52	39.512012N	116.155785E	1680
	016	2017-09-02 07:02:21	39.514210N	116.148247E	1320
	017	2017-09-02 07:02:28	39.515152N	116.146690E	1560
	018	2017-09-02 07:02:35	39.516174N	116.145264E	1320
	019	2017-09-02 07:03:05	39.522396N	116.142357E	1440
	020	2017-09-02 07:03:12	39.523525N	116.142517E	1260
	021	2017-09-02 07:03:19	39.524498N	116.141212E	1440
	022	2017-09-02 07:03:50	39.529682N	116.138458E	1440
	023	2017-09-02 07:04:35	39.537582N	116.132477E	960
	024	2017-09-02 07:04:42	39.538750N	116.133598E	1260
	025	2017-09-02 07:04:49	39.540279N	116.134171E	1440
	026	2017-09-02 07:05:19	39.546562N	116.131554E	960
	020	2017-09-02 07:05:27	39.548084N	116.130859E	1200
	027	2017-09-02 07:05:34	39.549725N		1440
	028	2017-09-02 07:06:05	39.556549N	116.129845E	1440
	029	2017-09-02 07:06:12	39.558041N	116.129868E	1320
	030	2017-09-02 07:06:19	39.559246N	116.130417E	1200
	and a second second	2017-09-02 07:06:48	39.565239N	116.132446E	360
	032	2017-09-02 07:06:55	39.566185N	116.133118E	660
	033	2017-09-02 07:07:02	39.567711N	116.133369E	1380
	034	2017-09-02 07:07:32	39.571323N	116.140129E	1320
	035	2017-09-02 07:07:39	39.572769N	116.140106E	1440
	036	2017-09-02 07:07:46	39.574432N	116.140152E	1500
	037	2017-09-02 07:08:16	39.581326N	116.141449E	1500
	038	2017-09-02 07:08:23	39.582718N	116.142326E	1380
	039	2017-09-02 07:08:30	39.583878N	116.143501E	1380
	040	2017-09-02 07:09:01	39.587124N	116.149849E	180
	041	2017-09-02 07:09:08	39.587288N	116.151978E	840
	042	2017-09-02 07:09:15	39.588524N	116.153419E	1380
	043				
	044	2017-09-02 07:09:45 2017-09-02 07:09:52	39.593891N 39.595028N	116.157295E 116.156982E	1140 960
	045				1140
	046	2017-09-02 07:09:59	39.595894N	116.157013E	
	047	2017-09-02 07:10:30	39.594944N	116.157486E	600
	048	2017-09-02 07:10:37	39.594826N	116.157242E	540
	049	2017-09-02 07:10:44	39.594940N	116.157036E	420
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时间

纬度 经度 分速

Figure 12, Figure 13, Figure 14

I have done a lot of such tests and taken large amount of records from 2017 to 2021. From these experimental records, I have discovered that after pigeons were released, they would fly up to about 100 to 200 meters and hover with their orientation abilities. Once they are oriented well, they would gradually lower the flight altitude to about 50 meters for cruising. Once they can see the loft, their flight speed will immediately drop to less than 1000 meters per minute and be kept till they land the loft. Apart from that, their flight speed will accelerate to between 1200 meters and 1400 meters per minute. If it is downwind, the wind speed will be added. On condition that it is against the wind, wind speed will be deducted from flight speed.



What problems should we pay attention to for home flight training? First of all, observing the

flock of pigeons flying together in training during the young pigeon period is of great significance. As we all know, after young pigeons fly away their homes and soar into the sky, they will all fly respectively, just like flowers scattered by the goddess. And it will take one week or two for them to adapt before they gradually fly in groups. Is that possible for young pigeons to gather together and fly at the same time as soon as quickly? The answer is definitely yes, which involves the time when the young pigeons can be moved to the one loft. After years of practice, I think it is the most appropriate to transfer young pigeons are not able to fly, so the racing loft to raise and train them. During this period, young pigeons are not able to fly, so they are more likely to stand on the landing platform to get familiar with their surroundings. When they grow to 30 to 35 days or so, their wing feathers have been full. They begin to flap their wings and fly slowly. Their muscles are very soft and not fully developed and strong enough. Therefore, they can fly out of different movements in the process of practicing, especially in their landing, which is very good for its adult flight and landing, especially for their rapid landing to the loft.

For young pigeons delivered to the same one loft to take home flight training, the best age gap between them is within ten days. Such a group of young pigeons can learn to fly at the same time. After a short run-in, they may be able to fly in groups. During this period, attention should paid to avoid interference, such as sudden firecracker set off by neighbors, or an old cat harassing. Young pigeons are scared of being frightened, thus negatively affecting home flight training. When young pigeons take home flight training, they will fly better if they are led by experienced pigeons, especially senior female pigeons. It is very important to control the time when the young pigeons are released to fly. It is not appropriate to release them too early. The best timing for you to do that is after other people have finished the whole training. It is not very hot in spring and the release can be conducted at eight or nine o'clock in the morning.

Besides, when young pigeons grow to 60 to 70 days old, they begin to huddle together when they fly. During this period, they have gradually matured and their feathers have grown up, too. After flying normally for one week or two, they will become more and more confident. These young pigeons will be very excited, and they will continue to fly farther and farther. Then the exciting period of young pigeons approaches. At this time young pigeons are particularly easy to get lost.

More than two months after baby pigeons are born, the time moves to May or June, and the temperature goes up at this time. Young pigeons grow more strongly and their ability to fly increases as well. They are excited and eager to fly. If they are in good health, it is easy for them to fly for 90 minutes and far away from home. They can fly five kilometers or even ten kilometers further. In May in south (or June in north), the weather is cool in the morning when they are released. As the sun rises, the temperature goes up quickly. Young pigeons can fly for

90 minutes, from 6:30 am to 8:00 am. After 8 o'clock, the temperature has risen from 20 degrees Celsius in the morning to 27 to 30 degrees Celsius. During this time, young pigeons consume their physical energy very quickly. If they encounter other pigeon flocks outside, they are more likely to get lost and not able to fly back to the loft.

Many pigeon fanciers must have such experiences. Young pigeons are particularly easy to get lost when they grow to 60 or 70 days old. And what should be done to tackle this problem? Of course, it is necessary to take measures to restrain flight training and reduce or even stop the flight training of young pigeons in time. When young pigeons eat more but fly less, their weight increases easily. Therefore, they are not able to fly very far. In addition, postponing the release time can also be adopted. If the weather is hot and the temperature is high, the flight time of pigeons will be relatively shortened. In this way, the probability of loss can be reduced as much as possible by delaying the exciting period of young pigeons.