FARRIER SCIENCE

A Bibliography

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**SCOPE:**

Horses are more than a hobby; they contain a variety of equine professionals dedicated to helping horses and clients with their horse hobby. Through examination of equine history, one can see the metamorphosis of the horse from a working tool to a recreational hobby. The history of horseshoeing began many years ago before it was considered a skilled profession. Horse owners shod their own horse. It wasn’t until the horse became a hobby, which the farrier profession took off. Just as any profession, there are various levels of expertise and multiple ways to improve and achieve elevated levels of expertise.

Through my research, I have organized resources suitable for an individual in the farrier industry. The sources I have gathered concern hoof anatomy, business management, various diseases and disorders, and types of shoeing. Some works are fairly specific and others take a more general approach to discussing the components of horse shoeing. The list is comprised of books, a dictionary, articles, websites, and videos. Therefore, the resource list is beneficial to all levels of the trade and the resources will help with a wide variety of farrier work. I was careful to choose authors specialized in the field of hoof health or farrier science in order to produce an appropriate list for a professional farrier.

**INTRODUCTION:**

Professionals in the industry mainly include veterinarians, horse trainers, and farriers. Although equine veterinarians are often credited with being the horse health specialist, it takes the skills and knowledge of a trained farrier to maintain soundness and general hoof health. Horse hooves, much like human feet, are all different. They all have a unique shape and are different strengths. At times, they need the extra support of various types of horseshoes due to terrain, performance, or disorder.

My patron is a farrier. I came to find that he is very interested in improving his profession and learning more advanced knowledge of the trade. Advancing in the trade can be narrowed into therapeutic shoeing for horses with chronic disorders or treating poorly shod horses or horses
with a curable disorder. Just as with any science, there are constant changes and scientific advancements improving the equine health and the professional industry in general. Improvements to oneself can also include business knowledge. Farriery is a certification rather than a degree. Horseshoeing has been done for thousands of years starting in Egypt and has become more scientific with every passing century. Some farriers practice without a certification because their skills have been passed down through generations. Presently, there are three levels of certification available for farriers. To be trained in farriery, a person must complete the certification process, which can range from several weeks to a couple years, but there is not yet a professional four-year Bachelor’s degree available. With that, it is clear, the resources available for improving one’s skills can be difficult to accomplish and therein lies the beginning of my research.

*A Basic Description*...

In his profession he works with horses concentrating on their hooves as well as the clients who own the horses. The farrier profession has come a long way since the first invention of the horseshoe by the Egyptians. The first horseshoe was made of woven grass and tied onto the hoof rather than nailed on like today’s shoes. Later, animal hides were used which was more durable. Finally, the Romans invented the first iron horseshoe called the *hipposandal* in the middle of the first century, which was also tied onto the horse’s hoof. Eventually, books were written regarding the science of horseshoeing. The very first English book was published in 1566. There are many unique and historical books that have been published and are most likely held in archives. They are probably not useful to modern day farriers, but useful in seeing the progression of the profession throughout time. In 1857, Henry Burden patented a horseshoe and nail making machine allowing for more efficient shoeing time. Before mechanical machines all horseshoes and nails had to be handmade and took a great deal of time to create and apply to the hoof. The machine was very helpful for the military until horses changed from a “tool” to a “recreation” allowing the skill involved in farrier work to flourish. The skills were highly demanded and horse owners were more willing to pay for a farrier’s services. Since then, the work of farriers has progressed changing becoming a morphed work of art and science.
A farrier works with metal shoes, nails, forges, rasps, and other tools to enhance the hoof catering aiding in the comfort of the horse and the needs of various clients. This can include changing the angles of the hoof and There are numerous types of shoes that can change or improve movement, provide comfort for horses afflicted with diseases or soundness issues, act as a protective shoe similar to a tennis shoe for an athlete, or provide traction.

An accomplished and lucrative farrier business is just like any small business. It requires financial skills, interpersonal communication, management and self-drive. Without these traits, the business will fail. Unfortunately, there are few classes during the farrier certification process that offer business knowledge and farriers need literature to gain such skills. By interpersonal communication skills, I am referring to those used to discuss a horse’s hoof needs with its owner and/or the veterinarian and vice versa. A farrier must communicate changes deemed necessary regarding angles, type of shoe, foot growth, etc.

The Hoof: In Brief

The hoof is an incredibly complex and crucial component to the anatomy of the horse. The hoof is always growing, similar to a human fingernail. As the horse grows, the hoof can change growth patterns due to diet, performance, environment, and other factors. Farriers use hoof dimensions including angles, lengths and ratios in order to assess the individual hoof. The recommended angle for the foreleg ranges between 50 and 55 degrees and the hind leg ranges between 53 and 57 degrees, but of course this varies depending on breed, discipline, and confirmation. In continuation, the farrier examines the angle of the heel, length of the toe, height of the hoof, among other aspects of the equine hoof in order to determine general balance.

The hoof capsule, inside the hoof is highly concentrated in keratin, which is produced in the hoof along with protein and lipids. A healthy hoof also has high concentrations of Biotin aiding in the strength of the equine hoof. A trained eye can see exterior growth rings on the hoof and determine the health and nutritional wellness of the horse. These nutritional
components produce the tough exterior, known as the horn, seen from the outside and protect the tender tissues within.

The equine hoof absorbs shock, bears weight and protects the foot. In addition, it absorbs moisture. The hoof must remain conditioned to stay healthy and it reflects the environment where the horse lives. For example, during a hot and dry summer, the hoof may become brittle, dry and cracked because there is little to no moisture to condition the hoof. In comparison, a rainy season offers plenty of conditioning water, but too much may make the hoof weak and prone to bacterial infections as well as wounds.

Several basic anatomical parts of the hoof include the bars, sole, and frog. These components are found under the hoof and aid in distributing weight, providing cushion, influencing blood circulation, and offer protection. Although there are other small parts to the hoof, these can be easily seen and are often considered basic knowledge to horse enthusiasts.

What is Therapeutic Shoeing Anyway?

Despite the horse’s large size, it is a very delicate animal. The livelihood of the horse rests on four small hooves. It cannot survive without the functionality of all four hooves. Foot disorders vary widely and can range from mild to severe. A few of the common disorders
farriers encounter include Laminitis, White Line Disease, and Navicular Disease. Below is an illustration of a normal hoof and one affected by Laminitis.

![Illustration of hoof and Laminitis](image)

*Courtesy of Biomedica Laboratories Inc.*

The Farrier uses methods of trimming and different therapeutic shoes to treat and provide comfort for a horse afflicted by Laminitis. This includes trimming off extensive amounts of the toe to relieve pressure from the rotated bone.

The following picture depicts White Line Disease. Although this is an advanced case, the farrier can treat it by disinfecting the area removing affected areas. Shoes can be fitted to provide extra support for more advanced cases, but oftentimes the disease is mild and/or can be prevented with regular farrier work.

The third picture is Navicular Disease where the very small Navicular bone is effected causing chronic lameness in the heel region. The farrier will often raise the heels, continue or begin proper trimming, and add pads under the foot provide comfort and support.

A farrier is needed to change the hoof growth angles and also needed to cure bacterial infections and encourage healthy foot growth. Although the veterinarian may diagnose the disorder, the owner and veterinarian both need a skilled farrier to treat the problem.
Aside from actual disorders, the horse may develop soundness problems because of poor environmental conditions, diet, or confirmation. The breed of horse also has a influence on the strength and stability of the hoof. Various breeds may be more prone to certain conditions of the hoof than others. All of these factors may influence the onset of a disease or disorder.

The horse industry has clearly gone through numerous changes during its existence. While the horse was once a tool used to work and provide for human beings, it has changed into a multi-million dollar recreational sport for enthusiasts of all ages. The discoveries made by veterinarians combined with the knowledge of farriers have created the horse we know today. Business strategies and professionalism become more important with every passing generation of farriers. The various disorders and diseases can be treated or prevented with the now advanced and scientific knowledge farriers. Listed below are the numerous resources found relating to lameness, business, and horseshoeing techniques helpful to a farrier seeking to continue involvement in the industry.

**Books:**


This book is designed for the professional farrier and improving his trade. It contains numerous illustrations and considered to be helpful for the lifetime of the farrier. A beginner farrier will get just as much use from the book as an advanced farrier would. It contains information regarding quick tips and tricks, lameness, general to advanced shoeing, entertainment articles, and confirmation of the horse and is written in a simple to understand format. There are 3 editions.
This book provides the professional farrier with applicable business advice. It includes information on managing income, expenses, and clients. The book helps a farrier capitalize on advertising, and organization to create the ideal $100,000.00 business. It also includes ideas that allow for a farrier business to truly grow and prosper while still considering the unusual components of the horse industry.


This book focuses on the farrier rather than the farrier’s ability. Butler explains how to achieve self-confidence as a farrier and a lasting career in the horseshoeing trade. There are of course photos and illustrations of hooves and various shoeing methods to addressing certain conditions of the hoof. Several business concepts are addressed which will help any farrier keep his business profitable. The book also includes practice exercises for farriers to challenge their skills and improve their trade.


There are two volumes included in *Corrective Farriery*. It is collection of nearly all characteristics of hoof repair. It also includes general background knowledge related to doing corrective farriery. The second volume is a continuation of the first and compiled by 14 authors from the veterinary and farriery profession specializing in the horse’s hoof.


The racehorse needs particular and differentiated attention from other equine athletes. This book includes information relevant to the profession of farriers, veterinarians, trainers, and breeders. It explains ideal confirmation and hoof-shape of the racehorse. It also provides in-depth discussions of deformities and diseases afflicting the racehorse. The uniqueness of this
book lies in its ability to discuss the growth of the racehorse from birth to the track and through retirement. Maintaining optimum soundness of horses throughout each major time-period in a horse’s life is the major goal of this resources.

Floyd, A., Mansmann, RA. (2007). *Equine Podiatry*. St. Louis, MO: Saunders Elsevier. It may be a little scientific for the laymen but it contains a wide range of information about the horse. The knowledge is dedicated to both farrier and veterinarian so it can be seen as a bit of a challenging read. Nonetheless, the photos, illustrations, and historical references are helpful in gaining a greater understanding of the hoof and what lies inside. It discusses diseases, structure, deformities, and anatomy. It also briefly touches on discipline-specific shoeing.

Heymering, H. (2001). *Hoof Care for Horses*. North Adams, MA: Storey Publishing, LLC. Hoof Care for Horses provides the professional farrier with advanced tips on improving his practice. It guides a farrier to create and maintain soundness with the horses hoof. Heymering discusses several issues pressing farriers and how to prevent poor hoof health and promote a promising future regarding the soundness of hooves.


Rooney, J. (1969) *Biomechanics of Lameness in Horses*. Don Mills, Ontario, Canada: Burns & MacEachern Limited. James Rooney is a recognized horse pathologist. His book is quite in-depth covering the diagnosis of lameness and understanding concepts and theories regarding it. Several chapters are beneficial for those not practicing veterinary medicine but other occupations pertaining to the horse. The emphasis of the book is on legs, hooves, and lubrication, bone structure, and
The updated version of his first publication of *Lame Horse,* it explains the mechanics of the horse’s legs, and the complications presented when things go wrong with the horses legs. This book covers tendons, ligaments, muscles, etc which are important aspects of lameness. The book also contains photographs, X-rays, and illustrations to help the reader gain a valuable understanding. It provides one involved with horses useful information which they can benefit through analysis and prevention of lameness.

Nassau provides great descriptions of the equine hoof. He uses numerous photos and diagrams along with text to describe over 50 hoof problems. Aside from the book, Nassau is an internationally renowned farrier and knows a great deal about the care of the equine feet and problems effecting the foot and parts of the leg. The illustrations begin with an internal look at the leg and foot, then maintaining healthfulness, nad finally towards issues that can cause problems with the soundness of the horse. It appears to be a great guide for professional farriers.

It is a textbook for farriers and vets of all levels. Chris Gregory is considered both a great educator and professional in the farrier industry. It is simple to understand and gives guidance to anyone interested in maintaining a healthy horse. It is a great reference resource for any farrier because it touches on an array of issues any a farrier of any level could encounter in their career. He discusses business maintenance, the foot, ligaments, tendons, nerves, confirmation of the legs, gaits of the horse, corrective shoeing, types of shoes, general horsemanship, diseases and much more.
Dictionary:

Book:

Online Version:

This dictionary is particularly helpful. It offers numerous words that a professional farrier will encounter when dealing with customers or other horse professionals. It is in its ninth printing and was written by a highly accredited farrier. It is also offered in a pocket-sized dictionary allowing a farrier to conveniently carry it with him while working. Yet even more helpful, it is offered in a slightly augmented online version. It will aid in communication and professionalism of the professional farrier.

Articles:

The author describes an approach to treating White Line Disease. He explains two methods of treating the horse afflicted with the disease. Both are beneficial to farriers as they see and treat this common fungal infection in the hoof.
Heymering, H. *Heel Expansion- Says Who?* Retrieved October 24, 2011, from The Farrier and Hoof Care Resource Center:

This article argues the well-known farrier, Evan Lungwitz’s theories on heel contraction and expansion. In the scientific language used by horse professionals he describes parts of the hoof and challenges the popular thoughts Lungwitz believed. He discusses the internal changes that occur when angles are changed and heel breadth is changed because of a farrier’s work.

Miller, R. *Farrier Industry- Related Problems.* Retrieved October 23, 2011, from The Farrier and Hoof Care Resource Center:

This article provides interesting facts about horse owners and how they view farriers. It is an eye-opening article for both farrier and horse-owner as both individuals will gain inside knowledge of the other individual. After reading this, a farrier would be able to appease his clients better and find where he fits in within the professional horseshoeing world.

Stovall,T. *Hoof Wall Separations.* Retrieved October 22, 2011, from The Farrier and Hoof Care Resource Center:

This article describes how Hoof Wall Disease and White Line Disease happen. It is easy to understand and Tom Stovall is a certified Journeyman farrier so his experience and expertise in the area is easily related to others in his profession. The article explains the layers of the hoof and where the disease would start inside the hoof. He also explains why it is such a serious issue and the extreme case of the disease if left untreated by a farrier.

http://www.nanric.com/identifying_negative%20_palmar_angle.asp.

The palmar angle is an important angle for all breeds and disciplines of horses. If a horse has Laminitis they have the undesirable negative palmar angle. It also affects healthy horses by promoting uninvited cracks and poor heels. Redden discusses the external and internal appearance of a negative palmar angle, creating a positive PA from a negative PA, guidelines, and prevention. This is a crucial angle for farriers to consider for their profession.


The Four Point method is a trimming and shoeing method with added developments by Redden where the farrier uses new techniques to promote healthy growth, healing, and maintenance for the low to high performance horse. This all natural method is helpful for horses afflicted with Laminitis and other diseases as well as healthy racehorses. He discusses the ligament’s involvement in the soundness of the horse along with a case study for farriers to read and apply.

Rooney, J. *Considerations on the Pathogenesis of Cracks in the Hoof Wall*. Retrieved October 30, 2011, from The Farrier and Hoof Care Resource Center:


A clear explanation is provided from Rooney regarding cracks in the hoof wall. He explains how cracks start at the coronary band but depending on what kind of crack they are, they may not be a chronic problem. However, as described in the article, all cracks must be watched as they internal damage to the hoof could be detrimental. This article also explains how horseshoe nails, weight, trauma, and genetics play a part in type and frequency of cracks. A helpful diagram is included in the article.
VIDEOS:


Yet, another informative farrier material produced by Chris Pollitt. He explains the basics of blood circulation and the role hooves have in the process. He also describes how the hooves bear weight and functionality of the hoof as more than a “foot”.


Redden developed his own methods for treating and curing the devastating and painful disease: Laminitis. In this short video he describes his methods for treating the disease at the International Equine Podiatry Center in Kentucky. His unique trimming and shoeing methods are beneficial to any farrier encountering the disease and he explains the methods in a simple and understandable format.


It cannot be argued that draft horses differ from the standard sized horse. With draft horse shoeing being less common than standard sized horse shoeing, this DVD depicts through discussion and video any adjustments necessary in shoeing draft horses. He demonstrates the differences in draft horses and show horses in an entertaining and knowledgeable manner. The farrier is Cornell University’s resident farrier and he has the highest farrier certification possible with years of experience.
WEBSITES:

This website is extremely scientific and provides some of the best information on strictly the equine hoof available. Ric Redden has spent countless hours focused on the equine hoof. His knowledge is easily displayed and available to anyone interested in learning more than the basics of horseshoeing and equine podiatry.

Articles, videos, book and video reviews, news and events, and more are all covered on this site. The Journal of Equine Foot Science has created a website where anyone, particularly veterinarians and farriers can share their knowledge and insight to the wide world of horses.
SUBJECT HEADINGS:

Below are several subject headings the Library of Congress uses to classify horse related materials focused on the hooves of the horse. Users would be able to find a variety of useful materials about the horse’s legs, feet, diseases, etc under these classifications. I also have listed the Dewey decimal classification number range of the “horse” and “blacksmithing”. All of the subject headings listed will be found in the corresponding Dewey Decimal number range.

Blacksmithing
Blacksmithing—Tools and implements
Foot diseases—Veterinary
Horseshoeing
Hoof and claw—abnormalities
Hoofs—Diseases
Hoofs—care and hygiene
Horses
Horses—Diseases—Laminitis
Horses—Diseases—Navicular disease
Horses—Equipment and supplies
Horses—Grooming
Horses—Lameness
Horses—Injuries
Lameness in horses
Dewey Decimal Correlation:

Horses, foot diseases—veterinary, hoof and claw abnormalities, and Lameness in horses fall between:
636.1-798.23

Blacksmithing and Horseshoeing falls between:
682-739.72

Several Noted Publishers:

- Doug Butler Enterprises
- Newmarket Farrier Consultancy
- Blood-Horse Inc.
- Veterinary Textbooks
- Nanric. Inc.
- International Equine Podiatry Center
- Russell Meerdink