

AN ABSTRACT OF THE THESIS OF

Elana Morgana Smith for the degree of Master of Science in Animal Science

Presented on October 25, 2002

Title: Comparison of Head Morphometric Traits Within Five Selected Performance Types of Quarter Horses (*Equus caballus*)

Redacted for privacy

Abstract approved: \_\_\_\_\_

Thomas F. Savage

A study was conducted to investigate if morphometric facial measurements could be utilized to differentiate five categorical performance types of Quarter Horses. The five categories being Western, Halter, English, Reining, and Cutting. The measurements were collected from 323 registered Quarter Horses representing animals who ranged in age from one year to 30 years of age and one of three gender (Stallion, Gelding, and Mare) categories. Eight facial measurements were obtained from two geographic areas, Florida and Oregon. A correlation was performed and resulted in a reduction of the data from eight to five facial measurements, due to the presence of facial symmetry. The reduced data was subsequently analyzed by Multivariate Analysis, using the Wilks Lambda Analysis of Variance. The Main effects, age, gender, and categorical performance type were all significant ( $p < 0.0001$  to  $0.001$ ). Of the two-way interactions only age:gender was not significant ( $p > 0.05$ ) and the three-way interaction age:gender:type was also not significant ( $p > 0.05$ ) Based upon the

not significant ( $p > 0.05$ ) Based upon the results, the five original performance categories could be reduced to four (English, Halter, Cutting, and Western/Reining). This indicates that there are a number of similarities in facial measurements between the Western and Reining horses. Findings of this thesis indicate that selected facial morphometric traits exist and are characterized in the different performance categories.

Comparison of Head Morphometric Traits Within Five Selected Performance  
Types of Quarter Horses (*Equus caballus*)

by  
Elana Morgana Smith

A THESIS

submitted to

Oregon State University

in partial fulfillment of  
the requirements for the  
degree of

Master of Science

Presented October 25, 2002  
Commencement June 2003

Master of Science thesis of Elana Morgana Smith presented on October 25, 2002.

APPROVED:

Redacted for privacy

---

Major Professor, representing Animal Science

Redacted for privacy

---

Head of the Department of Animal Sciences

Redacted for privacy

---

Dean of the Graduate School

I understand that my thesis will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my thesis to any reader upon request.

Redacted for privacy

---

Elana Morgana Smith, Author

## ACKNOWLEDGEMENTS

I want to first thank Dr. Thomas F. Savage for serving as my major professor. With his guidance, I was able to extend my research beyond all boundaries. It was his belief in myself and my research that gave me the courage to enter an area that had not been entered into before. I also want to thank him for his guidance. His guidance was extremely important to me because he was guiding through an area that he was not very familiar with, the horse world. He is more than my major professor, he is my friend and for that I will be eternally grateful.

I extend my thanks to each member of my committee: Dr. Don Holton, Fred Obermiller, and Russel Ingham. Their time and assistance was gratefully acknowledged. I would also like to extend my gratitude to Alix Gitleman, who was able to make sense of my statistical analysis. Without whom, I would not have a greater understanding of MANOVA.

Thanks are also extended to all the facility owners that allowed me to come and measure their horses. A special thanks is extended to the Animal Science Department, without their support, I would not have been able to go to Florida and conduct my research.

A special thanks is also extended to Bill Bereskin for his friendship, encouragement, and for aiding me with my research. Without whom, I could not have successfully completed my research. An extended thanks to Dodi Reesman, for being my friend and for her encouragement through the tough times and without her support, I would not be where I am today.

The encouragement and love of my parents have been essential to the completion of my degree. Without their support and encouragement, I would not be where I am today.

My greatest support has come from my future husband Ben Hoerter, who has served as my personal graphic artist in completing my research and thesis. With Ben's contributions and unconditional love, working towards this degree has been an enjoyable experience.

## TABLE OF CONTENTS

	Page
Introduction	1
Literature Review	7
Methods and Materials	13
Performance Types	15
AQHA Point System	15
Data Analysis	18
Results	19
Discussion	22
Bibliography	39
Appendices	45

## LIST OF FIGURES

Figures		Page
1	Measurement number and its description.	16
2	Interaction between gender and quarter horse type for the outer corner of the left eye to the outer corner of the right eye (outlr).	29
3	Interaction between gender and quarter horse type for the inner corner of the left eye to the inner corner of the right eye (innr).	29
4	Interaction between gender and quarter horse type for the poll to the outer corner of the eye (poll).	30
5	Interaction between gender and quarter horse type for the outer corner of the eye straight down to the outer most surface of the jaw bone (ejb).	30
6	Interaction between gender and quarter horse type for the inner corner of the eye to the incisive/mandible junction (elj).	31
7	Interaction between age and quarter horse type for the outer corner of the left eye to the outer corner of the right eye (outlr).	31
8	Interaction between age and quarter horse type for the inner corner of the left eye to the inner corner of the right eye (innr).	32
9	Interaction between age and quarter horse type for the poll to the outer corner of the eye (poll).	32
10	Interaction between age and quarter horse type for the outer corner of the eye straight down to the outer most surface of the jaw bone (ejb).	33



## LIST OF FIGURES (CONTINUED)

Figures		Page
11	Interaction between age and quarter horse type for the inner corner of the eye to the incisive/mandible junction (elj).	33

## LIST OF TABLES

Tables		Page
1	Table of all means.	34
2	Correlations coefficients for the eight facial measurements measured on the 323 quarter horses.	36
3	Correlations among the facial measurements after arbitrarily choosing one of polll and pollr, lejb and rejb, and lej and relj measurements.	37
4	Wilks Lambda analysis of variance with the combination of correlated measurements, which resulted in the elimination of one of the two-way interactions and the three-way interaction.	37
5	Means for the eight measurements (in inches) with type as the only factor compared to the overall mean of the entire population ( $P < .05$ ).	37
6	Means for the eight measurements (in inches) with Gender as the only factor ( $P < .05$ ).	38

## LIST OF APPENDICES

Appendix		Page
1A.	Detailed history of the American quarter horse.	45
1B.	An outlined history of the American quarter horses from the past to the modern day quarter horse.	82
1C.	The foundation American quarter horses-The first nineteen.	96
1D.	Influential quarter horses that contributed to the specialization within the breed.	130
1E.	The equine eye.	185
2A.	Tabular Interaction means for age:type and type:gender.	191

## Comparison of Head Morphometric Traits Within Five Selected Performance Types of Quarter Horses (*Equus caballus*)

### Introduction

The horse, *Equus caballus*, has played an important role throughout the history of the United States, moving from a role of survivor to one of pleasure. The horse has made its “mark” on our society. Some of the current roles for the horse include work, pleasure, racing, and showing. The horse has been used for a more diverse range of functions than what was generally perceived. For example, Arabians are used for endurance racing, whereas Thoroughbreds are used for long distance racing. During the Colonial times in the United States, horse racing was conducted on tracks shorter than those used in Europe. There was a need for a horse that could exhibit quick bursts of speed, which would last for a quarter mile-racing track, and be able to outrun Thoroughbreds over that distance.

As America developed and as settlers moved west, the need for horses increased. These horses had to endure hard work, which was a fundamental requirement in the movement west. They also had to survive on “next to nothing” for feed due to the lack of quality forage. Despite this lack of forage, they still had to be able to turn with a foot and degree of nimbleness that would allow them to travel through treacherous terrain. The development of a new breed, the Quarter Horse began its “journey of development” from necessity. The early settlers chose the Quarter Horse to make the trip west. These early Quarter Horses were able to run a quarter mile in the morning and work cattle in the afternoon. They ultimately

became the great all-around horse of this time. For the interested reader, a detailed narrative of the Quarter Horse's journey of development is located in Appendix 1A (see Appendix 1B for an outline version of the preceding Appendices).

In the late 1800s, cattle ranches began to appear throughout the southwest. The horse of choice for these ranches was the Quarter Horse. During the developmental process of establishing the Quarter Horse, the number of influential animals was surprisingly small as described in Appendix 1C. Over time and with the increase in motorized technology (about the 1950's), the interest in the Quarter Horse moved away from its "all-around" abilities and began to focus on its ability to specialize. Appendix 1D contains a description of the influential quarter horses that contributed to this specialization.

Price (1991) suggests, "Current trends in performance in America are towards specialization. Not so long ago in the USA the Quarter Horse was expected to be multi-talented, but as the show scene became a professional business with big rewards in prize money, stud fees for successful stallions, and high young stock values, specialization at the top level has become necessary in the Quarter Horse Industry."

In 2002, Ehringer remarked, "As the Quarter Horse breed has grown to fill the largest horse registry in the world, specific bloodlines have come to dominate. Breeders looking for a particular type of horse tend to flock to the same genetic fountain, hoping to capture the best qualities represented by the most exceptional sires and dams."

According to the 2001 AQHA World Show Class descriptions, there are now 24 different types of classes in which Quarter Horses can compete. The classes are Halter, Showmanship at Halter, Western Pleasure, Western Riding, Western Horsemanship, Trail, Reining, Working Cow Horse, Cutting, Calf Roping,

Breakaway Roping, Dally Team Roping-Heading, Dally Team Roping-Heeling, Team Penning, Barrel Racing, Pole Bending, Hunt Seat Equitation, Hunter Under Saddle, Hunter Hack, Green Working Hunter, Working Hunter, Jumping, Equitation Over Fences, and Pleasure Driving. Of the 24 different class types, there are five categorical classes that best describe the spectrum of specialization that has taken place in the modern day Quarter Horse.

1. Western Pleasure

Western Pleasure (Western), as the name implies, provides the rider enjoyment. Contestants compete simultaneously, traveling around the perimeter of the arena, and are required to walk, jog, and lope in both directions of the arena. A pleasure horse is described as having a free flowing stride of reasonable length in balance with his conformation. The rider must hold the reins with one hand unless, showing with a hackamore or snaffle, and cannot change hands during the performance.

2. Halter

Halter competition is used as a measure of judging the overall body shape and best represents the defined conformation of the American Quarter Horse as a breed. Halter classes are divided by age and sex. In this category, horses are evaluated for balance, structural correctness, breed and gender characteristics, and degree of muscling. Emphasis is placed on balance, the most desirable characteristic. Shown with a leather halter, the horse travels before the judges so soundness can be evaluated.

### 3. Hunter Under Saddle

Hunter Under Saddle (English) is the preliminary class for English riding disciplines, and judges evaluate the movement of a hunter type horse on the flat at a walk, trot, and canter. Exhibitors in this event must wear traditional English attire. Horses circle the perimeter of the arena, performing each gait. Particular attention is directed to the smoothness of gait, free-flowing stride, and willingness to perform.

### 4. Reining

To rein a horse is not only to guide its, but also to control its every movement. In reining, a rider is required to negotiate one of eleven American Quarter Horse Association patterns, which include prescribed maneuvers of stops, spins, rollbacks, lead changes, and circles at a lope. The horse should be willingly guided with little or no resistance. The horse is judged on movements, mastery of pattern, and attitude, and the score ranges from 0 to infinity, with 70 denoting average. Reining horse bloodlines and trends tend to run parallel with cutting horse bloodlines due to the athleticism required in both events. Reining horses are small and compact, with withers slightly higher than the croup, and a powerful loin that helps support the horse as it performs the deep stops that characterize the event.

### 5. Cutting

The cutting horse must possess “cow sense”, the ability to “out-think” and “out-maneuver” a cow. Horse and rider must move quietly into a herd of cattle, cut

one from the herd, drive it to the center of the arena, and isolate it away from the herd. The rider must keep that cow from returning to the rest of the herd. The cutting horse must match its movements with the cow's, anticipating its every movement. The horse is scored on its ability to keep the cow from returning to the herd, cow sense, attentiveness, and courage.

With Quarter Horse specialization began the differentiation into specific genetic sub-lines, characterized by changes in physical characteristics, such as head shape. With these differences in performance categories, a question arises: Are there body measurements that could explain the specialization in the Quarter Horse breed?

The horse has the largest eye globe of all land animals. It is thought that the horse has a total visual field of 350 degrees (Dyce et al, 1987). Eyes are complex sensory extensions of the brain, which enable the horse to process external sensory information from the external world into its' internal world. The external environment is processed through the horse's visual system, utilizing both binocular, both eyes are focused on an object in front, and monocular, utilizing visual input from one eye, vision. This type of vision allows the horse to utilize frontal vision with one eye and lateral with the other. Horses cannot use binocular and monocular vision at the same time (Dyce et al, 1987). The visual field of the horse, is dependent on the placement of the eyes within its' skull and subsequent perceptions of the environment. To understand how Quarter Horse differentiation has occurred, an understanding of eye placement is necessary(Appendix 1E).



Morphology is the science dealing with the visible structures of organisms related to their development and evolution, such that the horse's head is influenced by age, gender, and genetics. Morphometric traits features that may differ in shape and size and can be quantified (measured e.g. shape of the head or shape and size of body color patterns). The conformation of the horse's head develops during growth as the face lengthens and deepens to accommodate the full complement of teeth and expanding sinuses (Dyce et al, 1987). The animal's gender also influences head shape and its associated muscles. Stallions have greater facial muscling than mares and geldings. Differences in morphologic structures, such as head shape, may influence a horse's performance in the different categories (e.g. Western, Halter, English, Reining, or Cutting). With today's diverse genetic selection pressures, different performance categories have been developed for the Quarter Horse breed. It is unknown if these differences are associated with head morphology or head dimensions. This study was designed to investigate if morphometric differences in eye placement exist among five specific performance categories of the Quarter Horse, and if so, if these differences could be characteristics of a specific performance category.

## Literature Review

Studies attempting to associate head morphometric traits with an animal's performance are limited. Miller and Murphy (1995) reported that variation existed for eye placement within the skulls of various breeds of hunting dogs but did not determine if eye placement was associated with performance. Murphy and Pollock (1993) reported in canine breeds with normal heads (mesocephalic, such as German Shepard's and Siberian Huskies) that the eyes were directed forward. In breeds with short, broad heads (brachycephalic, such as Pugs and Boston Terriers) eye placement was laterally directed and the extent of the visual field and the amount of binocular vision overlap probably differed. Miller and Murphy (1995) reported that the length of the dog's nose also influenced the amount of binocular overlap. When the animal's eyes are considered together, the estimated visual field of the typical dog, based upon morphologic data was 250 degrees (Sherman and Wilson, 1975). Differences in head morphometric measurements have also been documented in captive Arctic Wolves. Federoff (1987) described a malocclusion associated with the jaws in captive bred Arctic Wolves. The malocclusion was evident in the portion of the rostrum anterior to the fourth premolars resulting in mandibular misalignment of both jaws. This morphometric skeletal deformity was heritable.

Morphological and morphometric traits have also been used to assess sub-line divergence in inbred strains of mice (Foster et al, 1981). McLaren and Michie (1954) first reported skeletal variations in the number of thoracic and lumbar

vertebrae of several mice sub-strains. The skeletal variations were genetically determined. With the variations present in the vertebrae, other areas of the body were also examined. Morphologic features of the skull, teeth, cervical and upper thoracic region, and the pelvis were measured. Twenty-seven phenodeviant traits (skeletal variations) were used and identified in inbred strains of mice to determine the rates of sub-line divergence (Bailey, 1981; Wickramaratne and Gruneberg, 1974; Festing, 1999).

For morphometric characteristics to be useful, they must be highly heritable and exhibit sufficient variation between strains to permit differentiation between individuals (Festing, 1999). The above-cited studies support the idea that differences in morphometric traits exist and have application in the differentiation between individuals.

In the horse, there are examples of morphometric traits of potential significance to the industry. In Arabian Horses characterized with white facial markings, the variations in their markings are due to the interaction of multiple alleles present at the A and E loci. The facial markings are regarded as morphometric (Woolf, 1989, 1990). Total leg markings in the Arabian Horse are also morphometric and the observed variability was attributed to genetic differences (Woolf 1989, 1990).

Variation in a morphometric trait and subsequent efforts to relate the variations with equine performance has been described by Koenen et al, (1995). Linear scored conformation traits, length of neck, length and position of the

shoulders, shape and length of croup, and muscularity of the haunches of the Dutch Warmblood riding horse were correlated to dressage performance. Muscularity of the neck, shape of the croup, and muscularity of the haunches were also correlated with show jumping ability. Further studies indicated these results were of limited value due to low genetic correlations (Langlois, 1975; Bruns, 1981; Huizinga and Van der Mey, 1989; Van der Werf and De Boer, 1990).

The conformation of a horse is expected to be an indicator of its performance ability. Indirect selection for performance traits with low heritabilities (dressage and show-jumping) using information obtained from conformation measures might be useful to the equine breeder (Langlois, 1975; Bruns, 1981; Huizinga and Van der Mey, 1989; Van der Werf and De Boer, 1990). Indirect selection efficiency for performance improvement is dependent on the genes responsible for conformation, if meaningful genetic correlations exist (Koenen et al, 1995).

Morphologic traits such as height at the withers, cannon bone circumference, and width of the chest have moderate to high heritability values (Arnason, 1984a) while the corresponding genetic correlations were very low (Langlois, 1975; Arnason, 1984b; Preisinger et al., 1991). In contrast, Koenen et al, (1995) found moderate genetic correlations to exist between movement traits and competition scores. This explains why genetic correlations associated with conformation are extremely important when breeding for competitiveness in a horse. To illustrate, the breeding goal for Royal Warmbloods of the Netherlands is

a horse with aesthetic and functional conformation and also competitive (Royal Warmblood Studbook of the Netherlands (KWPN), 1994). While equine breeders have selected for aesthetic conformation, more genetic selection has been placed on functional conformation in the recent decades (Keonen et al, 1995).

Skeletal differences in horses have been measured and studied within specific breeds. Hintz et al, (1978) analyzed records obtained from a Thoroughbred farm to determine the effects of age of dam, sex of foal, month and year of birth, and the sire's genetic influence on growth. Heritability estimates were high ( $>0.40$ ) and indicated that genetic gains for weight, height at withers, and front cannon bone circumference were practical. Breeders can change the skeletal structure of the Thoroughbred if the proper selection procedures are followed.

Garlinghouse et al, (1999) studied the influence of body measurements and condition scores on performance results of 193 horses participating in the 1998 Western States Trail Ride's 100-mile endurance race. Overall condition scores were assigned after physical and visual appraisal of six areas of the body as described by Henneke (1985). The neck area, withers, behind the elbow and shoulder, the ribs, tail head, and along the topline were evaluated and overall individual condition score for each animal was developed to determine if the level of the horse's conditioning affected its' performance. As the body weight of the horse increased, higher rates of trauma-induced lameness resulted. Circumference of the cannon bone did not increase proportionately as body mass increased suggesting that increased body weight without a proportionate increase in cross

sectional area of the metacarpus increases exercise-induced trauma and lameness. While body weight was not a critical factor in predicting performance during the 100-mile endurance competition, it did influence lameness. Although cannon bone circumference did not affect performance, the relatively narrow range of variation for the measurement may have contributed to lameness as body weight increased.

Variation in morphometric traits is not limited to predictions of an animal's performance. With the uncertainty in the world as a direct result of the new reign of world terrorism (September 11, 2001), human facial recognition research and application of morphometrics has gained importance. The applications of computerized face recognition began to increase in 1999 and now is a common occurrence. Visionics Corporation announced on May 23, 2002 that its latest Faceit ARGUS surveillance was used to augment security measures to identify and prevent known persons with terrorist involvements from entering the ferry embarkation area at the Battery Park, New York Screening Facility. This New York site served as a launching point for travel to Ellis Island and the Statue of Liberty in the New York area during the Memorial Day weekend. The "state of the art" system was loaned from Visionics to the United States Park Police for that holiday weekend and is now part of increased security measures visible at New York City landmarks. This technological innovation and its increased useage was the result of the September 11, 2001 tragedy with the goal to prevent any future attacks. This system surveillance utilizes proprietary morphometric facial measurements, automatically scanning the faces of suspected terrorists passing

through the entryway and compares them against an index of known terrorists (Identix, 2002). Biometrics when applied to humans is a group of proven technologies and computerized methods for recognizing individuals based on physical or behavioral characteristics. The technology includes facial recognition, fingerprints, hand geometry, iris, palm prints, signatures, and voice. Biometric technologies function in two modes, authentication (one to one matching) and identification (one to many) matching.

The facial recognition program “maps out” the facial features. A key morphologic feature to facial recognition is eye placement (Bulkeley, 1999). The facial recognition program demonstrates a measurement technique with the ability to measure the placement of the human eye.

## Methods and Materials

A series of eight measurements were defined (in collaboration with a veterinary anatomist) and determined the ocular placement in the Quarter Horse skull.

All measurements were visually recognizable based upon anatomic landmarks (Figure 1), with the exception of two which were located by index finger palpation. The eight measurements were recorded in duplicate by an individual unaware of the purpose for the measurements. The measurements were recorded to the nearest 0.01 inches using a cloth like measuring tape. If the duplicate measurement differed more than 0.03 units, the measurement were repeated. This type of material in the measuring tape was able to adapt to the contours of the horse's skull for more precise measurement. Two measurements (OUTLR (Figure 1) and INNR (Figure 1)) defined eye placement while the remaining six measurements defined the symmetry of the Quarter Horse skull. Other characteristics recorded for each animal included their age and gender. The gender category consisted of stallion, gelding (castrated males), and mare. Animals less than 12 months of age were not used in the study since skull development was not complete (Dyce et al, 1987). The data were arranged into six age (year) categories (1-5, 5-10, 10-15, 15-20, 20-25, and 25-30).

A total of 323 Quarter Horses representing five categorical types, as defined by the AQHA, were studied: Type 1 Western (n = 144), Type 2 Halter (n = 84), Type 3 English (n = 26), Type 4 Reining (n = 32), and Type 5 Cutting (n = 37).



The animals studied were distributed among 20 farms located in the state of Florida (n = 293) between Gainesville and Ocala and at AQHA sanctioned shows in Oregon (n = 30). The Florida farms were visited in May of 2001 and included McDuffee Quarter Horses, Classic Acres, Bo-Bett Farm, St. Onage Reining Horses, Lynn Salvatori Palm, Bill Horn Stables, Haylo Farms, Carousel Farm, RJC Quarter Horses, Pelton Show Horses, Broadmoor Farm, Marc De Champlain, Lonesome Pine Farm, Petty Quarter Horses, Jan and Judey Seutter, Heritage Farm, Tom Sanders Quarter Horses, Robertson Quarter Horses, Leppard Quarter Horses, and Rick Gervasio Pleasure Horses. The Florida farms were chosen on the basis of the type of horses being bred or trained at the respective facility. Four farms were visited for each of the five categories. Some of the farms visited contained horses of more than one of the categorical types. Thirty horses in Oregon were measured between January and May 2001 and were not related to those measured in Florida.

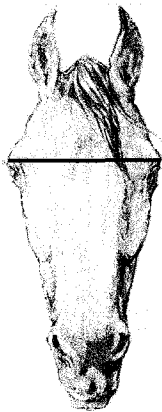
### Performance Types

Criteria used to determine the categorical type (Western, Halter, English, Reining, and Cutting) were based on each animal's individual show points record maintained by the American Quarter Horse Association (AQHA, 2002). The points earned by a Quarter Horse are based on the placing that an animal receives while being exhibited within a specific event. The more points a horse has accrued in an event, the better that horse is in that category. Points earned by a horse remain with the horse for its lifetime, even if ownership changes.

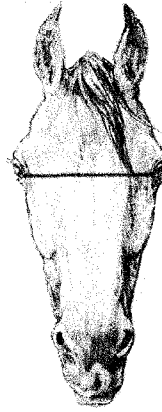
### AQHA Point System

No. of Entries in class	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>	6 <sup>th</sup>	7 <sup>th</sup>	8 <sup>th</sup>	9 <sup>th</sup>	10 <sup>th</sup>
3-4	½									
5-9	1	½								
10-14	2	1	½							
15-19	3	2	1	½						
20-24	4	3	2	1	½					
25-29	5	4	3	2	1	½				
30-34	6	5	4	3	2	1	½			
35-39	7	6	5	4	3	2	1	½		
40-44	8	7	6	5	4	3	2	1	½	
45 or more	9	8	7	6	5	4	3	2	1	½

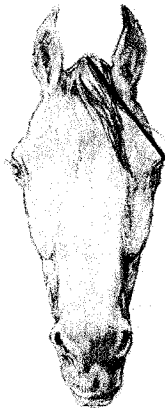
Some of the horses measured had not accumulated any AQHA show points due to age or lack of showing thus, the horse's sire and dam's accumulated points were used to determine the assigned type category for the horse (Type 1, Western n = 15; Type 2, Halter n = 2; Type 3, English n = 3; Type 4, Reining n = 5; and Type 5, Cutting n = 3).



**1. OUTLR**  
From the outer corner of  
the left eye to the  
outer corner of  
the right eye.



**2. INNR**  
From the inner corner  
of left eye to the  
inner corner of  
the right eye.

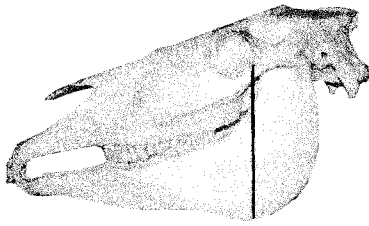


**3. POLLL**  
From the poll to the outer  
corner of the  
left eye.

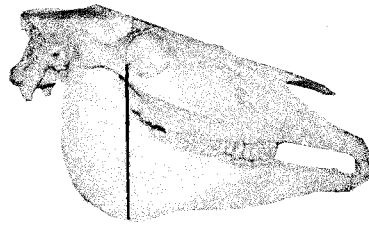


**4. POLLR**  
From the poll to the  
outer corner of the  
right eye.

**Figure 1 Measurement Number and It's Description**



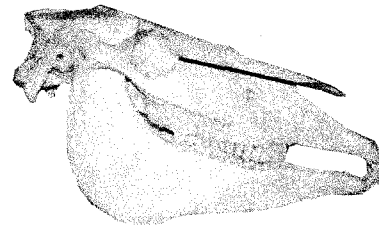
**5. LEJB**  
From the outer corner of the left eye straight down to the outer most surface of the jaw bone



**6. REJB**  
From the outer corner of the right eye straight down to the outer most surface of the jawbone.



**7. LELJ**  
From the inner corner of the left eye to the left junction of the incisive bone and the mandible.



**8. RELJ**  
From the inner corner of the right eye to the right junction of the incisive bone and the mandible.

**Figure 1 Measurement Number and It's Description (continued).**

### **Data Analysis**

A correlation (Rencher, 1995) was performed on the eight measurements which included age, gender, and type to determine if any of the facial symmetry measurements were highly correlated and could be removed from the analysis. Subsequently, the data adjusted for highly correlated measurements ( associated to facial symmetry) were analyzed by the Wilks Lambda multivariate analysis of variance (MANOVA, Rencher, 1995). With MANOVA, statistically significant differences among main effects and the interactions cannot be separated (in contrast to a univariate analysis). Thus, the interpretation of the results obtained can infer qualitative not quantitative differences.

## Results

Contained in Table 1 are the means for the eight facial measurements by age, gender, and performance type. To determine if there was facial symmetry between the paired measurements, a correlation was performed without reference to age, gender, or performance type and the resulting correlations are summarized in Table 2. The correlation coefficients for POLL and POLLR, LEJB and REJB, and LELJ and RELJ were all highly correlated between the paired facial means ( $r=0.97$ ,  $0.97$ , and  $0.98$  respectively). Thus, arbitrary selection of one of each of the paired facial measurements (POLL, EJB, and ELJ) could be utilized. A correlation was then recalculated on the reduced data and is summarized in Table 3. The measurements with lower  $r$  values ( $<0.51$ ) are still significant due to the level of significance being  $r = 0.11$ . There are interactions occurring between the five facial measurements. The POLL measurement has a level of significance of  $0.51$  when being correlated with the LOWLR measurement. It would be difficult to determine an exact relationship between the two measurements. The measurements across all genders, ages, and types, suggests that they are not susceptible to change due to the range of horses being measured.

The Wilks Lambda Multivariate Analysis of Variance (MANOVA, (Rencher, 1995)) was performed and the results of this analysis are summarized in Table 4. The main effects, age, performance type, and gender were highly significant ( $p<0.0001$ ). Of the two-way interactions, only age:performance type and performance type:gender were significant ( $p<0.001$ ). The three-way

interaction, age:performance type:gender was not significant ( $p>0.35$ ). The significant two-way interactions are best described in graphic format, Figures 2 through 11.

The interactions between gender and the five categorical types for the five facial measurements are illustrated in Figures 2 through 6. In examining the OUTLR measurement (Figure 2) English (Type 3) stallions were different when compared to the other four categorical types. A similar trend also occurred in the geldings. There did not appear to exhibit differences among the five types. The INNR measurement (Figure 3) was more dispersed within stallions and geldings. There was some variation present in the mare's category but no real trend is apparent. The POLL measurement (Figure 4) did not show any apparent difference for stallions or mares; however, differences were noted within the geldings, English and Cutting horses had the highest values. The EJB measurement (Figure 5) similar trends appear in all of the gender categories. English (Type 3) horses had the highest consistent variability among the categorical performance types for the three genders EJB values while the Cutting category appeared to exhibit a gender effect. Figure 6 illustrates that the ELJ measurement appears to lack any variation in the measurement.

Figures 7 thru 11 illustrate the interactions between age and the five categorical types. Within these five different interaction graphs, English (Type 3) category tends to “distance” itself from the four other categorical types. Overall, the measurements did begin to increase in value as the horse matured. It would be

difficult to draw any conclusions regarding the interaction between age and categorical type due to the low numbers present in some of the age categories (e.g. Cutting (n=2) age 15 to 20 years and Reining (n=1) age 15 to 20 years).



## Discussion

Having analyzed the data collected, the subsequent interpretation of the results has been a challenge. Typically, in interpreting/discussing results of a study there are published findings with which to compare and contrast. In this thesis research, no such scientific literature appears to have been published. Further, due to the statistical design utilizing multiple data matrices, detection of quantitative differences among the main effects and their interactions were not possible. Thus, only qualitative differences could be evaluated that may suggest future directions for scientific inquiry.

Having begun this investigation of five different categorical performance types of Quarter Horse, the data suggest that there were in essence four morphometric categorical types. These categorical types were not based on performance or training but on the numerical value of the facial measurements. The original five categorical performance types were Western, Halter, English, Reining, and Cutting. Based upon the facial measurements, the new categorical types are Western/Reining, Halter, English, and Cutting. Theoretically, two performance types (Western and Reining) can be combined. These two performance horses however cannot be placed into the same categorical performance type since there are other unique conformational traits and training disciplines that contribute to their ability to excel within their specific performance category.

Regardless of their categorical performance type or categorical type, all of the measurements gradually increased as the horses matured, plateauing between the ages of 5 to 10 years. Different genetic lines have excelled within a given categorical performance type of Quarter Horse. This is attributed to the different genetic trends observed within the Quarter Horse Association. These trends are based upon the genetic lineage of the Quarter Horses that have won AQHA World Championships for that time period (Appendix 1D is provided in support of this conclusion).

Of the four proposed categorical types of horses is the English horse characterized by having the largest overall skeletal dimensions. When comparing its five facial means to the other categorical type means for each measurement, English horses consistently had the largest values. Thus, it is understandable that development of English performance class would select for a horse that has a longer skull (POLL and ELJ) with wider placement of the ocular sockets (OUTLR and INNR). As a consequence, these animals depend upon monocular vision while traveling with their polls horizontal with their withers. Furthermore, English horses competing in jumping classes/competition are traveling with their heads elevated to view the jumps which also requires a reliance on monocular vision. When these horses jump, they utilize information they visually processed three strides prior to jumping (Schiffan, 1996).

The second categorical type of horse characterized by having wide ocular eye placement (OUTLR and INNR) and short upper skull dimensions (POLL) and

longer faces (ELJ) are the Halter horses. Comparing their five facial means to all other categorical types, the Halter horses consistently exhibit larger OUTLR, INNR, and ELJ measurements than those of the Cutting and Western/Reining. This suggests there are differences in angulations of the eye. When in competition, Halter horses stand with all four legs directly underneath their shoulders and hips to maximize head position. Their heads are elevated with their noses extended out beyond the poll and resemble the “alert” stance of a startled horse (Dyce et al, 1987). Thus, the Halter horses will have panoramic-like vision (binocular) due to the wider spacing of their ocular sockets than all other categorical typed horses. Panoramic-like vision (binocular) provides the horse the ability to look forward with environmental perception. Miller and Murphy (1995) reported that the height of the eyes from the ground has a major impact on the animal’s perception of its environment (e.g. the visual perception in dogs is oriented closer to the ground than that in horses) which is evident in Halter horses. Due to the larger OUTLR and INNR measurements, this categorical type of horse could have a greater perception of its environment. A smaller EJB measurement is a desired trait for the competitive Halter horse. As a consequence, breeders of Halter type Quarter Horses will select for wide set eyes and short faces, preferably with a “dished” skull shape. One disadvantage to having a dished skull is that the protrusion of the skull between the eyes which impedes their frontal visual field (Dyce et al, 1987).

The third categorical type of horse, the Cutting horse, is an animal characterized by having the second widest ocular placement (OUTLR and INNR)

and the shortest facial length (ELJ). Cutting horses have a shorter skull length from the eyes down to the junction between the incisive and mandible bones. The POLL measurement for Cutting horses is similar to English horses but is shorter from the eye to junction of the incisive and mandible bones. Cutting horses rely on their eyesight to counter every move the cow makes in its attempts to return to the herd. Cutting horses are more dependent on their binocular than monocular vision because of the type of movement required in this competitive category. The shorter face (smaller ELJ measurement) would permit optimum use of binocular vision.

Miller and Murphy (1995) reported that the length the dog's nose influenced the binocular overlap which interferes with the visual field. Sherman and Wilson (1975) found that there is behavioral and morphological evidence for binocular competition in the postnatal development of the dog's visual system. The results of these studies indicate that the length of the dog's nose affects the amount of binocular vision, similar to that observed in the Quarter Horse. The length of the nose (ELJ) in the horse can also impede the animal's binocular vision. When these horses are performing in an event that requires a high level of binocular vision, the length of the nose can be an influencing factor on how well that animal will perform.

The fourth categorical type of horse, the Western/Reining horse, is characterized by the smallest overall dimensions with the exception of the EJB measurement. This new categorical type has a smaller skull and a narrower

placement of the ocular sockets. Miller and Murphy (1995) reported that in certain dog breeds, ocular placement within the skulls varies. Again, similar results were found in this categorical type of Quarter Horse. This “new” categorical type, the two performance types (Western/Reining) the ocular socket (OUTLR and INNR) and skull (POLL and ELJ) dimensions are numerically similar (Table 5), even though their breeding (genetics) and performance categories differ. When emphasis is placed on performance during the breeding for the two types, there appears to be an indirect relationship of ocular socket placement (OUTLR and INNR) and skull (POLL and ELJ) dimensions to the remaining conformational traits.

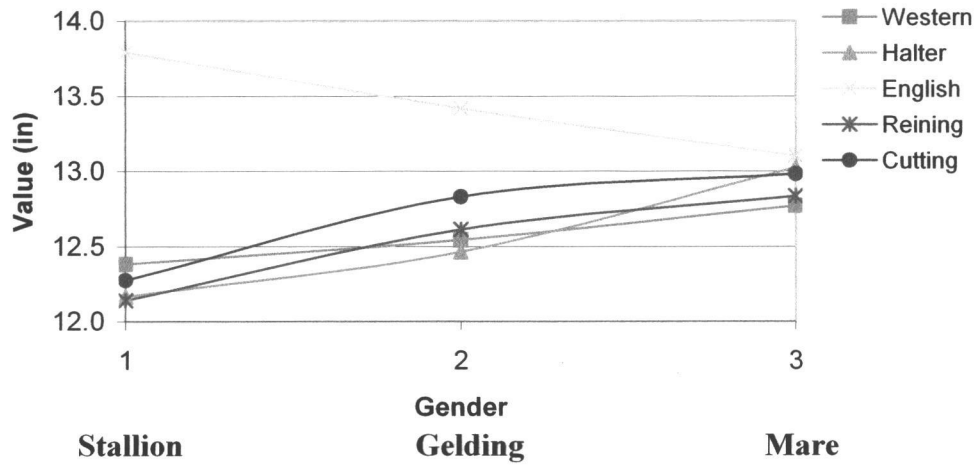
Returning the discussion relating to the “original” Reining horse performance category, this horse is dependent upon binocular vision when focusing (fixed object located at the opposite end of the arena) and completing haunch turns at a high rate of speed. The focal fixation is necessary to prevent loss of equilibrium- similar to ballet performers, focusing on stationary object while performing a series of turns. Focusing on one object when completing rotations, the equilibrium is maintained (Schiffman, 1996). The Reining horse performs other tasks, such as running in a straight line and sliding to a halt then completing another series of haunch turns, while maintaining equilibrium. The above remarks are applicable to Western horses, although their OUTLR measurement is wider than Reining horses. All of the other measurements for Western horses are similar to those of Reining horses. The main difference may be with the angulations of the

eyes (OUTLR and INNR) which influences binocular vision. Western horses travel with their heads (poll) horizontally to their withers and rely on monocular vision, where as Reining horses travel with their heads slightly elevated past the poll and rely on binocular vision.

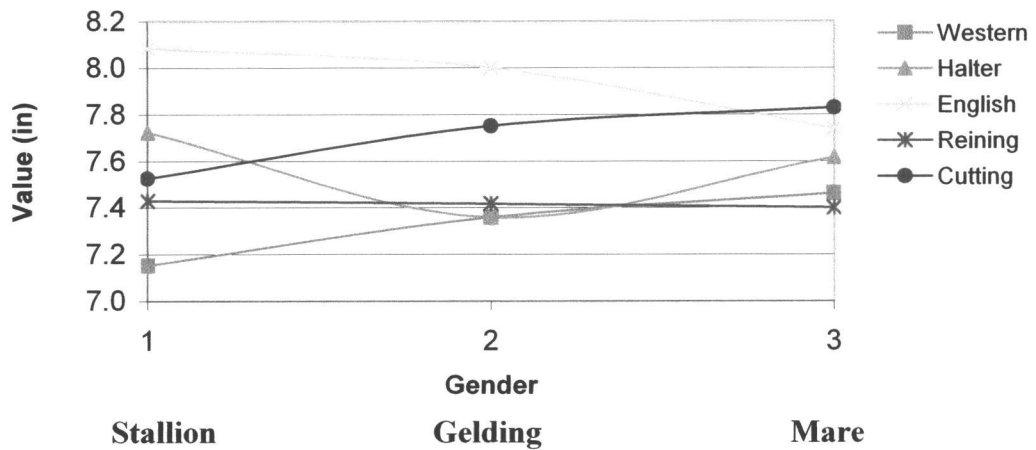
A phrase pertinent to this research by a Quarter Horse breeder was, “If you have a solid foundation (Appendix 1C), you can breed for whatever (performance type) you desire”. Thus, the facial measurements investigated in this thesis suggest that not all five categorical performance types of Quarter Horses appear to be morphologically different (Appendix 1D). The facial measurements of the equine breeder are a phenotypic marker that may assist in enhancing the elusive genetic gains of the specialized athletic Quarter Horse. In the Halter, English, and Cutting performance categories, these measurements can be used as a performance predictors.

Koenen et al, (1995) found that conformational traits, such as length of neck, length and position of the shoulders, shape and length of the croup, and muscularity of the haunches, could be correlated to performance in the Dutch Warmblood riding horse. Koenen et al, (1995) also found that conformation of the horse is expected to be an indicator of performance in dressage and show jumping. Shape of the equine skull has been reported by Burdas et al, (1994) to be a conformational trait. In this thesis, the skull dimensions were different amongst the categorical performance types indicating differences in ocular placement. Since ocular placement is associated with head conformation (Burdas et al, 1994), it can

also be considered a conformational trait. Thus it is my opinion that ocular placement measurements can be a factor in the prediction of the Quarter Horse's performance.

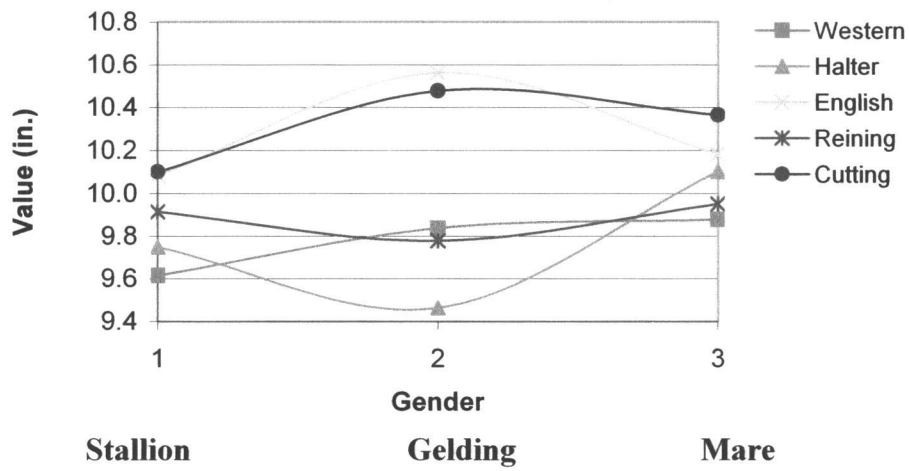


**Figure 2 Interaction between gender and quarter horse type for the outer corner of the left eye to the outer corner of the right eye (OUTLR).**

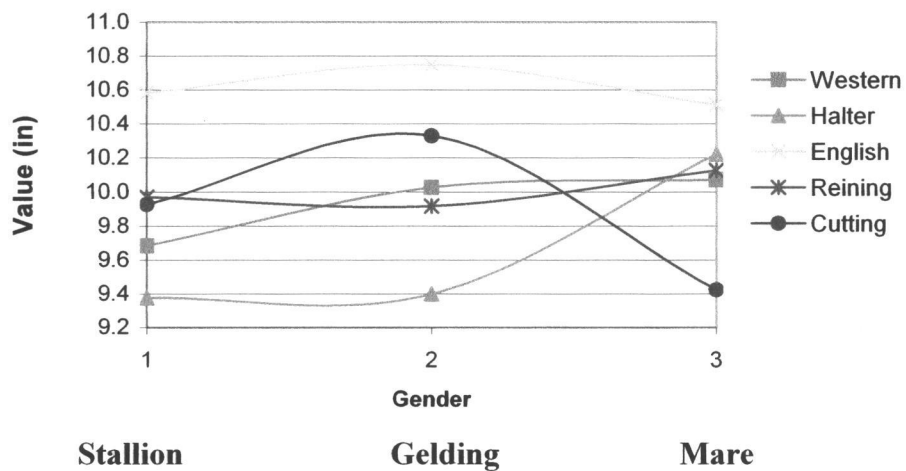


**Figure 3 Interaction between gender and quarter horse type for the inner corner of the left eye to the inner corner of the right eye (INNR).**

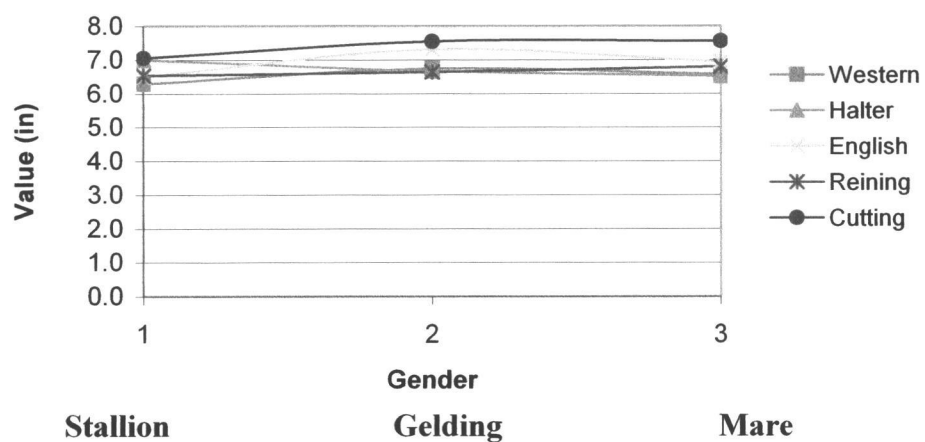




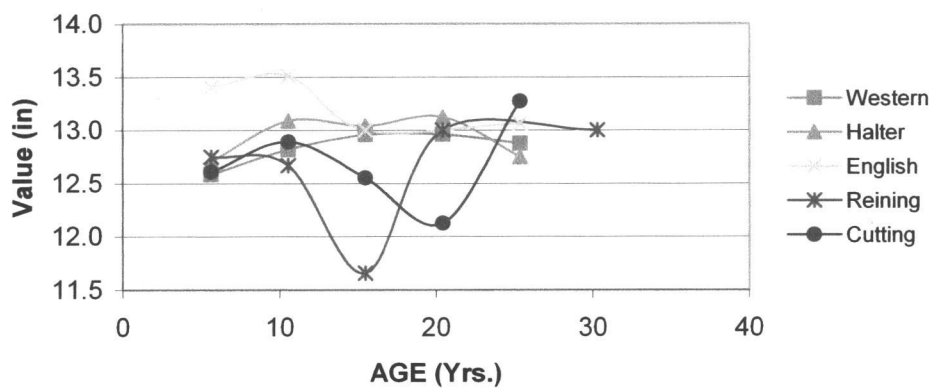
**Figure 4 Interaction between gender and quarter horse type for the poll to the outer corner of the eye (POLL).**



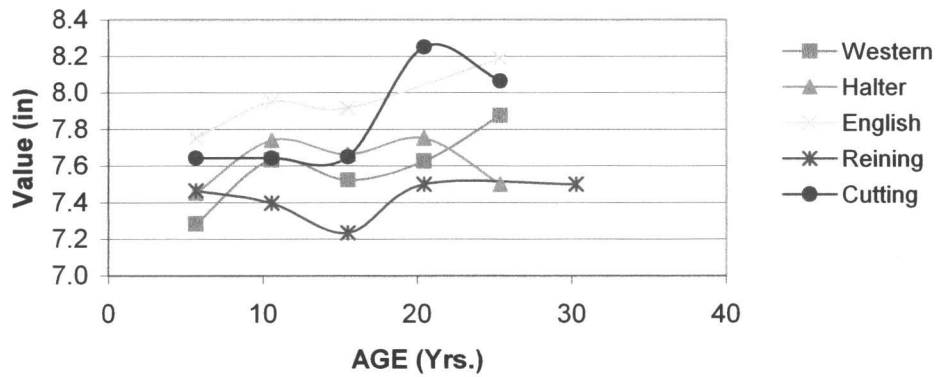
**Figure 5 Interaction between gender and quarter horse type for the outer corner of the eye straight down to the outer most surface of the jaw bone (EJB).**



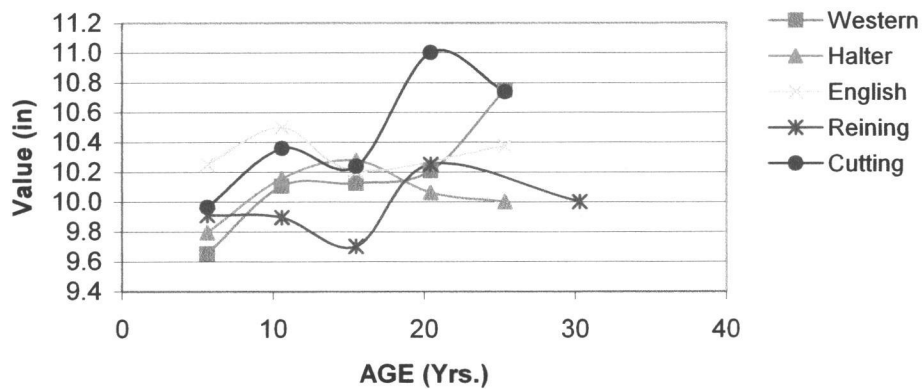
**Figure 6 Interaction between gender and quarter horse type for the inner corner of the eye to the incisive/mandible junction (ELJ).**



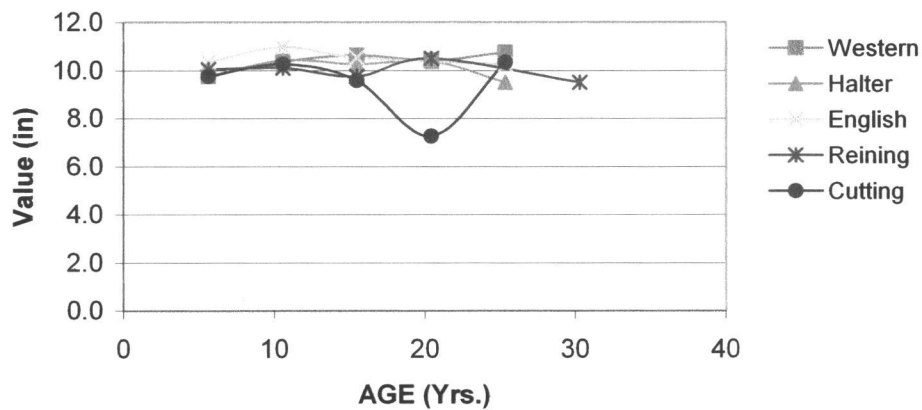
**Figure 7 Interaction between age and quarter horse type for the outer corner of the left eye to the outer corner of the right eye (OUTLR).**



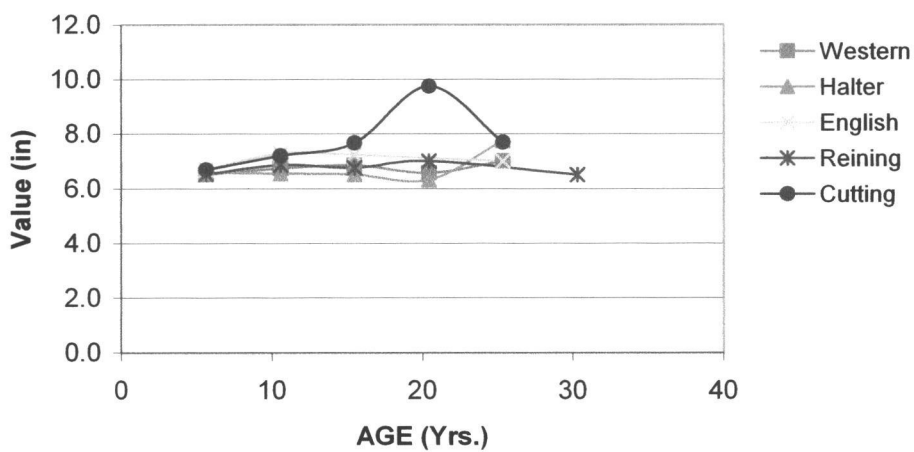
**Figure 8 Interaction between age and quarter horse type for the inner corner of the left eye to the inner corner of the right eye (INNER).**



**Figure 9 Interaction between age and quarter horse type for the poll to the outer corner of the eye (POLL).**



**Figure10 Interaction between age and quarter horse type for the outer corner of the eye straight down to the outer most surface of the jawbone (EJB).**



**Figure 11 Interaction between age and quarter horse type for the inner corner of the eye to the incisive/mandible junction (ELJ).**

Table 1. Table of all means.

	Age Categories (Years)																	
	1-5			5-10			10-15			15-20			20-25			25-30		
	Stallion	Gelding	Mare	Stallion	Gelding	Mare	Stallion	Gelding	Mare	Stallion	Gelding	Mare	Stallion	Gelding	Mare	Stallion	Gelding	Mare
<b>OUTLR</b>																		
Western	12.30 (10)	12.47 (32)	12.64 (46)	12.67 (3)	12.67 (9)	12.90 (24)	---	12.75 (2)	12.95 (5)	---	13.00 (1)	12.75 (1)	---	13.00 (1)	12.75 (1)	---	---	---
Halter	12.25 (10)	12.41 (5)	12.84 (25)	10.50 (1)	---	13.19 (26)	---	---	13.04 (19)	13.50 (1)	---	13.00 (3)	---	12.75 (1)	---	---	---	---
English	13.69 (2)	13.41 (4)	13.13 (2)	14.00 (1)	13.58 (5)	13.31 (4)	---	13.17 (3)	12.83 (3)	---	---	---	---	---	13.06 (2)	---	---	---
Reining	12.65 (5)	12.67 (3)	12.88 (6)	12.75 (1)	12.60 (5)	12.71 (6)	10.56 (2)	12.50 (1)	13.00 (1)	---	---	13.00 (1)	---	---	---	---	---	13.00 (1)
Cutting	12.50 (4)	---	12.75 (3)	11.86 (2)	12.80 (8)	13.59 (4)	12.00 (3)	12.63 (2)	12.85 (5)	---	---	12.13 (2)	13.00 (1)	13.50 (1)	13.30 (2)	---	---	---
<b>INNER</b>																		
Western	7.10	7.33	7.28	7.33	7.56	7.69	---	7.50	7.53	---	7.00	7.75	---	8.00	7.75	---	---	---
Halter	7.33	7.33	7.50	9.00	---	7.69	---	---	7.66	8.00	---	7.67	---	7.50	---	---	---	---
English	8.13	7.63	7.63	8.00	8.25	7.56	---	8.08	7.75	---	---	---	---	---	8.19	---	---	---
Reining	7.45	7.50	7.46	7.50	7.40	7.38	7.34	7.25	7.00	---	---	7.50	---	---	---	---	---	7.50
Cutting	7.50	---	7.83	7.63	7.72	7.50	7.42	8.00	7.65	---	---	8.25	7.75	7.50	8.50	---	---	---
<b>POLL</b>																		
Western	9.55	9.69	9.65	9.83	10.19	10.10	---	10.00	10.15	---	10.00	10.25	---	11.00	10.50	---	---	---
Halter	9.75	9.36	9.89	9.50	---	10.18	---	---	10.28	10.00	---	10.08	---	10.00	---	---	---	---
English	10.13	10.44	10.00	10.00	10.80	10.25	---	10.33	10.08	---	---	---	---	---	10.38	---	---	---
Reining	9.95	9.83	9.92	10.50	9.75	9.94	9.53	9.75	10.00	---	---	10.25	---	---	---	---	---	10.00
Cutting	9.94	---	10.00	10.00	10.50	10.25	10.42	10.38	10.07	---	---	11.00	10.00	10.50	11.23	---	---	---
<b>POLLR</b>																		
Western	9.55	9.67	9.65	9.75	10.14	10.10	---	10.00	10.11	---	10.00	10.25	---	11.00	10.50	---	---	---
Halter	10.02	9.52	9.88	9.50	---	10.22	---	10.00	10.25	10.00	---	10.08	---	10.00	---	---	---	---
English	10.13	10.50	10.00	10.00	10.60	10.19	---	10.17	10.08	---	---	---	---	---	10.25	---	---	---
Reining	9.95	9.83	9.88	10.50	9.75	9.24	9.53	9.75	10.00	---	---	10.25	---	---	---	---	---	10.00
Cutting	9.94	---	10.00	10.00	10.56	10.25	10.42	10.25	10.12	---	---	11.00	10.00	10.50	11.18	---	---	---

( ) = number of animals  
 --- = no animals

Table 1. Table of all means (continued).

	Age Categories (Years)																	
	1-5			5-10			10-15			15-20			20-25			25-30		
	Stallion	Gelding	Mare	Stallion	Gelding	Mare	Stallion	Gelding	Mare	Stallion	Gelding	Mare	Stallion	Gelding	Mare	Stallion	Gelding	Mare
<b>LEJB</b>																		
Western	6.33	6.72	6.41	6.17	6.89	6.73	---	6.75	6.88	---	6.00	6.68	---	7.00	7.00	---	---	---
Halter	6.99	6.45	6.53	7.50	---	6.53	---	---	6.51	6.50	---	6.25	---	7.75	---	---	---	---
English	6.25	6.82	6.88	7.07	7.65	6.88	---	7.42	7.04	---	---	---	---	---	7.00	---	---	---
Reining	6.25	6.33	6.83	7.00	6.85	6.83	7.00	6.50	6.50	---	---	7.00	---	---	---	---	---	6.50
Cutting	6.63	---	6.75	6.88	7.63	6.56	7.75	7.38	7.70	---	---	9.75	7.00	7.50	8.13	---	---	---
<b>REJB</b>																		
Western	6.33	6.72	6.40	6.08	6.92	6.75	---	6.75	6.88	---	6.00	6.75	---	7.00	7.00	---	---	---
Halter	7.02	6.35	6.53	7.50	---	6.51	---	---	6.52	6.75	---	6.25	---	7.70	---	---	---	---
English	6.25	7.00	6.88	7.00	7.60	6.75	---	7.42	7.00	---	---	---	---	---	7.13	---	---	---
Reining	6.25	6.33	6.83	7.00	6.85	6.83	7.00	6.50	6.50	---	---	7.00	---	---	---	---	---	6.50
Cutting	6.63	---	6.75	6.88	7.63	6.56	7.75	7.38	7.70	---	---	9.75	7.00	7.50	8.13	---	---	---
<b>LELJ</b>																		
Western	9.50	9.86	9.74	10.29	10.31	10.41	---	10.75	10.60	---	10.50	10.40	---	10.75	10.75	---	---	---
Halter	9.13	9.38	9.93	9.50	---	10.45	---	---	10.26	10.25	---	10.42	---	9.50	---	---	---	---
English	10.50	10.34	10.25	10.75	11.30	10.63	---	10.38	10.71	---	---	---	---	---	10.25	---	---	---
Reining	10.05	10.04	10.04	10.75	9.88	10.19	9.38	9.75	10.50	---	---	10.50	---	---	---	---	---	9.50
Cutting	9.69	---	9.83	10.25	10.27	10.25	9.83	10.50	9.08	---	---	7.25	10.50	10.50	10.19	---	---	---
<b>RELJ</b>																		
Western	9.50	9.94	9.74	10.38	10.31	10.40	---	10.75	10.60	---	10.50	10.45	---	10.75	10.75	---	---	---
Halter	9.07	9.39	10.00	9.50	---	10.46	---	---	10.26	10.50	---	10.42	---	9.50	---	---	---	---
English	10.50	10.43	10.12	10.75	11.22	10.63	---	10.38	10.71	---	---	---	---	---	10.25	---	---	---
Reining	10.05	10.00	10.04	10.75	9.93	10.33	9.38	9.75	10.50	---	---	10.50	---	---	---	---	---	9.50
Cutting	9.75	---	9.83	10.25	10.20	10.31	9.83	10.50	9.08	---	---	7.25	10.50	10.50	10.28	---	---	---

( ) = number of animals  
 --- = no animals

**Table 2.** Correlation coefficients for the eight facial measurements measured on the 323 quarter horses.

	OUTLR	INNER	POLL	POLLR	LEJB	REJB	LELJ	RELJ
OUTLR	1.00	0.36	0.35	0.36	0.48	0.47	-0.05	-0.06
INNER		1.00	0.51	0.50	0.38	0.37	0.40	0.41
POLL			1.00	0.97*	0.46	0.47	0.45	0.45
POLLR				1.00	0.40	0.42	0.47	0.48
LEJB					1.00	0.97*	-0.07	-0.07
REJB						1.00	-0.04	-0.03
LELJ							1.00	0.98*
RELJ								1.00

---

Tabular  $r = 0.11$ ,  $p < 0.01$ ,  $df = 321$

\* = significant

**Table 3.** Correlation coefficients among the facial measurements after arbitrarily selecting one poll, ejb, and elj measurements.

	OUTLR	INNR	POLL	ELJ	EJB
OUTLR	1.00	0.36	0.35	0.48	-0.05
INNR		1.00	0.51	0.38	0.40
POLL			1.00	0.46	0.45
ELJ				1.00	-0.07
EJB					1.00

Tabular  $r = 0.11$ ,  $p < 0.01$ ,  $df = 321$

**Table 4:** Wilks Lambda analysis of variance with the combined correlated measurements.

Source	Df	Wilks Lambda	approx. F	num df	den df	P-value
age	1	0.73	21.53	5	289	0.0001
type	4	0.69	5.69	20	959	0.0001
gender	2	0.90	3.17	10	578	0.001
age:type	4	0.84	2.68	20	959	0.0001
age:gender	2	0.95	1.48	10	578	0.143
type:gender	8	0.80	1.59	40	1263	0.012
age:type:gender	8	0.86	1.08	40	1263	0.345
Residuals	293					

**Table 5:** Means for the five measurements (in inches) with by type.

	Western Type 1 n=144	Halter Type 2 n=84	English Type 3 n=26	Reining Type 4 n=32	Cutting Type 5 n=37	Overall n=323
OUTLR	12.66	12.92	13.33	12.60	12.75	12.79
INNR	7.41	7.61	7.90	7.41	7.72	7.54
POLL	9.84	10.03	10.35	9.89	10.33	9.99
EJB	6.60	6.56	7.06	6.69	7.41	6.73
ELJ	10.02	10.10	10.63	10.03	9.83	10.07



**Table 6:** Means for the five measurements (in inches) by gender.

	Stallion Gender 1 n=40	Gelding Gender 2 n=83	Mare Gender 3 n=200
OUTLR	12.38	12.71	12.90
INNER	7.46	7.53	7.56
POLL	9.85	9.99	10.02
EJB	6.65	6.91	6.67
ELJ	9.83	10.11	10.10

## Bibliography

Anisile, T., and B. Ledbetter, 1980. *The Body Language of Horses*, William Morrow And Company, Inc., New York, NY. 208 p.

AQHA, 2001. *American Quarter Horse Association Rule Book*. The American Quarter Horse Association, Amarillo, TX. 300 p.

Arnason, T., 1984a. Genetic studies on conformation and performance of Icelandic toelter horses. I. Estimation of non-genetic effects and genetic parameters. *Acta Agric. Scand.* 34 : 409-427.

Arnason, T., 1984b. Genetic studies on conformation and performance of Icelandic toelter horses. III. Study on covariance matrices and breeding objectives by principal component analysis. *Acta Agric. Scand.* 34 : 440-449.

Bailey, D.W., 1981. Recombinant inbred strains and bilineal congenic strains. In: *The Mouse in Biomedical Research*, Volume 1, History, Genetics and Wild Mice (Foster, Small, Fox, eds.). Academic Press, New York, NY. p 223-240.

Barrier, G., and A. Goubaun, 1892. *The Exterior of the Horse*. J.B. Lippincott Company, Philadelphia, PA. p 47-56.

Bayley, L., and R. Maxwell, 1996. *Understanding Your Horse: How to Overcome Common Behavioral Problems*. Trafalgar Square Publishing, North Pomfret, VT. 152 p.

Blake, H., 1975. *Talking with Horses*, Trafalgar Square Publishing, North Pomfret, VT. 172 p.

Blake, H., 1977. *Thinking with Horses*, Trafalgar Square Publishing, North Pomfret, VT. 199 p.

Boardman, M., Ciarloni, D., Gold, A., Goodhue, J., Harrison, S., Holmes, F., Lynch, B., Mangum, A.J., Scarberry, S., and L. Thornton, 1999. *A Western Horseman Book Legends Volume 4 Outstanding Quarter Horse Stallions and Mares*. Publisher's Press, Salt Lake City, UT. 215 p.

Bruns, E., 1981. Estimation of the breeding value of stallions from the tournament of their offspring. *Livest. Prod. Sci.* 8 : 465-473.

Bulkeley, W, 1999, "Your Face or Mine? Ask a Computer", The Wall Street Journal, December 7, p B1 and B4.

Burdas, K., Sack, W., and S. Rock, 1994. Anatomy of the Horse An Illustrated Text. 2nd edition, Morsby-Wolfe, London, UK. p 29-45.

Ciarloni, D., Goodhue, J., Guenther, K., Holmes, F., Lynch, B., and L. Thornton, 1997. A Western Horseman Book Volume 3 Outstanding Quarter Horse Stallions and Mares. Publisher's Press, Salt Lake City, UT. 207 p.

Conn, G., 1890. The Arabian horse in America. Arco, New York, NY. 321 p.

Denhardt, R., 1947. The Horse of the Americas. Univ. of Oklahoma Press. Norman, OK. 286 p.

Denhardt, B., 1967. Quarter Horses: A Story of Two Centuries. University of Oklahoma Press, Norman, OK. 192 p.

Denhardt, R., 1970. The King Ranch Quarter Horses & Something of the Ranch & the Men that Bred them. University of Oklahoma Press. Norman, OK. 256 p.

Denhardt, R., 1979. The Quarter Running Horse: America's Oldest Breed. University of Oklahoma Press, Norman, OK. 302 p.

Denhardt, B., 1982. The Quarter horse : a varied assortment of historical articles, equine biographies and characteristics, sketches of horsemen, and other lore, all pertaining to the quarter horse. Texas A&M University Press, College Station, TX. 229 p.

Denhardt, R., 1982a. Foundation Dams of the American Quarter Horse. University of Oklahoma Press, Norman, OK. 232 p.

Denhardt, R., 1982b. Foundation Sires of the American Quarter Horse. University of Oklahoma Press, Norman, OK. 269 p.

Dyce, K., Sack, W., and C. Wensing, 1987. Textbook of Veterinary Anatomy. W.B. Saunders Company, New York, NY. p 462-487.

Ehringer, G., 2002. Its in the Blood, Quarter Horses 2002 Annual, 3 : 72-83.

Equine Research Publications, 1978. Equine Genetics and Selection Procedures, Equine Research Publications, Dallas, TX. 542 p.

- Evans, J., Borton, A., Hintz, H., and L. Van Vleck, 1977. *The Horse*. Second Edition, W.H. Freeman and Company, San Francisco, CA. p 445-586.
- Federoff, N.E., 1987. Malocclusion in the Jaws of Captive Bred Artic Wolves, *Canis lupus Arctos*. *The Canadian Field-Naturalist*. 110 : 683-687
- Festing, M., 1999. Inbred strains of mice. *Mouse Genome Information*, The Jackson Laboratory, Bar Harbor, ME. World Wide Web (URL: <http://www.informatics.jax.org/>).
- Foster, H., Small, D., and J. Fox, 1981. *The Mouse in Biomedical Research*, Academic Press, NY. 1 : 168-170.
- Fraser, A. 1992. *The Behavior of the Horse*. CAB International, Wallingford, NY. p 64-66.
- Garlinghouse, S.E., Bray, E.A., Cogger, E. A., and S.J. Wickler, 1999. The influence of body measurements and condition score on performance results during the 1998 tevis cup. *Equine Exercise Physiology, International Conference on Equine Exercise Physiology Publications*, 5. 65-73.
- Geurts, R. 1977. *Hair Colour in the Horse*, J.A. Allen, London, UK. 108 p.
- Goodhue, J., Holmes, F., Livingston, P., and D. Simmons, 1994. *A Western Horseman Book Legends Volume 2 Outstanding Quarter Horse Stallions and Mares*. Publisher's Press, Salt Lake City, UT. 248 p.
- Hedgpeth, D., 1990. *They Rode Good Horses : The First Fifty Years of the American Quarter Horse Association*. Tafton & Autry Printers Inc. Amarillo, TX. 157 p.
- Henneke, D.R., 1985. A condition score system for horses. *Equine Practice*. 7 : 13-15.
- Hintz, R.L., Hintz, H.F., and L.D. Van Vleck, 1978. Estimation of heritabilities for weight, height, and front cannon bone circumference of thoroughbreds. *J. Ani. Sci*. 6 : 1243-1245.
- Huizinga, H.A., and G.J.W. Van der Mey, 1989. Estimated genetic parameters of performance in jumping and dressage competition of the dutch warmblood horse. *Livest. Prod. Sci*. 21 : 333-345.

Indentix, 2002. Facial recognition programming. <<http://www.indentix.com>>

Jones, W., and R. Bogart, 1971. Genetics of the Horse, Edwards Brothers, Inc. Ann Arbor, MI. 356 p.

Koenen, E.P.C., Van Veldhuizen, A. E., and E.W. Brascamp, 1995. Genetic parameters of linear scored conformation traits and their relation to dressage and show-jumping performance in the dutch warmblood riding horse population. Livest. Prod. Sci. 43 : 85-94.

KWPN, 1994. The royal warmblood studbook of the Netherlands. KWPN, Zeist, The Netherlands, 67 p.

Langlois, B., 1975. Statistical interpretation of genetic gains of competition jumping horses in france . Livest. Prod. Sci. 2 : 191-204.

Miller, P., and C. Murphy, 1995. Vision in Dogs, JAVMA. 207 : 1623-1634.

McCall, J., 1988, Influencing Horse Behavior, A Natural Approach to Training, Alpine Publishing. Loveland, CO. 77 p.

McLaren, A., and D. Michie, 1954. Factors affecting vertebral variation in mice. I. Variation within an inbred strain. J. Embryol, exp. Morph. 2 : 149-160.

Murphy, C.J., and R.V.S. Pollock, 1993. The eye. In: Evans HE, ed. Miller's anatomy of the dog. 3<sup>rd</sup> ed. WB Saunders Co, Philadelphia, PA. p 1009-1057.

Nye, N., 1973. Speed and the Quarter Horse: A Payload of Sprinters. Caxton Printers Ltd. Caldwell, ID. 356 p.

Pasquini, C., Reddy, V., and M. Ratzlaff, 1978. Atlas of Equine Anatomy. Sudz Publishing, Albion, WA. p 75-107.

Preisinger, R., Wilkens, J., and E. Kalm, 1991. Estimation for conformation traits for foals and their practical implications. Livest. Prod. Sci. 29 : 77-86.

Price, S., 1999. The American Quarter Horse. Lyons Press, New York, NY. 308 p.

Rencher, A., 1995. Methods of Multivariate Analysis. John Wiley and Sons Inc., New York. p 174-721.

Rubin, L. F., 1989. Inherited Eye Diseases in Purebred Dogs, Williams & Wilkins, Baltimore. 363 p.

Schiffman, H.R., 1996, *Sensation and Perception, An Integrated Approach*, John Wiley and Sons, Inc., New York, NY. p 45-317.

Sherman, S., and J.R. Wilson, 1975. Behavioral and morphological evidence for binocular competition in the postnatal development of the dog's visual system. *J Comp Neurol.* 161 : 183-195.

Simmons, D., 1997. *A Western Horseman Book, Legends Outstanding Quarter Horse Stallions and Mares*, Publisher's Press, Salt Lake City, UT. 167 p.

Smythe, R. 1965. *The Mind of the Horse*. Stephen Greene Press, Lexington, MA. p 46-64.

Smythe, R. 1967. *The Horse: Structure and Movement*. J.A. Allen And Company, London, UK. p 69-84.

Smythe, R.H., 1975. *Vision in the Animal World*, St. Martin's Press, New York, NY. p 60-72.

Van der Werf, H.M.J.M., and I.J.M. De Boer, 1990. Estimation of additive genetic variance when base populations are selected. *J. Anim. Sci.* 68 : 3124-3132.

Walford, B., 1978. *Champion Horses of the Americas*, Arco Publishing Co. Inc., New York, NY. p 76-91.

Widmer, J., 1959, *The American Quarter Horse*. Charles Schribners Sons, New York, NY. 127 p.

Wickramaratne, G., and H. Gruneberg, 1974. A re-examination of two skeletal mutants of the mouse, vestigial tail (vt) and congenital hydrocephalus (ch). *J Embryol. Exp. Morphol.* 31 : 207-222.

Williams, M., 1976. *Horse Psychology*. J.A. Allen, London, UK. 208 p.

Woolf, C. M., 1989. Multifactorial inheritance of white facial markings in the arabian horse. *J.Hered.* 80 : 173-178.

Woolf, C. M., 1990. Multifactorial inheritance of common white markings in the arabian horse, *J.Hered.* 81 : 250-256.

Woolf, C. M., 1991. Common white facial markings in bay and chestnut arabian horses and their hybrids, *J.Hered.* 82 : 167-169.

Woolf, C.M., 1992. Common white facial markings in arabian horses that are homozygous and heterozygous for alleles at the a and e loci, *J.Hered.* 83 : 73-77.

## **Appendices**



### **APPENDIX 1A. Detailed history of the American quarter horse**

Based upon my interpretation of the literature this appendix details the history for the American Quarter Horse,. This history begins in the sixteenth century and concludes in the early twentieth century. The journey that the Quarter horse begins with the Conquistadors introduction to the Americas and their subsequent migration to North America. Once, the Quarter horse was present on American soil, the movement can be traced from being a pack horse for the Native American Indians to an early day race horse for the Colonists, to the westward migration. With this move west, the Quarter horse changed to a role of all around athlete necessary to “work” cattle. A second appendix 1B, provides in outline form the detailed narrative of Appendix 1A.

## **Pre-America**

### **The 1200s**

The Quarter Horse is known as “America’s Horse”, but other countries played crucial roles in development of this breed. Early America was shaped by England and Spain, countries founded on royal alliances. Some stock carried Spanish blood that originated from centuries of trade with Spain, which included imports by the Hobby, a mid-sized all around Saddle horse. This horse dates back to mid-evil times and was used in the English mounted infantry. Some Hobbies were Irish bred and named accordingly. Ireland participated in early horse-trading with Spain. Hobbies were a mid-sized muscular type that were short backed and had powerful hindquarters, which produced a comfortable walk, jog trot, and bursts of speed at the gallop. In both conformation and temperament, the Hobby was an important forebear of the Quarter Horse type. Spanish blood had been heavily used since the days of Edward I 1272-1307. Edward I imported nineteen Spanish studs into England between 1276-7. The Roman Empire also had an effect on the breeding of English horses. Throughout the entire Roman occupation of England, their cavalry shaped the early English breeds. Romans brought mounts from Europe and Asia Minor. Steppe horses were crossed with some Oriental blood being quartered along Hadrain’s Wall. The Spanish, Libyan, and Steppe horses were known for their hardiness and possessing quality and refinement.

Wealthy English men bought stock infused with the Oriental and Spanish blood which resulted from centuries of selective breeding. English stock and

Hobby stock were the most widely documented imports in the early part of the seventeenth century. Horses from England had to fulfill many roles in the colonies. Those roles included working horse, general saddle mount, and elegant courser. Each man with a decent horse wanted to prove its superiority. The traits that proved its superiority were a powerful conformation with powerful hind quarters. These hindquarters were a necessity for quick bursts of speed for the quarter mile track.

### **The 1500s**

Spanish stock had long been regarded as something akin to evolution crawling forth from the rocks. Hernando Cortez conquered Mexico for Spain in 1519 and his Calvary was mounted on the best-blooded horses in the world. They were magnificent stallions noted for their grace, beauty, speed, and endless endurance. As the Spaniards settled Mexico, Catholic Missions began to appear through out the territories. The importing of the Spanish stock went on for over 120 years, which provided a good foundation for the horse of the Americas.

In Cortez's conquest of the Aztec Empire, he continued to put great reliance on his horses. Montezuma, the Aztec ruler, believed that Cortez was the god Quetzalcoatl. This belief was reinforced for a time by the guns and horses of the Spaniards. Both of these seemed supernatural to the Aztecs. Many powerful tribes held in subjection by the Aztecs were ready to rebel. They rose up arms to support the invaders, who promised them freedom from the harsh Aztec rule.

The great store of Aztec gold and gems flowing from Mexico excited the Spaniards. This led many of the Spanish men to hope that further search might turn up more treasures along the Gulf coast of North America. The search turned north to Florida. With a royal grant to colonize Florida, Juan Ponce de León went north in 1521 with 250 men, 50 horses, other domestic animals, and farming implements. His men were attacked as they left their ships. Ponce de León was fatally wounded when he went to their relief. Survivors sailed back to Spain, but five years later Lucas Vásquez de Ayllón tried again with 500 men and women, 98 horses, and adequate equipment for the new colony. He found a location on the coast of South Carolina. There they began building, but the colony was buffeted by a series of very cold northern storms. These storms brought disease and death to Ayllón and many of his settlers. After one mutiny and Indian attacks, the survivors sailed back to Spain with only 150 people left out of the original 500.

Hernando de Soto and Francisco Vásquez de Coronado led two expeditions that gave rise to the reincountment of how stray horses from the explorer's herds managed to unite on the plains of Texas and in time filled the whole western grasslands with wild horses which made horsemen out of the Indians. De Soto, the new governor of Cuba, left Havana in May of 1539. He sailed to Tampa Bay with 600 armed men and 213 horses. When he first landed, he left 50 men and 30 horses to fortify camp and set out to find his riches. He marched at the head of an imposing cavalcade of 550 men and nearly 200 horses and headed across northern Florida. In October, he decided to spend the winter near Tallahassee. He sent

orders to the soldiers he left behind and they were to come to the new camp at once with all their supplies. The trail that led from Tampa Bay was over 300 miles in length with extremely difficult terrain. De Soto chose 30 of his best horsemen to be sent on this dangerous ride as messengers. Among them was Gonzalo Silvestre, who rode a dark chestnut stallion. This stallion was reputed as being the best in all of the Indies.

The messengers were lightly armed, with no bedding or spare clothes, and very little food. They set out on an October morning at a steady running walk, which eats up the miles while conserving the strength of the horses. After a very difficult journey, the weary riders approached the fort in time to see a line of horsemen riding two by two out of the gate. They also formed in pairs and each pair, started separately, dashed to the gate at a full gallop. They were twirling their lances to show the spirit of their horses after such a ride. Even for the best of De Soto's heard, the journey through the wilderness had been a remarkable feat of endurance.

De Soto wintered near Tallahassee and his men found Narváez' Bay of Horses, recognizable from the heaps of bleached bones on the sand. In the spring, after rejecting pleas from his men to turn back, De Soto marched northeastward into Georgia. In May of 1542, De Soto died of fever in Arkansas. He had lost 250 men and 150 horses since leaving Tampa Bay three years earlier. His men sent out to march overland to Mexico. After traveling into Texas, they became discouraged and turned back to the Mississippi. They spent the winter building seven

brigantines to carry them back. They killed all their hogs and all but 22 of their horses. They ate what they needed and preserved the rest for rations on their long voyage home. The 322 survivors set out with their horses and sailed down the river. They defended themselves from Indian attacks, which killed and wounded both men and horses with their arrows. Finally, the last five horses that were the best of the mounts were turned loose along the river. When the brigantines reached Pánuco, Mexico, on September 1543, there were only 310 survivors.

While De Soto camped near the Bay of Horses, Francisco Vásquez de Coronado was mustering his forces at Compostela west of Mexico City. He was preparing to follow the back trail, which was the same trail in the reverse direction of Cabeza de Vaca. Coronado had 336 men, several women, and a few hundred Indian allies and servants. His livestock included 550 stallions, three mares, and about 500 pack animals (mainly mules), a large herd of cattle, and a larger flock of sheep. Both the cattle and sheep were taken to stock the farms of any settlement that might be established. They were the traveling meat supply for the expedition. When traveling through strange country, the expedition had to move slow enough to allow the animals to forage each day. When Coronado reached Culiacan, he chose 80 of his best horsemen, 30 foot soldiers, and a large contingent of Indian allies to advance faster ahead of the main force. They investigated the land of Cibola, which in turned out to be the Zuni villages of Arizona. He lost most of his small flock of sheep and several horses. After a small advancing scouting party was attacked at night by the Zunis, who stampeded the loose horses. Luckily two

men on guard remained on their mounts and they rounded up the scattered horses the next day. He was able to send out three parties of his 80 horsemen to explore the country. The Pueblo Indians resented the continual presence of the strangers in their lands. In the fall, a series of attacks began which was focused first on the horses. One of the Pueblo villages sent out a war party to destroy a small herd of horses. The horses were able to escape with only minor injuries. In retaliation, the Spanish attacked the Pueblos. After fighting a difficult battle, the Spaniards set fire to the village and killed most of the people. They also attacked another village and took them as slaves. Before winter set on, the main body of Coronado's expedition reached Tiguex on the Rio Grande, where they set up their winter quarters. In 1541, the expedition set out to find the buffalo country. He had 1000 horses, 500 head of cattle, 5000 sheep, and 1500 people. Most of the people were Indians from Mexico or Pueblo slaves.

After traveling east through Texas, across the flat expanse of the Panhandle, Coronado's party realized that they were not in route to Quivira. They felt that their guide was lying and he sent most of his forces back to Tiguex, where they could safely rest while he went northeast with a small party. The small party was searching for the elusive Quivira. When he finally found Quivira, it was a prosperous farming village with no gold or palace. Coronado turned back from Quivira and reached the Pueblos safely. The following spring the entire troop retraced its steps to Culiacan, where they disbanded once there.

After the Aztec capital had been conquered in 1521, the Spanish fanned out in all directions. They were in search for more treasures. The groups did find rich loads of ore embedded in the solid rock of the mountains. Some of the ore was rich with gold, but most was rich with silver. Horses were needed for all types of work like caring riders, pulling carts, packing goods, furnishing the power to hoist the ore from the deep mines, and dragging the heavy stones that crushed the ore to a fine powder. This process allowed for the separation of the precious metals from the waste.

As mules replaced horses, they were then used to thrush the grains and used on the ranches. A hacienda might be quite large and pasture 100,000 head of cattle. Records from 1586 lists one hacienda owned by Diego de Ibarra that branded 33,000 head of stock in one season, while a neighbor, Governor Rodrigo Del Rio tallied 42,000 head. There were also hundreds of smaller herds through out the area. Ranging stock in larger herds was used instead of the more common practice of herding the animals in small bands. Ranging stock was turned out on unfenced pasture and allowed to graze at will over the countryside. They soon found a favorite watering place and fed around it in all directions for a few miles, which became the feeding range of the herd. Every few days a cowboy would ride out to look at the herd and would turn it back if it strayed too far. The vaquero (cowboy) would also search for predators and thieves. Under the range system cattle became wild, but they required very little supervision most of the year. The cattle was still



used to being handled by mounted men and became extremely dangerous to men on foot.

Twice a year, the cattle were rounded up and driven to a central point on the range where they were tallied. In late spring round up, the calves were tallied and branded. Most of the bull calves were castrated. In the fall the cattle were carrying enough weight to be sold or slaughtered. The owner of the hacienda needed a large number of well broke horses to carry him and work the cattle. Much of the ranch work had to be done on horseback, especially the handling of horses and cattle on the range. The riding horses had to survive by grazing and needed about three days of grazing to recoup after a hard day work. The horses were only ridden for a few hours a day. If the riding was over hard rocky ground, the horse would need several extra days of rest for its hooves to heal.

The hardest work for a horse was at the time of round up. The horses had to carry a rider for several hours, with most of their time being spent in series of short dashes to turn cattle. After a half days work, the vaquero needed a fresh mount. A top hand may need seven to eight horses for range work and two trained roping and cutting horses to handle the branding.

Horses raised on the open range matured at a slower pace than those raised in paddocks and developed finer bones, better muscles, and a greater endurance. They were not ready to be broke until they were five to six years old. After being broke, the horses were good for about five to six years of steady work. Out on the range, brood mares were grouped in small bands of about 20-25 head, with a

stallion protecting each band. The foals, yearlings, and two-year-olds stayed with the mares and there were about fifty head in each band. The quality of horses raised on the Mexican Plateau was good and was maintained by culling out the poorer horses for the mines, and importing good stallions from Spain.

In 1588, Spain tried to conquer England. English forces devastated the Spanish fleets, which forced the war-horses that survived the attack to swim ashore. The stallions were used for war. Few horses that were able to survive, bred with indigenous stock. Some of their descendents formed part of the livestock that was sent to the American colonies in the seventeenth century.

Due to the severe beating from England, Spain succeeded in carrying her banners to the New World in the sixteenth century. Spain's greed for the riches and religion of the Americas resulted in both conquistadors and priests ridding mounts from their homeland. As Spain's greed increased, more conquistadors were sent to the Americas bringing new stock from Spain and from the Spanish stallions in the Antilles.

### **The 1600s**

In the early 1600s, horses began to arrive in the New World. There was little doubt that these horses were of Spanish breeding. As Short racing became popular in Jamestown and in the other colonies, in 1649, the horse population showed 200 head. By 1671, there were close to 10,000 head. Early breeders searched for any blood that produced speed. As a result, these horses were producing offspring that had some of the same abilities as their parents. The

development of the horses to run a quarter mile was done out of necessity rather than choice. Early American breeders did not have the longer tracks that breeders of Europe had to use. These running horses of the colonies were bred for a fast break and a quick burst of speed. This is when the development of the Quarter Running Horse began. The Quarter Horse predated the English blood-horse, whose General Stud Book was first published in 1793, which resulted the English Thoroughbred stud book in 1827.

The Spanish Barb showed a distinct similarity in characteristics to the modern working Quarter Horse. The Barb and the Quarter Horse both had a low tail set, sloping quarters, which were great for the speed needed for the short distances, moderate height, and an even temperament. The Cherokee, Choctaw, Creek, Seminole, and Chickasaw Indian tribes acquired some of the Spanish horses. Before 1700, the Chickasaw and Choctaw tribes possessed the horses that ran west of the Mississippi River. Around this time, an alliance was established by English colonies with the Chickasaw, which remained unbroken for hundreds of years. It was during this time that the Chickasaw Pony became a source of out crosses for the colonial short horse. They were hardy, sound; sensible saddle horses, top cow horses, and could fly the  $\frac{1}{4}$  mile in an exciting sprint. These feral horses were largely from Chickasaw breeding herds. The business minded Chickasaws were soon making heavy traffic from Spanish Guale to the colonists. Besides, there was a natural migration north of those who were some how freed from man's grasp. The Indians were also lovers of horse racing. The Chickasaw

Pony stood close to 14 hands with a blocky frame and a great capacity for carrying weight.

In 1680, the Pueblo Indians with the aid of the Apaches rose up in a revolt, which resulted in the Spaniards leaving New Mexico. The Indians captured the Spanish stock, which included range stock and a few thousand horses. Since the Pueblos did not value horses, many were lost to raiders. Many of the horses looted from the raiders fell into the hands of the Comanche and Kiowa-Apache Indians. These horses offered a means for a faster pace of mobility. They were used for moving, hunting game, and raiding other tribes. These tribes considered a horse or two for each hunter as a sign of wealth. These Indians wanted all the horses that they could get their hands on. Small raiding parties moved across the Plains and a stream of horses would flow from southwest Texas, New Mexico, and Chihuahua to Canada, and north across the Mississippi to the northeast. While horses spread throughout the west from the Spanish colony in New Mexico, another movement of horses occurred across the Mississippi. These early horses were the number one item of trade. The Cayuses and Nez Perce had brood mares, which increased the level of breeding in their stock. The Columbia Basin tribes felt that their only use for these mares was to produce foals. The Nez Perce usually traded about five percent of their stock, which left them with enough stock to replace the older horses or the ones lost in a raid. The Nez Perce would trade off the poorer quality horses leaving them with a higher level of breeding stock, which was above most other tribes. They also gelded the poorer quality stallions, which would alleviate the

chance of lowering their high standard in their breeding stock. The Nez Perce raised good running horses, larger in size than those raised by the Plains Indians. Their close neighbors, who included the Flatheads, Cayuses, and Yakimas, did nearly as well with improving their own stock.

### **The 1700s**

The horses migrated up to the French traders at the Mobile Bay post after it was established in 1702. The extent of the use of the Indian horses in cross breeding with the early Quarter Running Horse is not fully known. Dr. George H. Conn writes in his book *The Arabian Horse in America* "The native American horses in Virginia and surrounding states at the time of the importation of English blood horses were chiefly of Chickasaw breeding." And he adds, "There was a marked improvement both in size and speed of these horses after the Chickasaw mares were cross-bred with English stallions."

According to Denhardt (1947), "The Seminole horses (from Florida) are the most beautiful and sprightly species of that noble creature, perhaps anywhere to be seen; but are of a small breed and as delicately formed as the American roe-buck.... The Seminole horses are said to descend originally from the Andalusian breed, brought here by the Spaniards when they first established the colony of East Florida. From the forehead to their nose is a little arched or aquiline, and so are the Choctaw horses among the Upper Creeks, which are said to have been brought across the Mississippi, by those nations of Indians who emigrated from the West, beyond the river. Those horses are everywhere like the Seminole breed, only

larger, and perhaps not so lively and capricious. It is a matter of conjecture and inquiry, whether or not the different soil and situation of the country have contributed in some measure, in forming and establishing the difference in size and other qualities between them. I have observed the horses and other animals in the high hilly country of Carolina, Georgia, and Virginia and all along our shores are of much larger and stronger make than those which are bred in the flat country next to the sea coast”.

### **The Janus Family**

Without men providing breeding guidelines, the early Quarter Horses became inbred and this resulted in loss of some of the symmetrical beauty that their ancestors had shown. They became tough, hardy, independent creatures, gaining a surety of foot and instinct for survival that made them the grandest partner available for settlers of the new land. These were the main body of mares that were bred to the stallion named Janus.

Janus became the gateway to two of America’s grandest breeds, the Quarter Horse and the American Thoroughbred. In the 1752, an Atlantic Plantation’s profits paid for an import of superior stock from England. Janus was foaled in England in 1746 and imported by Mordecai Booth of Gloucester, Virginia in 1752. He was a chestnut stallion that stood somewhere between fourteen to sixteen hands in height and a grandson of the Godolphin Arabian out of a mare by the Thoroughbred Fox. Janus possessed great bone and muscle definition, with large round compact hindquarters. He was a very swift runner and won some four-mile

aces in England before being retired due to a leg problem, but rest restored his leg. It has been said that the purpose to Janus's life was to better the blood of the distance runners on the colonial tracks.

In America, Janus had his chance to prove his speed. It was reported that Janus would produce near replicas of him-self and had a much greater impact on the early Quarter Running Horse than any other horse in the breeds of early history. He was also repeatedly line-bred to his own daughters and granddaughters. So many early pedigrees show a great proportion of his blood and genetic endowment. When he was also bred to Spanish mares, which produced offspring with tremendous amounts of speed. Janus was taken from place to place to cover quarter running mares of reputed Chickasaw breeding. When Janus was crossed with mares of the right type, he would pass on his ability to go the full distance.

Through trial and error, it was discovered that the blood of Janus crossed well with Chickasaw mares and traits poured into the foals that cultivated refinement of their traits, which was present from common breeding. Those ingredients produced the beautiful balance of quality and durability of the Quarter Horse. At least 100 sons appearing in written records, he rapidly became known as a sire of horses with an explosion of speed for sprinting. John Harvey, who was recognized as America's greatest horse historian, stated "The Januses became a tribe apart, so sharply were they differentiated from all others that wherever they went they could be picked out instantly by horseman. Like the blood of Justin Morgan a half-century later, that of Janus possessed a mystical something so

intensely individual and so individually different that it struck like the die of a mint, reproducing its pattern and design with a uniformity and a certainty that would be incredible except that it was incontestably a fact. Along with this went another trait, invisible, but just as fixed and just as marvelous. This was a speed so intense that beside it everything hitherto known in Virginia paled into insignificance. But with it went an equal incapacity to carry it. Though him-self a tested four-mile horse, the overwhelming majority of his get were Quarter Horses. Some of them could get a half a mile. Scattering few of them could win as far as two miles, but these were sports, exfoliated from the family tree". A good example of Janus's son is (Goode's) Old Twig. Old Twig stood 14.1 hands tall and was heavily muscled with a large blaze on his face as well as two white hind feet. He had a very compact frame, which possessed great muscular powers, symmetry, action, and strength and was called Little Twig. His sire was Janus and his dam, Puckett's Switch, also by Janus. Puckett's dam and sire were also by Janus, which made Twig line bred four times to Janus.

Janus was desired for his beauty and perfect conformation and was so popular that men came from hundreds of miles away to stand and look at him. He possessed great bone and muscle, powerful yet compact, heavy quarters, which was passed on to as far away as the third and fourth generations of get.

The Quarter Horse blood of Virginia and Carolina was fused with horses that Cortez brought to Mexico. The Janus family did much to broaden the base of Quarter Horse stock, which branched away from the long Thoroughbred. More



than half the founding families of the Quarter Horse breed that where to came along over 150 years, later trace to Janus.

During to early days of Colonial racing, a stallion named Printer came onto the circuit. Printer's fame was assumed almost entirely by the infusing of good Janus blood with Colonial mares. Printer was the maternal grandsire of Bay Cold Deck and Grasshopper. Grasshopper gained her recognition as the dam of Sykes Rondo. The bloodline charts for the Printer family was found to be important contributors to the Roan Dick family, the Lock Rondo tribe, the Old Joe Chalmers clan, the maternal source of the Old Fred line, and even the maternal headwaters of the famous Peter McCue family, with a good percentage of Quarter Horse pedigrees trace back to Janus through Printer.

The incipient Quarter Horse was able to make a great leap from the type the colonists had been working towards creating for close to a century, to early-bred status. Janus lived to be 34 years old and gained a reputation as a sire of sprinters. Janus spelled the end of the quarter mile racing on the eastern seaboard. Sir Archy was a horse that bridged the gap between the sprinting descendants of Janus and the modern American Thoroughbred. Sir Archy and his progeny took over Janus's position of fantastic speed and prepotency. He was able to hold the limelight for over fifty years.

## **The 1800s**

### **The Sir Archy Family**

Col. Archibald Randolph bred Sir Archy, who was foaled in 1805 on the plantation of Ben Lomond near Rock Castle, Virginia. Diomed, whose dam, Elbony, was a daughter of Flying Childers, son of the Darley Arabian was his sire. The Darley Arabian was imported into England in 1712. Diomed also carried Oriental, Paget's Turk and Leed's Arab blood. Castianira was of Oriental lineage and in foal with Sir Archy when she made the journey to the New World. Both were imported and entered into the newly formed English Thoroughbred studbook. Sir Archy was a rich bay that stood 16 hands and weighed 1400 pounds. After a less than desirable start in his racing career, due to ill health and being run unfit, he finished at a peak by beating the best racehorses of his time. His popularity increased and many crossings with Quarter Running Horse mares resulted. His early speed and short distance capabilities ensured that Sir Archy, noted as being the father of the American Thoroughbred, appears in pedigrees of many great names that are the root of the modern Quarter Horse families. Timoleon is known as being one of Sir Archy's best sons. Timoleon's grandest moment came the day that he sired Harry Bluff's dam, Big Nance, insuring the formation of the Steeldust family, which includes Shiloh, Steel Dust, Old Billie, Old Cold Deck, Zantanon, and Peter McCue, who all trace back to Janus. Sir Archy attained the height of immortality, which was nearly unequalled, and stands in proud and distinctive company as an important corner stone of the American Quarter Horse.

Before 1850, Copperbottom, the son of Sir Archy and Shiloh, traced directly to him, and Steeldust, traced to Sir Archy and Janus, had extended the Quarter Horses to Texas. Horses of Printer I (from Janus) breeding soon joined them. It was from this heritage that the progeny of working cow horses spread throughout the west. Quarter Horses are the only breed in America that can truthfully claim to be the oldest and also the youngest breed. Throughout early American history, the Quarter Horse played a crucial role. They played an important part in every war that was fought on the soil in the United States and were there when the Texans fought the Mexicans for the Alamo. Quarter Horses were the mounts of choice for Custard and his men. As settlers moved westward, the early Quarter Horse led the way. The early Quarter Horse played an important role in the development and establishment of America as a nation from the Atlantic to the Pacific Ocean.

As settlers moving west increased, the number of horses needed also increased. These horses had to be sturdy enough to bare the brunt of the hard work that would be required in the movement west. They also had to be thrifty doers because of the lack quality forage available and be able to turn with a foot and have a level of nimbleness that would allow them to travel through the treacherous terrain. These early horses had to have a sufficient quality that was inherited from their English and Spanish ancestors.

In the newly formed southern states, settlers found horses that were descendents of the continuous influx of Spanish stock from previous centuries.

These early settlers used corralling rather than stabling, previously used in the east. This made it easier for stock to be stolen, breakout, and generally disperse and end up in the hands of the Indians. Others also escaped to the wild and reverted back to a feral state. Feral horses obeyed nature's rule of survival of the fittest. Through inbreeding and natural selection they were eventually stamped with the traits of being small, tough, wiry, and far more removed from the prized Spanish blood of the warhorses.

Due to the vastness of the southern states, the type of vegetation insured this territory to be not as productive as the eastern territories. The sheer immensity of the new area opened up chances for huge scale cattle operations. Horses were used for patrol, control of the territories and livestock. Horses brought by the settlers and those from the southeast provided a physically suitable and mentally adeptness for cattle control. Ranchers were quick to recognize and capitalize on this characteristic and able to refine it by breeding specifically for cow sense. Ranchers now possessed a horse that was fast, powerful, highly intelligent, and had an innate cow sense.

### **The Copperbottom Family**

Copperbottom established the Copperbottom family in 1832. Edward Parker of Lancaster, Pennsylvania was the breeder of a dark chestnut stallion, known as Copperbottom. Copperbottom stood nearly 15 hands and weighed 1100 pounds. Copperbottoms made their name in the area of working cattle. The early Copperbottom breeders did not believe in racing their horses and concentrated

more on creating the ideal cow horse with refinement. Copperbottoms were intelligent and had a quick burst of speed necessary to catch a calf. These horses were heavily muscled horses with short backs and legs and had beautiful heads.

Copperbottom's foals were popular in the working environments, ideal ranch horses, and made fancy buggy teams. They were idealized for their willing intelligence, short bursts of speed, and sleek refinement. Being 100 pounds lighter than the typical Quarter Horse from this time period, they had fine pasterns with symmetrically beautiful heads and necks. Jack Close recalled the way they took to cow work, and their ability to work for long hours with a refreshing willingness, that made them a pleasure to ride. Copperbottom gained fame through his son Dexter #193, and was recognized as a sire of top working horses and foals brought forth from carefully selected mares.

### **The Shiloh Family**

Shiloh was a magnificent bay stallion whose speed and blood established the Shiloh family in 1848. Shiloh was out Union by Von Tramp out of Barbette by Sandbeck. Von Tramp's sire was Thomas' Big Solomon by Sir Solomon by Sir Archy. Shiloh's dam was Shiloh. Bred in Tennessee, Shiloh was brought to Texas. The Shiloh family contributed to and has been absorbed by the Billy, Cold Deck, Rondo, Fred, Traveler, Sykes, Peter McCue, Blake, and Joe Bailey families.

### **The Steel Dust Family**

The Steel Dust family was established in 1849. Legend has it that there was a stallion in the nineteenth century that was so superior that mare owners from all

over the United States would bring their mares to be bred to this stallion. Steel Dust was a bay that stood over 15 hands, weighed 1200 pounds. well balanced and had an extreme amount of power. This was evident by his incredible muscling, and solid, flat bone. He also stamped his get so indelibly a Steel Dust colt could readily be distinguished from other Quarter Horse. He also passed ideal Quarter Horse conformation and performance to his offspring. They were also heavily muscled horses, marked with small ears, huge jaws, remarkable intelligence, and lightening speed up to a quarter mile.

Crossing Steel Dust with Texas mares, this union produced “the best cow horses the South West had known”. Steel Dust’s sire was Harry Bluff and his dam was a Thoroughbred mare. Harry Bluff was sired by Short’s Whip by Blackburn’s Whip. Speckleback was Blackburn Whip’s dam and her sire was Randolph’s Celer. Steel Dust carried the genes of Janus. Harry Bluff’s dam was Big Nance by Timoleon by Sir Archy. When these two families combined (Janus and Sir Archy), the results were spectacular. Steel Dust’s descendents aided in providing the foundation to the Quarter Horse. This foundation was still extremely strong and one can still see this in the generations of today. Refrigerator, Docs Arky Sug, CD Olena, Mr Jes Perry, Noblesse Six, Bar J Jackie, and Heza Fast Man all trace back to Steel Dust. Steel Dust had a quite disposition and sired speedy, stocky, well built, well muscled, and high-spirited sons and daughters, predominantly bay or brown. Shiloh was the most important cross of Steel Dust’s blood. This

combination produced a large portion of successful offspring that were referred to as Steel Dust horses.

According to Ciarloni et al (1997), “whether the Quarter Horse champions of today actually benefit genetically from being able to trace their bloodlines back to Steel Dust, it is a fact that they and the entire modern breed of Quarter Horse have profited from the ideal on which the Steel Dust legend is based: horses universally recognized for speed and other athletic talents as well as the willingness to use those talents when asked”.

### **The Billy Family**

The Billy family grew from a combination of outstanding Quarter Horses in 1860. Old Billy was sired by Shiloh and his dam was Ram Cat (Steel Dust x Fannie Wolf). Old Billy never raced due to a crippling injury. It was evident that he passed his quality to many generations, because his offspring were of definite type. They were racy, flat muscled, “breedy” looking, and a little finer and faster than most. W.B. Fleming acquired a foundation mare from Guadalupe County in Texas. Pisana was bred to Old Billy. The first foal was Anthony, a dark brown stud colt. Anthony Dribble, the man Anthony was named after, raised a son of Anthony’s, Billie Dribble, a bald faced stallion. Mr. Nixon purchased Billie Dribble and he became one of the foundation stallions for Nixon’s horses, siring the Brown Nixon Mare, dam of Joe Bailey P-4. Anthony also sired May Mangum, a foundation mare in the Sykes Rondo Family. One of Billy’s finest sons was Old

Cold Deck. Old Billy had the ability to pass on his speed to his offspring and sired many racing horses that dominated the racing arena for many years.

### **The Cold Deck Family**

The Cold Deck family was established in 1872. Cold Deck carried blood of Sir Archy and was sired by Old Billy, out of a Missouri mare named Maudy. Cold Deck was a powerful force that swept through Texas and Oklahoma tracks. While he was in the hands of Foster Baker, he was never outrun until he was raced blind against Tom Stockton. Cold Deck lost his ability to see at the age of 19. Cold Deck proved to be a great sire by being able to pass on his incredible ability to run to his offspring. He was advertised as the "Boss Quarter Horse of America" and sired many great running horses, like Barney Owens. Barney Owen's dam, Nettie Overton, a mare that had already made a mark on the wall by having Bob Wade. Barney Owens was heavily muscled and deep barreled, almost black chestnut, and distinguished by his buckskin-type "skunk" tail. Sam Watkins took Butt Cut to the pen of Barney Owens in the spring of 1886 and sired Dan Tucker, the father of Peter McCue. According to Sam Watkins, who once had Old Cold Deck on lease, there were several bays with skunk tails, and one or two "cotton eyed" foals. In later years, Traveler was usually blamed for this trait, but it could easily have been a throw back to the Cold Deck line. Barney Owens went on to be one of the top sires of this time period and sired many greats.



Printer II was a full brother to Barney Owens and has contributed strongly to the Old Fred Family. Old Cold Deck sired Diamond Deck (1885-1905), who held the half-mile record at Dallas of forty nine seconds flat for many years. Red Deck was out of Diamond Deck, and out of an Old Mike mare, and a full brother to Nixon's Joe Bailey. Nixon's Joe Bailey was large and powerfully structured stallion, who stood 15.3 hands. He was a dark coppery chestnut with a large white spot on his head. His foals were mostly bays and browns, with very few sorrels and one gray.

Jack Alsup brought a mare to Joe Berry, a Blacksmith at Mt. Vernon, Missouri for new plating. Due to her lack of social behavior, she had her hind leg tied up and had a violent kicking tantrum, pulling her stifle. Her owner, disgusted by the entire situation, gave the mare to Berry on the condition that he has sense enough to breed her to the "finest stud available". According to the agreement, when the mare was able to move, Berry walked Dolly Crocker 100 miles to the pen of Old Cold Deck. As a result of this union, she produced Berry's Cold Deck. This colt was never ridden. He was a dark bay standing at 15 hands and weighing 1200 pounds with the shoe size of 00 (extremely small feet). Napoleon Bonaparte Maxwell, took his Bertrand mare to Berry's Cold Deck and in 1894 she produced Young Cold Deck.

Through the unbeatable team of S. Coke Blake-Maxwell formulated the "Blake" horses. These horses soon became a veritable fountain of speed, brains, and endurance. Two years later, Blake saw Berry's Cold Deck and decided that he

was even better than his Young Cold Deck stud. He sold off the young stud and bought the older stud.

Maxwell came from Tennessee, where the Brimmer strain was going strong. He owned a Brimmer mare, sired by Alsup's Bed Buck. She stood 14 hands and weighed nearly 1200 pounds and also wore a 00 shoe, with a running stride of 19 feet. This mare was never named and there was no written pedigree. Coke Blake called her Lucy Maxwell, after his daughter. In 1902, Lucy Maxwell was bred to Berry's Cold Deck and the era of Blake horses began. She foaled a stud colt, Tubal Cain. Coke bought Tubal Cain as a two-year-old and regarded Cain as the greatest Quarter Horse he had ever seen. He stretched down the track with a 22 ft running stride. Tubal Cain was an example of the Blake horse's name for liquid fire racing through their veins that was tempered with a great disposition. This stallion was very well mannered and Coke rode him all over the country leading his two young studs, Ironwood, and Big King, with no problems. Tubal Cain established his own family when he sired Tramp, and Red Man, sire of Old Red Buck P-9.

Maxwell was made aware of this legendary stallion's reputation for fast speed. White Lightning mares were enriching the blood of the Cold Deck family and had helped to make the Blake's a resounding name among Quarter Horses. Button was a Blake Stallion that was bred to the Blake mares. When Queen was bred to Button, a bay filly was foaled. Jane Hunt stood at 14.1 hands and weighed 1175 pounds. She later became the dam of Star Deck by Oklahoma Star. Even Sir

Archy and his get held full dominion over track and pens for fifty years. The Cold Deck Family and the Blake Family were extremely intertwined.

### **The Sykes Family**

Sykes Rondo established the Sykes Family in 1891. The Sykes Family was tied closely to the Tiger Family. Blackburn's Whip by Whip and his dam sired old Tiger, Jane Hunt was by Hampton's Paragon. Flimnap sired Hampton's Paragon, and was by South by a son of the Goldphin Arab. He was one of the most highly esteemed horses in the Carolinas. The Tigers were extremely successful in the racing arena. They were a highly sought after racing strain that had good size and speed. A daughter of Tiger, described as a "dappled brown", was bred to Anthony. This genetic combination created Mattie May, known to the public as May Mangum. She was the maternal source of the Sykes horses. The union of Sykes Rondo and May Mangum produced Jenny. Jenny produced Possum, Little Joe, Black Bess (dam of Cotton Eyed Joe), Baby Ruth (Paul Ell's dam), Nettie Harrison (dam of Nettie Jacket), Kitty II, and Blue Eyes.

Sykes Rondo was an extremely beautiful horse and was described as a light sorrel with a flaxen mane and tail, white stockings, and a blaze face. He stood just over 15 hands and weighed 1150 pounds. He was primarily used as an all around horse and spent many scorching days-rousting wild cattle out of the thick Texas brush. During the week, he was used to herd cattle, and on Saturdays, he would hit the racetrack and clean house. There was a band of mares that were the daughters

and grand daughters of a hot-blooded Irish Thoroughbred. They were known as the Crawford Sike's horses.

The get of the Sykes Rondo and the big Irish mares quickly earned the reputation of being exceptional polo prospects. These horses were fast breaking, agile, and powerful, with enough guts that they could not be bumped off or winded on a polo play. Listing the descendents of the Sykes Rondo family is like calling roll on all the Quarter Horse greats. Scores of today's top performers trace to the Sykes Rondo family.

### **The Traveler Family**

Traveler established the Traveler family in 1883. Traveler was a light sorrel with roan coloring on his flanks. He stood 15.1 hands and weighed 1100 pounds. He had long, flat muscling, and heavy driving hindquarters. Traveler was a stout horse that had been used to pull a dirt-moving scraper. He made his way from pulling a scraper to pulling past and beating racehorses on their own turf. Brown Seary purchased Traveler. When he reached home with his new stallion, he saddled him. Traveler pitched a fit and bucked before his intelligence calmed him down to accept training. Racing was old hat for Traveler and would only tolerate a jockey saddle and jockey. At the end of a race and on his way to the winner's circle, Traveler would walk while other racehorses were to hyped-up by the race to walk. He did not waste energy. Traveler had a reputation for being able to break from a score line faster than any other horse and was able to pass on these traits to his get, even if the mare was of lesser quality. Traveler sired many great sons and

daughters and they were top ranch horses with good dispositions, fast learners, and easy to handle. No other family had produced as many Register of Merit runners and all of them had descended from either Little Joe or Possum. Traveler was able to stand on his own and made his reputation with out the knowledge of his family tree.

### **The Peter McCue Family**

Peter McCue established the Peter McCue family in 1895. Peter McCue's sire was Dan Tucker and his dam was Nora M., whose sire was Voltiguer (Thoroughbred). Nora's dam was Kity Clyde (x Star Davis x Glencoe (Thoroughbred)). Nora was bred to a blind Dan Tucker. At maturity, Peter McCue stood 16 hands and weighed over 1400 pounds. He had a good head with prominent jaws and his back was a little on the long side and his hip was a bit short. People laughed at this stallion because they felt he was not show ring material, but the smiles disappeared when he began to thunder down Illinois tracks and had an incredible stride of 27 feet. He had a fine disposition on the track and in the stall and was kind, calm, and quick to learn. Many people said that you could breed a boxcar to him and still get a running horse, for this reason, he has been called the greatest horse that ever ran on a track. Some of his get are Old Sorrel, Wimpy P-1, Peppy, Bert, Joe Hancock, Ding Bob, Midnight, Midnight Jr., Grey Badger II, Pretty Boy, PrettyBuck, Blackburn, Navata Star, Poco Bueno, Knig Fritz, Cowboy P-12, Plaudit, and many more. The more prominent modern Quarter Horse sires

are Coy's Bonanza, Blondy's Dude, Two Eyed Jack, Zan Parr Bar, and Rugged Lark all trace to Peter McCue.

### **The Old Fred Family**

Old Fred established the Old Fred family in 1893. Old Fred was a golden dappled horse that weighed 1400 pounds. He had smooth, even, powerful muscling and stood on four clean, straight legs that balanced this 15 1/2 hand horse. He also had a silvery mane and tail with a blaze and four white socks and a wonderful disposition.

Bob H., a son of Old Fred, was extremely fast on the racetrack. An unfortunate accident prematurely ended Bob H.'s life. He did manage to establish himself as a worthy sire. One was with a mare named Fleet. Fleet was a flashy sorrel with a star and one white stocking. She stood 15 hands and weighed over 1200 pounds, with a predominantly flaxen mane and tail, which could have been carried over from her palomino grand-dam. She proved the blood of her sire, having ten foals, five of which were palomino. She produced Saladin, a Grand Champion at the Denver in 1936. He sired Papoose, out of a mare by Bob H. and this mare won 27 races before she was finally defeated.

Old Fred mares produced, when crossed with Peter McCue, horses like Sheik P-11, sire of top racing and working colts. Buck Thomas was the son of Stockings by Old Fred and in turn sired Old Red Bird P-14, Peter McCue the second, and Squaw. Squaw was a mare that won 49 out of 50 starts. Fred's blood was also present in Scooter W., a World Champion Running Stallion, Joker W., a

sire of working and halter horses, and the Question Mark family, produced Osage Red, a World Champion Running Stallion. Black Ball, a stud, sired old Fred by Rondo by Missouri Mike by Printer II. His dam was a palomino mare sired by John Crowder. Nan, a standard bred, was Black Ball's dam. He had the ability to pass on consistently the speed, sense, and topped off with smooth good looks.

### **The Joe Bailey Family**

Joe Bailey established the Joe Bailey Family in 1907. Joe Bailey was a remarkable performer. His sire was Eureka, one of the best-known short horse runners in Central Texas at the turn of the century, and his dam was Susie McQuister, a good performer. Unfortunately Joe was born just at the time the automobile became popular, as a result, Quarter Horse Racing began to disappear. He and most of his direct foals never had a chance to prove themselves on the track. With all the odds against Joe Bailey, his offspring and their get had enough to earn him a name forever remembered in the Honor Roll of Founding Sires. He and Old Mary, a Parker Mare by Barney by Traveler, together created Yellow Wolf and Yellow Bear. These are two very prestigious Quarter Horse sires utilized by the Waggoner Ranch. Yellow Wolf was the larger of the two. He was 14.2 hands tall and weighing 1100 pounds. His foals were faster than those of his brother, Yellow Bear, and held true to color. Most of them were zebra buckskins. Yellow Bear was 14 hands and weighed 1000 pounds and sired the best all around cow horses. His daughters were his best get and they became fine brood mares.

Joe Bailey also sired top rodeo horses. Stranger was the star among these get, the greatest Bull Dogging Horse of all time. He also sired cutters and calf roping mounts and was improving the quality of horses in Central Texas. Even though large numbers of his get are unknown to us today. He never appeared on the racetrack, showing, or rodeo arena, but all those fields of competition are in debt to him. He quietly passed along his traits that are so greatly appreciated by the breeders of the Quarter Horse.

In the late 1800's, the Quarter Horse was established and recognized as a type. This horse was called other names such as Billy horses, Steeldusts, Rondos, bulldogs, or short horses. They had the abilities to work cows in the morning and in the late afternoon, run a quarter mile race. In the nineteenth century, the Quarter Horse made its way to Texas. The original Texas Quarter horse did not amount to much and was undersized due to many generations of short rations and inbreeding. With the infusion of English blood, the Quarter Horse became a superb animal. This union was able to improve the Quarter Horse in the area of being used as a saddle horse qualities and concentrate on its racing ability. Mares of note are recorded but the stallion's exploits received greater recognition due to the broader dissemination of their blood in succeeding generations. Closer attention to record keeping of pedigrees tracing to these horses began to become accurately verified

### **The Early Day Quarter Horse Conformation**

The general head conformation for all Quarter Horse types was short and wide and tapered from wide muscular jaws to a moderately small muzzle. Its ears



were short and set wide apart and its eyes were large, set wide apart, and reflected both intelligence and docility. Its face was straight, with its nostrils full and a firm mouth. The head joined the neck at a forty-five degree angle and the throatlatch was trim, with a width between the lower edges of the jaw. The horse had a medium neck length, with the necks being muscular, flexible, and blended into well-sloped, muscular shoulders. The neck was never arched and normally carried just above saddle horn height. Its shoulders were muscular and long with a slope of forty-five degrees. There was medium height at the withers, which extended back beyond the top of the shoulder. The wither was slightly lower than the croup. The chest was exceptionally deep and broad giving a wide set to the forelegs, with the forearms being strong and muscular. Its back was medium short and close coupled. It was also exceptionally full and powerful across the loin. The girth was deep with well sprung ribs and the underline was longer than the back and did not cut high into the flank. Its rear quarters were muscular, broad, and deep with a peached appearance when viewed from the rear. Muscling extended through the thigh, stifle, and gaskin. Its croup was long and sloped gently from the hip to medium tail set, with the loin blending into the croup. The stifle was deep and widest at the point of the horse when viewed from the rear. Its legs were straight with strong wide flat bones and its cannons were short with the hock and knee joints low to the ground. The pasterns were medium in length and sloped at a 45 degree angle, with medium sized hoofs that were strong, oblong-shaped, deep, wide, and open at the knee. It was generally 14.2 to 15.2 hands but some were over or under that height

and usually weighed between 1000 to 1300 pounds and some were over or under as well.

### **The Categorical Types of the Early Day Quarter Horse**

The early Day Quarter Horse could be assigned to one of four categorical types; Type 1, Bull-Dog type, the original colonial Quarter Horse; Type 2, Semi-Bull-Dog, muscular but taller with smoother lines, Type 3; Progressive type, medium size between the Semi-Bull-Dog and Running; and Type 4, the Running Type, taller and most refined of all the types.

Type 1 (Bull-Dog) Quarter Horses stood between 14 to 14.3 hands and weighed between 1150 to 1350 pounds. Its body was short and compact with a low center of gravity and its entire body was extremely muscled, with either bulging (Wimpy) or smooth (Leo Zero) muscle structure. Its head was short and exceptionally wide with a very deep, wide, and muscular jaw and the withers were low and the back was short and wide. The hindquarters were broad and deeply peached, with a stifle that was muscular and well pronounced. It seemed to have had a docile, intelligent, and tractable temperament. The amount of muscling for type 1 horses determined the type of use. Average muscled type 1 horses were used in the field especially ranch work. Heavily muscled type 1 horses were primarily used as breeding stock. This type almost always had and passed on "cow sense". It seldom possessed the stride necessary for modern day racing.

Type 2 (Semi-Bulldog) Quarter Horses stood between 14.1 to 15 hands and weighed between 1050 to 1150 pounds. Its body was somewhat short, compact, and muscular and its shoulders, forearms, chest, thigh, stifle, and gaskin were well defined by muscle. Its jaws were prominent but not as deep or as muscular as the Type 1 Quarter Horse while its legs were set wider. Its withers were medium in height and blend into a medium to medium-short back that is not overly broad. Its temperament was the same as Type 1. These horses were very versatile and competed in all the western events, being particularly good in cutting, roping, working cow-horse, bull dogging, and barrel racing. While some competed successfully in racing, these horses were in the 15-hand range with a smooth muscle structure and made excellent hunter jumpers. This type was also invaluable in breeding of the Progressive type Quarter horses and had influence in other breeds such as, the Appaloosa, Paint, Palomino, Dun, Buckskin, Pinto, Quarter Pony, and the Pony of America.

Type 3 (Progressive) Quarter Horses stood between 15 to 15.1 hands and weighed between 1025 to 1150 pounds. Its conformation fit between the Semi-Bulldog and the Running types, with its head, neck, and back being of medium length with their bodies being round and full. Its hindquarters were rounded and full bodied, while showing a moderate “peach” shape when viewed from behind. Its shoulders, chest, forearms, thighs, gaskins, and stifles were well developed with smooth, flowing muscle structure. All the lines were aimed toward a refined, smooth appearance. Its legs were slightly longer and finer than those of Type 2 and

their heads were the preferred shape of the Quarter Horse having refined features but not overly muscular or wide. Its underlines were long and sloped upward in a gentle fashion. It required more work to get this type of horse ready for its daily activity, due to its hotter temperament but it was intelligent and highly tractable, as well. These were the most versatile of all the types being equally suited for English and Western events. They soon became the preferred types for Halter, Western Pleasure, Hunter Under Saddle, Trial, Reining, Jumping, and Hunter Hack. It could also hold its own against the specialists in Barrel Racing, Gaming events, Cutting, and Racing events.

Type 4 (Running) Quarter Horses stood between 15.1 to 16 hands and weighed between 1050 to 1200 pounds. Its body structure was dependent on the amount of Thoroughbred present in their genetics and its neck, back, legs, and underlines were slightly longer with body muscling that was smooth and sleek in appearance. Horses that were two thirds Thoroughbred had the racing type head and many other Thoroughbred features. It always exhibited refined lines from the side view, and were fairly steep in the slope from the hip to the tail and its underline sloped upward. Its hindquarters were substantial and its shoulder and stifle muscles were prominent. Its temperament was known as being fairly docile but sometimes may have been high strung. This Quarter Horse type was also intelligent and fairly tractable. Horses with one half or less of Thoroughbred blood were usually the fastest out of the start gates. These horses could also maintain top

speed on both curved and straight tracks while those with more than one half Thoroughbred blood required straighter tracks to gain full stride.

Quarter Horses are the most versatile of any breed and are capable of being proficient in unlimited number of uses. They are good-natured and have a great flexibility in their minds. Some horses will react differently due to their age, sex, level of training, and the experience of the rider. They are exceptionally fast and willing and are also eager to learn and retain knowledge. Their gates are naturally collected and comfortable. The Quarter Horse breed is very strong and healthy and requires no pampering or special care. They do not require regular riding to prevent them from becoming “high” or unmanageable.

**Appendix 1B. An outlined history of the American quarter horses from past to the modern day quarter horse**

This appendix provides in an outline form the detailed narrative provided in Appendix 1A.

**Copperbottom Family (1832)**

Sir Archy

**Copperbottom**

Dam crosses two times to Janus

Get

Dexter #193

**Shiloh Family (1848)**

Von Tramp(traces back to Sir Archy)

Union

**Shiloh**

Barbette

Contributed to

The Billy Family

The Deck Family

The Rondo Family

The Fred Family

The Traveler Family

The Sykes Family

The Peter McCue Family

The Blake Family

The Joe Bailey Family

## **Steeldust Family (1849)**

**Steeldust** Harry Bluff(traces to Sir Archy)  
 Big Nance (traces to Sir Archy)

### Generations of Today:

Refrigerator  
 Docs Arky Sug  
 C D O Lena  
 Mr Jes Perry  
 Noblesse Six  
 Bar J Jackie  
 Heza Fast M

## **Billy Family (1860)**

**Old Billy** Shiloh  
 Ram Cat (traces to Steeldust)

### Get:

Anthony Dribble  
 May Mangum  
 Billy Dribble  
 Brown Nixon Mare  
 Joe Bailey  
 Old Cold Deck  
 Columbus



**Cold Deck Family (1872)**  
Blood to Sir Archy

**Old Cold Deck**

Get:

Barney Owens

Printer 2<sup>nd</sup>

Dan Tucker

Peter McCue

Diamond Beck

Red Buck Mare

Mike Mare

Nixon's Joe Bailey

Billy Dribble

Berry's Cold Deck

Tubal Cain

Tramp

Iron Wood

Redman

Young Cold Deck

Joe Bailey

Chief

Old Red Buck

Sheik

White Lightning

Blake Era begins:

Button x the four daughters of White Lightning

Button x Queen

Get:

Jane Hunt

Star Deck

## **Sykes Family (1891)**

This family is tied very close to the Tiger Family

Blackburn's Whip(traces to Sir Archy)

### **Old Tiger**

Jane Hunt(traces to the Goldolphin Arabian)

Daughter of Tiger x Anthony Dribble

### Get:

May Magnum

Jenny

Possum

Little Joe

Black Bess

Cotton Eyed Joe

Baby Ruth

Paul Ellis

Nettie Harris

Nettie Jacket

Kitty II

Blue Eyes

Rialto

Waggoner's Rainy Day

Brown Possum

King P-234

Gay Bar King

## Traveler Family (1883)

Traveler has unknown origins

### Get:

Rialto

Dunit Rawhide  
 Hollywoods Striker  
 Dry Oil  
 Dry Dot  
 Smart Little Lena  
 Dry Doc's Dottie  
 Zippo Pine Bar  
 Hollywood Dun It  
 Dun It With A Twist  
 IsleBeaDunIt  
 Faithfully Dun  
 Billy All Dun  
 Dun Its Easter  
 Dun Gotta Gun  
 Joe Bailey  
 Old Jim  
 Brown Possum  
 Tomate Laureles  
 King P-234  
 Poco Bueno  
 Royal King  
 Tap O Lena  
 Lenas Dynamite  
 Scarlett O Lena  
 Dry Clean

King's Pistol  
 Contentental King  
 Power Command  
 King Fritz  
 Swing Chex  
 Cattitude  
 Poco Tivio  
 Poco Lena  
 Gay Bar King  
 Prissy Tivio  
 Tabasco Tivio  
 James Tivio  
 Docs Tivio  
 Tivitos Sugar Bar  
 Johnny Tivio  
 Taboos Maple Sugar  
 Holmdale Peponita  
 Holms Peppy Bar  
 Holms Tivio Sugar  
 Doc O Lena  
 Dry Doc  
 Dunit With A 045  
 Hes Dun Time

Dunnit Like A Cowboy  
 Dun It Sweetly  
 Not Dun Smokin  
 Spanish Dun It  
 Country Dun It  
 Tejons Finally Dun It  
 Gotta Get Wa Dunit  
 Mr. Hollywood Here  
 Top Sail Cody  
 Cee Blair Sailor  
 Whizard Jac  
 Topsail Whiz  
 Topgun Whiz  
 Topsail Dude  
 Whiz N Chex  
 Rest Stop  
 Freckles Top Prize  
 Sail Win Sam  
 Topsail Skeets  
 Moonstore Cody  
 Topsail Gold Spinner  
 Perfect Sailor  
 Sail On Surprise

**Old Fred Family (1893)**Rondo(traces to Printer 2<sup>nd</sup>)**Old Fred**Get:

Bob H

Saladin

Papoose

Sheik

Squaw

Buck Thomas

Old Red Bird

Scooter W

Joker W

Black Ball

**Joe Bailey Family (1907)**

Euerka

**Old Joe Bailey**

Susie McQuister

Bred to Old Mary, a Parker Mare by Barney by Traveler yielded:

Get:

Yellow Wolf

Yellow Bear

Other Get:

Stranger

Gay Bar King

**Joe Reed II Family (1936)**

Joe Reed

**Joe Reed II**

Nellene

Get:

Leo

Bill Reed

Little Sister W

Bull's Eye

Whisper W

Joak

Flit

King's Pistol

Yeagers Lady JA

Swamp Angel

O'Quinns Midget

Loes Midget

Miss Bar Leo

Miss Meyers

Palleo Pete

Dari Star

Dari Man

Vanette Dee

Vanna Bar

Vandys Flash

Peppy San Badger

Peptoboonsmel

Pep To Time

Kings Masterpeice

Mastermender

Peppy San

Leo San

Mr. San Peppy

Dual Peppy San Badger

NV Starlight

**Three Bars Family (1940)**

Percentage

**Three Bars**

Myrtle Dee

Get:

Mr. Bar None

Goldseeker Bars

Rocket Bar

Three Chicks

The Ole Man

Pokey Bar

Josie's Bar

Mr. Bruce

Sugar Bars

Kid Meyers

St. Bar

Lightning Bar

Barred

Bob Folly

Galobar

Breeze Bar

Little Lena Bar

Impressive

Lucky Bar

Steel Bar

Parr Three

Zan Parr Bar

Conclusive

Impressive Sundance

Diversified

Western Corbnet

Page Impressive

Impressevita

Impressive Candy Man

Doc Bar

Dash For Cash

Docs Hickory

Doc O Lena

Broadway Doc

Doc's Sug

Leo Lena

Docs Remedy

Master Remedy

Smart Wittle Play

Smart Little Lena

Smart Chic O Lena

Smart Little Calboy

Somebody Smart

Docs Oak

Docs Stylish Oak

One Time Soon

Pep To Time

Smart Little Helena

Gay Bar King

Zippo Pat Bars

Zippo Pine Par

Zips Chocolate Chip

Zippos Sheik

Zippa Bull

Zippo Can Do It

Zippo Pine Chip

Untouchable Zipper

Flashy Zipper

Quineys Zipper

Zippos Mr. Good Bar

Zippo Pine Glow

Zippo Bud Bar

Hotroddin Zippo

Zippo Parr Bar

Zan Parr Patriot

Zan Doc Starr

Lightning Parr Bar

Zan Doc Zanna

Zan Parr Sun

Saturday Nite Line

Jack Parr Sun

**Top Deck Family (1945)**

Equestrian  
(descendent of Man O War)

**Top Deck**

River Boat

Get:

Star Deck F

Skippy's Baby

Music Lover

Clear Deck

Mr. Kip

Janon

Skip Deck

Go Man Go

Magnolia Skipper

Amber Star

Mackay Boy

Moon Deck

Mackay Jimmie

Ridge Butler

Miss Mackay

Witness MacKay

Eagle Call

Dash For Cash

Baby Holdon

Queen For Cash

Dashingly

Dash Again

Justanold Love

Cash Rate

**Fillinic Family  
(1957)**

Arizona Junie

**Fillinic**

Alouette

Get:

Reminic

Bommernic

Pepinic

Smart Little Pepinic

Royal Pepinic

Pepinics Play

Lolipopinic

MTP Pepinics Badger

Von Reminic

Bommernicker

**Gay Bar King  
Family (1959)**

Three

Bars

**Gay Bar King**

Gay

Widow

Get:

Gay Robin Bar

Smart Chic O Lena

Gay Sugar Chic

Miss Gay Chex

Charlies Star Light

Gay Bar Chick

Mr. Bar Gold

Gold Margarita

Gay Bar Dixie

Doctor What

Gay Tom

Gin Gay

Pete's Shop Keeper

Johnie Gay Bar

Gay Candy Bar

Magnolia Bar

Shesa Lota Cash

Marcellena

Good Ole Duchess

Miss Peppy Gay Bar

Gay Bar Moon

Zan Parr Express

Shining Spark

Okie Paul Quixote

Vermajo King

Dox West Grey

Diamonds Sparkle

Genuine Doc

Gay Bar's Gen

Credit The Doctor



Sugs Gay Lady  
 ARC Matt O Lena  
 ARC Jumanji  
 Peppys Smart Pants  
 The Reyning King  
 Bingo Rebel  
 Jody Paul Quixote  
 Ray Gay Quixote  
 c O'Lena  
 Doc O Dynamite  
 Easy Does It Doc  
 Bay Bar Lady  
 Doc Ware

**Diamonds**  
**Sparkle Family**  
**(1974)**

Mr Diamond  
 Dude  
**Diamonds Sparkle**

Pollyanna  
 Rose

Get:  
 Sparkles Suzana  
 Zans Diamond Sun  
 Spark O Lena  
 Genuine Doc  
 007  
 Shining Spark  
 Perfect Spark  
 Smart Shiner  
 Ooh Cisco  
 Shiners Lena Rey  
 Lenas Sugar Man  
 There Comes A Time  
 Winning Colors  
 Shiner Glow At Nite  
 Shining Shoes

**Appendix 1C. The foundation American quarter horse – The first nineteen**

The American Quarter Horse Association was established during the Fort Worth Stock Show in 1940 to preserve this unique equine breed. When this organization was chartered the founders reserved the first nineteen numbers of the registry for the “foundation stock” that made the breed. Number one was reserved for the horse that won the award of Grand Champion at the 1941 Fort Worth Stock Show. The remaining eighteen numbers were assigned to stallions that represented what the founders were attempting to preserve was based on conformation, performance, bloodlines, or sireing ability. These nineteen pedigrees are described in order to provide the reader with an understanding of how the Quarter Horse Breed evolved.

**Wimpy P-1**

		Peter McCue
	Hickory Bill	Lucretia M
Old Sorrel		Unknown
	Dr. Rose mare	Unknown
Solis (Sire)		Rapallo (TB)
	Right Royal (TB)	
		Mrs. Delany (TB)
Mother of Solis		Unknown
	Lazarus mare	Unknown
		Unknown
Wimpy (1937-1959)		
		Peter McCue
	Hickory Bill	Lucretia M
Old Sorrel		Unknown
	Dr. Rose mare	Unknown
Panda (Dam)		Peter McCue
	Hickory Bill	Lucretia M
Roan Q Mare		Unknown
	Unknown	Unknown

Wimpy was given the registration number 1 due to his winning Grand Champion Stallion at the first American Quarter Horse Association show in Fort Worth, Texas.

**Rialto P-2**

		Galore (TB)
	Prince Plenty (TB)	Minerva (TB)
Horace H (TB)		Hindoo (TB)
	Hindoo Queen (TB)	Queen Regent (TB)
Billy Sunday (Sire)		Dan Tucker
	Peter McCue	Nora M (TB)
Carrie Nation 1		Fib (TB)
	Trixy W (TB)	Lyon Lady (TB)
Rialto (1923-1944)		Unknown
	Traveler	Unknown
Little Joe		Sykes Rondo
	Jenny 1	May Magnum
Dora Du Mar (Dam)		Old Billy
	John Crowder	Paisana
Julia Crowder		Unknown
	Shely mare	

Rialto was never able to prove himself as a sprinter. His offspring proved themselves on the track. He was given number two in the registry mainly on the basis of his progeny and their performance. Rialto was a chestnut stallion standing 15 hands and weighing around 1150 pounds. Rialto was an exception to Ott Adam's usual breeding procedure because his bloodlines were inverted. Rialto's top line contained Peter McCue blood from Billy Sunday, while his dam, Dora, was pure Billy Sunday, by Traveler and John Crowder. Ott Adams said "Breed to the best and hope for the best". Rialto's descendents still carry the deep rich stream of blood the name of Rialto promised.

**Joe Reed P-3**

	Enquirer (TB)
	Faustus
Bonnie Joe	Lizzie G (TB)
	Bonnie Scotland (TB)
	Bonnie Rose
	Melrose (TB)
Joe Blair (TB) (Sire)	King Galop (TB)
	Bowling Green
	Playing Fields (TB)
Miss Blair	Pursebearer (TB)
	Com-I-Cut
	Isbell (TB)
Joe Reed (1921-1947)	Queue (TB)
	Crazy Q
	Lannie
Old D.J. (Dedier)	Carlos
	Meon
	Inez
Della Moore (Dam)	Blackmore (TB)
	Shamrock
	Pelegie
Belle	Dewey (TB)
	Dilly
	Ella

Joe Reed was destined for greatness. It was a greatness that had been passed down through many generations. He had in his sire line some of the fastest Thoroughbred blood in the world and he could run. The main problem with Joe Reed is that he could not run far enough. Most of the races were at distances of 1/2 to 5/8 of a mile. Joe Reed and his sons have contributed greatly to the Quarter Horse Breed and their get has speed, good heads, and their stylishness. Joe Reed did not achieve greatness as a running horse. By producing Joe Reed II, Joe Reed established himself as one of the greatest sires in Quarter Horse history.

Joe Reed breeding is still represented in the list of current leading sires of race winners. In the 1965 totals, Joak by Joe Reed II was 17<sup>th</sup> on the list of current leading sires of race winners with 16 winners, winning 41 races.

During the 1930s, Joe Reed enjoyed a wide reputation as a sire and his owner bred him to many outside mares. It was understandable when that he would be assigned to the P-3 position in assigning number to the foundation sires of the breed.

**Joe Bailey P-4**

	Unknown
	Traveler
	Unknown
Possum (King)	Sykes Rondo
	Jenny
	May Magnum
Little King (Sire)	
	Unknown
Nellie	Unknown
Joe Bailey (1919-1947) Gonzales	
	Cold Deck
	Diamond Deck
	Unknown
Nixon's Joe Bailey	Missouri Mike
	Missouri Mike Mare
	Unknown
Brown Nixon Mare (Dam)	Anthony
	Billy Dibrell
	Unknown
Fanny	Unknown
	Nixon Mare
	Unknown

Joe Bailey weighed in at 1150 pounds and was solidly built. He had a blaze from just below the poll to his nostrils, and his legs below the knees and



hocks were roan, shading to almost white at the hoofs. He mounted up well to his withers, was deep through the heart girth, had a tremendous rear end, being well muscled inside and outside of his legs. He was not excessively wide between his front legs and he had a good, plain looking, head. He had good legs with dense, flat bones and clean, hairless fetlocks. His withers were high with his shoulders being well laid back. He had conformation that was built to be used, as well as to run. It would be difficult to estimate Joe Bailey's total number of offspring that are registered in the AQHA, because he was used for breeding for 20 years. Estimates show he has sired more than 1500 live foals. Many of his sons and daughters went to the racetracks, while others went to rodeo arenas and working ranches. His blood was kin to all the top Running Quarter Horses in Southern Texas during the early 1900's. His offspring were a good, blocky Quarter Horse Type 3. Most of his get were a lighter sorrel with muzzle shading almost white in coloring. Their legs had that same coloring with light manes and tails with white markings on their faces.

His pedigree reads nothing but SPEED. This sorrel stallion has upheld the reputation of the Traveler family, by winning enough races to interest mare owners in breeding to him. It would have been difficult to compete in a race or roping without there being a Joe Bailey colt in the competition. They all had the same blazing speed that their father had.

The first of Joe Bailey's offspring to make a mark in the AQHA record book was Little Joe, Jr. Little Joe, Jr. could do it all. He would win at Halter,

Racing, and Working events. When he was taken to Arizona for a show and race in 1942, he was named the Champion Cow Horse Stallion, proving that he had the conformation that horsemen were seeking to breed their mares to.

The get of Joe Bailey showed the ability and talent to race or catch a cow. They could catch a calf in money winning time, win match races, or go to into the pasture with a jogging trot that would cover a lot of distance in a very little amount of time.

**Chief P-5**

		Barney Owens	Cold Deck
	Dan Tucker		Nettie Overton
			Jack Traveler
		Lady Bug (Butt Cutt)	
			June Bug
	Peter McCue (Sire)		Vandal (TB)
		Voltigeur	
			Duet (TB)
	Nora M. (TB)		Star Davis (TB)
		Kitty Clyde	
			Margravine (TB)
Chief (1917-1946)			Cold Deck
		Printer II	
			Unknown
	Jeff		Unknown
		Campbell mare	
			Unknown
	Little Annie (Dam)		Jeff
		Pat	
	Bessie		Unknown
			Unknown
		Unknown	
			Unknown

Chief was dark brown with no white markings. He stood 15 hands and weighed about 1100 pounds and had a good disposition.

**Oklahoma Star P-6**

		Bend or (TB)
	Golden Garter	Sanda (TB)
	Lobos (TB)	Cheviot (TB)
	Temblor (TB)	Vibrate (TB)
Dennis Reed (TB) (Sire)		Pardee (TB)
	Protenial (TB)	Clara (TB)
	Bess Chitman (TB)	Euchre (TB)
	Chickweed (TB)	Chickwick (TB)
Oklahoma Star (1915-1942)		
		Missouri Mike
	Missouri Rondo	Unknown
	Gulliver	
		Unknown
	Cutthroat (Dam)	
		Barney Owens
	Dan Tucker	Lady Bug
	Belle K	Unknown
	Sleepy Kate	Unknown

Oklahoma Star was a mahogany bay with a star and a left hind sock. He stood 14.3 hands and weighed about 1150 pounds. He looked more like a Thoroughbred than a Quarter Horse. His best distance was an eighth of a mile and was extremely intelligent. He sired several important sons who went on to have

large influence on the Quarter Horse breed. His son Oklahoma Star Jr. sired Pat Star Jr., a brood mare sire and sire of AQHA champions. Other offspring include Nowata Star, Star Deck, Osage Star, and Starway. Many of his line have become famous in the rodeo arena. Oklahoma Star was inducted into the AQHA Hall of Fame in 1992.

**Columbus P-7**

		Lock's Rondo
	Lone Man	Fleetfoot
	Aquinaldo	Bell Punch
	Dotty Dimple	Unknown
Ben Bolt (Sire)		Gallantry (TB)
	Doc Oldham	Lizzie
	Lizzie II	Unknown
	Huntsinger Mare	Unknown
Columbus (1922-1942)		
		Unknown
	Little Billy	Unknown
	Dan	
		Unknown
	Old Billy mare (Dam)	
		Tenny (TB)
	Panmure (TB)	Queer Girl (TB)
	Miss Clark	
		Unknown

Columbus was a bay stallion that was known for producing superior cow horses for Texas ranchers. He was used on crosses with his half-sisters. He sired 21 mares and 1 stallion. Very little is known about this stallion and no published photos of this stallion have ever surfaced.

**Colonel P-8**

		Peter McCue
		Harmon Baker
	Old Joe	Nona P
		Jim Ned
		Anson mare
		Unknown
Little Joe Springer (Sire)		
		Maximalian (TB)
		Ute Chief (TB)
		Angela (TB)
	Old English	UhlaniII (TB)
		Brown mare
		LadyWentworth
Colonel (1925-1947)		
		Peter McCue
		Harmon Baker
	Old Joe	Nona P
		Jim Ned
		Anson mare
		Unknown
Mare (Dam)		
		Unknown
	Springer mare	Unknown

There is minimal information available about this stallion. Colonel was a sorrel stallion with a large star and two hind stockings. He was registered in the NQHBA with the number 215. He was used to breed to polo ponies. This is the reason he produced so few stallions. His get were gelded and used as polo ponies.



**Old Red Buck P-9**

	Berry's Cold Deck
	Tubal Cain
	Lucy Maxwell
Idle Jack	Young Cold Deck
	Lady Blake
	Grey Meg
Red Man (Sire)	Berry's Cold Deck
	Big Danger
	Lucy Maxwell
Belle Star	Unknown
	Bess
	Unknown
Old Red Buck (1924-1945)	Cold Deck
	Printer II
	Mare
Jeff	Unknown
	Campbell Quarter Mare
	Unkown
Pet Dawson (Dam)	Missouri Mike
	Little Earl
	Brimmer Mare
Old Babe	Unknown

John Dawson, who specialized in the "Blake" line of Quarter horses, bred old Red Buck. The Blake horses were a combination of Steel Dust, Shiloh, and Brimmer bloodlines. There is not much information about Old Red Buck. There is no known weight or height on this stallion. Pictures show him as having a blaze and a possible hind sock. Many of his daughters were bred to Oklahoma Star P-6, resulting in famous offspring. His get were used on the racetracks.

**Old Jim P-10**

	Unknown
	Traveler
	Unknown
Texas Chief	Unknown
	Unknown
	Hallettsville Mare
	Unknown
Little Texas Chief (Sire)	
	Unknown
	Clegg Mare
	Unkown
Old Jim (1922-1950)	
	Old Billy
	Pancho
	Paisana
	Jim Ned
	Traveler
	Gardner mare
	Unknown
Little Sister (Dam)	Unknown
	Unknown
	Red Rover (TB)
	Unknown
Old Bonnie (TB)	
	Unknown

Old Jim went by the name as the Conger Horse. There is one physical description given for Old Jim. They say he was a handsome, well-proportioned horse and was an excellent roping horse. He had a total of 112 foals: 15 stallions, 96 mares, and 1 unknown sex.

**Sheik P-11**

		Cold Deck
	Barney Owens	Nettie Overton
	Dan Tucker	Jack Traveler
		Lady Bug (Butt Cutt)
		June Bug
Peter McCue (Sire)		Vandal (TB)
	Voltigeur (TB)	Duet (TB)
	Nora M (TB)	Star Davis (TB)
		Kitty Clyde (TB)
		Margravine (TB)
Sheik (1918-1943)		Missouri Rondo
	Black Ball	Nan
	Old Fred	John Crowder
	Palomino Mare	Unknown
Pet (Dam)		Leadville (TB)
	Primero (TB)	Marie D (TB)
	Primera	
		Unknown

Sheik, today, is considered to be a dark palomino or a light chestnut with a flaxen mane and tail. He was also registered with the Palomino Horse Breeders

Association. But AQHA records have him listed as being a grullo. Sheik's most important offspring was Nick, who was out of Sylvia by Bob H. Nick sired Nick Shoemaker who in turn sired Skipper W (Hank Weiscamp's famous stallion). Most Weiscamp horses trace several times to Sheik P-11. He had a total of 110 foals: 39 stallions, 68 mares and 3 geldings.

**Cowboy P-12**

Whalebone

Lock's Rondo

Mittie Stephens

Little Rondo

Project (TB)

Minnie Franks

Franks mare

Yellow Jacket (Sire)

Whalebone

Lock's Rondo

Mittie Stephens

Barbee Dun

Joe Lee

Mary Lee

Nellie

Cowboy (1927-1945)

Peter McCue

John Wilkens

Katie Wawekus (TB)

Stalks

Blue

Cora

Unknown

Roan Lady (Dam)

Peter McCue

John Wilkens

Katie Wawekus (TB)

Bonnie Wilkens

Unknown

Jarene

Unknown

Many believe that Cowboy was one of the better Quarter Horses. This opinion is maintained when he is discussed as a sire, running horse, or a horse of use. Cowboy went on to sire many good horses and was known for his excellent cattle skills and extreme speed. He was also known for his good disposition, which was passed on to his get. Cowboy was a dark chestnut with a small strip and snip on his face. He stood 15.2 hands and weighed around 1200 pounds. His most famous offspring would probably be Shue Fly and Hard Twist. Hard Twist was the 1946 and 1951 Champion Quarter Running Stallion. Shue Fly was the 1941, 1942, and 1943 World Champion Quarter Running Horse.



**Waggoner's Rainy Day P-13**

	Gold Enamel (TB)
	Lone Star
	Quarter mare
Rainy Day	Old Tom
	Mare
	Unknown
Ben Hur (Sire)	Little Rondo
	Yellow Jacket
	Barbee Dun
Nettie Jacket	Sykes Rondo
	Nettie Harrision
	May Mangum
Waggoner's Rainy Day (1925-1950)	
	Duderstadt Horse
	Ace of Hearts
	Queen
Little Ace	Unknown
	Copeland Mare
	Unknown
Mare (Dam)	
Unknown	

Waggoner's Rainy Day was a dun with one hind sock. He stood 14.2 hands and weighed about 1200 pounds. Waggoner's Rainy Day's offspring seemed to excel on the racetrack and as Halter horses. Not much is known about this stallion.

**Old Red Bird P-14**

	Barney Owens
	Dan Tucker
Peter McCue	Lady Bug (Butt Cutt)
	Voltigeur (TB)
	Nora M (TB)
Buck Thomas (Sire)	Kitty Clyde (TB)
	Black Ball
	Old Fred
	Palomino mare
Stockings	Primero (TB)
	Mare
Old Red Bird (1924-1945)	Unknown
	Barney Owens
	Dan Tucker
	Lady Bug (Butt Cutt)
Peter McCue	Voltigeur (TB)
	Nora M (TB)
Lady McCue (Dam)	Kitty Clyde (TB)
	Wild Cat
	Pony
Roberts mare	Old Fred Mare
	Unknown

There is not much known about the stallion Old Red Bird. He was inbred, both his sire and dam were by Peter McCue. He also had 2 crosses to Old Fred.

**Brown Possum P-15**

	Unknown
	Traveler
	Unknown
Possum (King) (Sire)	McCoy Billy
	Sykes Rondo
	Grasshopper
Jenny	Anthony
	May Mangum
	Belle Nelle
Brown Possum (1925-1945)	
	Unknown
Pete Daniels mare (Dam)	
	Unknown

Brown Possum has sired the least number of foals from the first 19 stallions in the Quarter Horse registry. There are 15 foals: 4 stallions and 11 mares. There is no information available about Brown Possum. He was the only brown horse among the first 19 foundation sires, with possibly having right hind sock and a right fore stocking. His get was largely used as ranch horses and performance horses in rodeos. His breeding is totally unknown on his dam's side. His paternal grandsire was Traveler, but 75% of his breeding is unknown.

**Whiskaway P-16**

		Barney Owens
		Dan Tucker
		Lady Bug (Butt Cutt)
	Peter McCue	Voltigeur (TB)
		Nora M (TB)
		Kitty Clyde (TB)
	A. D. Reed (Sire)	Tom Campbell
		Ned Hanger
		School Girl
	Good Enough	Unknown
		Lizzie
		Unknown
Whiskaway (1924-1946)		Old Bob Peters
		Tom Campbell
		Old Bob Peters mare
	Speedy Bull	Unknown
		Stockings
		Unknown
	Snip (Dam)	Old Bob Peters
		Tom Campbell
		Old Bob Peters mare
	Old Haze	Unknown

Whiskaway had three crosses to Tom Campbell, which means theoretically he received 31.3% of his genetic inheritance from Tom Campbell. Tom Campbell was line bred to Old Bob Peters, which meant he theoretically received 23.4% of his genes from Old Bob Peters. Whiskaway stood 14.2 hands and weighed about 1200 pounds with a white marking on his face. Most of his get were used for ranch work.

**Little Richard P-17**

		Dan Tucker
		Peter McCue
		Nora M (TB)
	Hickory Bill	The Hero (TB)
		Lucretia M
		Bird
	Old Sorrel (Sire)	
		Unknown
	Dr. Rose Mare	Unknown
Little Richard (1922-1950)		
		Unknown
	Lucky Mose Mare (Dam)	
		Unknown

The King Ranch bred little Richard and was the first additional stallion kept by the King Ranch and used in their breeding program. His most famous offspring was Peppy P-212. Peppy was a famous show horse in the early days of the AQHA.



**Yellow Boy P-18**

		Whalebone
	Lock's Rondo	Mittie Stephens
Little Rondo		Project (TB)
	Minnie Franks	Franks mare
Yellow Jacket (Sire)		Whalebone
	Lock's Rondo	Mittie Stephens
Bardee Dun		Joe Lee
	Mary Lee	Nellie
Yellow Boy (1927-1950)		Dan Tucker
	Peter McCue	Nora M (TB)
John Wilkens		Wawekus (TB)
	Katie Wawekus (TB)	
		Lucy Hitt (TB)
Bonnie Wilkens (Dam)		Unknown
Jarene		Unknown

Yellow Boy has been described as being a dun with a red mane and tail (red dun). Pictures show him with a blaze on his face and a small right hind sock.

Yellow Boy was a 3/4 sibling to Cowboy P-12. His offspring were used on the racetracks.

**Tomate Laureles P-19**

	Dan Tucker
	Peter McCue
	Nora M (TB)
Hickory Bill	The Hero (TB)
	Lucretia M
	Bird
Old Sorrel (Sire)	Unknown
Dr. Rose mare	Unknown
Tomate Laureles (1927-1961)	
	Traveler
	Little Joe
	Jenny
Tom Thumb	Cherokee
	Wright mare
	Unknown
Dock Lawrence mare (Dam)	Peter McCue
	Hickory Bill
	Lucretia M
Mare	Unknown

Tomate Laureles was the last stallion chosen for the first 19, since number twenty had been given to the first president of the AQHA, Bill Warren, for one of his stallions. Tomate was owned by the King Ranch for his entire life and was used in their breeding program. The ranch retained 51 of his daughters to be used in their program, but none of his sons were used. Pictures show Tomate Laureles as having a stripe, a small hind leg marking.

**Appendix 1D. Influential quarter horses that contributed to the specialization within the breed**

Times have changed as well as the performance roles for the Modern Quarter Horse has changed. Now, there is specialization within the breed. The Quarter Horse has evolved from an “all around athlete” to one of specialization. As a result of this differentiation, certain bloodlines have had greater influences on the evolution of the Modern Quarter Horse. This section describes horses that I believe made substantial impact on the Quarter Horse breed. Unlike the first nineteen Quarter horses, this section describes some of the influential mares because early breeders considered that the stallion’s record was more important.

**Peppy**

	Hickory Bill
	Old Sorrel
	Dr. Rose mare
Little Richard (Sire)	Lucky Mose(TB)
	Lucky Mose mare
	Unknown
Peppy (1934-1964)	Old Sorrel
	Cardinal
	Piocha
China (Dam)	Unknown
	Brillante
	Unknown

Peppy was bred and shown by the King Ranch. Peppy stood about 15 hands and weighed about 1200 pounds. He could run 440 yards in twenty-two seconds and was a good cow horse. He was known for his great disposition. Most of Peppy's fillies had a talent for cow work, so they were used as broodmares. He did have some really talented sons, as well.

**Joe Reed II**

		Faustus(TB)
	Bonnie Joe	Bonnie Rose(TB)
	Joe Blair(TB)	Bowling Green(TB)
	Miss Blair	Com-I-Cut(TB)
Joe Reed P-3 (Sire)		Crazy Cue
	Old D.J.(Dedier)	Meon/Mignon
	Della Moore	Shamrock
	Belle	Dilly
Joe Reed II (1936-1962)		
	High Time	
	Fleeting Time(TB)	
	British Fleet	
Nellene (Dam)		
	Brown Billy	
	Little Red Nell	
	Red Nell	

In 1943, Joe Reed II won his first race by half a length, with the official time being 23.03 seconds. He won his second race against Chicaro, Domino, Arizona Girl, Red Racer, and Pay Dirt. He did a quarter mile in 22.08 seconds. For his third and final race, Joe Reed II went up against the World Champion Clabber. He won the race by half a head.

Joe Reed II was shown in many halter classes. He won the heavy weight stallion class twice and in 1944 he was named Grand Champion Cow Horse. Joe had his greatest success as a stallion. Some of his great foals are Leo, Bill Reed, Little Sister W, Bull's Eye, and Whisper W. Joe Reed II was bred to Little Fanny in 1940 and they produced the great sorrel stallion named Leo.

**Leo**

		Bonnie Joe(TB)
	Joe Blair(TB)	Miss Blair(TB)
	Joe Reed P-3	Old D.J.
	Della Moore	Belle
Joe Reed II (Sire)		
	Nellene	Fleeting Time(TB)
		Little Red Nell
Leo (1940-1967)		
	Joe Blair(TB)	Bonnie Joe(TB)
	Joe Reed P-3	Miss Blair(TB)
	Della Moore	Old D.J.
Little Fanny (Dam)		Belle
	Fanny Ashwell	Ashwell(TB)
		Fannie Richardson

Leo started winning every race he ran, from 220-300 yards. Leo was recognized as an AA rated running horse. At this time, there was no AAA rating for running horses. During the 1940's, there was a "steady stream" of good running horses coming out of Louisiana. Flying Bob and Doc Horn sired these running horses. Leo's first loss was to a little bay mare named Punkin. Punkin was out of Flying Bob. His second loss was to another little mare, Lady, out of Doc



Horn. Lady stood 14.3 hands and weighed 1100 pounds. Leo stood at 14.2 hands and weighed 1100 pounds. He was a stout, good backed horse. Lady had beat Leo soundly. These two would meet again, but this time, Leo would be the victor. These matches showed that Leo was not invincible and these defeats improved the stallion's earning capacity.

There is no other stallion in the breed that is as widely respected for producing good broodmares. Leo's speed and quality spoke for itself. Leo was running by the time he was 18 months old. His first race was at Eagle Pass, Texas at a distance of 220 yards. There were eight other colts and Leo covered the distance in 12.7 seconds. Leo started breeding mares in 1943. By 1946, Leo's colts had started arriving at the racetracks.

Within a decade, Leo's offspring excelled in racing and in breeding. Some of the mares, that came to be bred by Leo, were famous in their own right. He also helped to put other mares on the breeding map. These mares and their offspring produced halter, performance, and running horses. Leo's daughter Flit produced the first World Champion Cutting Horse Stallion, King's Pistol.

Leo helped to add speed to other stock horse bloodlines. The mare 89er, sired by King's Pistol, produced eleven Register of Merit (ROM) racing offspring with seven being by Leo. The mare Betty Warren, also out of King's Pistol, had four ROM foals by Leo. Some of the great mares that were bred by Leo had incredible production records. Yeager's Lady JA produced three of her five AAA rated offspring by Leo. Swamp Angel by Grano de Oro had four ROMs by Leo.

O'Quinn's Midget produced champions by nearly every major Quarter Horse stallion, had 2 AAA rated mares by Leo. One, Leo's Midget, went on to produce one of the hottest two year olds of 1962. Miss Bar Leo ran at Denver and set a world record time.

Horses that had lineage to Leo made the Quarter Horse world look twice because they were consistently producing World Champion title winners. Miss Meyers, by Leo, was the World Champion Running Mare. Palleo Pete, also by Leo, won the World Champion title for Quarter Horse running stallions. Dari Star and Dari Man, both from Leo mares, won the Racing World Championship for geldings. Another mare by Leo produced Vanetta Dee, Vanna Bar, and Vandy's Flash, all of which are World Champions.

Quarter Horse mares with ordinary pedigrees consistently produced both running horses and incredible brood mares. From 1949 to 1966, Leo was the leader among maternal grandsires of ROM qualifiers in the area of racing. No less than 122 of his daughters produced ROM qualifiers and those daughters produced 257 ROM qualifiers. He was also the second leading sire in ROM racing qualifiers. Two hundred and three of Leo's get were ROM qualifiers and about 78 were AAA rated. Leo is second among maternal grandsires of AQHA Champions. He had 23 through 1966. Only King P-234, with 35, ranked higher. He is also fourth among sires of AQHA Champions and was tied for third among the leading sires of 1966 ROM performance qualifiers. Leo stands out today as one of the foremost sires in several categories. Leo was the leading maternal grandsire of Register of Merit

qualifiers, from 1945 through 1965. He was ranked second to Three Bars as a leading sire of ROM qualifiers from that same period.

Leo colts were running at the racetracks and were being used for roping in top rodeo competitions, in cutting, and in all other phases of Quarter Horse performance competitions. Leo left a “huge mark” on the quality of horses in the Quarter Horse World. He has firmly established himself as one of the greatest foundation sires in the history of the breed. His blood continues to “fuse and blend” together producing power, speed, courage, and beauty to the modern day Quarter Horse.

**Doc Bar**

	Percentage
	Three Bars (TB)
	Myrtle Dee
Lightning Bar (Sire)	
	Doc Horn
Della P	
	Old D.J. mare
Doc Bar (1956-1992)	
	My Texas Dandy
Texas Dandy	
	Steak
Dandy Doll (Dam)	
	Bartender II
Bar Maid F.	
	Nelly Bly

Doc Bar will forever be remembered as the horse that revolutionized the cutting horse industry, even though he was not bred to be a cow horse. He stood at 14.3 hands and weighed around 1000 pounds. He did not look like a stretchy, streamlined running horse. Doc Bar turned out to be a great Halter horse and an extraordinary sire. His get transformed the sport of cutting with their ability and style and excelled in the events of Working cow horse, Reining, and Western Pleasure.

In 1983, 21 of the 23 horses at the National Cutting Horse Futurity had Doc Bar blood. He sired 485 foals. These foals earned 2092 Halter points and some 4569.5 Performance points. Doc Bar really revolutionized the Cutting world in terms of appearance and actions. His colts were “better looking” than he was. They had “keener” heads and “better” necks than the old style types that preceded Doc Bar.

Many of Doc Bar’s offspring were of similar size or even smaller but a horse does not need size for quickness or athletic ability in the cow pen. Doc Bar’s get are loaded with swiftness, agility, and style. They also have class, “cowiness”, and charisma. Some have more agility than others and some are a little higher strung than others. Doc Bar is credited with bringing a totally different look to the cutting industry. He put the sweeping motion into the Cutting horses of today. Doc Bar loved to cut and toy with the cow, similar to a cat toying with a mouse. His get enjoy the challenge of going head to head with a wily cow. Doc Bar breeding is not just for the Cutting arena, if anyone wants a classy, intelligent, and talented athlete, get a Doc Bar.

**King P-234**

		Traveler
	Little Joe	Jenny
Zantanon (Sire)		Billy
	Jeanette	Sykes Rondo mare
King (1932-1958)		
		Yellow Jacket
	Strait Horse	Gardner Mare
Jabalina (Dam)		Traveler
	Bay mare	Unknown

King was a blood bay with black mane and tail and black legs, foaled in 1932. Fully mature, King stood between 14.2-15 hands and weighed between 1150-1200 pounds. King was known for his “great heart” and “cow sense”. King was quick to learn and was a good natured for a stud. He possessed cow sense and was quick “out of the box” and quick to get the calf. King quickly took to roping, but was also used for breeding. Even though King “threw” speed, he was best known for the tremendous performance ability and cow sense in his offspring. King’s breeding grew in the cutting horse, working cow horse, and reining events. Several of his best sons were Poco Bueno, Royal King, King’s Pistol, and Continental King. Another of his sons, Power Command, sired King Fritz, who established his own fame in the reining and working cow horse events. Few records were kept regarding the breeding of these mares. Early breeders did not

keep records because some did not know that in time, Quarter Horses would be registered.

**Poco Bueno (Way No)**

	Little Joe
	Zantanon
	Jeanette
King P-234 (Sire)	
	Strait Horse
	Jabalina
	Bay mare
Poco Bueno (1944-1969)	
	Little Joe
	Poco Bueno (unregistered)
	Virginia D
Miss Taylor (Dam)	
	Hickory Bill
	Hickory Bill mare
	Unknown

King P-234 sired Poco Bueno. This is the most famous father-son team in the history of the AQHA. On the AQHA's leading sire list in the 1950's, they were listed first and second. There was no physical resemblance between these two great stallions. King P-234 was a blood bay and Poco Bueno a sorrel. Even though the two did not physically "look alike", they both had great athletic ability.

Poco Bueno excelled in the cutting arena. He would become a blur of lightening speed. He could cut a rank calf from the herd and make it look easy. Poco Bueno had his father's gentle disposition. He had the ability to work cattle with the best of them and he would then beat them in the Halter arena. Poco Bueno stood Grand Champion Stallion many times over.

Poco Bueno started his performance career as a cutting horse when he was four years old. His amazing ability allowed him to climb up in the ranks of the top Cutting Horses. Poco Bueno had the ability to pass on his gentle nature and



intelligence to his get. Poco Bueno's popularity did decline for a short time because he was the old fashioned type of Quarter Horse. During this decline, the Thoroughbred type became popular. These horses were taller and leaner than Poco Bueno. This popularity decline was only for a limited time. Horsemen started looking for a working type of horse. Cow sense was the most sought after trait. Poco Bueno's popularity soared and his blood is still sought after. He sired many excellent offspring. The two that have excelled above all the rest is a filly named Poco Lena and a colt named Poco Tivio.

**Poco Tivio**

	Zantanon
	King
	Jabalina
Poco Bueno (Sire)	Poco Bueno (unregistered)
	Miss Taylor
	Hickory Bill mare
Poco Tivio (1947-1976)	Dodger
	Pretty Boy
	Little Maud
Sheilwin (Dam)	Blackburn
	Blackburn mare
	Waggoner mare

Poco Tivio was successful in the Halter and Cutting arenas. He also went on to become an outstanding maternal sire. When his daughters were crossed with Doc Bar blood, the result was exceptional. Like so many of Poco Bueno's offspring, Poco Tivio's get predominately bay.

Poco Tivio's dam foaled Pretty Pokey and he excelled in roping, reining, and working cow horse. When you examine Poco Tivio's siblings, it proves that he was bred to be an outstanding athlete and sire.

Poco Tivio was very well mannered, extremely athletic, and more muscled than today's Quarter Horse. He went on to become one of the best athletes when it came to holding some of the rankest cows. Poco Tivio wanted the challenge of a rank cow. He did not perform as well if he drew a cow that was a little soft. He "looked" for a cow that would make him work, but he never became too aggressive to the cow.

**Poco Lena**

	Zantanon
	King
	Jabalina
Poco Bueno (Sire)	Poco Bueno (unregistered)
	Miss Taylor
	Hickory Bill mare
Poco Lena (1949-1968)	
	Dodger
	Pretty Boy
	Little Maud
Sheilwin (Dam)	
	Blackburn
	Blackburn mare
	Waggoner mare

Poco Lena was out of an unproven mare. She had a tiny star on her forehead and a little bit of white on her left hind foot, stood fifteen and one hands and weighed twelve hundred and fifty pounds. When she matured, she went on to become a dominant force in the Cutting arena. Poco Lena had her sire's winning conformation. She was a dark bay with a beautiful head, good strong shoulders with sturdy legs, powerful hindquarters, and a deep heart girth. She also excelled in the Halter arena.

Poco Lena was impatient and would paw the ground when she was tied up and forced to wait. She did mature physically and mentally quite quickly. She was like a mischievous child. She definitely inherited her sire's cow sense, but added her own ingredient. As her experience increased from show to show, Poco Lena became tenacious at holding a cow. When she went to turn, she would drop her front end straight down six to eight inches and glide away while never turning standing up.

Her full brother was Poco Tivio. There was only one kind of cow that he liked to work, “rank”. He could not come close to working a cow like Poco Lena. She was the most outstanding offspring of Poco Bueno. Poco Lena would run her “heart out”. She liked to go fast and slow was not in her vocabulary. In her days of cutting, there was only one turn back rider so the horse really had to work. She was a very confident cutting mare. Every rider that ever climbed on her back gained confidence from the mare. Out of all the Cutting competitions she participated in, she only lost one cow.

Poco Lena had a natural ability of controlling a cow. She would enter the arena eagerly and ready. When she went after a cow, Poco Lena would go “eye to eye” with the cow. When she began to work the cow, the only way a cow could get back to the herd was to weaken and give in. She was too much for the livestock. She always liked to run. She would run two to three laps around the arena, then she would stop, give a puff, and walk off. This was her way of letting her rider know that she was ready to work.

There are no arguments when Poco Lena is called one of the best Quarter Horse mares in competition. She gave her all every time she entered the arena. Poco Lena had the ability to go to the head of a cow. When the cow turns, she gets her belly to the ground with her ears pinned flat back and stares down the cow eye to eye. The wilder the cow, the better she worked. She challenged them, anticipating their every move, and blocking their every turn. She became a predator in search of prey.

Her first foal was Doc O Lena and her last foal, Dry Doc, took the Cutting Horse World by storm. Doc O Lena sired Smart Little Lena, Tap O Lena, Lenas Dynamite, and Scarlett O Lena. Together they have earned more than thirteen billion dollars in the Cutting arena. Dry Doc sired Dry Clean, Dry Oil, Dry Dot, and Dry Doc's Dottie. Collectively, they have earned more than four million dollars in the Cutting arena.

**Peter McCue**

		Cold Deck
	Barney Owens	Nettie Overton
	Dan Tucker (Sire)	Jack Traveler
	Lady Bug (Butt Cutt)	June Bug
Peter McCue (1895-1923)		
		Vandal
	Voltigeur	Duet
	Nora M (TB) (Dam)	Star Davis
	Kitty Clyde	Unknown

Peter McCue was born February 23, 1895. His sire was Dan Tucker and his dam was Nora M. He was a dark bay with no white markings. He had a good head with prominent jaws. His back was on the long side, and his hip was a bit short. He had no conformational faults. As a two year old, he weighed 1400 pounds and stood at 16 hands. Despite his size, he was the fastest horse ever to run on a short track. No one expected him to have such great short bursts of speed.

Peter McCue went on to become a prolific sire of the modern day Quarter Horse. He was crossed with some of the quick, tough little mustangs of the southwest. This began a new genetic stage for the Quarter Horse. Due to word of mouth, Peter's progeny began to spread across cow country. Over the years, Peter McCue's sons John Wilkins, Harmon Baker, Badger, A. D. Reed, Jack McCue,

Chief, Buck Thomas, Sheik, and Hickory Bill began to be talked about. All of his progeny went on to establish families that are equally good, e.g., Old Sorrel, Wimpy P1, Peppy, Bert, Joe Hancock, Ding Bob, Midnight, Midnight Jr., Grey Badger II, Pretty Boy, Pretty Buck, Blackburn, Navata Star, Poco Bueno, King Fritz, Cowboy P-12, Plaudit, Nick S, Skipper W, Jessie James, King's Pistol, and more.

His offspring produced both running and arena champions. His sons and daughters were the complete Stock Horse. Peter McCue had the ability to pass on his speed, his strength, and his capacity to reproduce quality in both his sons and daughters.

**Old Sorrel**

		Dan Tucker
	Peter McCue	Nora M (TB)
Hickory Bill (Sire)		The Hero
	Lucretia M (TB)	Bird
Old Sorrel (1915-1945)		
	Unknown	
	Dr. Rose mare (Dam)	
	Unknown	

Old Sorrel's sire is Hickory Bill and one of the greatest sons from Peter McCue. His dam was a Dr. Rose mare. Not much is known about her lineage except for the fact that she came from Kentucky. He is considered to be the foundation sire of the entire King Ranch breeding program of Quarter Horses. It has been said that they would rope off him and ride him all morning, then race him in the afternoon. All the ranch hands wanted to ride him because he was a cowboy's kind of horse. For these early ranch hands, it was vital to have a good cow horse with quality, disposition, and stamina.

Old Sorrel had exceptional beauty, disposition, conformation, and smoothness in action, speed, and incredible handling qualities. His first few colts confirmed his superiority. Old Sorrel was bred to fifty of the best handling and



performing mares on the entire ranch. These mares were mainly Thoroughbred or part Thoroughbred. The results were better than expected. This was the beginning of their controversial inbreeding program. The King Ranch's aim was the concentration and preservation of Old Sorrel's blood. They decided to produce less intense line breeding by breeding Old Sorrel's daughters to his sons. They also bred the sons and daughters of other sons. This immediately produced foals that were good performers but also maintained the type and qualities of Old Sorrel.

The King Ranch was fully aware that this type of breeding program (line breeding) would not work for all the stallions. The sire had to have an exceptional balance of genetic qualities that would stand the test of close inbreeding without producing poorer offspring. When Solis, one of Old Sorrel's first sons, was mated to Old Sorrel's daughters, the result was so great that the breeding managers decided to try to perpetuate Old Sorrel through line breeding and inbreeding. King Ranch is still using this program today. Some of the exceptional offspring produced in the first generation by Old Sorrel are Solis, Cardinal, Little Richard, Macanudo, Babe Grande, and Hired Hand. In the second generation, Peppy and Wimpy P-1 were produced. When Wimpy was bred to daughters of Old Sorrel, they got foals such as, Wimpy II, Lauro, Bill Cody, and Silver Wimpy. Wimpy II is known for being a leading sire and leading maternal grandsire of AQHA Champions.

One of Old Sorrel's exceptional offspring was Cardinal, known for his handling abilities. Little Richard was not as even tempered as his brother, which

resulted in attempts made to combine their attributes by mating each of them with daughters of each other. It did pay off with the foaling of Peppy. Peppy's sire was Little Richard and his dam was a daughter of Cardinal. Peppy is known for siring some of the finest horses that ever produced on the King Ranch. He sired many working horses, including ROM qualifiers. While his daughters added AQHA Champions and Racing ROM foals as well as arena ROM performers to this incredible family.

Some of the top horses like, Rey Del Rancho had five crosses to Old Sorrel in the first four generations. He was appreciated for his early speed and intelligent foals. The foals were smaller in size but were well balanced. Another of Old Sorrel's top offspring was Tomate Laureles, given the foundation number of 19. He was known for his siring abilities. He produced individuals that were extremely intelligent and had plenty of size. Hired Hand stood at 15 hands and was well balanced. He had incredible muscling in his forearms and hindquarters. He also had good straight legs with a great disposition. He was even tempered and could do anything that he was asked to do. Hired Hand and his foals were so exceptional that they were added into the ranch's entire breeding program and built it up around them. These foals and their descendants were crossed among themselves. It was done in such a way that it concentrated the blood of Hired Hand, perpetuating his type and abilities. His offspring excel in cutting, reining, and halter. Pep Up is also strong in the blood of Old Sorrel. He has sired many capable foals. His

daughters have primary fame as broodmares. The Blood of Old Sorrel lives on in every new generation. Within every new generation, new talents are found.

**Three Bars**

	Ballot
	Midway
	Thirty-Third
Percentage (Sire)	
	Bulse
	Gossip Avenue
	Rosewood
Three Bars (TB) 1940-1968	
	Ultimus
	Luke McLuke
	Unknown
Myrtle Dee (Dam)	
	Patriot
	Civil Maid
	Civil Rule

Three Bars has left his mark in racing, halter, cutting, and other performance events. In racing, some of his offspring that have gone on to win are Mr. Bar None, Goldseeker Bars, Rocket Bar, Three Chicks, The Ole Man, Pokey Bar, Josie's Bar, Mr. Bruce, Sugar Bars, Kid Meyers, St. Bar, Lightning Bar, Barred, Bob's Folly, Galobar, Breeze Bar, and Little Lena's Bar.

In halter, there was Impressive who is by Lucky Bar (TB), by Three Bars and out of a Three Bar's granddaughter. Before Impressive, there was Steel Bars, who went on to sire many fine halter horses, including Aledo Bar, the 1959 AQHA high point halter stallion.

In cutting, Doc Bar became a revolutionary for the industry. Doc Bar was a grandson of Three Bars, and his record as a sire of cutters has never been equaled.

In reining, roping, and other arena events, many of Three Bars get and grand-get excelled as sires and producers. Sugar Bars sired thirty AQHA champions. Another son, Parr Three earned a Superior at halter and then went on to sire Zan Parr Bar.

**Top Deck**

		Pennant
		Equipoise
		Swinging
	Equestrian (Sire)	
		Man O'War
		Frilette
		Frillery
Top Deck (TB)		
1945-1965		
		Chicle
		Chicaro
		Wendy
	River Boat (Dam)	
		Sir Gallahad III
		Last Boat
		Taps

Top Deck was a Thoroughbred that had tremendous impact on the Quarter Horse breed. Due to an injury, Top Deck's only future was as a stallion. Some say that by forcing Top Deck into breeding at such a young age, it thrust him into the Quarter Horse world. As a two-year old, Top Deck was bred to five mares. One was a compact type race mare named Skippy F. She had a Thoroughbred sire and an unknown dam. Records were rarely kept on the mare in this time period. Many felt that the stallion was more important than the mare. Skippy F.'s first colt was foaled July 22, 1948 and was named Star Deck F. This filly was destined to win the first Texas Futurity at Del Rio, Texas, in 1950. Skippy's second home was Lane's place. The union between Top Deck and Skippy created Skippy's Baby,

Music Lover, Clear Deck, Mr. Kip, Janon, and Skip Deck. All developed into AAA racehorses.

Top Deck had produced such AAA progeny as Star Deck F., Magnolia Skipper, Amber Star, Mackay Boy, Moon Deck, Mackay Jimmie, Ridge Butler, and Miss Mackay, along with an impressive list of AA horses. Top Deck also sired outstanding colts from other great mares, such as Witness Eagle Top from an exceptional mare named Eagle Call.

By 1967, Top Deck and his family, along with Three Bars and his descendents, dominated both the records and the prices paid for running Quarter Horses in the country. Of the 77 running Quarter Horses entered in Ruidoso in 1967, no less than 36 had some Top Deck blood.

In 1966, Top Deck was at the top of the Quarter Horse breed's list of leading sires of race winners. His get led the 1966 totals in number of wins, number of winners, and starts. 54 Top Deck get were winners and they won 133. Three Bars was second that year with 121 wins and 47 winners. Go Man go by Top Deck was third with ninety-nine wins by thirty-six winners.

Many of Top Deck's other sons showed promise in continuing his line and the market for his lineage. Sons like Go Man Go, Moon Deck, Top Bracket, Top Flight, Mr. Mackay, and many more assured his future as the kind of sprinter, with Thoroughbred blood, that was here to stay. Top Deck had tremendous impact on the Quarter Horse industry. He could sire speed and his get would dominant on the racetrack and arena in speed events

**Go Man Go**

	Equipoise
	Equestrian
	Frilette
Top Deck (TB) (Sire)	
	Chicaro
	River Boat
	Last Boat
Go Man Go (1953-1983)	
	Wise Counsler
	Very Wise (TB)
	Omona
Lightfoot Sis (Dam)	
	The Dun Horse
	Clear Track
	Ella

Go Man Go was foaled in 1953 and demonstrated at an early age the ability to run. As a two-year old, he won nine out of ten starts, finishing second the other time. Nine of those starts were run in AAA time. He won ten of thirteen starts in AAA time. In 1955, he became the first two-year old to be named a World Champion in the Quarter Horse breed. In 1956, he received the honor again and he became the first stallion to do this. In 1957, he was named champion once again, this time the title was World's Champion Quarter Running Horse and Champion Stallion. His dam, Lightfoot Sis, ultimately produced five AAA offspring.

In 1957 at Rudoso, New Mexico, Go Man Go captured America's attention and praise. Go Man Go was entered in a 440 yard sprint. A jockey named Robert Strauss, who pushed the four-year-old stallion across the finish line a full horse length ahead of a running horse named Vannevar, was riding him. His official time was a New World record, running four hundred and forty yards in 21.8 seconds.



He became known as “The World’s Fastest Quarter Horse”. The record stood for many years and it immediately focused the Quarter Horse industry’s attention on to Go Man Go’s sire, Top Deck. Everyone wanted to know if he had produced any other top running horses.

Go Man Go was stirring controversy in the American Quarter Horse Association. There were two schools of thought regarding the infusion of Thoroughbred blood into the Quarter Horse. Thought number one was that many stock horse breeders feel that such blood changes the entire character of the breed and makes a mockery of the idea of producing top cow horse types. Thought number two was that other breeders respected the cow horse but saw no reason why Thoroughbred blood could not help the breed. This difference of viewpoints made it difficult for Go Man Go to get a Quarter Horse registration number. Some breeders that opposed a registry number argued that he was seven-eighths Thoroughbred. Go Man Go eventually became #82000 in the AQHA registry.

**Hollywood Dun It**

	King P 234
Easter King	Gocha H
Hollywood Jac 86 (Sire)	Hollywood Gold
	Miss Hollywood
Hollywood Dun It (1983-)	Miss Buggins
	John Berry
Dun Berry	Fish's Streak
Blossom Berry (Dam)	Mr Tres Bar
	Regina Bella
	Tina Regina

In 1986 he was the National Reining Horse Association Futurity open reserve champion. In 1987, he was the NRHA Derby champion and NRHA Super stakes champion. NRHA lifetime earnings of more than \$65,000; total earnings including sire awards or more than \$100,000. In 1997, he was honored at the NRHA Futurity for becoming only the third stallion whose offspring have won a million dollars in reining competitions. He was an NHRA Leading Sire of Reining Money Earners in 1997, 1996, and first in 1995, third in 1994, first in 1993, and fifth in 1992. In 1997, he was a Leading Sire of American Quarter Horse Association Performance Point Earners. The stallion's get have been top

contenders at every major reining event, in almost every division. Some standout statistics are a record 14 finalists in the 1995 NRHA Futurity; twelve each in 1996 and 1997. Hollywood Dun It sired eleven finalists in the 1995 NRHA Congress Straight Arrow Futurity and at least one Congress Futurity champion for each of the past five years. He also sired five NRHA Futurity champions: Dun It With A Twist (1997 open co-reserve); Hes Dun Time (1995 open reserve); Dunit Rawhide (1995 limited open champion); Dunit Like A Cowboy (1993 open co-reserve, and a 1994 AQHA junior reining world champion); Hollywoods Striker (1993 non-pro champion). He was the 1994 through 1997 Leading Sire of NHRA Super stakes winners. He is also a sire of NRHA world champion Dun It Sweetly and Isle Bea Dun It, and reserve world champions Not Dun Smoken and Faithfully Dun. He is also the sire of NRHA Congress Futurity champions Spanish Dun It (1997 non-pro); Billy All Dun (1996 novice non-pro); Country Dun It (1995 open); and Dun Its Easter Bunny (1994 open). He also is the sire of offspring earning three AQHA Superior and 47 Register of Merit Awards winner. He is also the sire of one hundred and eighty eight AQHA point earners, earning more than 1432 performance points. He is not just a sire of reining horses, he is also an excellent sire of roping horses.

**Zippo Pine Bar**

	Three Bars(TB)	Percentage
		Myrtle Dee
Zippo Pat Bars (Sire)		
	Leo Pat	Leo
Zippo Pine Bar (1969-1998)		Dunny Girl
	Poco Pine	Poco Bueno
Dollie Pine (Dam)		Pretty Rosalie
	Hobo Sue	Hobo
		Home Gal

As an individual, he was pretty, personable, willing, and athletic. As a sire, he passed these qualities on with such astonishing regularity that he produced a dynasty of horse with almost universal appeal. To label him as simply as sire of pleasure horses would be selling him short. His offspring have demonstrated a diversity of talents. Zippo Pine Bar has had such a profound impact on the Quarter Horse, Paint, and Appaloosa breeds that his story will not be complete for many generations to come. Zippo's offspring were winning consistently in major competitions. The pleasure industry was emerging as a prestigious, popular, and lucrative segment of the horse show market. Pleasure classes had mass appeal because anyone and everyone could participate. Major futurities were being organized that paid large cash and prizes to the winners.

In 1986, he had already sired almost 600 offspring and his reputation as a superb stallion was firmly established. There was a demand for his offspring because of their characteristics and traits. As the stallion aged, his stud fee was raised to \$10,000 and this did not deter any breeders. As of 1999, for more than ten consecutive years, Zippo Pine Bar had been on top of the AQHA leading Performance Sires list. He's also been the National Snaffle Bit Association's leading sire, as well as, the leading maternal and paternal grandsire of pleasure horses. He was entered into the Hall of Fame in 1992 and was also an inductee into the 2000 Quarter Horse Hall of Fame. During his lifetime, he sired 1646 AQHA foals, 68 Appaloosas, and 72 Paints. Collectively, these horses have already earned over 50,000 show points.

Zippo Pine Bar was able to consistently pass on his athletic ability to his progeny, but many are amazed that he has the ability to pass on his easy-going temperament to all of his get. The Zippos are on the leading sires lists because almost every one can get along with them. Half of all his offspring have made it to the show ring. In two-dozen years of AQHA competition, his get amassed more than 50,000 points, 800 plus ROMs, and 50 world and reserve championships. His Appaloosa and Paint sons and daughters have made their mark as well, with 20 APHA national or world championships, and 48 ApHC national and world championships or year-end titles.

**Zan Parr Bar**

	Percentage
Three Bars (TB)	Myrtle Dee
Par Three (Sire)	Ed Echols
Annie Echols	Orphan Annie
Zan Parr Bar (1974-1987)	Poco Danny
Poco Astro	Solo Mount
Terry's Pal (Dam)	Semotan's Streak
Gold Raider	Dusty Dun

Zan Parr Bar was labeled as the cowboy's horse because he combined impeccable conformation with proven talent in the arena. Zan Parr Bar, a chestnut stallion-gathered world halter titles while simultaneously establishing himself as a top roping horse. His get inherited both his looks and his athletic ability, and built their sire's reputation as a leading sire of performance horses. Under trainer Billy Allen, Zan Parr Bar made his western pleasure debut and earned 19 points. By the end of 1977, he earned his AQHA Superior halter title. He was a nice horse, the kind that fits the industry at any time. He had lots of hip, a nice head, and good eye. This stallion's true athletic talent was in the roping arena. When he was retired to stud after the 1980 World Show, Zan Parr Bar's show record included three world titles, 114 grand championships, 13 reserve grand championships, 245 halter points, 146 heeling points, and 118 heading points, in addition to points in

western pleasure, calf roping, and reining, all earned before he turned seven years old.

He crossed well with any mare and produced winners. His get made as indelible mark on roping events, earning twenty open roping world championships, Zan Parr Bar sired horses who excelled across the board in performance categories, earning honors in events ranging from cutting and working cow horse to reining and western pleasure. Specialization has changed the face of the Quarter Horse industry since Zan Parr Bar's days in the arena and at stud. Today, stallions are often targeted at specific niches, capitalizing on their own successes in one event. Because of this, it's easy for some horsemen to question whether an all around sire of Zan Parr Bar's caliber will be seen again. At the time of his death, he was AQHA's leading sire of performance horses. He left behind 652 foals from 12 crops.

**Fillinic**

	Jake McClure
	G F's Punchinello
	G F's Pieret
Arizona Junie (Sire)	RO horse
	MC's Lone Wolf
	RO mare
Fillinic (1957-1983)	Golden Boss
	Master Boss (TB)
	Baby Eve
Alouette (Dam)	Crowder 1
	Powder
	Patsy Sue 1

Fillinic barely stood 14.3 hands, had a huge hip, was short couped, and perhaps a bit short through the neck. She was badly cut up on her back legs and had a huge cut across her nose right where the bosal would sit. She was hair trigger quick and took a lot of riding. She was a smooth, fluid mare who proved she had what it took to be a winner. She was always a bit wild eyed and high strung. She proved to be an easy breeder and crossed well with a number of stallions, always yielding foals having her unique stamp. Fillinic's offspring were highly energetic, naturally athletic, and wonderful cow horses, hard workers who were willing to learn and all show horses. There are over 200 descendents of this amazing mare that have been major money earners in National Cutting Horse Association, National Reining Horse Association, National Reined Cow Horse Association, and American Quarter Horse Association events. She left her mark on every one of her



ten sons and daughters, and they in turn passed along Fillinic's unique mark to each and every subsequent generation.

**Doc O'Lena**

		Three Bars (TB)
	Lightning Bar	Della P
Doc Bar (Sire)		Texas Dandy
	Dandy Doll	Bar Maid
Doc O'Lena (1967-1993)		King
	Poco Bueno	Miss Taylor
Poco Lena (Dam)		Pretty Boy
	Sheilwin	Blackburn mare

Doc O' Lena was a gift to the Quarter Horse world. He was able to perpetuate a cutting horse's dynasty in one of those inexplicable wonders of genetics. Doc O'Lena had keen intelligence and a nice disposition. He was a smart, cowy horse that had a connection with the cow. In 1970, Doc O'Lena made history and set a record at the NCHA Futurity that has stood from more than 30 years. He won all four go rounds, scoring a 220.5 in the first go, a 218 in the second go, a 219.5 in the semifinals, and a 223 in the finals. Finishing three points ahead of the reserve champion Miss Holly Deer.

By the mid 1970's, Doc O'Lena's first offspring were coming of age, and their talent further fueled the demand for breeding to him. During his lifetime, Doc O'Lena sired 1311 Quarter horses, six Appaloosas, and 12 Paints. His offspring have won more than 14 million dollars in cutting competition, including three NCHA Futurity championships with a record of 36 finalists. He has sired

champions in almost every major cutting event held, both in open and non-pro. His get have also won major titles in reining, working cow horse, and roping competitions.

During his lifetime, he bred all types of mares. His ability to stamp his foals enhanced his reputation as a sire. He was a domination sire. Most of Doc O'Lena's offspring headed to the cutting pen, 30 of his sons and daughters won more than \$300,000 in National Reining Horse Association events. As of September 1999, Doc O'Lena's get had won 14 AQHA world championships, 11 reserve world championships, and three year end high point titles. There are many outstanding sons and daughters of Doc O'Lena that it would be impossible to name them all. More than half of all his get have earned money in competition, be it cutting, roping, reining, or working cow horse. Although he was not known for his beauty, he was the quintessential cow horse, kind, intelligent, fleet, and powerful.

**Diamonds Sparkle**

		Small Town Dude
	Blondy's Dude	Blondy Queen
Mr Diamond Dude (Sire)		
		Dawson's Gary
	Miss Patsy Blake	Dolly Raper
Diamonds Sparkle (1974-)		
		Clabber Bar
	Clabber Question	Foolish Question
Pollyanna Rose (Dam)		Bert Barton
	Irene Vee	
		Smoky's Taffy

At two-years old, she earned 23 points in 1976, the next winter she earned 31 pleasure points her first year under saddle. She had a lot of feel to her with a lot of flex to her body and a nice light nose. She also excelled in reining and roping. Diamonds Sparkle would go on to produce a series of performance winners, competitive horses with the same athleticism displayed by their dam. Through her progeny, Diamonds Sparkle would remain a dominant force on the Quarter Horse show scene for years to come. As of 1999, 11 foals out of Diamonds Sparkle have earned AQHA performance points, racking up a point total of more than 2500, meaning on an average, a Diamonds Sparkle son or daughter who competes in the show ring earns well over 200 points. Greatly exceeding that average were Sparkles Suzana with 952.5 points, Zans Diamond Sun with 347.5 points, and

Spark O Lena with 525.5 points. Diamonds Sparkle is one of the leading dams of all time when it comes to reining horses, roping horses, performance horses, or world champions.

**Dash For Cash**

		Three Bars
	Rocket Bar (TB)	Golden Rocket
	Rocket Wrangler (Sire)	Go Man Go
	Go Galla Go	La Galla Win
Dash For Cash (1973-1996)		Market Wise
	To Market	Pretty Does
	Find A Buyer (TB) (Dam)	Alibhai
	Hide and Seek	Scattered

During a career that spanned over three years and 25 starts, Dash For Cash won 21 races. He placed 2nd three times. He was the first horse to win the Champion of Champions back to back and the first horse in two decades to be named world champion in consecutive years. His stride was 32 feet, among the longest ever measured. Both Dash for Cash and Secretariat stood 16.2 hands as three-year-olds and they had identical measurements. He was able to do 440 yards in 21.17 seconds. He was named 1976 World Champion Quarter Running 3 year old colt, World Champion Quarter Running three-year-old and more importantly, World Champion Quarter Running Horse. He was the first Quarter horse to earn \$500,000 without the benefit of wins in the rich all American Futurity or Derby.

His first foal crop earned more than \$1.2 million, including the fillies Baby Hold On and Queen For Cash; his second foal crop with daughters Dashingly, Dash

Again, and Justanold Love, won \$3.1 million. Dashingly's career yielded \$1.75 million in earnings. At first, Dash For Cash was labeled as a "fillies" sire and even when his son Cash Rate earned more than \$500,000 and his other son On A High earned more than \$1 million. Dash For Cash was one of those rare individuals that you could tell that there was something great about him.

**Impressive**

		Percentage
	Three Bars	Myrtle Doc
	Lucky Bar (TB) (Sire)	Karimkhan
	Fulfilment	Flying Bimy
Impressive (1969-1995)		
		Three Bars
	Lightning Bars	Della P
	Glamour Bars (Dam)	Sugar Bars
	Tonkawa Bar	Bucket Baby

Impressive single handedly changed the Western Horse World, by becoming the most influential *Halter-Horse* sires of all time. As a yearling, Impressive's conformation created a buzz in the Quarter Horse world. Blair Folck, one of the founders of the All American Quarter Horse Congress, said in an interview with *The Quarter Horse Journal* in 1985, "Sometimes you look at a colt's front end and it is really nice, then walk around behind, and it's a whole different story. But not with this colt. We'd stopped by at about midnight and Nick McNair showed him to us under a light he had on a pole...even then, we could see he was nice all around".

As Impressive developed into a stocky, muscled yearling with remarkable conformation, Folck became acquainted with the colt. Impressive was turned out with other young horses until spring. He was a playful and kind colt, who was not



as mean or as aggressive as the others. Although, he always had a lot of energy and was an erratic colt that was a bit on the nervous side. Impressive was extremely powerful. He showed a lot of speed, even as a two year old. To advance Impressive from Appendix status, he would have to earn additional AQHA points in performance events, or be approved by two AQHA inspectors. Appendix Status is a horse registered with AQHA, which is the result of breeding a Thoroughbred and an American Quarter Horse that has a permanent number, or a combination of an Appendix numbered American Quarter Horse and an American Quarter Horse with a permanent number. An "X" in front of their registration number distinguishes appendix horses and their certificates are gold. After being examined by a veterinarian, Impressive could not compete in performance events due to pedal osteitis, an inflammation of the coffin bone, and navicular bursitis. In the summer of 1971, two inspectors approved the stallion's muscling, way of traveling, and conformation, which advanced Impressive from Appendix to a numbered status.

Once Impressive achieved a numbered status, he was campaigned and earned many firsts and many grand championships in halter at shows across the mid west. Impressive became the breed's first world champion aged stallion retiring from the show ring with 48 halter points. Sons and daughters of Impressive claimed championships at every Quarter Horse World Show from 1975-1991. In halter competition, it became a given that Impressive-bred horses would fill the card of every judge who had a chance to evaluate them.

Impressive's success as a sire was so pronounced that much of his toughest competition came from his own sons. Ten years after the stallion's first appearance on AQHA's leading sires list, seven of the top twenty leading sires of halter class winners and point earning halter horses were sired by Impressive.

The only thing that tarnished Impressive's reputation was the discovery of the Hyperkalemic Periodic Paralysis (HYPP) disorder. The expression resulting from an autosomal dominant gene characterized by episodic attacks of muscle tremors, weakness and paralysis, associated with increased potassium concentration. HYPP, a hereditary genetic defect, disrupts a protein in a sodium ion channel, in the muscle cell membrane. The genetic defect disrupts the channel's normal opening and closing, which results in the uncontrolled influx of sodium inside the muscle cell. These influxes change the charge inside the muscle cells, which cause uncontrolled muscle twitching or weakness. High levels of potassium in the blood are usually present with ion channel disruption.

Homozygous horses are affected more severely than heterozygous horses. Under ideal management practices, the defective gene doesn't appear to have adverse effects. Most attacks occur following diet changes, fasting, stressful circumstances, or after consumption of alfalfa hay (which is high in potassium).

Unfortunately, a horse carrying the defective gene but showing minimal signs has the same chance of passing the gene to future generations, as does the affected horse with severe signs. The original genetic defect causing HYPP was a spontaneous mutation that occurred as part of the search for the perfect Halter

horse. The HYPP gene became wide spread in Quarter Horses when breeders sought to produce horses with heavy musculature. HYPP is unique because it is the first equine disease in which breeding and molecular genetics have yielded a specific genetic mutation identifiable with a specific bloodline.

Impressive's progeny continue to dominate the halter competitions, despite the knowledge of the HYPP gene and its effects. Stallion's tracing to Impressive (sons, grandsons, and great grandsons) still dominate AQHA's lists of leading halter sires. Impressive sired 2250 foals in 24 crops. Among his get were 846 halter point earners, who claimed more than 19038.5 points. He sired 268 performance point earners, who earned more than 5624 performance points. The stallion sired 29 world champions, earning 38 titles.

**Topsail Cody**

		Wimpy
	Bill Cody	Pesetita
	Joe Cody (Sire)	King P-234
	Taboo	Billie Bo
Topsail Cody (1977-)		Lightning Bar
	Doc Bar	Dandy Doll
	Doc Bar Linda (Dam)	Music Mount
	Bettys Mount	Josita

The gentle disposition of Topsail Cody and his get is one reason why they have been able to earn more than one million dollars in NRHA competition. The superb athleticism is another part of his gets success. As a three-year-old, Topsail Cody won the reining world's top event, the open division at the NRHA Futurity. The next year, he won the AQHA World Championship in Junior Reining. He has his ROM in reining, having earned twenty-four points in for AQHA shows. He was inducted to the NRHA Hall of Fame in 1996. In 1998, he was only the fourth stallion with offspring earning over one million dollars in NRHA competition. He is an all-time leading sire, leading broodmare sire, and leading paternal grandsire of reining money earners, and a leading sire of AQHA performance horses. He is the sire of Cee Blair Sailor, whose lifetime NRHA earnings total more than \$90000. At seven, Cee Blair Sailor became the youngest horse ever to be inducted into the

NRHA Hall of Fame, and the only non-gelding to be inducted on a performance record alone. He was an NRHA Futurity finalist, Lazy E Classic reserve Champion, and Reno Spectacular champion. Cee Bar Sailor was also the 1993 NRHA intermediate non-pro world champion, and in 1994 NRHA open and limited open world champion.

Topsail Cody is the sire of Topsail Whiz, whose lifetime NRHA earnings total nearly \$50,000. Topsail Whiz was an NRHA Futurity finalist (third place), Lazy E Classic champion, and All American Quarter Horse Congress Junior reining class winner. He has sired numerous winners, including Whizard Jac, the 1996 NRHA Futurity open champion; Topgun Whiz, the 1999 NRHA Derby open champion; and Whiz N Chex, the 1999 NRHA Derby non-pro champion.

Topsail Cody is the sire of Topsail Dude, the only horse to win both the open and non-pro NRHA classes in the same year at the All American Quarter Horse Congress. He has also sired more than 180 NRHA money earners. 29 offspring have earned more than \$10,000; the following six have earned over \$35,000: Cee Blair Sailor, Rest Stop, Topsail Whiz, Freckles Top Prize, Sail Win Sam, and Topsail Skeets. He is also the sire of 260 AQHA point earners, tallying over 4583 performance points in open, amateur, and youth competition.

**Barpassers Image**

Moon Deck  
 Senor Bardeck  
 Miss Barred

**Barpasser (Sire)**

Ranch Bars  
 Ranch Bars Vandy  
 Henryetta Sorrel

**Barpassers Image (1984-)**

Power Command  
 Last Command  
 Mary Blake

**Tee Command (Dam)**

Cat's Jojo  
 Tee Five Star  
 Star Quill

In 1986, Barpassers Image was Georgia Breeders Fall Classic Futurity champion, Texas Classic Futurity champion, and the Tom Powers Futurity champion. He is the earner of more than \$50,000 in the National Snaffle Bit Association competition. In 1989, he earned the AQHA Superior Western Pleasure Award, with 62 open Western pleasure points. In 1988, he placed sixth in junior Western pleasure at the World Show. Barpassers Image is the sire of many All American Quarter Horse Congress Champions and numerous AQHA Champions.

**Dynamic Deluxe**

	Sonny Dee Bar	Win or Lose
		Chigger's Baby
Sonny Deluxe (Sire)		
	State Clip	Flying Bar Fly
		State O Blue
Dynamic Deluxe (1981-2001)		
	Boston Mac	Triple Chick
		Trouble Fair
Boston Sonora (Dam)		
	Two Eyed Sonora	Two Eyed Jack
		Sonora Gal

As a three-year-old, he had won about \$26,000. In 1985 he won AQHA Superior Western pleasure award with one hundred and eleven Western pleasure points. In 1987, he was the senior Western pleasure champion at the All American Quarter Horse Congress. 1987 top ten, senior Western pleasure at the AQHA World Show. A leading sire of Western pleasure money earners (1991-1996); two-year-old Western pleasure money earners (1996); and Longe line money earners (1993,1995). Dynamic Deluxe was on seven AQHA leading sires lists in 1996: open performance point earners, open performance winners, youth halter point earners, youth performance point earners, and youth performance winners. He was

the sire of numerous AQHA champions, AQHA World Champions, and Congress Champions. He was noted as one of the top sires for Western Pleasure horses.



**Gay King Bar**

	Ballot
	Midway
	Thirty-Third
Percentage	
	Bulse
	Gossip Avenue
	Rosewood
Three Bars (Sire)	
	Ultimas
	Luke McLuke
	Midge
Myrtle Dee	
	Patriot
	Civil Maid
	Civil Rule
Gay King Bar (1959-1984)	
	Little Joe 1
	Zantanon
	Jeanette 2
King	
	Strait Horse
	Jabalina
	Bay Mare 1
Gay Widow (Dam)	
	Macanudo
	Graves Peeler
	Petra 2
Happy Gal	
	Joe Bailey
	Little Gal
	Sykes Rondo mare

Reining and Cutting are the Gay Bar King specialty. During 1960 and 1961, Gay Bar King stood grand champion at halter three times and stood reserve once. Before standing at stud, Gay Bar King earned 13 halter points from seven

outings. On the track, he earned a speed index rating of seventy-five. He also earned \$33.02 in NCHA monies. He also earned an open ROM in open performance. He was also a good brood mare sire. Gay Bar King crossed well with any kind of mare and produced a good foal. Smart Chic Olena is a grandson of Gay Bar King through his dam Gay Sugar Chic. After Smart Chic Olena, people started paying attention to this great line. Smart Chic Olena is a full brother to Gay Bar Chick, a 1977 brown mare that was the 1981 NCHA Derby non-pro champion. Smart Chic Olena was the 1990 AQHA world Champion in senior cutting and the 1993 AQHA world champion in senior reining. In all, Gay Bar Chick sired 1154 AQHA registered foals. One of his first offspring was a palomino son Mr. Bar Gold, the 1966 AQHA high point junior cutting horse. Mr. Gold Bar sired Gold Margarita, the 1972 AQHA champion halter horse. Gay Bar Dixie, another daughter, proved herself as a broodmare by producing Doctor What in 1982. The chestnut stallion went on to win \$116,827 in NCHA money. By Doc O'Lena, Doctor What is the full brother to Doc O Dynamite, the sire of a good gelding Easy Does It Doc, who was used as a barrel racing horse. In 1970 the AQHA high point cutting mare, Bay Bar Lady, a 1963 daughter of Gay Bar King. As a two-year-old, she earned fifteen firsts and four seconds at halter. She went on to produce Doc Ware the 1986 reserve world champion in junior cutting. In 1976, Johnie Gay Bar, a Gay Bar King son, was a fourth place finalist for NCHA world champion cutting horse. Placing sixth in the 1979 NCHA World Championship competition was Gay Candy Bar, a 1970 bay son of Gay Bar King.

In 1972, Magnolia Gay was named the AQHA honor roll champion halter horse. She racked up 114 firsts and five seconds out of 119 shows. Other prominent maternal Gay Bar King granddaughters include Shesa Lota Cash, 1996 NRCHA Futurity winner, Marcellena, 1996 AQHYA world champion cutting horse, Lotsa Train, 1995 NRHA Futurity non-pro winner and Good Ole Duchess, 1995 amateur world champion calf roping horse. In 1983, Miss Peppy Gay Bar was the AQHA high point amateur cutting horse.

In 1977 a mare named Gay Bar Moon was bred to Zan Parr Bar and she foaled Zan Parr Express. This stallion went on to become the 1983 AQHA high point champion. Shining Spark, sired numerous AQHA world champions in heading, heeling, reining, and working cow horse. Out of the 1979 AQHA World Show Superhorse, Diamonds Sparkle, Shining Spark is by Genuine Doc, a son of the great mare Gay Bar's Gen. Also by Genuine Doc is Credit the Doctor, this 1993 stallion has earned an AQHA ROM in both senior heading and senior heeling.

Gay Bar King is the maternal grandsire of Sugs Gay Lady, former NCHA Super Stakes champion with earnings of more than \$300,000. His leading earners include ARC Matt O Lena (full brother to Smart Chic Olena), ARC Jumanji, Peppys Smarty Pants, The Reyring King, Bingo Rebel and Jody Paul Quixote. One of Gay Bar King's offspring that has earnings in excess of \$100,000, is former NRHA Futurity champion Ray Gay Quixote. By Okie Paul Quixote, the 1994 stallion is out of Vermajo King by Gay Bar King, and the 1997 NRHA leading money-earning horses. Dox West Gray is a two time Canadian open cutting

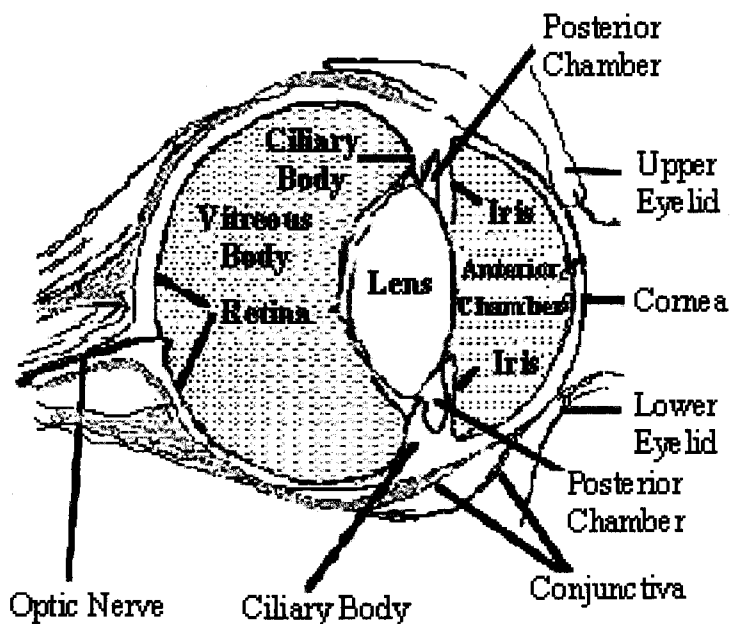
champion (1996-1997). Gay Bar King was a great individual and put a good stamp in the Quarter Horse world.

**Appendix 1E. The equine eye**

The bone structure of the animal's skull determines the location of their eyes. Sex and breed differences are not separable from those due to age since the face is disproportionately increased in larger animals. A longer face is characteristic of the adult compared to the juvenile, the stallion to the mare, and the heavy draft horse to the pony.

Another breed difference concerns the dorsal profile of the face which consists of a relatively straight profile and is generally preferred. Some convexity (rams head) is characteristic of certain heavy breeds, while concavity (dishing) is characteristic of Arabians and common in horses with Arabian heritage. The shape of the head characterizes breed type and be proportional to the body. The dished facial phenotype is thought to be due to a recessive gene. In contrast to the dished phenotype is the Roman nose which is characteristic of Draft horses.

A frontal view of the Quarter Horse's head will reveal a broad forehead in proportion to the size of the poll and the nostrils. The cranium should be large enough to provide adequate brain space. The face should taper to a small muzzle with large thin-walled nostrils capable of transferring large volumes of oxygen.



**Figure 1 E 1. Vertical cross section of the equine eye modified from Dyce et al, 1987.**

The horse's eye (Figure 12) makes use of the irregularity in the degree of concavity in the different parts of the retina. The horse contrives by lifting or lowering its head to enable the rays of light to meet upon the particular part of the cornea, which will produce the best visual image. The equine eye when viewed from a frontal position is more compressed from the front to the back and it is higher than wide. The eye is a complex visual processing organ. The front surface, when viewed from the outside, is the cornea, a clear window that allows light to enter into the interior surface of the eye. The cornea is relatively small and oval-shaped with the pointed end being lateral. The iris is a dark pigmented structure, unless there is an absence of pigmentation then it is a light bluish color. Both the iris and pupillary

opening are oval but the pupil becomes rounder when contracted. The iris dilates and contracts according to the light conditions. The equine eye has a modification at the upper edge, the corpora negra which acts as a visor and light filter. Between the cornea and the iris is the fluid filled anterior chamber. The space between the iris and the lens is referred to as the posterior chamber which is also fluid filled. The pupil allows the fluid in the two areas to come together. The lens is secured in place by the iris and has a special muscular arrangement which allows for relaxation and contraction of the lens enabling the eye to focus on objects. The ciliary muscles are poorly developed in the horse and controls the shape of the lens. Behind the lens is the main cavity of the eye globe which is filled with a clear gelatinous substance, the vitreous body. The retina is a thin transparent membrane that lines the posterior portion of the eye globe and rests upon the black choroid coat. The choroid coat ensures the absorption of the light rays. Since the dorsal part of the retina is a greater distance from the lens, it functions in processing near vision. The ventral portion functions for processing of distance vision. Therefore, the horse will adjust the carriage of its head in order to bring objects into its visual focus. Thus, changing the location of the image on the retina. The optic disc, located in the lower part of the retina is the point where the optic nerve enters and radiates outward, is the "*blind spot*". This anatomical site is somewhat hypothetical as it pertains to visual processing. The exterior of the eye comprises the conjunctiva which is divided into the palpebral, bulbar, and the eyelids. The upper eye lid contains lashes. Unlike humans, horses also have a third eyelid or



nictitating membrane which originates from the inside corner and closes horizontally. The third eyelid functions as protection for the cornea. The sclera which is relatively thin as one approaches the globe's equator where a bluish color results from the underlining choroid pigment. The optic disc which is situated ventral to the tapetum and ventrolateral to the posterior pole of the globe. The central area is comprised of both round and elongated components. The round is associated with binocular and the elongated components with monocular vision. Theoretically the horse's vision can extend to its rear and both sides simultaneously, providing for this panoramic vision.

The horse's eyes, located on opposite sides of its head are not positioned like those of cats, humans, and dogs. Each horse's eye transmits a distinctly different picture through the optic nerves to the brain. The left eye surveys objects and events from the left front, left side, and left rear. The right eye surveys objects and events from the right front, right side, and right rear. When looking forward with its face perpendicular to the ground, the horse directs both eyes simultaneously at the same point in the environment, monocular vision.

Theoretically, the horse possess a much larger visual field than humans. When referring to the human vision system, this is called fused, simultaneous binocular vision which is responsible for three-dimensional vision and accurate depth perception. Horses lack fused binocular vision and views objects as being flat with poor detail. Binocular vision requires two views of an object, each seen from a slightly different angle (parallax) combined to form a three dimensional

(stereoscopic) (3-D) presentation of that visible space. Human eyes are placed some distance apart, with a divider (the nose) in between, creating the ability to observe two separate images. The human brain combines these images to create a stereoscopic, three-dimensional reference.

With equine eye placement on the sides of the head, the animal cannot see close to the center of its face. The width between its eyes obscures the view of objects below eye level.

Frontal vision is important to a horse. This type of vision provides the horse the best possible view of its environment. When a horse is required to view objects at a greater distance, it consequently must raise its head with a concomitant loss of lateral and ground vision. Thus, the visual processing mechanism in the equine species must rely upon physical body movements to aid in the animal's ability to perform.

**Appendix 2A. Tabular Interaction means for age:type and type:gender**

### Age Categories in Years

	0-5	5-10	10-15	15-20	20-25	25-30
<b>OUTLR</b>						
Western	12.54 (88)	12.82 (36)	12.95 (11)	12.96 (6)	12.88 (2)	----
Halter	12.71 (34)	13.09 (27)	13.04 (19)	13.13 (4)	12.75 (1)	----
English	13.41 (8)	13.51 (10)	13.00 (6)	----	13.06 (2)	----
Reining	12.75 (14)	12.67 (12)	11.66 (4)	13.00 (1)	----	13.00 (1)
Cutting	12.61 (7)	12.89 (14)	12.55 (10)	12.13 (2)	12.28 (4)	----
<b>INNR</b>						
Western	7.28	7.63	7.52	7.63	7.88	----
Halter	7.45	7.74	7.66	7.75	7.50	----
English	7.75	7.95	7.92	----	8.19	----
Reining	7.46	7.40	7.23	7.50	----	7.50
Cutting	7.64	7.64	7.65	8.25	8.06	----
<b>POLL</b>						
Western	9.65	10.10	10.13	10.21	10.75	----
Halter	9.80	10.16	10.28	10.06	10.00	----
English	10.25	10.50	10.21	----	10.38	----
Reining	9.91	9.90	9.70	10.25	----	10.00
Cutting	9.96	10.36	10.24	11.00	10.74	----
<b>EJB</b>						
Western	6.51	6.73	6.85	6.56	7.00	----
Halter	6.57	6.56	6.51	6.31	7.75	----
English	6.69	7.28	7.23	----	7.00	----
Reining	6.52	6.85	6.75	7.00	----	6.50
Cutting	6.68	7.20	7.66	9.75	7.69	----
<b>ELJ</b>						
Western	9.76	10.37	10.63	10.42	10.75	----
Halter	9.75	10.42	10.26	10.38	9.50	----
English	10.36	10.98	10.54	----	10.25	----
Reining	10.04	10.10	9.75	10.50	----	9.50
Cutting	9.75	10.26	9.59	7.25	10.34	----

---- = no animals measured

( ) = number of animals

	<b>Stallions</b>	<b>Geldings</b>	<b>Mares</b>
<b>OUTLR</b>			
Western	12.39 (13)	12.54 (45)	12.77 (85)
Halter	12.17 (6)	12.47 (6)	13.02 (73)
English	13.79 (3)	13.42 (12)	13.10 (11)
Reining	12.14 (8)	12.61 (9)	12.83 (15)
Cutting	12.28 (10)	12.83 (11)	12.98 (16)
<b>INNR</b>			
Western	7.15	7.39	7.46
Halter	7.72	7.36	7.62
English	8.08	8.00	7.74
Reining	7.43	7.42	7.40
Cutting	7.53	7.75	7.83
<b>POLL</b>			
Western	9.62	9.84	9.88
Halter	9.75	9.47	10.10
English	10.08	10.56	10.18
Reining	9.91	9.78	9.95
Cutting	10.10	10.48	10.36
<b>EJB</b>			
Western	6.29	6.75	6.57
Halter	6.99	6.67	6.51
English	6.50	7.31	6.94
Reining	6.53	6.64	6.80
Cutting	7.05	7.55	7.55
<b>ELJ</b>			
Western	9.68	10.03	10.07
Halter	9.38	9.39	10.22
English	10.58	10.75	10.51
Reining	9.97	9.92	10.13
Cutting	9.93	10.33	9.42

---

( ) = number of animals measured