

PART ONE

**Background of the
American Veterinary
Profession**

The roots of animal disease in colonial America

Animals brought into the relatively disease-free environment of the colonies thrived at first. But later dependence upon this deceptively apparent immunity to disease, coupled with increasing lack of concern over the physical well-being of animals, contributed to the animal disease problem toward the end of the colonial period. Famine and filth were major factors in the increasing toll of animal plagues, and our colonial heritage had demonstrable effects upon the development of the veterinary profession in America.



Reproductions from paintings in oil by Mary Ellen Haggerty presented at the 30th annual meeting of the American Association for the History of Medicine, Williamsburg, Virginia, 1957.

Livestock in the New World

THE NORTH AMERICAN INDIANS had no domestic livestock prior to the coming of the white man, with the possible exception of a few motley dogs descended from wolf-like ancestors, and used by a few tribes for light draft purposes, food, or hunting. The bison was undomesticable, for draft purposes at least, and the great numbers of these animals in the Plains regions would have made domestication as meat animals an unnecessary chore. Nor was animal milk a necessary adjunct to the raising of the younger generation as in more civilized nations. The Aztecs of Central America had a species of dog they revered as a sacred or sacrificial animal, and may have had occasion to attend its accidents and ills, but unlike early civilizations in Asia and Europe, the North American Indian had no need for veterinary medicine.

INDIAN AGRICULTURE

The Indians, however, were better agriculturalists than they are frequently credited with being, for the cultivation of corn extends to prehistory, and the several species the Indians used cannot be maintained in a wild state. They recognized good land, passing by areas unfit for cultivation, and used good tillage practices—considering the primitive tools they had—along with the use of fertilizer. The abundance of good land, however, made the clearing of new land more profitable than the continued

use of old land once its fertility had been lowered to a point of diminishing returns. Although they had no steel axes, the practice of the Indians of girdling trees and waiting for the limbs to fall off has been cited as a prime example of their proverbial laziness. But it might be argued that the early settlers—even with their steel axes—were tilting at windmills in challenging the forest primeval, and they had the blisters to prove it.

Even with abundant game in the forests and on the prairies, Indian agriculture was limited by the lack of draft animals. Practically all field labor was performed by women, and Champlain termed squaws “the Indian’s mules.” Being essentially a nomadic culture, little thought was given to the accumulation of surplus crops against hard times. Dogs, which the Indians accumulated in numbers after the coming of the white man, were eaten when other food was scarce. The traditional succotash as made by the Indians included squash and dog meat in addition to the familiar corn and beans. The colonists in adopting this dish left out the squash and substituted pork for the dog meat. Agriculture was closely related to religious ritual, and while animal disease was not an immediate concern, plant pests and diseases were thought to be sent by evil spirits as a penalty for wrongdoing. The belief in disease as a punishment for sin appears to have been

a fundamental concept among primitive peoples—in the old world as well as the new.

“Primitive” does not connote a lack of astuteness, however; Indian medicine men called upon to deliver their tribes from scourges of caterpillars apparently knew that their incantations would be potent only when it was time for the caterpillars to pupate. And one Indian chief, accused of killing colonists’ livestock, in turn accused the English of killing the Indian’s deer. When told his deer could not be distinguished because they were unmarked, the chief suggested the colonists kill only marked deer—those unmarked belonged to the Indians.

Discreet Indians

The Indians were not all the veritable giants they may have seemed to the settler facing the business end of a tomahawk, and even in their native habitat they suffered from a number of infectious and dietary diseases. And the diseases introduced through the white man killed more Indians than were slaughtered in all the Indian wars. Of an estimated 15,000 Indians in Pennsylvania at the time of William Penn in 1682, only 1,500 were left a century later. The Indians practiced a species of domestic medicine that like any other empirical practice had some noteworthy features, but with the publication of native American medical and veterinary works, the prowess of the Indian in these matters was greatly overrated. Thus many home-grown medical works touted secret Indian remedies, as did the patent medicine peddler who later charmed a mint of money from the pockets of a gullible populace. One widely circulated veterinary work of the late eighteenth century claimed authorship in part by “discreet” or “experienced” Indians.

If the Indians had had occasion to practice any form of veterinary medicine, it undoubtedly would have been of the same nature as their medical rituals. Captain John Smith, writing of his *Voyages and Travels* in 1612, describes these:

Every spring they make themselves sicke with drinking the juice of a root they call *wighsacan*, and water; whereof they powre so great a quantity, that it purgeth them in a very violent maner; so that in 3 or 4 daies after, they scarce recover their former health.

Sometimes they are troubled with dropsies, swellings, aches, and such like diseases; for cure whereof they build a stove in the form of a dove-house with mats, so close that a few coales therein covered with a pot, will make the patient sweate extremely. For swellings also they use smal peeces of touchwood, in the forme of cloves, which pricking on the grieffe, they burne close to the flesh, and from thence draw the corruption with their mouth. With this root *wighsacan* they ordinarily heal greene wounds: but to scarrifie a swelling or make incision, their best instruments are some splinted stone. Old ulcers or putrified hurtles are seldome seene cured amongst them.

They have many professed Phisitons, who with their charmes and Rattels, with an inter-nall rowt of words and actions, will seeme to sucke their inwarde grieffe from their navels or their grieved places: but of our Chirurgians they were so conceipted, that they beleevd any Plaister would heale any hurt.

THE SPANISH COLONIES

Columbus brought several species of domestic stock to the West Indies on his second voyage in 1493; turned loose, these multiplied at a great rate, and served as a source of foundation stock for the Spanish colonies in Mexico. Despite other hardships, the Spanish colonists never suffered the “starving times” experienced by the English settlers of North America, who at times reputedly were forced to turn to cannibalism. Despite the riches in precious metals taken from New Spain, the value of the agricultural products of the colonial plantations far exceeded the output of all the mines. Much of this wealth was in cattle; Richard Hakluyt observed in 1572:

There is in New Spaine a marvelous increase of Cattel, which dayly do increase and they are of greater growth than ours are . . . some one man hath 20,000 head of cattel of his owne . . . They have great increase of sheepe in like manner. . . . They have many horses, mares and mules which the Spaniards brought thither.

In 1587, some 35,000 hides were shipped from St. Domingo, and 64,000 from New Spain. This trade is of some interest in the

later history of animal disease in North America, for Texas fever is presumed to have been introduced to the southeastern United States through tick-infested hides from a Spanish vessel wrecked along the Carolina coast.

Prolific Pigs

Cattle — a few heifers at least — were brought to Florida by Ponce de Leon in 1520. Although none of these appear to have survived, and while the mythical quest for the “fountain of youth” is now considered a flight of fancy of a later historian, Ponce probably little realized just what a vitalizing element cattle were to be in the economy of the new world. The first horses introduced into this country were landed in Florida in 1527. This importation was likewise unsuccessful; all 42 animals soon perished or were destroyed, whether as a result of accident or disease is not known. Swine, along with horses and cattle, were introduced by De Soto in 1539 from Cuba. Packs of bloodhounds and Irish greyhounds were brought along to pursue the Indians, but they appear to have been used chiefly to herd the ever-increasing swine population on the 4,000 mile march to the Mississippi and back. Unlikely as it may seem, the progeny of the original 13 sows increased to over 700 in less than three years. This expedition also marked the first successful importation of horses into the continental United States, but these animals fared less well than the porcine fraternity.

Some idea of the hardships suffered by horses may be had from the ferocity of certain of the engagements between the Indians and De Soto's band of 600. On one occasion, 2,500 Indians were slaughtered, with the loss of 18 Spaniards, but the Spaniards who remained alive suffered an average of five arrow wounds each. Of the hundred horses belonging to the Spanish entourage: “Twelve horses died and seventy were hurt.” And on another encounter: “There died in this affair, eleven Christians, and fifty horses.” Additional horses either escaped or perished in an at-

tempt to get the remnant across the Mississippi River, and upon De Soto's death in 1542 only three remained of the original one hundred. Some of those which escaped in the river crossing fared rather well, for it appears that they joined a small band of the progeny of horses brought to Mexico by Cortez. Within 40 years the Indians along the Mississippi had an ample supply of horses originating from this band of Mexican migrants and defectors from De Soto's camp.

The original 13 sows landed by De Soto in 1539 had increased to 300 in a year or so, and evidently to a considerably greater number within another year, for along with the 12 horses lost in one engagement, 400 swine reportedly were lost also. And along with the later loss of 50 horses, all but 100 of the remainder of the pig population were lost. This was in March, 1541; yet in May, 1542, upon De Soto's death, these had increased to 700. Thus is it evident that pigs were admirably adapted to life in the new world; wherever swine were introduced, they soon overran the confines of the settlements and took to the woods. In some areas the Indians gave up deer hunting, and for settlers on the fringe of civilization, boar hunting became a favorite pastime.

Virgin Territory

Cattle also increased and in some areas ran wild, but conditions in Florida were inimical to the survival of any but the hardiest of stock. Swarms of horseflies killed hundreds of horses and cattle, and those which escaped were kept in poor condition. Indian attacks and the raids of pirates and rustlers further reduced the livestock population about the settlements, and as late as the early eighteenth century the Augustinian friars were never able to supply their own needs for beef. It is reported that at times they were forced to eat horses, cats, and dogs to keep alive. The Indians became the first large herders in Florida, and in the mid-eighteenth century cattle and horses were plentiful and sold for trifles. Oxen were used for draft

rather than horses or mules because they were better able to withstand the continual attacks of flies. On large ranches herds of as many as 5,000 cattle were observed huddled in masses, switching their tails in unison to drive off the murderous insects — flies by day and mosquitoes by night. As more land was cleared, flies became less of a problem, and today Florida is one of the major cattle raising areas in the United States.

Other than the Spanish importations, major attention has been focussed upon the stock introduced by the English into Virginia and Massachusetts in the early 1600's. The Portuguese, however, brought cattle and swine to Nova Scotia and Newfoundland in 1553, where despite the radical change in climate, they increased rapidly. Thirty years later the English explorer, Sir Richard Gilbert, was wrecked on the shore of Newfoundland in an attempt to land there to secure provisions of cattle and swine.

As indicated below, these phenomenal increases in livestock populations, other than under conditions such as obtained in Florida, undoubtedly were due, in part at least, to the relatively disease-free environment into which they were brought. Moreover, in most settlements, the slaughter of any part of the foundation stock was forbidden during the formative years of the settlement — not infrequently upon the pain of severe penalty, including that of death. The slaughter of diseased animals, however, was sometimes permitted, and except for summary justice meted out to cattle rustlers, it may be doubted that the death penalty was ever enforced — except in the case of one man who killed and salted his wife during the "starving time" at Jamestown.

THE VIRGINIA COLONY

The details of these early importations are clouded with obscurity; not so with those of the Jamestown settlement in 1607, however. Earlier, Sir Richard Grenville had brought horses, cattle, sheep, goats, and swine to Roanoke Island in 1585, but no

evidence of any surviving stock was found by the Virginia settlers. The otherwise favorable conditions would suggest that these animals fell prey to the Indians, for whom the hunting of domestic animals on an island would have been like shooting ducks on a pond. Concerning the small supply of stock imported in 1607, the Rev. W. Simmonds wrote: "3 Sows, in one year increased 60 and od Pigges; and neere 500 Chickens brought up themselves, without having any meat given them."

Other animals apparently were imported in 1608, and by the fall of 1609, when Captain Smith left Jamestown, they had "six Mares and a Horse; five or sixe hundred Swine; as many Hennes and Chickens; some Goats and some Sheepe." Smith himself later noted: "There were few countries where overgrowne women became more fruitful."

Starving Times

Evil times fell upon the new settlement, however, and the misfortunes of these early colonists are well documented. Many were impoverished gentlemen in search of a fortune, and not being inclined to the new life by experience or temperament, many of their efforts were misdirected. With provisions already low, and their few crops blighted by a severe drought in 1609, in the absence of the strong hand of Smith the colonists turned to eating their precious foundation stock of animals. Simmonds, an eyewitness, states: "as for our hogs, hens, goats, sheepe, horse, or what lived; our commanders and officers did daily consume them: some small proportions we tasted, till all was devoured." And Lord Delaware declared upon his arrival in 1610:

Our people, together with the Indians, had the last winter destroyed and kild up all our hoggs, insomuch as of five or six hundred (as it is supposed), there was not above one sow, that we can heare of, left alive; not a henn nor a chick in the forte (and our horses and mares they had eaten with the first).

The historian, Fiske, states:

After the last basket of corn had been devoured, people lived for a while on roots and

herbs, after which they had recourse to cannibalism. The corpse of a slain Indian was boiled and eaten. Then the starving company began cooking their own dead. One man killed his wife and salted her, and had eaten considerable of her body before he was found out. This was too much for people to endure; the man was tied to a stake and burned alive. . . . No wonder that one poor wretch, crazed with agony, cast his Bible into the fire, crying "Alas! there is no God."

Vegetarianism to the contrary, the desire for good red meat appears to be a fundamental drive of most peoples, and cannibalism as such may be prompted less by a craving for human flesh than by a lack of another source of meat. At any rate, a Father Cobo declared that the spread of Spanish cattle in New Spain during the sixteenth century "had a great deal to do with ending the cannibalism of the Chiriguana of Los Charcas and of the Carib." Horses also increased at a prodigious rate; the Indians blessed them for having relieved them of burden-bearing, and horses became so cheap that they were hunted rather than bred. Priestley states:

Pedro di Mendoza, abandoning Buenos Aires, where he settled in 1535, turned loose five mares and seven horses; by the end of the century their progeny overran the country down to the Straits of Magellan. . . . By 1508 the people of La Espanola were given royal permission to hunt for a pastime the droves of wild descendants of the first hogs which had been brought.

Returning to the desperate colonists of Virginia, only 60 persons of some 500 in the colony in October were alive in May, and these had "the gleam of madness in their eyes." Fortunately, some of those who survived lived to see better times; few, perhaps, would have envisioned how much better these were to be, especially with regard to the increase of livestock.

Increase of Cattle

With the arrival of Sir Thomas Dale as governor in 1611, things took a turn for the better; the indolent colonists and the new arrivals found themselves under a strict disciplinarian, but one who forced

them to help themselves. Indian methods of tillage were adopted, and adequate provisions were made for the 100 or more cattle and 200 swine brought over. Dale designed and had erected the first stable in Virginia, and ordered that hay be put up for the winter. This was wild grass; the culture of grasses was not begun on any scale for another 150 years, and in the meantime many cattle starved to death in the more severe winters. Nor did the colonists, who had traditionally provided little winter shelter for their animals in England, continue to provide shelter for their stock beyond what the woods had to offer, once the restrictions of the settlement were behind them.

Reference has been made to the phenomenal increase in numbers of livestock. The hundred or so cattle imported in 1611 had barely doubled in number by 1616, but by 1620 they had increased to 500; to perhaps 5,000 by 1627 despite the massacre of most livestock by Indians in 1622, and to 30,000 by 1640. While there undoubtedly were more animals imported than are on record, it is obvious that other factors must account for this increase. In the first place, except for a few oxen for draft, only heifers (and the necessary number of bulls) were brought over, primarily because of the great expense of transport. It may be presumed that an attempt was made to select only healthy animals in England, for a heifer landed in Virginia represented an investment of \$250 in Virginia currency. The conditions on shipboard probably were better for the animals than for persons, for the former were housed above deck on caraval type ships, which because of their resemblance to Spanish vessels, often caused concern when they first appeared on the horizon.

While sanitary conditions were good, the decks being cleaned by washing the offal into the sea, many animals were lost through injuries incurred during storms at sea. Of 52 head on one trip, 10 were lost in this manner, but the loss was in part made up by the birth of 10 calves while still at sea. Moreover, by comparison with

the colonists themselves, scurvy, the dread killer of men aboard ship, was not a problem. Many persons who survived scurvy were landed in such a vitiated state that they fell ready victims to any of a host of diseases during their first few months in the new world. For this and other reasons, although over 100,000 persons had emigrated to Virginia by 1670, there were only about 75,000 inhabitants at this time. Although, as pointed out by Captain Smith, women were extremely fertile in the new country, they were outnumbered by men five to one among those who came from England. While few remained widows for long, and there are many records of families of a dozen or more children, this continual childbearing undoubtedly led many women to early graves and may actually have tended to depress the net population.

Cattle also were prolific once they had become acclimated, and their increase was practically guaranteed by the severe prohibitions against their slaughter once an agricultural economy had been established. In a determination to avoid a return of the "starving time," stringent laws, apparently including the death penalty, were enacted to preserve the precious animals with which the colony was restocked. It may be doubted, however, that the death penalty was ever inflicted for cattle killing in the Virginia colony, but even with a substantial increase in numbers, the laws against slaughter remained strict. In 1619 a decree promulgated by the Virginia Company stipulated:

No man, without leave of the Governor, shall kill any Neat cattle whatsoever, young or olde, especially kine, Heyfurs or cow-calves, and shal be careful to preserve their steers and oxen, and to bring them to the plough and such profitable uses, and without having obtained leave as aforesaid, shall not kill them, upon penalty of forfeiting the value of the beast so killed.

Apparently excess males were killed from time to time, and by 1627 animals permitted to be slaughtered included females which "had ceased to breed, or were stricken with a disease or infirmity

that would inevitably end in death." If the idea of eating animals which were about to die of disease seems esthetically offensive, the British had a long tradition in this department. Earlier, sheep dying of anthrax were fed to farm laborers, and as late as 1865, when asked by a German colleague what Britain did with her diseased meat, the eminent John Gamgee answered: "Eats it."

Still concerned with the need for further increases in livestock, the Virginia Company sent orders to the Governor in 1621:

for ye making all due provision for ye Encrease and preservation of ye bread [breed] of all sorts of cattle, And in particular Kyne: whereof wee thinke it most unfitt, that any should bee as yett killed, and requier your vigilant care for ye Inhibiting thereof.

There are conflicting reports concerning the economy of the colony at this early period; some of the more glowing ones undoubtedly were circulated by the London Company in an attempt to secure more settlers. Thus in 1620 the counsel for Virginia stated:

The Cattle which we have transported thither, being now growne neere to five hundred, become much bigger of Body, then the breed from which they came: The Horses are also more beautifull, and fuller of courage. And such is the extraordinary fertility of that Soyle, that the Does of their Deere yeelde two Fawnes at a birth, and sometimes three.

This was written to refute rumors of poverty spread back home by letters of the colonists, but it is of some interest to note that the fertility of the soil was related at this early time to the reputed increase in size of stock. While more probably there was some basis for reporting a size increase in animals, and much of the land was very fertile, some of the earliest farms were established upon land already abandoned by the Indians as unproductive. Forage was short at times, and in 1618 Governor Argall ordered: "no man to take hay to sweat tobacco because it robs the poor beasts of their fod-

der." Yet this same governor in the winter of 1617–1618 killed some of the public cattle for personal profit.

Decrease of Cattle

At this time there was said to be some 300 cattle in Virginia, and: "Cattle that springe all brought forth another yeares increase." But in the Indian massacre of 1622, much of the livestock on the settlements was destroyed, and some that survived had to abandoned to the Indians, the rest being brought back to Jamestown. Stock which already ran wild in the woods fared better, the wild cattle being referred to as "Indian deer," and wild swine were so abundant that the Indians apparently gave up deer hunting. Yet in the famine that followed the massacre, the settlers were unable to hunt in the woods for fear of the Indians. The number of cattle salvaged by the settlers was reported to be 192 by actual count, and according to one settler:

Some of theis 192 dyed by the way and many dyed as wee have Credible heard for want of good lookinge to. Many alsoe have been slayne by the Indians since the last Massacre. . . . How manie more these might have beene encreased had not soe many persons beene unfortunatelic and inconsideratelic sent over to Consume the fruits of the former labour and another abuse latelic crept in of killing the bull Calves wch was not suffred before their last 4 Yeares.

Letters from various colonists leave little doubt as to the condition of the colony at this time, especially with reference to their lack of livestock. One wrote in 1623:

This yeare we live hard by reason of the Indians and gett little or no meate. . . . We lack about halfe our kine and most of these are dead this Winter. Here hath been a generall death of men and Cattle. . . . [Another wrote]: for as well our people as our Cattle have dyed, that we are all undone . . . [and another]: Many of our yong Cattle are dead for there hath ben a generall mortalitie of man & beast this yeare & the last.

Still another elaborated:

As you know this land hath felt the affliction of Warr, sense of sicknes and death of a great

number of men, likewise among the Cattle for doggs have eaten this winter more flesh then the men: And he that had 40 hoggs about his house hath one or two: and a hundredth henns hath now 3 or 4. . . . The woods are so dangerous we dare not goe abroad: And for tame Cattle there have so many died and ben killed otherwayes that there is no more to be had.

Some cattle appear to have been left, however, for in 1623 the death penalty was provided for cattle stealing.

During these early times there are few specific references to measures taken for the care of livestock other than desultory attempts to gather native grasses for hay, and protection of animals from the Indians. Some thought for the medical care of animals may have occurred to a few settlers, however, for in 1620 *Records of the Virginia Colony* indicate: "Markhams and Googes books . . . are now sent," and an invoice of goods sent from England includes among agricultural tools: "a bras serine [syringe] for a glister [clyster, or enema] pipe." It might be noted that there were few worthwhile books on animal disease extant in England at this time, and Markham's work, probably his notorious *Maister-Peece* (1610) alluded to below, was no exception. Barnaby Googe's *Foure Books of Husbandrie* (1577) was a translation of an earlier work by the German, Conrad Heresbach.

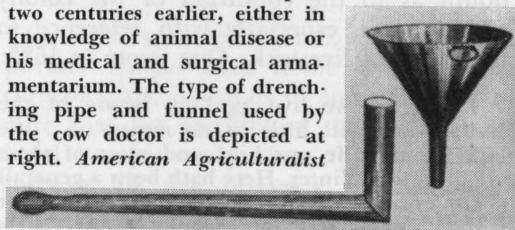
Googe was a poet with no pretensions to competence in the veterinary field, and except for what is abstracted from the ancient Roman authors on contagious diseases, the work is a prototype for many of the worthless works which followed, first in Britain and later in America. Thus while he advises separation of the sick if "murrain" appears, he repeats the centuries-old superstition of keeping swine away from cattle because their dung is poisonous and breeds pestilence and murrain. "Wolf in the tayle" is described, together with the approved manner of slitting the tail and putting in salt and soot. "Sickness of the loonges" is treated with a pint of salt in a quart of chamberlye (urine). On the other hand, calves



with dysentery are to be given milk to which rennet has been added. One affection of some interest is "gargyse," a swelling about the eye, for which surgical intervention is prescribed. The term employed for this swelling actually refers to the throat, as in gargle, and later was used to denote a swelling on any part of the body. Thus "gargyse of the udder" eventually came to be known as "garget," a not uncommon designation for mastitis even today.

Those who followed Googe's recommendations at least had an authority of sorts for failing to house their cattle. Googe states: "You shall have them foddered abroad all the winter; they can abide the cold." He, of course, was referring to the milder winters of England, where this practice was common. It did not occur

"The Cow Doctor" of rural America in the mid-nineteenth century (above) differed little from his colonial counterpart two centuries earlier, either in knowledge of animal disease or his medical and surgical armamentarium. The type of drenching pipe and funnel used by the cow doctor is depicted at right. *American Agriculturalist*



to most of the Virginia settlers — or even to many in Massachusetts — that circumstances alter cases, and countless numbers of cattle succumbed to the cold and starvation of the harsh winters.

With the importation of replacement stock following the hard times of 1622—

1623, conditions in Virginia were greatly improved. As new ground was broken, a large measure of the fertile promise of the new world was realized, and livestock increased more in the proportions dreamed of by the more enthusiastic earlier settlers. Although stock was still neglected by present standards, its care did improve, and by 1625 there was at least one "cow-doctor" in the colony, and a few years later Virginia began exporting cattle to New England.

Competent Cow Doctor

While it must be supposed that animals suffered more from disease than is on record, it is evident that few plagues of newsworthy proportions occurred prior to 1700. Except for large-scale deaths of animals in the severe winters, some 50,000 cattle being said to have perished in Virginia alone in the winter of 1673, "the hardest season experienced in the history of the Colony," few records of animal diseases, sporadic or otherwise, exist.

What may be the first record of veterinary services in America is recorded by the medical historian Blanton who states: "in colonial Virginia the services of veterinarians were sought and valued." He refers to a William Carter as: "an expert veterinarian or cow doctor, who lived in James City in 1625." The designation of "veterinarian" was unknown at that time, however; the term was not introduced in any English writing until 1646 by Sir Thomas Browne, and was not in general usage until well into the nineteenth century. How expert a cow doctor Carter may have been is open to doubt if his testimony in a lawsuit is representative of his prowess. It is of interest that he establishes the presence of a second man who had some reputation for treating cattle. As recorded by Blanton from the court record:

... he drest a Cow for Mr. Allnutt in May last ... for wch demandinge 10s. Mr. Allnutt did not pay him, And the last springe there was a Cow ... with a fistula uppon the Eye ... and about Easter last he offered Mr. Allnutt ... to cure ye cow wth ye fistula for 20s.

in money soe as he might be satisfied for the former cure, wch Mr. Allnutt refused saying he had rather give another man forty shillings then him 20s. and so put the Cow to goodman Tree's man to Cure, who not beinge to cure her Mr. Allnutt offered this deponent to give him content if he would Cure her ... [Carter] used his best skill, yett at length she dyed.

In 1642 the York County (Virginia) court awarded Thomas Spilman 400 pounds of tobacco from a John Smith who had hired Spilman: "to use the best of his skill for the cure of the horse," but which had died. Inasmuch as the owner was present "at the opening of the horses wound," and brought no charges of lack of skill, the court decided he was liable for the cost of treatment.

Pest-free Haven

A factor of considerable importance was the environment into which these animals were brought. Inasmuch as no domestic animals existed in the new world prior to the coming of the white man, America at the outset provided a practically pest-free haven. Only by this factor can the lack of animal plagues of any consequence for a century or more be explained, for while the abundant feed caused animals to grow larger than those in England for a while, as the population increased, feed became scarce. Many animals died during the winters, and nearly all were left in a weakened condition in the spring, ripe for the invasion of plagues had they been lying dormant. This eventually did occur as a concomitant of generations of degenerate breeding and management.

From prehistoric times, cattle have been considered as synonymous with wealth, and Virginia was no exception. In 1630, Captain Smith relates that there were: "about five thousand people, and five thousand kine, calves, oxen, and bulls; [and] for goats, hogs, and poultry ... they have so much more than they spend."

Yet at this time cattle were worth about \$375 in terms of purchasing power in Virginia. About this time Virginia began exporting cattle to Massachusetts, which, to-

gether with relaxation of slaughter laws, helped account for a decrease in the cattle population from 30,000 in 1640 to 20,000 in 1649, but at this latter date there were only 15,000 inhabitants. Sheep had increased to but 3,000 at this late date, primarily because of the depredations of wolves. Hogs, the most prolific of the lot, had so increased by 1627 that the settlers were obliged to palisade the settlements to keep them out.

Few horses were brought to the colonies in the early days. It was early learned that they were unsuited for plowing, and they required much more attention in winters than did oxen. It 1647 only five horses were enumerated in Lower Norfolk County for tax purposes; at this time four pounds of tobacco were levied on cattle while 32 pounds were levied on horses. While there were only 200 horses in all of Virginia at this time, many of these were of blooded stock, and horseracing was the coming sport. Before the end of the century wild horses were so numerous they were hunted as sport, frequently with dogs. These animals were so fleet that many good horses were ruined in the chase. Horses were introduced to New France in 1647, where they soon became a pet luxury, and they thrived surprisingly well despite the harsh winters. Tail docking was universal.

Evidently conditions in Maryland were much the same as in Virginia at this time, although the eyewitness account of Lord Baltimore in 1633 might be somewhat exaggerated inasmuch as it was intended as a prospectus for colonists:

There are such numbers of swine and deer that they are rather an annoyance than an advantage. There are also vast herds of cows, and wild oxen, fit for beasts of burden and good to eat. . . . Sheep, as well as asses and mules, have to be procured either from our country or from the Canaries. The nearest woods are full of horses.

The latter statement, of course, simply was not true.

THE NEW ENGLAND COLONIES

While the Mayflower had dogs, and possibly goats and chickens aboard on her

maiden voyage, no cattle or horses were brought over in 1620. Of the first importation of cattle in 1624, William Bradford wrote that Edward Winslow brought over: "3 heifers and a bull, the first beginning of any catle of the kind in ye land." These were allowed to increase for four years, and were then apportioned by lot. Other importations were made, and animals were kept on the town commons under the care of keepers much as had been the custom in England. Here, too, the absence of disease was in great contrast to what had been the situation in England. There are no records of widespread animal disease in the early days of the colony. The importance of animals in the economy of the colony is demonstrated by the numerous ordinances passed regulating the keeping and slaughter of livestock; the events of veterinary importance are considered in the section dealing with public health matters in the colonies.

Some items from Governor Winthrop's *Journal* for 1630 undoubtedly are representative of events in the early days of the Massachusetts colony:

July 1: The Mayflower and the Whale arrived safe in Charlton harbor. Their passengers were all in health, but most of their cattle dead (whereof a mare and a horse of mine). Some stone horses [stallions] came over in good plight . . .

Sept. 30: The wolves killed six calves at Salem, and they killed one wolf . . . The wolves killed some swine at Saugus. A cow died at Plimouth and a goat at Boston, with eating Indian corn . . .

Oct. 29: The Handmaid arrived at Plimouth having been twelve weeks at sea, and spent all her masts and of twenty-eight cows she lost ten.

Captain Smith relates concerning a shipment of cattle from Virginia to Massachusetts in 1630: "Of two hundred Cattell which were so tossed and brused three score and ten died."

Despite an increase of animals more or less commensurate with that in Virginia, the value of cattle skyrocketed in Massachusetts as it had done in the South. Bradford stated in 1638:

Kine were sould at 20 pounds and some at 25 pounds a peece, yea, sometimes at 28 pounds [over \$500 purchasing power]. A cow-calfe usually at 10 pounds.”

That these prices were artificially high is demonstrated by the fact that in 1642 prices fell in one week from 22 pounds to 6 or 8. Sheep also were valuable animals in the North; while they were harried by wolves as they were in Virginia, there were few diseases, which in the South made sheep raising a doubtful enterprise from the early days of the colonies. Wool, of course, was a premium product in the rigorous northern climate.

The loss of animals being transported was a matter of some economic importance, for Governor Winthrop relates that in 1630:

The passage of the people in the *Eagle* and nine other vessels to New England came to 9500 pounds. The swine, goats, sheep, neat and horses cost to transport 12,000 pounds, besides the price they cost.

By 1633 the population of the Massachusetts Bay Colony numbered 4,000, with 1,500 cattle, 4,000 goats and “innumerable” swine.

The Dutch brought 103 head of animals, including horses, cattle, sheep, and swine, to New Amsterdam in 1625; only two died on the voyage. The floors of the pens aboard ship were sanded to prevent injury from falling. The animals were kept on farms (“bouweries” — whence the Bowery) outside a stout palisade wall (whence Wall Street) at the edge of the settlement. Many pigs, however, were kept within the town limits, and slaughterhouses were built over the ditch outside the wall. These wastes, which found their way to the East River, were the first of an apparently never-ending series of offenses to the olfactory senses of the Gothamites. In an article entitled “The Butcheries of New York,” in the *American Agriculturist* for 1849 the writer says with much feeling: “It is quite time our city fathers proceeded efficiently for the removal of these intolerable nuisances. The stench from these yards is perfectly unsupportable.”

Most of the sheep brought to New York in 1625 fell prey to wolves and dogs; 20 years later there were only 16 sheep left in the colony. The sheep introduced into Massachusetts in 1633 were of a coarse-wooled relatively unprofitable type. Fine-wooled sheep were not imported until 1793; the first such animals, brought from Spain, came to an untimely end — the caretaker, not realizing their value, ate them. Later importations early in the eighteenth century resulted in an outbreak of “Merino fever,” prices for rams reaching \$500 to \$1,000 before the rash subsided.

Sheep May Safely Graze

Unlike the situation in New York, the 88 sheep brought to Massachusetts in 1635 had multiplied to a thousand or more by 1642, had again tripled in a few years, and were reputed to number nearly 100,000 by 1660. While wolves, bears, and dogs harassed sheep in Massachusetts as elsewhere, the provident Puritans took measures to reduce the inroads made by these predators. Flockmasters were appointed to attend their grazing on the town commons, and laws were enacted to reduce the population of sheep-killing dogs and wolves. In 1648 an ordinance was passed requiring:

If any dogg shall kill any sheepe, the owner shall either hange his dogg forthwith, or pay double dammages for the sheepe; if ye dogg hath bene seene to course or bite any sheepe before . . . then he shall both hange his dogg and pay for the sheepe.

This principle was reaffirmed numerous times and, in effect, is the law today in most states. Likewise, a system of bounty for wolves undoubtedly was effective in reducing the population of predators, but the inherited bounty system still existing in many states is considered illogical by many conservationists because it upsets the balance of nature.

Pioneers and Providence

Sporadic deaths from accident and disease, and losses from marauding Indians and wolves, undoubtedly were relatively common. While they did not interfere with the net increase in livestock popula-

tion, nor, perhaps, were they particularly serious in the communal herds, on the fringe of civilization they were a threat to existence itself. Here the thin veneer of civilization depended upon the labor of the ox, the milk of the family cow, and the meat of the pig. Callous though it may seem, the loss of one of these animals was possibly a harder blow than the death of a child, although infant mortality was a matter to be reckoned with, for children also constituted a form of wealth. The pioneer certainly mourned the passing of his child as much as the man in town, but a child was replaceable, whereas frequently an animal was not—even if he happened to have the price of one; most often he likely did not.

The observations of De Crevecoeur made about 1770 are applicable to any pioneer community at any time. The early American colonist, he says:

finds himself suddenly deprived of the assistance of his friends, neighbors, tradesman, and all those inferior links which make a well-organized society so beautiful and pleasing. What is he to do in all possible cases of accidents, sickness, and other casualties which may befall his family, his cattle and horses . . . Has he a cow or an ox sick, his anxiety is not less, for they constitute a part of his riches. He applies what recipes he possesses; he bleeds; he foment; he has no farrier at hand to assist him.

A cow, perhaps a few sheep, a couple of poor horses must be housed, must be fed through the inclement season. If the least accident happens through droughts, sickness, carelessness or want of activity happens, a general calamity ensues. The death of any one of these precious animals oversets the well being of the family. Milk is wanting for the children; wood must be hauled; the fleeces of sheep cannot be dispensed with. What providence can replace these deficiencies?

All too frequently the answer was, "None."

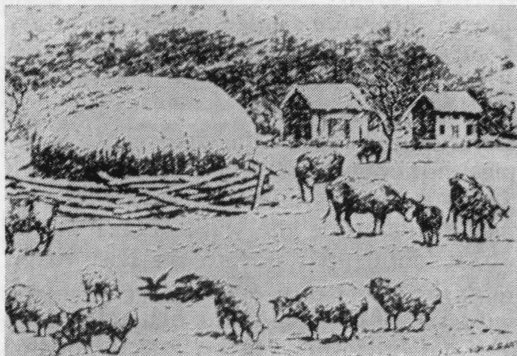
Yet despite this knowledge, the lack of attention to animals upon the pioneer farms was a primary cause of loss. It would seem as if it were a reaction to being freed from the relatively severe restrictions of communal life under the town fathers. There, not only was the manner of keeping animals legislated, but such items as who

might be entertained in a citizen's house and for how long. Obviously, it was more often the citizen who—whether he liked it or not—was appointed cow-keeper or garbage-overseer or fence-mender, than it was the town fathers, who migrated to the fringe. More likely it was a reversion to traditional ways of life once the authority of the town was removed, coupled with the probability that there always seemed to be something more pressing than building a cow house or mending fences.

CARE OF LIVESTOCK

The care of livestock by the colonists left much to be desired, and, in fact, remained a matter for reproach. Two centuries later, the editor of the *Country Gentleman* (1866) comments upon this inertia in an article entitled "Shelter for Animals." Noting that some improvements had been effected lately, he states:

We can well remember when nothing was more common than feeding cattle and sheep from stacks in the open field throughout the entire winter . . . exposed to every snow storm and every sharp cutting wind . . . it was necessary that one-third of their entire food should go towards restoring the animal warmth swept away by the furious winds. This, however, it did very imperfectly; and the feeling of many farmers for their cattle on entering winter and emerging from it, was like that of a general on



Protection against the elements had been less a problem in the relatively mild climate of England, but even in the most severe weather it was not unusual for the colonists to leave their stock to fend for themselves. This apathy toward animal needs persisted to the point of becoming traditional. *American Agriculturalist*

taking his men into battle and coming out of the conflict—he expected to lose many of his men as an unavoidable calamity . . . the degree of success or failure was sometimes measured by the distance at which an animal's ribs could be counted when viewed across the field.

In many areas the situation was not much different from that in Virginia two centuries earlier. Concerning the loss of some 50,000 cattle during the harsh winter of 1673, the historian, Bruce, states that even at a much later date:

The habit of furnishing but little food to cattle in winter still prevailed, the provender which they received, when it was supplied at all, being the shucks of Indian corn, to which occasionally a small quantity of wheat straw was added.

Shelter was provided for the cattle that grazed upon the town commons in the Massachusetts settlements, frequent reference being made to “cow-houses” in the early records of the colony. Animals were well guarded, and the best meadow land reserved for grazing. Cattle represented real wealth, for with the wages of laborers being fixed at one shilling or less per day in 1630, and cattle worth up to 25 pounds—of which 10 pounds represented the cost of transport from England—one cow was worth a year's labor or more. Although grazing on the commons was practiced until 1800 in some areas, the arrangement must have been far from satisfactory, and may have been a factor in the urge for men to head for farms of their own as soon as they could raise the capital necessary to stock one. The owner paid for a full season's grazing regardless of how long the animals grazed: “What Catle shall be put to the neatherd shall pay for the whole tyme, except in case any should miscarry, and then yts loss enough.” Evidently abortion was not unknown in 1630, but there are no suggestions that the disease was a great problem at this time.

The Town Bulls

A more serious concomitant of the commons system was the fact that all cattle

had to be bred to the town bulls, and it may be doubted that the town fathers were particularly astute in choosing the best stock. Inasmuch as only female cattle were imported after the foundation bulls were brought in, the quality of male stock must have steadily deteriorated because of the indiscriminate breeding. The English cattle were mostly Devonshires, which thrived well at first, but: “with neglect, hardship and miscellaneous crossings the breed deteriorated and, big-boned, rangy and tough, were known as the red or native stock.” Nor was the increase in Massachusetts as great as in Virginia, for in 1634 there were but 1,500 cattle for a population of 4,000. On the other hand, sheep increased by 100 fold in 20 years, there being over 100,000 in Massachusetts by 1660.

The almost total neglect of the veterinary art as such during the colonial period must be charged to this curious attitude toward the keeping of animals. And, as indicated above, despite the defects of the commons system, matters deteriorated once the bulk of the livestock population was removed to individual farms and the pioneer fringe. That conditions did not change during the entire colonial period may be appreciated from the (possibly prejudiced) observations of a Britisher, Dr. John Mitchell, in his work on *American Husbandry* (London, 1775):

Most of the farmers in this country are, in what concerns cattle, the most negligent ignorant set of men in the world. Nor do I know of any country in which animals are worse treated. Horses in general, even valuable ones, are worked hard and starved: they plough, cart, and ride them to death, at the same time that they give very little heed to their food; after the hardest day's works, all the nourishment they are like to have is to be turned into a wood, where the shoots and weeds form the chief of the pasture; unless it be after the hay is in, when they get a share of the after-grass. A new Englander (and it is the same quite to Pennsylvania) will ride his horse full speed twenty or thirty miles; tie him to a tree, while he does his business, then re-mount, and gallop back again. This bad treatment extends to draft oxen; to their cows, sheep, and swine; only in a different manner, as may be supposed.

Small wonder then that little thought was given to the need for a veterinary profession until long after the introduction of large-scale animal plagues which threatened the entire livestock industry.

Crazed Cattle

The period from 1650 to 1700 includes the pioneer years for a number of the colonies. The events in Pennsylvania, for example, were not materially different from those in the other colonies, and little that can be considered new transpired in the older settlements. One notable exception — a sidelight so far as veterinary medicine is directly concerned — was the extension of witchcraft and sorcery to animals and their diseases. But as is all too well known, unreasoning superstition plays at least a subtle role in animal treatment even today, if only by the laity. Certainly it played a major role in some areas until very recently. But while much of the discussion of this period (Chapter 2) relates to this subject, it should not be supposed that in all respects the colonies had reverted to the Middle Ages.

In 1682 contemporary reports mention the great increase of livestock in the Carolinas, one stating that sheep: "thrive very well; the Country being so friendly to their natures, that it's observed, they are neither liable or incident to any known Disease or Distemper."

Another writer the same year observes: "The Cattle are not subject to any Disease as yet perceiv'd, and are fat all the Year long." As might be expected, however, all reports dating to this time do not agree; some observations undoubtedly were valid on a purely local basis, others may have been overenthusiastic exaggerations. Thus a Virginia historian dealing with the late seventeenth century states:

Cattle at this period suffered even more than the horses from the hardships and privations to which they were exposed in the winter, many perishing in the spring, because, having ventured after the young grass in the marshes, they were too weak to extricate themselves from the quagmires into which hunger had led them. The wealthiest planters, from this

cause, sometimes lost as many as thirty head apiece. Among the horned cattle a curious habit was observed as soon as the spring tides began to pour their floods into the rivers and estuaries; and irresistible impulse taking possession of them, they would make for the salt water, travelling twenty and thirty miles to reach it. . . . The opinion prevailed among a large number of planters that to feed livestock in winter was to prepare the way for their destruction. . . . No hay was now produced in the Colony as a cultivated crop.

Since no specific mention appears to have been made of providing animals with salt — anymore than with the other amenities of daily life — it may be that these cattle were crazed for salt and instinctively knew where to find it. This particular event is too well documented to be an isolated happening, or due to mere happenstance.

The first great epizootic among cattle, but one not too well substantiated, apparently occurred in "the South" in 1695, when, it is said, over 100,000 cattle were carried off. Mention is also made of a "recently published and handy little pocket volume": *The Countryman's Companion, or a New Method of ordering Horses and Sheep so as to preserve them both from Diseases and Casualties, and to recover them if fallen Ill* (London, 1680) finding its way to the mantel-corner of many colonial farm homes. Books, other than those on theological subjects, were relatively rare in the colonies, and none dealing even remotely with animal diseases appear to have been published in America before 1710.

PENNSYLVANIA PIONEERS

Pennsylvania was settled in 1647 by Swedes, who despite the neglect of their livestock, soon produced an excess that was eagerly bought up by other settlers. About 1700, Pastorius, a German, in what may be a biased account of the Swedes states:

The old inhabitants are poor agriculturalists. Some of them have neither barns nor stables . . . and allow their cattle, horses, cows, swine, etc. to run in the woods summer and winter, and so derive little profit from them.

And as late as 1759, another observer reports:

Stables and cow-houses are seldom seen on farms. The animals endure the severity of the winter which, along with rain, frost and snow, is sometimes intolerable.

Still another traveller reports in 1749 an account—probably gotten from an over-enthusiastic old settler—concerning the stock of the early Swedes. Of the animals brought over by the settlers, he says:

The hogs propagated so much that, there being so great a plenty of food for them, they ran wild in the woods, and the people were obliged to shoot them when they wanted them. . . . The horses ran wild in the woods in some places. . . . Food for all kinds of cattle was so plentiful and abundant that the cattle were extremely fat. A cow at that time gave more milk than three or four do at present [1749], but she got more and better food at that time than three or four get now.

While the truth generally lies somewhere between the extremes, it is evident that livestock was at a premium during the time of William Penn, and for some time prior. In 1676 a law was passed making it unlawful “for any man to kill any Cow, Ox or Bull or such like Cattle,” without a permit. And Penn stipulated in 1682 that no one “shall within three years kill or cause the same to be killed, any Cow, Calf, or Ewe-lamb, whose dam shal not dye by casualty,” upon penalty of forfeiting five pounds. In 1701 this was amended to the effect that “no person shall kill or sell to kill above one half of their growing neat Cattle.” Hogs were also protected in the early days of the colony. In 1672 the penalty of ear-cropping was decreed for pig stealing. In 1682 Penn substituted 29 lashes and banishment.

The English, perhaps, were the most notorious offenders in the matter of neglect of livestock, primarily because the mild climate of England required less attention to housing. Fletcher, in his work on pioneer agriculture in Pennsylvania, states:

The reluctance of most English immigrants to build barns was due, in part, to their background of experience . . . many cattle died from exposure and hunger. Others were “on the lift” in the spring—so weak and emaciated that they had to be lifted to their feet. Eventually farmers of English stock built tight barns.

The Pennsylvania Germans, however, who settled at the same time as the English, early became famous for their handsome barns. In 1787 Benjamin Rush observed:

They always provide large and suitable accommodations for their cattle before they lay out much money in building a house for themselves.

According to Fletcher, livestock raising in Pennsylvania was more or less incidental until about 1790, and animals were indeed left to fend for themselves in the forest, in part because of the abundance of game. He states:

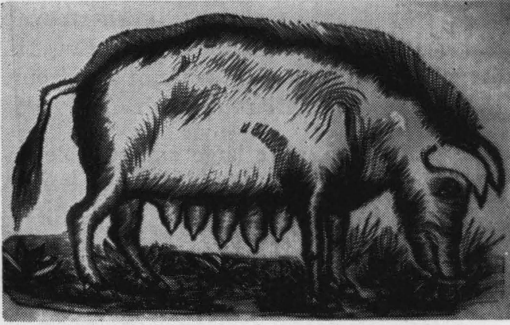
The cattle of early colonial days were small, scrawny and unproductive. This was due not only to insufficient and unbalanced feeding and promiscuous breeding but also to the character of the stock imported; only the smallest animals could be kept alive during the long voyage. . . . The inevitable result of poor feed, poor shelter and promiscuous breeding of livestock running at large was degeneracy. By 1750 the stock was much smaller and less productive than the animals first imported from Europe . . . Frequently cattle died of starvation or by eating, in desperation, laurel, wild cherry and hemlock. Credulous farmers tied a dogwood bough about the neck of a cow that staggered from starvation—this was supposed to be a tonic! Cows lost in the woods might not be milked for several days, hence they dried up quickly.

Pugnacious Pigs

While it undoubtedly was true that semi-feral hogs soon populated the woods of Pennsylvania, as they had earlier in Virginia, Fletcher says of them:

The swine of early colonial days were razor-backs. They had a narrow body, long snout, arched back, large bones. They were better qualified to serve as subsoilers than to fill the pork barrel. Running wild, swine degenerated toward the wild boar type of Europe from which they had sprung—lean, swift, fierce. They could outrun and sometimes outfight most of their forest enemies.

Nor was any improvement in the breed to be noted a century or more later. The eminent British veterinarian, William Youatt, in his book on *The Pig* (1846) says of the American hogs:



Hogs allowed to run wild soon reverted to ancestral prototypes, and in some areas the "prairie ranger" was hunted as a sport. The fact that many of these feral hogs were found in supposedly virgin territory led to the belief that they were native. Perriam and Baker: *Stock Doctor*

They have long-peaked snouts, coarse heads, thin chests, narrow shoulders, sharp backs, slab sides, meagre diminutive hams, big legs, clumped feet, the hide of a rhinoceros, the hair and bristles of a porcupine, and as thick and shaggy as a bear's; . . . No reasonable fence can stop them; but, ever restive and uneasy, they rove about, seeking for plunder, swilling, grunting, rooting, pawing — always in mischief and always destroying.

And Charles Dickens, in his *American Notes* (1842), describes the "swinish multitude" of the large cities:

They are the city scavengers, these pigs; ugly brutes they are, having for the most part scanty brown backs, like the lids of old horse-hair trunks, spotted with unwholesome black blotches; they have long gaunt legs, too, and such peaked snouts, that if one of them could be persuaded to sit for his profile, nobody would recognize it for a pigs likeness . . . he is in every respect a republican pig, going where he pleases, and mingling with the best society, on an equal if not superior footing, for every one makes way when he appears.

Despite the almost universal practice of letting hogs roam at large, and the ravages of weather, wolves, bears, and Indians, pork early became an article of export from several colonial ports. Pennsylvania soon established her supremacy in the swine trade, exporting both pork and live hogs within a decade of the founding of the colony, in part because of the better care given their animals by the Germans and

Quakers. Some of these hogs topped 200 pounds at slaughter.

Virginia and Massachusetts also carried on an extensive trade. Smithfield hams, still the epicure's delight, were already famous before the Revolution, and pork exports from Virginia exceeded 20,000 barrels annually before 1750. Practically all of this was raised in the woods, and an exceptionally hard winter undoubtedly was reflected in a lessened supply the following season. During the winter of 1694 it is reported that in excess of 60,000 hogs and 25,000 cattle died in Virginia of cold and starvation.

The indispensable part played by the ubiquitous razorback in the settling of America, however, should not be underestimated. For a century and a half, agriculture was primarily subsistence farming; hogs, which were highly successful in fending for themselves, were an important hedge against hard times. This is particularly true of the early pioneer times on the western fringe. Quite correctly, one traveler about 1700 notes: "These hogs suffer hardships as no other animal could endure." Here, neglect was understandable, but at times it exacted a heavy toll. The



The "razorbacks" kept by many poor farmers who made no effort to breed toward any standard differed little from swine that roamed the woods. Perriam and Baker: *Stock Doctor*

German Prince Maximilian, visiting in Indiana in 1843, writes:

We observed them in our excursions, in the depth of winter, when the young ones often perish with cold; and we also saw them eaten by the mothers. Dead swine were lying about in all directions, partly devoured by others. The negligence and want of feeling with which the animals are treated, are very great.

VETERINARY PUBLIC HEALTH IN COLONIAL AMERICA

The most superficial study of the colonial town records of any of the settlements clearly demonstrates that livestock played an important part in everyday life. The earliest concern was over the manner of handling the animals which grazed upon the town commons. Grazing on the commons in England had been a fertile source of contagion, but this apparently was not a problem in this country until late in the colonial period, when the practice was being superseded by an agricultural rather than a town economy. But, as the livestock population increased, so did animal disease and, with the latter, a number of problems of a public health nature inevitably arose.

That these problems relating to animal and human health were not considered as being in the veterinary domain is not surprising, for the American colonies had no veterinary profession — nor did they recognize the need for one. The injuries and ailments of animals were attended by the owner as best he could or, occasionally, by the relatively scarce self-denominated farrier or cow-leech — who likely as not often added to the misery of his patients.

The nature of some of these worthies may be deduced from a contemporary description of one who appeared in a New York City parade in celebration of the ratification of the Constitution. Several thousand people were in the line of march, arranged by trades and professions. A newspaper account, reprinted in the *Pennsylvania Journal* for August 20, 1788, informs us:

Walter Gibbons, Horse-Doctor, dressed in an elegant half shirt with a painted horse on

his breast; a balling iron in the horse's mouth, and the Doctor putting a ball of physic down his throat, with implements of fariery [*sic*] ready for use. Over the horse, written "Federal Horse Doctor;" at bottom; "physic." On his back a horse skeleton, the Doctor examining the head; over his head, "Federal Horse Doctor;" at bottom dissection.

Under such conditions, it is perhaps obvious that the earliest records of problems now considered to be wholly, or in part, in the veterinary domain should have been those in which there is an interrelation between animal and human health. But what we would today consider as veterinary public health matters were not recognized as such in colonial times. If the colonist neglected the control of his animals — which fared surprisingly well despite the seeming lack of attention — the colonial town fathers were considerably more astute in framing measures to protect the populace, whether from Indians, animals, or epidemics. More or less in the order in which action was taken, these public health problems can be categorized as follows: (1) restrictive measures against livestock; (2) regulation of slaughter and disposal of animal wastes; (3) food hygiene, including inspection of foods of animal origin; (4) control of animal diseases transmissible to man.

Restraint of Animals

Almost from the very beginning of the Massachusetts settlements, town ordinances regulating the herding and movement of livestock were put into effect. Cows belonging to private citizens, along with the town bulls, grazed on the commons under the care of keepers as late as 1800, and apparently occasioned relatively little trouble. Pigs were kept at first in the same manner but, pigs being pigs, they proved troublesome from the outset, and many families simply let them roam. Apparently free from disease themselves, they soon became a menace to the community as indicated by the following excerpt from the town records of Boston for 1658:

Whereas by long and sad experience very many and greatt damages have accrued to this towne by swine, besides the many dangers that children have beene in of loss of life and limb, and elder people also of greatt hurt, by the unruliness and ravenousnes of swine, and notwithstanding the law in that case provided by the Gen. Court that requires the making and constituting effectuall orders to prevent all harmes by swine. And although yearly endeavours have beene to attaine the end aforesaid and yett fruittles.

Itt is therefore ordered that hence forth every inhabitant in this towne that shall keepe any swine within this towne after the first of next month they shall constantly keepe up such swine in their owne ground . . . yett shall so keep them . . . [without] the annoyance of any neighbors or travellers through the comon streetes or high wayes, upon the foresaid penalty [two shillings, six pence] for every offence.

But in 1671, this law required restatement:

This town haveing lately many and greivous complaints of greate sufferings by . . . swine in this towne, and alsoe consideringe the many inconveniencies by the aboundinge of these creatures, in a towne soe populous as this is in respect of sicknesses & the like.

And in 1701, not only was it illegal to allow swine to go at large upon the town:

nor shall any person keep any hogg or swine in any hoggstey within twenty foot of any highway, street, lane or alley within this neck of Boston, or the dwelling house or shop of any Neighbour.

Legislative acts such as these failed in their purpose, however, and swine continued to roam the streets long after towns had become cities. One of the first reforms urged by the New York *Evening Post* upon its establishment in 1801 was the clearing of pigs from the streets.

Destructive Dogs

Dogs, too, had their day in court; as early as 1635, the town of Salem passed a dog ordinance requiring, among other stipulations, that they “be tyed up in the day tyme & if any doggs there spoile fish . . . they also shall either be sent away or killed.” And at Ipswich, in 1644, dogs were required to have one leg tied up to pre-

vent their digging up fish in the cornfields. (A fish was placed in each hill of corn as fertilizer — a practice learned from the Indians.)

The cow keepers of Boston town, in 1692, were given liberty to: “destroy and kill any dog or dogs they shall find to seize upon any cow or cattle.” In 1696:

Noe person whatsoever shall keep more than one Dogg, or Bitch in the Town . . . [and] noe Hounds or Hunting Doggs shall be suffered to Goe at Large in the Town . . . It shall be lawfull to any of the inhabitants of the Town to kill and destroy any Dogg so kept [contrary to these orders].

Although the wisdom of allowing any person to act as judge and jury in such cases may be open to question, in 1701, it was ordered further that after notifying the owner, any inhabitant could

cause the Town to be rid and discharged of [any] unruly Dogg or Bitch, that . . . hath been known to bite seiz upon worry or do harm to man or beast.

Wolves, and dogs — many with the demeanor of wolves — were a powerful deterrent to the sheep industry of the colonial period, and for some time after. In 1794, a traveler through southeastern Pennsylvania wrote:

Sheep are not well understood, little attended to, are very often destroyed by the wolves & few People therefore except of good Capital keep them.

The wolves were slowly decimated by a bounty system and by the encroachment of civilization but, as the wolf was pushed into the hinterland, the semiferal dog took his place — and with a vengeance. Pennsylvania attempted to counteract these depredations with a dog law in the early 1800's, but how effective this may have been is a moot question.

The broad aspects of this problem are clearly stated in an exchange of letters, in 1811, between Thomas Jefferson (after his retirement from public life) and a Peter Minor. While their thoughts on the matter may appear harsh, it should be recalled

that Jefferson was an astute farmer as well as an able public servant, and his correspondent seems to have been equally well versed in agricultural and legal matters. Minor had proposed a dog law for Virginia patterned after the one in effect in Pennsylvania, adding:

Since the introduction of the Merino & other valuable breeds of Sheep, I think it particularly behoves us to guard against their destruction by dogs. But Independent of their propensity to destroy Sheep, why should we not endeavor to diminish a race of Animals which to make the best of them are a nuisance, but when considered in a state of madness are certainly as great a curse as can visit us.

To this Jefferson replied:

I participate in all your hostility to dogs, and would readily join in any plan of exterminating the whole race. I consider them as the most afflicting of all follies for which men tax themselves, but as total extermination cannot be hoped for let it be partial. I like well your outlines of a law for this purpose: but should we not add a provision for making the owner of a dog liable for all the mischief done by him? . . . The average of what they get fairly and unfairly of the food fit for man, would feed a man . . . [and] are there not as many sheep and hogs annually lost to the owners by dogs, or with their aid, as there are dogs in the state?

Regulation of Slaughter

In the first days of the colonies, the slaughter of meat animals was not a problem. The first few animals brought over were intended for foundation stock and, while hogs in Virginia soon became so numerous that the Indians reportedly gave up deer hunting, the killing of cattle was made a capital offense.

With most of the meat supply being wild game killed in the woods, the public health problems attendant upon the establishment of slaughterhouses did not exist. But as towns grew in size and the livestock population increased, slaughtering became a regular industry. A particularly revealing series of entries is to be found in the town records of Boston in the 1640's:

[1642] It's Ordered that the Constable shall give speedy notice to Robt. Nash, Butcher, that with all speed he remove the Stinking garbage out of his yard, nere the street, and provide some other remote place for slaughter of Beasts, that such loathsome smells might be avoyded, which are of great annoyance unto the neighbours, and to strangers.

[1647] It is ordered that the annoyance that is made bye Robt. Nash in his slaughterhowse, by his killinge of beasts in the street now layd out, that hee shall remove that annoyance on penalty of 19s 6d. for evry defect justly complained of.

[1649] Robert Nash is fined 19s 6d. for his leaving his slaughter howse with noyesome smells, to the offence of the Towne.

Mr. Nash may have been the only butcher in Boston at this time, for the ordinance framed for the relief of the town from this specific nuisance was not extended to all until 1652, when it was ordered:

that noe person inhabiting within this Towne shall throw forth or lay any intralls of beast or fowles or garbidge or Carion or dead dogs or Catts or any other dead beast or stinkeing thing, in any hie way or dich or Common within this neck of land of Boston, but ar injoyened to bury all such things that soe they may prevnt all anoyanc unto any.

Whether convenient burying ground became scarce, or the town fathers felt that an easier method might result in greater compliance, they decreed in 1666:

for the prevention of annoyance to the Town, all garbidge, beast entralls &c. are to be throwne into the Mill Creek over the Mill Bridge upon penalty of 20 shillings for every default.

Later it was stipulated that not more than three slaughterhouses should be erected over the Mill Creek; it was not until 1798 that one of the duties of a newly appointed health officer was "to prevent dead carcasses and other nuisances being thrown into the Mill Pond."

The appointment of a health officer for Boston town followed closely upon a law of the Commonwealth providing for similar services, and later the same year the

town fathers broadened this concept by establishing a Board of Health:

The Duty of the Board of Health shall be to examine into all Nuisances & other causes injurious to the health of the Inhabitants whether the same shall be caused by stagnant Waters, drains, common sewers, slaughter Houses, Tan Yards, Fish Houses, Docks, Necessaries, putrid animal or vegetable substances or any other cause of whatever kind, which may be injurious to the Health of the Inhabitants as aforesaid, with power to search all houses, stores, cellars, ships & vessels where they may have reason to suspect any of the causes aforesaid to exist.

A Wholesome Food Supply

As mentioned above, the British forbears of the American colonists had generally given little thought to the wholesomeness of their food supply, especially as it related to the lower classes. It is not surprising, therefore, that few references should be found relating to food hygiene in the early days of the colonies.

The town records of Boston for 1654 indicate that two men were chosen for "Searchers and packers of Flesh and Fish," but subsequent appointments do not include the term "searcher," and it would appear that the duties involved mainly supervision of weight and the adequacy of the containers. The first specific reference to matters of food hygiene in Boston appears in the regulations for the town market in 1733:

if any Person or Persons Shall Presume to Expose to Sale in the Said markets or Either of them unholson or Stale victuals, Blown meat, Leprous, or measly Swine, He She or they so offending Shall forfeit and pay in Proportion to the Offence.

The legality of this ordinance was confirmed in 1742, and orders were given to prosecute offenders. Nothing appears to have been stated concerning the authority for determining when an offense had been committed but, in 1742, this matter was placed in the hands of the clerk of the newly erected Faneuil Hall Market, who:

shall suffer no unwholsome or putrid Meat, or otherwise unfit for Sale, to be Sold there; and if any such be Offered to Sale, in the said

Market, he shall be obliged to prefer a Prosecution against the Offender . . . [and] no Meat shall be left in the Market after it is shut up.

In a relatively short time after its settlement, Pennsylvania began to export considerable quantities of beef. In an act of 1727, there was appointed: "an officer for viewing, searching, packing or repacking and branding all beef and pork intended for exportation." While it may be presumed that this law was based more upon economic necessity than altruistic motives, it is at least an early recognition of the need for food inspection.

Military Food Hygiene

A major source of information on almost any aspect of colonial affairs is the writings of George Washington (42 large volumes). It is from these writings that we obtain a good picture of the problems of food hygiene in the military campaigns of the French and Indian and the Revolutionary wars. In 1755, Washington mentions the procuring of salt beef, some of which had to be condemned upon receipt. Because of the problems involved in storage and transportation of processed meat, it was preferred to drive live cattle behind the armies for slaughter as needed. Washington's passion for detail is demonstrated by his diagrams for battle lines in certain static campaigns in which the position of grazing fields and slaughterhouses for the army are indicated. The scarcity of transport emphasized the advantages of keeping slaughter cattle nearby. But in a fast moving campaign, the cattle could not be driven fast enough, and in a forced retreat they frequently had to be left behind, to the obvious advantage of the enemy forces. "Grass guards" were posted to protect the grazing cattle, but frequently cows were lost to the enemy or even to noncombatant Indians.

In a communication to Commissary Charles Dick, in 1755, Washington directed:

You are, so soon as you arrive here, to give such directions as you shall see necessary about driving the Cattle to Fort Cumberland. You

are to send up Doctor Walker, or go yourself there, to see them properly killed and salted.

And later the same year, he wrote Commissary Thomas Walker:

I am sorry to find the Carolina Beeves are so unfit for Slaughtering . . . [Colonel Stevens is] to assist you with his advice, either to kill and salt, or feed them this winter. . . . Proven-der is very scarce in this Colony, however. . . . As I am unacquainted with the proper methods to cure provisions, I must desire you will consult the principal Officers at the Fort; and if their opinions corroborate with yours, let some of the Beef be dried, as you propose. . . . I am informed, that meat will lie sometime in bulk without salt. I think you should not delay slaughtering the Beeves one moment . . . for the Cattle lose flesh every hour . . . [and to Robert Dinwiddie]. Many of the Carolina beeves are dead, through absolute poverty; and the chief part of them too poor to slaughter.

It might be noted that Washington was only twenty-three years old at this time, but was already a formidable military disciplinarian. His order: "You are to send up Doctor Walker, or go yourself there, to see them properly killed and salted," meant exactly what it said. While it must be assumed that supervision of slaughter and processing by a medical officer was a fortuitous exception rather than the rule, it is evident that Washington insisted upon the best food hygiene at his command. His concern did not stop with matters of supply, but carried down to the welfare of all of his soldiers. Although Washington insisted on maintaining an aloofness even with his officers, as a good commander he was attentive to the needs of his men. In 1756, he wrote:

The Soldiers have made some complaints of their provision being very bad. The Commissary is ordered to inspect all that he can have the least doubt of and if there is any that can be saved, to put it into fresh pickle; what can not, must immediately be thrown away.

In a similar vein, one of Washington's first general orders as Commander in Chief of the colonial forces in the Revolutionary War (1775) reads:

Next to Cleanliness, nothing is more conducive to a Soldiers health, than dressing his

provisions in a decent and proper manner. The Officers commanding Companies should therefore daily inspect the Camp Kitchen, and see the Men dress their food in a wholesome way.

And in 1777, he issued a general order requiring:

A fatigue party of an officer and twenty privates, to be employed to bury all the Offals in and about the Slaughter House, dead horses, dogs, or any kind of Carrion in and about the town; also to remove all the filth about the Gaol . . . otherwise as the weather grows warm, the consequences may be fatal, as well to the Soldiery, as the Inhabitants . . . [also]: The Commissary General to have his Slaughter-house, at least a mile in the rear of the camp, and to be very careful to have the offals, of what he kills, buried, a sufficient depth under ground . . . [and]: The Slaughter pens are to be removed from the brooks which afford water for the army. The offal is to be buried once a day.

It was not until 1783, the last year of the war, however, that official provisions for civilian inspection of meat destined for the army were made. In a general order, Washington directed:

The Contractors for the Army having desired, that agreeably to Contract, a person might be appointed to inspect the Cattle destined for the Army, Henry Wykoff, esquire of Fishkill is appointed for that purpose . . . he was recommended by Mr. Parker [one of the contractors] who, himself, previous to the appointment, had condemned a large quantity of Beef wch. had been slaughtered and was ready to Issue.

These selections, culled from nearly 20,000 pages of the writings of Washington, are a representative sample of his thinking on military food hygiene and reflect his sagacity in all matters relating to military operations. From the above it is evident that, in principle at least, the fundamental basis for an adequate system of safeguarding the meat supply for the army had been evolved by the end of the Revolutionary War. How well the tenets of Washington were carried out in subsequent wars, in the nineteenth century at least, is open to suspicion — considering the "embalmed beef" scandals of the Spanish-American War.

Returning to civilian matters, a bill framed by Thomas Jefferson and enacted by the Virginia legislature, in 1786, became the prototype of similar measures in other states. This was:

A Bill Prescribing the Punishment of Those Who Sell Unwholesome Meat or Drink. — Be it enacted by the General Assembly, that a butcher that selleth the flesh of any animal dying, otherwise than by slaughter, or slaughtered when diseased, or a baker, brewer, or distiller, who selleth unwholesome bread or drink shall, on conviction the first time, be amerced; the second time he shall suffer judgement of the pillory, and the third time he shall be imprisoned and make fine; and every time after he shall be adjudged to hard labour six month in the public works.

Rabies Rampant

While it must be supposed that animals suffered more from disease during the colonial period than is on record, nevertheless, it is a fact that animals in the New World enjoyed an immunity from large-scale plagues — an immunity unknown for centuries in Europe. Not until the end of the colonial period did it become apparent that this immunity was a deceptive one, and that the furies were gathering to be unleashed in the nineteenth century. The one disease that reached alarming proportions prior to 1800 was rabies.

Although rabies had been the scourge of both dogs and man from the beginning of historic time, Noah Webster, in his *History of Epidemic and Pestilential Diseases* (1800), states that this disease did not appear in America until 1769, at first in and around Boston. Webster says: "Rabies in dogs commenced in this part of the world at this time" (1769). But on July 5 of the same year, George Washington noted in his diary:

A Dog coming here [Mount Vernon] which I suspected to be Mad I shot him, Several of the Hounds running upon him may have got bit. Note the consequences.

While no "consequences" were mentioned in his diary, the fact that Washington should have recorded the occurrence in a rather perfunctory manner, and that he an-

ticipated some untoward consequences, suggests some familiarity with the disease. As a matter of fact, rabies is first mentioned in the *Archives* of Virginia in 1753.

While reports of human infection are surprisingly scarce in the early reports from Boston, swine, which had the run of the streets, were bitten in large numbers, and foxes in the rural areas became infected. It seems that dog ordinances were ineffective in controlling the disease for, in addition to it remaining a problem in New England, rabies was reported to be "common" in Philadelphia and Maryland by 1779, and "raging" over all the northern states during the 1780's.

The town fathers of Boston were disturbed over the dog menace, and in 1784 it was recorded:

The Committee Appointed to consider of the danger the People at large are continually exposed to, by the large number of Dogs, going at large in this Town, have attended that service — And as many Persons, not only in the Town, but in other parts of this Commonwealth, have been bit by that Animal, and some have lost their lives, & others in great Danger — therefore your Committee apprehend it of great consequence to the People, at large that some effectual method be taken to prevent, the growing evil complained of.

The committee requested instructions for framing a dog law, but it is not clear just what action may have been taken at this time.

In 1786 Washington wrote in his diary:

A Hound bitch which like most of my other hounds appearing to be going Mad and had been shut up, getting out, my Servant Will, in attempting to get her in again, was snapped at by her at the Arm. The Teeth penetrated through his Coat and Shirt and contused the Flesh, but he says did not penetrate the skin nor draw any blood.

Thus in his usual vein, Washington was more concerned with the apparently unharmed individual than with his cherished dogs. His matter-of-fact observation that most of his hounds appeared to be going mad undoubtedly belies his concern over them, but perhaps suggests that the situation was by no means uncommon.

Human rabies had become a major problem during this decade; Webster states that the gazettes of 1785 "abound with accounts of its dreadful effects," and during the following year, "many cases of hydrophobia were observed in the Southern States."

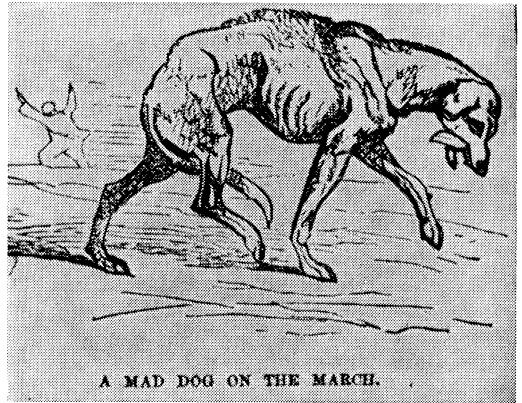
Some of the newspaper accounts of human deaths from rabies during this period are hardly more than vital statistics; others portray graphic and unusual cases. In 1789 the *Connecticut Courant* mentions the case of a man who: "died in July of that dreadful malady, taken as was supposed, by skinning a cow that died of the disorder in the April preceding." And in 1796 the same paper records the death of a man bitten five weeks prior by his own dog when disengaging it from combat with another. The dog died three weeks later; meanwhile:

He suffered the dog afterward to lick the wound It did not occur to Mr. Eger all this time that the animal could have been infected with the hydrophobia; on the contrary, he supposed him to have been poisoned, and employed a negro man to open his body with a view to ascertain the fact, but no symptoms of poisoning appeared.

The Philadelphia physician, James Mease, published a work: *On the Disease Produced by the Bite of a Mad Dog* (1792), in which he rejected the commonly held concept of spontaneous generation of the disease in man or dog, insisting that the only mode of transmission was the wound produced by the bite of an infected animal. His illustrious contemporary, Benjamin Rush, in his *Observations Upon the Nature and Cure of the Hydrophobia* (1805), recognized the bite of a rabid, or merely "angry," animal as a cause, but listed twenty other causes, including fear, thirst, heat, cold, worms, dysentery, and typhus.

Prevention Versus Cure

Responsible physicians and quacks alike professed to "cure" rabies. In the former category was a Dr. Henry Stoy of Lebanon, Pennsylvania, who was "celebrated for curing persons bitten by mad animals." In



The colonies appear to have been free of rabies until about 1750 when the disease appeared in dogs and spread to wildlife. The cry of "mad dog" became increasingly frequent and was the occasion for much talk but relatively little effective action. Forester: *The Dog*

1797, Washington gave a servant, who had been bitten, \$25 for expenses for a trip to Lebanon for treatment. The physician's fee was \$5. Concerning the "cure" of his servant Christopher, Washington notes:

he derived so much aid from the medicine he took as to have remained perfectly well ever since; and has placed such confidence in his Doctrs. skill, that he wou'd not again despair of being cured of the bite of a mad dog; if the Hydrophoby was strong upon him.

Stoy's method was communicated to the Senate of Pennsylvania in the early 1800's as "a sure remedy for the bite of any kind of mad animals." The informant, Valentine Kettering:

from motives of humanity . . . says that his ancestors had already used it in Germany 250 years ago, and that he had always found it to answer the purpose, during a residence of fifty years in the United States.

This remedy, he says, is said to be the same through which the late Doctor William Stoy effected so many cures, and consists of chickweed. The weed must be gathered in June when in full bloom, and dried in the shade, after which it is pulverized:

The dose of this for a grown person is a small tablespoonful in beer or water. For children the dose is the same, yet it must be

administered at three different times. In applying it to animals, it must be used green, cut to pieces, and mixed with bran or ther feed. For the hogs the pulverized weed is made into little balls by mixing it with flour and water. It can also be put on bread and butter, or in honey.

The Rev. Henry Muhlenberg is quoted to the effect that in Germany:

30 grains of this powder are given four times a day, the first day, then one dose a day for a whole week; while at the same time the wound is washed out with a decoction of the weed, and then the powder strewed in it.

If the theory that more of a good thing is better than a little be admissable, the latter regimen would seem more promising than a single shot.

Not all those who professed to cure rabies were as magnanimous as Doctor Stoy, however. As related by Merillat and Campbell, in 1811 the New York legislature appropriated \$1,000 to pay one John M. Crous for a rabies cure and received the following prescription:

Take one ounce of the jaw-bone of a dog, burned and pulverized, or pounded to fine dust. Take the false tongue of a newly foaled colt; let that be also dried and pulverized; and, Take one scruple of the verdigris which is raised on the surface of old copper by lying in moist earth; the coppers of George I. or II. are the purest and best.

It would, perhaps, be invidious to note that another century was to elapse before sound rabies control programs were worked out by responsible public health officers. And it is all too apparent that, for various reasons, the problem is not yet one of the past.

Anthrax Epizooty

One other disease common to man and animals which became a problem during the period under consideration was an-

thrax, but this appears to have been confined, in epizootic proportions at least, to the West Indies. Fleming, in his work on *Animal Plagues*, states that in 1769:

An epizooty of anthrax on St. Domingo resulted in famine, compelling the colonists to salt or smoke the flesh of all their cattle — dead or dying from the anthracoid malady. The consequence was, that a carbuncular epidemy appeared, and in less than six weeks more than fifteen thousand black and white people had perished. The plague did not cease until the consumption of the poisonous flesh or “tassau” was interdicted.

The disease appeared again in epizootic proportions on the Island of Grenada in 1783, and in Barbados in 1795. Fleming quotes a contemporary report which records that:

On those plantations where care was taken to burn the carcasses of the diseased cattle, no further consequences resulted. But they unhappily were few. On those where this precaution was not used, and, indeed, it is surprising that it should be used in any, seeing that the disease was new, and its effects unknown, the flesh of the cattle that died being dug up and eaten by the negroes, proved most dreadfully septic, producing a pestilential carbuncle, attended by a malignant fever. There were not wanting instances of the iniquitous practice of offering the flesh of the diseased cattle for sale, and on these occasions, such was the highly septic nature of this poison, that even touching the flesh, in such manner as that part of the sanies adhered to the finger, produced the same fatal consequence.

One instance of infection in a child who drank milk from a diseased cow was recorded, and Fleming suggests a possible relationship between anthrax and the outbreaks of “milk-sickness” in America in the nineteenth century. While this, of course, was due not to anthrax but to white snake-root poisoning, it seems likely that the West Indies remained a reservoir of infection.