

ETHNOVETERINARY MEDICINE IN THE BLUE RIDGE: COMMUNITY BASED  
ANIMAL HEALTHCARE IN SOUTHERN APPALACHIA

A Thesis  
by  
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## **Abstract**

### **ETHNOVETERINARY MEDICINE IN THE BLUE RIDGE: COMMUNITY BASED ANIMAL HEALTHCARE IN SOUTHERN APPALACHIA**

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This paper explores an informal folk veterinary medical system in the southern Appalachian region of North Carolina and Tennessee. In addition to a review of regional and international literature on ethnoveterinary medicine, the study utilizes methodologies in ethnography to examine both informally trained practitioners [small-holder stock-keepers and folk veterinarians] and phenomena surrounding how and why vernacular veterinary medicine functions in Southern Appalachia. A five county study area was chosen in the Blue Ridge, and qualitative data was obtained from 16 purposefully chosen, culturally specialized informants. Semantic domains of illness were established to aid in ethnographic analysis.

Human folk medicine has been extensively researched in Appalachia; however little is known about folk veterinary medicine in the region. This paper demonstrates that farm animal veterinarians are inaccessible to some mountain stock-keepers and many small-holder veterinary needs are met through a community based animal healthcare system.

Ethnoveterinary practices have both detrimental and beneficial effects on human, animal, and environmental domains of health. Folk practitioners are not only the first responders in animal emergencies, they are commonly the only individuals addressing a wide variety of farm animal illnesses. Many ethnoveterinary techniques and beliefs differ significantly from those of formally trained practitioners; however, there are also considerable similarities. Ethnoveterinarians practice *vis a vis* with Doctors of Veterinary Medicine [DVMs] servicing the area; however, most informants cited that formally trained practitioners are inaccessible or impractical due to the costs of their services, their unwillingness or inability to respond, and/or the distance between veterinary hospitals and the farm. Instead, stock-keepers along the Blue Ridge rely on the knowledge of local experts who prescribe readily available medicines [botanicals, pharmaceuticals, minerals, oils, alcohols, various foods, and other *materia medica*] and/or offer advice in the diagnosis, treatment, and prevention of farm animal illnesses. Stock-keepers operate on motives of reciprocity rather than financial gain, and utilize local or “traditional” knowledge, empirical “ethnoscience” evidence, and a multitude of veterinary skills to address a variety of animal healthcare problems.

I recommend that instead of marginalizing or discrediting folk knowledge of animal health, institutionalized veterinary medicine should look beyond epistemological differences and alternatively find creative and participatory methods to harness and apply local veterinary knowledge to better serve the area. I also argue that a cultural competency of vernacular veterinary terminology, technique, and belief is essential if formally trained veterinarians and extension agents are to effectively communicate with their clients and gain farmer’s trust and patronage.

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**Dedication**

*For*

*Eunice and William*

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## **Chapter 1: Introduction**

Studies in folk medicine are extensive in the Southern Appalachians, yet little research has examined folk veterinary medicine in the region. However, it is evident that folk knowledge of animal health plays an important role in the husbandry of livestock on small farms along the Blue Ridge of North Carolina and Tennessee. Within this region, licensed farm animal veterinarians have persistently remained inaccessible to many stock-raisers due to a variety of socio-economic factors which are confounded by the region's rugged terrain, undulating road system, and low livestock density. As a result, many mountain farmers have relied on a community based animal healthcare system to address a myriad of veterinary healthcare needs. Indeed, folk veterinarians are important determinants of animal well-being in the Appalachians, where despite its apparent prevalence, ethnoveterinary medicine has been historically overlooked by scholars, and even marginalized by institutions of biomedical thought.

Since the rise of agricultural societies some ten to twelve thousand years ago, an imperative body of folk knowledge has developed around animal husbandry. Indeed, many practices of modern veterinarians, especially surgical and manipulative procedures and even vaccination and blood drawing, have deep roots in ancient veterinary technique. In fact, until very recently, all veterinary know how would have been classified as "traditional," or of "folk ontology," and it is evident that unique veterinary techniques and knowledge continue to be developed and utilized by agrarian groups of people the world over. Ethnoveterinary skills and practices have developed by way of empiricism and agricultural apprenticeship, and importantly, traditional knowledge of animal care has been passed from generation to

generation by word of mouth or through imitation. It should be noted that ethnoveterinary knowledge continues to be developed or modified all stock-keeping peoples, and such local knowledge is adaptive to economic, environmental and social change.<sup>1</sup>

Ethnoveterinary medicine represents a type of ethnoscience or indigenous knowledge that is concerned with both agro-ecological processes and medical know how. Importantly, this type of knowledge encompasses both empirical processes of understanding and traditional epistemologies. Ethnoveterinary research is inherently holistic and interdisciplinary in nature, and includes both the study of socio-economic conditions and the associated skills, beliefs, practitioners, and social structures concerning local knowledge of animal health. Constance McCorkle, the so called “mother” of ethnoveterinary medicine commented that the paramount goal of such research should build upon local veterinary knowledge and socio-structural resources so as to increase the number of reliable animal healthcare options that are readily available, cost effective, and sustainable (Mathias, McCorkle, & Schillhorn Van Veen, 1996). Accordingly, scholarship on the subject has not surprisingly focused on the Global South, where applications of ethnosciences have proven to be viable alternatives to high input, costly, and often inaccessible Western veterinary technologies.

Similarly, in southern Appalachia it appears as though a community based animal healthcare system presently functions to meet the veterinary needs of many small holder animal keepers in the region. Not surprisingly, many of the high mountains and plateaus of

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<sup>1</sup>Traditional paradigms, and many others including biomedical, miasmatic, and humoral theories of illness and treatment have influenced folk veterinary knowledge through various forms of media, education, and cross-cultural exchange. Folk veterinary know-how is far from static, and the adaptive nature of such know-how is evident.

the southern Appalachians are not well suited to large scale livestock production due to a variety of geophysical features. Instead, the region has historically supported small-holder livestock rearing activities, subsistence agriculture, and barter economies, or small-scale agricultural production for local and national markets. Even today, it is evident that livestock rearing is an important component of multiple livelihood strategies in the region, and many individuals still grow up on the family farm. According to USDA agricultural census statistics, average farm acreage and numbers of animals on individual southern Appalachian farms is significantly lower when compared to farm animal demographic data noted throughout much of the country. And furthermore, like many rural regions of our country with low livestock densities and depressed economies, few formally trained large animal veterinarians are at practice.

As a practicing veterinarian in the mountains of North Carolina, I became aware that folk veterinarians are important determinants of animal health and welfare in the region. In my experiences with these practitioners, I have been both appalled and impressed by their techniques, which I will note have both positive and negative consequences for animal well-being. My interest in folk veterinary medicine was sparked by a variety of encounters in practice with animal keepers saying things like: “I soaked him in burnt motor oil to kill the fleas;” or “Used to, dogs would take the ‘running fits;’” and, “I worm my horses with a ‘hand’ of tobacco;” or, “You can feed that plant [Mullen] when they [cattle] have the scours.” I was intrigued to know that a veterinary medical approach very different from mine existed in the minds of some clients and neighbors, and furthermore, I was well aware that such practices likely had significant consequences for animal health. In a cultural sense, I also hypothesized that this knowledge was locally beneficial [at least applicable] and of

complex epistemological roots. Also, as a result of my interest in this corpus of folk knowledge, I began talking with neighbors about “old time” remedies for animals and learned about how my community [Elk Park, North Carolina] dealt with a shortage of large animal veterinarians in the area. Immediately, I found that folk veterinarians were indeed providing many animal healthcare services in the southern mountains, and subsequently I began to realize that these individuals held a significant corpus of veterinary practices that were uniquely adapted to the environment in which they worked.

As part of the requirements for an M.A. in Appalachian Studies and Dr. Susan Keefe’s “Qualitative Research Methods” course at Appalachian State University, Boone, NC, I began formally researching [spring 2013] folk veterinary medicine. My research began as ethnographic field work which involved interviews and participant observation with community based animal healthcare workers in a five county study area. A field documentary focusing on my neighbor, 82 year old William Cable [Elk Park, NC], was also produced for Dr. Cecelia Conway’s, “Advanced Folklore” course which was entitled “Doctoring Around the Farm, Hump Mountain, North Carolina.” Also, a thorough review of regional literature concerning folk veterinary medicine was performed, where surprisingly little scholarly research was unearthed. In the end, I interviewed 16 informally trained animal healthcare agents in the Blue Ridge, and the project’s results indicate that a complex and thorough pattern of indigenous veterinary knowledge is being practiced by stock-keepers throughout the region.

Chapter Two [a literature review] identifies what is known about folk veterinary medicine in southern Appalachia, and highlights some important socio-economic and cultural determinants surrounding ethnoveterinary practices in the region and beyond. Here, I present

a sampling of folk veterinary beliefs gleaned from the literature, and outline some important vernacular conceptualizations of animal illness from the area. Chapter Two also describes the uses of some folk veterinary materia medica documented in regional literature.

Specifically, folk illnesses of non-human animals, the signs of the zodiac, and magico-religious beliefs are discussed here at length, while other chapter sections identify some surgical and manipulative veterinary procedures that are documented in printed materials. Furthermore, I attempt to expose how there is a shortage of large animal veterinarians throughout rural America, including southern Appalachia [although there is little literature on the subject], and give a sampling of literature which offers insight into how stock-keepers of the Blue Ridge have historically addressed a diverse array of animal healthcare needs. In addition to literature on the southern mountains, Chapter Two also describes a corpus of international ethnoveterinary research, thereby highlighting some important theoretical frameworks, findings, and applications of important scholarship in the field. This review also sheds light on the human-animal cultural and ecological interface, and places special focus on zoonotic disease potential, livestock as facilitators of sustainability, and changing human perceptions of non-human animals as a result of the industrialization of agriculture. I shall make the point that a cultural knowledge of animal health and husbandry has significant impacts on the health of humans, animals, and the environment.

Chapter Three describes the methodology of my research. In addition to a review of literature, research for this project utilized methodologies in ethnography for the collection of qualitative cultural data on the subject of folk veterinary medicine. A group of community based animal healthcare workers were identified as culturally specialized informants, and these individuals were interviewed using a semi-structured, question/answer/elaboration

interrogative technique. Furthermore, participant observation was utilized on some farms where informants lived. A five county study area was chosen based on geographical proximity to my residence, institution, and location of veterinary practice. The study area included the counties of McDowell, Avery, Watauga, and Ashe in North Carolina, and Carter County in Tennessee. Sixteen informants were identified in this area through snowball sampling methods, and these individuals were questioned over an eight month period. The interviews were recorded and transcribed and semantic domain analysis was utilized to develop a folk taxonomy of animal illnesses, thus making it possible [sometimes] to determine how ethnoveterinary terminology equates to formalized veterinary lexicon. The interviews were also structured to help the researcher better understand how and why folk veterinary medicine functions in the region, and how various therapies are utilized by mountain stock-keepers to prevent or cure disease. In addition to this, Chapter Three gives a description of informant's farms, livelihood strategies, and educational levels, and reveal's interviewee's [or pseudonym's] geographical distribution within the five county study area.

Chapter Four is the first of three data driven narratives derived from ethnographic research conducted for the project. This chapter commences by introducing the reader to "traditional" agriculture in the region and begins to consider how ethnoveterinary knowledge is obtained, utilized, and transmitted in livestock raising communities of the Blue Ridge. Specifically, this chapter explores both the use and accessibility of formally trained veterinarians through use of the informant's words, and describes how a community based animal healthcare system helps meet the needs of many stock-keepers. Folk veterinary beliefs concerning the signs of the zodiac are discussed in some detail here, while castration and other procedures associated with reproduction are also recounted. Furthermore, Chapter

Four outlines the materia medica utilized by folk veterinary practitioners in the region. Medicines identified by this study are divided into five generalized categories for the purpose of discussion here: Edible or botanical medicines, commercially available pharmaceuticals, oils and petroleum products, alcoholic beverages, and a variety of “miscellaneous” materia medica that could not be easily categorized with others. The informant’s use(s) of these medicines is discussed and significant parallels are drawn between human and animal folk medicines.

Chapter Five is another chapter of ethnographic data exploring illnesses of bovine and equine animals that were commonly mentioned by informants. Importantly, this chapter also identifies the treatments utilized for these conditions, which apparently include a variety of surgical, manipulative, and medicinal therapeutic approaches. Furthermore, preventative measures for these important illnesses are also explored, as are the informant’s conceptualizations of associated pathologies and processes of healing. Specifically, the locally acknowledged livestock illnesses of *pink eye*, *shipping fever*, *worms*, *milk fever*, *mastitis*, *scours*, *colic*, *hollow head*, *hollow horn*, *hollow tail*, and the etic generalizations of informant’s knowledge of lameness, external parasites, wounds, and bleeding are demonstrated in this chapter. A wide variety of medicines were identified as folk treatments for these conditions, and materia medica suggested by the informants are presented in this chapter in correlation with their associated animal illnesses. According to the informants, many of the treatments outlined here are effective, and many were apparently learned from other community based animal healthcare agents or kin.

Chapter Six explores several illnesses of horses and cattle which are termed *poisonings* in the local vernacular. These conditions result as a consequence of livestock

ingesting toxic plants. Specifically, the informants identified seven distinct conceptualizations of *poisoning*, which include *buckeye poisoning*, *wild parsnip poisoning*, *snuffweed poisoning*, *wild cherry poisoning*, *laurel poisoning* [which is also known as *ivy poisoning*], white-snake root poisoning [which is known in the local vernacular as *milk poisoning* or *fall poisoning*], and *stagger*. Of these, four types of *poisonings* easily translate to toxicities commonly known to DVMs, however three [*wild parsnip poisoning*, *snuffweed poisoning*, and the folk poisoning of *stagger*] are not so easily transposed from ethnographic data collected in this project. Furthermore, a variety of locally attainable materia medica were identified as folk treatments for these *poisonings*. Interestingly, many treatments suggested by informants have therapeutic actions which are known to be effective for toxicities. In fact, some toxicity treatments suggested by informants are similar to those utilized by formally trained practitioners, and pertinent comparisons are drawn in this chapter to the important extension publication, *Plants Poisonous to Livestock and Pets in North Carolina* (Hardin, Brownie, and North Carolina Agricultural Research Service, 2003). Most *poisonings* are veterinary emergencies, and it is apparent that folk veterinarians are the first, and often times only responders to these crises in the study area. Interestingly, no pharmaceutical products were recommended by informants for the treatment of *poisonings*, and stock-keepers of the region apparently have a complex knowledge of poisonous plant ecology and seasonality which helps them diagnose and prevent common illnesses caused by toxic plants.

Finally, Chapter Seven summarizes the finding of this project and suggest some potential applications of my research. This research project indicates that formally trained large animal veterinarians are inaccessible to many stock-keepers along the Blue Ridge, and

community based animal healthcare workers can and do provide useful and effective animal healthcare services in the underserved area. It is apparent that folk veterinary knowledge and skill has potentially useful applications in the southern mountains, which for example, could be used in the training of para-veterinary personnel or in the participatory development of techno-blended approaches to help solve animal healthcare problems. Furthermore, research and development efforts directed toward the scientific study of ethnoveterinary materia medica identified by this study may be especially beneficial to organic producers and small holder livestock keepers that do not have access to a formally trained veterinary practitioner, or modern veterinary pharmaceuticals. Yet, I also caution that many folk veterinary techniques might indeed prove damaging to animal health and well-being, and further research is needed if specific therapies are to be endorsed or marketed in the future. Finally, the vernacular lexicon utilized to describe and identify animal illnesses, and folkways of conceptualizing animal maladies differ significantly to taxonomies employed by formally trained veterinarians. Sadly, folk medical practice is all too often marginalized and even ignored by official practitioners, yet I argue that a cultural competency of vernacular veterinary medical practice is essential to formally trained veterinarians wanting to effectively communicate with mountain stock-keepers, and thus, gain their trust and patronage.

## Chapter 2: Literature Review

### **Ethnoveterinary Medicine, Folk Veterinary Medicine, and Veterinary Anthropology**

The earth's greatest cultural and ecological transition started during the Neolithic revolution some ten to twelve thousand years ago, when humans largely shifted from hunter-gatherer societies and mobile lifestyles to a culture of sprawling agricultural civilizations and transhumance. With this transition, the domestication of animals catapulted humans into a new relationship with the natural world, whereby *Homo sapiens* were directly responsible for the well-being of other non-human creatures, in what has been termed the "domesticated animal contract"<sup>2</sup> (Anderson 1998; Larrère & Larrère, 2000; Palmer, 1997). Since the advent of agriculture, stock-raisers have naturally been concerned about animal health (Bierer, 1955; Shanklin, 1985) and have been experimenting and developing their own veterinary theories and techniques. "Until the early 1900s most veterinary practices could be considered 'traditional' in the sense that they were derived from long experience and underwent little fundamental change in many of their tools and techniques" (Mathias et al., 1996, p. 3). Interestingly, traditional and complementary medicine continue to be widely used in most countries, and these practices are increasing in prevalence in others (World Health Organization [WHO], 2014). It is estimated that nearly 80% of the earth's inhabitants still rely on ethnomedicine<sup>3</sup> (Alves & Rosa, 2012), and as early as the mid-1990s, upwards of 80-90% of humans were thought to rely on ethnoveterinary care for livestock (Mathias et al.,

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<sup>2</sup> The "domesticated animal contract" represents an ethic in which humans have a moral responsibility to treat domesticated livestock with more equality and respect. According to Samantha Hurn (2012) this type of mentality can be viewed as an extension of hunter-gatherer ontology (p. 65).

<sup>3</sup> Ethnomedicine is "the people's medicine," which is also synonymous with the term "folk medicine." Essentially, ethnomedicine is the medical practices of informally trained providers.

1996, p. 1), and similar figures likely exist for small animals. However, Mathias et al. (1996) also noted:

The prospects for the universal extension of “high tech” or high-input Western-style medical and agricultural technologies [to the global south] are dim when viewed in the context of such technology’s soaring prices, the shaky economies and politics of many nations, and burgeoning human and livestock populations. (p. 1)

According to the expertise of many medical anthropologists (Inhorn & Wentzell, 2012; McElroy & Townsend, 2009; Singer & Baer, 2007; Witeska-Młynarczyk, 2015) the economic, environmental, and biological sustainability of many modern technologies is questionable and according to Mathias et al. (1996), concerns of sustainability have led to greater interest in and acceptance of disciplines previously relegated to the fringes of Western medical/veterinary practice including: Osteopathy, homeopathy, acupuncture, chiropractic and herbal and holistic medicine (p. 1). In both First and Third World countries, the search for alternatives has also triggered a re-evaluation and appreciation of ‘ethnoscience’: local or indigenous knowledge and methods of cropping, stock-raising, healing, managing natural resources, and so forth (Brokensha, Warren, & Werner, 1980; McCorkle, 1989; Slikkerveer, Brokensha, Dechering, & Warren 1995). Mathias et al. (1996) commented:

Scientists and developers are increasingly searching for alternative paradigms—social as well as technical—to achieve continued progress in medicine and agriculture. The search is on-going in both human and veterinary medicine, plant and animal agriculture, First and Third Worlds, and at grassroots as well as government levels. It

[sustainability], focuses on concerns of affordability, environmental friendliness, socio-organization, and institutional manageability or ‘implementability.’ (p.1)

Mathias et al. (1996) comment further:

The larger literature on ethnopharmacology suggests that traditional treatments based on natural materials prepared and administered according to time-tested prescriptions and regimes tend to be environmentally more benign than their Western commercial equivalents. They may be less effective but also pose less danger of seriously polluting local water supplies, lands, or animal based foodstuffs. (p. 12)

Ethnoveterinary medicine is a rather recently defined sub-discipline of medical anthropology (McCorkle, 1986) that includes the interdisciplinary scholarship of a few researchers in veterinary folklore, veterinary anthropology, veterinary science, sociology, and sustainable development. Historically, scholars of folk medicine have largely ignored ethnomedical practices directed toward domesticated animals, and have instead focused their attention toward humans. However, several researchers have noted that “traditional” therapeutics are typically used in both domesticates and humans (Anjaria, 1996; Ibrahim, 1996; Roepke, 1996), and disease surveillance and prevention [ethno-epidemiology], infectious and zoonotic disease control, and food safety assurance are applications of ethnoveterinary research (Maliki-Bonfiglioli, Diallo, & Fagerberg-Diallo, 1996; Grandin & Young, 1996; Kohler-Rollefson, 1996; McCorkle & Martin, 1998; Perezgrovas, 1996; Schillhorn Van Veen, 1996; Shanklin, 1996; Stem, 1996) transcending problems at the human-animal interface.<sup>4</sup> Furthermore, it is apparent that ancient ethnoveterinary texts and

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<sup>4</sup> The human-animal interface is defined by Reperant and Osterhaus (2014) as “a continuum of contacts and interactions between humans, animals, their products, and the environment, and represents the medium allowing cross-species transmission of zoonotic and emerging human and animal pathogens.” Importantly, this interface

practices from Egypt, India, China, and elsewhere have inadvertently informed both modern physicians and veterinarians (Lin & Panzer, 1994; Mitchell, 1993; Schwabe, 1993; Shirlaw, 1940). Calvin Schwabe's extensive research on cattle doctors in Egypt's Nile Valley has also demonstrated that current ethnoveterinary practices have deep roots in the ancient cattle doctoring traditions of the African subcontinent (Schwabe, 1996).

Ethnoveterinary medicine represents a type of ethnoscience or indigenous knowledge<sup>5</sup> that is concerned with both agro-ecological processes and medical know how. This type of knowledge encompasses both empirical understanding and tradition, while it should be noted that biomedical understanding<sup>6</sup> has more recently been incorporated into folk medical practice through various forms of media and education. Much of ethnoveterinary know how has been passed down from generation to generation by word of mouth or by imitation through processes of folk transmission,<sup>7</sup> while ethnoveterinary knowledge also

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is where human culture and animal husbandry interact as complex determinants in the health of animals, humans, and the environment.

<sup>5</sup> "Ethnoscience" is an inherent form of empiricism that informs people [folk, ethnos] about the world around them. Indigenous knowledge is a broader term which concerns the people's science, in addition to customs, traditions, and other beliefs based in folk ontology. Post-modern and post-colonial critiques of Western paradigms of knowledge have brought new attention to the value and application of folk knowledge. Research on indigenous knowledge has been especially vigorous in the realms of agro-ecology and ethnomedicine and a number of journal titles have routinely published pertinent research in these areas, including: *The Journal of Ethnobiology and Ethnomedicine*; *The Journal of Ethnopharmacology*; *Veterinary Parasitology*; *Agriculture and Human Values*; *The Indigenous Knowledge and Development Monitor*; *Development and Change*; *Culture and Agriculture*; *Pharmacotherapy*; *Human Organization*; and *Tropical Animal Health and Production*.

<sup>6</sup> In Britain, the word "biomedicine" first appeared in Dorland's 1923 *Medical dictionary*, and was defined as: "clinical medicine based on the principles of physiology and biochemistry" (Quirke & Gaudilliere, 2008). After the wide-spread acceptance of germ theory, the institutionalization of medical education, and the advent of antibiotics, biomedicine became increasingly concerned with the study of microbiology and infectious disease. Unfortunately, practitioners of biomedicine have undoubtedly been pre-occupied with the biological determinants of health, while socio-economic, cultural, and environmental determinants of health have been largely overlooked. This inadequacy of modern biomedicine, which is based in problems of scientific reductionism, have led many medical anthropologists to question biomedicine's ability to identify, treat, and prevent illness effectively and equitably in today's complex global society.

<sup>7</sup> According to Jan Brunvand (1998), folklore is defined as: "The traditional, unofficial, non-institutional part of culture. It encompasses all knowledge, understandings, values, attitudes, assumptions, feelings, and beliefs transmitted in traditional forms by word of mouth or by customary examples." The term "folk-life" is now widely used in both Europe and America to identify folk knowledge and cultural behaviors. Some scholars believe "lore" is an antiquated word associated with fallacy, peasants, and the past, while "life" better encompasses all cultural groups and a broader folkloristic scholarship of human behavior.

continues to be developed or modified by local groups as their ecological, economic, social, demographic, or other circumstances change (Mathias et al., 1996). Such knowledge and skill has important implications for the health of both people and non-human animals, and the application of ethnoveterinary knowledge in livestock raising communities has the potential to improve socio-economic conditions. Constance McCorkle (1995), a pioneer in veterinary anthropology defines ethnoveterinary research and development as:

The holistic, interdisciplinary study of local knowledge and its associated skills, practices, beliefs, practitioners, and social structures pertaining to the healthcare and healthful husbandry of food-, work-, and other income producing animals, always with an eye to practical development applications within livestock production and livelihood systems, and with the ultimate goal of increasing human well-being via increased benefits from stock raising. (p. 53)

According to Sansoucy (1994), livestock are a driving force for food security and sustainable development and have a direct impact on human well-being as well.

Accordingly, much of ethnoveterinary research and development has been focused on serving smallholder stock-raisers—including many peri-urban farmers and women—and poor or remote rural groups who cannot afford or lack access to conventional veterinary services (Mathias et al., 1996; Mathias-Mundy, Wahyuni, Murdiati, Suparyanto, 1992).

Ethnoveterinary research has been typically applied through techno-blended approaches<sup>8</sup> in

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<sup>8</sup> Techno-blending, or techno-grafting, is a process whereby formal scientific knowledge is integrated with more traditional practices (and vice-versa). According to Mathias et al. (1996), this process has afforded easy, efficacious, and cost effective solutions to many animal healthcare problems in the developing world. According to these authors, techno-grafting has even contributed to the conservation of indigenous knowledge and biodiversity, and some ethnoveterinary botanicals have subsequently been reformulated into affective, easily distributed medicines that can even be marketed by indigenous groups.

an effort to train para-veterinary personnel, or to make ethnomedicines more readily available to peasant stock-keepers.<sup>9</sup> Accordingly, ethnoveterinary research has not surprisingly fixated its attention on the Global South. However, it is easy to infer that folk veterinary medical practices are relevant wherever humans care for non-human animals. For example, even in the Western developed world, formally trained large animal veterinarians are not accessible to everyone during every hour of the day or night, and oftentimes only community based animal healthcare agents [CBAHA]<sup>10</sup> are able to respond to an emergent crisis. Also, there is an increasing consumer demand for local, organically grown, and humanely produced meat and dairy products (Adams & Salois, 2010; Dimitri & Greene, 2000; Dimitri & Oberholtzer, 2009; Harper & Makatouni, 2002; Howard & Allen, 2010; Sahota, 2010) which fosters small farms, agro-ecological methods, and consequently folk veterinary providers; with their alternative arsenal of more natural and affordable *materia medica*. However, little research on ethnoveterinary medicine has been conducted in the developed world, and such research is especially scant in North America. Unfortunately,

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<sup>9</sup> Much of ethnoveterinary research and development has focused on identifying botanical ethnoveterinary medicines which have potential applications in Western alternative and complementary veterinary medicine (Refer to: Baïracli-Levy, 1991; Hussain, Khan, Iqbal, & Sajid, 2008; Katerere & Luseba, 2010; Morris & Keilty, 2006; Tabuti, Dhillon, & Lye, 2003; Wynn and Fougère, 2007). Plants employed in traditional medicine are two to five times more likely to test out as pharmacologically active than any random sample of plants (Daly, 1983). According to Mez-Mengold (1971), most modern pharmaceutical companies started over a century ago selling plant extracts, and according to Cox and Balick (1994), approximately a quarter of all prescription drugs currently sold in the Western world still use active ingredients derived from plants.

<sup>10</sup> Community based animal healthcare workers (CBAHW) [a.k.a. Community based animal healthcare agents (CBAHA)] are invaluable resources in communities underserved by formally trained veterinarians. These individuals perform important animal healthcare duties which include the prevention and treatment of disease, surgery, and emergency response. CBAHW are typically livestock keepers themselves, and are trained through a lifetime of experience with animals and/or apprenticeship with another healer. Many CBAHA also act as human folk doctors, however their ability to practice medicine [human or veterinary] is oftentimes relegated as illegal in many countries. Nonetheless, CBAHW have been identified as important agents in integrated veterinary medical systems in the developing world, whereby these healers are trained as veterinary para-professionals who serve their communities with techno-grafted techniques that are both accessible and affordable, yet also complementary to formalized veterinary medical intervention. Refer to: Bhandari & Wollen, 2008; Catley, Blakeway & Leyland, 2002; and Mathias & McCorkle, 2004, for insightful perspectives on community based animal healthcare.

many practitioners of conventional veterinary medicine are largely unable to respond to the recent onslaught of specialized animal healthcare needs associated with organic agricultural movements,<sup>11</sup> and many organic farmers are entirely responsible for the health of their animals due to a widespread shortage of organically keen, formally trained practitioners (Benedsgaard, Thamsborg, Vaarst, & Enevoldsen, 2003; Hardeng & Edge, 2001; Vaarst, Lund, Roderick & Lockeretz, 2004; Valle, Lien, Flaten, Koesling, & Ebbesvik, 2003; Sutherland, Webster, & Sutherland, 2013).

An especially valuable insight into the global distribution of ethnoveterinary research is Martin, Mathias, and McCorkle's *Ethnoveterinary Medicine: An Annotated Bibliography of Community Animal Healthcare* (2001). This invaluable reference includes 1240 abstracts from 118 countries. Abstracts from this bibliography originated in 39 African countries, 32 Asian, 25 European, 19 countries in the Americas, and in 3 countries of Australasia. The authors assert that "the percentage distribution of abstracts across continents roughly parallels the country count" (p. 2). In addition to these abstracts, many other peer reviewed "ethnoveterinary" papers were examined for this literature review, while only a mere handful were found to concern ethnoveterinary medicine in North America. Known ethnoveterinary literature originating in the United States includes Elizabeth Lawrence's research on many of the beliefs and practices of Native Americans in the Great Plains region (1996, 1998), while two papers outline folk veterinary medicines utilized in British Columbia, Canada (Lans, Turner, Khan, Brauer, & Boepple, 2007; Lans, Turner, Khan, & Brauer, 2007). No abstracts

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<sup>11</sup> Veterinarians are not typically trained in alternative or complementary medicine during their formal education, however, professional organizations including the American Holistic Veterinary Medical Association, the American Veterinary Chiropractic Association, and the International Veterinary Acupuncture Society have recently emerged as significant facilitators of education, practice, and fraternity in holistic veterinary medicine.

from the Martin et al. annotated bibliography (2001) originated from the Appalachian region, and Rosemary Brookman's "Folk Veterinary Medicine in Upper East Tennessee" (1977) received no attention in this compilation. Brookman's important work, which will be discussed in upcoming chapter subsections on ethnoveterinary practices in Appalachia, was evidently overlooked by these scholars.

### **Shifting Agricultures and Transitioning Attitudes toward Animals and their Health**

Within the last half century, livestock rearing activities throughout much of the world have aggressively shifted from subsistence type stock-raising and localized use of animals and their products, to large scale industrial animal production systems dependent upon external markets and capitalist economic principles (Allen, 2009; Fitzgerald, 2003; Sahlins, 1972). Not surprisingly, this profound shift in agricultural production has had extreme implications for animal health, human health, and the environment (Atlas & Maloy, 2014; Bengis, Kock, & Fischer, 2002; Davis, 2011; Diamond, 1998, 2002; Gold & Moellering, 1996; Lam & Chua, 2002; Patz, Epstein, Burke, & Balbus, 1996; Reperant & Osterhaus 2014; Swabe, 1999; Torrey, & Yolken, 2005). In addition to an array of detrimental effects on the three domains of health outlined in "One Health" initiatives,<sup>12</sup> the industrialization of agriculture has also led to drastic changes in societal structure whereby cultural perceptions of animals have morphed significantly in response to *Homo sapiens'* evolving relationship with non-human creatures (Bulliet, 2005; Clutton-Brock, 2015; Dollis, 1999; Serpell, 2003). Furthermore, the shifting nature of human-animal relationships during this post domestic

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<sup>12</sup> The study of health from a holistic, interdisciplinary, systems approach has been termed "One Health," and a great deal of biomedical and anthropological research as of late has focused on identifying the complex interactions of an infinite number of determinants in health, by utilizing systems science theory among other methodologies in the study of human-animal ecological interfaces.

era<sup>13</sup> has more recently prompted increased societal attention to animal welfare and animal health. Both consumers and producers are increasingly rejecting industrial models of livestock production and substantial markets have developed for “organic,” “natural,” “sustainable,” “humanely raised,” “cage free,” “grass-fed,” and “local” animal products. Long overdue, formal veterinary institutions and universities are finally starting to question the healthfulness of intensive livestock rearing activities and veterinary professionals are increasingly being held ethically responsible for safeguarding the welfare of animals (Arkow, 1998; Edwards, 2004; Hewson, 2003). Societal concern for animal well-being has increased significantly over the last two decades and veterinarians now more than ever are responsible for upholding their professional oath:

“Being admitted to the profession of veterinary medicine, I solemnly swear to use my scientific knowledge and skills for the benefit of society through the protection of animal health and welfare, the prevention and relief of animal suffering, the conservation of animal resources, the promotion of public health, and the advancement of medical knowledge. I will practice my profession conscientiously, with dignity, and in keeping with the principles of veterinary medical ethics. I accept as a lifelong obligation the continual improvement of my professional knowledge and competence.” (AVMA, 2015)

Despite the palpable moral and ethical dilemmas facing many consumers, producers, and veterinarians in our post-domestic society, justification for *Homo sapiens*’ continued use of animals is exemplified by many scholar’s work (Pollen, 2006; Berry, 1978, 1992;

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<sup>13</sup>According to Hurn (2012), paraphrased from Bulliet (2005), “Post-domestic societies are characterized by the removal of most consumers from the reality of intensive livestock production, a close but inherently anthropomorphic relationship with pets and a suppressed sense of guilt about industrial farming practices and the widespread exploitation of animals.

Horrigan, Lawrence, & Walker 2002; Sansoucy, Jabbar, Ehui, & Fitzhugh, 1995). Unlike most people living in industrialized western societies, many agrarian and rural peoples the world over provide case in point evidence for the appropriate and sustainable management and use of animal power and product.<sup>14</sup> Furthermore, sustainable agricultural movements focusing on the principals of localized organic production foster humane animal use in small scale farming systems.<sup>15</sup> For instance, animals provide soil amending manure, fossil fuel free sources of traction and draft, natural insect and varmint control, fibers and plumage for clothing and bedding, and a source of protein and calories that is readily available year round in even the most extreme of climates. In addition to all of this, both domestic and wild animals play undeniable roles in the formation of cultural identity, and importantly, non-human animals have undoubtedly shaped what it simply means to be “human.”<sup>16</sup> Although most Americans are now removed from the farm and are thus ignorant of livestock husbandry, many in rural Appalachia continue raising animals and are thereby knowledgeable of animal health and are thus responsible for animal welfare.

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<sup>14</sup> The Nilotic people of east Africa, the Berber of the high Atlas Mountains, and other groups including the Fulani of West Africa and the Saami of circumboreal Europe, all practice livestock production through transhumance. This production method involves the seasonal movement of livestock to alternating grazing lands in order to maximize natural inputs from the environment. Furthermore, this method of production limits the concentration of pathogens in the environment, which lowers the need for antimicrobial use and other external inputs.

<sup>15</sup> According to the International Federation of Agricultural Movements (IFOAM), organic agriculture is defined as “a production system that sustains the health of soils, ecosystems and people. It relies on ecological processes, biodiversity and cycles adapted to local conditions, rather than the use of inputs with adverse effects. Organic Agriculture combines tradition, innovation and science to benefit the shared environment and promote fair relationships and a good quality of life for all involved” (IFOAM, 2005). Although this definition does not directly mention animal welfare, it certainly implies an ambiguous “good quality of life for all involved.” One can assume that use of the word “all,” includes non-human animals. Furthermore, other ethical principles associated with sustainable agriculture include “humanely raised” certifications, which require animals to live more natural lives with reduced stress and pain.

<sup>16</sup> For insightful perspectives examining how non-human animals have informed human identity refer to Clark (2007), Diamond (2002), Evans-Pritchard (1940), Hurn (2012), Leach (2003, 2007), Marks (2003), and Noske (1997).

## **Livestock Rearing in the Southern Appalachian Highlands**

Many of the high mountains and plateaus of southern Appalachia are not well suited to large scale livestock production due to a variety of geophysical features. Therefore, with the exception of the foothills and the Great Valley of Virginia and Tennessee (Otto, 1983) and urban centers like Knoxville, TN, and Asheville, NC, (Walker, 2000), the area has remained relatively free of industrialized commercial agricultural activities. Instead, rural highland regions of Appalachia have historically supported small-holder livestock rearing activities, subsistence agriculture, barter economies, and small scale agricultural production for local and national markets (Beaver, 1986, 1992; Beaver, Ballard, & Hicks, 2013; Billings & Blee, 2000; Hatch, 2003; Howell & Stonich, 2003; Olson, 1998; Otto, 1983; Pudup, 1990). In a highland county of North Carolina, Elvin Hatch (2003) identified that the production of milk and surplus calves was the most significant source of cash for households, while eggs, butter, crafts, and other botanicals provided substantial bartering opportunities during the 1930s. Hatch (2003) also noted that many subsistence activities persisted in the area well after World War II. Howell & Stonich (2003) note that subsistence farming activities persisted in the Big South Fork region of Tennessee up until the 1970s, while Glassie (1969) commented that a rich “traditional” culture was preserved in the Upland South due to the prevalence of “small, nearly self-sufficient” farms.

Having said that, it should also be noted that by in large, Appalachian economies have been transformed by the extractive industries [timber, coal, and other minerals] (Anglin, 2002; Eller, 1982; Shifflet, 1991; Williams, 2002); tourism (Boyer, Monsas, & Moretz, 1993; Davis, 2000; Long, 2010; McGehee & Meares, 1998) and other sectors of manufacturing and public work (Eller, 1982; Hatch, 2003, Hinsdale, Lewis, and Waller, 1995; Williams, 2002).

In fact, during a 50 year time period following the year 1880, mountain farms decreased in sized from 187 acres to 76 acres, and by 1930 most farms had already become part-time units of production when the predominant source of income in the region shifted to non-agricultural employment (Eller, 1982). By 1954, the average Appalachian farm was 81 acres [compared to the U.S. average of 242 acres] and nearly half of the farms in the region had other income greater than farm sales (Ford, 1967). An insightful vantage point on the progression of this agricultural transformation can be achieved by review of United States Department of Agriculture livestock census statistics. For instance, beef cattle herds increased in some parts of the region following World War II due to their cash crop potential, while sheep decreased in prevalence, largely due to a decline in the wool market and competitive advantages associated with globalization (Jarrell, 2011). Significant geographical and periodic variations in livestock densities are also noted between and even within mountain counties of the study area. For example, the 1930 agricultural census indicated that Avery County had 5,407 cattle; 8,099 sheep; 1,839 swine; and 871 horses; while Ashe County had 20,021 cattle; 28,712 sheep; 6,324 swine; and 2,884 horses. The 1969 census indicated that Avery County contained 3,618 head of cattle; 205 sheep; 330 swine; and an unknown number of horses; while Ashe County contained 23,834 head of cattle; 1,990 sheep; 1,210 swine; and once again, an unknown number of horses. Finally, the 2012 agricultural census indicated that Avery County, NC was home to 1,444 head of cattle; 251 sheep; 20 swine; and 218 horses; while nearby Ashe County had 19,521 head of cattle; 1,148 sheep; 221 swine; and 910 horses. A number of variables are certainly at play in the construction of these statistics, however the number of horses certainly dropped as a consequence of mechanization, while the number of swine likely declined as a result of the

American chestnut blight, enclosure laws, and changing domestic lifestyles. Cattle numbers remained relatively constant during the time period examined above; however, the total number of cattle on individual farms drastically increased, representing a transition from family subsistence [eg. milk cows] to market production [beef herds, dairy farms].

Although it is evident that livestock keepers in the southern Appalachian highlands integrate their products into external markets, concentrated animal feeding operations [CAFOs] and factory farms are very uncommon in the mountains. According to the 2012 USDA agricultural census, livestock head counts on individual farms in the highlands of North Carolina and Tennessee are significantly lower than averages noted across much of the United States. Unlike industrial farm workers and absentee ranch owners, livestock keepers in the southern highlands [due to the small size of herds] often have deep and meaningful relationships with their animals.<sup>17</sup> Some scholars of domestication describe such wholesome human-animal relationships as a symbiosis between keeper and herd (Hurn, 2012; Russell, 2007). Not surprisingly, such a connection is all but absent on factory farms where livestock simply have an identification number and a monetary value. Although exceptions exist, when compared to factory farmers, small scale producers place greater value in an individual animal's life, typically provide better living conditions, use fewer pharmaceuticals and agrichemicals, and practice agriculture that is more attune to local ecological processes. In essence, small-holders of livestock demand fewer resources by naturally minimizing the need for external inputs, which thus fosters agricultural sustainability.

It should also be noted that both the region's landscape and culture have been shaped by the ubiquitous influence of wild and domestic animal life. For example, early

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<sup>17</sup> An insightful look at the relationship between livestock and keeper in Appalachia can be found in Collins & Hunter (1999).

settlers first came to the region in pursuit of pelts sold in the fur trade while ox driven wagons and those on horseback traversed the Great Valley of Virginia in search of new found homesteads in the southern and central mountains (Davis, 2000; Williams, 2002). Settlers brought with them a host of domestic farm animals which forever changed the landscape. Great forests were cleared using animal traction, which thus made room for grazing sheep and cattle (Otto, 1983) and the innumerable livestock drives that followed (Henlein, 1959; Williams, 2002). Swine roamed the mountain commons in search of acorns and chestnuts (Boyer, 2006) while ponies pulled coal from deep mines underground. Milk cows and chickens were found at nearly every homestead, and many rode horses and mules to church and school, or to market. The first roads of the region were graded by teams of horses or mules, and just 20-30 years ago it was not uncommon to see people plowing their fields with draft animals. The region's folk song traditions, play party games, square dance sets, local crafts, and local economy were all highly influenced by various forms of animal life,<sup>18</sup> and importantly, non-human animals continue to morph human identity in the region today. Yet in these modern times, companion animals largely overshadow the cultural role that farm animals once occupied in the Appalachian populace. That said, livestock remain important cultural entities throughout the mountains, and significantly, these creatures continue to have both socio-economic and ecological influence on the region's landscape today.

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<sup>18</sup> For examples of how animal life has influenced Appalachian folk traditions, refer to Brown & Hand (1964); Howell & Stonich (2003); Jamison (2015); Olson (1992, 1998); Warner & Warner (2000); and Warner, Warner, & Epstein (1984). Many examples of this relationship exist in the corpus of Appalachian literature, however, few researchers have directly confronted how Appalachian folk traditions are oftentimes a representation of non-human animals.

### **Formally Trained Veterinary Practitioners in the Southern Highlands**

Despite the historical and ongoing importance of small farms in the region, formally trained large animal veterinarians have always, and unfortunately still remain inaccessible to many stock-keepers in the southern highlands. It should be noted that veterinary accessibility is lacking throughout many regions of rural America, and the profession is actively seeking solutions to these problems with an added emphasis being placed on addressing widespread food animal veterinary shortages (AVMA, 2013). In Appalachia, social science and public health researchers have historically focused on exposing human healthcare inadequacies,<sup>19</sup> while veterinary accessibility has been all but ignored. However, a report released in October 2015 by the newly formed Center for Animal Health in Appalachia at Lincoln Memorial University found that 75 percent of rural counties within the region have an apparent veterinary shortage. The study calculated a total shortage of some 1,907 veterinary practitioners in the Appalachian Regional Commission's geographical confines of Appalachia (AVMA, 2015). No other compilation of state or regional data outlining the density of formally trained large animal practitioners was found in this review of literature, however, a search on the North Carolina Veterinary Medical Association's [NCVMA] website indicated that three ambulatory member practitioners [large animal] live in the North Carolina study area. My first hand professional knowledge of these practitioners indicates that only one of them practices full time mobile large animal veterinary service, while the other two practice predominately small animal office medicine. That said, the author is aware of at least one additional non-NCVMA member who lives and practices large animal

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<sup>19</sup> For literature examining human healthcare accessibility in the Appalachian region, refer to Behringer (1994); Behringer & Friedell (2006); Ford (1967); Hare & Barcus (2007); Haverson & Harner (2004); and Huttlinger, Schaller-Ayers, & Lawson (2004).

medicine [part time] in the study area, and others do have the area within their sprawling practice radius.

Unfortunately, new graduates of veterinary institutions, me included, find large animal veterinary work in many regions of the mountains to be a daunting task. According to USDA agricultural census data, livestock densities are very low in many mountain counties, and subsequently, the geographical practice radius [service area] of mobile large animal veterinarians must be very large. As a result of these problematic animal demographics, which are compounded by the highland's undulating system of roadways, large animal veterinarians must work extreme hours for little financial reward. From personal experiences working in both large and small animal practice in the region, animal keepers of the Blue Ridge oftentimes cannot pay the fees associated with veterinary services, and many farmers don't have the proper facilities needed to work large animals. As a result, farm calls are commonly time intensive and even dangerous, and practitioners are not always guaranteed full compensation, which in turn makes it challenging to pay off student loan debt or the mortgage on a practice. Sadly, Appalachia is no land of opportunity for veterinary school graduates in search of farm animal jobs, despite the need for animal health services throughout the region. To further complicate the inaccessibility of formally trained animal doctors in the region, elder veterinarians are retiring or switching to small animal office jobs, while new veterinary graduates interested in large animal practice flock to "horse country" or the lands of CAFOs and feedlots. The accessibility of official veterinarians to mountain stock-keepers will be explored further in ethnographic data presented in chapter four.

## **Folk Veterinary Practitioners in Appalachia and their Epistemologies**

In Appalachia, ethnoveterinarians play significant roles in maintaining the health of animals in rural settings. Yet research examining folk veterinary practitioners is scant,<sup>20</sup> and in fact, such literature is lacking throughout the United States and also in other developed nations. However, it is evident that folk practitioners of animal medicine are prevalent in rural America despite the lack of scholarly attention given to this important population. Folk veterinarians attend to a variety of animal health care problems, and not surprisingly these individuals play significant roles in safeguarding animal production, health, and welfare. Without community based animal healthcare agents, farm animal morbidity and mortality would likely increase throughout many agrarian regions of the United States, especially where formally trained veterinarians are inaccessible. On the contrary, folk veterinarians might also have detrimental effects on animal health as well (Mathias et al., 1996), which further justifies our need to better understand this indispensable population of practitioners.

Folk practitioners of human medicine have been well described in the Appalachian region (Cavender, 2003; Crellin, Philpott, & Bass, 1990; Evans, Kileff, & Shelley 1982; Green, 1978; McCallister, 1999), however little scholarship has considered the folk veterinarian. Albeit brief, Rosemary Brookman's article "Folk Veterinary Medicine in Upper East Tennessee" (1977), makes one of the most important contributions to our understanding of folk veterinarians in Southern Appalachia. In her research, Brookman thoughtfully gives important background information about her interviewees and also

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<sup>20</sup> Very little research has examined folk veterinary medicine in southern Appalachia, however, several scholars have contributed research on Pennsylvania Dutch "pow-wowing" for animals. This magico-religious folk medical technique [which has virtually nothing to do with the Native American practice for which it was named] utilizes charms and holy words to heal both man and beast. For more information on these Germanic traditions refer to Hohman (1877); Kriebel (2007); and Yoder (1976, 2005).

demonstrates how these individuals conceptualize and treat animal illness. Not surprisingly, many folk beliefs and folk therapies expressed by Brookman's informants differ significantly from the practices of formally trained veterinarians. Unlike other works concerning vernacular veterinary medicine in Appalachia, Brookman performs insightful analysis of the folk veterinary medical system and its practitioners, and her research is both critical and descriptive. Brookman's paper is a unique ethnoveterinary study from the region and is both objective and methodologically sound. Unfortunately, little follow-up research has been spawned by her scholarship, however, Anthony Cavender is currently compiling a paper on vernacular veterinary medicine in Tennessee (Personal communication, June, 2015).

Other literature concerning folk veterinary practitioners is certainly less noteworthy compared to the aforementioned work by Brookman. However, it should be noted that the *Foxfire Magazine* and *Foxfire Book* series contain several oral histories of livestock farmers who hold noteworthy knowledge of animal health.<sup>21</sup> Although not analytical in nature, *Foxfire* offers important insight into the beliefs and practices of animal keepers in the southern mountains. In fact, Elliot Wigginton and other editors, with the help of generations of high school students, have compiled a formidable repository of folk veterinary literature originating in Southern Appalachia. *Foxfire* publications highlight the skills, practices, and beliefs of many farmers and horse traders in Northern Georgia and the Carolinas. Although less objective than Brookman, the editors of *Foxfire* have assimilated a valuable resource which offers important glimpses into the veterinary practices of small scale

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<sup>21</sup> Significant *Foxfire* literature concerning animal health in Appalachia includes the following titles: "Slaughtering hogs" (Wigginton & Gillespie, 1972, pp.189-198); "From raising sheep to weaving cloth" (Wigginton, 1973, pp. 172-185); "Cattle raising" (Wigginton, 1975, pp. 77-94); "Animal care" (Wigginton, 1975, pp. 93-119); "Horse trading" (Wigginton, 1977, pp.213-251); "Let me tell you about this mule" (Wigginton & Bennett, 1984, pp.488-510); and "Farm animals" (Collins & Hunter, pp.201-237).

livestock farmers in the region. From these works, we easily glean the informal nature of ethnoveterinary knowledge, whereby folk practitioners are trained through apprenticeship and experience, use few pharmaceutical medicines, and exemplify minimal biomedical understandings of disease causation. Furthermore, the *Foxfire* literature demonstrates the undeniable influence farmers have on their animal's health and welfare.

### **Folk Veterinary Medicines of Southern Appalachia**

Diverse cultural groups of the southern mountains have a long history of utilizing readily available materials as medicines for themselves and their animals. Many of these medicines are obtained from the natural environment, and others are commonly found in the home. The pharmacognasy<sup>22</sup> of animal keepers in the region has been informed by European, North American, and even African pre-colonial knowledge systems, much like that of human folk medicine practiced in the region. Significantly, cross cultural exchange of Cherokee and European ethnomedical knowledge occurred when the region was settled by Scotts-Irish, English, German, and other settlers who invariably brought their livestock into Native North American cultures. Little is known about Cherokee ethnoveterinary knowledge, however Anthony Cavender has commented on the importance of animals in this cultural group's understanding of illness and medicine:

According to Cherokee myth, humans were without diseases until the animals created them in retribution for the lack of respect humans had shown them. The plants, however, felt that the animals were much too harsh, and volunteered themselves to provide a cure for every disease the animals created. (Cavender, 2003; Hudson, 1976)

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<sup>22</sup> Pharmacognasy is the knowledge of medicines. Ethnopharmacognasy is the folk knowledge of medicines.

Livestock keepers in the southern mountains utilize a variety of medicines to treat or prevent illness on the farm. Many of these medicines are also utilized in humans for similar conditions, however some therapies appear to be used exclusively and/or uniquely in animals. For instance, flour is used to treat diarrhea in both humans and cattle (Brookman, 1977; Cavender, 2003; Wigginton, 1975), while poke root [*Phytolacca americana*] is used to treat *sweeny*, *fistulas*, and *poll evil* in horses (Brookman, 1977; Wigginton, 1977), yet it is used for *rheumatism* and *scabies* in humans (Cavender, 2003). Interestingly, commercial liniment preparations formulated for animals are apparently used by humans as well (Cavender, 2003) while many veterinary pharmaceutical products were first developed in human biomedicine. Another parallel between human and animal folk medicine is the use of zootherapeutics [medicines derived from animals]. Materia medica like animal fats, meat, manure, eggs, milk, and cheese are used for the treatment of a variety of illnesses in humans and animals (Brookman, 1977; Cavender, 2003; Wigginton, 1975).

Also like human folk medicine,<sup>23</sup> lay veterinarians typically use generalized dosing and treatment regimes, and rarely make definitive diagnoses on which to place their medicinal choice. However, the literature available on Appalachian ethnoveterinary medicine indicates that folk remedies used for animals are often times therapeutic and are sometimes even curative. Although ethnoveterinary research in the region is scant, many animal illnesses have been documented in the regional lexicon, and a sampling of folk veterinary therapies can be gleaned in many of the aforementioned citations from the region.

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<sup>23</sup> Formalized medical therapies most commonly have specific dosing regimes. However, folk medical therapies do not. Instead, general doses are given to effect [eg. a “hand-full,” “spoon-full,” “bucket-full,” “a few,” “some,” “a lot”]. Furthermore, the use of non-specific doses is how a treatment is typically described or taught to others, and such methods are commonly effective when folk therapeutics are administered within the correct cultural context.

A systematic examination of that corpus of literature informed this table which outlines some of the documented ethnoveterinary materia medica of the region:

**Table 2.1:** Folk veterinary medicines documented in regional literature.

Key for sources: A = Brookman (1977); B = Wiggington (1973); C = Wiggington (1975); D = Wiggington (1977); E = Brown & Hand (1964); F = Kirkeminde (1976).

Medicine	Classification	Use	Source
Sweet Spirits of the Nitre (ethyl nitrate)	Commercial	Kidney Trouble	A
Blue Stone (copper sulfate)	Miscellaneous	Disinfectant, Sore Foot, Coccidiosis	A
Bag Balm	Commercial	“Chapped” or “Sore” Udders	A
Watkins Red Liniment	Commercial	Chest Colds, Coughs, Colic, Bloat, Roup	A
Turpentine	Commercial	“Cure-all,” Sore Tongue, Hollow Tail, Kidney Trouble, Warbles, Maggots, Thrush, Lameness, Worms, Hollow Horn	A, C, D, E
Salt	Food	Pink-eye, Sore Tongue, Hollow Tail, Retained Placenta, Mastitis, Warbles, Maggots, Routine Care	A, B, C, E, F
Pepper	Botanical	Sore Tongue, Hollow Tail	A, E
Dish Rag	Miscellaneous	Lost Cud	A
Peach Leaves	Botanical	Lost Cud	A
English Rosin	Miscellaneous	Calving	A
Brine of Cured Meat	Food	Retained Placenta	A
Flour	Botanical	Scours	A, C
Soot	Miscellaneous	Scours	A
Eggs	Food	Scours, Poison Ivy	A, C
Cheese	Food	Scours	A
Red Clay	Miscellaneous	Scours	A
Nutmeg	Botanical	Scours	A
Coca-Cola™	Food	Scours	A
Vinegar	Food	Scours, Mastitis	A
Vanilla Flavoring	Food	Scours	A

<b>Medicine</b>	<b>Classification</b>	<b>Use</b>	<b>Source</b>
Coffee	Botanical	Scours, Poison Ivy, Mountain Laurel Poisoning	A, C
Ginger Tea	Botanical	Scours	A
Karo Syrup™	Botanical	Scours	A
Air (Compressed)	Miscellaneous	Milk Fever, Sweeny, Old Age	A
Linseed Oil	Oil (Petroleum)	Bloat, Packed Stomach, Lameness	A
Kerosene	Oil (Petroleum)	Bloat, Buckeye Poisoning	A, F
Lamp Oil	Oil (Petroleum)	Bloat, Quinsy	A
Mineral Oil	Oil (Petroleum)	Bloat	A
Coal Oil	Oil (Petroleum)	Bloat	A
Milk	Food	Bloat	A
Motor Oil (Burt)	Oil (Petroleum)	Lice	A
Tobacco	Botanical	Lice, Bots, Worms, Staggers, Ivy Poisoning	A, F
Stock Dip	Commercial	Lice	A
Meat Skin	Food	Lice	A
Ashes	Miscellaneous	Lice, Worms	A, C
Carbolic Acid	Miscellaneous	Sore Foot, Greasy Heel	A
Elder Leaf Tea	Botanical	Bots, Sprains	A
Molasses	Botanical	Bots	A
Silver Dollar	Miscellaneous	Bots	A
Poke Root	Botanical	Sweeny, Fistulas, Poll Evil	A, D
Penny	Miscellaneous	Sweeny	A
Pumpkin Seed Tea	Botanical	Kidney Trouble	A
Muriatic Acid	Miscellaneous	Greasy Heel	A
Healing Powders	Miscellaneous	Greasy Heel	A
Red Oak Bark Poultrice	Botanical	Scratches	A
Mixed Fruit Acid	Botanical	Scratches	A
Alcohol	Miscellaneous	Scratches	A
Dynamite	Miscellaneous	Heaves, Lethargy	A
Alum (Powdered)	Miscellaneous	Colic	A
Ginger	Botanical	Colic	A
Arsenic	Miscellaneous	Bloody Wart, Cancer	A
Castor Oil	Oil (Petroleum)	Bloody Wart, Cancer	A
Pond Mud	Miscellaneous	Galls	A

Medicine	Classification	Use	Source
Spider Webs	Miscellaneous	Bleeding Wounds	A
Artificial Light	Miscellaneous	Neck Molt	A
Pennyroyal Leaves	Botanical	Fleas, Flies	A
Wintergreen	Botanical	Worms	A
Morphine	Commercial	Lameness, Lethargy	D
Japanese Oil	Commercial	Heaves, Colic	C, D
Novocain	Commercial	Spavin, Ringbone	D
Gun Powder	Miscellaneous	Lethargy, Running Fits	D, F
Dope	Miscellaneous	Lameness, Lethargy	D
Blue Ointment	Commercial	Lameness	D
Cornmeal	Botanical	Worms	C
Syrup	Botanical	Bots	C
Sage	Botanical	Bots	C
Hornet's Nest	Miscellaneous	Distemper	C
Hot Water	Miscellaneous	Colic	C
Soap	Miscellaneous	Colic	C
Disinfectant	Miscellaneous	Hollow Horn	C
Lard	Food	Mountain Laurel Poisoning	C
Sweet Milk	Food	Poison Ivy	C
Baking Soda	Miscellaneous	Poison Ivy	C
Lye Soap	Miscellaneous	Worms	F
Mullen	Botanical	Swelling	F
Ice Water	Miscellaneous	Founder	F

Not surprisingly, turpentine is one of the most commonly mentioned folk veterinary medicines in the region. Turpentine was, and still is used in human folk medicine rather ubiquitously as a broad spectrum cure for just about anything. Accordingly, turpentine appears to be utilized in the same manner for animals. For instance, it has been documented as a treatment for *sore tongue*, *hollow tail*, *kidney trouble*, *warbles*, *maggots*, *thrush*, *lameness*, *worms*, and *hollow horn* in livestock (Brookman, 1977; Brown & Hand, 1964; Wiggington, 1975, 1977).

Another common ethnoveterinary medicine appears to be salt. This materia medica has been documented as a treatment for *pink-eye*, *sore tongue*, *hollow tail*, *retained placenta*,

*mastitis, warbles, maggots*, and as a nutritional supplement (Brookman, 1977; Brown & Hand, 1964; Kirkemide, 1976; Wiggington, 1973, 1975). Salt is also commonly used in human folk medicine. Another common therapeutic in both human and veterinary ethnomedicine from the region is kerosene or lamp oil. For animals, therapies that involve a variety of oils and petroleum products are documented. These include the use of linseed oil for *bloat, packed stomach*, and *lameness* and the use of mineral oil for *bloat* (Brookman, 1977). Lamp oil and kerosene have been documented as a treatment for *bloat, buckeye poisoning* and *quinsy* in livestock (Brookman, 1977; Kirkemide, 1976).

A few important botanical medicines commonly appear in the Appalachian folk veterinary literature. Tobacco [*Nicotiana tabacum*] is documented as a treatment for *lice, bots, worms, staggers*, and *ivy poisoning* in animals (Brookman, 1977; Kirkemide, 1976), while this botanical is used in humans to treat insect bites and stings (Cavender, 2003). Coffee [*Coffea arabica*] is apparently used in animals for *scours, poison ivy*, and *ivy poisoning* [*Kalmia latifolia* or *Rhododendron* spp.], and it is utilized in humans to treat headache, and as a kidney cleanser (Cavender, 2003). Mullen [*Verbascum thapus*] is used to treat *swelling* in animals (Kirkemide, 1976) and for cough, boils, and piles in humans (Cavender, 2003). Other ethnoveterinary botanicals documented in the region include the use of sage [*Salvia officinalis*] for *bots*, and corn [*Zea mays*] for worms (Wiggington, 1975). Brookman (1977) documents the use of ginger [*Zingiber officinale*] for *colic* and *scours*, pumpkin seed [*Cucurbita pepo*] for *kidney trouble*, molasses from sorghum [*Sorghum bicolor*] for *bots*, peach leaves [*Prunus persica*] for *lost cud*, and a red oak bark poultice [*Quercus falcate*] for *scratches*. Black pepper was used in cattle to treat both *sore tongue* and *hollow tail* (Brookman, 1977; Brown & Hand, 1964). It should be noted that Cavender

(2003) documents that all of the aforementioned botanicals are used in human Appalachian folk medicine as well.

### **Folk Illnesses of Farm Animals**

Livestock keepers in the southern Appalachians hold a variety of beliefs concerning illnesses that are dismissed by official veterinary medicine. Scholars in anthropology and folklore term these conditions in humans “folk illnesses,” which they define as syndromes from which members of a particular group claim to suffer and for which their culture provides an etiology, diagnosis, preventive measures, and regimes of healing (Rubel, 1964). However, many of the illnesses that are now dismissed by official veterinary medicine [eg. lost cud, hollow tail, hollow horn, hidebound], were at one time recognized by the profession’s experts, and printed materials were disseminated to aid farmers and practitioners in diagnosis and treatment (See: Armatage & Blaine, 1877; Barnum & Hunt, 1832; Fair, 1916; Günther, 1847; Jewett, 1835; Lawson, 1825; Sloan, 1869). Interestingly, many of these authors theorized disease causation in animals based on the quality of air [miasmatic theory], the balance of body humors [humoral theory], or atmospheric conditions [atmospheric theory]. Veterinary treatments documented in the literature of previous eras often involved purging, puking, blistering, or blood-letting.

Research in ethnoveterinary medicine has largely focused on indigenous knowledge of “real” animal illnesses. Unfortunately, much of ethnoveterinary research concerns equating vernacular veterinary terms and beliefs with official medical taxonomies of disease. As a result, well-known folk diseases of animals have been researched little. The notable exception of this trend in ethnoveterinary scholarship is its attention to magico-religious

beliefs<sup>24</sup> which will be discussed further in an Appalachian context in the next chapter section. This chapter section will present a limited sampling of literature concerning significant folk diseases of cattle in the southern mountains, including *lost cud*, *hollow horn*, *hollow head*, *hollow tail*, and *hide bound*.

The folk illness of *hollow tail* [apparently synonymous with the vernacular terms *wolf in the tail* and *tail-sick* in the United States] is frequently mentioned in Appalachian folk veterinary literature. It should be noted that this perceived condition of cattle has been documented in many regions of the United States<sup>25</sup> and the malady likely has European origins. Michael Doherty (2001) gives a brief Irish perspective on this illness which was identified by one of Scotland's founders of formalized veterinary medicine, William Dick in 1869. In Dick's essay on Perthshire folk practices (1869), he describes the etiology of a disease termed *tail-slip* or *slip-tail* which involved the perceived presence of a worm in the tail of cattle. Treatment of the illness involved surgical removal of the dorsal ligament [the worm] in the coccyges and the subsequent insertion of salt, garlic, or soot under the skin or application of a poultice consisting of these materia medica. Interestingly, Doherty (2001) also brings attention to the fact that these Old World folk veterinary practices were taken to the New World. This is evidenced by the American veterinarian, Keene's observation that some east coast farmers believed that downer cows were affected by *hollow tail* and that

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<sup>24</sup> Illnesses can be classified from an etic perspective as either "natural" or "supernatural." Illnesses associated with the "supernatural" realm are often relegated as "medico-religious" or "magico-religious" beliefs, however, it should be noted that "supernatural" illnesses may correlate with natural disease processes. For examples of magico-religious beliefs and the supernatural in folk veterinary medicine, refer to Brisebarre (1996); Lawrence (1996), Perezgrovas (1996), and Shanklin (1996).

<sup>25</sup> For a sampling of North American beliefs associated with the folk illness of *hollow tail*, refer to Allison (1950); Brown & Hand (1964); Gorham (1988); Jackson (1903); Kirkemind (1976); Koch (2001); Pacific Rural Press (1917); and Randolph (1964).

believers always pointed out the soft ventral surface of the tail and treated the condition by splitting the tail with a knife and packing it with salt (1971). In southern Appalachia, there are numerous folkloric accounts of *hollow tail* in cattle, in which similar therapeutic regimes are suggested. Rosemary Brookman (1977) commented on this folk illness:

Hollow tail is a disease reported by some informants to be quite common in cattle, caused by a worm in the tail. It is treated by making a slit in the tail where the worm appears to be [shown by the tail being limp in that spot] and packing the opening with salt or salt and pepper or turpentine, and wrapping it with a cloth. However, some informants and modern medical authority consider hollow tail to have no basis in fact. Some feel that it stems from undernourished or poorly nourished animals who seem unhealthy, and the old-time farmer, not knowing the cause, felt the animals must be treated for something, so he blamed it on hollow tail. Those who believe in hollow tail defend it stoutly against non-believers, and other informants simply weren't sure whether it was real or not. Hollow tail is a very common fictional folk disease with a great many believers. (p. 65)

Like those described by Brookman, similar conceptualizations of and treatments for *hollow tail* are described by Doherty (2001) and Dick (1869) in Ireland, Brown and Hand (1964) in North Carolina, Randolph (1964) in the Ozark Mountains, Kirkemide (1976) in Tennessee, and Wiggington (1975) in northern Georgia. Salt, pepper, and turpentine are commonly mentioned therapeutics for *hollow tail* in southern Appalachia and diagnostic indicators noted in the region's folk knowledge are similar to those of the British Isles and other regions of North America. For a northern Georgia perspective on the illness, Mack

Dickerson, a small cattle herder interviewed in *Foxfire Three* (Wiggington, 1975), spoke about *hollow tail*:

My uncle ran cows in the woods. They'd get poor in the wintertime and he'd drive them in, and they was weak and wobbling everywhere you know. And one of them got down, and he split her tail and put a little salt in it and wrapped it up. Said she got up after a while and come on in. He was an old-timer. They believed in all that stuff. Sometimes you can feel their tail [near the base] and it's just like it's been broke. But salt won't fix it. (p. 84)

*Hollow head* and *hollow horn*, both of which are related folk illnesses of cattle, are also commonly mentioned in folk veterinary literature from the Appalachian region. Like *hollow tail*, these folk illnesses have also been documented throughout the United States and likely have at least some European epistemological heritage that does not appear well documented in English language literature. That said, the dismissal of *hollow head* and *hollow horn* as “fictitious,” “imaginary,” or “not real” by many farmers, veterinarians, and extension agents alike is well documented in North America,<sup>26</sup> whereby the illness is commonly equated with *hollow tail* and other diseases related to malnutrition. It is apparent that many informed individuals in livestock raising capacities use the descriptor “hollow belly” to describe the etiology of all three of these vernacular illnesses.

In *Foxfire Three* (Wiggington, 1975), informant Lon Dover utilizes the term *hollow head* to describe an illness of cattle. According to Dover, affected animals have a nose that “drips and runs” and the disease “eats the soft inside out of the horn” causing the horn to feel like a “shell.” The treatment Dover recommends is sawing off the horns, which he considers

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<sup>26</sup> Refer to Beecher & Hooper (1846); *The Farmer's Cabinet* (1837); *The Farmer's Cyclopedia* (1914); Gorham (1988); Jackson (1903); and Kirkemide (1976).

curative (p. 114). Furthermore, in the same publication, another informant, Esco Pitts commented:

The veterinarians will laugh at a fella for saying a cow has hollow horn, but usually, the cows would get droopy and they'd get where they wouldn't eat much and they'd go to fallin' off. We'd take and cut those horns off and put disinfectant on there to keep flies from bothering them. They'll heal up and get all right so we thought that was what was the matter. (p. 116)

Other glimpses into the interrelationship of *hollow tail*, *hollow horn*, and *hollow head* exist in Brown and Hand (1964). In this collection of North Carolina folklore, Zilpah Frisbie of McDowell County, North Carolina, said that “when a cow has hollow horn, a small hole is drilled in the horn and turpentine poured in” (p. 448). This exact therapy is also mentioned in Tennessee (Kirkemide, 1976). Interestingly, Frisbie also suggests using turpentine for *hollow tail*: “If a cow has hollow tail, the tail should be split and equal portions of salt and pepper poured in and wrapped up. The bandage is then saturated with turpentine” (p. 449). Several informants of Brown and Hand (1964) suggest that a confounding cure for cows with hollow horn involved splitting the tail and filling it with various substances like corn meal, salt, and soot (pp.448-449).

Other important folk illnesses of cattle documented in Appalachia and throughout the United States and in Great Britain are *hidebound* and *loss of cud*.<sup>27</sup> These folk pathologies appear to be associated with malnutrition, and both appear to have semantic roots in the

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<sup>27</sup> For a sampling of North American beliefs associated with the folk illness of *hidebound* and *loss of cud* refer to Brown & Hand (1964); Dadd (1851); Eaton (1860); The Farmer's Cyclopedia (1914); Jackson (1905); Knowlson (1846); and Pacific Rural Press (1913).

British Isles. The illnesses of *hidebound* (p. 393-394) and *lost cud* (p. 131) are mentioned in 18<sup>th</sup> century British literature of the nobility (Osbaldiston, 1792). In reference to these conditions, Rosemary Brookman (1977) eloquently commented on the problematic process of making semantic distinctions between illness and symptom with folk illnesses:

Several old-time diseases which were thought to be a specific ailment are in fact considered today by modern veterinarians and farmers to be symptoms of malnourishment or illness and not diseases themselves. An unbalanced diet will produce symptoms of illness, but better practices were simply not known or impossible to follow. An example of this treatment of symptom rather than cause is the disease *hidebound*, whose adherents can't pinpoint a cause but say the hide of the animal [generally cows, but sometimes horses] gets very stiff and "grows into the bone." The cure is to work on the hide and move it around, and you can hear it pop and crackle while you do this. Modern veterinarians say this condition is due to malnourishment and the real cure is improved feeding, but its believers disagree and say they have seen it in well-fed animals.

Another case of treatment of the symptom is *lost cud*. A cow who stops her almost constant chewing is said to have lost her cud, and this is seen as a problem in itself, while modern authorities would say it is a symptom of some other illness and that cows tend to stop chewing when they are sick. The old-time treatment is to take a greasy dish rag or a nubbin of peach leaves and push it down the cow's throat. (p. 65)

### **The Signs of the Zodiac**

It is evident that stock-raisers in the southern mountains consider the signs of the zodiac and the associated phase of the moon to be important determinants of animal health,

especially when an animal is bleeding or has surgery. It is also apparent that the “signs,” as they are commonly referenced, are believed to have influence on the success of castration and weaning activities, the quality of meat at slaughter, and on the ease of plucking feathers and shearing sheep, all of which will be outlined in this chapter section. It comes as no surprise that stock-keepers have astrological beliefs, especially considering the influence farmer’s almanacs [*The Old Farmer’s Almanac, Leavitts Farmer’s Almanac, Harris’ Farmer’s Almanac, Farmer’s Almanac, Standard Farmer’s Almanac, and others*] have had in disseminating celestial knowledge in rural America for well over two centuries. Furthermore, there are biblical justifications for following the signs in Genesis (1:14) and Ecclesiastes 3: 1-2.<sup>28</sup> However, it should also be noted that astrological knowledge is commonly passed down through oral tradition as well, and following the astrological signs was, and perhaps still is, one of the most widely known and practiced agricultural traditions in the United States (Loyd, 1995).

It should also be noted that celestial beliefs have been well documented in human folk medical literature from the region as well.<sup>29</sup> Anthony Cavender (2003) comments:

Some magical cures were performed during certain phases of the moon, and others in accord with the rising and setting of the sun. Organs of the body were associated with the moon signs of the zodiac, and each organ was thought most vulnerable to certain ailments when its sign was ascendant. Some people believed that the healing power of certain herbs was defined by an association with zodiac signs, and that the

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<sup>28</sup> Genesis 1:14 – “Let there be lights in the firmament of the heaven to divide the day from the night; and let them be for signs and seasons, and for days, and years.” Ecclesiastes 3:1-2 – “To everything there is a season, and a time to every purpose under the heaven: a time to be born, and a time to die; a time to plant, and a time to pluck up that which is planted.”

<sup>29</sup> For examples of astrological belief evidenced in human folk medicine in Appalachia, refer to Brown and Hand (1964); Cavender (2003); Creillin, Philpott, & Bass (1990); Garret (1978); and Waggoner (1984).

cycle of signs determined when such plants were to be gathered. The forty days [3 July to 11 August] encompassing the rise of the Dog Star, Sirius, was thought to be a dangerous time for both people and animals. During the “dog days,” dogs were more susceptible to going mad, snakes more inclined to bite, and sores and wounds less likely to heal. (p.45)

Interestingly, some human folk doctors believe that when a person’s astrological sign [which is based on birthdate] is ascendant, they are more prone to “catching” infectious pathogens (Cavender, 2003); however, this relationship does not appear to be prevalent in folk veterinary medical belief documented in regional literature. This difference may have something to do with the fact that stock-raisers are not necessarily in tune with their animal’s astrological sign, since exact livestock birthdates are unfrequently known.

Having said that, some general trends do emerge in the literature on folk veterinary astrological beliefs in the region. Instead of referring to the signs in celestial terms [eg. Aries, Leo, Virgo, Scorpio, Pisces], stock-keepers use the sign’s associated body region for referencing purposes [e.g., Aries = Head; Leo = Heart; Virgo = Belly; Scorpio = Secrets (genitals); Pisces = Feet, etc.]. Generally speaking, it appears as though animal surgeries should be performed when the moon “sign” of the zodiac is located as far away from the surgical site as is possible (Brown & Hand, 1964; Howell & Stonich, 2003). For instance, castrations should be performed when the sign is in the feet or head. If the sign is near the groin, it is commonly believed that excessive bleeding will occur. De-horning should be performed when the sign is away from the head, and no surgery should be performed when the sign is in the heart. Not surprisingly, many indicate they believe de-horning in the sign of the head would increase bleeding, as would doing any surgery when the sign is in the heart.

Weaning is thought of as a psychological and nutritional stressor, and many say this should not be performed during a sign in the body cavity, especially when in the head or stomach. Signs in the arms and legs, or simply during the New Moon are better for weaning (Brown & Hand, 1964; Howell & Stonich, 2003), while feathers should be plucked and sheep sheared during the “light” of the moon<sup>30</sup>, because the process is thought to be easier and these animals should supposedly give more wool and feathers (Brown & Hand, 1964; Collins & Hunter, 1999; Wiggington, 1973).

Slaughtering, especially of swine, should be done in the appropriate phase of the moon as well, according to recorded folk veterinary beliefs of the region. When the moon is decreasing in size [“waning,” or during the “dark of the moon”], meat slaughtered at this time is generally thought to produce excessive grease or lard and little flesh when fried. However, when the moon is increasing in size [“waxing,” during the “light of the moon”], less grease is supposedly produced and more flesh will remain (Brown & Hand, 1964; Howell, Stonich & Howell, 2003; Wiggington, 1972). Many farmers believe that slaughtering on or near the ascendant full moon yields the best quality meat.

### **Other Customs and Magico-Religious Ethnoveterinary Beliefs**

In addition to beliefs and practices associated with signs of the zodiac, stock-keepers in the southern mountains hold a variety of medico-religious ethnoveterinary beliefs and practice many customs that relate to their animal’s health. According to Mathias et al. (1996):

People often surround their practical animal healthcare and husbandry measures with magical and religious ones such as prayers to saints and other supernatural beings,

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<sup>30</sup> The phrase “light of the moon” is used to describe the lunar transition from new moon to full moon, while the “dark of the moon” describes the time following the full moon’s transition back to the new moon. These lunar cycles can also be conceived of as “waxing” and “waning,” which are associated with increasing moon size, and decreasing moon size, respectively.

amulets and fetish bundles, chants and ceremonies, ritual feedings, or other kinds of special, apparently extra-medical attention. (p. 10)

However, a different socio-cultural context exists in the southern Appalachians compared to regions where most ethnoveterinary scholarship has been conducted. Therefore, little data has been published on the prevalence of prayer, ceremony, and fetish in Appalachian folk veterinary medicine. We can infer that supernatural beliefs noted in literature from the Global South differ from those in Appalachia because of the southern mountaineer's Judeo-Christian Western heritage. However, folk veterinary literature from Appalachia does indicate some interesting medico-religious practices and beliefs [many of which are likely of Germanic heritage] that will be presented in this chapter subsection.

According to Cavender (2003), "use of the term "magico-religious is meant to capture all supernaturally based beliefs and practices relevant to both the cause and treatment of illness, including the use of supernatural modalities for the treatment of illnesses not thought to be caused by sensate agents." Interestingly, literature from southern Appalachia indicates that non-human animals can act as both supernatural agents [much akin to, or oftentimes associated with witches], yet non-humans can also be recipients of curses, spells, and magical illness.<sup>31</sup> For instance, Gerald Milnes' study of West Virginia's livestock folklore (2007) indicates that witches are sometimes indicated as the etiological agents of bloody milk in cows and in cases of sudden death and stillbirth in livestock. Milnes (2007) also documents how witches are thought to cast spells, sour milk, dry up cows, cause lethargy in horses, and create difficulty in churning butter. It should be noted that such beliefs are rooted in long standing Old World Germanic traditions. Brown and Hand (1964) also offer several

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<sup>31</sup> For a detailed analysis of "magic" and the supernatural in European and American folk medical technique, refer to Hand (1980).

accounts of the bewitchment of cattle and instances of the “evil eye” being cast upon non-human animals. Like Milnes (2007), Brown and Hand (1964) document spells<sup>32</sup> that can be cast on cattle to cause sudden death, or witchcraft that was utilized to cure cattle poisoned by ivy [mountain laurel (*Kalmia latifolia*) or *Rhododendron* spp.]. According to Brown and Hand (1964), Zilpah Frisbie from McDowell County, North Carolina was documented saying: “To keep witches from riding horses at night, nail a horseshoe over the stable door,” and both Brown and Hand (1964) and Milnes (2007) document the use of silver coins to ward off curses and witches. Significantly, Rosemary Brookman (1977) and Edith Walker of Watauga County, North Carolina (Brown & Hand, 1964) suggest that putting horseshoes in the fire will keep hawks away from your chickens, while Zilpah Frisbie of McDowell County advises hanging a bottle of salt on a pole to keep hawks from being able to capture poultry.

Interestingly, both Brown and Hand (1964) and Milnes (2007) document the ancient custom of “whipping” or “killing” toads or frogs, whereby an amphibian acts as a supernatural agent in some capacity. Milnes (2007) conveys that this custom was performed to cause chickens and ducks to lay more eggs, while Brown and Hand (1964) indicate that killing frogs was thought to cause cows to give bloody milk or go dry. In addition to this, Brown and Hand (1964) indicate that killing frogs was also associated with the sudden death of calves. According to Milnes (2007), toads are very common in all aspects of witchery and magic, and these customs result from Old World conceptualizations of illness.

In addition to toads and frogs, black chickens also appear to have magical powers in the regional human folk medical literature. Milnes (2007) indicates that killing a black chicken, and using its blood to rub on affected skin was thought in West Virginia to be

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<sup>32</sup> Many of the “spells,” “charms,” and magico-religious beliefs noted in both Milnes (2007) and Brown and Hand (1964) are of Germanic origins.

curative of the folk illness “wildfire.” A similar treatment is also outlined by Cavender (2003) for human patients. Furthermore, the intestines of a black chicken were once used as a poultice for snakebites in the region. Interestingly, another magical treatment mentioned by Cavender (2003) documents a mysterious cure whereby illness is transferred from a human to a dog. He comments: “Beginning sometime in the 1950s, some parents kept a small dog in the house, usually a Chihuahua, in the belief that their child’s asthma would be transferred to the dog” (p. 83). Carol Ann Rinzler (1979) comments further:

This belief is based on putting two observations together and coming to the wrong conclusion. First, childhood asthma often diminishes in severity and disappears all together as a child matures. Second, small dogs like Chihuahuas have small tracheas that frequently collapse as they grow older, causing difficulty in breathing. Thus, one comes to the erroneous conclusion that the child’s asthma has been transferred to the dog. (p. 16)

A variety of beliefs that correlate to the cardinal directions and the sun’s rising and setting are also documented in ethnoveterinary literature from the region. For instance, an informant in Brown and Hand (1964) said: “If a hen is set in the afternoon, all the chicks will be roosters.” Furthermore, other informants from this work commented: “Build cowper gates facing north to bring bull calves,” while on the contrary, building them facing to the south is thought to bring heifer calves. Also within the medico-religious realm of healing, use of a Bible verse (Ezekiel 16:6) for “blood-stopping” is well documented in both human and veterinary folk medical literature from the region (Brookman, 1977; Brown & Hand, 1964; Cavender, 2003). The verse: “And when I pass by thee, and saw thee polluted in thine own blood, I said unto thee when thou wast in thy blood, live; yea, I said unto thee, when

thou wast in thy blood, live” was read with the bleeding patient in mind, and the hemorrhage supposedly stopped.

### **Folk Veterinary Surgeries, Alterations, and Other Manipulative Procedures**

Livestock keepers in the Southern Appalachians, like many agrarian peoples the world over, possess surgical and manipulative skills which they commonly use to alter or treat their animals.<sup>33</sup> Alterations performed in the region include castrations, de-horning, horseshoeing, teeth floating, teeth pulling, ear cropping [slitting], and branding. Most of these procedures are performed without the use of sterile technique and modern anesthesia, so pain and subsequent infection are potential negative sequela of these folk medical practices. However, in many instances, folk veterinary surgical know-how is an essential skill for stock-raisers to possess, since formally trained large animal veterinarians are all too often inaccessible on area farms.

Not surprisingly, the most commonly mentioned animal surgery in Appalachian folk veterinary literature is castration. According to Ghirotti and Woudyalew (1996):

Castration is one of the most ancient techniques for improving livestock performance. It is documented in the Bible (Leviticus 22:24-5) about 1250 BC, but it was certainly well known before then. It was performed by the ancient civilizations of the Fertile Crescent, the cradle of livestock domestication, where cattle played fundamental socio-cultural and productive roles. (p. 116)

It should be noted that cattle have also played significant agricultural roles in the Appalachian region; however, swine, equines, and sheep and goats have also occupied important positions, and these farm animals, like cattle, are also commonly castrated by

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<sup>33</sup> For global perspectives on ethnoveterinary surgery, refer to Bonfiglioli et al. (1996); Ghirotti & Woudyalew (1996); Lawrence (1996); and Schwabe (1996).

community based animal healthcare agents in the area. That being said, literature from Appalachia also demonstrates that people of the region perform a variety of animal surgeries in addition to castration. Surgeries for the treatment of hollow horn and hollow tail were outlined in a previous chapter section on folk illnesses; however, many other surgical and manipulative techniques have been documented in the region. Rosemary Brookman (1977) describes a manipulative treatment for *milk fever* which involves using a hollow quill to pump a cow's udder full of air. After pumping the "bag" full of air, the teat is tied off for fourteen hours, which causes the cow to retain her milk and the associated mineral nutrients therein. Brookman (1977) and Adam Foster, an informant of Wigginton (1977) describe treatments for *sweeny* in horses which involve making an incision into the affected shoulder and placing a poke root or penny inside to make the wound fester. The foreign material is eventually cleaned out. According to Brookman (1977), the shoulder can also be pumped up with air or simply massaged. In Kirkemide (1976), informant John Carter describes a treatment for *quarter cracks* on the hooves of horses, whereby a piece of copper is cut and applied to make a plate which bridges the crack, uniting the two sections together again. "Po' Boy" Jenkins recounts how to bleed mules for the treatment of *blind staggers* and also describes how to float a mule's teeth in Wigginton and Bennett (1984). A description of pulling horse teeth is outlined in Wigginton (1977), while several accounts of marking animals with brands or with slits in the ears are noted in Wigginton (1975) and in Collins and Hunter (1999).

## **Conclusion**

Although scholars of ethnoveterinary medicine and folk medicine in general have obviously neglected examination of folk veterinary practices in southern Appalachia, it is

apparent that a rich body of knowledge and belief is documented sporadically in literature from the region. Long preceding Constance McCorckle's coining of the term "ethnoveterinary medicine," scholars including Brown and Hand (1964), Wiggington and Gillespie (1972), Wiggington (1973, 1975, 1977), and Brookman (1977) were compiling data on folk veterinary medicine in the region. However, little follow up research has been spawned by these scholar's work, and no thorough review of Appalachian ethnoveterinary literature has been performed to date. Although not the focus of this research project, and albeit brief and by no means comprehensive, this review of literature has demonstrated that community based animal healthcare agents [ethnoveterinarians or folk veterinarians] have played an important role in the region's stock-keeping traditions, animal health, and even human health. Folk vets hold a variety of beliefs and knowledge that differs substantially from formally trained veterinarians, and their practices interestingly parallel many human folk medical practices documented in southern Appalachia. Furthermore, it is obvious that ethnoveterinary practices in the region stem from a variety of epistemologies, while significantly, such knowledge has potential applications that can be utilized to help meet the need for large animal veterinary practitioners in the underserved area. Furthermore, ethnoveterinary practices are oftentimes more sustainable than their high input, technologically advanced "modern" equivalents, and such folk veterinary knowledge systems can complement formalized veterinary practices, especially in small scale production systems. This literature review has obviously highlighted the complexity and richness of ethnoveterinary knowledge in the region which functions within certain socio-economic conditions. The need for additional research on the subject is exemplified by the potential application of local veterinary know-how in small-scale livestock production systems, and by

the fact that we know little about informal practitioners, their knowledge, and their skills in the Appalachian region.

### **Chapter 3: Methods of Inquiry**

After graduating from Auburn University's College of Veterinary Medicine with a Doctorate of Veterinary Medicine [DVM] degree in 2009, I moved to McDowell County, North Carolina [March, 2009] to work as small animal veterinary practitioner. In May of 2011, I relocated to Avery County, North Carolina, where I began homesteading while also pursuing a Master of Arts [M.A.] degree in Appalachian Studies [concentrating in Sustainable Development] at Appalachian State University in Watauga County, NC. Once moving to the "High Country," of the Blue Ridge, I integrated into many of the communities of the region long before my official field work began. My daily engagement with various communities offered me significant networking opportunities with locals and academics alike. Long before the official research process for this project began, I developed many curiosities surrounding ethnoveterinary practices in the region, which I gleaned from both livestock keepers and small animal veterinary clients alike.

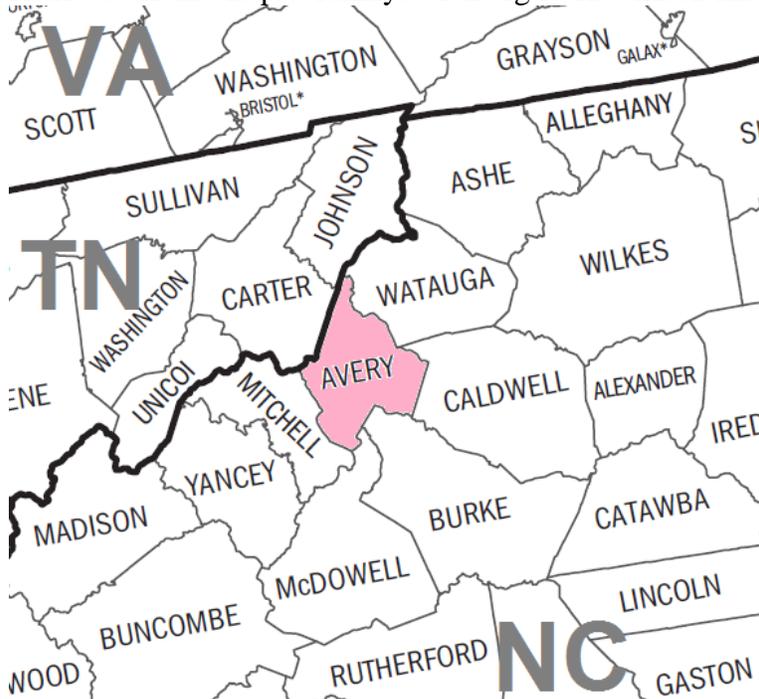
#### **Study Area**

In efforts to fulfill thesis requirements for the Appalachian Studies M.A. program, an ethnographic survey examining both folk veterinary knowledge and a type of community based animal healthcare system was executed in the Blue Ridge of Tennessee and North Carolina. Interviews were conducted with 16 informants residing in five contiguous counties within the Blue Ridge physiographic province of two states. These counties included Carter County in Tennessee; and Avery, Ashe, Watauga, and McDowell counties in North Carolina. Five informants of the study live in McDowell County while another five reside in Avery

County. Two informants live in Ashe County, two in Carter County, and one in Watauga County. Avery County is the geographical center of the study area [see Map 3.1].

**Map 3.1.** The study area includes the following counties: Avery, Watauga, Ashe, McDowell, and Carter.

Retrieved from: <https://familysearch.org/learn/wiki/en/images/6/6b/Ncavery.png>



This study area was chosen based on a number of factors, most of which are given in the following discussion. First, this region is where the author has lived, studied, and worked as a veterinarian for almost six years. Thus, as I mentioned in the introduction of this chapter, I was well aware of an ethnoveterinary medical system functioning in the study area and was equipped with the social networking opportunities to study it. Furthermore, as a result of being intimately integrated into several mountain communities, I was also well aware of a vigorous movement toward local, small-scale food production in the region. This “locavore” movement is intimately dependent on the production of healthy animals, and I assumed that ethnoveterinary research in the Blue Ridge would likely be applicable to the developmental efforts of several local institutions working to increase sustainable food

production in the study area. On the same note, a shortage of large animal veterinarians in the region also validated the need for my research in the Blue Ridge. The lack of farm animal veterinarians working in the area was expected to yield ripe grounds for ethnoveterinary research, since I had already observed that many stock raisers relied on a system of local knowledge to address various animal healthcare needs.

The Blue Ridge province is also very rich in biodiversity. The ecological diversity of the region results in part from significant topographical and climactic variation in the area. For example, most of the informants of McDowell County raise their stock at an elevation of approximately 1,000 feet above sea level. Yet many informants in the highlands region [e.g. Avery; Ashe; Watauga; and Carter Counties] routinely graze animals on mountain balds [pastures] that are 5,000 feet or more above sea level. Interestingly, the historical biogeographical distribution of flora during interglacial periods has left a variety of remnant floral species in the Blue Ridge, and a significant diversity in floral types exists throughout southern Appalachia. Such biodiversity gives the region added potential for ethnoveterinary botanical research. For example, many plants are not only used as ethnomedicines, but flora may also induce toxicities that affect livestock. I postulated that both ethnoveterinary materia medica and ethnoveterinary knowledge of plant toxicology would contribute significantly to this research, and it was believed that the region's biodiversity would positively influence the breadth of my findings.

Finally, the Blue Ridge region is well noted for traditional folk beliefs, customs, and practices, which importantly includes a large body of knowledge concerning "traditional" agriculture<sup>34</sup>. However, as also noted in my review of literature, ethnoveterinary data from

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<sup>34</sup> Refer to the *Foxfire* Book Series and Magazine and the *Frank C. Brown Collection of North Carolina Folklore* for detailed accounts of agricultural beliefs and customs noted in the Southern Appalachians.

the region is scant. Furthermore, a significant number of small scale livestock farmers have persisted in the region, yet unfortunately, their numbers and subsequent knowledge is dwindling<sup>35</sup>. Many residents of the Blue Ridge have long familial histories that oftentimes revolve around animal rearing. Many of these individuals have remained on family lands for generations and have effectively learned to live within the means of the local environment and economy. In commencing this research project, I postulated that stock-keeper's collective veterinary know-how would likely exemplify a complex local knowledge of livestock husbandry, illness, and veterinary medical treatment. Before this study began, I realized that both folk knowledge and empirical wisdom were integral to stock-keeper's ways of understanding animal health, and that few of the individuals caring for animals in the region had actually received official training in animal science or veterinary medicine. I was also well aware that "folk veterinarians" were actively addressing a wide variety of animal health care needs in their respective communities which made the region an especially appealing choice for data collection on this subject.

### **Research Methods**

Qualitative data was attained using both unstructured and semi-structured interviews. Unstructured interviews were incorporated to gather data from my neighbor, William Cable, of Elk Park, North Carolina. Semi-structured interviews were used to gather data from all informants, including Mr. Cable. With the exception of Mr. Cable, all informants were interviewed once. The average interview lasted between 1.5 and 2.5 hours. At least ten

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<sup>35</sup> Refer to the 2002 and 2007 United States Census of Agriculture for detailed data and trends concerning farms and farm animal populations in the five county study area. Much of this data will also be included in an agricultural description of each county in the "sampling" section of this chapter.

hours of material was collected from Mr. Cable that resulted in the production of field notes, ethnographic film, and interview transcriptions.

At the start of each interview, a series of questions was asked to determine the informant's expertise concerning various farm animals. For instance, the informant was asked what species of farm animals they had worked with, and then they were asked what animals they felt most knowledgeable about. Once the informant's animal expertise was better known, he or she was then asked to name some of the illnesses they were familiar with in those respective species. From here, more detailed questions were then asked to evoke informant descriptions of etiology, periodicity, symptoms, and any known treatment modalities concerning various afflictions. Specific dosages of therapeutics were sometimes queried, however, informants often gave vague responses to such questions, thus making my attempt to attain dosage specific data seem futile.

In addition to interrogations about various farm animal illnesses, more general questions were asked to help the author better understand local ethnoveterinary beliefs and practices, and importantly, how the folk veterinary medical system functions to meet a diverse spectrum of animal healthcare needs. These questions were intended to have the informant identify important beliefs and skills, and to describe how veterinary healthcare problems are solved. In conclusion, a series of background questions was then asked at the end of each interview to gather the informant's age, birthplace, work history, educational level, and local kinship ties. A complete interview guide is included in Appendix A.

## **Sampling**

A total of 16 culturally specialized livestock raisers and/or healers were purposively chosen from the study area. All of these individuals were referred to me by word of mouth, with the exception of William Cable who is my neighbor in Elk Park, NC. Four informants were referred to me by affiliates of Appalachian State University in Boone, NC, while the remaining 11 were referred to me by local livestock raisers. Many of the informants knew each other, and even suggested that I go talk to other informed individuals in the local livestock rearing social network. This produced a snowballed sample population. Interview questions were often employed as a means of locating additional stock raisers and other well respected community based animal health care workers. Several informants that were recommended to me were not interviewed either because their experience with livestock seemed limited, or, they were part of a distinctly different sample population based on their education and experience [e.g., veterinarians and extension agents]. Every informant interviewed contributed to this research. All informants of this study are, or have been, livestock raisers themselves, and have spent the majority of their lives taking care of various animals.

At the time of interview, the median age of informants was 73.5 years, while the mean age was 72.4 years [Note: All ages given below are based on the date of interview]. The youngest informant was age 54 and the oldest was age 87. Each informant described below is placed in order of county residence. A brief overview of pertinent agricultural data gathered in the 2007 and 2002 United States Census of Agriculture is also presented here on each county. Rankings of animal populations are given based on census statistics gathered in

the 100 counties within the state of North Carolina and the 95 counties within the state of Tennessee. The code used to refer to informants in forthcoming interview excerpts is also indicated in parentheses beside their name. For example: (ST) Shawn Terrell.

### **McDowell County, North Carolina**

McDowell County has 383 farms covering 22,968 acres. There is a 36% increase in farm number and a 6% decrease in farm acreage noted when 2002 and 2007 agricultural census statistics data are compared. Nearly 22% of the county's farmland is considered pasture. In 2007, there were 3,008 cattle and calves (67<sup>th</sup> in NC) and 708 horses and ponies (47<sup>th</sup> in NC).

**(RS) Ralph Silvers.** RS is 63 years old and graduated from high school. Mr. Silvers was born on the Cane River in Yancey County, NC, yet has lived near Marion, NC for over 40 years. He has been employed by Baxter Healthcare of North Cove, NC for much of his life. Mr. Silvers is currently raising about 80 head of sheep which he commonly markets for supplemental income. In addition to sheep, he also currently raises chickens, dogs, horses, mules, and pigs. He has also worked with cattle in the past. Mr. Silvers routinely performs equine farrier and dental work in the McDowell county area. He shoes horses, floats their teeth<sup>36</sup>, and also helps doctor animals when called on by neighbors.

**(BL) Bart Laney.** BL is 54 years old. He graduated from high school and spent some time in college at North Carolina State University. Mr. Laney was born in Marion, NC and continues to live in the nearby Glenwood community. He sells chickens and dogs from

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<sup>36</sup> Unlike human teeth, a horse's teeth continue to grow throughout its life. As a horse ages, it may develop uneven chewing surfaces or sharp edges called points which prevent the normal mastication of forage. When this occurs, it is possible to file a horse's teeth to repair this anomaly. This equine dental procedure is commonly referred to as "floating" a horse's teeth, and is usually performed by a veterinarian with specialized equipment and sedatives.

time to time, and he works in the maintenance department for the McDowell County public school system. Laney currently raises chickens, dogs, and has a horse, but he also has experience with other animals.

**(CL) Cliff Ledbetter.** CL is 87 years old and has a seventh grade education. Mr. Ledbetter was born on Frazier Creek, which is in the southern part of McDowell County. He moved away from his birthplace at six years of age and now lives in the Glenwood community, which is centrally located in the county. He has logged with horses and worked in furniture factories for income. Ledbetter also served in the U.S. Army in Austria following World War II and has a lifetime of experience raising and caring for goats, rabbits, chickens, dogs, horses, and cattle. Mr. Ledbetter just recently got rid of his milk cow and was only tending to chickens and a dog at the time of interview. Mr. Ledbetter recently died after being severely injured in a tractor accident.

**(WB) Walter Brothers.** One brother is 74 years old and has an 8<sup>th</sup> grade education and the other is 71 years old and has a 9<sup>th</sup> grade education. Both brothers live in the West Marion community. The Walter Brothers are retired wage laborers, and have experience with goats, chickens, dogs, mules, horses, donkeys, and cattle. A pseudonym has been used at the request of these informants to disguise their identity. Any information supplied by either of these brothers will be identified under the collective pseudonym, Walter Brothers, (WB). The Walter Brothers wished that I not record their interview, and restricted my data collection to field notes. This made it difficult to record individual data with specificity since both informants commonly spoke simultaneously or in conversation with each other. Therefore, the information gathered in their interview will be presented collectively.

**(JE) John English.** JE is 76 years old. His education level is unknown. Mr. English has spent most of his life raising milk cows on a small commercial dairy. English and his two sons continue to operate the dairy, while a fourth generation of fledgling dairymen (John's grandchildren), continue to work and learn on the farmstead today. The dairy has recently diversified to include the production of cheese. The English farmstead is one of the last family-owned, commercial production dairies in the five county study area and is located in the northernmost mountainous region of the county in the North Cove community.

### **Avery County, North Carolina**

Avery County has 477 farms covering 27,818 acres. There is a 4% decrease in farm number and a 9% decrease in farm acreage noted when 2002 and 2007 agricultural census statistics data are compared. A little more than 22% of the county's farmland is considered pasture. In 2007, there were 1,189 cattle and calves (81<sup>st</sup> in NC) and 335 horses and ponies (69<sup>th</sup> in NC).

**(HW) Hubert Ward.** HW is 76 years old and has a sixth grade education. Mr. Ward was born and raised in Elk Park, NC, and now lives in the Heaton Creek community nearby. He considers himself to be a horse and cattle trader and has made much of his income through livestock farming and in selling or bartering for animals. He has also done intermittent construction jobs for much of his life. Hubert currently raises chickens, dogs, cattle, and goats and has kept horses, sheep, and pigs in the past. He routinely aids community members when they have pressing animal healthcare concerns.

**(WC) William Cable.** WC is 82 years old and has a third grade education. William was born in Shell Creek, TN, but went back and forth between Carter County, TN/Avery County, NC and the Pine Mountain region of eastern Kentucky until the 1950s. Mr. Cable

currently resides on the eastern side of Hump Mountain, near Elk Park, NC, where he and his son make much of their income from raising animals together on the farm. Mr. Cable has had a multiple livelihood strategy for much of his life, working in coal mining, construction, logging with mules, road building, farming, and in masonry for much of his life. William, his son Mike, and grandson Kyle, currently raise chickens, dogs, cattle, goats, pigs, donkeys, a horse, a cat, and over 200,000 trout on the property. He has raised sheep on the mountainous terrain in the past. In his younger days, Mr. Cable was an active community based animal healthcare worker in the Elk Park area, and would commonly perform the services of castration and horse shoeing, among many others.

**(JD) J.D. McKinney.** JD is 79 years old and has a tenth grade education. Mr. McKinney was born and raised in Elk Park, NC and lives near the headwaters of the Little Elk River on the northeast side of Hump Mountain. He currently raises cattle for market, but he has also worked in road construction and in his father's apple orchard for much of his life.

**(RhM) Rhoda McKinney.** RhM is 78 years old and has an eighth grade education. She is the wife of J.D. McKinney, and also lives near the headwaters of the Little Elk River, near Elk Park, NC. Often assisting J.D. with tasks around the farm, Rhoda helps in taking care of cattle and also gives daily attention to their dog and chickens. Rhoda was born in Carter County, TN and has worked in factory mills that once operated in Linville and Newland, North Carolina.

**(SW) Steve Wilson.** SW is 71 years old. His education level is unknown. A pseudonym has been used at the request of this informant to disguise his identity. Wilson is retired after a lifetime of work in the furniture industry, and considers himself a retired farmer today. He has experience with dogs, cats, pigs, goats, horses and cattle. He currently

keeps a small herd of cattle on Buck Mountain, near Elk Park, NC. Mr. Wilson claims to have worked with animals since he was 10 years old, and often answers community animal health care needs by sharing his veterinary knowledge, medicines, and skill with other livestock raisers in the area.

### **Watauga County, North Carolina**

Watauga County has 587 farms covering 45,782 acres. There is a 20% decrease in farm number and a 12% decrease in farm acreage noted when 2002 and 2007 agricultural census statistics data are compared. A little more than 29% of the county's farmland is considered pasture. In 2007, there were 7,490 cattle and calves (42<sup>nd</sup> in NC) and 854 horses and ponies (43<sup>rd</sup> in NC).

**(LM) Len Moretz.** LM is 66 years old and has finished high school. Mr. Moretz has just recently retired from working in the maintenance department at Appalachian State University for 24 years. Before this, he worked at Watauga Wood Products, and did a variety of side jobs which included helping people farm and shearing sheep. He has raised animals for much of his life on the family farm in Meat Camp, NC, where he continues to tend sheep and cattle. He has experience with a variety of animals, but is most knowledgeable about the ones he currently raises.

### **Ashe County, North Carolina**

Ashe County has 1,125 farms covering 108,452 acres. There is a 2% decrease in farm number and a negligible change in farm acreage noted when 2002 and 2007 agricultural census statistics data are compared. A little more than 30% of the county's farmland is considered pasture. In 2007, there were 16,490 cattle and calves (15<sup>th</sup> in NC) and 1,188 horses and ponies (28<sup>th</sup> in NC).

**(ML) Max Lewis.** ML is 78 years old and has a tenth grade education. Mr. Lewis lives in the Sutherland community where he has farmed all of his life. He was born nearby. In addition to running a produce stand and farming row crops, Max also operated a 29 head dairy farm on the property in the past. He has over 70 years of experience with cattle, and claims to have never done a day of “public work” in all of his life. He has experience with a variety of other animals, but only tends to dogs, geese, cats, and chickens today. He has acted as a community based animal healthcare worker in the past, and has helped innumerable farmers with a variety of veterinary problems.

**(VL) Virginia Lewis.** VL is 73 years old and has a tenth grade education. Virginia is Max’s wife. She resides with Max in Sutherland, NC, but was born in Tamarack (Pottertown), Watauga County, NC. Mrs. Lewis has helped tend to and raise most animals on the farm, and has considerable experience with dairy cattle and fowl. In addition to working on the farm, Mrs. Lewis has worked a variety of factory type jobs throughout the region.

### **Carter County, Tennessee**

Carter County has 516 farms covering 39,374 acres. There is a 10% decrease in farm number and a 5% increase in farm acreage noted when 2002 and 2007 agricultural census statistics data are compared. A little more than 27.5% of the county’s farmland is considered pasture. In 2007, there were 11,692 cattle and calves (66<sup>th</sup> in TN) and 925 horses and ponies (57<sup>th</sup> in TN).

**(RM) Ralph McKinney.** RM is 65 years old and graduated from high school. Ralph was born and currently resides in Upper Shell Creek, TN, on the western side of Hump Mountain. He commonly sells draft horses and sheep, both of which are sources of

supplemental income. His occupations aside from farming are unknown. He currently raises chickens, sheep, and horses and has kept other domestic animals as well.

**(RT) Ronnie Townsend.** RT is 66 years old. He graduated from high school and attended some higher education classes in Elizabethton, TN. Mr. Townsend resides in the community of Whitehead Hill, TN, where he raises draft horses, draft mules, donkeys, and cattle, all of which he commonly markets for supplemental income. He raises steers “naturally” with no steroids or growth hormones and has them custom killed for neighbors and friends. In the past, Townsend has also had experience with chickens, turkeys, and hogs.

### **Data Collection, Analysis, and Organization**

Thirteen semi-structured interviews were recorded using an Edirol™ digital audio recorder and were saved in mp3 format. Several interviews involved two informants. At the request of Steve Wilson and the Walter Brothers, two interviews were not recorded in order to safeguard identity. In these two instances, only field notes were taken. Interviews with William Cable were recorded using the Edirol™ audio recorder, in combination with a Cannon ZR 960™ camera-recorder. The ZR 960 was used to make a 50 minute documentary in Adobe Premier Pro™, entitled: “Doctoring Around the Farm, Hump Mountain NC, February 2013.”

All interviews were conducted in the homes or on the farms of the informants. Most informants were eager to share their knowledge of animal healthcare with the researcher and many expressed excitement about my efforts to document the subject matter. Interviewees typically seemed honored that I would care to learn some of “the old ways” from them. In all cases, rapport was easily gained and no one consulted for this research refused an interview.

Although I always explicitly expressed the motives behind my research and had informants sign an interview consent form, I typically withheld that I was a licensed veterinarian until the conclusion of the interview. I was also cautious to withhold my biomedically based etic perspective on the subject matter in order to prevent my influence on informant responses. Ultimately, I wanted to present myself non-judgmentally so the informants would feel comfortable discussing the subject matter in an honest, expressive manner.

Eleven of the interviews were transcribed in their entirety from the Ediro!™ recorder into Microsoft Word.™ Hand written field notes from Steve Wilson and the Walter Brothers were also transferred into separate Word™ documents. Following the transfer of all information into electronic formats, responses were organized into 65 different categories. These categories were then further organized into more specific sets of data which were then used to develop explicit groupings of animal illnesses. Methods of semantic domain analysis were utilized in this process, whereby a folk taxonomy of animal illness was developed from informant responses. Animal illnesses mentioned by the informants were identified from the field notes, transcriptions, and video, and then, informant responses to specific questions or general dialog about these conditions was compiled into unique documents. Finally, the informant's methods of associating symptoms, perceived etiologies, beliefs, treatments, and preventative measures could be gleaned from the interview process, and further data analysis and presentation of ethnographic data could be approached through a presentation of a narrative in my research composition. In all, the livestock illnesses of *pink eye, shipping fever, worms, milk fever, mastitis, scours, colic, hollow head, hollow horn, hollow tail*, and the toxicities of *buckeye poisoning, wild parsnip poisoning, snuffweed poisoning, wild cherry poisoning, laurel poisoning* [which is also known as *ivy poisoning*], white-snake root

poisoning [which is known in the local vernacular as *milk poisoning* or *fall poisoning*] and *stagger* were identified through semantic domain analysis. Additionally, the informant's knowledge of lameness, external parasites, wounds, and bleeding was generalized by the author into etic categories of illness since comparatively little data was collected pertaining these conditions and such a wide variety of folk terminology was utilized in their description. For clarity, it should be noted that all emic [insider] classifications and identifications of animal illness will be italicized in this document, while etic classifications will not.

Many animal illnesses are apparently categorized by the informants based on the species type affected, however, some afflictions [e.g., *poisonings*, skin conditions, lameness, and parasites] apparently involve several species. Many illnesses like these had similar treatments across species lines as well, and in these specific instances no effort was made to organize ethnographic data based on the animal type affected. Besides toxicities, parasites, lameness, and skin conditions, all other animal illnesses were organized into semantic domains according to the species affected and the informant derived vernacular classification schemes gleaned from analysis. This allowed the author to give a detailed presentation of the etiological, symptomatic, and therapeutic identifiers noted by informants in such domains. Background information was also organized into categories, as was a wealth of sampled information pertaining to how and why the folk veterinary medical system functions in the region.

## **Conclusion**

The informants of this study have helped generate a large set of data which significantly contributes to our understanding of a complex folk veterinary medical system in the Blue Ridge of Tennessee and North Carolina. This ethnographic data which comprises

approximately 29 hours of recorded interviews, has resulted in several hundred pages of typed transcriptions and field notes, and an ethnographic film. A corpus of ethnoveterinary data was attained pertaining to horses, cattle, dogs, cats, chickens, sheep, goats, pigs, rabbits, and even rainbow trout. Information concerning cattle is most prevalent in the data set, while data concerning horses is second most prevalent. Although a wide array of detailed information was gathered concerning many domestic species, the choice was made to focus the analysis of this research on horses and cattle due to temporal restraints, since data on these farm animals was most voluminous. The next three chapters will outline the most consistent and important findings of my work, and Chapter Seven will give some recommendations for how this research can be applied in the area and beyond. Importantly, semantic domain analysis allowed the researcher to identify common vernacular categorizations of animal illness which allowed me to convey how folk practitioners conceptualize animal illness and associated therapeutics in this manuscript.

## **Chapter 4: Community Based Animal Healthcare in the Blue Ridge**

### **Introduction**

Throughout southern Appalachia, an important, yet often overlooked folk veterinary medical system presently functions to help meet an array of farm animal healthcare needs in this historically agrarian region. Ethnographic data presented in forthcoming data chapters demonstrates how and why this ethnoveterinary medical system functions alongside formalized veterinary medicine in the American South. This study provides evidence for a wide variety of ethnoveterinary medical practices in the region, and demonstrates a type of veterinary medical pluralism, in which folk veterinarians practice *vis a vis* formally trained doctors of veterinary medicine [DVMs, VMDs]. Such pluralism in human medicine has also been well documented throughout Appalachia and the Americas, and it should be noted that folk veterinary medicine is not unique to the southern highlands. Ethnoveterinary practices of the area have been influenced by traditions, empiricism, biomedical thought, and an array of medical paradigms, and stock-raisers have been trained in some capacity by various forms of media, practicing DVMs, and extension agents or high school agricultural teachers. Importantly, most stock-raisers interviewed indicated that much of their knowledge on animal health was gained through experiential learning on the farm through the folk method of transmission by word of mouth or imitation with other stock-keepers who were doctoring animals. As a result, a unique set of folk terminology is utilized by farmers to identify animal illness and thus treat it. Formally trained veterinarians, and those outside of local livestock raising communities are typically unfamiliar with such lexicon, and thus, the

relationship between stock-keeper and DVM is certainly strained by problems of communication and trust.

In addition to the complex pluralistic nature of veterinary knowledges noted in this paper, it is evident that folk veterinary medicine has important implications for both animal and human health. Ethnoveterinary practices have profound effects on the health of not only domesticates and people, but also, many such practices are likely to be more sustainable than biomedical practices, and the social structures underlying folk veterinary systems attest to larger cultural phenomena which are worth examining. Thus, since regional and national data on the subject are scant, folk veterinary medicine is worthy of increased academic attention from both the veterinary sciences and medical humanities.

This chapter will begin to explore a community based animal healthcare system that continues having a variety of impacts on animal health throughout the Blue Ridge. Although folk veterinary medicine is not nearly as widespread in the region as it was in the past, it is apparent that folk veterinary medical beliefs and associated practices in Appalachia continue to play an important role in the health of farm animals, and their keepers. Stock-raisers are the practitioners of folk veterinary medicine in the region, and these individuals occupy positions of high social capital, by bestowing veterinary care to livestock and important skills and knowledge to stockmen and women of various communities. Folk veterinary medicine is vibrant in the mountains, in part because many locations in the area have low livestock densities which do not support services of formally trained, large animal veterinarians.

Unfortunately, stock-keepers in several counties of the Blue Ridge are lacking reasonable accessibility to affordable large animal DVM services. Stock-keepers interviewed were often times raising animals on the outer fringes of several large animal

veterinary practice radiuses, and these veterinarians commonly cover geographical zones that take more than two hours to traverse via slow and winding roads. In times of emergency, or when costs of formal veterinary services are prohibitive, many stock-keepers rely on their own knowledge and skill or call on their neighbors for animal health-care assistance. Since the inaccessibility of large animal DVMs remains an animal healthcare problem in the region, many stock-keepers rely on an informal community based animal healthcare system which will be described here.

It is without doubt that ethnoveterinary medicine has both positive and negative effects on animal health. Although imperfect, folk veterinary medical practices represent a crossroads of animal healthcare knowledge characterized by a diversity of epistemologies which are demonstrated by its practitioners. Ethnoveterinary beliefs and practices in the Blue Ridge appear highly influenced by tradition, empirical logic, and biomedical understanding. Most folk veterinarians rely on both biomedical pharmaceutical products and readily available homeopathic therapeutics that can be found in local stores, pantries, gardens, or at the barn. Many rely on un-official medicines for the treatment of a variety of livestock afflictions, however, these same stock-keepers may also utilize commercially available pharmaceutical products like antibiotics and de-wormers for infectious diseases and other conditions. Many of the commonly mentioned livestock medicines suggested by informants will be discussed briefly in this chapter; however, more detailed ethnographic data clarifying the breadth and context of stock-keeper's ethnoveterinary knowledge will be presented in Chapter Five and Chapter Six. This chapter will instead focus on ethnoveterinary beliefs, skills, and customs noted in the study area, in addition to describing how and why the folk

veterinary medical system plays such an important role in animal health along the Blue Ridge.

### **Livestock and their Keepers**

Stock-raisers of the Blue Ridge have extensive experience caring for a variety of domestic farm animals. The farms visited during my field research were all small in scale and were typically inhabited by a variety of domestic species. The animals most commonly encountered on area farms included dogs, cats, cattle, fowl, and equine animals. However, informants commonly had knowledge and experience caring for other animals including sheep, goats, pigs, and rabbits, while one informant, William Cable (WC) also had extensive experience raising rainbow trout and pigeons. The vast majority of individuals consulted had been raising animals their entire lives and most informants reared stock as a part of a multiple livelihood strategy which both supplemented income and provided food for the table.<sup>37</sup> Although questions concerning the farmer's net income from stock-raising were not asked during field interviews, it is likely that only two of the stock-raisers interviewed (WC, JE) receive more than half of their income from livestock production. Generally speaking, the farms visited inhabited less than 20 animals; although many stock-raisers likely kept greater numbers of stock in their youth, especially while living on their families' farms.

Each stock-raiser queried indicated that much of their life has involved caring for several species of large and small animals. Most of the informants grew up on small, traditional type mountain farms along the Blue Ridge, on which their family produced both animals and vegetables. The agricultural goods they produced may or may not have been

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<sup>37</sup> Multiple livelihood strategies are commonplace throughout the southern Appalachian region, and a variety of domesticated animals are incorporated into local economies through the production of meat, dairy products, and eggs for personal consumption and/or the market.

sold on the market as cash crops, and many informants' families were likely in transition from subsistence agriculture to market based production during their youth. Having said that, one thing is certain according to most individuals surveyed: A large percentage of food produced on their families' farm was consumed there as well. According to the informants, farm animals were ubiquitous across the landscape and children were typically surrounded by a variety of domestic species at a young age. Stock were used by children to plow the fields, take goods to market, or to travel back and forth between school or church. Cows were often milked by the youth, as were sheep sheared, pigs slaughtered, and chickens caught and killed. Animals were an essential asset to most people's families and these creatures played a significant role on the farm by providing sustenance from meat, milk, and eggs; draft power and transportation; fiber for clothing and bedding; and manure, which was used to fertilize crops.

In order for farm animals to provide these benefits on mountain farms, the stock-raisers interviewed were required to provide adequate provisions of feed, husbandry, and healthcare for their animals throughout their youth and adulthood. According to most informants, formally trained veterinarians were not practicing in the Blue Ridge during their youth, and earlier generations were essentially left with the responsibility of providing healthcare for farm animals by utilizing their own knowledge and skill or that of other community members. J.D. McKinney comments: "I don't know when vets started coming in. But there wasn't no such thing when I was younger. If a cow got sick, they just called one of the neighbors that knew something about one." Furthermore, modern pharmaceutical products like antibiotics, de-wormers, and vaccinations were largely unavailable during most informants' youth, and likewise, earlier generations from whom they were learning, relied on

a therapeutic arsenal of locally attainable materia media for the treatment of most human and animal illnesses alike. As a result, the stock-raisers interviewed grew up watching their fathers, mothers, and other family or community members around them doctor animals to the best of their abilities with a limited arsenal of medicines. In turn, informants of this study learned these folk veterinary skills themselves, since livestock health was such an integral component of rural livelihood. Many informants continue raising livestock as elders today, where they continue imparting their knowledge and skill [at least in some small capacity] to a few interested youth of the community.

### **Transmission of Knowledge and Skill**

Animal doctors practicing during the informant's youth rarely had any formal training. Many stock-raisers state that their grandfathers or uncles acted as veterinarians in the community, while some describe other community members who took on the responsibility of traveling to care for sick animals when needed. Most informants credit learning lots of information about animal health from kin or other stock-raisers in the area. Very few credit learning veterinary skills from printed material or through formal instruction [e.g., extension service workshops, college coursework, etc.]. However, informants in some counties cited that the agricultural teacher in the local high school acted as the local veterinarian. These teachers would commonly bring students out into the field to perform various surgeries and treat sick animals, which in turn trained community members on the basics of animal husbandry and healthcare. It is unknown whether any informants took courses from these high school teachers. Significantly, most individuals that were queried stated they had not taken any classes on animal health in their lifetime, although several remember learning from these high school teachers on visits to their farm.

Not surprisingly, printed materials on animal health were largely unavailable to earlier generations of stock-raisers throughout the region, and such media was likely inaccessible to many due to illiteracy. Only two informants [LM, RT] even spoke of books that earlier generations may have consulted on animal health. However, many informants claimed to have learned some knowledge of animal care from livestock magazines, and some cited they had learned about modern pharmaceutical products from mail order catalogues or from information at local feed stores that sell farm animal medications. Interestingly, very few informants mentioned books they would refer to when diagnosing or treating animal illness. Furthermore, none cited using the internet to attain such knowledge, and none cited learning from extension publications. Instead, most informants cited the importance of learning from other individuals, while many also noted that a lifetime of experiential education on the farm has played an important role in their empirical reasoning as it relates to animal health.

In addition to learning from earlier generations, stock-raisers along the Blue Ridge continue to learn a great deal about animal health from other community members who are consulted in times of necessity. Such consultations often occur when a stock-raiser has been unsuccessful at solving an animal healthcare problem, or when he or she may feel inadequate in their abilities to do so. When such consultations occur, advice or treatments are given and procedures may be performed, all of which afford stock-raisers opportunities to learn from each other. Furthermore, conversations about animal health are commonplace in livestock raising circles; thus, many stock-raisers share their animal healthcare experiences with each other and gain valuable understanding through exchange. Significantly, formally trained veterinarians also play an important role in transmitting knowledge of animal health to stock-

raisers throughout the region. Although veterinarians are rarely utilized by the majority of individuals surveyed, many informants cited learning important skills and knowledge from formally trained animal doctors in the past. Surprisingly, most informants did not describe learning about animal health from agricultural extension agents. However, a few informants did cite involvement in the Future Farmers of America or 4H Clubs, where they undoubtedly learned some basics of animal husbandry and health.

According to the stock-raisers of the region, it is evident that the folk transmission of knowledge appears to be of paramount importance to the functionality of ethnoveterinary medicine in the Blue Ridge. The stock-raisers queried say they have learned a wealth of practical folk knowledge and skill from earlier generations, and many continue to use and teach these skills in Blue Ridge communities today. Furthermore, these individuals are also using and teaching knowledge that is less traditional in nature. The influence of biomedicine is apparent in many of the informant's epistemologies concerning animal health. Such integration of this modern paradigm likely originates from licensed veterinarians educating their clients, or by informants consulting or browsing various publications. Thus, the knowledge and skills utilized by stock-keepers to solve a plethora of animal healthcare problems have origins in traditional ways of knowing, biomedicine, and many other theories of illness. This melding of knowledge and skills appears to characterize community based animal healthcare throughout the study area today, where stock-raisers continue to provide animal care solutions in response to a variety of needs that are not being adequately met by the current biomedical animal healthcare model.

### **Veterinarian Use and Accessibility**

The overwhelming majority of stock-raisers surveyed rarely if ever use formally trained veterinarians, unless they are unable to solve an animal healthcare problem or lack confidence in their abilities to do so. John English, who operates a small Holstein dairy, and Ronnie Townsend, who breeds purebred draft horses and mules, are the exception to this generalization of the sample population. Unlike most informants, both English and Townsend have many valuable pure-bred animals on their farms. Much like their parents' generation, many of the stock-raisers in the Blue Ridge attempt to handle a majority of large animal healthcare problems themselves. Many farmers are proud to be independent and are capable of providing veterinary care on their own or with the community's help. However, in addition to valuing self-sufficiency, many stock-raisers also cite that large animal veterinarians are inaccessible to them for various reasons. When available, most informants state that formally trained veterinarians are prohibitively costly to employ, especially in emergency situations. For a perspective on veterinary use and accessibility, Steve Wilson comments:

Sometimes I would get a veterinary to come out and help, and I stored up a lot of different opinions about how to take care of animals. The old-timers also helped me a lot, but they are all dead and gone. But the vets won't come out anymore. And when you get a down cow, it's not possible to get it into the trailer. All the vets want to do today is doctor dogs and cats. It's a pitiful situation.

On a similar note, William Cable responds with this comment when he was asked about how animal healthcare has changed over his lifetime:

It's not the same now. At one time, it [veterinary medicine] was for farm animals. And now it is for pets; cats and dogs. The veterinarians won't even look at a farm animal! At one time you could call a vet and he would come out and look at your animals and doctor them. I won't say that he would 100% save them, but he would come out and doctor. But now you couldn't hardly get a vet to come out and doctor a big farm animal. They are all cat and dog vets. Of course they make a lot more money in cats and dogs than they did in farm animals.

Unfortunately, most informants in addition to Wilson and Cable cite the phenomena of large animal veterinarians shifting to exclusively or mostly small animal practices, or going out of business altogether, as a contributing factor to problems of inaccessibility. A shortage of food animal veterinarians has been a developing problem throughout rural America over the last few decades due to an array of factors that deserve more attention than can be given here. However, it is without question that small animal practice is much more lucrative in the mountains than large animal practice, which is especially true in counties where livestock populations are proportionately small and transportation is hindered by slow and curvy mountain roads. Thus, many aging veterinarians have shifted to small animal office jobs, and few recent DVM graduates see economic potential for large animal practice in the region. As a result, most farm animal veterinarians have very large practice radiuses, and are thus unable to respond in many emergency situations. For instance, many individuals in Carter County, TN and in Avery County, NC have used large animal veterinarians based in Johnson City, TN, or Morganton, NC, both of which are approximately an hour away. Stock-raisers in Ashe and Watauga Counties, NC cite having used a veterinarian from Abington, VA who is approximately one hour and fifteen minutes away. Many informants

comment that it is essential to doctor animals yourself because you can't depend on veterinarians to do it anymore.

Furthermore, many informants cite the prohibitive costs of using farm animal veterinarians as a reason to provide animal healthcare themselves. Many of the livestock on area farms are not pure-bred animals, and thus are worth less money than many production, performance, or show type animals. Economic constraints associated with animal value are typical on small-scale farms in the region, and many stock-keepers thus have difficulty justifying payment for treatments or procedures administered by a veterinarian.

Significantly, many smaller livestock like goats, sheep, and pigs are worth substantially less than the price a veterinarian would charge to visit the farm, which in turn forces the stock-raiser to choose between safeguarding the animal's health and welfare or an economic loss. Unfortunately, if the stock-raiser's treatments don't work, many mountain animals die or are euthanized by gunshot due to financial constraints. J.D. McKinney comments: "I just don't fool with them [licensed veterinarians] much. You lose more than you gain. They are expensive!"

### **Community Based Animal Healthcare**

My field research was designed to describe how and why a folk veterinary medical system functions within the study area while also highlighting the beliefs, skills, and knowledge stock-raisers have attained as acting community based animal healthcare agents (CBAHA) in the Blue Ridge. Largely due to the inaccessible nature of farm animal veterinarians, the prohibitive costs of their services, and the independent nature of livestock-raisers in the region, many stock-raisers address an array of animal's healthcare needs through an informal community based animal healthcare system (CBAHS). The majority of

stock-raisers surveyed have acted as CBAHA around the region, treating not only their own animals, but also those of other community members who were in need. This CBAHS appears to largely function on the expertise of elder stock-raisers who have had extensive experience caring for a variety of animals. The culturally specialized knowledge of these individuals appears to be of paramount importance to the functionality of this ethnoveterinary medical system. Furthermore, exchanges of knowledge and skill are commonplace amongst stock-raisers in the region, as are exchanges of unofficial veterinary services. Both types of exchanges provide stock-raisers solutions to a multitude of animal healthcare problems, many of which will be discussed in detail in Chapters Five and Six.

Unlike formally trained veterinarians, CBAHA practicing in the Blue Ridge appear to more commonly work on the basis of informal reciprocity rather than financial reward. However, some informants claim to have taken money for assisting other stock-raisers with sick animals. According to the informants, such payments were typically given as a “gift” and were intended to compensate the agent for time and supplies. No informant claimed to have a set fee for any veterinary service they performed. Unlike formalized veterinary medicine, the CBAHS of the Blue Ridge appears to be largely non-commodified, however, a few informants did say they expected to be paid upon completion of a veterinary service for another individual. No informant mentioned receiving a payment of more than 100 dollars, and many were aware that it was illegal for them to accept payment altogether without a veterinary license to practice animal medicine in the state. Informants who admitted receiving payment said that the amount was usually about twenty dollars. Hubert Ward comments about a time he received two twenty dollar bills:

It's just a gift. I don't charge them nothing. A lot of them tries. Now one fellow, he had the money. He said, can you cut a 700 pound bull? And I said, can you hold his tail? Well, anyways, my friend Ed took me over there, and I told the man, you don't owe me nothing. I said it didn't cost me nothing to come over here. And he put something down my shirt pocket. Well, I wouldn't pull it out, because I was afraid if Ed seen it, he would want half of it for taking me over there. So I never said a word until I got to the house, and he'd stuck two twenty dollar bills in my damn shirt pocket!

Like Ward, Steve Wilson also commonly helps stock-raisers with animal healthcare problems in Avery County, NC. Wilson comments:

I'm an outlaw vet. Just a shade-tree doctor. I will go out and help people doctor their animals when they call me. I don't charge anything. But I don't have a license neither. Most of the time I work on dogs or cattle, and sometimes horses, if they get the shipping fever. If I have a case I can't handle, I will use the professional. You don't always save them. But I feel like I've saved a lot in my life.

Cliff Ledbetter also has extensive experience working as a folk veterinarian in McDowell County, NC. Ledbetter's grandfather, Mont Murphy, was well known across the region as a traveling veterinarian. According to Ledbetter, Murphy would set off across the countryside with a stud horse and jackass carried behind it. He would go from farm to farm, and if a person wanted a horse or mule, he stayed overnight and bred it, and if they needed an animal castrated, he did that too. He would even pull peoples' teeth for a charge. Ledbetter comments further:

He [Mont] didn't have any license, but he charged. But if I was veting, it was against the law for me to charge anything. I would say most people give me 20 dollars. But I ain't allowed to charge you nothing. And if I was in doubt about a fellow—say I went to castrate that dog— but if I was afraid he would turn me in, I would say sell me this dog for five dollars and I will sell him back to you when I get done. And I would cut him you see, and add a little more and make a profit. But I've been called out in the night and everything. I had a fellow one time give me a terrible bonus. In fact, it was so hard for me to think that anybody would believe me, so I carried it and showed it to a few. But that calf was trying to be born backwards, and it was after dark and it took me a good while to get done. And that fellow asked me how much he owed. I said well, I ain't supposed to charge you, but most people gives me 20 dollars in this case. He gave me 20 dollars and I went home. In a few days, he called me up and said what is your address, and I got a check for 100 dollars! He said if it hadn't been for me, the cow would have died. She was worth 300 dollars at that time, and he decided he would split it with me.

Most informants say they have performed a variety of veterinary services throughout the region, although many don't do so currently because of their age. Many comment that stock-raisers in need of veterinary assistance will typically consult first with informally trained animal healthcare agents before calling a licensed veterinarian to the farm. However, John English states that he always advises people to have the vet out when he is consulted, however, he will sometimes go and help other stock-raisers if the circumstances are dire.

English comments:

You always had somebody in the community that knew a little something about cattle. He may be wrong, but at least you try. You would call on your neighbors and if that didn't work, you buried the cow. I've been out to several peoples' places. We've got a farm down the road and if he's been having trouble with a calving he will call the vet, but if he can't get him, he has called us. It's a last resort. Normally, my first recommendation is to call the vet. For one thing, I'm getting too old to fool with it, and another thing is I don't want the responsibility.

Finally, representing the importance of reciprocity in the CBAHS, Len Moretz answers a question which was asked to him concerning if people ever tried to give him payment for the veterinary services he performs. Moretz replies:

Sometimes. Most of the time I don't try to charge nothing. If you can't do a good deed for somebody, then there ain't much else. It [animal health] has become a profession rather than a true calling. Veterinarians are after the all mighty dollar with the dogs and cats. They don't care about the big animals.

Stock-raisers of the Blue Ridge have a complex and largely effective way of addressing a myriad of animal healthcare problems commonly occurring on small mountain farms. These CBAHA have a set of knowledge and skills that allow them to help address or prevent animal illnesses with both modern pharmaceuticals and/or locally attainable materia medica. Several of the common animal illnesses these individuals treat will be discussed in detail in Chapter Five and Chapter Six. However, the materia medica utilized by the informants to treat these afflictions will also be outlined near the end of this chapter. The remainder of this chapter will focus on outlining the skills informants utilized to perform basic animal surgeries and various manipulative techniques. However, the informant's

beliefs concerning how astrological *signs* influence animal health, slaughter, and weaning will be discussed next.

### **Astrological Signs**

Like earlier generations of stock-raisers throughout the region, the majority of informants queried believe the *signs* of the zodiac, or simply the phases of the moon, have profound effects on both livestock wellness and meat quality at slaughter. Specifically, it is believed that the time of castration, weaning, dehorning, and slaughter should be appropriately chosen based on the *signs*. Importantly, the influence of the *signs* on non-elective procedures and animal illness does not appear significant to the stock-raisers surveyed since no individual mentioned a corollary. Essentially, the majority of informants believe that animals castrated or de-horned during the wrong *sign* will experience increased bleeding or swelling, and potential discomfort or even death if bleeding is severe enough. Many informants also commented that weaning can be much more difficult on a young animal and the mother if it is done during the wrong sign. Also, many informants commented that an animal [especially hogs] should be slaughtered during the correct moon phase or the meat would be of inferior quality.

Not surprisingly, informant's beliefs concerning the astrological *signs* were rather homogenous and ubiquitous throughout the Blue Ridge. The stock-raiser's customs of adhering to the *signs* when performing surgeries, weaning, and slaughtering is actually not unique to the southern mountains. In fact, many rural agrarian Americans have followed agricultural customs associated with phases of the moon for centuries. Without doubt, the ubiquity of following the *signs* in America has largely resulted from the widespread distribution of farmers' almanacs and other related literature. However, it should be noted

that these traditions have long histories predating European settlement of the Americas. Uniquely, people of the Blue Ridge are proud tradition bearers, and many stock-raisers of the region continue “following the *signs*,” even as some juggle busy work schedules or feel pressure from modern society to disregard this custom altogether. A sampling of informant’s beliefs relating to astrology and its correlation to animal health will be presented next.

In this next passage, Cliff Ledbetter describes how the signs correlate with the appropriate time for castration. He does not specify any certain species of animal in this passage; however, it is important to note that Ledbetter does place increased value on paying attention to the *signs* when doctoring large animals, a belief which he relates to size and bleeding potential. Ledbetter comments:

We’ll start with castration. Back through the years, I would pay attention to the signs. And I still do. Back yonder, the people, if it was a small animal they didn’t pay too much about the signs. But if it was a big animal, they went to the signs and went with anything out of the body. Otherwise in the feet, and in the arms, or something of that sort. You see, with small animals your wounds wasn’t as big like that. And if they didn’t have an almanac or calendar, they went and checked the moon. And if the moon was increasing, they waited till it started fading out. Otherwise, it was growing small. And things wouldn’t swell.

Most informants concur that large animals should be castrated when the moon is decreasing in size, or waning from full to new. Furthermore, most informants believe that de-horning should not be performed when the *signs* are in the head or body, and castration must not occur when the *sign* is located in the heart or genitals. When asked if he paid attention to the *signs*, Len Moretz comments:

I try to, but I did more when I had time. I used to go by it pretty strict. But being on a public job you got to be there when they want you there or need you there, and certain times you can't take off. But I weaned them calves Wednesday and Thursday. I looked on the calendar yesterday, and the signs were in the arms. Well, you don't want to wean them when it is in the head, and you don't want to wean them when it is in the balls. They would stand and bawl for a week or two. But if it was in the arms, a calf ain't got no arms. They didn't seem to be bawling all that much yesterday morning when I went by to check on them.

When you are castrating, you don't want nowhere [in the signs] around the secrets [genitals]. You don't want nowhere around the heart where they will bleed to death. It either needs to be in the feet or the head. Somewhere away from that [site of incision]. But if you was dehorning, you wouldn't want to do it when it is in the head. You would want to do it when it was in the feet somewhere. It definitely makes a big difference. And I tell people when you cut your finger and you bleed like a stuck hog or another time when you cut it you hardly bleed at all—I said if you had looked at the signs you would have seen that it was nowhere near the heart. I do believe in them. I do believe it makes a difference. And with cuts of meats it makes a difference. Even your bacon in the frying pan. One day you go to fry it and when you start chewing it, it gets bigger and bigger. Well the next batch you fry it and when you start chewing it, it gets smaller, and it taste so crunchy! I'm sure that has a lot to do with the signs.

According to several other informants, animals should be slaughtered in the “old of the moon,” or simply after the full moon, yet well before the new moon. Virginia Lewis comments:

You don't kill them in the new of the moon. About everything you kill in the new of the moon makes it where the meat won't fry good. I wait to go by the full moon. Just about everything in the head or so. I don't think anything is killed when the signs is in the bowels or the heart. But if you killed anything in the new of the moon, the meat wouldn't be still in the pan and everything wanted to curl up.

Virginia's husband, Max Lewis also commented:

It would make no difference the sign you killed in. The moon was the only thing that made any difference. You kill a hog in the signs of the new and the meat won't fry good. It won't have any grease in it. When we were changing them or dehorning, we always tried to get the signs just as far away from where we were cutting as we could. We always dehorned when the signs were in the feet or thighs. And if we was changing them, we would do that when the signs were in the head.

Other informants like Walter Brothers, Ralph McKinney, and Len Moretz appear to believe that it would be inappropriate to castrate when the signs are in the head, as was suggested by Max Lewis. These individuals would likely echo Ralph McKinney's response to my question asking him what type of signs he castrates by. McKinney comments:

When we castrate anything, even today, I look on the calendar and see where my signs are at. You want the signs in the knees down. Not in the head, not in the heart, and not on down in the privates. It is best in the feet. They have less bleeding or anything else like that. It works with weaning too. It works on humans as well as

animals. I've got a friend and he has tried to quit smoking, and I was telling him to do it when the signs is down in the feet. He said that's just a crock of bull! And he tried when they were in the feet and when they got back to the head, he didn't have no more cravings for his cigarettes. There is something to it. It works with any animal pretty much. You want it from the knees down. It's even better in the feet.

When considering the informant's beliefs concerning this custom, some simple patterns emerge relating to how some CBAHA of the region correlate moon phases or *signs* with animal health. If surgeries are to be performed according to most informant's astrological beliefs, the *sign* should be correlated with a body region that is far away from the surgical site. For instance, generally speaking, the *sign* should be near the feet for castration, and far away from the head for dehorning. Furthermore, when the *signs* are in the heart, it is also believed to be a bad time for surgery. When the *signs* are in the heart, informants state there is an increased risk of bleeding or death. Interestingly, some informants relate the act of weaning to a psychological challenge, commenting that the location of the *signs* should be far away from the head during this time period.

Also of significance, some informants related the moon's phase to swelling or shrinking, sinking and rising. For instance, with animals slaughtered during the new [waxing] moon, Virginia Lewis comments that meat will curl in the pan, while Len Moretz comments that it gets bigger in your mouth when you chew it. Similarly, Cliff Ledbetter comments that surgical sites won't swell if the moon is decreasing in size. All informants that commented on slaughtering by the *signs* stated that this should be done after the full moon and before the new moon. If done during another *sign*, the meat quality might be affected, or there may not be adequate grease when it is fried. In addition to these

ethnoveterinary beliefs concerning the zodiac, some informants also mentioned how the *signs* influence splitting locust rails, planting potatoes, or curing hams. Importantly, according to Anthony Cavender's study of human folk medicine in southern Appalachia, "organs of the body [human] were associated with the moon sign of the zodiac, and each organ was thought to be more vulnerable to certain ailments when its sign was ascendant" (2003, p. 45).

Furthermore, according to Cavender's study, many people believed that human teeth should be extracted when the sign was "anywhere beneath the head and neck. Extracting a tooth when the moon sign was in the feet was thought to prevent excessive bleeding" (2003, p. 108). Several informants themselves commented that astrological *signs* affect both humans and animals.

### **Castration**

Ten informants mentioned that they had experience with castrating a variety of domestic animals. Animals that informants mentioned castrating were cats, dogs, cattle, horses, mules, donkeys, sheep, goats, and pigs. Although only ten informants mentioned performing surgeries intended to *change* animals from male to neuter, many other informants who were interviewed for this project most likely had experience with this simple surgery. In order to utilize livestock for draft power or meat production, castration is performed to increase growth rates or modify behavior. The procedure is also employed to help prevent unwanted pregnancy, both in large and small animals. Stock-raisers around the world have been castrating farm animals for much of agrarian history, while many livestock keepers in North America continue to do so today. Many of the stockmen and women of the Blue Ridge are teaching a new generation of men and women to castrate farm animals today, as they continue to perform and teach folk surgeries on animals in the southern mountains.

The CBAHA of the region pay close attention to the *signs* of the zodiac when choosing an appropriate time to castrate farm animals. Most informants that mentioned castrating animals stated they followed astrological *signs* because they believe the phase of the moon has significant implications for animal health. Since *changing* animals according to *the signs* was outlined previously, this section will focus on outlining some techniques stock-raisers utilize to castrate a variety of animals. For example, William Cable and two other informants mentioned that cats can be castrated by placing the animal's head first into a tall boot [shoe], which would then allow the person doing the surgery access to the scrotum while also preventing the cat from scratching and biting. This technique is likely very painful and stressful for the cat, unsanitary, and deemed inhumane by today's standards. Although male anatomy is rather similar across mammalian species, a variety of approaches are utilized to castrate dissimilar species. For instance, horses are generally tied and casted [or anesthetized by DVMs] allowing the surgeon to make a longitudinal incision along the scrotum. Through this incision, the testicle is exteriorized and excised after the spermatic cord<sup>38</sup> is crushed or tied with a ligature. William Cable describes some techniques for castrating horses that don't require casting the animal to the ground. Cable comments:

Probably in the Sixties, me and Hayden Eller cut about 300 horses one summer. I held their feet and Hayden cut them. Soon as he was cut, we put a rider on him to ride him all day. He never swelled and never got sore by doing that. And I would hold his leg up [instead of casting him] and he didn't strain as much that way and it didn't make him sore. I just kept a rope on his foot. I kept him from killing the man that was cutting. Hayden wouldn't trust just any man to hold his foot. Mainly what

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<sup>38</sup> The spermatic cord is an anatomical structure communicating between the testes and the abdominal cavity. It primarily contains the spermatic artery and vein, retractor muscles, and the vas deferens.

makes them swell up and stiff is straining. Now they will strain when you tie them till they can't move. I had him tied where he couldn't reach up and get the man that was working on him. He wasn't straining, he was standing on his feet. And he wasn't straining like he was if you was to lay him down and cut him. A lot of them [the older generation] would take a willow—a willow bush. And they would split it and put it on there [the spermatic cord] and leave it on there, and it would rot off. You would use it like you would a thread. You'd split it, and put it on there, and tie it where couldn't no blood go through there. Just like a clamp.

William Cable and Hayden Eller worked together in Avery County, NC during the 1960s. The two would typically designate a location for stock-raisers to meet with their horses, and they would castrate animals that were brought there for a fee. Undoubtedly, this pair castrated many equine animals in and around the Blue Ridge. Also, Hubert Ward, who lives in Avery County as well, has used another individual to castrate horses. Ward comments:

Yea, I used to trade a lot of horses. I used to go up to Stony Creek there where them stud horses come in there. They wouldn't bring as much. And this man would cut one for ten dollars. I'd buy the stud, and he would take it out behind the barn. He had some kind of ropes he would put around their legs and he'd lay them down. He would cut them for ten dollars! I would bring him home and in a week or two, he would be well, and I would sell him. I cut three ponies myself. I asked this man, ain't you got one of them emasculators? He said, son, I've cut Jacks and all kinds of studs. He said you are welcome to my emasculators, but I advise you not to use them. He said you just wrap that cord around your finger and it would slide right out. Me and

that girl of mine [daughter] cut three here in the yard, and I cut them just like that and they never did bleed a bit. I tied me a rope around its neck, looped me a rope around its hind leg and went through that one, and made him start going backwards and he just sat down. I kept the ropes tight and down he went. Then I tied his feet to his front feet and that girl of mine sat on its head. I said, “Now, don’t let it get its damn head up. If it gets its head up, it will come up. She sat on its damn head and I jumped the straddle of it and cut it. I done all three like that. Now Hayden and William Cable used to cut them and they would cut that cord with the emasculator. And sometimes, they would bleed pretty bad. I didn’t cut the cord, I just pulled the cord straight out.

Surprisingly, several informants mentioned having experience with castrating horses, despite the dangers associated with this procedure. In addition to Ward and Cable, Max Lewis mentioned that he had castrated ponies, while Cliff Ledbetter and Ralph Silvers also mentioned having helped elders *change* equine animals. Ronnie Townsend stated that he didn’t like to perform castrations. Instead, Townsend either calls his brother in law, a friend, or a veterinarian out to his farm to castrate equine animals. In this next passage, Ralph McKinney demonstrates a castration technique for horses that he has learned more recently. McKinney states that he learned this seemingly bizarre castration technique from a DVM. McKinney comments:

Well, they would just throw them [horses] down and cut them. To tie them [the spermatic cord], you take a white thread. We didn’t have no emasculators to crimp the cord. But when you would cut a big animal or a horse, you would take and pull that cord out. And somebody would take and wrap that cord with that white thread,

and pull it tight and tie. And then, they would scrape in front of that and scrape the testicle off and that was it. Up on the cord, there is a little knot back there and you got to get behind that.

I'll tell you the best technique I've found. Now they've got a vet down in Morganton—he takes a cordless drill after he takes that testicle out. He's got a clamp that goes right on the cord and he starts a drilling that thing real slow. He'll come out of there with a cord about that long [approx one foot]. There's no bleeding, no swelling, no nothing. It's ten times better than the conventional way of cutting them.

In addition to McKinney, Ralph Silvers in McDowell County states he has also seen this technique utilized by the same veterinarian. Beyond experience with castrating horses, many informants also have skills that allow them to castrate cattle. According to the informants, a variety of techniques are utilized by stock-raisers of the region to castrate male cattle. Many informants indicated that they utilize rubber bands or “banders” to castrate these animals. This technique requires no incision, but instead involves the placement of a band around the proximal aspect of the scrotum, which then causes blood flow to cease. This in turn causes subsequent necrosis of the scrotum and testicles which yields the desired effect of sterilization. Other informants utilize a surgical technique which involves cutting the end of the scrotum off or making two incisions at the back of the scrotum creating an opening for removal of the testicles, which many refer to as *seeds*. Some informants indicate that the testicles should simply be pulled out, while others say that the spermatic cord should be scraped with a knife to fray these tissues so they don't bleed when the testicle is removed. Like most veterinarians, no informant recommended simply incising the spermatic cord to

remove the testicles. Like several informants, Len Moretz indicates that he has experience with both excision and banding techniques. Moretz comments:

I have done both. Most of them I do anymore, I just split the back of the bag. I don't know if it makes a lot of difference or whatever, but it just looks better to me in the fall, especially if you keep them till two years old. If you just leave that bag in there, they look more fuller. If you use a rubber band, they look hollow between the hind legs. I don't know if it makes any difference, but just to me or not. I just like to use a knife and scalpel. I bought a pair of elastatomes one time, but I've never used them. I would rather just use the knife.

Like most informants, Moretz also has experience castrating pigs and hogs. He comments: "I've cut several hogs and basically, they are just about like a horse other than you go ahead and pull the cord out. But you use kerosene on a hog for disinfectant. A few people over in this country kinda done stuff like that. They would go out castrating and dehorning." Cliff Ledbetter comments: "I've cut a many a pig, and I've castrated many a dog." Walter Brothers and Barte Laney actually recommended that I speak with Cliff Ledbetter since he was so well known for castrating animals in and around McDowell County, NC. Only Ledbetter admitted to castrating a dog, while several informants had experience castrating sheep and goats. Few of the techniques utilized to castrate these species were discussed. Without doubt, the stock-raisers of the Blue Ridge often castrate farm animals by utilizing their own knowledge and skill, or that of another CBAHA in the area. Apparently, these individuals rarely use licensed veterinarians for castrating large animals. Interestingly, this does not appear to be the case for dogs and cats. Small companion animals are apparently rarely castrated by CBAHA in the region. Unfortunately,

stock-raisers of the region did not describe using anesthetics for any surgical procedures like castrations and dehorning, although some did describe techniques they thought were useful for decreasing swelling and pain associated with these procedures. Some informants indicated that they use licensed veterinarians to castrate horses since modern anesthesia is perceived by them as beneficial. Modern anesthetics eliminate some of the danger and pain associated with the procedure in horses, while others commented that they often use veterinarians to de-horn cattle for the benefits of anesthesia as well. It appears as though stock-raisers queried rarely utilize licensed veterinarians to castrate pigs, cattle, goats, and sheep.

### **Reproduction: Surgical and Manipulative Techniques**

*To get male colts, they would breed them at daylight, facing to the east, as the sun come up. It was something they done very often. Do you know how often that worked? I'd say about 50 percent of the time...*

-- William Cable, Elk Park, NC, 2013

Twelve informants stated they had experience with a variety of surgical and manipulative techniques associated with the female reproductive system of several livestock species. The stock-raisers mentioned a variety of skills which they utilize to address several problems associated with livestock reproduction. Their abilities included how to determine when stock should be bred or if they were pregnant; how to aid animals with dystocia [difficult birthing] through Cesarian section or with digital manipulation; how to “clean out” the afterbirth or replace a prolapsed uterus; and how to breed animals to improve their genetics.

All of the informants queried had experience breeding farm animals. However, there was a diversity of techniques these individuals utilized to breed stock. For instance, John English artificially inseminates his Holstein cattle with semen he attains from a commercial

supplier, while most individuals use male animals to naturally service their females. However, natural service can create some challenges for the stock and their keepers. With natural service, the timing of parturition [birthing] commonly occurs during the harsh winter months, which is not ideal. William Cable comments: "I seen my grand-daddy bring calves in the house and wrap them up in quilts to keep them from freezing to death. In 1936 we had three foot of snow. A calf can't walk in three foot of snow. We would bring them into the back room by the fireplace where they would thaw." Similarly, J.D. McKinney also comments on this problem:

I've got six cows and two bulls. A big bull and a little one. I lost four calves this year. I went up there on a Sunday morning a few weeks back and it was the awefullest time with the wind a blowing and the snow. I went up there and found them [cow and calf] down in the holler. And I said, well, I will just run to the house and put milk down it. I put some down it, and he got up. By the time I got back up there, it was dead. Hubert Ward lost one on the same day. It was down about 19 degrees and that wind was a blowing. It was so cold! The best secret I know is to not have them [calves] in the winter time. Just have them come later in the year. You breed to where they will come in April. A lot of people has gone to that now. This is the first time I have had any problems in years. Normally, people just let the bull run with them all the time. They ain't got nowhere to put their bulls up. They ain't got no bull lots. You have to build you a lot and put electric around it, and you got to have pasture for him in the summer time. I just never did do that, and it looks like if a man is gonna continue to fool with cattle he's gonna have to do that.

In this next passage, Ralph McKinney describes two interesting techniques that he utilizes with his horses to time breeding and confirm pregnancy. McKinney comments:

I've got a hog that tells me when my mare comes into heat. He'll start rooting on their front legs when he thinks they are coming into cycle. You know, an old boar hog will start rooting on a sow's belly when they are coming in. And they will grunt around. He'll start on her front legs, and if they'll stand for that a few minutes, he will go around back and root on their hind legs. And they [the mare] will squat and pee just like a stud was teasing them, and in just a few minutes he will go around and rear up and try to breed her. And then I bring the stallion from the other barn. People think it's a joke, but it is the truth! It's the honest truth!

I learned something this past summer about checking a mare to see if she was bred. They was a fellow that brought two mares up here, and I bred them to my stud. I said are you going to take them to the vet and have them ultra-sounded in 16 days? He said no, I'm gonna witch them. I said do what? He said you can witch a mare and tell if she is bred. I thought he was full of bull you know. So I got my mares that I knew were in foal because they were pregnancy checked by a vet. I also had some that I knew hadn't been bred because they weren't exposed to nothing. I got me a coat hanger and made me two wires and I got one of my big mares that was bred. You walk right up to their side, right in their flank right behind the front of their hind leg. You gotta check both sides because it depends on what ovary they are bred on. If they are bred, them wires will cross. If they are not bred, they will stay straight. That old boy that told me that come out of Alabama. It will supposedly work at 16 days.

In addition to Ralph McKinney's method of diagnosing pregnancy, surprisingly, only one informant discussed using palpation [the use of touch] per rectum to determine if an animal was bred. John English and his son Terry have taken courses on artificial insemination which they claim taught them some of these techniques, however they have also certainly learned this skill from years of experience working on the family dairy. English comments:

I can feel one [a calf in the uterus]. The big thing is, you go in there and if she is carrying a calf and if it is fairly late term, you are gonna feel that cervix stretch out over I guess what you would call the pelvic cavity. You can tell a lot about the way a calf feels. If you reach in there and feel the ovaries, then she is not bred.

Some of the more common problems stock-raisers mentioned addressing were problems with birthing [dystocia]. Stock-raisers acknowledged they had assisted several species of farm animals with reproductive problems by utilizing both manipulative and surgical techniques. Len Moretz, Hubert Ward, Max Lewis, and John English all commented that they had even performed Cesarean sections themselves. These informants, in addition to the overwhelming majority of others interviewed for this project also had experience "pulling" calves vaginally. These skills are very important to stock-raisers in the region since licensed farm veterinarians are often unavailable in times of emergency or when an animal cannot be loaded into a trailer. In instances of dystocia, the situation is usually very urgent, and the CBAHA makes emergency decisions requiring immediate action. Stock-raisers having little experience with reproductive problems typically consult with other CBAHA, or simply have these agents respond to the emergency by coming to the farm if

they are available. However a few informants did prefer to call a veterinarian with more serious reproductive maladies. John English comments:

Once in a while you are gonna get one [a calf] with a head turned or backwards or whatever. We hardly ever call a vet for something like that. The one calving problem we generally call the vet on is a breech. That's when it has been going along for a while, and nothing is coming. If she has been pushing a while, and can't relax that uterus you have so little room to work. It takes two people. Somebody has to push on the abdomen and a lot of times you will tear something in there and the cow will die. It may take her a couple of days to do it, but she will die. We've lost a couple of good registered cows. So if it's breeched now, that's the only time I call the vet. He can give her epi [epinephrine] you know and that will relax the uterus and she can help you. For 30 seconds, a man has got all kind of room to reach in there and turn those legs. And once you get the calf out, you give her a shot of oxytocin to make her start pushing again.

For severe instances like those described by English, Max Lewis actually learned how to do C-sections from a veterinarian in Boone. In this next passage, Lewis comments about how he has informed other stock-raisers in the community to deal with problems of dystocia themselves. Lewis states:

Last spring he [a community member] had a calf in there that was twisted up. And I told him how to cut it out. I said the cow is gonna die. I said just go ahead and cut that cow and save the calf. But they didn't want to do that. I don't know where it would have worked or not. They just killed the cow. But I think I could have taken the calf out and it would have been fine, but I don't have much strength in my arms.

There ain't nothing to it though. You get them stretched out where they can't get up. And you know, they don't bleed much when you cut them like that. I took one calf out of a cow in the barn. It swelled and we couldn't get it out. I've done four or five C-sections.

I learned that from a veterinary up at the top of the hill in Boone. You just go ahead and do it because the cow is gonna die anyway. Sometimes you can save her, and sometimes you can save the calf. You can take hog rings and clamp them in to close it [the skin]. And they won't tear out. I don't use no thread. I just use those clamps. But for that first layer of skin next to the calf, you sew that back with some kind of thread. You can take the clamps out of the skin in about a month or two. You wouldn't imagine how quick they heal up.

Most informants mentioned they had experience "pulling" an animal from the womb in cases of a difficult birthing. This procedure is usually done by manipulation of the calf, lamb, or foal with the hands per the vaginal orifice. No suggestions of similar techniques for pigs, goats, or smaller animals was mentioned; however, some informants likely had experience assisting birth in these species, often with ropes or chains, and with means of traction provided by calf jacks, ATVs, tractors, or strong individuals. Hubert Ward comments:

Well, I can do anything that needs to be done. I can pull a calf. I can clean the calf. Or, I can cut a bull. I had trouble with my Charolaise. She springed the biggest you have ever seen. And I thought, now that calf will fall out of her. But I let her go up on the hill there out of the mud. I went up and a hind leg was sticking out of her. You hardly ever save a calf coming out backwards. He was dead by the time I got it out.

He drowned I recon when that water bag busted. If they don't come out right then, they can't get their hips through.

I called a fellow and he brought another man with him and we tied a rope through the hind legs. They got one leg, and I got the other one and we drug him out. We got the legs and it come right on out! She started pushing when we started pulling. And then when we started pulling, she went to helping us. After you get the hips past her hip bone, you got it made. But sometimes, they are pretty hard to get.

I had eight staples put in my head last fall with a damn cow. Damn Charolaise heifer. She was as gentle as a dog out there in the barn, but she couldn't have her calf. I put her in the barn and that son of a bitch made a dive at me and slapped my head up against a 4x4 and knocked me down backwards flat, and I mean flat into that shit and mud. And I had to go to the damn hospital and they put those staples in my head.

Len Moretz's wife calls him "the corn string king" since he is well known for tying bailing twine to a calf's feet when he assists with birthing problems. Moretz has extensive experience with dystocia in both cattle and sheep. He comments about some of those experiences:

When they first start having [labor] pains, you stay away from them and leave them alone. Most of them takes three or four hours from the time they start until it gets in the birthing channel and it is out. But after they strain for so long, they get to a point where they can't strain anymore. That's when you go in and see what the problem is, and see if you can find the feet and the head. If you find them, tie a string or chain around their feet and start to pulling. And most of the time, they will come out fairly

easily. Once in a while you will have trouble with a calf or lamb, but I usually don't have that much trouble.

It's one of those things that you've got to have this picture in your mind of knowing where everything is supposed to be laying and how the head is supposed to be between the feet. You see that picture in your mind, and if it is laying right, you start to pulling. But if you reach in there and it is one foot and a head, there is a problem. And if you reach in there and there are two feet and no head, there is a problem. Or, if you reach in there, and the two feet are upside down, you know it is coming backwards. It really depends on how long they have been in there. A calf is harder to turn than a lamb. I have pretty good luck turning and saving lambs. But I have also pulled several backwards. A lot of people say if they are backwards, they won't live. But I've had pretty good luck with them.

Similarly to Moretz, Cliff Ledbetter states that waiting three hours after contractions begin before starting any type of reproductive manipulation is a good rule of thumb. Also like a technique described by Moretz for removing lambs from the mother's uterus, Ledbetter performs a procedure that is useful for removing deceased calves in order to save the cow or heifer's life. Ledbetter comments:

If I knowed when they started [labor], I would give them three hours. And if nothing happens and it don't show up in within three hours, go in and get him. And most of the time if nothing shows up, it is trying to be born backwards. If it's alive, you can turn it and deliver it. Or if it is dead, cut it up. Get it out piece by piece. Start cutting. Get another leg out and cut it off and keep on until you get to where you can

get the rest of it. If you hit the joints it is real easy. It's a pretty good job. I can tell you that.

To prevent dystocia all together, a few informants were well aware that the bull should be appropriately matched with the cow or heifer. John English uses the commercial reproduction specialists who supply his semen to choose appropriate bulls for his inseminations, while Ronnie Townsend performs his own assessment when choosing the appropriate sire. Townsend comments:

A lot of times, the mare will determine the size of the colt, but occasionally you will have some problems like you would with a bull you know. If I was back in the stock cow business now, I would want my smaller cows and heifers bred to an Angus bull rather than a Charolaise or even a Hereford. Those Angus calves come smaller you know. And you got to check the heads out on bulls because with some of these broad heads, the calves will be that way.

To conclude this section, the informant's experiences with prolapsed uteruses will be outlined. Prolapsed uteruses are fairly common after ruminant animals give birth. This type of reproductive problem generally requires the stock-raiser or DVM to replace the uterus per vagina. Often times, a Caslick's suture is placed across the vaginal orifice to prevent the uterus from prolapsing again. Cliff Ledbetter admits that such procedures are beyond his abilities, however he is aware that opposing the vaginal labia is an essential component of the procedure. Len Moretz states that he has had good success with replacing prolapses in cattle and sheep over the years, and Hubert Ward comments that he has replaced "the calf bed" several times. Moretz comments:

Wash it [the uterus] and clean it up as best you can. If they are down, they are harder to get back in, but if they are standing up, you can get it started and it will go. You just have to be real careful not to tear any of the ligaments. But once it goes so far, it will drop back down.

### **Materia medica**

Stockmen and women of the Blue Ridge use a diverse bag of medicines to treat and prevent a wide range of farm animal illnesses. The next two chapters will explore commonly mentioned livestock afflictions and will outline the materia medica suggested by informants to treat or prevent each of these conditions. This chapter section will categorize medicines mentioned by informants based on their source of attainment, and will attempt to draw pertinent corollaries between historical and present day human and veterinary folk medicines of the region and beyond. Furthermore, an effort will be made to identify the most commonly mentioned therapeutics for some prevalent maladies of cattle and equine animals. It should be noted that many of the therapeutics listed in forthcoming paragraphs and tables were also mentioned by the informants to treat a variety of afflictions in other animals including goats, sheep, pigs, poultry, dogs, and cats. Due to temporal limitations in research analysis, only a few of the therapies used in these animals will be mentioned here.

Materia medica mentioned by the informants were organized into five categories by the author for purposes of analysis and subsequent presentation to the reader. Categorizations of medicines included “Edible and/or Botanical Medicines,” “Alcoholic Beverages,” “Oils and Petroleum Products,” commercially available “Pharmaceuticals,” and “Miscellaneous Medicines” that could not be easily categorized and grouped. Since “Edible

and/or Botanical Medicines” were mentioned frequently by all informants, these *materia medica* will be discussed first.

Twenty-five “Edible and Botanical Medicines” were suggested for the treatment of 20 documented afflictions in bovine and equine animals. Many of these medicines are readily available to stock-raisers and are commonly found in or near people’s kitchen, at the local convenience store, or in gardens, fields, or in forests. Importantly, many edible or botanical medicines can be sustainably cultivated or raised throughout the southern Appalachians. The most commonly suggested therapeutics for use in farm animals were various raw forms or preparations of tobacco (*Nicotiana tabacum*) including “snuff,” “chew,” or simply “cigarettes.” Importantly, tobacco was by far the most commonly mentioned medicine suggested by stock-keepers in the region. Eleven stock-raisers mentioned this botanical as a treatment for eight maladies including *lice*, *calf itch*, bleeding, *worms*, *colic*, *wild parsnip poisoning*, *stagger*, and *buckeye poisoning*.

Salt, coffee, hog lard, and flour were also commonly suggested therapeutics. Salt was suggested by eight informants for the treatment of several afflictions including *pink-eye*, *hollow tail*, *wounds*, and as a preventative for *colic* when fed to increase water intake. Coffee [*Coffea Arabica*] was suggested by six informants for the treatment of several types of toxicities including *ivy poisoning*, *laurel poisoning*, *wild parsnip poisoning*, *stagger*, *buckeye poisoning*, *milk poisoning*, and *fall poisoning*. Hog lard, bacon grease, and “meat grease,” all of which are zootherapeutics, were mentioned by six informants for the treatment of several types of external parasitism, wounds, *buckeye poisoning*, and *milk poisoning*, while wheat flour was mentioned for stopping excessive hemorrhage and for the treatment of *scours*, which is a severe form of diarrhea.

Many of the “Edible and/or Botanical Medicines” mentioned by the informants have been extensively documented as human folk medicines in the region. For instance, tobacco has been used as medicine by Native American groups in Appalachia since pre-historic times. According to Anthony Cavender’s research (2003), tobacco was used for a variety of human skin conditions, insect bites or “stings,” and for dental hygiene. Cavender also documents the use of hog fat for a variety of skin conditions and external parasites, and suggests that “flour slightly burned in a skillet” was used for diarrhea. Cavender (2003) also documents the use of coffee for “sore eyes,” headache, and to “clean the kidneys.” Salts were used for a variety of human conditions including constipation, wounds, poison ivy [skin condition], shingles, ear-ache, and for dental hygiene. “Mushroom puffballs” [presumed species: *Lycoperdon pyriforme*], were suggested by informants Max and Virginia Lewis for the treatment of hemorrhage, while Cavender (2003) documents the use of this fungus for bleeding wounds and hemorrhoids in humans.

**Table 4.1.** “Edible and/or Botanical Medicines” and their therapeutic uses according to informants.

<b>Materia medica</b>	<b>Use</b>	<b>Animal Type</b>	<b>Informant Source</b>
Tobacco	<i>lice, calf itch, worms, colic, wild parsnip poisoning, stagger, buckeye poisoning, bleeding</i>	Bovine, Equine	RM, SW, WC, HW, ML, VL, RT, RS, WB, BL, JD
Salt	<i>pink-eye, hollow tail, wounds, colic (preventative)</i>	Bovine, Equine	RT, JE, ML, VL, SW, JD, LM, CL
Coffee	<i>poisoning, stagger</i>	Bovine	JE, ML, JD, RM, RT, SW
Hog Lard or Tallow	<i>wounds, lice, flies</i>	Bovine, Equine	RM, WC, CL, WB, RS
Bacon/Meat Grease	<i>wounds, grubs, buckeye poisoning, milk poisoning</i>	Equine, Bovine	RT, RM
Flour	Bleeding	Bovine, Equine	WB, BL, ML, VL
Flour “scorched”	<i>Scours</i>	Bovine	RT
Pepper	<i>hollow tail</i>	Bovine	ML, VL, LM
Eggs	<i>wild parsnip poisoning</i>	Bovine	VL, RT, ML
Vinegar	<i>lameness, wounds, hollow tail</i>	Bovine, Equine	RM, CL
“Mushroom Puff Balls”	Bleeding	Bovine, Equine	ML, VL
Ginger	<i>Scours</i>	Bovine	CL
Baking Soda	<i>scours, hollow tail, “not eating”</i>	Bovine	CL
Corn Meal “browned”	<i>Scours</i>	Bovine	WB
Banana	<i>Scours</i>	Bovine	RT
Save-a-Calf™	<i>Scours</i>	Bovine	RT
Gatorade™	<i>Scours</i>	Bovine	RT
Pedialyte™	<i>Scours</i>	Bovine	RT
Pine Tar	Wounds	Bovine, Equine	RT
Hickory Bark	<i>worms</i>	Equine	RT
Honey	<i>milk poisoning</i>	Bovine	WC
Apples	<i>milk poisoning</i>	Bovine	WC
Green Corn	<i>milk poisoning</i>	Bovine	WC
Buttermilk	<i>buckeye poisoning</i>	Bovine	RM

Commercially available “Pharmaceuticals” were mentioned as animal medicines by nearly every informant. These modern biomedicines were recommended for the treatment of seven afflictions, which were not surprisingly of the “infectious” type, including bacterial or viral diseases and parasitism. Ivermectin, typically referred to as Ivomec,™ was importantly

the second most frequently mentioned materia medica of the study. Ivermectin was one of the first avermectin de-wormers to become widely available to both stock-raisers and veterinarians alike, and it is widely used as a broad spectrum parasiticide throughout the country. In addition to this pharmaceutical, unspecified intra-mammary antibiotics were suggested by six informants for the treatment of *mastitis*, while various preparations and brands of oxytetracycline antibiotic were also commonly suggested for the treatment of a variety of illnesses including *pink-eye*, *scours*, *lameness*, and *shipping fever*. Penicillin was surprisingly mentioned by only two informants for the treatment of *pink-eye*, *shipping fever*, and *scours*, while a few individuals suggested using more recently patented de-wormers and antibiotics, and other commercially available medicines for the treatment of several farm animal afflictions. It should be noted that a large number of informants mentioned both microbial and intestinal parasite resistance as an increasing problem with modern pharmaceutical products. Interestingly, unlike most folk practitioners of human medicine, folk veterinarians legally have access to a variety of over the counter antibiotics in addition to those prescribed by veterinarians. Unfortunately, these medications are often used indiscriminately.

**Table 4.2.** Commercially available “Pharmaceuticals” and their therapeutic uses according to informants.

<b>Materia medica</b>	<b>Use</b>	<b>Animal Type</b>	<b>Informant Source</b>
Ivomec™ (ivermectin)	<i>worms</i>	Equine, Bovine	RM, RT, RS, HW, JD, RhM, JE, LM, SW, CL
Intra-mammary Antibiotic	<i>mastitis</i>	Bovine	WC, HW, JE, CL, ML, VL
LA-200™ or Agrimycin™ (oxytetracycline 200mg/ml)	<i>pink-eye, scours, lameness, shipping fever</i>	Bovine	RT, JE, SW, JD
LA-300™ (oxytetracycline 300mg/ml)	<i>shipping fever</i>	Bovine	RT
Cydectin™ (moxidectin)	<i>Worms</i>	Bovine	LM, RT, JE
Penicillin	<i>pink-eye, shipping fever, scours</i>	Bovine	RT, WC
Tramisol™ (levamisole)	<i>worms</i>	Bovine	HW, JE
Safeguard™ (fenbendazole)	<i>worms</i>	Bovine, Equine	JE, SW
Copperas	<i>worms, scours</i>	Bovine	HW, WC
Nuflor™ (Florfenicol)	<i>shipping fever</i>	Bovine	RT
“Sulfa Pill”	<i>Scours</i>	Bovine	SW
Pepto-Bismal™	<i>Scours</i>	Bovine	WB
Aspirin	<i>Scours</i>	Bovine	WB
Vaseline™	<i>warbles</i>	Bovine	CL
Worm Pills	<i>worms</i>	Bovine	JD
Biotin™	<i>lameness (preventative)</i>	Equine	RT

Eight types of “Oils or Petroleum Products” were mentioned by stock-keepers for the treatment of 14 farm animal afflictions. Kerosene and mineral oil were mentioned by six informants each while motor oil was mentioned by four. Kerosene was mentioned for the treatment of lameness, *lice*, *hollow tail*, *mastitis*, and wounds, while mineral oil was mentioned for the treatment of *colic* and *buckeye poisoning*. Motor oil was mentioned by four informants for the treatment of lice and for the prevention of flies. As a side note, motor oil was also commonly suggested by stock-keepers for treating external parasitism in dogs and pigs, and the practice of using this potentially harmful therapeutic appears rather

widespread in the American South. While in veterinary practice in both Alabama and North Carolina the author became well aware that motor oil is a common folk medicine typically utilized for the treatment or prevention of external parasites in a variety of domestic animal species.

Various types of oil and petroleum products are also commonly utilized as human folk medicines in Appalachia. Cavender (2003) suggests that kerosene has been widely used as an antiseptic for wounds, cuts, bites, and stings, and was used for several other afflictions including a variety of skin conditions, leg and foot cramps, rheumatism, croup, and scrofula. Other oils like mineral oil, castor oil, cooking oil, sweet [olive] oil, and linseed oil have also been well documented in human folk medicine. Cavender (2003) indicates that these oils have been used in Appalachia for a variety of afflictions ranging from dry skin to constipation, while motor oil is also a documented human folk medicine.

**Table 4.3.** “Oils and Petroleum Products” and their therapeutic uses according to informants.

<b>Materia medica</b>	<b>Use</b>	<b>Animal Type</b>	<b>Informant Source</b>
Kerosene	lameness, <i>lice</i> , <i>hollow tail</i> , <i>mastitis</i> , <i>wounds</i>	Bovine, Equine	SW, LM, WC, CL, RT, WB
Mineral Oil	<i>colic</i> , <i>buckeye poisoning</i>	Equine	HW, WB, RT, BL, RS, LM
Motor Oil	<i>flies</i> , <i>lice</i>	Bovine	JE, SW, WB, RT
Cooking Oil	<i>ivy poisoning</i> , <i>laurel poisoning</i> , <i>wild parsnip poisoning</i> , <i>wild cherry poisoning</i> , <i>buckeye poisoning</i>	Bovine, Equine	CL, VL, ML
Linseed Oil	<i>buckeye poisoning</i>	Bovine	ML, VL, LM
Lamp Oil	lameness, <i>buckeye poisoning</i>	Bovine	VL, RM
Diesel Fuel	lameness, <i>maggots</i>	Bovine, Equine	LM, BL
Castor Oil	<i>Colic</i>	Equine	RS

Six “Alcoholic Beverages” were suggested by informants for the treatment of toxicities caused by plant *poisonings*. Significantly, these materia medica were not suggested

for the treatment of “poisoned” equine stock. Instead, alcoholic beverages were mentioned exclusively by informants for the treatment of bovine toxicities. When suggesting these therapies, informants sometimes referred to “alcoholic beverages” simply as “alcohol,” while more specific terms like “white liquor,” “moonshine,” whiskey, beer, and wine were also commonly utilized. “White liquor” or “moonshine” was mentioned for use in treating a variety of toxicities including *fall poisoning*, *milk poisoning*, *ivy poisoning*, *laurel poisoning*, *wild parsnip poisoning*, *stagger*, and *buckeye poisoning*. Beer, wine, and whiskey were also alcohol based materia medica that were mentioned for the treatment of various *poisonings*. Worth noting, William Cable’s suggestion of apple brandy and honey to treat cattle affected by *milk poisoning* is similar to that described by Cavender for “milk sickness” in humans (2003, p. 91). Apparently bandy and honey was once used to treat “milk sickness” by human folk doctors. This corollary will be discussed further in the presentation of ethnographic data concerning *milk poisoning* or *fall poisoning* in Chapter Six.

**Table 4.4.** “Alcoholic Beverages” and their therapeutic uses according to informants.

<b>Materia medica</b>	<b>Use</b>	<b>Animal Type</b>	<b>Informant Source</b>
“White Liquor” or “Moonshine”	<i>fall poisoning, ivy poisoning, laurel poisoning, wild parsnip poisoning, stagger, buckeye poisoning</i>	Bovine	RM, JE, RT, LM, SW
Alcohol (non-specific)	<i>scours, ivy poisoning, laurel poisoning</i>	Bovine	CL, JE, LM, SW, RT
Beer	<i>ivy poisoning, laurel poisoning, buckeye poisoning</i>	Bovine	JE, LM, SW, RT
Wine	<i>ivy poisoning, laurel poisoning, buckeye poisoning</i>	Bovine	JE, LM, SW, RT
Whiskey	<i>stagger, milk poisoning</i>	Bovine	RT, SW
Apple Brandy	<i>milk poisoning</i>	Bovine	WC

Twenty-three “Miscellaneous Medicines” were suggested for the treatment of 17 specific livestock afflictions in both bovine and equine stock. Medicines suggested in this grouping could not be categorized with adequate specificity, so the decision was made to present these materia medica under a miscellaneous heading. Not surprisingly, turpentine was a frequently mentioned ethnoveterinary medicine in the study. Informants suggested using turpentine for a diversity of conditions including *scours*, lameness, *wounds*, *maggots*, *hollow tail*, and *colic*. Sulfur, often mixed with lard or tallow was also mentioned by five informants for the treatment of wounds, grubs, and external parasites in dogs and pigs. Interestingly, Max Lewis suggests the seemingly odd and potentially detrimental practice of placing goat manure in the eye of cattle to treat *pink-eye*; however, it should be noted that manure has been documented as a medicine used for a wide array of human afflictions in the Blue Ridge as well.

Cavender (2003) recognizes turpentine as well documented folk medicine utilized for a wide variety of human afflictions in Southern Appalachia. Several informants mentioned using turpentine topically [on the naval] for equine *colic*; however, Cavender also notes that turpentine was given orally or rubbed on a baby’s stomach for colic in humans. According to Cavender (2003), turpentine was also used as a disinfectant for cuts, sores, bites, and stings, to treat worms, leg and foot cramps, and rheumatism in humans. Interestingly, turpentine was never mentioned as a treatment for *worms* in livestock, however one informant mentioned this medicine as a treatment for *scours*, which can be caused by internal parasites. Also of interest, sulfur has been well documented in Appalachia for the treatment of external parasites and various human skin conditions.

**Table 4.5.** “Miscellaneous Medicines” and their therapeutic uses according to informants.

<b>Materia medica</b>	<b>Use</b>	<b>Animal Type</b>	<b>Mentioned by</b>
Turpentine	<i>scours</i> , lameness, wounds, <i>maggots</i> , <i>hollow tail</i> , <i>colic</i>	Bovine, Equine	HW, RM, WC, RT, LM, CL
Sulfur	wounds, <i>grubs</i>	Bovine, Equine	RM, WC, CL, RT
Manure	<i>colic</i> , <i>pink-eye</i>	Equine, Bovine	BL, ML
Water Enema	<i>scours</i> , <i>colic</i>	Bovine, Equine	CL, RS
Epsom Salt	lameness, wounds, <i>fall poisoning</i>	Bovine, Equine	RM, RT
“Teat Dip” (iodine solution)	lameness, <i>mastitis</i> (preventative)	Bovine	VL, JE
Lye Soap	<i>lice</i> , <i>colic</i>	Equine	RM, BL
Fly Spray	<i>flies</i>	Bovine, Equine	RS, JE
“Feed Additive”	<i>flies</i>	Bovine	RT, JE
Clorox™	lameness	Bovine	RT
Raleigh Liniment™	<i>scours</i> , <i>colic</i>	Bovine, Equine	CL
Ashes	lameness (preventative)	Bovine	ML
Alum	wounds, <i>proud flesh</i>	Equine	RT
Pickling Lime	wounds, <i>proud flesh</i>	Equine	RT
“Stove Smut”	bleeding, <i>hollow tail</i>	Bovine, Equine	WB
“Sheep Dip”	<i>maggots</i>	Bovine	LM
“Bean Dust”	<i>lice</i>	Bovine, Equine	RT
Sevin Dust™	<i>lice</i>	Bovine, Equine	RT
Coal Tar	<i>mastitis</i>	Bovine	SW
“Bag Balm”	<i>mastitis</i>	Bovine	SW
Horse Mane	<i>worms</i>	Equine	WB
“Amish Colic Concoction”	<i>colic</i>	Equine	RT
“Sugar Water with Liniment”	<i>colic</i>	Equine	RT

In all, the informants suggested 82 specific folk therapeutics which are apparently utilized to treat an array of bovine and equine afflictions. A complete table outlining these materia medica is included in Appendix B. Both commercially available pharmaceutical products and readily available folk medicines appear to be extensively utilized by stock-raisers in the region. Instead of solely relying on medicines tested for safety and efficacy, stock-raisers appear to utilize a variety of materia medica that are readily available and cost

effective, and most stock-raisers believe in and recommend these so called “old-time remedies” and often prefer them over more formalized medicines.

Significantly, many of the “Edible and/or Botanical Medicines” can be grown, raised, or harvested sustainably in the region, and it appears as though many materia medica of this category are efficacious according to both informants and other sources. Although likely effective for treating some afflictions, petroleum products have potential negative implications for animal health, especially when applied directly to the skin or when swallowed. Significantly, alcoholic beverages are actually utilized by formally trained veterinarians to treat some toxicities, and it is likely that folk veterinary therapeutics including “white liquor,” “moonshine,” beer, wine, and whiskey have beneficial therapeutic properties when treating some plant toxicities.

Having said that, this research demonstrates that the administration of therapeutics by ethnoveterinarians has a significant impact on animal health in the Blue Ridge, and is therefore worth increased academic attention. Some therapeutics administered by community based animal healthcare agents have deleterious effects, while some are most certainly palliative or even curative. Many of the medicines mentioned by informants are certainly worthy of clinical trials, which could better establish their efficacy and safety or lack thereof. No efficacy studies have been conducted on the majority of therapeutics mentioned; therefore, the author makes no claim to the safety or effectiveness of these medicines and discourages use under most circumstances. Additional ethnographic data concerning therapeutics for some commonly mentioned livestock afflictions will be thoroughly presented in the next two chapters.

## Conclusion

This chapter has attempted to give context for ethnoveterinary medicine in rural Appalachia by describing some important characteristics and functions of folk veterinary medicine along the Blue Ridge. Specifically, this chapter presented ethnographic data that indicates how stock-keepers of the region practice an informal type of ethnoveterinary medicine, characterized by knowledge rooted in multiple epistemologies of understanding. As suggested by this study, empirical understanding, a variety of health theories, and biomedical ways of knowing all appear to be important determinants of stock-raiser's epistemologies concerning veterinary medicine. It should also be noted that these plural epistemologies have considerable similarities with both human folk medicine and biomedicine in both the human and veterinary realm. Significantly, most stock-keepers indicated that the majority of their knowledge was gained through experiential learning on the farm or from other individuals in the community who were "doctoring" animals. In times of emergency or in cases of financial hardship, community based animal healthcare agents act as accessible veterinary healthcare providers in the region. However, many informants also indicated that they actually prefer utilizing informal community based veterinary resources instead of relying on the services offered by formally trained doctors of veterinary medicine, even when DVMs are accessible.

Importantly, it should be noted that folk veterinary practices certainly result in both beneficial and deleterious effects, and animal keepers have substantial influence over both human and animal health in the region. Stock-keepers along the Blue Ridge possess a breadth of knowledge and skill, and a diversity of ethnoveterinary beliefs and customs. Many of these beliefs and customs were likely held by some of the first formally trained

veterinary practitioners in region; however, trained veterinary professionals currently practicing along the Blue Ridge are likely unaware of such folk veterinary medical practices and beliefs, despite their continued importance as socio-cultural determinants of health today. Furthermore, much of the terminology and many techniques once utilized by official practitioners in the region [but now out of favor] remain in use by folk veterinarians. Hopefully this study will shed some light on a little researched, culturally specialized group of animal healthcare agents that have profound influence on animal health in rural Appalachia.

My research indicates that many stock-keepers in the region are capable of performing surgeries such as castration, dehorning, tail splitting, and Caesarian section, while some informally trained animal healthcare agents also possess skills used for the diagnosis of pregnancy, for reproductive assistance in cases of dystocia, and for hoof trimming and shoeing. In addition to these skills, Blue Ridge stock-keepers possess a complex knowledge of livestock illnesses and recommend a wide variety of materia medica that can be used as therapeutics. Informants not only mentioned a diversity of medicines, these individuals also indicated that they have complex ways of diagnosing and preventing farm animal diseases, and have a unique ethnoveterinary lexicon through which they communicate. The next two chapters will thoroughly explore commonly mentioned animal illness, and will attempt to present ethnographic data that further exemplifies the informant's beliefs and practices associated with many of the region's more prevalent livestock afflictions. Chapter Five will first consider a miscellaneous assortment of livestock afflictions described by a substantial percentage of stock-keepers, while Chapter Six will focus exclusively on livestock *poisonings* caused by the ingestion of toxic plants. Both chapters will rely heavily on the

presentation of ethnographic data to examine the folk veterinary practices utilized by informants to treat or prevent a diverse spectrum of livestock afflictions.

## Chapter 5: Local Knowledge of Illness in Cattle and Horses

### Introduction

Stock-raisers of the Blue Ridge have extensive experience with a variety of infectious and non-infectious illnesses that commonly afflict both bovine and equine stock in the southern mountains. A large percentage of informants surveyed acknowledged the following afflictions, all of which will be outlined in forthcoming chapter sections: *pink-eye*, *shipping fever*; *milk fever*; *mastitis*; *scours*; *worms*; *colic*; *hollow head*; *hollow horn*; and *hollow tail*. In addition to the rather definitive semantic domains of illness listed above, a variety of folk terms were utilized by the informants to identify or describe afflictions involving external parasites, lameness, and wounds in both cattle and equine animals. Since the vernacular employed to describe and identify these types of afflictions was so diverse, and data collection was comparatively sparse, the decision was made to group these illnesses into three broad categories which will be presented in forthcoming chapter sections. However, it should be noted that the terms chosen to define these illness categories were derived from an etic perspective [the author's], and accordingly, terminology utilized therein was not explicitly derived from stock-raisers use of the vernacular. Therefore, the afflictions of lameness, wounds, and external parasites are not italicized in this document, since this vocabulary indicates generalized semantic domains that are not part of the local vernacular. However, the terminology utilized by the informants to identify specific afflictions within these groups of illness will be italicized when presented in the body of each chapter section.

The informant's complex knowledge and beliefs associated with commonly mentioned livestock illnesses and the aforementioned author defined categories will be

presented in this chapter. Here, I will present ethnographic data concerning both infectious and non-infectious illness, while Chapter Six will focus on illnesses termed *poisonings*, which are caused by toxic plants. The diverse knowledge presented in these chapters involves traditional, scientific, and empirical ways of knowing. Significantly, many of the individuals surveyed are aware of specific etiological agents that correlate with a variety of commonly mentioned afflictions [e.g. bacteria and face flies are associated with *pink-eye*; or: over-eating, impaction, and dehydration are associated with *colic*]. Not surprisingly, for a few afflictions like *hollow head*, *hollow horn*, and *hollow tail*, the informant's awareness of etiology seems vague and descriptions of such illnesses were rather inconsistent. However, generally speaking, empirical evidence, folk knowledge, and an understanding of basic biomedical principles all appear to be important definers of stock-raiser's knowledge of livestock afflictions. Importantly, the believed etiology of most conditions appears to have a significant influence on the informant's choice of therapy used for its treatment. This phenomena indicates rational logic in stock-raiser's choice of therapeutics; however, it should be noted that many ethnoveterinary therapies will likely appear irrational to those not accustomed with the local folk veterinary medical system.

For instance, akin to licensed veterinarians, many informants have a keen awareness of germ theory, and thus choose antimicrobial pharmaceuticals for the treatment of many infectious diseases. Modern antibiotics that are apparently utilized for illnesses presented here include penicillin-G (RT, WC), oxytetracycline (RT, JE, SW, JD, HW), florfenicol (RT), and sulfa drugs (SW). Modern anthelmintics<sup>39</sup> that were cited by the informants for the treatment of *worms* included ivermectin (RM, RT, RS, HW, JD, RhM, JE, LM, SW, CL),

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<sup>39</sup> Anthelmintics are de-wormers used in the prevention or treatment of internal helminthic parasites.

moxidectin (LM, RT, JE), fenbendazole (JE, SW), and levamisole (HW, JE). Furthermore, preventative measures used for contagious diseases like *shipping fever* and *pink-eye* were commonly cited by the stock-raisers of the region. The methods mentioned for disease prevention included fly control and vaccination for *pink-eye* and the use of quarantine protocols for *shipping fever*. Unfortunately, informants often demonstrated indiscriminant use and choice of antimicrobial therapies. Such behavior has likely led to instances of antibiotic resistance which is an emerging problem of both cattle and horses according to many informants. Furthermore, an apparent lack of rotational grazing practices in the region has likely contributed to informants citing a decrease in the efficacy of many commercially available de-wormers. Sadly, since the rotational approach to managing parasites does not appear common place in the region, the development of anthelmintic resistance is likely to worsen.

In addition to modern therapeutics, the stock-raisers of the Blue Ridge are accustomed to utilizing a variety of readily available or locally produced materia medica for the treatment or prevention of many livestock illnesses. For instance, salt was mentioned by eight informants (RT, JE, ML, VL, SW, JD, LM, CL) as a treatment for several afflictions of bovine and equine stock. According to the informants queried, salt could be used as a treatment for *pink-eye*, *wounds*, and *hollow tail*; while according to another informant, salt could be fed as a preventative for *colic*. Turpentine was mentioned by six informants (HW, RM, WC, RT, LM, CL) for the treatment of *scours*, lameness, wounds, *maggots*, *hollow tail*, or *colic*. Kerosene was mentioned by six informants (SW, LM, WC, CL, RT, WB) for the treatment of lameness, *lice*, *hollow tail*, *mastitis* or *wounds*. Hog Lard was mentioned by five informants (RM, WC, CL, WB, RS) for the treatment of wounds and *lice* and was also

commonly used as a preventative for *face flies*. Tobacco, which was also commonly cited as a treatment for *poisonings*, was mentioned by ten informants (RM, SW, WC, HW, ML, VL, RT, RS, WB, BL) for the treatment of *lice*, *worms*, *colic*, or *bleeding*. Sixty-eight distinct materia medica were cited by the informants for the treatment of 13 domains of illness outlined in this chapter. The stock-raiser's beliefs and knowledge concerning these afflictions and their associated therapies will be outlined and discussed in detail the forthcoming 11 chapter sections. An attempt was made to present this ethnographic data from the emic perspective, therefore only minimal analysis will be approached in this chapter and the next.

### ***Pink-eye***

Eight informants acknowledged the affliction of *pink-eye*, which is a common infectious disease of cattle in the region. Most of these informants were aware that face flies (*Musca autumnalis*) are intimately associated with transmission of the microbial disease. Significantly, both pharmaceutical derived products and locally attainable materia medica were suggested for treatment of the affliction, which is typically caused by the bacterium, *Moraxella bovis*. The most commonly suggested treatments for *pink-eye* were antibiotics and table salt. One informant (HW) typically vaccinates for the disease, and several others use various methods to control the flies which are involved in transmission of the pathogen. Ronnie Townsend suggested using sulfur block licks in the summer months to control flies around the faces of cattle. Although fly control is an important preventative measure for *pink-eye*, the stock-raiser's methods for controlling various insects will be discussed in the forthcoming chapter section entitled "external parasites."

Interestingly, some informants claim that *pink-eye* incidence is on the decline in the region. For example, Steve Wilson claims that the illness “was bad in the Sixties and Seventies and Eighties” yet it is not much of a problem today. In the upcoming passage, Hubert Ward gives his perspective on the declining prevalence of the condition. Ward comments:

Used to, we would see a lot of pink-eye, but you don't anymore. There ain't no damn flies anymore. They are spraying that shrubbery I reckon or something. You don't see many birds. Used to, you would see damn flocks of birds. It's killed them. Hell, used to you couldn't sit out on the porch out there with the flies aggravating you. You could sit out there all day and you might see two or three. The flies is gone.

LA-200™ [oxytetracycline] was suggested for the treatment of *pink-eye* by both Ronnie Townsend and John English. Specifically, Townsend suggested using LA-200™ or penicillin-G directly in the eye. Significantly, five informants (RT, JE, ML, VL, SW) suggested that salt could be used directly in the eye for treatment of the affliction. Steve Wilson comments:

The best thing for pink-eye is iodine salt. You just throw it in the eye. The eye will boil and fester and the salt will bring it to a head. I've used patches, sprays, and antibiotics. Pink-eye don't get in the blood stream.

This therapeutic approach to treating the illness is likely painful for the animal, however most informants seem to outweigh the caustic side effects of salt with its efficacious benefits. On the other hand, John English, who claims *pink-eye* was brought onto his farm last summer, says: “I know a lot of people that would say throw salt in their eyes. And I say hey, I don't want somebody throwing salt in my eyes. Especially if it is already irritated.”

English chose to use an antibiotic for the treatment of the disease on his dairy that summer. Max and Virginia Lewis also claim that salt will treat *pink-eye*; however, Max Lewis also suggests applying boiled goat manure to the affected eye. He also recommends pasturing goats with cattle to prevent the illness. Lewis comments:

You know the best thing you can do for pink eye if you've got a bunch of cows out here on the hill? You get you a couple of goats to run with them and the bacteria from the goats will kill the bacteria of that pink-eye. And you won't be bothered with it. One time, one of our milk cows took that pink-eye. We had goats. Her eye got bad. But I took and got me a handful of that goat manure, good clean goat manure, and I put it in that water and boiled it, and it looked just like coffee. And I put it in one of those squirt guns, and I squirt it in the cow's eyes a couple of three times and boys it healed up in no time. And I always thought the goat manure, if you get the water out of it would be good for pink-eye. That was the only time we ever tried that. She couldn't see a wink but in two or three days it worked! Everybody laughed at me because I said the bacteria from these goats out here in this field would help them. I tried it and it worked. I hadn't heard it from anybody, I just done it.

**Table 5.1.** Therapeutics mentioned for the treatment of *pink-eye*.

<i>Materia medica</i>	Use (animal type)	Dose/Admin.	Action	Informant
LA-200™ (oxytetracycline)	<i>pink-eye</i> (Bovine)	Unknown/ In eye or injection	Antibiotic	RT, JE
Penicillin	<i>pink-eye</i> (Bovine)	Unknown/In eye	Antibiotic	RT
Salt	<i>pink-eye</i> (Bovine)	Unknown/In eye	Unknown	RT, JE, ML, VL, SW
“Boiled Goat Manure”	<i>pink-eye</i> (Bovine)	Unknown/In eye	Unknown	ML

### *Shipping Fever*

Six informants acknowledged the illness domain of *shipping fever*. The majority of these individuals spoke of the condition in cattle, however, three informants (RM, WC, RT) also acknowledge this affliction in horses. The term “shipping fever” is commonly used in official veterinary medicine lexicon to describe a specific complex of respiratory pathogens [viruses and bacteria] that afflict both cattle and horses during times of stress, especially during transport. The informant’s conceptualizations of this illness domain appear no different. According to the stock-raisers queried, *shipping fever* primarily occurs when animals are bought from “sales” or livestock auctions. Significantly, no informant recommended a readily attainable therapeutic for the treatment of this illness. Instead, most informants recommended using antibiotics for treating cattle, which included use of injectable penicillin (RT, WC); LA-300™ (oxytetracycline 300mg/ml), Nuflor™ (florefenicol) (RT); LA-200™ (oxytetracycline 200mg/ml) (SW); and Agrimycin™ (oxytetracycline) (HW). Steve Wilson and Hubert Ward also recommend the use of quarantine procedures to help prevent the illness from spreading when new animals are brought into the herd. Hubert Ward states: “You can bring one [cow] home and put it with your other cattle and some of them would catch it [shipping fever]. I’ve had that to happen. Now when I bring one in, I keep it separated a few days.” Steve Wilson has a specific quarantine protocol that he follows. Wilson comments:

I recommend quarantining cattle for 21 days when they come from the market. If they come from the stockyard, you don’t want to put them with other cattle. I’ve learned that 21 days is a good rule from my experience.

Interestingly, several stockmen indicate that *shipping fever* is worsening due to the prevalence of pathogens at regional sales and increasing problems with antibiotic resistance. Hubert Ward believes *shipping fever* is becoming more of a problem because cattle are marketed so frequently. When asked if he thinks the disease's prevalence is worsening, he affirms that it is, and also recommends a specific antibiotic protocol for its treatment. Ward comments:

Oh yea, it is worser than when I was a little boy. Of course there's so many more cattle going through there, and so damn many more sick cattle anymore. I guess that is the reason. Back then, there wadn't many cattle going to market when I was a little boy. And you didn't have to doctor that much. But right now, if you bring one home, you might as well doctor it right then, and get it over with because it would damn's sure take it. Hell, it's in all those stock barns. In that saw dust and all that shit. And they go through there and breathe that dust, and catch it. They will cough and their nose will run. You bring one in you seen at the market and go down there in the morning and you will see that damn stuff a pouring out of his nose. I lay the Agrimycin™ to it. I give it about three shots. I give it then, and I'll wait till tomorrow, and then I will wait about two more days and give it another one, and it's all over with.

On a similar note, Ronnie Townsend has also observed rising antibiotic resistance and increasing morbidity and mortality associated with *shipping fever* in horses. Townsend comments:

I've heard of some of the old-timers just putting mixed salves in the nostrils and all of that, but really, in this day and time if you don't have antibiotics, you are really

hurting the horses. Sometimes even with antibiotics you have a hard time getting them over it. It seems like the strains are worse than they used to be. Evidently the antibiotics don't work as well because they keep coming up with higher and stronger types of antibiotics. I think Nuflor™ is for cattle, and they've got LA-300™. And there is another product they use in horses that is equivalent to Nuflor™. But the name won't come to me. When we didn't have anything else, we used penicillin. Which it still works in some cases, but for the more serious cases you need to get a little more potent item.

**Table 5.2.** Therapeutics mentioned for the treatment of *shipping fever*.

<i>Materia medica</i>	Use (animal type)	Dose/Admin.	Action	Informant Source
Agrimycin™ (oxytetracycline)	<i>shipping fever</i> (Bovine)	Once a day for 2 days, then again on the 4 <sup>th</sup> day/Injection	Antibiotic	HW
LA-200™ (oxytetracycline 200mg/ml)	<i>shipping fever</i> (Bovine)	Unknown/Injection	Antibiotic	SW
LA-300™ (oxytetracycline 300mg/ml)	<i>shipping fever</i> (Bovine)	Unknown/Injection	Antibiotic	RT
Nuflor™ (florfenicol)	<i>shipping fever</i> (Bovine)	Unknown/Injection	Antibiotic	RT
Penicillin	<i>shipping fever</i> (Bovine)	Unknown/Injection	Antibiotic	RT, WC

### Lameness

Eight informants acknowledged various terms referring to lameness in cattle. Seven informants also acknowledged another set of terms referring to lameness in horses. Since there was an abundance of folk terminology utilized to describe or identify various types of lameness in the two species, the decision was made to group all of the terms employed by the

informants under one chapter section which was entitled “lameness.” This decision was intended to help facilitate an appropriate presentation of the affliction, although it should be noted that only five informants actually utilized this term at all. However, the folk terminology outlined in this chapter section refers to several types of lameness which appear to have specific treatments. It should also be noted that with additional fieldwork, these terms could easily be separated into individual semantic domains, and a more detailed understanding of ethnographic data would likely be attained. The terms used by the informants to identify lameness in cattle include *sore foot* (JD); *cracked toe* (JD); *cracked hoof* (VL, JD, SW, CL); *cracked foot* (RT, LM, VL, ML, CL); *lameness* (JE, LM); *founder* (VL, LM); and *tender foot* (CL, WC). Terms used by the informants to identify types of lameness in equids include *gravel* (RM, WC, CL); *quicked*<sup>40</sup> (RM, WC); *lameness* (WC, RT, RM); *limping* (WC, RM); *bruised frog* (WC, CL); *abscess* (WC, RT, RS); *founder* (LM, CL, RT); *white line disease* (RS); and *broke leg* (WC, RS). It should be noted that several of these terms likely identify dissimilar types of lameness, yet some terms identify similar types. For instance, the term *gravel* appears to be synonymous with the term *abscess*, and the term *tender foot* appears to be a general term synonymous with *lameness*. According to the informants, both modern pharmaceutical products and readily or locally available therapeutics are commonly used for treatment of these afflictions in both species. Significantly, there appears to be marked similarity in therapeutics suggested by informants for the treatment of lameness in both bovine and equine stock.

The terms *cracked foot* and *cracked hoof* were only used by the informants in reference to types of lameness in cattle. It is unclear whether or not these two terms are also

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<sup>40</sup> The “quick” of hooves and nails, unlike the hardened outer portion, is vascular and will bleed or cause pain when penetrated. The term used by veterinarians and stock-raisers to describe such bleeding is “quicked.”

descriptive of types of lameness in equids. Significantly, according to the informants queried, these afflictions are more common in the winter when soil is waterlogged and “muddy,” or when “marshy” conditions are prevalent. Treatments recommended for *cracked foot* or *cracked hoof* include the use of topical therapeutics and soaks like Clorox™, lamp oil, kerosene, diesel fuel and “teat dip” [iodine solution]. In addition to these materia medica, some informants recommend using antibiotics for treatment of these afflictions. Antibiotics mentioned include LA-200™ (JD, SW), and Penicillin (RT). For instance, Ronnie Townsend recommends an elaborate treatment, utilizing a manipulative technique coupled with antibiotic injections and topical applications of Clorox. Townsend comments:

Cracked foot is common in marshy areas. To treat it, get them in a corner and tie a rope to the foot and stretch it out. Take a hemp sack or an old rope and rough the skin up. Then put Clorox on it and give it a shot of Penicillin.

In this next passage, Virginia Lewis describes her experience with *cracked foot* in milk cows. Virginia spent much of her life working as a dairy-woman, and believes that “lamp oil is number one stuff” for the treatment of *cracked foot* which she also calls *cracked hoof*. She comments:

Well, our cows used to take the cracked foot. That is awful bad if they get around anywhere that is muddy a lot, especially when they stand around in the mud when you are milking. And we got this stuff for cracked hoof and it never did heal it. So I got me some lamp oil and washed her hoof out. And I washed that foot out with water and while she was standing there eating, I put just a little bit of that lamp oil in there, and it healed that cracked foot. And I used that tit dip, and it didn't work like that. One guy came by and said you are gonna make all of that hair come off on that

cow's foot and leg. But it didn't make any of that hair come off. That lamp oil I believe is the best thing to heal that cracked foot. It wasn't no time until they was over it. That lamp oil is number one stuff!

Although most informants did not cite a specific etiology for *cracked foot* or *cracked hoof* besides moist soil conditions, Virginia's husband, Max, believes a "worm" causes the affliction. Unlike other informants, Lewis also recommends a unique method for preventing the condition in dairy cattle. He comments:

And what caused that cracked foot is a little worm that would come out of the mud. You can put ashes in the mud that they walked through and you would never be bothered by cracked foot. That little worm was in the mud. It's a worm that ain't very long, and it has a flat head. I've seen them. Ashes will kill worms you know. We got to pouring ashes out in our barn where the cows walked through and we wasn't bothered with cracked foot much.

One of the more common therapeutics suggested for the treatment of lameness in both cattle and horses involves the use of petroleum products. Virginia Lewis mentioned that she likes to use lamp oil for treatment of the affliction. Others, like Steve Wilson, prefer kerosene for *cracked hoof*. Wilson comments: "Kerosene is one of the best things you can use for cracked hoof. Cracked hoof is an infection between the hooves. To treat it, get a gallon jug and massage the foot with kerosene and then give it an antibiotic." On a similar note, Len Moretz comments:

Every once in a while I will have one that will get a little lame. They will start limping. And you can see above their hoof, there is a little nodule and it starts letting puss out of it. And they call it cracked foot. I don't know if it is bacteria or dirt. If I

can get them in the pen or in a head stock, I will take diesel or kerosene and pour it on their foot and leg.

Like Moretz, William Cable likes to use kerosene on horse's feet for a *bruised frog*<sup>41</sup> and if there is a *gravel*. In fact, WC, LM, RT, RM, and CL suggest that kerosene could be used as a treatment for various types of lameness in equids. However, Ralph Silvers prefers lamp oil, while Barte Laney uses diesel fuel for lameness in horses. Of significance, William Cable acted as a farrier in the region from the early 1950s until about 1970. Cable has likely informed significant numbers of stock-raisers in the region about how to properly care for their horse's feet. Like other stock-raisers queried, Cable claims that "kerosene was awful good on a horse's feet." Cable comments:

If it was a bruise to the frog or something like that, you had to get it up where they wouldn't be walking on it. Maybe get a pad on it. Kerosene was awful good on a horse's feet. I used kerosene a lot on their feet. Sometimes, they would get a gravel between the soft part of their foot and the outside hull. It would finally work out up at the hairline, if you couldn't get it out from the bottom. But if you could get something in there to kill that infection and take the soreness out, you could still use some of them.

For a *bruised frog* or if there is a *gravel*, Cliff Ledbetter recommends using kerosene as well. He is also familiar with a treatment for *founder* which involves cooling the horse's feet by wading the animal in cool water. Other informants including Barte Laney and William Cable echoed this treatment for *founder*. Ledbetter also recommends corrective

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<sup>41</sup> The "frog" is a V-shaped anatomical structure located on the underside of the equine hoof. The frog extends from near center of the sole to the heel of the foot.

trimming to treat the condition, causing the horse to place pressure on the frog and sole instead of the hoof wall when bearing weight. Ledbetter comments:

For bruised frog or if they have a gravel, I use kerosene. The gravel may work out the hairline. I turn the foot, and put it on the frog [in the case of a *gravel*]. I've never seen a foundered mule. Mules won't over eat. They are 90% sick proof. But to treat founder, put them in the creek where the water can cool it. The founder will change the foot to be brittle and soft. The hoof starts to look like a sled. It can never be cured at that point.

In addition to Cliff Ledbetter, other informants including RM, WC, LM, BL, and RS all demonstrated significant knowledge and skill associated with farriery and corrective hoof trimming in horses. Interestingly, Ralph McKinney and William Cable also demonstrate how to find the "hot" nail in a horse's hoof if it is *quicked*. McKinney comments:

Sometimes you'd shoe one and quick it and it might not quick it at that very time. But when you get it out a working it, that nail might be real close to that little quickie area. You could take a little soapy water and pour it on that hoof, and the nail that is hot will just dry in a second. Where that nail is in the quick, it will dry off right there, and the other ones will stay wet. Pull that nail out and pour turpentine where that nail was and pack cotton in it.

Ralph McKinney also uses several other therapeutics for *gravel* or *abscess*. These therapies include both manipulative techniques, topical applications, and/or soaks.

McKinney comments further:

A gravel is an abscess in a horse's foot. All the old timers called it a gravel. But there ain't no gravel to it. You take your pocket knife or something and cut in there

just as best you could. Then take and pour turpentine in there. That would help the gravel. And also, you can take Epsom salts and vinegar, and put that foot down in warm water and soak it, and that will help that thing come out of there. You can take a hoof knife and dig down as deep as you can get and let it drain from the bottom.

Ralph Silvers who currently does farrier work on a routine basis in McDowell County has dealt with a variety of lameness types in horses. He describes symptoms of an *abscess* and recommends treatments for this affliction in the following passage. Silvers comments:

For abscesses, you gotta find it in his feet. It is around the coffin bone and sometimes in the heel. It's like getting something under your fingernail. It starts going up. It will come all the way between the wall and the coffin bone and come out at the coronet band right there at the cuticle. That's on the top of his hoof. I have a set of hoof testers on the truck and I find it. You mash it, and it is like you are stepping on a thorn. When you take those pressure testers to it, he is sore. That's how you know where to start digging it out. Just take your frog knife and start to cutting. And when you bust that, it will be just black. Lamp oil is good for their feet. You would put that on them, and make them just as tough.

**Table 5.3.** Therapeutics mentioned for the treatment of lameness in horses and cattle.

<i>Materia medica</i>	Use (animal type)	Dose/Admin	Action	Informant Source
LA-200™ (oxytetracycline 200mg/ml)	<i>cracked foot</i> (Bovine)	Unknown/Injection	Antibiotic	JD, SW
Penicillin	<i>cracked foot</i> (Bovine)	Unknown/Injection	Antibiotic	RT
Clorox™	<i>cracked foot</i> (Bovine)	Unknown/Topical	Unknown	RT
“Teat Dip” (iodine solution)	<i>cracked foot</i> (Bovine)	Unknown/Topical	Unknown	VL
Lamp Oil	<i>cracked foot</i> (Bovine) <i>lameness</i> (Equine)	Unknown/Topical	Unknown	VL, RS
Ashes	<i>cracked foot</i> (Bovine)	Spread in mud as a preventative	“kills worm”	ML
Kerosene	<i>cracked hoof,</i> <i>cracked foot</i> (Bovine) <i>gravel, bruised</i> <i>frog, lameness</i> (Equine)	Unknown/Topical	Unknown	SW, LM, WC, CL, RT
Diesel Fuel	<i>cracked foot</i> (Bovine) <i>lameness</i> (Equine)	Unknown/Topical	Unknown	LM, BL
Turpentine	<i>quicked, gravel,</i> <i>abscess</i> (Equine)	Unknown/Topical	Unknown	RM, WC
Epsom Salt	<i>gravel, abscess</i> (Equine)	Unknown/Topical	Unknown	RM, RT
Vinegar	<i>gravel, abscess</i> (Equine)	Unknown/Topical	Unknown	RM
Biotin™	<i>lameness</i> (Equine)	Feed as supplemental preventative.	Strengthens hooves.	RT

### External Parasites

Ten informants mentioned various external parasites that afflict cattle and/or horses. Terms used to identify parasite afflictions include *flies* (HW, JE, LM, SW, RT, RS); *warbles* (CL); *grubs* (RT); *wolffs* (HW, RT, CL); *maggots* (LM); *ticks* (RM, SW); *lice* (JE, SW, WB,

RM, RS); and *calf itch* (CL, SW). Significantly, *warbles*, *grubs*, *wolffs*, and *maggots* are the larval stages of certain fly species that reside in the flesh. However, many species of flies are more of a nuisance to stock, and do not cause true illness. Stock-raisers of the region not only distinguish between mature fly and larval stages, but they also recommend different treatments or preventative measures depending on which species they encounter.

Informants queried appear to have little experience with *ticks* in cattle and horses. However, the stock-raisers of the region mentioned extensive experience with *lice* infestation, which is also known as *calf itch* throughout the area and beyond. Both manipulative techniques and readily available therapeutics were mentioned by the informants for the treatment or prevention of several types of external parasites. Significantly, fly larva which are commonly termed *warbles*, *wolffs*, or *grubs* appear to be much less of a problem today than in the past, according to many informants.

For instance, Hubert Ward comments: "I never see a wolff. Never. I guess where you use the wormer and all that shit, it keeps them from having it. You never see a cow with a wolff anymore." John English comments further: "You know, I haven't had a wolff on this place in a long time. Used to we did. But I don't know why, but all of a sudden, we haven't had any. We haven't had a wolff on a cow here in years. I don't know what the difference is." It should be noted that both English and Ward use commercial de-wormers regularly to prevent parasitism in their herd. Many of these de-wormers including those containing ivermectin or related anthelmintics are also efficacious in preventing or eliminating many species of fly larva in both cattle and horses. However, several informants also recommended treatments for *warbles*, *wolffs*, and *maggots* in cattle. When asked how people got rid of *wolffs* in cattle when they were more of a problem, Hubert Ward comments:

“Just let them go, and they would pop out on their own. We didn’t have nothing to put on them back then.” Len Moretz comments that he once used *sheep dip* for *maggots* when it was available, but today he says: “If it ain’t too bad, I will just slosh a little diesel on them.” For treating *grubs* or *wolffs* in cattle, Ronnie Townsend states: “Get you an old-timey Coke bottle and put the top of the bottle on the hole [larval air hole], and pop it hard into the skin. And it will jump out of the hole into the bottle. And you can also put bacon grease and sulfur on the hole.” Finally, Cliff Ledbetter comments:

In the spring, I would have warbles in them [cattle]. Most of the people back when I was little mashed them, and made them jump out. He’s got a hole. In fact, that is where you popped him out was through that hole. Now I made a remedy of my own for my cattle since I’ve been living here. You find that hole and take just a little bit of Vaseline and cap that hole, and in a day or two he would be laying out in the hair dead. Vaseline would bring him out of there, and sometimes you would find him there in the hair a lying dead and all wrinkled up.

In addition to fly larva, informants also suggested methods to treat or prevent adult fly infestation in cattle and horses. Steve Wilson comments: “There aren’t any commercial remedies that work well for flies in cattle. I use a burlap sack covered with motor oil. They rub on it and that keeps the flies away.” Ronnie Townsend states: “There are those fly rubs and stuff. They make a treatment for them [cattle] that they will rub on, and it will get on their backs. I have also fed the salt blocks to them where it would kill the flies internally.” John English comments: “Now we’ve got some fly spray that we use once in a while, and will spray down in here [the milk parlor]. We don’t have much a problem anymore because of those big fans we’ve got in the windows.” Finally, Ralph Silvers comments:

I just use wipe on fly spray now. But it's not good for them [horses and mules]. It's a chemical. Years ago, we would keep their ears oiled with hog tallow that we rendered into grease. We would keep that in their ears and there wouldn't be no flies or nothing.

The stock-raisers of the region also demonstrate a wealth of experience with *lice* in cattle, an affliction which is known throughout the region as *calf itch*. A variety of readily available therapeutics were suggested for the treatment of this infestation. For the treatment of *lice*, Ralph McKinney comments: "You could just soak tobacco in water and stir it up and make a tea, and then put it all over them. They also use that lye soap for about everything from killing lice on down." Similarly, Steve Wilson states: "For lice or cattle itch, I use tobacco. You boil the tobacco down and then rub the juice where the hair is off. It works. Those lice are a little white bug that causes the calf itch. But I don't use tobacco often today." Ronnie Townsend comments: "For lice and stuff like that, you can take burnt motor oil to them. Or bean dust and Sevin Dust™. That will work. I use that on my cattle and horses and even hogs." Finally, Walter Brothers comments:

For lice, we would mix a half a coffee cup full of kerosene and two tablespoons of lard. Then we would pour it on their skin [cattle and swine] from head to tail. The lard would help prevent blistering in the sun. We would keep him in the shade until it was off of him. Then, we would cut a locust post, and put it in the ground, and put a burlap sack on it soaked in motor oil so they could rub on it.

**Table 5.4.** Therapeutics mentioned for the treatment of external parasites.

<i>Materia medica</i>	Use (animal type)	Dose/Admin.	Action	Informant
Tobacco Solution	<i>lice, calf itch</i> (Bovine)	Unknown/Soak	Unknown	RM, SW
“Burnt Motor Oil”	<i>flies, lice</i> (Bovine)	Unknown/Rub	Unknown	JE, SW, WB, RT
Turpentine	<i>maggots</i> (Bovine)	Unknown/Spray	Unknown	LM
Sheep Dip	<i>maggots</i> (Bovine)	Unknown/Spray	Unknown	LM
Diesel Fuel	<i>maggots</i> (Bovine)	Unknown/Soak	Unknown	LM
Vaseline™	<i>warbles</i> (Bovine)	Unknown/Apply to air hole.	Unknown	CL
Kerosene mixed with Lard	<i>lice</i> (Bovine)	Unknown/Soak	Unknown	WB
“Bacon Grease mixed with Sulfur”	<i>grubs</i> (Bovine)	Unknown/Apply to air hole.	Unknown	RT
“Bean Dust”	<i>lice</i> (Bovine, Equine)	Unknown/Powder	Unknown	RT
Sevin Dust™	<i>lice</i> (Bovine, Equine)	Unknown/Powder	Unknown	RT
Lye Soap	<i>lice</i> (Equine)	Unknown/Bathe	Unknown	RM
“Fly Spray”	<i>flies</i> (Equine, Bovine)	Unknown/Spray	Unknown	RS, JE
“Feed Additive”	<i>flies</i> (Bovine)	Unknown/Mix with Feed	Preventative. Inhibits fly reproduction.	RT, JE
“Hog Tallow Grease”	<i>flies</i> (Equine)	Unknown/Apply in ears.	Unknown	RS

### ***Milk Fever***

Six informants acknowledged *milk fever* in cattle. This illness is certainly more common in milking stock; however, no informants mentioning this malady raise milk cows currently. Having said that, it is possible for beef cattle to be affected by *milk fever*; however, this affliction is much less common in non-milk stock. *Milk fever* is biomedically known to be triggered by low levels of circulating calcium in the blood which most commonly occurs near the time of parturition and the subsequent start of lactation. Most

informants mentioning the illness were aware of the basic pathological principles of the condition and thus offered treatments that were intended to increase calcium levels in the pregnant or post-partum cow. The treatments for *milk fever* recommended by stock-raisers of the region included the use of manipulative techniques and the administration of calcium intravenously or in the feed.

In the next passage, Hubert Ward offers his knowledge of three treatments for *milk fever*. The manipulative technique he describes involves the use of a hand pump to inflate the affected cow's udder. Significantly, this treatment is also described by other informants including William Cable, J.D. McKinney, and Cliff Ledbetter. Here, Ward also comments about one of his only experiences using a veterinarian, which he claims was a necessity because he couldn't "hit the vein" to inject calcium. Ward also demonstrates that he understands the importance of supplementing calcium in the feed prior to parturition. He comments:

There used to be cows that had milk fever. What they would do is take a damned old hand pump, and pump the bag up through each tit. And then, they would tie a string around each tit for an hour or so. Now J.D. [McKinney] is the best. I never did do that. I've heard it and seen it. But I asked: I said how in the hell would that stop milk fever? But now, that is what the old people done, they pumped the bag up. Now I had one to have milk fever out there. She was stretched out and I called that vet from Linville to run that bottle of calcium through her veins. I tried to hit that vein. I never could hit that damn vein. We tried everyone in the world to hit that and we never could. And that vet hit that vein just like that. It was easy, just as simple as that! He run that bottle of medicine in her and she got up! Now I bought a cow that

had had milk fever every spring for three years. She was a heavy milker, I mean a heavy milker! And I was down getting some feed and we was talking about cattle, and I said I got a cow that has had milk fever every year for three years. And that fellow said well son, you get you a bag of calcium, and in two weeks before you think she is gonna calf, throw a handful of that in her feed. And I done that, and she didn't have no milk fever.

In the next passage, J.D. McKinney describes his experiences with *milk fever*. He also describes the therapies he is aware of used to treat the affliction. Not surprisingly, McKinney's experiences with the condition are quite similar to those of Hubert Ward. J.D. McKinney comments:

I had one that had milk fever one time when she had a calf. She had a big ole bag and I milked her. I got that milk out, and the next morning, she had the milk fever. I had to call the vet out and he give her a shot, and she got up. Now I used to see an old man that lived down here in Elk Park take a tire pump, and pump her up. He would put that needle in there and pump those tits up. He tied them, and left them tied for a few minutes and then untied them and milked that out. And she got up! What it does is it locks up in there and won't come out. The milk won't flow. He would leave that [air] in there and it would loosen it up and he would take that off, and milk that out, and it would start flowing. That milk would quit flowing is what it does. That learned me not to fool with a cow when she has a calf. Leave her alone! Let the calf suck, and if it don't suck all of it, just leave it alone. It will get them down!

In addition to Ward and J.D. McKinney, it should be noted that William Cable also describes using a needle to pump air into the udder for the treatment of *milk fever*. In the

next passage, Cliff Ledbetter describes this same procedure and also conveys why he believes this bizarre treatment works. Ledbetter comments:

A cow's bag is kinda spongy. Well if that milk don't come down, that bag sticks together in there. So therefore, they call it milk fever. Well, what you do is take a needle like you would pump a football with, a hand pump, and slide it up that tit. And pump that tit until you see it expand. And you do all four that way, and it works by gosh! What you do is you open the bag. Well if the bag is stuck together, it [milk] can't go no further. And when you open it up, blow that cow's bag up, you see naturally, it's gonna start easing back out and the milk comes down. I don't know what remedy they have for it now.

Importantly, four informants describe this seemingly strange *milk fever* treatment which involves the use of a hand pump to inflate a cow's udder. Also worth noting, several informants (HW, JD, SW, LM, RT) are well aware that the affliction is caused by low calcium after the start of lactation, or in many instances, poor conditioning near the time of giving birth. Hubert Ward, J.D. McKinney, and Steve Wilson have all used veterinarians to administer calcium intravenously for the treatment of their cattle. Significantly, the informant's usage of veterinarians for this illness appears to be more common than for most other afflictions encountered in my field research. This phenomenon could in part be due to the severity of the illness and the urgent need to administer intravenous calcium which requires special skill and equipment.

**Table 5.5.** Therapeutics mentioned for the treatment of *milk fever*.

<i>Materia medica</i>	Use (animal type)	Dose/Admin.	Action	Informant
Calcium (injectable)	<i>milk fever</i> (Bovine)	Unknown/IV	Increases Calcium	HW, JD, SW
Calcium (powdered)	<i>milk fever</i> (Bovine)	Unknown/Mix in feed as a preventative	Increases Calcium	HW, LM
Pressurized Air	<i>milk fever</i> (Bovine)	Unknown/Pump udder with air through teat	Unknown	HW, JD, WC, CL

### *Mastitis*

Nine informants acknowledged the affliction of *mastitis* in cattle. This condition affects the mammary glands, teats, and udder, and results in abnormal milk that often contains blood or pus. This condition also results in swelling, pain, and fever in the affected quarter(s). *Mastitis* is typically caused by bacterial pathogens. The informants queried about this illness most commonly stated that it had no viable cure. However, informants like John English, who has had extensive experience with the condition, demonstrated a variety of methods that are helpful in prevention. It should be noted that equids can also be affected by *mastitis*; however, no informants mentioned this affliction in horses, donkeys, or mules. *Mastitis* commonly affects dairy cattle, however, beef cattle can also be afflicted by the illness. The stock-raisers interviewed appear to have experience with *mastitis* in both beef and dairy cattle, however, the therapeutics they suggested for the illness were typically non-curative.

For instance, William Cable states that intra-mammary antibiotics do not effectively treat the condition. Instead of using such antibiotics, Cable suggests slaughtering the affected cow after she has been fed apple cider vinegar to tenderize the meat. Cable comments:

We didn't have much mastitis early. The first mastitis I run into was probably in the 1950s. But if you've got real heavy milking cows with big bags on them, they would come down with mastitis sometimes. Now we used a couple of things for mastitis. You could get you some medicine to squirt up in their teats. But it was a lot better to feed them out on apple cider vinegar than it was to squirt that medicine in their bag. And if you was fattening a cow for beef, you fed her vinegar to tenderize the meat a little bit. It worked, a lot of that old stuff worked.

On a similar note, Hubert Ward also states that intra-mammary antibiotics do not typically cure *mastitis*. Although neither Cable nor Ward specify the exact antibiotic they have used, both informants concur that treatment of the affliction is challenging. Ward comments:

I had one to have mastitis, but there ain't no damn cure. I got a tube of stuff and squirted it up in there. I might as well have squirted water across their back. A fellow I know bought a cow and I hauled his cattle a while back. He brought her home, and she had mastitis. He spent: I forgot how much he spent. He called every vet, and everything else. They told him this, and they told him that, and I told him there ain't no cure for it. I said go ahead and spend all your money. And he turned her dry, and he said now when she has her next calf, she won't have it [mastitis]. And when she had that next calf, it was just as bad as it ever was. And I took her to the market for him. You can't cure that damn mastitis. It will come back. You might slow it down or something, but it will come back. They say the best thing is to let a calf suckle it, where it bumps that bag all the time, and keeps that damn shit broke loose.

Like Ward and Cable, Max Lewis has had similar experiences with *mastitis*. Significantly, Lewis lost \$750 in a cow he bought from a preacher who didn't disclose the animal was afflicted by the condition. Lewis comments:

Well, there wasn't much you could do. There was stuff you could put up in their tits. If we had a cow that would get mastitis, we got rid of her as quick as we could because we needed to keep it from getting to our other cows. This man had this cow and calf that he wanted to sell to me one time. She was a good milker. And I went and bought them, and brought them home. He knew she had mastitis. And he was a preacher! I had \$750 in her and the calf.

In concordance with the opinions of each stock-raiser cited above, Ralph Silvers comments: "If a cow got mastitis, the hogs ate it [milk]. If you got her better, she was gone down the road, and some other man could own her. It would always come back."

Unfortunately, it has likely always been common that such animals afflicted by *mastitis* are circulated through various markets in the area. Stock-raisers who acquire or have animals afflicted by the condition are likely to sell them for beef at regional livestock markets.

However, the buyers at these "sales" may not be aware of these animals' medical history, and thereby may end up bringing afflicted cattle into their herds. When *mastitis* resurfaces after calving, affected cattle are likely sold again, thus increasing the overall regional prevalence of the illness. Cliff Ledbetter acquired a cow afflicted with mastitis and called a veterinarian out to treat the condition. The cow eventually died, leaving Ledbetter at a loss with his investment in addition to veterinary bills. Ledbetter comments:

There ain't too much they can do about it [mastitis]. In fact, I called a veterinarian. She [the cow] had mastitis and I think he gave her a shot or something. And lo and

behold he told me that she would eventually die. And she did. And that was it. The bag just swelled way up. That was the only one I had die with it.

Finally, John English recounts a lifetime of experience with *mastitis* on his family's dairy in this next passage. English does not suggest any cures for the affliction, however, he is aware of a variety of procedures that can be used to prevent its occurrence. Interestingly, English offers his perspective on how the dairy industry has changed due to technological innovations. In his opinion, technology has certainly decreased the prevalence of the condition in his herd. However, English also admits to currently milking several cattle with one affected quarter, but he comments that the milkers with *mastitis* "have got to pay off."

English comments:

In any dairy, mastitis is one of your most costly things. Mastitis is the most expensive. We never did treat mastitis way back. We wasn't even sure what it was. Back then, we were milking 10 or 12 cows. Now we are milking 75. The cleaners for equipment and the procedures for cleaning wasn't nearly as good then as it is now. I used to take a brush and scrub and scrub trying to get the milk stone off [the milking equipment]. I haven't heard of milk stone with all the cleaners and acids and stuff we've got today. We didn't have anything to cut it off, and now we've got some advanced soaps. Back then, we might have used 120 degree water. Now we run 160 degree water. It [milk proteins] won't reattach. It won't reset. When we had the old barn, we had nowhere to wash it. We had to take everything to the house and wash it. I've had many a times milking a cow, and reached up and took a hunk of manure out of the bucket. With the concrete and everything, we are able to keep the cows

cleaner, and of course the milk never touches air. It goes straight into the milk tank. It's just a different ballgame.

For teat dips, we normally use 1% iodine mixed with some kind of oil. A lot of times you dip them in the morning, and in the evening it is still on there. In other words, when the cow goes through the creek, it don't wash off. And you know, we never heard of teat dips when we were milking many years ago. And we've got wash cloths. We use a clean rag for every cow. And as soon as we get done milking, we put them in the washing machine and hit wash. But we milked cows in here by hand for quite sometime before they ever got the power up. We were waiting on electricity here just to get milkers. I think it came in 1949. And it wouldn't have come then if it wasn't for rural electrification. We were keeping the milk cool in the spring before that. I will put it this way, I wouldn't want to go back and do it over.

The sanitation protocols and technology used currently at the English dairy certainly decrease the prevalence of mastitis in the herd. However, English indicated that mastitis continues to have a significant economic impact on his dairy operation. Even if treated, milk from animals with mastitis cannot be sold until the appropriate drug withdrawal times are met. Even then, many animals afflicted by this condition have relapses or non-productive quarters of the udder. Thus, stock-raisers like English and others are forced to sell the affected animals. Sometimes, these animals are sold for beef; however, it is also likely these animals re-circulate amongst several herds as the condition reoccurs, and stock-raisers attempt to re-gain their investments.

**Table 5.6.** Therapeutics mentioned for the treatment of *mastitis*.

<i>Materia medica</i>	Use (animal type)	Dose/Admin.	Action	Informant
Iodine	<i>mastitis</i> (Bovine)	Unknown/Teat Dip (preventative)	Antiseptic	JE
Intra-mammary Antibiotic	<i>mastitis</i> (Bovine)	Unknown/Intramamary	Antibiotic	WC, HW, JE, CL, ML, VL
“Coal Tar mixed with Kerosene”	<i>mastitis</i> (Bovine)	Unknown/Topical	Unknown	SW
“Bag Balm”	<i>mastitis</i> (Bovine)	Unknown/Topical	Unknown	SW

### *Scours*

Seven informants acknowledged the illness domain of *scours*. According to the stock-raisers of the region, this affliction is principally associated with severe diarrhea. The folk term *scours* can be used to identify a specific illness. However, the term also appears to be used as a symptomatic descriptor of several types of diarrhea of multiple etiologies. *Worms* were mentioned as the most commonly believed etiology of *scours*, however, other informants indicated that bacteria or nutritional imbalances could also cause the affliction. All informants queried spoke of the condition in cattle, yet it is unclear whether the term is also used to identify severe diarrhea in horses. The author is aware of the term *scours* being used to describe diarrhea in a variety of species; however, the term was used by informants of this study only to describe illness in cattle. Several antibiotics were recommended for the treatment of *scours* including Penicillin (WC); Agrimycin (oxytetracycline) (HW); *sulfa pills* (SW); and *scour tablets* (RT). Ronnie Townsend also recommended using various electrolytes, which included Save-a-calf™, Gatorade™, and Pedialyte™. Townsend also recommends feeding bananas to correct for electrolyte imbalances associated with *scours*. He comments:

If one scours a lot and starts dehydrating, I've used Gatorade™ and Pedialyte™ like they use for babies. A lot of times I will just get a generic brand and a lot of times, we just fed bananas and the peelings and all and it will build up the potassium. Some of the old-timers, now this is back to horses, said what was good for a man was good for a horse. And a lot of things you could treat a human with was good for a horse. More so than for a cow you know. Their system is more like ours.

Another common treatment recommended by Townsend and others involves feeding afflicted cattle various preparations of flour or meal. Walter Brothers comments: "Take plain meal and parch it real brown before it burns. Then feed it to them. Hopefully he will like it. Before they eat it, give them four Pepto™ and Aspirin." When Townsend was asked for an older way to treat *scours*, this is what he recommended:

Scorched flour. You take flour and put it in a frying pan. You don't put anything else with it. You get it just almost black and burn it the best you can, and mix it with water. You don't use oil. You want it dry and scorched real good. And you can wet it down and make a liquid, a thick liquid, and pour that down them. Or if one is eating real good, you can mix it in with their grain. As long as you can get it down them, that scorched flour works real good. It just kinda helps check it.

Like several informants, Hubert Ward believes *worms* generally cause *scours*. When he was asked how the old-timers would treat the affliction, Ward states:

I guess give them copperas<sup>42</sup>. Might give them some turpentine too. Generally, if one takes the scours it is worms. Now I've bought ones scoured to death and wormed them, and in a couple of days they would be over it.

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<sup>42</sup> Copperas was a commercially prepared product commonly used to de-worm various animals throughout the region prior to the 1960s.

When he was a teenager, Cliff Ledbetter apprenticed under an informal veterinary practitioner in McDowell County. In this passage, Ledbetter describes his experience of learning to treat *scours* from his mentor, and also comments about how he likes to use Raleigh liniment to treat the condition. Ledbetter comments:

Old man Ed Snipes, I used to go with him when I was in my teens. And if they had scours, he would put water in a tub and he had a pump with a nozzle on it made of wood that was holler, and they slid that in the cow's butt and pumped that water and washed that cow out. And then he made a mixture of ginger and maybe sodey [baking soda] and sometimes a little alcohol, and poured it in that cow. Ginger would make them sweat. And most of the time, she was alright. And another thing, the peddler used to come around. They called him the Raleigh man. Now they sell that Raleigh liniment over at the furniture shop. But they would use that on cattle and for colic in horses. It was good for most anything that ailed you.

*Scours* appears to be a commonly utilized term that describes symptoms and/or specifically identifies various types of diarrhea in cattle. A diverse array of treatments was recommended by the informants for this affliction. The diversity of treatments encountered is likely correlated with the condition's multiple possible etiologies. Like formal veterinary uses of the term "scours," informants also consider the illness to have multiple causative agents.

**Table 5.7.** Therapeutics mentioned for the treatment of *scours*.

<i>Materia medica</i>	Use (animal type)	Dose/Admin.	Action	Informant
Penicillin	<i>scours</i> (Bovine)	Unknown/Injection	Antibiotic	WC
Agrimycin™ (oxytetracycline)	<i>scours</i> (Bovine)	Unknown/Injection	Antibiotic	HW
LA-200 (oxytetracycline 200mg/ml)	<i>scours</i> (Bovine)	Unknown/Injection	Antibiotic	RT
“Sulfa Pill”	<i>scours</i> (Bovine)	Unknown/Injection	Antibiotic	SW
Copperas	<i>scours</i> (Bovine)	Unknown/Injection	De-wormer	HW
Turpentine	<i>scours</i> (Bovine)	Unknown/Injection	Unknown	HW
“Water Enema”	<i>scours</i> (Bovine)	Unknown/Pump Enema	“Wash them out”	CL
Ginger, Soda, and Alcohol mixture	<i>scours</i> (Bovine)	Unknown/Oral Drench	“Makes them sweat”	CL
Raleigh Liniment™	<i>scours</i> (Bovine)	Unknown/Oral	Unknown	CL
Meal (Browned)	<i>scours</i> (Bovine)	Unknown/Oral	Unknown	WB
Flour (Scorched)	<i>scours</i> (Bovine)	Unknown/Oral	“Helps check it.”	RT
Pepto-Bismal™	<i>scours</i> (Bovine)	4 tablets/Oral	Anti-diarrhea	WB
Asprin	<i>scours</i> (Bovine)	4 tablets/Oral	Analgesic	WB
Bananas with Peel	<i>scours</i> (Bovine)	Unknown/Feed	Potassium replacement	RT
Save-a-Calf™	<i>scours</i> (Bovine)	Unknown/Oral	Electrolyte replacement	RT
Gatorade™	<i>scours</i> (Bovine)	Unknown/Oral	Electrolyte replacement	RT
Pedialyte™	<i>scours</i> (Bovine)		Electrolyte replacement	RT

### **Worms**

A total of nine informants acknowledged *worms* [internal helminth parasites] in cattle, while another nine acknowledged *worms* in equine stock. Seven individuals mentioned these afflictions in both bovids and equids. Many informants currently use commercial de-wormers for the treatment of internal parasites in both cattle and horses, however, knowledge of using tobacco for the treatment of *worms* in horses appears to remain commonplace. Commonly used pharmaceutical company derived de-wormers include Ivermec™ [ivermectin; injectable, pour-on, or paste], Cydectin [moxidectin; pour-on],

Tramisol™ [levamisole; injectable], and Safe-guard™ or Panacur™ [fenbendazole; liquid, paste, oral suspension, or lick]. Another commercially produced de-wormer known as “Copperas” was once commonly used to treat a variety of livestock for parasites, however, it has been largely unavailable for decades. Unfortunately, only one informant mentioned rotational grazing as a preventative measure for parasite control.<sup>43</sup> However, the stock-raisers queried suggested using a variety of readily available materia medica for de-worming horses. Yet interestingly, it was noted that commercially available products were most commonly recommended for de-worming cattle. A sample of the stock-raiser’s knowledge of livestock parasitism will be presented in the following passages.

All informants mentioning *worms* in equids (RM, WC, HW, ML, VL, RT, RS, WB) stated that various preparations of tobacco could be used as treatment for these parasites of the intestines. The preparations cited for therapy included dried or cured tobacco; snuff; chewing tobacco; smoking tobacco; and cigarettes. In the following passage, Ralph McKinney describes how before modern de-wormers were available, they would use a “hand” of tobacco to treat horses for intestinal parasites. McKinney comments:

Back years ago when we would have to worm our horses, we’d use a hand of tobacco. We would pull it off, and let it cure out, and then crumble it up and put it in their feed. And they would eat it, and that would take care of the worm situation. Some of them would eat it out of your hand. They liked it pretty good. But I don’t grow tobacco anymore, so I don’t use it. I just use commercial wormer.

On a similar note, William Cable comments about how horses would steal tobacco out of your shirt pocket because they were accustomed to its taste and liked it:

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<sup>43</sup> Rotational grazing techniques are often very intensive, requiring moderate amounts of land and substantial time commitments and fencing infrastructure.

Some of them would get your stud out of your pocket. And a lot of horses you would worm them with tobacco a time or two, and then they would bum you for tobacco. They would want them cigarettes out of your pocket. A lot of times you just give them two or three cigarettes and they would pass the worms through.

In this next passage, Walter Brothers mentions two therapeutics that he considers useful for de-worming horses. Brothers comments:

For worms, we would use Brewton™ snuff, and would sprinkle it over the feed. You could also cut up their mane real fine and feed it back to them and they claimed it would cut the worms. We did that when we was younger, and they were always fat and healthy. We never had one die on us.

Like Brothers, Ronnie Townsend also mentions that snuff is useful for de-worming horses, although he uses modern pharmaceutical products for this purpose today. Townsend also mentions several readily available therapeutics which could be used to de-worm other stock. He comments:

Of course we use over the counter wormers that we order today. But some of the old timers would use tobaccer or snuff, and feed it to the horses. They would even feed hogs soft lumps of coal. I've seen them give hogs lye, and that would worm them, but tobacco works pretty well on the horses. You can even put snuff in the grain, and let them eat it. And I've taken hands of tobacco that were good and dry, and let it blend in at the mill, and then feed it that way to the horses. I would throw a few hands of tobacco in. I've also heard that you can take hickory bark and burn it up real fine, and feed it to livestock and horses. But they mostly fed it to horses to worm them.

In this final passage concerning the treatment of *worms* in equids, Ralph Silvers comments about the historical importance and efficacy of de-worming horses with tobacco:

We wormed with tobacco. You just take Burley tobacco and grind that up into a dust and put that right in their feed. Chop or whatever, we used everything. Son, it killed every worm in it! You can give them that, and son, you can look where they crapped and you will see them white worms that long [approx. 1 foot]. My daddy did it. That was the only way we wormed horses. Pop would grind up a tea cup full. Now sweet tobacco out of a pouch, they will eat that like crazy!

Interestingly, informants indicate that tobacco is not typically used as a therapeutic for de-worming cattle. Instead, the stock-raisers queried indicate that commercial de-wormers are more commonly used to treat bovine stock for intestinal parasites in the Blue Ridge. These modern medicines are attained from local feed and seed stores or mail order catalogues. Some stock-raisers certainly have preferences for specific pharmaceutical products, and others have preferences for certain modes of administration [e.g., pill, pour-on, injectable, liquid, paste, or lick]. Hubert Ward comments:

You tell one has got the worms by her ass! It will get shit on their tail, and their hair will go to looking bad. You can pick one out with worms very easy. I don't like that pour on stuff too good. I guess it works. Hell, to me it looks like if a shower of rain comes along, it would wash off. I used to use that Tramisol™. It was the best you could get a hold of, but they took that out of that book [Jeffers™ mail order catalogue]. You could stick that needle in there and by the time you took that needle back out, she'd go to slobbering. Now that's how fast that stuff would work. Now son, it would worm one of them. In that Jeffers™ book it said that if cattle have liver

flukes, give it Ivomec™, and that would kill those flukes. It said those flukes would make the animal grow slow. And I vaccinate mine with Ivomec™ because that's what the book said.

William Cable also uses Ivomec™ to de-worm cattle. However, Cable also admits to accidentally killing one of his exotic African Watusi cattle by using the medication erroneously. Cable comments:

That one [pointing to large skull hanging on the barn wall] was a bull calf I bought. And I wanted to worm him and I used Ivomec™ on him. And it says on the bottle not to use it on an exotic animal. And I didn't know he was exotic, and it killed him. We didn't know that. Ivomec™ was one of the last things they come out with. Before that, they didn't use a whole lot of stuff for worming cattle. I don't remember worming much.

Unlike Hubert Ward, many informants (JD, JE, LM, SW, CL, RT) commonly use pour-on preparations of de-wormers for cattle. The modern pharmaceutical most commonly mentioned for this application is ivermectin, however, moxidectin was mentioned by two informants. Many informants also indicated that they rotate de-wormers. For instance, Len Moretz comments:

I just like to change wormers from time to time and use what I like. Which I have been using an injectable for the last several years. I've used pour-on a time or two, but it is so expensive that if you've got a bunch, it is big money in a hurry. It's a lot more convenient and quicker, but it is a whole lot more expensive.

Like Moretz, Steve Wilson also likes to use a variety of de-wormers. Wilson commonly uses Ivomec™ pour-on, Safe-guard™ paste or salt block, or "worm pills" if he

can get them. John English states that he uses Safe-guard™ horse paste on his dairy cattle instead of the lick preparation, commenting: “You never know exactly how much they get [with the lick]. They might not get enough, they might not get any. I use the paste gun. It’s expensive, but it works!” Like many of the informants queried, Max Lewis demonstrates that empirical knowledge and experimentation plays an important role in his choice of de-wormer. Lewis comments: “We would use this and that, and anything that would come up. And when it got up here years later, we would go up here to the vet and get what they had for worms.”

**Table 5.8.** Therapeutics mentioned for the treatment of *worms*.

<i>Materia medica</i>	Use (animal type)	Dose/Admin.	Action	Informant
“Cured Tobacco”	<i>worms</i> (Equine)	“Hand” or pre-mixed/Feed	De-wormer	RM, WC, HW, ML, VL, RT, RS
Cigarettes	<i>worms</i> (Equine)	2-3/Feed	De-wormer	WC
Snuff	<i>worms</i> (Equine)	Sprinkle Over Feed	De-wormer	WB, RT
Horse Mane	<i>worms</i> (Equine)	Cut up fine and Feed	Cuts worms.	WB
Burnt Hickory Bark	<i>worms</i> (Equine)	Unknown/Feed	De-wormer	RT
Ivomec™ (ivermectin)	<i>worms, liver flukes</i> (Bovine, Equine)	Unknown/Injection, Pour-on, Paste	De-wormer, kills flukes	RM, RT, RS, HW, JD, RhM, JE, LM, SW, CL
Cydectin™	<i>worms</i> (Bovine)	Unknown/Pour-on	De-wormer	LM, RT, JE
Tramisol™	<i>worms</i> (Bovine)	Unknown/Injection	De-wormer	HW, JE
Safeguard™	<i>worms</i> (Bovine, Equine)	Unknown/Paste, Lick, Liquid	De-wormer	JE, SW
Copperas	<i>worms</i> (Bovine)	Unknown/Oral	De-wormer	HW, WC
“Worm Pills”	<i>worms</i> (Bovine)	Unknown/Oral	De-wormer	JD

### *Colic*

Eight informants acknowledged the illness of *colic*<sup>44</sup> in equids. Many of these individuals indicated that *colic* rarely affects mules and donkeys, although one informant

<sup>44</sup> “Colic” is defined literally as abdominal pain. However, the etiology of colic can range from mild gastric upset or constipation to severe impaction or torsion/intussusception of the intestine. Treatment for the condition

(WC) mentions this affliction in mules. Although various types of *colic* can certainly occur in most mammalian species, the informants queried appear to use the term exclusively to describe severe digestive system anomalies of equine stock. Several readily available therapeutics including turpentine and mineral oil are apparently utilized by stock-keepers to treat *colic*, as are various liniments and manipulative therapies. The informant mentioned therapeutics for this affliction will be outlined in this chapter section. Although less than 1/3<sup>rd</sup> of the stock-keepers queried continue to raise horses, mules, or donkeys today, it should be noted that these farm animals were once very significant aspects of the economy throughout the region. That said, the role of these stock today is certainly more novel, however, stock-raisers surveyed appear to have a substantial knowledge of equine *colic* in the Blue Ridge. However, it should also be noted that with the exception of *worms*, lameness, and *colic*, stock-raisers spoke significantly less frequently of equine afflictions.

A common treatment for *colic* in the past employed the use of turpentine administered topically. Hubert Ward comments: “Now for colic, you can take a saucer full of turpentine, and stick it to their navel, and it would drink that turpentine.” Similarly, Ralph McKinney comments: “For colic, they would take a lid, a jar lid, and pour turpentine up in it, and hold it to that navel, and it would suck every bit of that turpentine out of that jar, right up into the horse’s system.” Differing from McKinney and Ward, Cliff Ledbetter likes to apply turpentine to the foot when a horse “colics.” In the following interview excerpt, Ledbetter also demonstrates that he is aware of administering turpentine through the navel:

CL: A lot of horses had colic back when I was younger. I used to drive my daddy’s horses. I had one that would take the colic when you were working it. It would lay down on you. You would take it to the house and doctor it. Then, you would take turpentine and put it on its foot! Yea, I don’t know what the idea was, but they done

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is dependent upon its etiology. Some colics resolve without any treatment at all, while others are medical emergencies requiring prompt surgical intervention.

it. And we done that one time to a mare that we had, and she took more fit. It must have burned her or something. It must have been raw, and she took more spell over the turpentine than she did the colic. We took her to the creek!

ST: Do you ever hear about putting turpentine on the navel?

CL: Oh yea. Well, that was for lots of things, and if they was well their navel wouldn't take that, but if they were sick by gosh, it would drink a lid full of turpentine. I never did do it, but I watched it done.

ST: Would you do anything else for colic?

CL: Well, we usually poured something in them like Raleigh Liniment. If I was over at the [furniture] store. I wouldn't care to have a bottle of it right now.

Another therapeutic commonly employed for the treatment of *colic* is mineral oil.

Unlike turpentine, mineral oil is commonly utilized by modern veterinarians to treat this affliction. Typically, mineral oil is administered by veterinarians using a naso-gastric tube and pump which delivers the treatment directly into the stomach. Once beyond the stomach, mineral oil lubricates the digestive tract and helps break up impactions. Stock-raisers of the Blue Ridge also use mineral oil in this fashion; however, their modes of administration do not typically entail the use of tubes and pumps. Instead, oral administration is typically performed using a long neck bottle. Also like modern veterinarians, the stock-raisers queried incorporate a variety of manipulative therapies into their treatments for colic, some of which are not surprisingly also utilized by formally trained veterinarians.

In the next passage, Hubert Ward describes an incident of *colic* that afflicted his neighbor's horse. Ward offered to treat the animal; however, his neighbor chose to call a veterinarian instead. Ward comments:

Bill down here had one coliced to death. And I told him to get me a big damn bottle of mineral oil, and I would have poured that down her and in 15 minutes she would have been up. Well, he called me and said my horse is a dying. By the time I got up there, the damn vet had got there. And I told him, all you got to do is pour a bottle of mineral oil down it to break it loose. The vet said no, no, no, and he ran a hose down

it and brought it around his nose and tied it to his damn neck and told him that he would take it with him. I told him that I didn't need a damn thing to pour a bottle of mineral oil in it and break the colic loose. In a day or two, he [the veterinarian] came back and said it had died, and charged I don't know how much. Now I could have saved that damn horse if he would have let me.

Similarly, Walter Brothers utilizes mineral oil in conjunction with other manipulative therapeutics for the treatment of *colic*. Brothers comments: "For colic, walk him and put mineral oil down him. We would cut a poplar pole about 8 feet long and rock them back and forth under their stomach. I've also used the Hotshot to get them to passing gas." Barte Laney also suggests using similar treatments for *colic*. Laney comments:

I use Dr. Shutz for my horses, but I rarely call him. He had to put one of my colicing horses down. He gave her a shot, but I think I could have pulled her out. For colic, the first thing I do is walk one. If that don't seem like it is working, you stick them on a trailer and 9 times out of 10 they will use the bathroom. I guess the nervousness or something makes them go. And I've also taken them around strange horses and manure. If you go to notice, they will smell that manure from another horse in a barn, and when they smell it, they want to go and have a bowel movement. But I've rode quite a few miles getting them cleaned out. I had the vet do mineral oil one time. Ralph [Silvers] can tell you how to use soap for that. The old people used to use lye soap and tobacco. They would cram that up in there.

The next passage will demonstrate the methods Ralph Silvers uses to treat *colic*. It should be noted that the condition can have several etiologies which can have a number of pathological effects on various parts of the digestive system. In this passage, Silvers

describes treatments that could be useful for both large and small bowel colic. Silvers comments:

Mules won't overeat. You can't colic them for nothing. When their belly fills, they quit. And a horse, she will just overeat till she busts. If a horse coliced, we would mix up a gallon of mineral oil or castor oil in a bottle with a long neck on it, and we would dowse him. We would tie his head where he couldn't get away, and son, he would have to drink it. I don't know, part of it may have gone in his lungs. And I'll tell you what, if a horse gets compacted, and you know that he's compacted, you can use a [garden] hose right in there. Get you one with the end cut off, and just be real easy with it. Start it right up his rectum. And when you hit where its compacted, let your buddy crack that water a little. But now a lot of people would say Lord, you'd blow up a gut, but I will tell you what, I've done it many a time plumb up through his large intestines. You don't want to go up into his small intestines. But hey, when you get up in there, you know when you get past the compaction because son, it's just like unstopping the dang pipe in your house. I've took it up in there probably two and a half foot. Now you got to go real easy with it. You don't want to punch a hole in the gut lining. When you put that water on, it will give.

Like several informants, Ronnie Townsend also indicates that *colic* in mules is rare. Townsend has extensive experience with mules, horses, and donkeys. He continues to breed draft mules today, and has had some recent experiences with *colic* in horses. Townsend comments:

Well, you never hardly have colic in a mule. A horse will colic. A horse will overeat and colic. The biggest problem I've dealt with is colic. Something overeating.

Eating something that wasn't palatable would cause them to colic. And it's very dangerous. You got to keep them from laying and wallering. If they waller up, they will twist their gut. You have to put them down, there is no way of breaking the colic. So usually, we would pour something down like mineral oil. One time, we had a horse to colic and an older fellow used some liniment, and warm water and sugar, and mixed up a concoction and poured it down. And it broke up the colic. And you need to keep them walking. Don't let them lay down. Exercise and walk them, and get the colic broke. And if you can get the mineral oil down them, it is one good way to start the process. But nothing seems to work as well as some of the medicines that the vet has. But a lot of people have to do their own doctoring and have their own remedies that work pretty good you know. I had some concoction that I got from the Amish that they used for colic. I'd take a big syringe and drench them. It works pretty good. And I like to feed more white salt, because it seems to create more of a thirst and makes them drink water better, especially in the winter time. Horses need to drink a lot of water. And a lot of times, I have feed mixed and I will blend salt in heavier than usual. I like to see them drink a lot of water.

**Table 5.9.** Therapeutics mentioned for the treatment of *colic*.

<i>Materia medica</i>	Use (animal)	Dose/Admin.	Action	Informant
Turpentine	<i>colic</i> (Equine)	Unknown/Apply to Navel or Foot	Unknown	RM, WC, HW, CL
Mineral Oil	<i>colic</i> (Equine)	Unknown/Oral Drench	Lubricates Intestines	HW, WB, RT, BL, RS
Raleigh Liniment™	<i>colic</i> (Equine)	Unknown/Oral	Unknown	CL
“Liniment and Sugar mixed with Warm Water”	<i>colic</i> (Equine)	Unknown/Oral	Unknown	RT
Salt	<i>colic</i> (Equine)	Unknown/Feed	Increases Thirst	RT
“Amish Colic Concoction”	<i>colic</i> (Equine)	Unknown/Oral Drench	Unknown	RT
Foreign Manure	<i>colic</i> (Equine)	Unknown/Smell	Causes Defecation	BL
Tobacco	<i>colic</i> (Equine)	Twist/Per Rectum	Causes Defecation	BL
Lye Soap	<i>colic</i> (Equine)	Unknown/Per Rectum	Causes Defecation	BL
Castor Oil	<i>colic</i> (Equine)	Unknown/Oral Drench	Lubricates Intestines	RS
Water Enema	<i>colic</i> (Equine)	Unknown/Per Rectum using Garden Hose	Breaks up Compaction	RS

### Wounds and Bleeding

Twelve informants spoke of folk remedies or beliefs associated with wounds and bleeding. As would be expected due to horse behavior, informants considered these maladies to be quite common in horses. However, these problems were rarely mentioned in cattle. It should be noted that these afflictions certainly affect cattle as well, although it is plausible to posit that bovine stock are less likely to be diagnosed or treated for such ailments compared to horses due to inherent differences in domestic patterns of use. A variety of therapeutics were suggested by the informants for the treatment of wounds and bleeding. Most of these therapies recommended involve the use of locally available *materia medica*. Modern pharmaceuticals were rarely mentioned as therapeutics for these conditions; however, it

should be noted that commercially available preparations are certainly utilized by some informants. Significantly, magico-religious beliefs about bleeding and its treatments are prevalent in the region, however, these supernatural ways of understanding illness and associated modalities of treatment are likely much less common today than in the past. Several informants (RS, BL, RT, WC, WB) mentioned that reading a Bible verse from the book of Ezekiel has historically been used to stop bleeding in animals. However, most of the informants did not mention using this approach today. Barte Laney has doubts of this treatment's efficacy, stating:

Grandpa read a verse out of the Bible. People would come to him if their animal was bleeding and he would read that verse to the person. He would never even see the animal. I don't know about that. That doesn't sound right to me. I asked one fellow why they don't do that anymore and the old man said, well, people don't have faith anymore. But that's one of those old wives' tales I was telling you.

Laney's doubtful regard for this magico-religious treatment's efficacy is echoed by two other informants who consider using such means of faith healing to be "old wives' tales." However, Ronnie Townsend and his friend Jack (JJ) believe differently. The following conversation took place during an interview in Townsend's kitchen:

ST: Is there anything else you would use for wounds, or for stopping blood? Do you have any tricks for stopping blood?

RT: Jack does. And actually, there are people that don't believe in it. Jack, tell him that verse in the scripture that you read to stop blood.

JJ: Ezekiel. I believe it is chapter 18. It works.

RT: Yea, there is a scripture. Hey. Believe me. It works!

JJ: Ezekiel goes to likening the nation of Israel to a baby—An infant that has just been born and the mother didn't want it, and was cast out on an ash sheet. And what got said about Israel was: When I passed thee, I saw thee polluted with thine own blood until thee live. That's the saying—Until thee live. And you read that, and watch it quit!

RT: And he's an ordained Baptist preacher!

It should be noted that reading a verse from Ezekiel to stop blood has been well documented in human folk medical beliefs from the region. In addition to faith healing, several other therapies for wounds and bleeding were mentioned by the informants. Most of the materia medica utilized for the treatment of trauma are used topically in soaks or in salves. Furthermore, the materia medica used in these preparations are oftentimes readily available in the community. For instance, Ronnie Townsend comments:

For deep cuts, take alum and pickling lime and make a paste out of it and apply. You can also put it on dry. Pickling lime will also cure proud flesh<sup>45</sup>. That's what saved my big mare. For skin wounds, you can also take bacon grease and salt and put it over a cut and the hair will come back. It works real good. Pine tar and turpentine works for dressing wounds or for when you castrate or dehorn. But you can't get turpentine no more.

In the next passage, Ralph McKinney recommends using a homemade salve for *cuts* and abrasions that is similar to that recommended by Townsend. However, instead of bacon grease and salt, McKinney uses hog lard and sulfur for the preparation. He also uses Epsom salts and vinegar to "take the swelling out" if an animal is *cut* or has a *wound*. It should be noted that William Cable and Cliff Ledbetter have had good experiences using hog lard and sulfur for abrasions as well. McKinney comments:

We'd use Epsom salts and vinegar to take the swelling out. You could bathe it in that and it would pull the swelling out and help it heal. That's because that vinegar and salts both have healing effects in them. Hog lard and sulfur was another thing we

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<sup>45</sup> Proud flesh is a non-malignant dermatological condition recognized by formally trained veterinarians in horses. It is characterized by the excessive proliferation of skin cells which form tumor like growths [excessive scarring] following various types of trauma to the skin [eg. surgeries, wounds, and abrasions].

used. You make you a paste out of hog lard and sulfur and put it on cuts, and it will hair over just as pretty. You just keep it rubbed on there. That sulfur will dry it out and that hog lard will keep it sort of soft. And it will just heal up as nice as can be.

Ralph Silvers also likes to use a similar salve made from fat meat grease for *cuts* and abrasions on horses. Yet Silvers uses lamp oil as a “poultice” for ailments like *boils* and puncture wounds. Len Moretz indicates that he has experience suturing wounds in cattle and horses yet John English indicated that he typically calls a vet if there is bleeding serious enough to require ligation of blood vessels. Although not mentioned, other informants likely have suturing and ligation abilities as well. A variety of other therapies for bleeding were mentioned including the use of “stove smut” (WB), “flour” (WB, BL, VL, ML), “snuff” (ML, VL), and “mushroom puff balls” (ML, VL).

**Table 5.10.** Therapeutics mentioned for the treatment of wounds and bleeding.

<i>Materia medica</i>	Use (animal type)	Dose/Admin.	Action	Informant
“Epsom Salt with Vinegar”	<i>swollen wounds</i> (Equine, Bovine)	Unknown/Soak	Takes swelling out. Has healing affects.	RM
“Hog Lard and Sulfur”	<i>cuts</i> (Equine, Bovine)	Unknown/Topical Salve	Dries and Softens	RM, WC, CL
“Alum and Pickling Lime”	<i>cuts, proud flesh</i>	Unknown/Topical Salve	Unknown	RT
“Bacon Grease and Salt”	<i>cuts</i> (Equine, Bovine)	Unknown/Topical Salve	Unknown	RT
“Mushroom Puff Balls”	bleeding (Equine, Bovine)	Unknown/Topical	Unknown	ML, VL
Snuff	bleeding (Equine, Bovine)	Unknown/Topical	Unknown	ML, VL
Flour	bleeding (Equine, Bovine)	Unknown/Topical	Unknown	WB, BL, ML, VL
“Stove Smut”	bleeding (Equine, Bovine)	Unknown/Topical	Unknown	WB
“Pine Tar and Turpentine”	<i>wounds</i> (Equine, Bovine)	Unknown/Topical	Unknown	RT

***Hollow Head, Hollow Horn, and Hollow Tail***

The bovine afflictions of *hollow head*, *hollow horn* and *hollow tail* are considered fictitious illnesses by most of the informants queried; however, a few individuals questioned believe these conditions are real, although none mentioned recent experience with any of these illnesses. Most informants echo John English's assessment, which relates the etiology of these maladies to poor nutrition. English comments: "They [cattle] didn't have the hollow horn or the hollow tail, they had the hollow belly!" Four informants mentioned the afflictions of *hollow head* or *hollow horn* (JD, LM, JE, CL), while nine informants mentioned the affliction of *hollow tail* (HW, JD, RhM, JE, ML, VL, LM, CL, WB). Although most stock-raisers believe these conditions are fictitious, many, including John English, are well aware of therapeutics employed to treat these folk illnesses. Other informants have had significant experience with these illnesses in the past, and have even performed the seemingly odd therapeutic interventions once commonly employed to treat the afflictions.

Of the four informants mentioning the apparently synonymous afflictions of *hollow head* or *hollow horn*, only J.D. McKinney believes the illness is legitimate, although he does not describe any recent experience with the pathology. J.D. McKinney states: "They used to have holler head. It gets in their horns and sets up. You cut that horn off and they get better." On the contrary, Len Moretz comments: "The hollow horn. I don't know what the deal is on that. I've dehorned many a cow that were hollow. When they are a yearling, they are soft, but when they get up to two or three years old, they are hollow anyway!" Cliff Ledbetter comments: "Well, when one [cow] got puny, sometimes they decided it had hollow horn. But you know, and I know that all horns are hollow!"

Like *hollow horn* and *hollow head*, most informants also believe *hollow tail* is not a legitimate affliction. However, many of these same individuals claim they have treated it, often citing that they did so just to appease the stock-raiser they were helping. Significantly, no pharmaceutical company derived therapeutics were mentioned for the treatment of *hollow horn*, *hollow head*, or *hollow tail*. Even more significantly, surgical techniques that also utilize readily available materia medica were cited by many informants for the treatment of these folk illnesses. For instance, Hubert Ward describes the condition of *hollow tail* in the next passage, and describes the way he learned to treat the condition from his Uncle Roy. Ward indicates that he believes *hollow tail* is a legitimate condition of cattle, however, he claims that it has been a long time since he has seen a case. Ward comments:

Used to, the ones that was calving would come down with the holler tail. And we'd split it and pour turpentine in there. But you can't get turpentine anymore. I guess any kind of poison would work. They claim a worm gets in there and that does something to the nerve going to their head. I'd say any kind of strong medicine would kill that worm. A woman had a big old cow up there and she was as fat as a fool. And she said my cow is gonna die, she is getting poorer and poorer and just lays around. And I said lets go down there and feel and look at her. I went down there, and I just got her by the tail and held it, and it was just like a dishrag. And I said this cow has got the holler tail. And every word she said, was "now are you sure?" I said "hell yea," she's got the holler tail. I said you got any turpentine. She said yea, let me go get you some. I just laid her tail down on that board and split it about two inches I guess, and poured that turpentine in there. If you can bend that damn thing [the tail], you can tell. It feels like there ain't no bone in there. It's just maller. You

can bend that thing double, it's like there is nothing in there. And you can split it right there [where it bends], and it will get better. Well, I was back up there in a couple of weeks, and she said, "My cow is doing the best!" But I hardly ever hear tell of one anymore with holler tail. I don't know why. Momma had one with holler tail. She started doing the same thing, and I split her tail.

On a similar note, J.D. McKinney also believes that *hollow tail* is a legitimate illness. He describes the affliction's etiology similarly to that described by Ward. McKinney also describes a similar surgical technique for treatment of this affliction, however, he recounts utilizing different materia medica for killing the "worm." J.D. McKinney comments:

They claim a fly will lay an egg and hatch a worm and the worm would go in their tail. But I don't know. They would split that cow's tail, and pour it full of salt and take a rag and wind it up. And she would get alright. They called it the holler tail. You don't hear tell of that no more.

Interestingly, Max Lewis claims that he does not believe *hollow tail* is a legitimate condition. However, Lewis has treated the illness in cattle by splitting the tail, although he truly believes the condition is caused by starvation. Surprisingly, Virginia Lewis believes *hollow tail* is a legitimate affliction, and like other informants states the condition is caused by a "worm" living in the tail. An excerpt from an interview with the Lewis' will be presented next:

ST: Have you ever heard of hollow tail or hollow horn?

VL: Yea, they had the hollow tail. It's a worm.

ML: You know, most of that hollow tail they come up with they would split their tail and the cow would get up. You split anything's tail and put that pepper and salt in there and wrap it up and they will get up. I've been to many barns and split their tail and done it up like they wanted it done just to satisfy the old men. I've done it. But you know, I'm gonna tell you. It's starvation that caused the holler tail. You never seen a fat cow with holler tail. But you can tell right where that artery in that tail is

dried up to. It dries up, and it runs to their head, and they can't walk straight. You can take your finger and lay it on that cow's tail, and you can drag your finger under her tail, and right where it is dead, it will fall down over your finger right there. You split it right there until you come to the live part of the tail and it will start that blood to circulating again. But what starts that is starvation.

VL: I don't think it is starvation. I think it is a worm. I don't know.

ML: There ain't no worm in there.

VL: That's what people said it was.

ML: I've split many. I went up and split Virginia's grandpa's cow's tail and he said it had holler tail. It was a good looking calf. We split it just to satisfy the old man and we went home. I hollered back and he said his cow had a calf. She was wanting to have a calf, and he thought it was the holler tail. And we split her tail, and she had that calf, but he was satisfied.

ST: So you just split it on the top or the bottom?

ML: On the bottom, where the arteries sit. You put salt and pepper in there and tie it up with a cloth. I split a many, but I don't know why I done it.

VL: They couldn't cut on top because its got the gristle on it. A lot of them good ole remedies are gone. A lot of them are gone.

ML: That salt and pepper was just a burning the life out of them!

Similarly to Max Lewis, Cliff Ledbetter also believes that *hollow tail* has nothing to do with a worm in the tail and more to do with starvation. Ledbetter comments:

There wasn't too much medicine. You just made your own. Say a cow was puny and she wasn't eating too good, they doctored with baking sodey. They would put about half a box of baking sodey in a long neck bottle and pour water in it or even vinegar.

And they would pour that down them. If you know cattle, you can tell when they are not right, otherwise, kinda poor and not navigating around. You go by what they do.

There wasn't such a thing as holler tail, but a lot of people believed in holler tail.

You see, you pick up the cows tail, and it will flop down. Well now, there is a little holler spot about an inch, but it depends on the size of the cow. If they decided it had holler tail, they laid a board up and held it, and they took a knife and opened that holler part up. And they got some plain soot out of the stove, and salt, and they filled

that full and tied a rag around it and the cow got alright. I don't know if it was worth anything or not.

It is unclear whether or not Walter Brothers believes *hollow tail* is a legitimate illness. However, like Ledbetter, Brothers claims: "We would cure it by splitting the tail. Then we would put kerosene and smut from the stove pipe in the split." On the contrary, Len Moretz outright states that *hollow tail* was an "old wives tale," and relates his awareness of this fact to some published material he had read. Moretz states that the cattle afflicted by *hollow tail* likely had *milk fever*. When asked to tell me what he knew about *hollow head* or *hollow tail*, Moretz comments:

Of course, I don't keep milk cows anymore. I guess it was actually milk fever that they had. But they would feel on a cow's tail, and if it felt spongy, they said it had hollow tail. They would take and split the tail, and fill it full of salt and pepper. And put a bandage around it, and in two or three days she would be up, giving milk, and going. According to the article in that book [*The Peoples Home Library, Stockbook*], it said it was an old wives tale and never did no good.

**Table 5.11.** Therapeutics mentioned for the treatment of *hollow tail*, *hollow horn*, or *hollow head*.

<i>Materia medica</i>	Use (animal)	Dose/Admin.	Action	Informant
Turpentine	<i>hollow tail</i> (Bovine)	Unknown/Apply to split in tail.	“Kills Worm”	HW
Salt	<i>hollow tail</i> (Bovine)	Unknown/Apply to split in tail.	“Kills Worm”	JD, JE
Salt and Pepper	<i>hollow tail</i> (Bovine)	Unknown/Apply to split in tail.	“Kills Worm,” “Causes them to get up”	ML, VL, LM
“Baking Soda mixed with Water”	<i>hollow tail</i> , “not eating” (Bovine)	Half a box to a quart of water/Drench	Unknown	CL
“Baking Soda mixed with Vinegar”	<i>hollow tail</i> , “not eating” (Bovine)	Unknown/Drench	Unknown	CL
“Salt and Stove Smut”	<i>hollow tail</i> (Bovine)	Unknown/Apply to split in tail.	“Kills Worm”	CL
“Kerosene and Stove Smut”	<i>hollow tail</i> (Bovine)	Unknown/Apply to split in tail.	“Kills Worm”	WB

## Conclusion

Stock-raisers of the Blue Ridge demonstrate a complex knowledge of both infectious and non-infectious illnesses that commonly afflict bovine and equine stock in the southern mountains. This knowledge plays a crucial role in the region’s stock-keeping traditions, enabling livestock raisers to provide a variety solutions to the animal healthcare problems which they encounter. The population of stock-raisers surveyed appears to have complicated and efficacious folk methods of identifying, treating, and even preventing livestock illness. Their ways of knowing have roots in empiricism, tradition, and a mishmash of medical theories, and in essence, stock-keeper’s knowledge and skill is representative of “the peoples’ science” and associated vernacular. Sixty-eight *materia medica* were identified for the treatment of 13 different afflictions presented in this chapter. In addition to the medicines outlined here, an array of therapeutics were mentioned by informants as treatments for *poisoning*, which will be presented next in Chapter Six.

The *materia medica* utilized to treat illnesses discussed included pharmaceutical company derived antibiotics, anthelmintics, and supplements. Modern pharmaceuticals that were mentioned included penicillin, oxytetracycline, florfenicol, ivermectin, moxidectin, levamisole, aspirin, and Pepto-bismal™. Although not “official” medicines for the outlined illnesses, readily available household products like Clorox™, pickling lime, lamp oil, kerosene, diesel fuel, motor oil, alcohol, soda, alum, Vaseline™, and “bean dust” were mentioned as treatments for an array of afflictions, as were a variety of human foods. These foods included sugar, flour, pepper, vinegar, Pedia-lyte™, Gatorade™, banana, ginger, salt, and Epsom salt. In addition to these medicines, many locally produced *materia medica*, some of which are also zootherapeutics<sup>46</sup>, were recommended by the informants to treat several afflictions. Therapeutics that could be locally produced or gathered included tobacco, manure, hickory bark, coal, pine tar, “stove smut,” corn meal, “mushroom puff balls,” hog lard, bacon grease, and ashes. Furthermore, many products that are now not so easily attainable like turpentine, “sheep dip,” Copperas, and castor oil were once used as therapies for a variety of farm animal illnesses.

In addition to having a deep knowledge of therapeutics for livestock afflictions, all informants demonstrated that determining the etiology of illness is essential to making appropriate therapeutic choices. Furthermore, knowing what caused the condition was also considered important by some informants because such information aided them in taking preventative measures. Commonly mentioned preventative measures included the administration of vaccinations, the use of prophylactic therapeutics such as salt, calcium, or tobacco in the feed, the use of quarantine protocols when new animals are introduced into the

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<sup>46</sup> Zootherapeutics are *materia medica* derived from animals.

herd, and the use of modern disinfectants in dairy applications. Unfortunately, the use of rotational grazing does not appear to be an important aspect of stock-raisers' method of managing parasites, while some informant's use of antibiotics is also apparently rather indiscriminant. Both of these practices have potential ill effects on the efficacy of modern medicines used to treat infectious disease. Not surprisingly, the rising incidence of anthelmintic and antibiotic resistance was mentioned by several informants.

In addition to therapeutic materia medica, several manipulative and surgical techniques were also cited as useful ways to treat various afflictions. These included the administration of water enemas, suturing, abrasion, and several kinesthetic therapies. Surgeries mentioned included splitting, packing, and then wrapping the tail for *hollow tail*, and de-horning to treat *hollow horn* or *hollow head*. Also, it is apparent that in times of emergency or when stock-raisers are aware of inadequacies preventing them from properly addressing an illness, formally trained veterinarians are sometimes utilized to treat the most severe illnesses of farm animals. However, it is apparent that most stock-raisers queried rely on their own knowledge and skill, or that of another community member to solve the majority of livestock afflictions they encounter.

## Chapter 6: Local Knowledge of “Poisonings” in Cattle and Horses

### Introduction

The stock-men and women of the Blue Ridge hold a complex and useful knowledge of toxic plants that commonly cause illness in both cattle and horses in the region. Such toxicities are typically referred to as “poisonings” in the local vernacular and include the following commonly noted livestock afflictions: *milk poisoning*, also known as *fall poisoning*; *ivy poisoning* or *laurel poisoning*; *snuffweed poisoning*; *wild cherry poisoning*; *wild parsnip poisoning*; *stagger*; and *buckeye poisoning*. Most informants suggested that these poisonings typically evoke a rather uniform spectrum of clinical symptoms in affected stock. However, the stock-raisers queried indicated that they distinguish between various types of toxicity by typically considering the periodicity of each affliction and/or the associated occurrence of toxic plants or their parts [e.g., fruit pod] in the environment, rather than relying solely on clinical symptoms to make a diagnosis. Stock-raisers may also diagnose specific toxicities based on evidence of livestock exposure to toxic plants. This evidence is typically gathered through visual assessment of both the stock and their environment. Furthermore, some plant poisonings are thought to occur in a variety of domestic species, while others are thought to only occur in a single species. Stock-raisers indicate that an understanding of species specificity also provides a means to distinguish between various types of poisonings, since clinical symptoms of toxicities are often indistinguishable.

The phenomena of periodicity appears prominent in ethnotoxicological knowledge gathered from the region. This is not surprising, since such information also provides vital

diagnostic clues to formally trained veterinary professionals as well. For example, informants believe *milk poisoning* or *fall poisoning* is common in the late summer or autumn when stock are more likely to ingest the white snakeroot plant; while *stagger* and *wild parsnip poisoning* are believed to be more common in the spring when soil is moist and these plant species are more likely to be uprooted. *Ivy poisoning* or *laurel poisoning* is believed to be more common in late winter and early spring, when malnourished livestock are more likely to search out the plants causing this affliction due to seasonally poor nutrition. However, *buckeye poisoning* is thought to be common twice a year; in the spring when new growth occurs, or in the fall when buckeye fruit pods drop from the tree.

Furthermore, the stock-raisers interviewed demonstrate a keen awareness of the ecological landscape and pay close attention to their stock and pastures. Nearly all of the informants demonstrated a deep understanding of the environment and the seasons, and indicated an extensive knowledge of the plants on which their stock might graze. Most individuals did not claim to have direct evidence of livestock ingestion when diagnosing various toxicities; however, it was not uncommon for the informants to suggest significant suspicion of specific plant poisonings based on other types of empirical evidence gathered on the farm. Such empirical evidence was typically correlated with the informant's wisdom of plant ecology. Surprisingly, informants did not typically cite "gut feelings" or "faith" when distinguishing between different types of poisonings. Also, the informants did not cite formal educational materials [e.g., publications] or educational courses as being epistemologically significant to their understanding of toxicities in livestock.

The informant's knowledge of livestock poisonings demonstrated in this chapter is certainly based in both traditional and empirical ways of knowing. Surprisingly, only one

informant claimed to have read literature pertaining to toxic plants on the farm, although many of these individuals had likely accessed such materials. However, it should also be noted that scientifically derived thought certainly has significant influence on local ethnotoxicological veterinary knowledge in the Blue Ridge. Many of the individuals interviewed have at least had minimal relationships with veterinarians and extension agents. These professionals have inevitably engendered techno-centric ways of understanding animal health to the populace they serve.

Although modern biomedicines are used for a variety of livestock afflictions throughout the region, it is evident that informants in the study area use little in the way of modern therapeutics for toxicities in cattle and horses. For example, when informants were asked to describe how they treated various poisonings in livestock, none mentioned that they would use a commercially available medicine marketed for animals. Instead, readily available or locally produced *materia medica* are typically used as therapeutics for toxicities. For example, cooking oil was recommended by several informants for the treatment of *ivy poisoning* [*laurel poisoning*], *wild parsnip poisoning*, *wilted wild cherry poisoning*, and *buckeye poisoning*. Tobacco, which can be easily grown throughout the region, is commonly used for *wild parsnip poisoning*, *stagger*, and *buckeye poisoning*. Various preparations of alcoholic beverages including moonshine, brandy, beer, or wine are typically used to treat *fall poisoning* [*milk poisoning*], *ivy poisoning* [*laurel poisoning*], *wild parsnip poisoning*, *stagger*, and *buckeye poisoning*.

Also of significance, many of the therapies mentioned by the informants align surprisingly well with the treatment recommendations made in the respected publication,

*Plants Poisonous to Livestock and Pets in North Carolina* (Hardin & Brownie, 2003).<sup>47</sup> The similarities in treatment recommendations made by this publication and the informants provides evidence for a possible epistemological relationship between two seemingly disjointed bodies of knowledge; one formal and scientific, and the other folkloric. It is certainly likely that folk veterinary knowledge in the United States has significantly informed researchers like Hardin et al., (2003). Yet it is also likely that such publications have had significant influence on the ethnotoxicological veterinary knowledge of stock-raisers throughout the Blue Ridge. Although none of the stock-raisers interviewed made that direct correlation, it is evident the informants of this study have been exposed to scientific ways of knowing through a variety of modalities, including published materials. Also, early formalized veterinary medical practices in the Appalachian region were undoubtedly influenced by both folk veterinary and human folk medical practices in the area. Interestingly, some therapeutic principles of these early practices likely persist in therapies used for various types of poisoning today. However important this epistemological relationship may be, it is impossible to draw definitive corollaries describing this in my analysis, although the phenomena does deserve mention here. As a result, only the beliefs of the informants whether based in science and more formalized ways of knowing, empiricism, or tradition—or a combination of these, will be outlined in this chapter. No distinction will be made between various epistemologies in the forthcoming discussion of stock-raiser's ethnotoxicological knowledge concerning cattle and horses.

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<sup>47</sup> Refer to Appendix C [adapted from Hardin et al., 2003], to compare published treatment recommendations for various toxicities to those suggested by the informants. The mode(s) of therapeutic action for each poisoning, whether recommended by the informants or Hardin et al. (2003), have some remarkable similarities. This phenomena provides evidence for an epistemological relationship between the two seemingly disparate bodies of knowledge.

This chapter is organized into seven sections that are rooted in semantic domains derived from a comprehensive analysis of ethnographic data gathered during my field work. Data collected from other sources of folklore in the region was also included when it was determined appropriate for the chapter section. Both Anthony Cavender's *Folk Medicine in Southern Appalachia* (2003) and Elliot Wiggington's *Foxfire Three* (1975) were used as supplemental data here. It should also be noted that two of the semantic domains outlined in this chapter have two unique folk terms that refer to indiscernible conditions. For instance, *milk poisoning* and *fall poisoning* appear to have the same etiology: *Eupatorium rugosum*. Therefore, both folk terms were grouped into one domain for discussion. Also, informants do not appear to distinguish between *ivy poisoning* and *laurel poisoning* when describing the symptoms, periodicity, or treatments of either of these afflictions. Therefore, the etiologies of *ivy poisoning* and *laurel poisoning* also appear to overlap semantically. Accordingly, these toxicities were grouped into one domain to allay any confusion for the reader. However, according to the informants, *ivy poisoning* or *laurel poisoning* could be caused by *Kalmia latifolia* or Rhododendron species of herbaceous shrub. Although this chapter does not describe these afflictions as separate conditions, with additional research, the local semantics associated with these poisonings could likely be divided further.

Under each of the forthcoming chapter sections, ethnographic data pertaining to toxic plants and their associated symptoms, periodicity, prevention, and treatments will be outlined using informant responses to interview questions. I have tried to limit etic perspectives in forthcoming sections to a necessary use of standardized classification schemes [e.g. use of scientific nomenclature], and in brief discussions. Instead, I will concentrate my analysis of

each ethnotoxicologic semantic domain by presenting the knowledge, beliefs, and vernacular of the individuals interviewed.

### ***Milk Poisoning or Fall Poisoning***

This illness domain of both bovine and equine stock was acknowledged by 11 informants of the study. Importantly, this toxicity can also occur in humans. Two vernacular terms, *milk poisoning*, and *fall poisoning*, are used by the informants to identify poisonings of animals resulting from the ingestion of the White Snake-root plant [*Eupatorium rugosum*].<sup>48</sup> Accordingly, both *milk poisoning* and *fall poisoning* appear to have a seasonal periodicity where incidence increases during the months of late summer and autumn. These conditions also appear to have indistinguishable symptoms. For this reason, both vernacular terms have been placed into one chapter section for discussion here. It should be noted however, that only a few informants use these folk terms interchangeably. It is also worth noting that unlike the vernacular terminology indicated for all other *poisonings* with the notable exception of *stagger* [e.g., *buckeye poisoning*; *wild cherry poisoning*; *ivy poisoning*; *laurel poisoning*; *wild parsnip poisoning*; *snuffweed poisoning*], the causative agent is not part of the folk taxonomy used to identify the affliction [e.g., “White Snake-root poisoning” is not used by the informants to identify this illness].

Since White Snake-root toxicity is communicable, it is considered a unique and very unusual poisoning. *Eupatorium rugosum* toxicity has zoonotic potential; meaning it can be transferred from animals to humans. According to medical anthropologist Anthony Cavender (2003), “Cattle grazing in the mountains sometimes fed on White snake-root, and the milk they produced contained the plant’s toxins. Those [humans] suffering from milk

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<sup>48</sup> Refer to Appendix B for an etic perspective on the *Eupatorium rugosum* plant, its toxicity, and potentially useful modalities of treatment.

sickness experienced nausea, dizziness, weakness, fetor of breath, weak trembles, and sometimes convulsions” (p. 91). Citing Joseph Hall, Cavender (2003) continues: “Unsure of what caused it, and noting an association between illness and place, many people abandoned their farms” (p. 91).

According to Cavender (2003), the term “milk sickness” was used to describe a toxicosis of humans resulting from ingestion of an affected cow’s milk, however, no informants of this study used “milk sickness” to identify *Eupatorium rugosum* toxicity in animals. However, the term “milksick” is used by Lon Dover in *Foxfire Three* (Wiggington, 1975, p. 107) to presumably refer to this condition in mules and horses. There is ample evidence gathered by my research that indicates both *milk poisoning* and *fall poisoning* are common terms used to describe a toxicity in livestock that can cause “milk sickness” in humans. It is also plausible to infer that informants don’t use the descriptor “White Snake-root poisoning” in folk veterinary terminology because the etiology of the affliction has only recently become common knowledge to many stock-raisers throughout the region.

According to the informants, there has been significant confusion surrounding what caused *milk poisoning* [*fall poisoning*] in the past. In the following passage, Max Lewis relates how he learned about the etiology of *fall poisoning* rather recently. Lewis indirectly gives credit to official veterinary medicine for his most current understanding of the condition. This passage provides evidence for an epistemological relationship between current ethnoveterinary practices and biomedical veterinary knowledge. Lewis states:

Fall poisoning is a snake plant. A snake-root plant. There’s a white and a red one and the red one is poisonous. We were always bothered with it and didn’t know what to do with it. Me and this fellow one time took a cow to Raleigh. And we took that

plant down there, and they checked that cow and said she had fall poisoning. We took it down there to a lab where they run them through and check them. And he told us which weed it was. That's been thirty years ago. A lot of people thought it was in the water all the time. And people would fence off springs and keep their cattle from going in it. There wasn't a thing but a weed growing, usually on the north side of the hill.

Lewis and other informants are well aware that *milk poisoning* [*fall poisoning*] is caused by the White Snake-root plant. However, some informants like Hubert Ward indicate they are uncertain of the causative agent of this affliction. Ward comments, citing three possible etiologies for *milk poisoning*:

Now we was on Beech Mountain one time a hoeing corn. There was a big spring and Mr. Eller had a bunch of ponies down there and he said go down there to that spring and get us a bucket of water. I went down there, and there was ponies laying everywhere dead. I come back and said, "Damned if I'd drink any of that water." He said milk poison has got in them. He said that place was full of milk poison in there. But I've heard all kind of tales about milk poisoning. I've heard you get it out of the water. I heard it's these damn weeds. Now the old White Snake-root will damn sure kill them. One man said he would feed corn fodder, and he said if they didn't eat all of that off the ground that night and if he didn't gather it up off the ground the next morning, they would get milk poisoning. He said it come out of the ground. I've heard everything. I've heard it was a weed. I've heard it come out of the water. I've heard it come out of the ground.

Describing “milk sickness” further, Cavender (2003) writes: “This debilitating and potentially fatal disease is no longer present in Southern Appalachia” (p. 91). However, according to several informants of this study, White Snake-root remains an important etiology of poisonings for livestock raisers in the Blue Ridge, causing illness and often death in both cattle and horses during the late summer and fall. Ralph McKinney of Upper Shell Creek, Tennessee [Carter County], conveys the importance of having a keen awareness of *Eupatorium rugosum* plant ecology in order to prevent the associated toxicity. In this passage, McKinney describes recently experiencing the death of three horses on his property. McKinney claims that he failed to properly inspect his field before releasing stock into an area known to harbor the plant last autumn. He states:

We have some weed here on this property called White Snake-root. I just buried three horses. It affects their nervous system and there ain't nothing you can do for them. You just help put them out of their misery. They get so weak; they just can't stand up and stuff. You see normally, you can let the livestock out where it's at when it freezes. It [the freeze] is supposed to kill it. But with the fall we've had this year [2012] I just didn't watch close enough so I buried three horses. You'll find it growing in sort of a damp, wet place. Around the edge of the woods, in the shade, in places like that. After they come a killing frost, they say it's alright, but I just hadn't walked up the holler. It's a white blossom weed and some of it will probably get four feet tall. They say it is just like a man on drugs. The more they eat, the more they want. They get a craving for it and just go a hunting it.

In the following passage, Len Moretz describes how his sheep and cattle farm near Meat Camp, North Carolina [Watauga County] is plagued by *fall poisoning*. Moretz

indicates his awareness of the plant's ecology, and demonstrates how he applies ecological knowledge to cope with the illness. For instance, he grazes sheep instead of cattle in a so called "poison field" near his home, claiming that sheep are not typically afflicted by the condition. He also moves his cattle seasonally, and does not graze on top of Rich Mountain in late summer and fall. Furthermore, he advocates for prescribed burning techniques to control toxic plant proliferation. In this detailed passage, Moretz indicates his knowledge of *fall poisoning*, and recounts how humans have also been plagued by the illness in his community. Here, Moretz demonstrates several adaptive techniques useful for coping with *fall poisoning* in the Blue Ridge. He also indicates the importance formal veterinary knowledge has had on his understanding of the affliction:

Well, there is either a plant or a vegetable they call fall poisoning, and any of the land that has got that on it, a cow will eat that and die from it. According to one of the veterinarians, he claimed it was a White snake-root. They discussed it a while, and then he came back and said it is certain stages that is more poisonous than others. A lot of boundaries that people had grazed on all of their lives all of a sudden started losing cattle. It usually happens in the fall. Usually September or October. They would just get real nervous and start shaking and get down and basically not get up. I try to switch my cattle around so I don't have it, but I will lose one every once in a while. Supposedly, a cow eats it and it goes into the milk and the milk comes out and the calf would get it. There was a guy that lived across the hill over here and he got it years ago, but he never got over it. Every fall, he would get bedfast every year. It would affect him. Well, his daughter was married and lived on the back side of the hill [north of Len's sheep pasture] and she got it and died of it. And they said it was

fall poisoning out of the milk. There is one field back there called the poison field. That is where that lady lived and died.”

Where my sheep run now, if you turn a cow in there in the fall of the year, they are gonna get it and die. It doesn't bother the sheep. A mule they say won't get it. A horse will get it quicker than a cow, but a cow will get it too. That is one reason I still got sheep. I couldn't graze cows in the fall and it would just grow up if I don't keep sheep. Back then, we would burn all of these mountains off in the fall of the year. They would go around and light everything that would burn and it would go up so high on the mountain and just go out. Everybody done it. They kept the woods pretty clean. People used to graze years ago and never had any problem with it. They turn cattle in now and it will kill them. It's gotta be something they used to keep off and now it has grown back. I take my cows off Rich Mountain the first of July. I'm afraid to leave them up there after July. I'm afraid they will get the fall poisoning.

Both William Cable and Ralph McKinney also advocate for burning the mountain off in the fall of the year to help kill the plant that causes this illness, however government interventions on the national forest lands around Hump Mountain, where they have traditionally grazed their stock, are now preventing this practice. William Cable states, “Every year, somebody burnt it. And they killed all that junk. And when the government got into it, it was causing too much smoke and they wanted to send somebody to jail for it.”

J.D. McKinney of Elk Park will comment next. Like Cable, McKinney also grazes his cattle near Pisgah National Forests lands adjacent to Hump Mountain. When asked about White Snake-root, McKinney acknowledges the plant and even describes it; however he

suggests that “milk poison gets in the water.” In order to prevent the type of *poisoning*, he suggests fencing livestock out of springs. McKinney comments:

Yea, I’ve heard tell of it [White Snake-root]. But I don’t know exactly what it is. But there is two kinds of that. There is a white one and a blue one. The white one won’t hurt ‘em, but the blue one will. The milk poison gets in the water. There ain’t none of that around here as far as I know. Now there is over on Hampton Creek [Tennessee] and in there. There is plenty of it in Shell Creek [TN].<sup>49</sup> There is worlds of it. It will even kill you. They would fence the springs off. They get it out of the spring. Now it ain’t in every one of ‘em. There is certain one’s it gets in there. I don’t know what they do now. Now if they drink that water, it will kill them. And if you drink out of that spring, you will take it. You can get it out of the milk. You take a cow with a calf that is suckling her and if that calf sucks, it will kill the calf and won’t hurt the cow. I’ve heard people tell that. I don’t know if there is a cure for it or not.

Although some informants indicate that these illnesses result from drinking water from certain springs, the majority believe the etiology involves ingestion of the White Snake-root plant. Another trend in descriptions of this illness is also worth noting: Most informants indicate that *milk poisoning* [*fall poisoning*] occurs more frequently in specific areas, often describing an increased prevalence of the toxicity near sources of water or on north facing slopes where mesic conditions persist. *Eupatorium rugosum* grows in these mountain environs, which partially explains folk beliefs noted previously whereby both J.D. McKinney and Hubert Ward indicate certain spring water is the etiology of the toxicity. Significantly,

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<sup>49</sup> Ralph McKinney who lives in Upper Shell Creek, Carter County, Tennessee, has had many experiences with *milk poisoning*, including the death of three horses in the fall of 2012.

only two informants from McDowell County acknowledged this domain of illness, and what little information they shared on the subject was entirely inconsistent with other informant descriptions of *milk poisoning* [*fall poisoning*], leading the researcher to believe they had little experience with this affliction.

Compared to other poisonings examined in this study, very few treatments are discussed for *milk poisoning* [*fall poisoning*]. The following passages indicate all of the interventions mentioned for this illness domain. One suggested intervention was used to treat humans, two were used to treat stock, and another was used to prevent humans from getting “milk poison.” In the following passage, William Cable comments on treatments once used for both humans and animals. It should be noted that brandy and honey, followed by a laxative is described in Cavender (2003) as a common folk treatment for humans. Cable essentially recommends this same treatment modality here. He suggests treating cattle with green corn or apples, which are used as laxatives to evacuate the gastrointestinal system of toxins. Cable comments:

A lot of cows would get milk poison and die. It probably killed more cattle than any one thing. If you was acquainted with what it was, you could see a cow and know that she had it because she would be trembling all over. A lot of times you didn't know they had it, and if you was using the milk, somebody in the family would come down with milk poisoning. And when it come down into the families, they usually used apple brandy to doctor with it. Usually they got over it, but a lot of them didn't. And they would doctor the cow sometimes with brandy. You could kill it [treat the poisoning] with brandy and honey. You could also put a lot of apples down them.

You could get green corn in them to get them to squirting. Anything to get that out of their bowels.

In the next passage, Ralph McKinney recommends a similar treatment regime to that suggested by Cable. Instead of brandy, McKinney uses liquor to “kill the poison.” He also uses Epsom salts as a laxative, instead of green corn and apples. McKinney comments:

Liquor will kill the poison. Some people use white liquor. For cattle with fall poisoning, it would pack their stomach where they can't manure and stuff. You could take Epsom salts and drench them with that. You can put a pretty large amount<sup>50</sup> into them and dissolve it and pour it down them, and within five minutes or less you could hear their stomach just a rolling and a growling and you better stay out from behind them because it was coming out. And if you could get their bowels to move, you could save them. But if you couldn't get their bowels to move, they would die.

Interestingly, Hubert Ward does not acknowledge any treatment for this type of poisoning in animals or humans, but instead indicates how a local man would prevent the illness in the following quote: “A fellow back up on Beech Mountain had plenty of milk poisoning. He said it was like a spot of grease in the milk, and they brought it in and would take a spoon and get those drops of grease out of there and drink the milk.” This belief concerning prevention of the zoonotic *poisoning* in humans was not suggested by other informants, and it is unknown whether this was a common folk belief in the past.

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<sup>50</sup> When questioned further, Ralph McKinney specifically suggests putting two pounds of Epsom salt in a half gallon of water for this treatment.

**Table 6.1.** Therapeutics mentioned for the treatment of *milk poisoning* or *fall poisoning*.

<i>Materia medica</i>	Use (animal type)	Dose/Admin.	Action	Informant
Epsom Salt	<i>fall poisoning</i> (Bovine)	2 lbs in ½ gallon of water/oral drench	Laxative	RM
“White Liquor”	<i>fall poisoning</i> (Bovine)	n/a	“kills poison”	RM
Apple Brandy with Honey	<i>milk poisoning</i> (Bovine)	n/a	“kills poison”	WC
Apples	<i>milk poisoning</i> (Bovine)	“A lot”/feed	Laxative	WC
Green Corn	<i>milk poisoning</i> (Bovine)	Unknown/feed	Laxative	WC
“Meat Grease”	<i>milk poisoning</i> (Bovine)	Unknown/oral drench	Unknown	WC
Black Coffee	<i>milk poisoning</i> (Bovine)	Unknown/oral drench	Unknown	SW
Whiskey	<i>milk poisoning</i> (Bovine)	Unknown/oral drench	Unknown	SW

### ***Ivy Poisoning and Laurel Poisoning***

This illness domain was acknowledged by five informants who were all living within McDowell County. Although only one informant residing in the highlands region of the study area acknowledged this affliction, it is likely some of the individuals interviewed may have been aware of *laurel poisoning* or *ivy poisoning*, even if they did not mention it in interviews. Three informants noted in Elliot Wiggington’s *Foxfire Three* (1975) acknowledge this toxicity in northern Georgia and excerpts from their interviews are included here to enhance the forthcoming discussion.

Before continuing further, it should be noted that some challenges arose in placing these related, yet distinct types of toxicities into semantic domains. This is because people of

the Southern Appalachians commonly use the colloquial terms “ivy” and “laurel” when identifying either *Kalmia latifolia* or *Rhododendron* species of shrub. Technically speaking, idiosyncrasies in the southern Appalachian vernacular make it especially challenging to determine how folk terms and techno-centric vocabulary overlap and interact in the dialect. Since *Kalmia latifolia* and *Rhododendron* spp. are both identified by the same folk terms and symptoms, and treated with the identical therapeutics, the decision was made to group these afflictions into one domain for ease of discussion.

An example of vernacular idiosyncrasy is indicated as how Cliff Ledbetter distinguishes between *ivy poisoning* and *laurel poisoning* in the following passage. It should be noted that when asked to clarify the difference between the two plant types by showing me examples on his McDowell county farm, Ledbetter indicated that *Kalmia latifolia* is termed “ivy,” while *Rhododendron* spp. is termed “mountain laurel.” Use of such folk terminology is common in the region,<sup>51</sup> however, interpretation of the following passage can be rather confusing if one is not well versed in the local vernacular usage. Ledbetter comments:

In the winter time, sometimes cows that are fed a lot of cotton mill and have the awfulest appetite will just eat ivy. They would eat enough to get poison. And if you find out they are poisoned, they would be gritting their teeth and trying to vomit. You can take about a quart of cooking oil and pour it in, and lo and behold she will puke that right up. I don't believe mountain laurel will poison them. I've never know'd one to eat enough to hurt them. But I've seen where they would eat a few in the winter time. But now ivy is poisonous.

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<sup>51</sup> Refer to Appendix C for a list of common names that refer to these toxicities.

John English also had considerable experience with these poisonings on his dairy farm in northern McDowell County. Unlike most livestock raisers in the study area, English indicates that both *laurel poisoning* and *ivy poisoning* are his only significant problems with toxic plants. Furthermore, he acknowledges that “home remedies” for poisonings are the only unofficial medicines he uses. English indicates that he typically uses modern therapeutics for all other illnesses with the exception of *poisonings*. English comments:

I know some of the old home remedies for stuff like poison. We used to have a lot of cows that would go and eat this old ivy, mountain laurel, or mountain ivy, stuff like that. And it will kill them. And the only thing I have ever tried that will really work is any kind of diuretic. Get something in there to make them urinate that stuff out. Make it run through their kidneys. Alcohol. Beer is the best thing in the world for them. Drench them with beer. Wine. White liquor. Black coffee will work. I had a calf up here, well it's been up over 30 years ago. That little old calf got down and it couldn't even raise its head up. It was just out of it. Alan [his son], long before he got married, said you know I've got some old beer out there that's been in my refrigerator for ages. And he went in there and got five or six cans and we poured it in the bottle and drenched it. As a matter of fact, my dad used to always keep a long neck bottle with this slender neck on it, and we would pour that stuff in that bottle and pour it over his tongue and down on into his throat, and drench him with it. And by God, the next morning that calf was up eating. It got a hold of the ivy. But you can lay it to it. Anything that will make it urinate. Open it up and let it run.

Wigginton's *Foxfire Three* (1975) conveys a sampling of livestock raiser's knowledge of *ivy poisoning* and *laurel poisoning* in both sheep and cattle in northern

Georgia. In the following passage from this folkloric work, Lon Dover indicates the use of another folk term, “poison ivy,” to refer to these afflictions. Semantically, Dover is likely referring to *Kalmia latifolia* toxicity, although it is impossible to assert this with full conviction. That said, it is unlikely Dover is referring the common human skin condition caused by *Toxicodendron radicans* when he speaks of “poison ivy.” The vine which causes “poison ivy” in humans, rarely if ever affects domestic stock. Dover comments:

Cattle get poison ivy in the spring—they’d be poor and eat everything green and sometimes they would get that poison ivy. It wasn’t so bad; it’d make them sick t’their stomach, and they’d stagger just like a drunk man and you’d give ‘em something and they’d throw it up. We generally used coffee and raw eggs t’make’em throw up the poison ivy. (p. 107)

On a similar note, Esco Pitts demonstrates a comparable treatment for “mountain laurel” toxicity in Wiggington (1975). It is unclear as to whether Pitts is speaking of *Kalmia latifolia* or *Rhododendron* species toxicity in this passage; however, like Dover and English, he also recommends using strong coffee as part of the treatment. It is significant that both Dover and English recommend use of a related diuretic regime.<sup>52</sup> Pitts comments:

Now and then the cows would eat this mountain laurel and sometimes they’d get poisoned. We’d feed’em strong coffee, pour strong coffee and lard down ‘em and that’d generally kill the poison. You’d have to give about a quart of that. We’d mix it while it was hot and melt the lard and pour it down’em. You’d have to get the cow right by the under jaw and stick their head straight up, and get a’hold of their tongue and just pour it down’em. I’ve drenched a many a’cow by myself. (p. 116)

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<sup>52</sup> Hardin et al., (2003), also recommend a diuretic therapy for both *Kalmia latifolia* and *Rhododendron* spp. toxicity. Refer to Appendix C for additional information on official treatments for these plant toxicities.

On a final note, an interview excerpt from Annie Perry (Wiggington, 1975) will be considered. Perry further demonstrates how the folk vernacular appears to group all of these toxicities under one treatment regime, and thus one illness domain. However, the therapeutic materia medica Perry suggests for treatment are markedly different from those recommended by all other informants. She comments:

When cattle get sick, they'll eat ivy sometimes. Now you folks know what ivy is. It grows on bushes. We have ivy, rhododendron, and laurel. Sometimes animals get t'where they don't want nothing t'eat but that. And then it makes'em sick. And then t'get'em over that, you get you some sweet milk, tablespoon of soda (baking soda), and a little salt. Put it all in that pint of sweet milk, shake it up, pour it down'em. He'll be sick then, y'know. Then they vomit and it makes'em better. (p. 117)

The five passages outlined above indicate how difficult it can be to semantically distinguish between *Kalmia latifolia* and Rhododendron spp. toxicity in livestock. All five of the presented passages indicate that cattle are primarily affected by the affliction, while the Walter Brothers, who are not mentioned above, indicated that both sheep and goats may be affected by the illness as well.<sup>53</sup> Informants indicate that livestock will only eat “laurel” or “ivy” when they are “starving” in the winter or early spring. Steve Wilson comments: “I don't have problems with laurel. I take care of my cattle. I fed 56 round bales of hay to mine this past winter.”

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<sup>53</sup> The symptoms of *Kalmia latifolia* and Rhododendron spp. toxicity in ruminants are similar, as is the poisonous principle [andromedotoxin]. For more information on the symptoms of these toxicities, refer to Appendix C which is derived from Hardin et al. (2003). Therefore, formally trained veterinarians and extension agents rarely distinguish between these toxicities [much like the informants noted here] since their treatments are identical.

Prevention of *ivy poisoning* or *laurel poisoning* appears to be highly dependent on farmers supplementing nutrition in the cold months of the year. Significantly, all of the *materia medica* mentioned in the passages above are recommended by the informants to help expel toxic substances from the animal's system. Cliff Ledbetter recommends using cooking oil to make the animal vomit, while John English recommends using a diuretic to make it urinate. It should be noted that Lon Dover in Wiggington (1975) recommends a similar treatment to Ledbetter, which is supposed to make the cow vomit. Esco Pitts [in Wiggington, 1975] on the other hand uses a similar therapeutic regime to that recommended by English, which entails the administration of "coffee and lard." However, unlike English, Pitts couples his treatment with lard which likely acts as a laxative. Perry's use of sweet milk, salt, and baking soda is unlike any other treatment encountered for toxicities in this research; however, like for many other treatment regimes, vomiting is the intended outcome.

**Table 6.2.** Therapeutics mentioned for the treatment of *ivy poisoning* or *laurel poisoning*.

<b><i>Materia medica</i></b>	<b>Use (animal type)</b>	<b>Dose/Admin.</b>	<b>Action</b>	<b>Informant</b>
Cooking Oil	<i>ivy poisoning, laurel poisoning</i> (Bovine)	Quart/Oral Drench	Vomiting	CL
Alcohol	<i>ivy poisoning, laurel poisoning</i> (Bovine)	Unknown/Drench	Diuretic	JE
Beer	<i>ivy poisoning, laurel poisoning</i> (Bovine)	“5 or 6 cans per calf”/Drench	Diuretic	JE
Wine	<i>ivy poisoning, laurel poisoning</i> (Bovine)	Unknown/Drench	Diuretic	JE
White Liquor	<i>ivy poisoning, laurel poisoning</i> (Bovine)	Unknown/Drench	Diuretic	JE
Black Coffee	<i>ivy poisoning, laurel poisoning</i> (Bovine)	Unknown/Drench	Diuretic	JE

### ***Snuffweed Poisoning***

*Snuffweed poisoning* was acknowledged by five informants who all described the affliction in horses. It should be noted that all five of these informants live within a small geographical radius along the crest of the Blue Ridge. Unfortunately, no stock-raisers describe the “snuffweed” plant adequately enough to identify it here with a scientific name, and no specimen of this plant was gathered during field work. Furthermore, two extension agents working in Watauga and Avery Counties, a botanist, and an animal scientist [both affiliated with Appalachian State University], were queried about the plant, and none of these professionals were familiar with any toxic flora identified by this colloquial name in the region (personal communications, 2014). Unfortunately, additional literature review performed by the author did not yield a more definitive etiology for *snuffweed poisoning* in the Blue Ridge. There is also no known folk literature concerning this type of *poisoning* and

the illness is not identified in Hardin et al. (2003) under the vernacular term utilized by stock-raisers in the highlands. To complicate taxonomic matters, no descriptions of this condition's periodicity were mentioned by the informants and descriptions of this illness were vague making even a rudimentary understanding of this toxicity quite challenging.

Although limited information was gathered on this affliction, significantly, there was a biogeographical variable noted in its pattern of prevalence. Three informants from Avery County claim that "snuffweed" grows in high mountain pastures, yet Ronnie Townsend, who raises livestock near Whitehead Hill in Carter County, Tennessee, considers "snuffweed" to be primarily a problem when feeding hay. It is unknown whether Ronnie Townsend feeds or has fed hay grown on mountaintop pastures which are known locally as "balds." In this passage Townsend confers how he understands the etiology of *snuffweed poisoning*:

There's an item called snuffweed. And a lot of times, they would get it in hay you know, and eat it in hay. And we would feed it when we were feeding the hay, and there would be snuffweed in the hay that we wouldn't see you know, and that would kill them.

When William Cable and Ralph McKinney were asked if there were any types of poisonous plants that grow up high on Hump Mountain, both commented that "snuffweed" could be found there. Both Cable and McKinney have extensive experience grazing on Hump Mountain, a peak which is nearly one mile high, and is one of the largest "balds" in the region. Cable comments:

Snuffweed will kill a horse. It has a yellow flower with a brown button like center. It will drive him just as crazy as a louse. If you can get him down to the creek and pour water on his head, and keep his temperature down, he will sometimes get over it. But

most of the time when they get it, it may not kill them, but it will cause them to kill themselves, because it will cause them to run into something. I've seen them hit a walnut tree and knock the bark off. Of course they broke something when they get knocked off their feet. When you can get them to water and pour water on them to them to keep their temperature down its fine.

In the following passage, Hubert Ward tells a story about a horse he presumes was afflicted by the poisoning, and comments about how the condition can pose danger to human life:

Now that snuffweed, now it would kill a damn horse. It grows around these mountains. Because I had a horse here, and that boy of mine when I come in was putting the saddle on. And I looked at that horse wild out of his eyes and I said, "Son, you don't put that damn saddle on that horse, there is something wrong." A few minutes after that, the horse went down, and in five minutes, it was as wet as wet can be. And I called the vet, and he said, "Son, it will be dead before I get there." He said it's been poisoned. And in about fifteen minutes I guess, that horse reared up on his front legs and he [the vet] said his heart would bust, and I guess that's what it done. It reared up like he was gonna get up, and fell over and never moved no more. It sure killed it. Mr. Laws, who lived just across the mountain from me had one to eat that snuffweed. It killed it. They go crazier n' hell. But they claim it busts their heart. Which that is the only one I have ever had. I got that horse down there at Hickory, but they claim a horse raised around here won't eat it. But you bring a horse in from down in the country, it might eat it.

Although my research gathered only limited data concerning *snuffweed poisoning*, it is obvious this toxicity exists in the beliefs of stock-raisers in Avery County, North Carolina and Carter County, Tennessee. According to these individuals, the affliction only affects horses and is quite severe in nature, resulting in the rapid onset of neurological symptoms and subsequent death. Interestingly, no treatments other than keeping the horse cool with creek water were recommended by the informants. In order to determine the true etiology of this condition, or if *snuffweed poisoning* exists simply as a folk illness, additional ethnotoxicological data collection is needed along the Tennessee/North Carolina border and elsewhere in the Southeast.

### ***Wild Cherry Poisoning***

This toxicity was acknowledged by seven informants living throughout the study area. One informant mentioned their experience with a horse afflicted by the condition. Another informant mentioned experiences with *wild cherry poisoning* in both cattle and horses. While the other five informants mention their experiences with this poisoning only in cattle. Informant descriptions of this condition's etiology are uniform. Significantly, all who were interviewed describe how the causative agent, wild cherry (*Prunus* spp.) leaves, must be "wilted" in order to elicit the toxicity when eaten by livestock.<sup>54</sup> Although the informants did not give many symptomatic descriptions of this *poisoning* other than rapid death, descriptions of its temporality are insightful. According to stock-raisers, occurrence of this toxicity is dependent on both environmental and anthropogenic factors, of which livestock

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<sup>54</sup> When leaves of *Prunus* spp. decompose, enzymes release hydrocyanic acid causing the leaf to become toxic when ingested by livestock. This typically occurs when leaves are exposed to frost or drought, or when limbs, or entire trees fall to the ground. Refer to Appendix C and Hardin et al.(2003), for more published information on this tree, its toxicity, and potentially useful modalities of treatment.

producers typically have little control. Describing how the etiology of the condition requires wild cherry leaves to be wilted, William Cable comments:

Wild cherry would get them. Wild cherry, if they eat it off the tree green, it didn't hurt them. But if a limb got broke off and it wilted, and they eat the leaves, it would kill them. But it had to wilt before it had the poison in it."

On a similar note, Len Moretz also demonstrates how he is well aware that cherry leaves must be wilted in order to induce toxicity:

Well, wild cherry leaves, if it falls when the leaves are green, as soon as the leaves start wilting they are deadly. If they eat them green and they walk on off, they are alright, and if they are dry, they can eat it and it won't bother them, but while they are wilted, it will kill them as dead as a hammer.

In the next passage, Cliff Ledbetter describes how storms and floods have knocked down trees in McDowell County resulting in *wild cherry poisoning* of both cattle and horses grazing affected areas. Ledbetter recounts his experiences with the toxicity:

Now wild cherry at a certain stage will kill a cow or a horse. It come a flood here several years ago, and I lost a horse and a pony too during that time. And I didn't see them eat it, but I had plenty in my pasture, and I presumed that is what it was. It was in the summer time, and we had a storm you know, and in fact, my uncle down on Cedar Creek had one in his barn yard, and it come a storm and a big limb flipped out of it and it wilted before he come home. And when he come home, one cow was already laying there dead, and he moved it, and that was all the trouble he had. It's bound to have happened because there was evidence.

In these forthcoming comments about the toxicity both John English and Steve Wilson demonstrate how power company maintenance of electrical service lines is often part of the etiologic equation. Steve Wilson comments: “I know a man that lost ten cattle after the power company cut trees on his property and just left them there for the cattle to eat. I’ve talked to the power company about not trimming my trees until the leaves are gone.” On a similar note, John English comments further:

I know they used to [have problems with wild cherry poisoning]. They would come around cutting power lines and that was one thing we would tell them right off. If it’s a wild cherry, don’t touch it. I know they come and cut some one time and we made them go back and load all them wild cherries up and haul them off. Get them out of there.

In the preceding passages, informants demonstrated a complex understanding of the toxic principals and periodicity of *wild cherry poisoning* in the study area. Such knowledge is of paramount importance for the prevention of the affliction. Individuals interviewed indicate empirical evidence justifying their beliefs, citing tree trimmings and various weather phenomena as being associated with *wild cherry poisoning* in livestock. Thus, their knowledge affords agency in prevention of the illness, which includes communication with power line maintenance crews and the judicious survey of pasture lands after storms and floods. Only Cliff Ledbetter offered a treatment for this affliction, which he used for a horse. Ledbetter’s therapy involved administration of “about a quart of cooking oil” as a drench, so “she would throw it up.” It should also be noted that Ledbetter suggests a similar treatment for *ivy poisoning*. Compared to other toxicities identified in the study area, scant therapeutic options were mentioned by the informants for *wild cherry poisoning*. The reason for this is

unknown; however, the severity and rapid onset of the affliction may be one factor in this phenomena.

### ***Wild Parsnip Poisoning***

This toxicity was mentioned by three informants who all reside in separate counties. Two of the three informants consider *wild parsnip poisoning* to be an affliction of cattle. The other informant does not specify which species he believes are affected. A wealth of toxicologic literature concerning the common names of poisonous plants indicates that the term “wild parsnip” is commonly used to identify two different species, both of which occur in the study area. For clarity, a distinction will be made between the two types of “wild parsnip” plants found in the Blue Ridge.

One species known as “wild parsnip,” *Pastinaca sativa*, primarily induces contact photosensitivity that results in severe sunburn on light colored skin in both humans and animals. Another species, *Cicuta maculata*, also commonly known as “wild parsnip,” “water hemlock” or “spotted cowbane” induces severe neurological symptoms and death when parts of the plant [especially the root], is ingested. *Cicuta maculata* primarily afflicts cattle in the early spring.<sup>55</sup> According to informant descriptions of the causative agent, symptoms, and periodicity of *wild parsnip poisoning*, *Cicuta maculata* is the likely etiology of this affliction as discussed by informants in this chapter section. However, the following is also worth noting: Informant descriptions of the folk illness *stagger* appear to be related to *wild parsnip poisoning* and thus, *Cicuta maculata* could also be one etiologic agent involved with both types of poisoning. Although my research was unable to describe the etiological agent of

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<sup>55</sup> Refer to Appendix C and Hardin et al., (2003) for more published information on the *Cicuta maculata* plant, its toxicity, and potentially useful modalities of treatment.

“stagger” toxicity definitively, an effort will be made to explore the similarities *stagger* has with *wild parsnip poisoning* in the next chapter section.

Significantly, none of the informants describe photosensitization as a symptom of *wild parsnip poisoning*. Their beliefs indicate that the stalk, leaves, and flowers of the “wild parsnip” plant are not poisonous. Therefore, informant descriptions of *wild parsnip poisoning* do not equate to toxicity caused by *Patinaca sativa* since each individual queried suggests the root is the toxic portion of the plant. For instance, Ronnie Townsend says: “The top of the plant is not poisonous. The root is poisonous.” Steve Wilson comments: “Wild parsnip does the same thing as milk poisoning. It grows around the creek and cows will eat the root.” In a more thorough description, Max Lewis comments: “It’s a weed that grows in the creek and it’s got a whole bunch of little fingers on the roots and when they get down and eat it, they will die.”

The informant descriptions outlined above indicate *Patinaca sativa* is not the causative agent of *wild parsnip poisoning* in the study area, since informants identify symptoms which do not equate with those describing *P. sativa* toxicity in the scientific literature. Instead of photosensitivity, all three informants describe *wild parsnip poisoning* as having severe neurological symptoms. Two informants offer potential treatment options for this affliction. Steve Wilson does not offer a cure, although he relates *wild parsnip poisoning* to *milk poisoning*, an illness which according to most informants, has a small likelihood of cure in both cattle and horses. Furthermore, Ronnie Townsend describes a treatment for *wild parsnip poisoning* which is similar to that he uses for *fall poisoning*. According to Townsend: “If not treated, they will be dead in four hours. Drench them with white liquor as soon as possible.”

In the following passage, Max Lewis tells a detailed story about a cow poisoned by wild parsnip. To his surprise, he was able to save the cow with a drench of tobacco and eggs.

Lewis comments:

We had one we put baccer [tobacco] down with eggs. She had eaten parsnip. Wild parsnip. She was practically dead. And he [a community member] called me down here. And I went up there and he had tobacco and everything and he put that down the cow and it was the awefullest mess. And she was practically dead. And we put that down her mouth and she kinda eased off some. And I went back up there in about an hour and the cow was gone. And I said to the boys, “Where is that cow at?” And he said, “In the barn.” She got up and I put her in the barn. I went down and looked at her and the only way you could tell she had been sick is she had been wallering in the mud. But you know, every bit of the hair come off of that cow. Every bit of it. It was after that wild parsnip poisoning. That was the only cow we ever saved eating that wild parsnip.”

The next section will attempt to demonstrate how the folk term “stagger” functions as a common descriptor used to illustrate the symptoms of many *poisonings*, including *wild parsnip poisoning* and *buckeye poisoning*. However, it is also clear that several informants believe “stagger” has a specific etiology, caused by the ingestion of a root that is typically found in moist environments. As mentioned previously, *stagger* and *wild parsnip poisoning* may be related folk illnesses since both involve a similar etiology. Unfortunately, my research was not comprehensive enough to suggest there is a relationship between these two afflictions. Thus, I have organized *stagger* and *wild parsnip poisoning* into separate semantic groupings for the purposes of clearly analyzing ethnographic data.

**Table 6.3.** Therapeutics mentioned for the treatment of *wild parsnip poisoning*.

<i>Materia medica</i>	Use (animal type)	Dose/Admin	Action	Informant
“White Liquor”	<i>wild parsnip poisoning</i> (Bovine)	Unknown/Oral Drench within 4 hours	n/a	RT
“Tobacco with Eggs”	<i>wild parsnip poisoning</i> (Bovine)	Unknown/Oral Drench	n/a	ML
Black Coffee	<i>wild parsnip poisoning</i> (Bovine)	Unknown/Oral Drench	Laxative	ML
“Cooking Oil with Eggs”	<i>wild parsnip poisoning</i> (Bovine)	Unknown/Oral Drench	n/a	VL
“Meat Grease”	<i>wild parsnip poisoning</i> (Bovine)	Unknown/Oral Drench	n/a	SW
Whiskey	<i>wild parsnip poisoning</i> (Bovine)	Unknown/Oral Drench	n/a	SW

### *Stagger*

*Stagger* was described by eight informants who all believe this illness solely affects cattle. Each of the individuals mentioning this affliction resided in the highlands region of the study area. Another stock-raiser, Ralph Silvers of McDowell County, mentioned an illness he terms “blind staggers,” which he believes is caused by “little tiny ivy.” According to Silvers, this condition only affects sheep. The illness of “blind staggers” described by Silvers does not appear to be semantically related to the *stagger* described by all other informants of this study, and therefore the condition will not be considered in the following discussion.

As mentioned in the previous discussion, *wild parsnip poisoning* and *stagger* may have the same etiology, however the two terms were not used interchangeably by any informant. To compound efforts at making a taxonomic distinction between these two terms, “staggering” is described by some informants as simply a symptom of various *poisonings*,

while others believe *stagger* is a specific toxicity caused by the root of a plant.

Unfortunately, the plant which causes *stagger* was not identified during my field research.

In addition to *Cicuta maculate*, which is the presumed causative agent of *wild parsnip poisoning* in the Blue Ridge, it is possible that multiple plant species cause toxicities represented by the folk term *stagger*, including toxicity from *Delphinium* spp., commonly known as “larkspur” or “staggerweed;” and *Amianthium muscaetoxicum* which is commonly known as “crow-poison,” “fly-poison,” or “stagger-grass.”<sup>56</sup> Many informants even describe the symptoms of *buckeye poisoning* (*Aesculus* spp.), to include “staggering.” This dichotomy will be discussed in the next chapter section.

The forthcoming passages have been included to help demonstrate the complexities associated with determining parameters of the illness domain of *stagger*. Unlike other toxicities examined in this chapter, it is impossible to attach a single causative agent to the affliction of *stagger* based solely on descriptions provided by the informants. Essentially, the informants indicate *stagger* is both a type of *poisoning* and a symptomatic descriptor, which may involve multiple etiological agents. The passages presented here will attempt to demonstrate the nature of both the symptomatic use of the word “stagger” or “staggering” and descriptions of the specific folk illness *stagger*. For example, in the following passage Max Lewis describes “staggering” as a symptom associated with *buckeye poisoning*. Yet Lewis also describes *stagger* as a specific plant. When discussing the differences between *buckeye poisoning* and *stagger*, he says: “They just eat it and start staggering all at once and they are dead. Now the stagger, you won’t notice it until they get to walking around. Like buckeye [poisoning]. They just show up.” Lewis goes further in his description of the

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<sup>56</sup> Refer to Appendix C and Hardin et al., (2003), for more information on all of these plants, their toxicity, and possible modalities of treatment.

“stagger” plant, saying: “Now stagger, it’s got a little old blue blossom on it. It’s got an awful pretty bloom. I don’t know what stagger is. It’s got a name, but I don’t know what it is.”

Both Rhoda (RM) and J.D. McKinney (JD) describe their beliefs concerning the etiology of *stagger* in the following interview excerpt. Both of these individuals indicate that the affliction is caused by a specific plant that primarily affects cattle in the early spring. They give descriptions of the plant and its environment, its periodicity, and the associated therapeutic options for treatment when cattle are affected:

RM: There is stagger in here. It’s a little bitty weed. It has red leaves on it and a blue or purple looking bloom on it.

JD: There is a white one and a blue one. The white one won’t hurt them, but the blue one will kill them. The top won’t hurt them, but if they get a bite of that root, it will kill them. I lost I don’t know how many. If you find them in time, pour that coffee or baccor [tobacco] down them and they will get right up.

ST: It’s got a blue bloom? And what did the leaves look like?

JD: Yea, it’s got a blue bloom in it. They are little old long leaves.

RM: It looks like a four leaf clover.

JD: There is plenty of it over there in that holler. I guess it is in bloom. It will kill them, that stagger will. It will lay them dead. It ain’t long either. One day and one night, if you don’t find them.

ST: Where does that stuff live, normally?

JD: Well, not everywhere. There is plenty of it right over there on the other side of that pine [Frasier Fir] patch. There ain’t none right in here [around the house].

ST: Does it grow down low, or high?

JD: It grows down pretty low. Now right over here on that side [north side of Hump Mountain], it’s up high. There is quite a bit. They get it early in the spring. After the first of June, they don’t get it. Bud Smith rented a pasture over there one year and about this time of year, the grass started growing a little bit and I bet he brought fifteen or twenty head and turned them out. In a few days he lost two or three head to that stagger. And he moved them out!

ST: So that is a big problem then?

JD: It is.

ST: I wonder what the name of the plant is?

JD: I don’t know. But there is two kinds of that. There is a white one and a blue one. The white one won’t hurt them, but the blue will. Boatright, he was a vet; he said there wasn’t no such thing as that. He said there is no such thing as stagger. I say it’s up here, and it will poison them.

ST: Is this when it comes up [April 2, 2013]?

RM: I'd say it is up.

JD: You see when the ground is soft. You see a cow ain't got but one set of teeth. And they kind of bite and pull. And if that ground is real soft, they get a bite of that root and they are gone. They don't have to get that much. When the ground gets back hard in the last of May, they won't get it. They won't have no problem after the last of May. But if you've got it in your pasture, you just don't turn them in there.

In the next passage, Hubert Ward recounts an experience he had with *buckeye poisoning*. Ward indicates that this type of toxicity is also characterized by symptoms of "staggering." Interestingly, Ward describes a treatment J.D. McKinney shared with him for *buckeye poisoning*, which can also be used for *stagger* toxicity according to McKinney.

Ward comments:

I've had three down at the same time with poison on buckeye. Boil baccer [tobacco], pour that baccer juice and in fifteen minutes they'll be back on their feet. Yea. J.D. McKinney now is the one that told me that. I had three laying up here, stretched out, eyes rolled back in their head, and I poured oil down them. Somebody said pour mineral oil down them. But it didn't seem to help. And I called J.D.. I remembered him having some sort of poison on stagger. And I asked him, "What did you do for your cattle when they got that poison on stagger?" And he said, "Well Lord, you boil baccer [tobacco] and pour it down them." Well, I had a damn heifer, she was crazy. I bet she would have killed you. And she was laying down in the bottom, and I had a little old hose about that long and a funnel and I told that grand young'un of mine: "I said come down here! When I run this down her throat, you pour this in the funnel." And she said, "Damn you grandpa, you trying to get me killed." And I said "Hell, she can't get up." Well, we poured that down her and time I walked from down to the barn, she come through the barn. I had a bucket in my hand, and she knocked that

bucket clean out of my hand. I tell you, that's how quick they will get up. Just in a few minutes. They'll get up.

Hubert Ward provides no description of a "stagger" plant, however, he does acknowledge "some sort of poison on stagger" which he learned about from J.D. McKinney. It is unknown whether Ward would describe the etiology of *stagger* similarly to J.D. McKinney, or if he would just describe it as a symptom of a toxic condition, for instance, akin to *buckeye poisoning*. In the following interview excerpt, Max (ML) and Virginia Lewis (VL) demonstrate how the term "stagger" can be used as a symptomatic descriptor of various *poisonings*, or in the identification of a specific illness:

ML: That stagger will kill them. Stagger causes them to kill themselves. It's just like eating buckeyes or acorns, or anything you know. They just get to staggering and break their necks. It's got a blue blossom on it.

ST: And you were saying something about eating the root?

VL: If they eat that blossom, it won't kill them. The root is what kills them.

ML: It won't kill them, they will just kill themselves. Buckeyes won't kill them, but it makes them dizzy and they kill themselves.

In the next interview excerpt, Ronnie Townsend (RT) describes *stagger* further by giving his descriptions of both the etiology and seasonal periodicity of the illness and ways to distinguish between various types of *poisoning* which have "stagger" like symptoms. Townsend's comments are consistent with those of other informants concerning this illness domain:

RT: And there was another one [weed] they would call "stagger." What the old-timers would call "stagger." And it would be in the woods and have a purple like bloom on it. And what they do, it usually grows on soft ground. And it's not the top that hurts them. But if they pull up and get the root, it's the root that will hurt them. And like I say, if they get down with it, the remedy that will best help them is the whiskey. Pour whiskey down them.

ST: With the "stagger?"

RT: About any kind of poison like that.

ST: Whiskey is good? And moonshine?

RT: Especially moonshine if they can get it!

ST: So when you have stagger, or say buckeye poisoning, or snuffweed poisoning, is there any difference in them? How do you tell the difference between them or can you?

RT: There's not a whole lot, its kinda guess work. But basically, if you've got one in the stable there and you are feeding him hay, you know he's not got the buckeyes or the stagger you know. The first thing you think about is snuffweed. Or of course if he is out on spring pasture or late summer or whatever, you will suspicion buckeyes. Then, if it is the early spring, you will think of the stagger, because the stagger dies down after a while you know. It's a seasonal deal you know.

ST: You got the stagger bad down here?

RT: Not bad on this place. There are some areas around here. There is one place down on Persimmon Creek that had it real bad, and there used to be a place, a farm that joins us where it was bad. But right now, on our property, knocking on wood, we don't have that problem.

Both Steve Wilson and Len Moretz do little more than just acknowledge there is a “weed” that causes *stagger* in cattle, however, Rhoda McKinney, J.D. McKinney, Max Lewis, Virginia Lewis, and Ronnie Townsend all describe a similar etiology and seasonality of the condition, which appears to involve a specific plant. Informant descriptions of the affliction are all rather consistent, which indicates that beliefs concerning its occurrence throughout the highland region of the study area are rather ubiquitous. Unfortunately, the informant derived data concerning this illness is not specific enough to attach a definitive etiological agent to this domain of toxicity. Furthermore, the passages presented in this chapter section indicate that the descriptor “stagger” is often used to illustrate manifestations of other conditions like *buckeye poisoning* or *wild parsnip poisoning* which also makes it challenging to fully describe this affliction. Simply put, *stagger* is a folk term used to describe a specific toxicity; yet “stagger” is also a term used to describe the symptoms of various illnesses that are common in the study area. For added detail concerning the symptomatic use of the word “stagger,” the illness domain of *buckeye poisoning* will be discussed next.

**Table 6.4.** Therapeutics mentioned for the treatment of *stagger*.

<i>Materia medica</i>	Use (animal)	Dose/Admin.	Action	Informant
“Boiled Tobacco”	<i>stagger</i> (Bovine)	Pint/Oral Drench	Causes them to get up.	HW, JD
“Plug of Tobacco”	<i>stagger</i> (Bovine)	Plug/Oral	Causes them to get up.	JD
Coffee	<i>stagger</i> (Bovine)	Unknown/Oral Drench	Causes them to get up.	JD
Whiskey	<i>stagger</i> (Bovine)	Unknown/Oral Drench	Unknown	RT
Moonshine	<i>stagger</i> (Bovine)	Unknown/Oral Drench	Unknown	RT

### ***Buckeye Poisoning***

This toxicity was acknowledged by twelve informants who lived in all counties of the study area. However, the three informants acknowledging this affliction in McDowell County also commented that their experience with this type of *poisoning* was very limited. Informants living in the highland regions of the study area offered much more detailed accounts of the symptoms, treatments, and periodicity of the condition. Highlanders also provided several additional ways to prevent this affliction compared to those stock-raisers living in the foothills of McDowell County.

All informants consider *buckeye poisoning* to be an affliction of cattle, yet informant beliefs concerning which part of the buckeye tree (*Aesculus* spp.) is ingested to induce the toxicity vary.<sup>57</sup> Some informants claim that the leaves are eaten while others claim that ingestion of the fruit pod, the so called “buckeye,” evokes the poisoning. Several informants

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<sup>57</sup> Refer to Appendix C and Hardin et al., (2003), for more information on Buckeye tree, its toxicity, and therapeutic modes of action.

don't specify which portions of the plant are poisonous while others insist that one side of the buckeye is poisonous and the other is not. Several informants cited folk wisdom pertaining to the fruit pod. Folk phrases about this poisoning commonly equate to the following: A squirrel will eat the good side of a buckeye, but he will leave the poisonous side. That's why he doesn't get sick.

Treatments mentioned for *buckeye poisoning* are quite numerous according to the informants. However, the materia medica used in these therapies are rather similar to those mentioned for other poisonings. All of the therapeutics mentioned are readily available, and their intended modes of action have similarities to those recommended by Hardin et al., (2003). The informants also describe symptoms of *buckeye poisoning* similarly to other toxicities, often employing the descriptors "stagger," "crazy," or "drunk" to illustrate manifestations of the affliction.

In the following passage, Ralph McKinney describes the symptoms of *buckeye poisoning* and then offers several therapeutic options for its treatment. The materia medica recommended by McKinney for treatment of this condition are also commonly used in the treatment of other *poisonings*. For instance, tobacco and coffee are used by other informants for the treatment of both *stagger* and *wild parsnip poisoning*. Ralph McKinney comments:

When our cattle would eat buckeyes, it would make them drunk. We'd use buttermilk and lamp oil. And pour it down them and drench them. And you can also make you a real strong, dark black coffee, and put some chewing tobacco in it. Stir that tobacco in it, and it will cure them. Dad always chewed Black Moriah chewing tobacco and whenever we would get a cow or calf that had buckeyes, he would take a plug about six inches long and he'd cut it in half. And he would rake it up and put it

in that coffee, and he would pour that down them and that would also cure the buckeye poisoning.

When asked to describe the ratios used for buttermilk to lamp oil in this treatment, McKinney says they would mix the two “about half and half.” In the next passage, McKinney comments about how he believes some cattle are more predisposed to *buckeye poisoning*, and explains that treatment for this affliction is administered using the readily available “long neck bottle.” He comments:

Well, we would take a long neck bottle. That is all we had back then you know, and just hold their head up and stick that bottle right in the side of their jaw and you could drench one. That’s how we would do it. Well now some cattle can eat the buckeyes and it don’t bother them. And some it will kill.

In the following passages, J.D. McKinney describes the symptoms of *buckeye poisoning* even more thoroughly. However, he also indicates the periodicity of the affliction and confers that he believes the leaves are the poisonous part of the plant. Furthermore, J.D. McKinney describes a treatment for *buckeye poisoning* which involves the use of tobacco and coffee administered with a 16 ounce bottle and a rubber hose. It should be noted that the tobacco/coffee treatment described in this passage is similar to one of the treatments mentioned by Ralph McKinney. J.D. McKinney comments:

I had two [cattle] down. I went up through there and they had eat them buckeye leaves in the spring. It was about this time of year [early April] and it had been warm, and they [the leaves] had come out. It was a steer calf, and he had eat them buckeye leaves and it poisoned it. He was lying stretched out. And all he could do was bat his eyes. He couldn’t even raise his head up. I had a plug of chewing

tobaccer in my pocket, so I just put that baccer down there and pried his mouth open and pinched that baccer off. I fed him that whole plug of tobaccer. I went back to the house to get some coffee to pour down him, and he was up! Hube [Hubert Ward] had three or four down, and he come up here and got me, and I said you get you some of the boiled tobaccer down them and they will get up. They get up in about fifteen minutes. I bought a big pot full of it. I got one of those sixteen ounce pop bottles with a rubber hose on it. I wiggle it down them. If you pour it down them and they ain't swallowing, it will strain them to death. I would wiggle it on his tongue, and when he went to swallowing, I would lay it to him. But when he quit, I quit. I would give him about a pint. I don't know what it does to them.

Like many in the stock-raising communities of Southern Appalachia, it should be noted that both Hubert Ward and J.D. McKinney often consult with each other about various conditions affecting their cattle. In a passage highlighted in the previous chapter subsection concerning *stagger*, Ward comments about an effective cure for *buckeye poisoning* which he learned from J.D. McKinney. In the following passages, Hubert Ward describes his experiences with the symptoms and treatment of *buckeye poisoning* more fully. Ward comments:

Now I had one big old black steer. I had to get Stacy to come down here and bury it. That damn thing got poisoning on buckeye and came off of there and jumped in that pond and drowned himself. They go crazy, and then they will finally get down and there is where he will lay. If you don't do something, he will die. That baccer juice will sure bring them up. You can run that hose down there, and pour that tobacco

juice [about a pint] and in fifteen minutes or less, they'd be back on their feet. As long as you boiled it, a pint would cure one cow.”

In the following interview excerpt, Max (ML) and Virginia Lewis (VL) describe the symptoms of *buckeye poisoning* similarly to the informants highlighted in the passages above. Significantly, both Virginia and Max also recommend therapies that use various types of oil. Similar treatments for *buckeye poisoning* are also indicated by Ralph McKinney, Steve Wilson, and Hubert Ward. Max and Virginia Lewis comment in the following interview excerpt:

ML: It [buckeyes] won't kill them, they will just kill themselves. Buckeyes won't kill them, but it makes them dizzy and they kill themselves. We had two Holstein heifers up here you know, and they ate buckeyes.

VL: If they eat too much of that buckeye, they will break their neck a beating. That one [a cow] got it one time and I had a young'un go up here to the store and get some eggs and linseed or liniment oil.

ML: You can doctor them and get them over it.

VL: But she got better. If you doctor them early, you can save them.

ML: You can give them any kind of oil to keep their bowels loose. When it has been in there so long, their entrails get all caked up.

VL: You know, lard is pretty good. And mix it with eggs and pour it down them. It's really just like in a dog. That will kill the poison.

William Cable discusses *buckeye poisoning* in the forthcoming passage. For treatment of the affliction, Cable suggests an ingenious technique which utilizes a goose quill to puncture the stomach of cattle. Cable confers that gas forms in the stomach as a consequence of ingesting buckeyes, and this procedure releases the “bloat.” Significantly, the procedure describe by Cable is similar to rumen trocharization, which is a minor surgical technique commonly performed by large animal veterinarians. Formally trained veterinarians typically use a large trochar needle, instead of a goose quill, to alleviate bloat in cattle. In the following passage, Cable also describes ways to limit livestock exposure to

buckeye trees and gives his opinion about squirrels knowing which side of the buckeye is poisonous. Cable comments:

You hear a lot of times the cattle get buckeye poisoning. They would eat the buckeyes and get poisoned that way. If you knew where the buckeyes was, you would cut the trees down, or fence them out to keep the cows from getting it. They say buckeyes is poison because a squirrel will eat half of a buckeye and his belly won't hold no more, and he leaves the other half. I've seen people peel it and eat it. It's bitter. That's why people don't eat them, they are bitter. But as far as the other half being poison, there ain't nothing to it. But they [buckeyes] will swell them up real bad. They used a quill. They'd put a quill in the side there. Well, I know'd of them using a goose feather, and they would cut it off where it would be sharp, and maybe three to four inches long. You would get it through [the skin] and into there [the stomach] and it would let that gas off. You'd pull the quill out because the feather would be holler, and when you got it in there, the gas would come out. You had to use something that was holler so the gas could get out. We used it like a needle; something that could puncture the hide. It used to be in the sixties [1960s], they tried to keep the needles away from people. You couldn't hardly get a needle to give your animal a shot, because if they [veterinarians] done it, they got ten dollars.

Steve Wilson gives additional insight into *buckeye poisoning* in the following passage. Unlike Cable, Wilson demonstrates that he believes only one half of the buckeye is poisonous. He also describes the periodicity, symptoms, and treatments for the illness consistently with other informants. Wilson comments:

The cattle won't eat buckeyes unless they are starving. A squirrel will only eat the good half of a buckeye. A cow doesn't know what part to eat. When cows eat them, they will stagger like on dope or like they are drunk. They will just beat themselves to death. When they first go down, take salty meat grease, black coffee, or whiskey and pour it down them to flush everything out of the stomach. If it gets in the bloodstream, it [the cow] doesn't have a chance.

Like Steve Wilson, Len Moretz says that the occurrence of buckeye poisoning is dependent on nutritional status. In concordance with other informants, Moretz recommends using a laxative to treat the affliction. Specifically, he suggests using mineral oil to help alleviate the toxicity. Moretz comments:

I have problems with buckeye sometimes. It depends on how much grass you got. It depends on whether all the grass is gone and if it forces them to go back into the woods. If you catch them in time, and can pour mineral oil or something down them and get their bowels to move, they will get over it. Anything to loosen their bowels up and get it to moving. The book [*The Peoples Home Stock Book*] recommends linseed oil and something. Any kind of oil that you could get it to go through them.

In this final passage on the subject of *buckeye poisoning*, Ronnie Townsend gives a detailed description of an experience he thinks he may have had with buckeye poisoning very recently [October 2013]. Once again, the materia medica suggested by Townsend to treat this toxicity are very similar to those suggested by other informants. Townsend comments:

Well, we had a steer maybe last week. He had evidently gotten poisoned, either on buckeyes, and somebody was telling me that if they eat enough acorns it will poison them. But he had lost a lot of weight when I saw him there. I knew something bad

had happened because he was scouring real bad. I bet he had lost 200 pounds. And I was actually telling Jack about it, and he said I bet he is poisoned. So we caught him up and we drenched him and actually poured some whiskey down him and coffee and raw eggs and beat them up and stirred them up and drenched him and poured it down. We took a long neck bottle, a big bottle with a long neck and held his head up and just poured it down him. So we used the coffee and raw eggs and whiskey and he got okay. I've seen them poisoned with buckeyes and they will fall over down. And you can pour the moonshine down them and in just a few minutes, it will cause them to get up. It will cause them to scour, but evidently, that pushes the poison out someway, and they really get diarrhea you know. And that will clean their system out. I used probably a half gallon of coffee and eight or ten eggs and poured that down him. And probably put better than a quart of whiskey down him.

**Table 6.5.** Therapeutics mentioned for the treatment of *buckeye poisoning*.

<i>Materia medica</i>	Use (animal type)	Dose/Admin.	Action	Informant Source
“Buttermilk and Lamp Oil”	<i>buckeye poisoning</i> (Bovine)	1:1 ratio/Oral Drench	Unknown	RM
“Black Coffee and Chewing Tobacco”	<i>buckeye poisoning</i> (Bovine)	Unknown/Oral Drench	Unknown	RM, JD
“Boiled Tobacco”	<i>buckeye poisoning</i> (Bovine)	Pint/Oral Drench	Unknown	HW, JD
Mineral Oil	<i>buckeye poisoning</i> (Bovine)	Unknown/Oral Drench	Loosen Bowels	HW, LM
“Wine, Beer, Liquor, or Moonshine”	<i>buckeye poisoning</i> (Bovine)	Unknown/Oral Drench	Diuretic	JE, LM, SW, RT
Linseed or Liniment Oil	<i>buckeye poisoning</i> (Bovine)	Unknown/Oral Drench	Keeps Bowels Loose	ML, VL, LM
“Lard mixed with Raw Eggs”	<i>buckeye poisoning</i> (Bovine)	Unknown/Oral Drench	Keeps Bowels Loose	ML, VL
“Salty Meat Grease”	<i>buckeye poisoning</i> (Bovine)	Unknown/Oral Drench	Flush everything out of stomach	SW
Black Coffee	<i>buckeye poisoning</i> (Bovine)	Unknown/Oral Drench	Flush everything out of stomach	SW
“Coffee mixed with Raw Eggs”	<i>buckeye poisoning</i> (Bovine)	Quart of Coffee and 8-10 eggs/Oral Drench	Cause Scours	RT

## Conclusion

The stock-men and women of the Blue Ridge possess a rich and complex knowledge of poisonous plants that commonly cause toxicity in both cattle and horses of the region. This chapter has presented a wealth of ethnotoxicological knowledge essential to community based animal healthcare in the southern mountains. Specifically, there were seven semantic domains of poisonings outlined here which were mentioned by a large percentage of informants. These “domains” are a taxonomic linguistic key that allows outsiders from an

etic perspective to have a better understanding of the folk medical system [specifically plant toxicities in this chapter]. The informants indicate that poisonings were not diagnosed or distinguished from each other based solely on evidence of symptomatic signs. Other types of empirical understanding, such as knowing the periodicity of an affliction, or a plant's ecology, appear to be even more epistemologically significant to stock-raisers' ways of knowing about toxic conditions. Stock-men and women of the Blue Ridge have developed a keen awareness of the ecological landscape through a lifetime of experience on mountain farms. This experience has bestowed a knowledge gained from both empirical reasoning and the folk transmission of beliefs and skills. In essence, the ethnotoxicological knowledge of stock-raisers presented here represents a crossroads where empirical understanding, scientific knowledge, and oral history converge in formation of an ethnomedical belief system vital to the maintenance of animal husbandry and health along the Blue Ridge.

Nineteen distinct *materia medica* were suggested by the informants for treatment of various poisonings affecting livestock. The informants mentioned a variety of remedies for these toxicities which represent several modes of potential therapeutic action. However, as outlined previously, only one treatment each was mentioned for both *wild cherry poisoning* and *snuffweed poisoning*. The *materia medica* suggested for the treatment of many poisonings are by in large locally attainable throughout the study area. A significant portion of these therapeutics are locally produced and none require specialized equipment for administration. Although many of the treatments recommended by the informants will certainly appear bizarre to many readers, the mechanisms of these therapies are likely pharmacologically similar to those suggested by Hardin et al., (2003). Interestingly, it is likely that many therapies mentioned were once used by formally trained veterinarians

practicing throughout the region in the not so distant past. Therefore, it is plausible that an epistemological relationship exists between formally trained practitioners, published veterinary literature on plant toxicology, and the ethnotoxicological veterinary knowledge of the population surveyed. The epistemological influence of, nor a description of this relationship was determined through my research, however, the crossroads of knowledge described here should certainly be recognized as an important contributor to rural animal health, as should the current influence of earlier animal healthcare theories which were once prominent in formalized veterinary medicine.

From the ethnographic data presented in this chapter, it is evident that most of the informants believe in and continue to use their so called “old-time remedies” for poisonings. Some of the traditional remedies they suggest have likely been passed down from generation to generation, by word of mouth, or by imitation. However, it is likely that other remedies have epistemological origins in published materials, extension agents, or veterinarians. Some of these remedies are likely effective, while others may do harm, or nothing at all. Many such treatments are likely regarded to be “old-time remedies” by the informants; however, folk classification schemes oftentimes fail to take into account the origin of such knowledge, whether biomedical, formalized, empirical, or “traditional” in nature. Not surprisingly, stock-raisers of the region appear to gather empirical data about animal illness and rely on their own knowledge and skill to address a myriad of farm animal toxicities. In short, stock-raiser’s knowledge of veterinary medicine represents a type of “peoples’ science,” which inherently contributes to the overall health and welfare of animals in many mountain communities.

## Chapter 7: Conclusion

The findings of this project indicate that a complex, yet practical folk veterinary medical system has historically met a variety of animal healthcare needs in Southern Appalachia. Furthermore, it is obvious that a community based, ethnoveterinary healthcare system continues to function in an important capacity throughout the area today. Yet instead of understanding the detrimental and/or beneficial consequences of this vernacular veterinary knowledge system, institutionalized veterinary medicine has looked the other way, rarely acknowledging the existence of such know-how, or alternatively criticizing its logic. However, it is obvious that the knowledge stock-keepers possess is a first line of defense in preventing or treating animal illness. In order to address animal healthcare problems more holistically, we [DVMs and others concerned about human, animal, and environmental health] must at minimum have an appreciation for, and understanding of the veterinary practices of lay people.

I assert that a pluralistic type of veterinary medicine exists in the southern mountains and elsewhere throughout rural America, whereby formally trained veterinarians and folk practitioners work side-by-side to treat and prevent a plethora of animal maladies with a wide variety of materia medica and techniques. My research indicates that access to formally trained large animal veterinarians is limited throughout the Blue Ridge, and I argue that neither population of practitioners [folk nor formally trained] can adequately and effectively address animal healthcare problems in the absence of the other. In this concluding chapter, I will highlight some important findings of the study, expose areas where further research is

warranted, and offer some potentially useful applications of my research in the region and beyond.

### **Veterinary Medical Pluralism**

Formally trained veterinary practitioners are at work in the study area, however, many small holder livestock keepers do not have reasonable access to large animal veterinarians or cannot afford their services. Circumstances surrounding this problem of accessibility are complex. First, many large animal veterinarians are retiring in the region, or they are shifting their efforts toward small animal clinical work due to its lucrative financial potential and ease of practice. Second, graduates of veterinary institutions are overwhelmingly choosing to practice small animal medicine in our post-domestic society, and those wanting to practice as large animal veterinarians follow opportunities afforded by regions with much higher livestock densities than found in the southern highlands. As a result of animal demographics in the Blue Ridge, large animal DVMs oftentimes have sprawling practice radiuses, have long response times, or may be unable to respond at all during an emergent veterinary crisis. Furthermore, transportation in the mountains is hindered by winding and often indirect roads, while concentrated populations of people and animals are dispersed throughout valley communities that are commonly separated by expansive mountainous terrain.

Compounding the aforementioned issues associated with transportation, topography, and demographic dispersal, small holder stock-keepers commonly have little in the form of financial capital to pay for the skyrocketing costs of veterinary services. Additionally, their herds are generally small and are often composed of individual animals that are commonly not of enough monetary value to justify remittance of veterinary fees. Therefore, stock-keepers of the region address many animal healthcare problems themselves, or rely on the

knowledge and skills of other community based animal healthcare agents [other stock-keepers (or) ethnoveterinarians/folk veterinarians]. According to the sample population, formally trained farm animal veterinarians are typically used by farmers as a last resort, or in instances when a stock-keeper or folk veterinarian is unsure of their abilities to solve a problem. Indeed, formally trained veterinarians are important animal healthcare providers in the Blue Ridge; however, it appears as though ethnoveterinarians also play a substantial role in the health of small herds.

### **Community Based Animal Healthcare**

The informal, community based animal healthcare system described in my study functions on the expertise of two agents: The animal-keeper and the folk veterinarian. In fact, most stock-keepers apparently respond to animal healthcare needs in the community from time to time, and all ethnoveterinarians appear to be stock-keepers themselves. If a mountain farmer is unable to solve an animal healthcare problem independently, typically, he will consult with another farmer, and sometimes even summon that individual's assistance. However, there are also individuals in the community that work more consistently as folk veterinarians, and certain stock-keepers get a reputation for being more willing and/or more able to respond when a problem arises. Some stock-keepers have developed specialized skills for performing surgeries and handling reproductive maladies, while others are more skilled at medical intervention or prevention. Many elders are venerated for their knowledge of animal illnesses, and these individuals may be consulted over the phone or in person if a veterinary issue arises.

The practice of folk veterinarians is not condoned by state veterinary medical boards, and by law, informally trained practitioners are not allowed to accept currency for their

services. It appears as though the majority of community based animal healthcare agents in the Blue Ridge work on motives of reciprocity rather than those of financial gain, and most informants stated they rarely expected financial compensation for their services. However, some informants did admit to accepting money, which was commonly slipped in a shirt pocket or sent in the mail. In general, it was noted that livestock community members work together to solve many animal healthcare problems, and stock-keepers are less concerned about financially capitalizing on their neighbor's misfortunes than formally trained veterinarians seem to be.

The knowledge, practices, and beliefs of folk veterinarians in the Blue Ridge is of diverse epistemological roots. For instance, conceptualizations of and treatments for various animal illnesses can be traced to previously popular medical theories [e.g., humoral, miasmatic, etc], biomedical knowledge, "traditional" understanding, or simply empiricism. The practices of formally trained veterinarians have certainly informed lay veterinarians in the region, and in a broader sense, "traditional" veterinary knowledge and skill has certainly informed "modern," official veterinary practice, as well. It is also apparent that various forms of media have informed folk veterinarians; however, word of mouth, imitation, apprenticeship, and experiential learning on the farm appear to be more important forms of knowledge acquisition.<sup>58</sup> Cross cultural transmission of knowledge and belief amongst Germans, English, Scotts-Irish, Native Americans, Africans, and other ethnic groups is also

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<sup>58</sup> In fact, many formally trained veterinarians [myself included], would indicate that they have largely learned how to effectively practice veterinary medicine through experience in the field and/or in association with veterinary mentors through a formalized type of apprenticeship [eg. preceptorships, internships, or mentorship with an elder veterinarian]. Scholarly knowledge lays a foundation for formally trained practitioners, however, such knowledge alone does not make one a proficient veterinarian. This holds especially true as new graduates of veterinary institutions attain surgical, diagnostic, and many other skills, including those of communication, with practical experience.

evident in the study area; however, analysis of this phenomena was not the focus of my scholarship.

Folk veterinarians hold a diversity of beliefs and practice a variety of methods that are foreign to formally trained practitioners. Indeed, vernacular veterinary terminology and techniques can be very similar to, or quite different when compared and contrasted with more official veterinary lexicons and practices. For instance, many folk veterinarians follow the astrological signs when weaning and slaughtering, or when performing surgeries like castration. Ethnoveterinarians commonly believe in illnesses which are dismissed or not even well understood by official veterinary medicine [e.g., *hollow head*, *hollow horn*, *hollow tail*, *fall poisoning*, *snuffweed poisoning*, and *stagger*]. Folk veterinarians practice a wide variety of medico-religious beliefs as well. For example, informants of this study commonly cited that reading verses from the Bible could be used to stop blood, and my review of literature indicates that other supernatural conceptualizations of animal illness [witchery, spells, and transfer of maladies] are not uncommon, at least historically speaking.

Although we know little about folk veterinary practices and community based animal healthcare in the southern United States, this study demonstrates that stock-keepers and folk veterinarians play an undeniable role in maintaining animal health and welfare along the Blue Ridge. That said, it should be noted that such animal healthcare agents can also have detrimental effects on animal well-being. At a minimum, these individuals respond in emergency situations and mitigate a variety of veterinary maladies; however, many informants sadly indicated that veterinary know-how is becoming less prevalent throughout the study area which in turn makes such folk knowledge less effective at dealing with emergent crises. Informants largely blame this modern phenomena on the fact that few youth

are growing up in agrarian settings, since it is evident that ethnoveterinary knowledge is obtained through experiential learning on the farm and through informal exchange with culturally specialized individuals. However, as many livestock rearing elders pass away, and few younger individuals grow up on the farm to take their place, the fate of community based animal healthcare and local ethnoveterinary knowledge in southern Appalachia remains uncertain.

### **Local Knowledge of Illness**

Stock-keepers of the region identified the following illnesses of cattle and horses: *pink-eye*, *shipping fever*; *milk fever*; *mastitis*; *scours*; *worms*; *colic*; *hollow head*; *hollow horn*; and *hollow tail*. Furthermore, a variety of folk terms were utilized by the informants to identify or describe afflictions involving external parasites, lameness, wounds and bleeding in both species, however, it proved difficult to place these maladies into specific semantic domains. Instead, etic categorizations were chosen by the author to outline and analyze ethnographic data collected on these rather non-specific afflictions and their associated vernacular lexicon.

Most of the illnesses that were identified by stock-keepers are also recognized by official practitioners of veterinary medicine. Informant conceptualizations of recognized maladies are sometimes in line with those of formally trained veterinarians; however, in other instances, folk conceptualizations and terminology are vastly different. For instance, many informants were aware that *pink-eye* is a bacterial infection transmitted to cattle by face flies, and importantly, stock-keepers were generally aware that control of the disease is achieved by eliminating the arthropod vectors involved in transmission. Also, many informants conceptualized *shipping fever* as an infectious disease of cattle and horses spread from close

contact during the intermingling of stressed animals at sale barns and auctions. For both *pink-eye* and *shipping fever*, informants seemed aware of biological germ theory, had some level of pathophysiological understanding, and recommended using modern antibiotics or control measures [much akin to official veterinarians] to treat or prevent these conditions. Similarly, both illness terms utilized by stock-keepers in the region [*pink-eye* and *shipping fever*] are also employed by formally trained veterinarians to identify seemingly similar pathologies in bovids and equids.

On the contrary, some informant conceptualizations of animal illnesses are very different from more formalized ways of understanding disease processes. The folk illnesses of *hollow horn*, *hollow head*, *hollow tail*, and *stagger* are all examples of maladies that are not even recognized by official veterinary medicine. For instance, *hollow tail* was believed by some informants to be caused by a “worm in the tail” and was treated by surgical removal of the “worm” and application of a poultice and bandage. However, formally trained veterinarians familiar with *hollow tail* consider the “worm” to actually be the dorsal ligament of the tail, and instead, believe the condition is a consequence of malnutrition. Informants also demonstrated diverse ways of understanding some other disease processes that would likely seem very foreign to most formally trained practitioners. For instance, some informants believed that lameness can be caused by a worm in the foot. The author [a DVM] is not aware of any lameness that has such an etiology. Also, vernacular terminology like the word “gravel” were used to identify abscesses in horses by some informants, and a variety of seemingly bizarre medicines were utilized to treat several afflictions of lameness. Interestingly, many informants seemed aware that milk fever was caused by low calcium in cattle, however, a spectrum of treatments were recommended, ranging from supplementing

calcium near parturition, the intravenous administration of calcium in acute cases, and pumping the udder [via a teat cannula] with air and subsequently tying off the teat with a string to supposedly cause the cow to retain calcium from the milk.

### **Ethnoveterinary Toxicology**

In addition to the aforementioned illnesses, informants also commonly identified several livestock maladies associated with the ingestion of toxic plants. These conditions are termed “poisonings” in the local vernacular, and included: *milk poisoning*, also known as *fall poisoning*; *ivy poisoning* or *laurel poisoning*; *snuffweed poisoning*; *wild cherry poisoning*; *wild parsnip poisoning*; *stagger*; and *buckeye poisoning*. Much of the vernacular terminology utilized to identify these “poisonings” is easily transposed or is interchangeable with more formalized veterinary terminology. For example, laurel poisoning, wild cherry poisoning, and buckeye poisoning are all terms that would likely be familiar to large animal DVMs. On the contrary, as mentioned previously, *stagger* is a folk toxicity that is not recognized by official veterinary medicine, while *ivy poisoning* is a vernacular term synonymous with *laurel poisoning* [a condition caused by *Kalmia latifolia* or *Rhododendron* spp.]. *Milk poisoning* or *fall poisoning* is caused by the *Eupatorium rugosum* plant; however, since this malady is not nearly as common as it was in the past, I surmise that many farm animal veterinarians would likely be unfamiliar with both of these vernacular terms. Furthermore, the etiology of *snuffweed poisoning* was not identified by the researcher, and I was unable to find any veterinary literature equating “snuffweed” to a specific plant species. Additionally, stock-keepers indicated another toxicity termed *wild parsnip poisoning*; however, no informant was able to identify this plant for me, and this vernacular term is apparently utilized to identify a variety of plant species across the nation.

Stock-keepers of the region demonstrate complex methods of identifying and controlling *poisonings*, and utilize many methods of treatment that likely have analogous therapeutic mechanisms to those commonly prescribed by formally trained veterinarians. Clinical symptoms of plant toxicities are similar for many floral species, and it is therefore difficult to distinguish between “poisonings” based solely on physical exam findings. Instead, both stock-keepers and official veterinarians alike utilize knowledge of plant periodicity [seasonality], or simply observe livestock ingesting the plants and/or note the presence of flora in the environment. Such ecological knowledge can be utilized by farmers to mitigate livestock exposure to poisonous plants by controlling where livestock graze during certain seasons, fencing livestock out of problematic areas, removing noxious species from pastures, and by providing adequate nutrition to prevent hunger.

In addition to preventing “poisonings,” stock-keepers apparently utilize a variety of readily available *materia medica* to treat these maladies. Like many official veterinarians, folk veterinarians commonly use alcoholic beverages to treat plant toxicities. Indeed, such therapies bind enzymatic receptors in the liver that would otherwise process the toxins into potentially harmful metabolites. The administration of alcohol gives the kidneys additional time to clear some toxins before they evoke more harm during and after metabolism. Furthermore, many plant toxins cause suppression of the central nervous system and heart, and stimulants like coffee and tobacco were commonly mentioned by informants to treat these symptoms. In addition to these treatments, several types of oils were recommended to help lubricate and increase gastrointestinal motility, which according to many informants [and formally trained veterinarians], helps affected animals rapidly pass toxic plant material in the feces.

## **Materia medica**

Stock-keepers indicated use of 83 distinct materia medica to treat the 13 “illnesses<sup>59</sup>” and seven “poisonings” of livestock outlined in previous chapters. However, only 24 of these medicines were suggested by three or more informants, and many suggested using the same materia medica for a variety of illnesses. Many of these therapeutics are also well documented as human folk medicines of the region, and much akin to prescribing behaviors of human folk doctors, specific dosing regimes appear unimportant to practitioners of ethnoveterinary medicine. Materia medica suggested by the informants were divided by the author into the following categories: “Edible and/or Botanical Medicines;” “Alcoholic Beverages;” “Oils and Petroleum Products;” commercially available “Pharmaceuticals;” and “Miscellaneous Medicines” which could not be easily categorized and grouped.

Twenty-five “Edible and Botanical Medicines” were suggested for the treatment of nearly every affliction mentioned. Tobacco was not only the most commonly suggested botanical medicine, but it was also mentioned more than any other materia medica and is apparently utilized to treat at least six different illnesses and *poisonings* of both cattle and horses. Furthermore, this Native American botanical can be readily cultivated in the Blue Ridge, and importantly, the tobacco plant does have real therapeutic potential [especially for parasites] despite its potentially toxic side-effects. Other edible and/or botanical medicines that were commonly mentioned include salt, animal fats, coffee, flour, pepper, and eggs.

Sixteen commercially available “Pharmaceuticals” were mentioned as animal medicines by nearly every informant. However, only three pharmaceutical products were mentioned by more than a few stock-keepers. These medicines included: Ivermectin [an

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<sup>59</sup> The 13 illnesses mentioned here include three etic categorizations of “wounds and bleeding,” “external parasites,” and “lameness.”

anthelmintic and external parasiticide]; intra-mammary antibiotics [antibiotics used for mastitis]; and oxytetracycline [a broad spectrum antibiotic]. Ivermectin was mentioned by more than two-thirds of the informants for the treatment of worms. Intra-mammary antibiotics were suggested by many informants for the treatment of mastitis, while oxytetracycline was mentioned for the treatment of *pink-eye*, *scours*, lameness, and *shipping fever*.

Eight types of “Oils or Petroleum Products” were mentioned by stock-keepers for the treatment of 14 farm animal afflictions. Only kerosene, mineral oil, cooking oil, motor oil, and linseed oil were mentioned by three or more informants. Kerosene is apparently utilized for the treatment of lameness, lice, *hollow tail*, *mastitis*, and *wounds* in both bovine and equine animals. Mineral oil was mentioned for the treatment of *colic* and *buckeye poisoning*, while motor oil was suggested for the treatment and prevention of flies and lice in cattle. Cooking oil and linseed oil were mentioned as treatments for *ivy poisoning*, *laurel poisoning*, *wild parsnip poisoning*, *wild cherry poisoning*, and *buckeye poisoning*. I should note that the use of oils might be therapeutic in certain applications; however, both kerosene and motor oil have very real potential to cause toxicity and illness themselves.

Six “Alcoholic Beverages” were suggested by the informants, and interestingly, this category of materia medica is apparently utilized in the study area only for the treatment of plant toxicities. Many stock-keepers indicated that any type of alcohol could be utilized to treat a variety of “poisonings,” and many individuals commented that these materia medica were very effective. White liquor or “moonshine” was mentioned for the treatment of *fall poisoning*, *ivy poisoning*, *laurel poisoning*, *wild parsnip poisoning*, *stagger*, and *buckeye poisoning*, while beer, wine, whiskey, and brandy were suggested as therapies for a variety of

plant toxicities. As was mentioned previously, formally trained veterinarians commonly use alcoholic beverages to treat toxicities, however, unlike ethnoveterinarians, DVMs often administer these substances intravenously.

Finally, I will mention the 23 “Miscellaneous Medicines” that were suggested for the treatment of 17 specific livestock afflictions in both bovine and equine stock. Medicines in this category could not be easily grouped with the aforementioned materia medica. Not surprisingly, turpentine was the most commonly suggested materia medica placed in this category. Turpentine is apparently utilized to treat a wide array of maladies ranging from *scours*, lameness, wounds, *maggots*, *hollow tail*, and *colic* in farm animals. Sulfur was also commonly mentioned for the treatment of wounds and grubs [external parasites] while interestingly, manure was recommended by two informants for the treatment of *colic* or *pink-eye*. Also, a variety of other materia medica that are labeled for other unrelated purposes [eg. Clorox,<sup>TM</sup> Sevin Dust,<sup>TM</sup> and Raleigh Liniment] are included in this category.

### **Literature Review and Identifying Areas for Additional Research**

An extensive review of literature yielded only a few significant works concerning folk veterinary medicine in the southern Appalachian region. These works included Rosemary Brookman’s article “Folk Veterinary Medicine in Upper East Tennessee” (1977), several articles in the Foxfire Books and Magazine, Patricia Kirkemide’s *History of Veterinary Medicine in Tennessee* (1976), and volumes six and seven of *The Frank C. Brown Collection of North Carolina Folklore*, (Brown & Hand, 1964). Due to this project’s timeline, it was not the focus of my research to review archival materials and primary sources; however, a thorough exploration of such literature would likely yield additional data on the subject. If a book were to be written on ethnoveterinary medicine in the southern

mountains, a lengthy analysis of such materials would be required to assist in the validation process of all findings, both mine and those of others.

On the contrary, a wealth of ethnoveterinary research and developmental data was located from around the world for this project. This corpus of literature was instrumental in formulating the researcher's theoretical perspectives and methodological approaches, and many of these readings provided the framework upon which this study was conducted. Significantly, Martin, Mathias, & McCorkle's, *Ethnoveterinary Medicine: An Annotated Bibliography of Community Animal Healthcare* (2001), provided the researcher with a perspective on the global distribution of folk veterinary research. Upon review of this bibliography and many other works concerning ethnoveterinary medicine, I realized that the majority of research on the subject focused on the Global South and few researchers have examined vernacular veterinary medical systems in the developed world. Scholars of ethnoveterinary medicine have traditionally focused their attention toward the developing world due to the potential of applying such research to help meet the animal healthcare needs of small-holder livestock keepers. However, I argue that stock-keepers in many regions of the developed world, including small producers in the southern Appalachian mountains of the United States, are lacking reasonable access to formally trained veterinarians. Furthermore, even when official practitioners are prevalent in an area or region, folk veterinary practices continue to function [at least in some capacity] to meet a wide variety of animal healthcare needs. Therefore, ethnoveterinary research in the developed world deserves much more attention than it has historically received.

In addition to expanding the focus of ethnoveterinary research, scholarship exploring the socio-economic factors contributing to DVM [VMD or other equivalents] accessibility is

also warranted in First Worlds. The circumstances surrounding widespread large animal veterinary shortages throughout rural America are complex, and few research initiatives have focused on exposing issues associated with this increasingly pressing problem. Apparently, small-scale and organic livestock producers are some of the most underserved populations in the developed world, and if these sustainable producers are to be valued in an era of industrial agriculture, research must be conducted to help address the veterinary healthcare problems they face.

### **Applying the Research**

Although imperfect, I assert that a local knowledge of animal health and its associated folk practitioners of veterinary medicine can be harnessed to provide practical, low input, safe, efficacious, and sustainable solutions to animal healthcare problems in the Blue Ridge and beyond. Ethnoveterinary know-how is a significant force throughout the world, and its position within a pluralistic spectrum of veterinary medicine in rural America has been considered by few. I argue that instead of marginalizing such folk knowledge or discrediting its logic and practitioners, formally trained veterinarians should instead aim to collaborate with ethnoveterinarians through a variety of participatory methodologies. For instance, folk practitioners are keepers of a vast corpus of local veterinary knowledge which is well adapted to the local environment and socio-economic conditions of the region. Much of this knowledge has been formulated through complex processes of empirical logic, while other skills and beliefs have been passed from generation to generation and have stood the test of time. Without doubt, much of the knowledge of stock-keepers and folk veterinarians would be a beneficial addition to the “book knowledge” of veterinary school graduates. On the contrary, it should also be noted that the knowledge and skill of formally trained practitioners

is of great benefit to folk veterinarians, and a viable avenue for the transmission of such know-how should be created to help facilitate the sharing of both formal and informal knowledge types. Much akin to evidence gathered by ethnoveterinary developmental programs in the Global South, techno-blended educational approaches like those proposed here have great potential in places like Southern Appalachia.

Additionally, much of the *materia medica* utilized by folk practitioners has real therapeutic potential, however, many of these medicines might also have detrimental effects on animal health and welfare. Therefore, if ethnoveterinary medicines are to be utilized, marketed, and condoned outside of the local context, extensive safety and efficacy studies should be conducted by qualified researchers. That said, it is without doubt that a knowledge of readily available and efficacious medicines is of great benefit to stock-keepers and their animals, especially during an emergent crisis or when pharmaceuticals are not available. Many folk veterinary medicines are also acceptable therapeutics in organic livestock production, and most are less harmful to the environment than commercial equivalents. Additionally, folk veterinary *materia medica* are typically cost effective, whereas pharmaceuticals oftentimes are not. Ethnoveterinary medicinal research can certainly be utilized to broaden the therapeutic arsenal of both official and informally trained veterinary practitioners in the region and beyond.

In addition to harnessing the potential of ethnoveterinary medicines and the sharing of veterinary knowledges, participatory developmental techniques could be utilized to help strengthen community based animal healthcare systems in the region. Perhaps DVMs and elder folk veterinarians could work together to train a “new crop” of community based para-veterinary personnel. With a restructuring of veterinary practice laws, these individuals

could perhaps work side by side with certified veterinary technicians to provide a wide variety of essential farm animal healthcare services in targeted underserved areas while also receiving appropriate financial compensation for their time and supplies. With technology-blended approaches like these, folk veterinarians would be better equipped to safely and effectively address a wider variety of animal healthcare problems, and furthermore, DVMs could become more culturally competent individuals within the population they serve. Obviously, some type of unprecedented solution is needed to confront widespread veterinary inaccessibility in the region.

Finally, I argue that instead of looking the other way and failing to acknowledge the presence of folk veterinary medical systems in the southern mountains and elsewhere, formally trained veterinarians could better serve livestock raising communities by becoming more familiar with vernacular veterinary belief, practice, and lexicon. Such efforts to attain cultural competency, rather than propagation of a cultural ignorance would certainly aid veterinarians in effectively communicating with their clients. Additionally, I assert that culturally competent veterinarians would also be more likely to gain the trust of their clients, and thereby improve overall compliance with medical recommendations. Furthermore, a DVM that respects and understands a stock-keeper's beliefs and practices is more likely to gain the repeated patronage of that individual, in addition to attaining a good reputation in the community.

It is evident that ethnoveterinary medical practices in the Blue Ridge are diverse, efficacious, and commonly utilized by stock-keepers to meet a variety of animal healthcare needs. Little is known about folk veterinary beliefs, practitioners, and terminology in southern Appalachia; however, this study provides evidence for a rich and applicable corpus

of knowledge, lexicon, and skill that functions throughout the region. In conjunction with the practices of formally trained veterinarians, ethnoveterinarians provide important animal healthcare services to many livestock raising communities of the southern mountains. Folk knowledge of animal health helps enable localized sustainable agriculture practices in the region, and in turn fosters a humane, healthy, small-scale production of livestock and their products. Instead of focusing entirely on biomedical solutions to animal healthcare problems, veterinarians and other concerned individuals should begin to contemplate culture's role at the human-animal-environmental interface, and thereby consider the position folk veterinary medical systems occupy within a pluralistic spectrum of healthcare knowledge.

## References

- A.V.M.A., The American Veterinary Medical Association. (2013). Final Report. U.S. Veterinary Workforce Study: Modeling Capacity Utilization.
- A.V.M.A., The American Veterinary Medical Association. (2015). Veterinarian's oath. Retrieved from: <https://www.avma.org/KB/Policies/Pages/veterinarians-oath.aspx>
- A.V.M.A., The American Veterinary Medical Association. (2015). Report: Appalachia's rural counties have veterinary shortage. *Journal of the American Veterinary Medical Association*. 247(12), 1351.
- Adams, D. C., & Salois, M. J. (2010). Local versus organic: A turn in consumer preferences and willingness-to-pay. *Renewable Agriculture and Food Systems*, 25(04), 331-341.
- Allen, R. C. (2009). *The British industrial revolution in global perspective*. Cambridge, UK: Cambridge University Press.
- Allison, L. (1950). Folk beliefs collected in southeastern Illinois. *The Journal of American Folklore*, 63, (249), 309-324.
- Alves, R. R. N., & Rosa, I. L. (2012). *Animals in traditional folk medicine: Implications for conservation*. Heidelberg, Germany: Springer.
- Anderson, K. (1998). Animal domestication in geographic perspective. *Society and Animals*, 6, (2), 119-136.
- Anderson, M. (1996). The interpenetration of endogenous and exogenous in Saami Reindeer Raising. In McCorkle, C. M., Mathias, E., & Schillhorn Van Veen, T. W.. *Ethnoveterinary research & development* (pp. 91-102). London, UK: Intermediate Technology Publications.

- Anglin, M. K. (2002). *Women, power, and dissent in the hills of Carolina*. Champaign, IL: University of Illinois Press.
- Anjaria, J. (1996). Ethnoveterinary pharmacology in India: Past, present, and future. In McCorkle, C. M., Mathias, E., & Schillhorn Van Veen, T. W.. *Ethnoveterinary research & development* (pp. 137-147). London: Intermediate Technology Publications.
- Arkow, P. (1998). Application of ethics to animal welfare. *Applied Animal Behaviour Science*, 59(1), 193-200.
- Armatage, G., & Blaine, D. P. (1877). *Every man his own horse doctor*. London, UK: F. Warne and Co.
- Atlas, R. M., & Maloy, S. R. (2014). *One health: People, animals, and the environment*. Washington, D.C.: American Society for Microbiology.
- Bairaclli-Levy, J. (1991). *The complete herbal handbook for farm and stable*. London, UK: Faber and Faber.
- Baker, S. (1993). *Picturing the beast: Animals, identity, and representation*. Manchester, UK: Manchester University Press.
- Barnum, H. L. & Hunt, U. (1832). *The American farrier*. Philadelphia, PA: Uriah Hunt.
- Beaver, P. D. (1986). *Rural community in the mountain south*. Lexington, KY: University Press of Kentucky.
- Beaver, P. D. (1992). *Rural community in the Appalachian south*. Prospect Heights, IL: Waveland Press Inc.
- Beaver, P. D., Ballard, S. L., & Hicks, B. R., Appalachian State University, Elk Knob Community Heritage Organization, & Appalachian Regional Commission. (2013).

- Voices from the headwaters: Stories from Meat Camp, Tamarack (Pottertown) & Sutherland, North Carolina.* Boone, NC: Center for Appalachian Studies.
- Beecher, H.W., & Hooper, E.J. (ed.) (1846, January 1). Communications: Hollow horn. *Western Farmer and Gardener*, 101.
- Behringer B. (1994). Health care services in Appalachia. In Cuoto R.A., Simpson N.K., Harris G, (eds.), *Sowing seeds in the mountains: Community- based coalitions for cancer prevention and control.* (pp. 62-80). Bethesda, MD: National Cancer Institute; 1994.
- Behringer, B., & Friedell, G. H. (2006). Appalachia: where place matters in health. *Preventing Chronic Disease*, 3 (4). Retrived from <http://www.ncbi.nlm.nih.gov>
- Bengis, R. G., Kock, R. A., & Fischer, J. (2002). Infectious animal diseases: the wildlife/livestock interface. *Revue Scientifique Et Technique (international Office of Epizootics)*, 21, (1), 53-65.
- Bennedsgaard, T. W., Thamsborg, S. M., Vaarst, M., & Enevoldsen, C. (2003). Eleven years of organic dairy production in Denmark: herd health and production related to time of conversion and compared to conventional production. *Livestock Production Science*, 80, 121-131.
- Berry, W. (1978). *Unsettling of America: Culture and agriculture.* New York, NY: Avon Books.
- Berry, W. (1992). The pleasures of eating. In Curtin, D. W., & Heldke, L. M.. *Cooking, eating, thinking: Transformative philosophies of food* (pp. 374-379). Bloomington, IN: Indiana University Press.

- Bhandari, D. P. & Wollen, T. S. (2008). Community-based animal health care. *Annals of the New York Academy of Sciences*, 1149, 9-11. doi: 10.1196/annals.1428.054
- Bierer, B. W. (1955). *A short history of veterinary medicine in America*. East Lansing, MI: Michigan State University Press.
- Billings, D. B., & Blee, K. M. (2000). *The road to poverty: The making of wealth and hardship in Appalachia*. Cambridge, UK: Cambridge University Press.
- Boyer, J., Monast, J., & Moretz, R. (1993). Toward a sustainable economy in western North Carolina: Ashe and Watauga Counties. Report prepared for the Z. Smith Reynolds Foundation, Sustainable Development Program, Appalachian State University.
- Boyer, J. C. (2006). Reinventing the Appalachian commons. *Social Analysis*, 50(3), 217-232.
- Brisebarre, A. M. (1996). Tradition and modernity: French shepherds' use of medicinal bouquets. In McCorkle, C. M., Mathias, E., & Schillhorn Van Veen, T. W., *Ethnoveterinary research & development* (pp. 76-90). London: Intermediate Technology Publications.
- Brokensha, D., Warren, D. M., & Werner, O. (1980). *Indigenous knowledge systems and development*. Washington, D.C: University Press of America.
- Brookman, Rosemary (1977). Folk veterinary medicine in upper east Tennessee. In Olson, T. & Cavender, A. P. (Eds.), *A Tennessee folklore sampler: Selections from the Tennessee folklore society bulletin, 1935-2009* (pp. 60-69). Knoxville, TN: The University of Tennessee Press.
- Brown, F. C., & Hand, W. D. (1964). *Popular beliefs and superstitions from North Carolina*. Durham, NC: Duke University Press.
- Brunvand, J. H. (1998). *The study of American folklore: An introduction*. New York: Norton.

- Bulliet, R. W. (2005). *Hunters, herders, and hamburgers: The past and future of human-animal relationships*. New York, NY: Columbia University Press.
- Catley, A., Blakeway, S., & Leyland, T. (2002). *Community-based animal healthcare: a practical guide to improving primary veterinary services*. London, UK: ITDG Publishing.
- Cavender, A. P. (2003). *Folk medicine in southern Appalachia*. Chapel Hill, NC: University of North Carolina Press.
- Clark, N. (2007). Animal interface: The generosity of domestication. In Cassidy R. & Mullin M. (eds). *Where the wild things are now: Domestication reconsidered*. pp. 49-70. New York, NY: Berg Press.
- Clutton-Brock, J. (ed.) (2015). *The walking larder: Patterns of domestication, pastoralism, and predation*. London, UK: Routledge Press.
- Collins, K. C., & Hunter, L. (1999). *Foxfire 11: The old homeplace, wild plant uses, preserving and cooking food, hunting stories, fishing, and more affairs of plain living*. New York, NY: Anchor Books.
- Cox, P., & Balick, M. (1994). The ethnobotanical approach to drug discovery. *Scientific American*, 271, 82-87.
- Crellin, J. K., Philpott, J., & Bass, A.L.T. (1990). *Herbal medicine past and present*. Durham, NC: Duke University Press.
- Dadd, G. H. (1851). *The American reformed cattle doctor*. Boston, MA: J.G. Tilton and Company.
- Daly, D. C. (1983). The National Cancer Institute's Plant Collections Program: Update and implications for tropical forests. In Plotkin, M. & Famolare, L. (Eds.), *Sustainable*

- harvesting and marketing of rain forest products*. Covelo, CA and Washington, DC: Island Press for Conservation International
- Davis, D. E. (2000). *Where there are mountains: an environmental history of the southern Appalachians*. University of Georgia Press.
- Davis, R. G. (2011). *Animals, diseases, and human health: Shaping our lives now and in the future*. Santa Barbara, CA: Praeger Press.
- Diamond, J. M. (1998). *Guns, germs, and steel: The fates of human societies*. New York, NY: W.W. Norton & Co.
- Diamond, J. M. (2002). Evolution, consequences and future of plant and animal domestication. *Nature*, 418, 700-707.
- Dick, W. (1869). *Occasional papers on veterinary subjects*. Edinburgh, Scotland: Blackwood Press.
- Dimitri, C., & Greene, C. (2000). Recent growth patterns in the US organic foods market. USDA: *Agriculture information bulletin*, 777, 98-103.
- Dimitri, C., & Oberholtzer, L. (2009). *Marketing US organic foods: Recent trends from farms to consumers*. Washington, DC: US Dep. of Agriculture, Economic Research Service.
- Doherty, M. L. (2001). The folklore of cattle diseases: A veterinary perspective. *Béaloides*, 69, 41-75.
- Dolins, F. L. (1999). *Attitudes to animals: Views in animal welfare*. Cambridge, UK: Cambridge University Press.
- Dorland, W. N. (2007). *Dorland's illustrated medical dictionary*. Philadelphia, PA: Saunders.
- Eaton, A.W. (ed.) (1860). *The Dairy Farmer*, 1 (1).

- Edwards, J. D. (2004). The role of the veterinarian in animal welfare-a global perspective. In *Global conference on animal welfare: An OIE initiative: proceedings* (pp. 27-32). Paris, France: Office international des epizooties.
- Eller, R. D. (1982). *Miners, millhands, and mountaineers: Industrialization of the Appalachian South, 1880-1930*. Knoxville, TN: University of Tennessee Press.
- Evans, E. R., Kileff, C., & Shelley, K. (1982). *That was all we ever knew: Herbal medicine, a living force in the Appalachians*. Durham, NC: Medical History Program and the Trent Collection, Duke University Medical Center.
- Evans-Pritchard, E. E. (1940). *The Nuer*. Oxford, UK: Oxford University Press
- Fair, W. C. (1916). *The people's home library: The people's home stock book*. Cleveland, OH: R.C. Barnum.
- The Farmers Cabinet*. (1837, June 1) Observer—No. 8. 1(22) 337-339.
- Faulkner, C. H. (1978). *Glimpses of Southern Appalachian folk culture: Papers in memory of Norbert F. Riedl*. Knoxville, TN: Tennessee Anthropological Association.
- Fitzgerald, D. K. (2003). *Every farm a factory: The industrial ideal in American agriculture*. New Haven, CT: Yale University Press.
- Ford, T. R. (Ed.). (1967). *The southern Appalachian region: A survey*. University Press of Kentucky.
- Garret, R. (1978). Traditional Southern Appalachian Dental Practices. In Faulkner, C. H. (Eds.), *Glimpses of Southern Appalachian folk culture: Papers in memory of Norbert F. Riedl* (pp. 56-68). Knoxville, TN: Tennessee Anthropological Association.
- Ghirotti, M. & Woudyalew, M. (1996). Madosha: Traditional castration of bulls in Ethiopia. . In McCorkle, C. M., Mathias, E., & Schillhorn Van Veen, T. W. (Eds.),

- Ethnoveterinary research & development* (pp. 116-120). London: Intermediate Technology Publications.
- Gilbert, M., Xiao, X., Chaitaweesub, P., Kalpravidh, W., Premashthira, S., Boles, S., & Slingenbergh, J. (2007). Avian influenza, domestic ducks and rice agriculture in Thailand. *Agriculture, Ecosystems, Environment* 119, 409-415.
- Glassie, H. (1969). *Pattern in the material folk culture of the eastern United States* (No. 1). University of Pennsylvania Press.
- Gold, H. S., & Moellering, R. J. (1996). Antimicrobial-drug resistance. *The New England Journal of Medicine*, 335(19), 1445-53
- Gorham, M. E. (1988, May 6). Cow disease lore: Fact and fiction. *Moscow-Pullman Daily News*. Retrieved from <https://news.google.com/newspapers?nid=2026&dat=19880506&id=kTMuAAAAIIBAJ&sjid=3NAFAAAAIBAJ&pg=6464,793849&hl=en>
- Grandin, B., & Young, J. (1996). Collection and use of ethnoveterinary data in community based animal health programmes. In McCorkle, C. M., Mathias, E., & Schillhorn-van-Veen, T. W. (Eds.), *Ethnoveterinary research & development* (pp. 207-228). London, UK: Intermediate Technology Publications.
- Green, E. C. (1978). A modern Appalachian folk healer. *Appalachian Journal*, 6(1), 2-15.
- Günther, F. A. (1847). *New manual of homoeopathic veterinary medicine: Or the homeopathic treatment of the horse, the ox, the sheep, the dog, and other domestic animals*. Boston, MA: Otis Clapp, School Street.

- Hand, W. D. (1980). *Magical medicine: The folkloric component of medicine in the folk belief, custom, and ritual of the peoples of Europe and America*. Berkeley: University of California Press.
- Hardeng, F., & Edge, V. L. (2001). Mastitis, Ketosis, and Milk Fever in 31 Organic and 93 Conventional Norwegian Dairy Herds. *Journal of Dairy Science*, 84 (12), 2673-2679.
- Hardin, J. W., Brownie, C. F., & North Carolina Agricultural Research Service. (2003). *Plants poisonous to livestock and pets in North Carolina*. Raleigh, NC: North Carolina Agricultural Research Service, North Carolina State University.
- Hare, T. S., & Barcus, H. R. (2007). Geographical accessibility and Kentucky's heart-related hospital services. *Applied Geography*, 27(3), 181-205.
- Harper, G. C., & Makatouni, A. (2002). Consumer perception of organic food production and farm animal welfare. *British Food Journal*, 104(3/4/5), 287-299.
- Hatch, E. (2003). Delivering the goods: Cash, subsistence farms, and identity in a Blue Ridge county in the 1930s. *Journal of Appalachian Studies*, 9(1), 6-48.
- Haverson J., & Harner E. J. (2004). An analysis of disparities in health status and access to care in the Appalachian region. Washington, DC: Appalachian Regional Commission.
- Henlein, P. C. (1959). *Cattle kingdom in the Ohio Valley, 1783-1860*. Lexington, KY: University of Kentucky Press.
- Hewson, C. J. (2003). What is animal welfare? Common definitions and their practical consequences. *The Canadian Veterinary Journal*, 44(6), 496.
- Hinsdale, M. A., Lewis, H. M., and Waller, S. (1995). *It comes from the people: Community development and local theology*. Temple University Press.

- Hohman, J. G. (1877). *The long lost friend: Containing mysterious and invaluable arts and remedies for man as well as animals with many proofs of their virtue and efficacy in healing diseases*. Lancaster, PA: Publisher not identified.
- Horrigan, L., Lawrence, R. S., & Walker, P. (2002). How sustainable agriculture can address the environmental and human health harms of industrial agriculture. *Environmental health perspectives*, 110(5), 445.
- Howard, P. H., & Allen, P. (2010). Beyond organic and fair trade? An analysis of ecolabel preferences in the United States. *Rural Sociology*, 75(2), 244-269.
- Howell, B. J., & Stonich, S. (2003). *Folklife along the Big South Fork of the Cumberland River*. Knoxville, TN: University of Tennessee Press.
- Hudson, C. M. (1976). *The Southeastern Indians*. Knoxville, TN: University of Tennessee Press.
- Hunter, E. D. (1962). Folk remedies on man and beast. *Kentucky Folklore Record*, 8, 97-108.
- Hurn, S. (2012). *Humans and other animals: Cross-cultural perspectives on human-animal interactions*. London, UK: Pluto Press.
- Hussain, A., Khan, M. N., Iqbal, Z., & Sajid, M. S. (2008). An account of the botanical anthelmintics used in traditional veterinary practices in Sahiwal district of Punjab, Pakistan. *Journal of Ethnopharmacology*, 119(1), 185-190.
- Huttlinger, K., Schaller-Ayers, J. and Lawson, T. (2004). Health care in Appalachia: A population-based approach. *Public Health Nursing*, 21, 103-110.
- Ibrahim, M. (1996). Ethnotoxicology among Nigerian agropastoralists. In McCorkle, C. M., Mathias, E., & Schillhorn Van Veen, T. W. (Eds.), *Ethnoveterinary research & development* (pp. 54-59). London, UK: Intermediate Technology Publications.

- IFOAM. International Federation of Organic Agricultural Movements. (2005). Definition of Organic Agriculture. Retrieved from <http://www.ifoam.bio/en/organic-landmarks/definition-organic-agriculture>
- Inhorn, M. C., & Wentzell, E. A. (2012). *Medical anthropology at the intersections: Histories, activisms, and futures*. Durham, NC: Duke University Press.
- Jackson, J. F. (ed). (1903). Hollow horn-Hollow tail. *The southern planter*, 64. Retrieved from <https://digitalarchive.wm.edu>
- Jackson, J. F. (ed). (1905). Hide-bound. *The southern planter*, 66. Retrieved from <https://digitalarchive.wm.edu>
- Jamison, P. (2015). *Hoedowns, reels, and frolics: Roots and branches of Southern Appalachian dance*. Champaign IL: University of Illinois Press
- Jarrell, T. T. (2011). "Sheep!" Sheep production in Watauga and Ashe Counties in North Carolina from the 1930s to now. *Appalachian Journal*, 38(4), 362-407.
- Jewett, P. (1835). *The New England farrier: Or farmers' receipt book*. Boston, MA: Charles Gaylord.
- Katerere, D. R., & Luseba, D. (2010). *Ethnoveterinary botanical medicine: Herbal medicines for animal health*. Boca Raton, FL: Taylor & Francis Publishers.
- Keene, R. B. (1971). Folklore of fifty years in veterinary medicine (1920-1970). *Veterinary Medicine, Small Animal Clinician*. 66(7), 684-686.
- Kirkemide, P. B. (1976). *History of veterinary medicine in Tennessee*. Nashville: Modern Typographers.
- Knowlson, J. C. (1846). *The Yorkshire cattle doctor and farrier*. London, UK: Longman, Brown, Green, and Longmans.

- Koch, J. (2001). Hollow tail not a real disease. Retrieved from <http://www.semissourian.com/story/41184.html>
- Kohler-Rollefson, I., (1996). Traditional management of camel health and disease in North Africa and India. In McCorkle, C. M., Mathias, E., & Schillhorn Van Veen, T. W. (Eds.). *Ethnoveterinary research & development* (pp. 129-136). London UK: Intermediate Technology Publications.
- Kriebel, D. W. (2007). *Powwowing among the Pennsylvania Dutch: A traditional medical practice in the modern world*. University Park, PA: Penn State Press.
- Lam, S. K., & Chua, K. B. (2002). Nipah virus encephalitis outbreak in Malaysia. *Clinical Infectious Diseases: An Official Publication of the Infectious Diseases Society of America*, 34, 48-51
- Lans, C., Turner, N., Khan, T., Brauer, G., & Boepple, W. (2007). Ethnoveterinary medicines used for ruminants in British Columbia, Canada. *Journal of Ethnobiology and Ethnomedicine*, 3(11), 1-22.
- Lans, C., Turner, N., Khan, T., & Brauer, G. (2007). Ethnoveterinary medicines used to treat endoparasites and stomach problems in pigs and pets in British Columbia, Canada. *Veterinary Parasitology*, 148, 325-340.
- Larrère, C., & Larrère, R. (2000). Animal rearing as a contract?. *Journal of Agricultural and Environmental Ethics*, 12(1), 51-58.
- Lawrence, E. A. (1996). I stand for my horse: Equine husbandry and healthcare among some North American Indians. In McCorkle, C. M., Mathias, E., & Schillhorn Van Veen, T. W. (Eds.), *Ethnoveterinary research & development* (pp. 60-75). London, UK: Intermediate Technology Publications.

- Lawrence, E. A. (1998). Human and horse medicine among some Native American groups. *Agriculture and Human Values: Journal of the Agriculture, Food, and Human Values Society*, 15(2), 133-138.
- Lawson, A. (1825). *The Modern Farrier; or, the art of preserving the health and curing the diseases of horses, dogs, oxen, cows, sheep, & swine*. London, UK: Newcastle Publishing.
- Leach, H. M. (2003). Human domestication reconsidered. *Current Anthropology* 44(3), 349-368.
- Leach, H. M. (2007). Selection and the unforeseen consequences of domestication. In Cassidy R. & Mullin M. (Eds.), *Where the wild things are now: Domestication reconsidered* (pp. 71-99). New York, NY: Berg Press
- Lin, J. H., & Panzer, R. (1994). Use of Chinese herbal medicine in veterinary science: History and perspectives. *Revue Scientifique Et Technique*, 13(2), 425-432.
- Long, L. M. (2010). Culinary tourism and the emergence of an Appalachian cuisine: Exploring the foodscape of Asheville, NC. *North Carolina Folklore Journal*, 57(1), 4-19.
- Loyd, W. B. (1995). Folklore, foodways, and the supernatural. In Walker, B. (Ed.), *Out of the ordinary: Folklore and the supernatural*. Logan, UT: Utah State University Press.
- McCallister, R. (1999). *Frontier medicine: Practitioners, practices, and remedies on America's first frontier, Northeast Tennessee, 1770-1850*. Piney Flats, TN: Rocky Mount Historical Association.
- McCorkle, C. M. (1986). An introduction to ethnoveterinary research and development. *Journal of Ethnobiology*, 6(1), 129-149.

- McCorkle, C. M. (1989). Toward a knowledge of local knowledge and its importance for agricultural RD&E. *Agriculture and Human Values: Journal of the Agriculture, Food, and Human Values Society*, 6(3), 4-12.
- McCorkle, C. M. (1995). Back to the future: Lessons from ethnoveterinary RD&E for studying and applying local knowledge. *Agriculture and Human Values*, 12(2), 52-80.
- McCorkle, C. M., & Martin, M. (1998). Parallels and potentials in animal and human ethnomedical technique. *Agriculture and Human Values*, 15(2), 139.
- McElroy, A., & Townsend, P. K. (2009). *Medical anthropology in ecological perspective*. Boulder, CO: Westview Press.
- McGehee, N. G., & Meares, A. C. (1998). A case study of three tourism-related craft marketing cooperatives in Appalachia: Contributions to community. *Journal of Sustainable Tourism*, 6(1), 4-25.
- Maliki-Bonfiglioli, A., Diallo, Y., & Fagerberg-Diallo, S. (1996). Veterinary science and savvy among the Ferlo FulBe. In McCorkle, C. M., Mathias, E., & Schillhorn Van Veen, T. W. (Eds.), *Ethnoveterinary research & development* (pp. 246-254). London, UK: Intermediate Technology Publications.
- Marks, J. (2003). *What it means to be 98% chimpanzee: Apes, people, and their genes*. Berkely, CA: University of California Press.
- Martin, M., Mathias, E., & McCorkle, C. M. (2001). *Ethnoveterinary medicine: An annotated bibliography of community animal healthcare*. London, UK: Intermediate Technology Publications
- Mathias, E., McCorkle, C., & Schillhorn Van Veen, T. (1996). Introduction: Ethnoveterinary research and development. In McCorkle, C. M., Mathias, E., &

- Schillhorn Van Veen, T. W. (Eds.), *Ethnoveterinary research & development* (pp. 1-23). London, UK: Intermediate Technology Publications.
- Mathias, E., & McCorkle, C. M. (2004). Traditional livestock healers. *Revue Scientifique Et Technique (international Office of Epizootics)*, 23(1), 277-84.
- Mathias-Mundy, E., Wahyuni, S., Murdiati, T., & Suparyanto, A. (1992). Traditional animal health care for goats and sheep in West Java: A comparison of three villages. Working paper No. 139 of the Small Ruminant Collaborative Research Program/Indonesia.
- Mez-Mengold, L. (1971). *A history of drugs*. Totowa, NJ: Parthenon Publishing.
- Michell, A. (1993). *History of the healing professions: Parallels between veterinary and medical history*. Wallingford, UK: CAB International.
- Milnes, G. (2007). *Signs, cures, & witchery: German Appalachian folklore*. Knoxville, TN: University of Tennessee Press.
- Morris, T. F., & Keilty, M. T. (2006). *Alternative health practices for livestock*. Ames, IA: Blackwell Publishing.
- Nfi, A. N., Mbanya, J. N., Ndi, C., Kameni, A., Vabi, M., Pingpoh, D., Yonkeu, S., Moussa, C. (2001). Ethnoveterinary medicine in the northern provinces of Cameroon. *Veterinary Research Communications: An International Journal Publishing Topical Reviews and Research Articles on All Aspects of the Veterinary Sciences*, 25(1), 71-76.
- Noske, B. (1997). *Beyond boundaries: Humans and animals*. London, UK: Black Rose Press.

- Olson, T. (1992). Agricultural Themes in Appalachian Folk Songs:" The Farmer is the Man Who Feeds Them All". *Journal of the Appalachian Studies Association*, 4, 59-68.
- Olson, T. (1998). *Blue Ridge Folklife*. Jackson, MS: University Press of Mississippi.
- Osbaldiston, W. A. (1792). *The British sportsman: Or, nobleman, gentleman, and farmer's dictionary*. London, UK: Printed for the proprietor, by J. Stead.
- Otto, J. S. (1983). The decline of forest farming in southern Appalachia. *Forest & Conservation History*, 27(1), 18-27.
- Pacific Rural Press. (1913). Cause of "loss of cud." 86(2). Retrieved from <http://cdnc.ucr.edu/cgi-bin/cdnc?a=d&d=PRP19130712.2.30>
- Pacific Rural Press. (1917). Hollow tail in cows. 94(16). Retrieved from <http://cdnc.ucr.edu/cgi-bin/cdnc?a=d&d=PRP19171020.2.33>
- Palmer, C. (1997). The idea of the domesticated animal contract. *Environmental Values* 6(4), 411-426.
- Patz, J. A., Epstein, P. R., Burke, T. A., & Balbus, J. M. (1996). Global climate change and emerging infectious diseases. *Journal of the American Medical Association*, 275(3), 217-223.
- Perezgrovas, R. (1996). Sheep husbandry and healthcare among Tzotil Maya shepherdesses. In McCorkle, C. M., Mathias, E., & Schillhorn-van-Veen, T. W. (Eds), *Ethnoveterinary research & development* (pp.167-178). London UK: Intermediate Technology Publications.
- Pollan, M. (2006). *The omnivore's dilemma: A natural history of four meals*. New York, NY: Penguin Press.

- Pudup, M. B. (1990) The limits of subsistence: Agriculture and industry in central Appalachia. *Agricultural History*, 64(1), 61-89.
- Quirke, V. & Gaudilliere, J.-P. (2008). The era of biomedicine: Science, medicine, and public health in Britain and France after the Second World War. *Medical History*, 52(4), 441–452.
- Randolph, V. (1964). *Ozark magic and folklore*. New York, NY: Dover Publications.
- Rinzler, C. A. (1979). *The dictionary of medical folklore*. New York, NY: Crowell Publishing.
- Reperant, L., & Osterhaus, A., (2014). The human-animal interface. In Atlas, R. M., & Maloy, S. R. (Eds.), *One health: People, animals, and the environment* (pp. 33-52). Washington, DC: American Society for Microbiology.
- Roepke, D. (1996). Traditional and re-applied veterinary medicine in East Africa. In McCorkle, C. M., Mathias, E., & Schillhorn Van Veen, T. W. (Eds.), *Ethnoveterinary research & development* (pp. 256-264). London: Intermediate Technology Publications.
- Rubel, A. J. (1964). *The epidemiology of a folk illness: Susto in Hispanic America*. Indianapolis, IN: Bobbs-Merrill.
- Russell, N. (2002). The wild side of animal domestication. *Society and Animals*, 10(3), 285-302.
- Russell, N. (2007). The domestication of anthropology. In Cassidy, R., Mullin, M. H., & Wenner-Gren Foundation for Anthropological Research. (2007). *Where the wild things are now: Domestication reconsidered*. Oxford, UK: Berg Press.
- Sahlins, M. D. (1972). *Stone age economics*. Piscataway, NJ: Transaction Publishers.

- Sahota, A. (2010). The global market for organic food & drink. *The world of organic agriculture: statistics and emerging trends 2008*, 53.
- Sansoucy, R. (1994). Livestock: A driving force for food security and sustainable development. Working Paper. Rome, Animal Production and Health Division (AGA) of FAO.
- Sansoucy, R., Jabbar, M. A., Ehui, S., & Fitzhugh, H. (1995). Keynote Paper. The contribution of livestock to food security and sustainable development. *World*, 32(75.0), 13-1.
- Schillhorn Van Veen, T. (1996). Sense or nonsense? Traditional methods of animal disease prevention and control in the African Savannah. In McCorkle, C. M., Mathias, E., & Schillhorn Van Veen, T. W. (Eds.), *Ethnoveterinary research & development* (pp. 25-36). London: Intermediate Technology Publications.
- Schwabe, C. (1993). Interaction between human and veterinary medicine: Past, present and future. *Advancement for veterinary science: The bicentenary symposium 1991*. 119-133.
- Schwabe, C. (1996). Ancient and modern veterinary beliefs, practices and practitioners among Nile Valley peoples. In McCorkle, C. M., Mathias, E., & Schillhorn Van Veen, T. W. (Eds.), *Ethnoveterinary research & development*, (pp. 37-45). London, UK: Intermediate Technology Publications.
- Serpell, J. A. (2003). Anthropomorphism and anthropomorphic selection-beyond the "cute response". *Society and Animals*, 11(1), 83-100.
- Shanklin, E. (1985). Sustenance and symbol: Anthropological studies of domesticated animals. *Annual Review of Anthropology*, 14, 375-403

- Shanklin, E. (1996). Care of cattle versus sheep in Ireland: South-west Donegal in the early 1970s. In McCorkle, C. M., Mathias, E., & Schillhorn Van Veen, T. W. (Eds.), *Ethnoveterinary research & development* (pp. 179-192). London: Intermediate Technology Publications.
- Shifflett, C. A. (1991). *Coal Towns: Life, work, and culture in company towns of southern Appalachia, 1880-1960*. Knoxville, TN: University of Tennessee Press.
- Shirlaw, L. (1940). A short history of Ayurvedic veterinary literature. *Indian journal of veterinary science*. 10, 1-39.
- Singer, M., & Baer, H. A. (2007). *Introducing medical anthropology: A discipline in action*. Lanham, MD: AltaMira Press.
- Slikkerveer, L. J., Brokensha, D., Dechering, W., & Warren, D. M. (1995). *The cultural dimension of development: Indigenous knowledge systems*. London, UK: Intermediate Technology Publications.
- Sloan, W. B. (1869). *Sloan's complete farrier and cattle doctor*. Chicago, IL: Walker & Taylor.
- Sutherland, M., Webster, J., & Sutherland, I. (2013). Animal Health and Welfare Issues Facing Organic Production Systems. *Animals*, 3(4), 1021-1035.
- Stem, C., (1996). Ethnoveterinary R&D in production systems. In McCorkle, C. M., Mathias, E., & Schillhorn Van Veen, T. W. (Eds.), *Ethnoveterinary research & development* (pp. 193-206). London, UK: Intermediate Technology Publications.
- Swabe, J. (1999). *Animals, disease and human society: Human-animal relations and the rise of veterinary medicine*. London, UK: Routledge

- Tabuti, J. R., Dhillon, S. S., & Lye, K. A. (2003). Ethnoveterinary medicines for cattle (*Bos indicus*) in Bulamogi County, Uganda: Plant species and mode of use. *Journal of Ethnopharmacology*, 88, 2-3.
- Torrey, E. F., & Yolken, R. H. (2005). *Beasts of the earth: Animals, humans, and disease*. New Brunswick, N.J: Rutgers University Press.
- USDA, United States Department of Agriculture. (1916). *Farmers' cyclopedia: Abridged Agricultural records in seven volumes*. Garden City, N.Y: Doubleday, Page & Co.
- USDA. (1930). Agricultural census, 1930. Washington, DC: United States Department of Agriculture.
- USDA. (1969). Agricultural census, 1969. Washington, DC: United States Department of Agriculture.
- USDA. (2012). Agricultural census, 2012. Washington, DC: United States Department of Agriculture.
- Vaarst, M., Lund, V., Roderick, S., & Lockeretz, W. (Eds.). (2004). *Animal health and welfare in organic agriculture*. Cambridge, MA: CABI Publishing.
- Valle, P. S., Lien, G., Flaten, O., Koesling, M., & Ebbesvik, M. (2003). Herd health and health management in organic versus conventional dairy herds in Norway. *Livestock Science*, 112, 123-132.
- Waggoner, T. (1984). *The poor man's medicine bag: Home remedies and helpful hints*. Knoxville, TN: Kingdom Press.
- Walker, B. (1995). *Out of the ordinary: Folklore and the supernatural*. Logan, UT: Utah State University Press.

- Walker, M. (2000). *All we knew was to farm: Rural women in the upcountry South, 1919 - 1941*. Baltimore, MD: Johns Hopkins University Press.
- Warner, A., Warner, F., Warner, J., & Epstein, J. S. (1984). *Traditional American folk songs: From the Anne & Frank Warner Collection*. Syracuse, NY: Syracuse University Press.
- Warner, A., & Warner, F. (2000). *Nothing seems better to me*. West Chester, PA: Appleseed Recordings.
- Wigginton, E. (1973). *Foxfire 2*. Garden City, NY: Anchor Press/Doubleday.
- Wigginton, E. (1975). *Foxfire 3*: Garden City, NY: Anchor Press.
- Wigginton, E. (1977). *Foxfire 4*. Garden City, NY: Anchor Books.
- Wigginton, E., & Bennett, M. (1984). *Foxfire 8*. Garden City, NY: Anchor Press/Doubleday.
- Wigginton, E., & Gillespie, P. F. (1972). *The foxfire book*. Garden City, NY: Anchor Press/Doubleday.
- Williams, J. A. (2002). *Appalachia: A history*. Chapel Hill, NC: University of North Carolina Press.
- Witeska-Młynarczyk, A. (2015). Critical Medical Anthropology - a voice for just and equitable healthcare. *Annals of Agricultural & Environmental Medicine*, 22(2), 385-389.
- World Health Organization. (2013). *WHO traditional medicine strategy 2014-2023*. Geneva, Switzerland: World Health Organization
- Wynn, S. G., & Fougère, B. (2007). *Veterinary herbal medicine*. St. Louis, MO: Mosby Elsevier.

Yoder, D. (1976). *Hohman and Romanus: Origins and diffusion of the Pennsylvania German powwow manual*. Berkeley, CA: University of California Press.

Yoder, D. (2005). *The Pennsylvania German broadside: A history and guide*. University Park, PA: Penn State University Press for the Library Co. of Philadelphia and the Pennsylvania German Society.

## **Appendix A: Interview Guide**

### Introduction:

Introduce myself. Introduce the project and its importance. State the goals of the project. Ask for permission to include this research in the project, and have informant sign IRB [Institutional Review Board] permission forms. Offer my gratitude.

### Questions of Context:

- 1.) Tell me about what types of animals you have worked with or owned.
- 2.) How long have you been working with these animals?
- 3.) Which animals do you work with today?
- 4.) Which animals do you feel most knowledgeable about?
- 5.) How did you learn what you know about animal care?

### Questions Concerning Folk Veterinary Knowledge:

Questions 1-4 should determine the interviewee's expertise, and thus should determine the manner in which upcoming questions will be posed in reference to farm animals. This section of the interview will focus on the informant's expressed species specific knowledge [e.g. cattle, equids, pigs, sheep, goats, dogs, cats, or fowl]. The interrogative template below will be utilized to formulate the questions of this section.

- 6.) What types of diseases are you aware of in these animals? Are there any older names for these diseases?
- 7.) How do you know if these animals have specific diseases?
- 8.) How do you treat these diseases? Do you know any old time remedies for these diseases?
- 10.) Do you continue to use any of these remedies for these animals? Why or why not?
- 11.) Are there any ways to prevent these diseases?
- 12.) What are some of the basics people should know about when taking care of these animals?
- 13.) Do you find certain diseases at some elevations/locations and not at others [examining the ecology of disease]?
- 14.) Do any breeds/species do especially well in this area? If so, why?
- 15.) Are there any species/breeds difficult to raise here? If so, why?
- 16.) Are you aware of any local breeds?
- 17.) Has animal health improved in your lifetime? If so, why and how?
- 18.) Has animal health deteriorated in your lifetime? If so, why and how?

### Historical Questions:

- 19.) When were the services of a licensed veterinarian first available in this area? Who was the first licensed veterinarian in the area?
- 20.) What do you think about modern/licensed veterinarians and the services they offer?
- 21.) Do you use modern/licensed veterinarians? For what purposes?
- 22.) In the past [specify time period], say that you didn't know what was wrong with your animal: Who would help you in this area with advice/treatments [specific name]? Why did these people have expertise? Would this person(s) be consulted by others?

Reflective Questions:

- 23.) How has animal care changed over your lifetime? Please give some specifics [eg. treatments, general husbandry, surgery, disease prevention].
- 24.) Why do you think it has changed in this way?
- 25.) Have veterinarians changed the way you take care of animals?
- 26.) Has literature you've read changed the way you take care of animals? If so, how?
- 27.) Did you learn how to take care of animals from any classes you've taken [eg. agriculture classes in school, extension seminars, etc]?
- 28.) Have extension services changed the way you take care of animals? If so, how?
- 29.) Do you think this traditional knowledge of animal care is valuable today?
- 30.) Do you think these traditional ways of animal healing are being passed on to future generations? Why or why not?

Background Information:

- 31.) What is your full name?
- 32.) Where were you born?
- 33.) How old are you?
- 34.) What is your education?
- 35.) What is/was your occupation?
- 36.) How long has your family lived in this area?
- 37.) Where were your mother and father born?
- 38.) Why did your family settle here?
- 39.) Are there any animals that have been especially important to the livelihood of your family [historically speaking]?

Conclusion:

Show appreciation. Get picture/contact. Arrange for future meeting if needed. Can you recommend any other individuals with similar knowledge?

**Appendix B: All materia medica mentioned by informants.**

<b>Materia medica</b>	<b>Use</b>	<b>Animal Type</b>	<b>Informant Source</b>
Tobacco	Lice, Calf Itch, <i>Worms, Colic, Wild Parsnip Poisoning, Stagger, Buckeye Poisoning</i>	Bovine, Equine	RM, SW, WC, HW, ML, VL, RT, RS, WB, BL, JD
Ivomec™ (ivermectin)	<i>Worms</i>	Equine, Bovine	RM, RT, RS, HW, JD, RhM, JE, LM, SW, CL
Salt	<i>Pink-eye, Hollow Tail, Wounds, Colic-preventative</i>	Bovine, Equine	RT, JE, ML, VL, SW, JD, LM, CL
Coffee	<i>Ivy Poisoning, Laurel Poisoning; Wild Parsnip Poisoning; Stagger; Buckeye Poisoning, Milk Poisoning, Fall Poisoning</i>	Bovine	JE, ML, JD, RM, RT, SW
Mineral Oil	<i>Colic, Buckeye Poisoning</i>	Equine, Bovine	HW, WB, RT, BL, RS, LM
Kerosene	Lameness, Lice, <i>Hollow Tail, Mastitis, Wounds</i>	Bovine, Equine	SW, LM, WC, CL, RT, WB
Turpentine	<i>Scours, Lameness, Wounds, Maggots, Hollow Tail, Colic</i>	Bovine, Equine	HW, RM, WC, RT, LM, CL
Intra-mammary Antibiotic	<i>Mastitis</i>	Bovine	WC, HW, JE, CL, ML, VL
Alcohol (Drinking)	<i>Scours, Ivy Poisoning, Laurel Poisoning</i>	Bovine	CL, JE, LM, SW, RT
Hog Lard	Wounds, Lice, Flies	Bovine, Equine	RM, WC, CL, WB, RS
“White Liquor” (Moonshine)	<i>Fall Poisoning, Milk Poisoning, Ivy Poisoning, Laurel Poisoning, Wild Parsnip Poisoning, Stagger, Buckeye Poisoning</i>	Bovine	RM, JE, RT, LM, SW

<b>Materia medica</b>	<b>Use</b>	<b>Animal Type</b>	<b>Informant Source</b>
LA-200™ (oxytetracycline 200mg/ml)	<i>Pink-eye, Scours, Lameness</i>	Bovine	RT, JE, SW,JD
Snuff	Bleeding, <i>Worms</i>	Bovine, Equine	ML, VL, WB, RT
Flour	Bleeding, Scours	Bovine, Equine	WB, BL, ML, VL, RT
Motor Oil	Flies, Lice	Bovine	JE, SW, WB, RT
Beer	<i>Ivy Poisoning, Laurel Poisoning, Buckeye Poisoning</i>	Bovine	JE, LM, SW, RT
Wine	<i>Ivy Poisoning, Laurel Poisoning, Buckeye Poisoning</i>	Bovine	JE, LM, SW, RT
Pumped Air	<i>Milk Fever</i>	Bovine	HW, CL, HW, WC
Sulfur	Wounds, Grubs	Bovine, Equine	RM, WC, CL, RT
Pepper	<i>Hollow Tail</i>	Bovine	ML, VL, LM
Cydectin™ (moxidectin)	<i>Worms</i>	Bovine	LM, RT, JE
Cooking Oil	<i>Ivy Poisoning, Laurel Poisoning, Wild Parsnip Poisoning, Wild Cherry Poisoning, Buckeye Poisoning</i>	Bovine, Equine	CL, VL, ML
Eggs	<i>Wild Parsnip Poisoning</i>	Bovine	VL, RT, ML
Linseed Oil	<i>Buckeye Poisoning</i>	Bovine	ML, VL, LM
Penicillin	<i>Pink-eye, Shipping fever, Scours</i>	Bovine	RT, WC
“Water Enema”	<i>Scours, Colic</i>	Bovine, Equine	CL, RS
“Teat Dip” (Iodine)	Lameness, <i>Mastitis</i> (preventative)	Bovine	VL, JE
Diesel Fuel	Lameness, Maggots	Bovine, Equine	LM, BL
Epsom Salt	Lameness, Wounds, <i>Fall Poisoning</i>	Bovine, Equine	RM, RT
Vinegar	Lameness, Wounds, <i>Hollow Tail</i>	Bovine, Equine	RM, CL

<b>Materia medica</b>	<b>Use</b>	<b>Animal Type</b>	<b>Informant Source</b>
“Mushroom Puff Balls”	Bleeding	Bovine, Equine	ML, VL
Lye Soap	Lice, Colic	Equine	RM, BL
“Fly Spray”	Flies	Bovine, Equine	RS, JE
“Feed Additive”	Flies	Bovine	RT, JE
Tramisol™ (levamisole)	<i>Worms</i>	Bovine	HW, JE
Safeguard™ (fenbendazole)	<i>Worms</i>	Bovine, Equine	JE, SW
Copperas	<i>Worms, Scours</i>	Bovine	HW, WC
Manure	<i>Colic, Pink-eye</i>	Equine, Bovine	BL, ML
Whiskey	<i>Stagger, Milk Poisoning, Fall Poisoning</i>	Bovine	RT, SW
Meat Grease/Lard	<i>Buckeye Poisoning, Milk Poisoning, Fall Poisoning</i>	Bovine	SW, VL
Lamp Oil	<i>Lameness, Buckeye Poisoning</i>	Bovine	VL, RM, RS
LA-300™ (oxytetracycline 300mg/ml)	<i>Shipping fever</i>	Bovine	RT
Agrimycin™ (oxytetracycline 200mg/ml)	<i>Shipping fever, Scours</i>	Bovine	HW
Nuflor™ (florfenicol)	<i>Shipping fever</i>	Bovine	RT
“Sulfa Pill”	<i>Scours</i>	Bovine	SW
Ginger	<i>Scours</i>	Bovine	CL
Soda	<i>Scours</i>	Bovine	CL
Raleigh Liniment	<i>Scours, Colic</i>	Bovine, Equine	CL
Pepto-Bismal™	<i>Scours</i>	Bovine	WB
Aspirin	<i>Scours</i>	Bovine	WB
Corn Meal (Browned)	<i>Scours</i>	Bovine	WB
Wheat Flour (Scorched)	<i>Scours</i>	Bovine	RT

<b>Materia medica</b>	<b>Use</b>	<b>Animal Type</b>	<b>Informant Source</b>
Banana	<i>Scours</i>	Bovine	RT
Save-a-Calf™	<i>Scours</i>	Bovine	RT
Gatorade™	<i>Scours</i>	Bovine	RT
Pedialyte™	<i>Scours</i>	Bovine	RT
Clorox™	Lameness	Bovine	RT
Ashes	Lameness (preventative)	Bovine	ML
Biotin™	Lameness (preventative)	Equine	RT
Alum	Wounds, Proud Flesh	Equine	RT
Pickling Lime	Wounds, Proud Flesh	Equine	RT
Bacon Grease	Wounds, Grubs	Equine	RT
“Stove Smut”	Bleeding, <i>Hollow Tail</i>	Bovine, Equine	WB
Pine Tar	Wounds	Bovine, Equine	RT
“Sheep Dip”	Maggots	Bovine	LM
Vaseline™	Warbles	Bovine	CL
“Bean Dust”	Lice	Bovine, Equine	RT
Sevin Dust™	Lice	Bovine, Equine	RT
Baking Soda	<i>Hollow Tail</i> , Not Eating	Bovine	CL
Coal Tar	<i>Mastitis</i>	Bovine	SW
“Bag Balm”	<i>Mastitis</i>	Bovine	SW
Horse Mane	<i>Worms</i>	Equine	WB
Hickory Bark	<i>Worms</i>	Equine	RT
“Worm Pills”	<i>Worms</i>	Bovine	JD
“Amish Colic Concoction”	<i>Colic</i>	Equine	RT
“Sugar Water with Liniment”	<i>Colic</i>	Equine	RT
Castor Oil	<i>Colic</i>	Equine	RS

<b>Materia medica</b>	<b>Use</b>	<b>Animal Type</b>	<b>Informant Source</b>
Apple Brandy	<i>Milk Poisoning</i>	Bovine	WC
Honey	<i>Milk Poisoning</i>	Bovine	WC
Apples	<i>Milk Poisoning</i>	Bovine	WC
“Green Corn”	<i>Milk Poisoning</i>	Bovine	WC
Buttermilk	<i>Buckeye Poisoning</i>	Bovine	RM

**Appendix C: Information on toxic plants derived from Hardin *et al.* (2003).**

<b>Etiology</b>	<b>Common Name</b>	<b>Habitat and Description</b>	<b>Toxic Part of Plant</b>	<b>Periodicity</b>	<b>Animals Affected</b>	<b>Symptoms</b>	<b>Treatment</b>
<i>Eupatorium rugosum</i>	White Snakeroot, Fall Poisoning.	Woods, thickets, roadsides, clearings, pastures.  Herbaceous perennial 1-4 ft tall. Flowers white.	All parts, green or dried.	Late summer and fall when palatable forage is scarce.	Cattle, sheep, hogs, horses, mules, and goats. Nursing calves can be poisoned through the milk without the mother showing symptoms.	Weakness, trembling, quickened and labored respiration, Delayed death in cattle, death may come in 2-3 days for horses.	Nutrients and fluids. Some relief from heart and respiratory stimulants and cathartics.
<i>Kalmia latifolia</i>	Mountain laurel, Mountain ivy, Ivy-bush.	Moist woods or streambanks.  Shrub with leathery, evergreen leaves. Flowers white, rose, purple, or crimson.	Leaves, twigs, and nectar; 0.1-1.5% animal weight (consumption) necessary to cause symptoms	Winter and early spring when other forage is scarce.	Mostly sheep and goats but also cattle and horses	Loss of appetite, repeated swallowing with salivation, nasal discharge, dullness, depression, nausea, vomiting and frequent defecation.	Diuretics, laxatives, nerve stimulants, and gastric sedatives or demulcents. Fluid therapy is essential.
<i>Rhododendron maximum</i>	Rosebay rhododendron, Great-laurel, White-laurel, Great-ivy.	Moist or wet woods and stream banks.  Shrub or small bushy tree to 30ft tall. Leaves evergreen and leathery. Flowers white, rose, or purple.	Leaves, twigs, and nectar. Dose dependent.	Winter and early spring when other forage is scarce.	As in <i>Kalmia latifolia</i> .	As in <i>Kalmia latifolia</i> .	As in <i>Kalmia latifolia</i> .
<i>Prunus serotina</i>	Black cherry, Cherry.	Woods and along fence rows, edges of fields, and often in abandoned fields. Stump sprouts are common.  Tree 15-60 ft. tall at maturity. Leaves alternate, deciduous. Flowers white, small.	Leaves, twigs, bark, or seeds.	Spring, summer, and fall; fresh or wilted leaves due to frost, drought, or broken branches.	Cattle, horses, sheep, goats, dogs, and birds	Peracute course: difficult breathing, vertigo, spasms, convulsions, coma, and sickness of short duration followed by death. A more rapid reaction can occur with few outward signs leading to death within one hour following ingestion. Abortions have occurred in cattle.	Parenteral sodium nitrite and sodium thiosulfate. Oxidizing substances such as potassium permanganate or hydrogen peroxide. Also vigorous respiratory, heart, and nerve stimulants.

<b>Etiology</b>	<b>Common Name</b>	<b>Habitat and Description</b>	<b>Toxic Part of Plant</b>	<b>Periodicity</b>	<b>Animals Affected</b>	<b>Symptoms</b>	<b>Treatment</b>
<i>Cicuta maculata</i>	Spotted water-hemlock, Spotted cowbane, Wild-parsnip	Meadows, thickets, moist banks of streams, springheads, seepage areas, and various habitats where the soil is wet or moist.  Perennial herb, 3-7ft tall with clustered, short and thickened tuberous roots. Flowers small, white.	Mostly the roots and young leaves, although some poison is in all other parts. A very small amount of the root can be fatal to livestock.	Spring—this is one of the earliest plants to appear in the spring, at a time when other forage is scarce. When it grows in wet soil, the entire plant can be pulled up easily and the roots eaten. The plants become large and tough later in the season and are eaten only occasionally at that point.	Cattle mostly, but also horses, sheep, and swine.	Frothing at the mouth, uneasiness, jerking of muscles, stiffening of muscles, dilated pupils and rolling of eyes, periodic spasms, slow and shallow breathing, dizziness, and convulsions, followed by death. Abortions in cattle have been noted.	Practically hopeless in most cases. Avoid heavy grazing in wet areas early in the spring. Some aid may come from intestinal evacuation followed by intestinal astringents and nerve and heart sedatives if the animal does not die within a short time.
Delphinium spp.	Larkspur, Stagger-weed	Rich woods, dry woods, sand hills, rocky slopes, waste places, old fields, roadsides, and around gardens.  Annual or herbaceous perennial with alternate, long-stalked leaves. Flowers blue to purple or nearly white.	Young plant, including the roots; seeds.	Entire growing season, toxicity decreases with maturity.	Cattle; this is one of the most important plants in the western states, but toxicity is uncommon in North Carolina.	Death from respiratory and cardiac failure.	Toxic effects are so rapid that treatment is most likely futile.
<i>Amanthium muscaetoxicum</i>	Crow-poison, Fly-poison, Stagger-grass	Open woods and fields of the coastal plain, rich woods of the piedmont and mountains.  Herbaceous perennial to 3 ft tall with simple stems from a bulb. Flowers white.	Fruit, leaves, and bulb. The highest concentration of alkaloids is found in the bulb.	Spring to late summer and fall; usually eaten only when other forage is not available.	Cattle and sheep.	Frothing at mouth, nausea, vomiting, weakness and staggering, rapid and irregular respiration, lower than normal temperature.	Nerve, heart, and respiratory stimulants.

Etiology	Common Name	Habitat and Description	Toxic Part of Plant	Periodicity	Animals Affected	Symptoms	Treatment
Aesculus spp.	Buckeye, Horse-chesnut	Creek or river banks, rich woods, edges of woods, and pastures.  Trees or shrubs. Leaves opposite, palmately divided with 5-9 leaflets. Flowers appear with the leaves and the fruit has a thick, leathery husk.	Young leaves in spring, and seeds in the fall.	Spring or fall.	Cattle, horses, and pigs.	Weakness, lack of coordination, twitching muscles, paralysis, inflamed mucous membranes, dilated pupils, congestion of visible mucus membranes, severe gastroenteritis, vomiting, depression, stupor, and death from frequent ingestion.	Purgatives; respiratory, heart, and nerve stimulants.

### **Vita**

Shawn Terrell is a practicing veterinarian in the state of North Carolina. He holds a Bachelor of Science [B.S.] degree in Biology from Auburn University in Montgomery, Alabama (2005) and a Doctorate of Veterinary Medicine [D.V.M.] from Auburn University's College of Veterinary Medicine in Auburn, Alabama (2009). While in veterinary school, Shawn formed The Honduras Veterinary Outreach, where he led students and clinicians into La Moskitia, Honduras to provide preventative veterinary services, animal husbandry education, and surgical services to pets and livestock in need. He is currently an adjunct instructor for The Goodnight Family Sustainable Development Program at Appalachian State University in Boone, North Carolina. Shawn presently lives with his beloved dog, Wilson, in Elk Park, North Carolina. In his spare time, he likes to dance, travel, play old-time string-band music, and spend time outdoors. Shawn enjoys gardening, keeping a few livestock around the "homestead," and "porch-sitting" with neighbors, friends, and family.