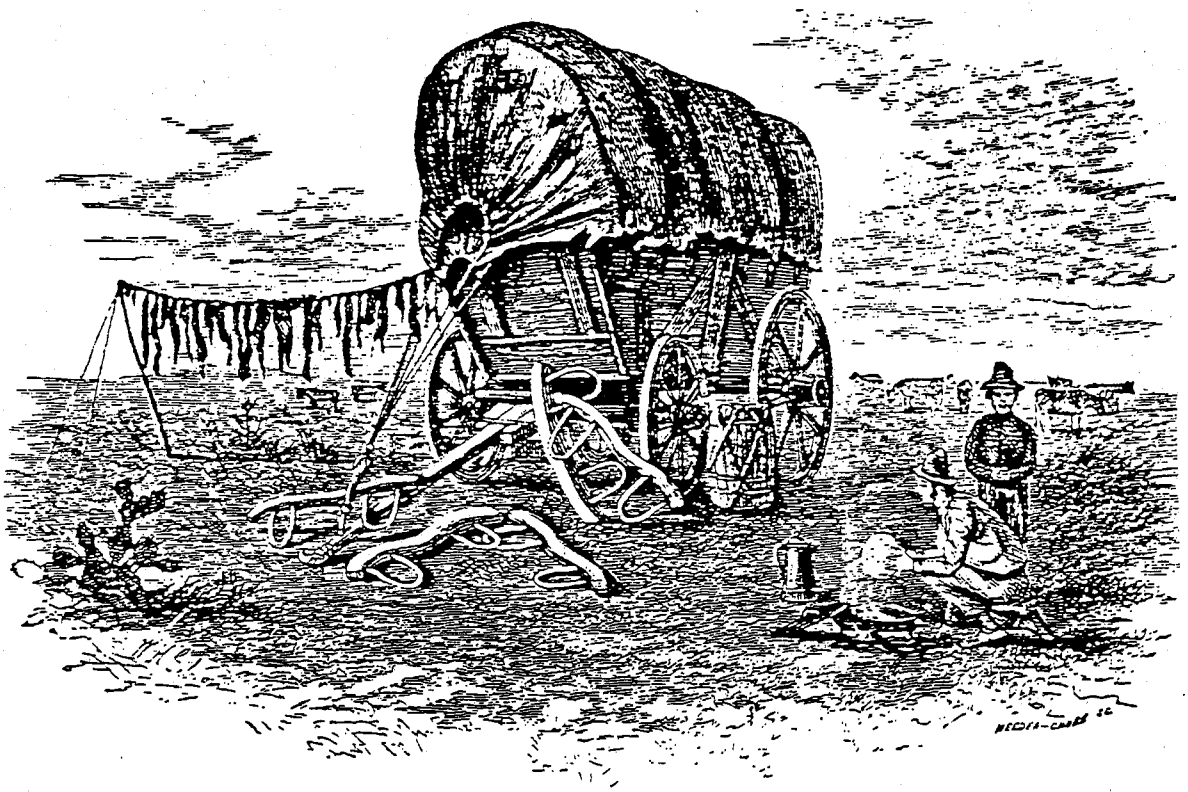
WAGONS ON THE SANTA FE TRAIL

1822-1880

by

Mark L. Gardner



NATIONAL PARK SERVICE

DEPARTMENT OF THE INTERIOR

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Mark L. Gardner

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For

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AUTHOR'S PREFACE

This study was commissioned by the National Park Service in 1994 to "provide a compendium of information ... pertaining to the kinds of civilian wagons used on the Santa Fe Trail during its historic period of use, 1821-1880." For, despite volumes of literature on the Santa Fe Trail, there is very little useful and reliable information on the wagons that were the backbone of the "commerce of the prairies." This is partly explained by the overwhelming challenge that any researcher faces when dealing with this topic: not one of the countless "prairie schooners" that rolled down the Santa Fe Trail during its long and eventful history is known to have survived into the present day--at least in a complete condition. So, in essence, this is a material culture study in which the material culture is virtually non-existent.

Without the wagons themselves, then, I have had to rely primarily on contemporary descriptions, artworks, and photographs for this study. Although detailed specifications are scarce, this deficiency is made up in part by an abundance of pictorial evidence, providing us with important and rare views of typical Trail wagons. And, in the case of one wagon type--the Conestoga--we are fortunate because there are many existing examples that are, if not identical to those that traveled the Trail, very close in many respects.

It should be remembered that the emphasis of this study is on civilian freight wagons, and, to a certain extent, their makers. Yet the reader will also find a section on Dearborns and other personal wagons, and also, for comparison, an appendix that provides the specifications for six-mule army wagons of the 1870s. Various types of stagecoaches traveled the Santa Fe Trail, too, but they have purposely been placed outside the scope of this work.

Many thanks are due to all those who have assisted me in this project, particularly the able staff of numerous historical agencies throughout the country. I am particularly grateful for the many comments provided by the several readers of the first draft of this study: Doug Thamert, Stanley B. Kimball, Marc Simmons, Leo E. Oliva, William Y. Chalfant, Harry Myers, Jane Elder, Charles Bennett, William Pat O'Brien, and the staff of the Long Distance Trails Group Office in Santa Fe. Also, Marc Simmons, Harry Myers, W. Earl Givens, and the late Pauline Fowler graciously shared their research with me, and this study has benefited as a result.

Deserving of special thanks is wagon maker and transportation historian Doug Thamert. Doug generously provided me with reams of obscure published materials on wagons and carriages (many can be found in the present study's bibliography), as well as his own valuable insights on his craft. During our many conversations (and some friendly arguments), I never failed to learn something about this fascinating subject. If this study meets with Doug's approbation, then I will consider this to have been a worthwhile effort.

Too, I would like to thank my wife, Katie, and my daughter, Christiana, who have, for the last few years, been forced to accommodate my research on, of all things, freight wagons.

Cascade, Colorado
December 5, 1996

I

EARLY WAGONS

GENERAL DESCRIPTION

The first wagons to cross the plains from Missouri to New Mexico were part of William Becknell's 1822 Santa Fe trading expedition. The year previous, Becknell and five companions had been the first American traders to penetrate the newly independent Mexican nation. The handsome profits realized on that venture were the driving force behind the considerably more ambitious second expedition, which set out for Santa Fe within nine months of the first.

According to Becknell's now-famous "journal," first published in the pages of the *Missouri Intelligencer* in 1823, his 1822 company consisted of "21 men, with *three waggons*."[1] It appears that only one of the wagons belonged to the expedition's leader, however.[2] This wagon, it was later reported, had cost $150 in Missouri and was sold by Becknell in New Mexico for $700.[3] The other wagons were probably disposed of in a like manner; they do not seem to have returned to Missouri. What these wagons looked like, their hauling capacities, and where they were made and by whom--all this is unknown. Their importance, however, is unquestioned. They proved that merchandise-laden wagons could navigate the 800-plus miles between Franklin, Missouri, and Santa Fe--a remarkable feat that did not go unnoticed.

No wagons were reported on the Santa Fe Trail in 1823, but the 1824 caravan contained an amazing assemblage of vehicles. Meredith Miles Marmaduke, a member of this company, recorded in his diary on May 24 that they traveled with "2 road waggons, 20 dearborns, 2 carts and one small piece of cannon."[4] Augustus Storrs, another member of the expedition, wrote some months later that there had been "twenty-three four-wheeled vehicles, one of which was a common road wagon."[5] Although Marmaduke and Storrs do not agree on the number of vehicles in the caravan, it is important to note their use of the term "road wagon." According to transportation historian Don Berkebile, in his *Carriage Terminology: An Historical Dictionary*, the term has two definitions. One describes a vehicle also known as a buggy. The term was "also loosely applied," Berkebile tells us, "to larger WAGONS that were employed in the movement of materials or merchandise over the roads."[6] The second definition is probably the one intended by Marmaduke and Storrs; Santa Fe trader and historian Josiah Gregg uses "road-wagon" in his *Commerce of the Prairies* (1844) to denote freight wagons.[7] Although the term leaves us to speculate on the appearance of these vehicles, it is possible that the road wagons in the 1824 caravan were the first actual freight wagons to travel the Santa Fe Trail.[8]

Where the road wagons of the 1824 caravan were manufactured is unknown. They could have been made in Missouri, however. James D. Earl and Andrew Light, blacksmiths and wagon makers of St. Louis, advertised in the 1821 directory for that city that they had "made such arrangements as will enable them to manufacture Road Wagons, Dearborn Carriages, Carts & Drays, Hand & Wheel Barrows ...."[9] At the same time, it is possible that traders' wagons were brought from the East--a practice that became commonplace in the Santa Fe trade in the 1830s and 1840s.

The caravan for 1825 reportedly contained 34 wagons. The *Missouri Intelligencer* declared simply that the "wagons and carriages, of almost every description are numerous."[10] Also on the Trail that season were seven wagons purchased for the use of the U.S. government survey party, which was charged with surveying and marking a road from Missouri to Santa Fe. George C. Sibley, one of three commissioners for the survey appointed by the president, ordered six wagons for the expedition from two unidentified St. Louis makers (the seventh wagon acquired for the survey may have been used). The vehicles were described as "seven strong light wagons (painted light blue)--2 of them drawn by 4 horses each and 5 by 2 horses." These wagons appear to have had a capacity of at least 2,000 pounds.[11]

The year 1826 saw a substantial increase in wagons traveling the Santa Fe Trail. Josiah Gregg estimated that a total of 60 rolled to New Mexico that year. Also according to Gregg, 1826 was the first year that pack animals were not part of the yearly caravan, and he notes that from that date forward only wagons were used to transport goods to Santa Fe.[12] Some of those wagons belonged to Mexican Manuel Escudero. The *Missouri Intelligencer* of June 9, 1826, reported that "Six or seven new and substantial built waggons arrived in this place on Tuesday last, heavily laden with merchandise on their way to New Mexico, owned exclusively, we believe by Mr. *Escudero* .... This gentleman has expended a very large sum in the purchase of goods, waggons and equipments." Where Escudero purchased his "new and substantial built waggons" is unclear, although he did travel to St. Louis and Washington, D.C., during the year previous, and undoubtedly passed through St. Louis again on his return.[13]

"SANTA FE WAGGONS FOR SALE" was the bold title for an advertisement that appeared in the *Missouri Intelligencer* on April 1, 1828. "There will be sold for cash," the ad stated, "at public sale, on Monday the 10th inst. in the town of Fayette, several light running Waggons, but strongly constructed, and well suited for the Santa Fe trade--for families removing--for market or plantations." Unfortunately, like most of the references to wagons during this period, the ad simply poses more questions. What did these "light running wagons" look like? How were they constructed? And how did they differ from other wagons? Were they perhaps comparable to the light wagons constructed for the government survey party?

Sixty wagons and approximately 120 men are supposed to have made up the Santa Fe caravan of 1830. "The goods of the adventurers are now almost exclusively transported in waggons, dearborns, &c.," reported the *Missouri Intelligencer*. "Some of the waggons are of the largest class, with four horses or mules."[14] The wagons of "the largest class" were almost certainly a type of freight wagon.

The first known graphic depiction of Santa Fe Trail wagons is a small engraving (figure 1) found in *Scenes of American Wealth and Industry in Produce, Manufactures, Trade, The Fisheries, &c. &c. For the Instruction and Amusement of Children and Youth* (Boston: Allen and Ticknor, 1833). The engraving, titled "Santa Fe Traders," pictures a train of mule-drawn wagons; the wheels of the wagons are quite wide, and the wagons have a very box-like shape. The artist is unknown, as is the artist's inspiration for the image. Was "Santa Fe Traders" created from personal observation or a written description? Whatever the source for the image, the presence of palm trees (not native to the region of the Santa Fe Trail) in the scene renders the engraving highly suspect.

In the absence of additional artist renderings or more detailed references to vehicles, the hundreds of wagons used on the Santa Fe Trail during the 1820s, and even into the 1830s, must remain somewhat of a mystery. What is clear, though, is that the early years of the trade saw an odd assortment of vehicle types traveling to Santa Fe--a characteristic of Trail travel that would never entirely disappear.

DRAFT STOCK

Horses were used almost exclusively during the first years of the trade. Alphonso Wetmore wrote in 1824 that Santa Fe goods were "transported by means of horses raised here [Missouri], which are fed on the herbage found in abundance on the route."[15] However, the horse was rapidly replaced in the harness by the mule "as soon as the means for procuring these animals increased," wrote Josiah Gregg.[16] In 1829, oxen were introduced to the Trail by the U.S. Army. They drew the baggage wagons and carts for the first military escort to accompany the traders' caravan, commanded by Major Bennet Riley. Trader Charles Bent experimented with one yoke of these oxen after leaving the military escort behind at the Arkansas River, taking the animals all the way to Santa Fe.[17] From that date forward, according to Gregg, "upon an average about half of the wagons in these expeditions have been drawn by oxen."[18] Some freighters purposely matched their teams by color or other distinguishing characteristics. Colonel James F. Meline described the ox trains he saw in Leavenworth, Kansas, in 1866 as "remarkable, each wagon team consisting of ten yokes of fine oxen, selected and arranged not only for drawing but for pictorial effect, in sets of twenty, either all black, all white, all spotted, or otherwise marked uniformly."[19] How frequently teamsters followed this practice is unknown to the author.

Notes

1. *Missouri Intelligencer* (Franklin, Missouri), April 22, 1823.

2. Alphonso Wetmore wrote in 1824 that "Mr. Becknal ... took with him a wagon, as did also two or three of his associates." Augustus Storrs and Alphonso Wetmore, *Santa Fe Trail First Reports: 1825* (Houston, Texas: Stagecoach Press, 1960), 61.

3. *Missouri Intelligencer*, February 13, 1823, as quoted in Larry M. Beachum, William Becknell: Father of the Santa Fe Trade, Southwestern Studies Monograph No. 68 (El Paso: Texas Western Press, 1982), 38. The Intelligencer states that only "one waggon has ever gone from this state to Santa Fe, and that was taken by Capt. Wm. Becknell." Despite the fact that the editor claims to have obtained this information directly from Becknell, he is in error on this one point, for Becknell reported in his journal published in the same paper just two months later that the expedition had three wagons.

4. Meredith Miles Marmaduke, "Santa Fe Trail: M. M. Marmaduke Journal," ed. Francis A. Sampson, *Missouri Historical Review 6* (October 1911): 3.

5. U.S. Congress, Senate, *Answers of Augustus Storrs, of Missouri, to Certain Queries upon the Origin, Present State, and Future Prospect, of Trade and Intercourse between Missouri and the Internal Provinces of Mexico*, Propounded by the Hon. Mr. Benton, Sen. Doc. 7, 18th Cong., 2nd sess., 1825 (Serial 108), 3.

6. Don H. Berkebile, *Carriage Terminology: An Historical Dictionary* (Washington, D.C.: Smithsonian Institution Press, 1978), 239.

7. "We had fourteen road-wagons, half drawn by mules, the others by oxen (eight of each to the team); besides a carriage and a Jersey wagon." Josiah Gregg, *Commerce of the Prairies*, ed. Max L. Moorhead (Norman: University of Oklahoma Press, 1954), 229. See also page 57.

8. One author writes that "A Road Waggon was just that -- an ordinary wagon of the period with some fitting out for road travel, these, with the exception of the techniques of manufacture, was [sic] structurally little different from the farm wagons of our youth." See Paul H. Downing, "A History of Carriages," *The Carriage Journal 6* (Autumn 1968): 79.

9. John A. Paxton, *The St. Louis Directory and Register* (St. Louis: John A. Paxton, 1821).

10. Louise Barry, *The Beginning of the West: Annals of the Kansas Gateway to the American West, 1540-1854* (Topeka: Kansas State Historical Society, 1972), 119; and *Missouri Intelligencer*, June 19, 1825. Josiah Gregg gives the number of wagons on the Trail that year as 37. Gregg, Commerce of the Prairies, 332.

11. Kate L. Gregg, ed., *The Road to Santa Fe: The Journal and Diaries of George Champlin Sibley* (Albuquerque: University of New Mexico Press, 1952), 30, 176, and 217-218.

12. Gregg, *Commerce of the Prairies*, 332.

13. Susan Calafate Boyle, *Commerciantes, Arrieros, Y Peones: The Hispanos and the Santa Fe Trade*, Southwest Cultural Resources
Center Professional Papers No. 54 (Santa Fe, N. M.: National Park Service, 1994), 68.

14. *Missouri Intelligencer*, May 22, 1830.

15. Santa Fe Trail First Reports, 68. 16.

16. Gregg, *Commerce of the Prairies*, 24.

17. Leo E. Oliva, *Soldiers on the Santa Fe Trail* (Norman: University of Oklahoma Press, 1967), 28.

18. Gregg, *Commerce of the Prairies*, 24-25.

19. James F. Meline, *Two Thousand Miles on Horseback* (1868; reprint ed., Albuquerque: Horn & Wallace, 1966), 3.

II

WAGONS FROM PENNSYLVANIA

GENERAL DESCRIPTION

Precisely when the first Pennsylvania-made wagons rolled down the Santa Fe Trail is unknown. By the late 1830s, however, they had become a prominent fixture of the trade. Thomas J. Farnham, in Independence, Missouri, in 1839, wrote that "In the month of May of each year ... [Santa Fe] traders congregate here, and buy large Pennsylvania wagons, and teams of mules to convey their calicoes, cottons, cloths, boots, shoes, &c., &c., over the plains ...."[1] It is well documented that most of these Pennsylvania wagons were manufactured in Pittsburgh. *Niles' National Register* of July 10, 1841, related information obtained from a Pittsburgh newspaper saying that "Six horse wagons are constructed in Pittsburg, loaded with assorted goods from New York and Philadelphia, transported to Independence in Missouri, and there driven across the country to Mexico, where they were sold and paid for in specie or the best funds." The following year, another newspaper reported that six Mexican traders "were in Pittsburg for the purpose of making contracts for waggons, harness, & purchasing other articles intended to cross the desert for the Mexican market."[2] And Josiah Gregg, in his *Commerce of the Prairies*, states plainly that "The wagons now [1844] most in use upon the Prairies are manufactured in Pittsburg; and are usually drawn by eight mules or the same number of oxen."[3]

Why Pittsburgh? By the 1840s, there were several wagon shops and factories located in and around Pittsburgh. Here they had access to supplies of iron and lumber, as well as the immense overland freighting business of the roads from Philadelphia and Baltimore. Pittsburgh was also an important shipping point on the Ohio River through which goods purchased or imported at New York, Philadelphia, and Baltimore were funneled to the West.[4] Santa Fe traders on their way to these cities to make their selections passed through Pittsburgh and made purchases of convenience while there. Pittsburgh wagons were probably priced competitively, and they could be shipped on board steamboats along with boxes and bales of new merchandise destined for the Southwest.[5]

As will be shown, it is now evident that the freight wagons purchased by Santa Fe traders at Pittsburgh, and perhaps elsewhere in Pennsylvania, were none other than the famous Conestoga (figures 2, 3, and 4), or variations thereof. The Conestoga was, as described by one historian,

> "a huge affair, very heavily built, with a bed higher at each end than in the middle, and topped by a dull-white cloth cover that had a similar curve of still more pronounced degree."[6] Another distinguishing characteristic was the paneled look of the wagon's

> body. The wagon's two side panels were constructed of three longitudinal rails, several vertical uprights or standards mortised through these rails, and thin board planking. The front and rear end-gates also were made up of rails, uprights, and planking. The paneled look came from the fact that the rails and uprights were visible on the outside of the wagon (the technical term for this is "raved body"). Traditional colors for the Conestoga were blue for the wagon bed and red for the running gear.[7] By the 1830s, Conestogas had for years been the primary freight carriers on the roads between Philadelphia and Pittsburgh, and Baltimore and Pittsburgh. It should be no surprise, then, that this wagon type, which had been proven on the uneven routes over the Appalachian Mountains, was popular with Santa Fe traders."

It is important to note here that many of the Conestogas used on the Santa Fe Trail appear to have differed in some aspects from the "classic" Conestoga traditionally associated with southeastern Pennsylvania, of which several examples survive in museums. Although most of the literature on the Conestoga focuses on the classic Pennsylvania wagon, Conestoga-type wagons were also manufactured in other regions and states. A recent and revealing study of several existing early Virginia freight wagons has concluded that, although the wagons contained several features that distinguished them from the Pennsylvania freighters, they "can properly be classified as Conestogas."[8] (In fact, surviving Pennsylvania Conestogas vary from one to the other, in size and other small details, although they are still readily recognizable as Conestogas). Similarly, Conestogas used on the Santa Fe Trail had their own distinguishing characteristics (discussed in chapter 4), no doubt based on the demands of the traders themselves, the building methods employed by Pittsburgh wagon makers, and the latest innovations in wagon construction. However, it is clear from contemporary descriptions and artist renderings that, like the Virginia Conestogas, these wagons properly belong in the Conestoga class. Indeed, they were identified as such at the time.[9]

Several firsthand accounts confirm the presence of Conestoga-type wagons on the Santa Fe Trail. Thomas Farnham described the freight wagons he saw in 1839 as "long sunken Pennsylvania wagons," an obvious reference to the Conestoga's curved, downbowed, body.[10] A similar observation comes from the pen of Lewis Garrard, who was on the Trail in 1846. He writes of "the heavily laden, *high before and behind* [emphasis added], Pennsylvania wains careening from side to side in the ruts ...."[11] Some individuals mention Conestogas by name. At a camp on the Santa Fe Trail near the Missouri state line in 1841, Rufus Sage observed "four large Connestoga waggons, with ample canvass tops."[12] Lieutenant James Abert, a member of the Topographical Engineers, was in New Mexico with the Army of the West in 1846, and, according to his official report, on November 10 camped on the Chihuahua Trail within sight of a train of "forty large Conestoga wagons."[13] Another reference is found in an 1857 issue of *Harper's New Monthly Magazine*, in which author Charles Hallock describes (apparently from personal observation) an 1852 Santa Fe Trail caravan that included "fourteen white-tilted Conostoga wagons."[14]

By far the best contemporary description of Conestoga wagons used by Southwest traders was written by a young Missouri volunteer in the Army of the West by the name of Frank S. Edwards. Sometime around December 22, 1846, Edwards viewed the traders' caravan that was following Colonel Alexander W. Doniphan's Chihuahua expedition. The caravan was then spread between camps at San Diego and Robledo, at the southern end of the Jornada del Muerto on the Chihuahua Trail. Edwards described what he saw thus:

> "Encamped here ... were about three hundred wagons belonging to the traders; and to one who has never seen these traveling merchants on their journey, the whole is interesting. Their wagons, called Conestoga or Pennsylvanian, are of the largest kind, covered with three or four cotton covers or sheets drawn close at each end so as to exclude moisture, and these are supported by high hoops, and, as those at the ends of the wagon are much higher than those in the middle, it has a very singular appearance. The height to the top of these end-hoops is usually from eighteen to twenty feet. They are each drawn by ten mules or six yoke of oxen, and contain about forty hundred weight of goods each."[15]

In support of the written accounts are several contemporary engravings, woodcuts, and drawings picturing Conestoga-type wagons on the Santa Fe and Chihuahua trails. Josiah Gregg's *Commerce of the Prairies*, first published in 1844 by Henry G. Langley of New York City, contains four illustrations showing freight wagons with Conestoga features, the most notable being the engraving entitled "March of the Caravan" (figure 5). This engraving distinctly portrays wagons on the Trail with curved bodies and outward-canted end-gates. Although it is almost certain that the artists who created the illustrations for *Commerce of the Prairies* never traveled the Santa Fe Trail, it is known that Gregg was in New York City for the first half of 1844, paying close attention to his book's production, and thus may have supervised to some degree the artists' efforts.[16] In fact, many of the illustrations in *Commerce of the Prairies* contain authentic details that would have been impossible to render accurately simply from studying Gregg's text. And, although it was a common practice for illustrators to "borrow" from earlier published works, the author has been unable to locate any previous depictions of the Santa Fe Trail that contain similarities to the illustrations in Gregg's book.[17]

A now-famous engraving of Independence, Missouri (figure 6), an important outfitting point for Santa Fe Trail traffic, pictures a Conestoga-type wagon on the town square. This engraving, part of a series of views of western towns published by Herrmann Meyer of New York City in 1853, is believed to represent Independence as it appeared about 1847-1850, and may have been based upon a daguerreotype.[18] However, it has been shown that other views in the above series are not entirely faithful to the earlier images they were drawn from; in at least two cases, various vehicles appear in the engravings that are not in the original source images.[19] It is possible, then, that the unknown artist for the Independence engraving could have added the Conestoga to the scene--and the other vehicles as well. Yet without the original source for the engraving, this will never be known. Artistic license or not, the fact that the engraving includes a fairly good representation of a Conestoga, a type mentioned in the contemporary Trail literature, bears consideration. Two firsthand Trail accounts of the late 1840s also contain illustrations containing Conestoga-type wagons, although the provenance of these images is impossible to document (figures 7 and 8).

Fortunately, there exist two early images featuring overland freight wagons in which the artist is both identified and known to have rendered his work from on-the-spot observation. On the inside cover of a diary kept by artist Edward Kern is a sketch of Barclay's Fort, on the Santa Fe Trail near Watrous, New Mexico, dated August 9, 1851 (figure 9).[20] In this view, several wagons can be seen parked haphazardly around the walls of the adobe stronghold. Although the sketch is rough and the wagons are missing their hoops and cloth covers, distinct Conestoga characteristics are visible--primarily the overhanging end-gates, and the slightly curved lines of the wagon bodies. The other early image (figure 10), and perhaps the more important of the two because of its clarity, is an

engraving made from a drawing by M. Rondé, a Frenchman who visited the State of Chihuahua, Mexico, in 1849.[21] Titled "Chariots de Chihuahua," the engraving pictures Conestoga-type wagons and a Mexican *carreta* at the hacienda or village of Corralitos, the home of merchant José María Zuloaga, an operator of local silver smelters. Mexican merchants, including many from Chihuahua, are known to have purchased and used American freight wagons, and from Rondé's account of his experiences in Chihuahua, it is probable that the Conestogas pictured in his rare image were the property of Zuloaga.[22]

PENNSYLVANIA WAGON MAKERS

In 1826, Pittsburgh had "7 establishments where wagons and ploughs of a dozen different kinds are made -- employ 35 hands, and manufacture per year to the amount of 12,000 dollars."[23] A survey of existing Pittsburgh city directories for the 1830s, 1840s, and 1850s, reveals the identities of several wagon makers situated in and near the city. (Some of the wagon manufactories of this period were actually located in the village of Manchester, a short distance downstream from Pittsburgh, although warehouses for these establishments were often in Pittsburgh proper.) In the 1837 directory are advertisements for Samuel Kissick, who kept "on hand, ready to ship at short notice, a good stock of the best Wagon Work," and for Marlatts & Hall, "Plough and Wagon Manufacturers."[24] The wagon-making firm of Townsend & Radle, Manchester, advertising in the directory for 1839, stated that

> "[they have] on hand and are daily manufacturing a good supply of all kinds of WAGGONS, CARTS, WHEEL BARROWS, &C. either for town or country, for the river trade or for western and southern planters. They manufactured last year, about $40,000 worth, and are preparing to extend their business by a steam engine."[25]

An interesting list of nine coach and wagon makers appears in the 1844 directory for the cities of Pittsburgh and Allegheny: Thomas Donahu; John Donahu; Jacob Fedder; Jacob Wise; Neal McIlwayn; Wm. McCegua (M'Cague, later M'Kee) (figure 11); Robert D. Nicholson; David Sloan; and Cyrus Townsend. Manufacturers who advertised themselves as wagon makers in the 1850 directory were William M'Kee, and Daniel T. Johnston & Brothers. In the 1854 volume there were advertisements for Phelps, Carr & Co.; F. Aeschlemann; and J. & M. Fischer.[26]

Of course, not all wagon makers placed advertisements in the directories. Some shops changed hands over time or went out of business, and there were undoubtedly those small establishments who catered only to local trade. According to an 1854 article on the commerce and manufacturers of Pittsburgh, there were then seven carriage manufacturers in the city and "2 very extensive wagon factories, where are manufactured every year an incredible number of light and heavy wagons of every description .... Most of their products go far West .... The larger of these establishments supplied our army while in Mexico [1846-1848] with most of the camp and baggage wagons, gun-carriages, &c."[27]

It is impossible to determine which Pittsburgh shops did the most business with Santa Fe and Chihuahua traders. However, two are known to have catered to this particular clientele: William M'Kee and Cyrus Townsend. M'Kee's 1850 directory advertisement announced that "Those engaged in the Santa Fe trade, and Furnace men, are requested to give him a call before purchasing elsewhere." M'Kee had been in business in Pittsburgh at least as early as 1839. Townsend, a native of New York, is listed in the 1839 directory as a blacksmith and a member of the firm of Townsend & Radle, noted above. By 1841 he was the sole owner of what he advertised as the Manchester Wagon Factory (figure 12). (Townsend seems to have quit the business or retired by 1854, when the firm of Phelps, Carr & Co. listed themselves as the successors to Townsend, Carr & Co.) A surviving invoice book for the Southwest trading firm of Owens & Aull shows that they purchased 15 wagons and five "Sleeping Wagons" from Cyrus Townsend in April 1846.[28] Apparently, it was these very wagons that became the subject of controversy in the press later that year.

On September 9, 1846, the St. Louis *Missouri Republican* reported that a letter received from Bent's Fort spoke "in disparaging terms of the wagons purchased by the traders at Pittsburgh. A great portion of the time was occupied in repairing them, and on their arrival at the Fort much the largest portion of the timber in them was not that with which they started." The paper went on to encourage wagon purchases in St. Louis. It did not take long for this little news item to make its way east. The *Missouri Republican* noted on September 30 that the *Wheeling Times* (Virginia) had responded to the statements in the letter by proclaiming that "Wheeling furnishes the right kind of wagons." The *Pittsburgh Chronicle* quickly rejoined this attack on its manufacturers: "The wagons of which the complaints were made, were *not* Pittsburgh wagons. They were manufactured elsewhere. The statement made in St. Louis papers was most emphatically denied by Mr. Townsend, the principal carriage maker in our city. Mr. Townsend showed that no wagons from this city had reached St. Louis at the time when the complaints were made ...." But the *Missouri Republican* stood by its story, and also took the opportunity to slip in another taunt. The Pittsburgh "wagons not only reached St. Louis, but had, as stated, made the trip to Fort Bent, so much, at least, as was left of them ...." Cyrus Townsend's denial may have resulted from confusion over the delay involved in receiving letters from the plains. Or, in the interest of business, he may have conveniently forgotten his transaction with Owens & Aull, who had indeed traveled the Santa Fe and Chihuahua trails that year.

Despite the popularity of Pittsburgh wagons, it is possible that Southwest traders also purchased wagons from manufacturers in Philadelphia, another center for wagon-making in Pennsylvania at that time and an important stop for western merchants. *O'Brien's Philadelphia Wholesale Business Directory* for the Year 1844 lists 12 firms and individuals under the heading of wagon, dray, cart, and wheelbarrow manufacturers: Nicholas Coleman; Everham & Colsher; B. Flum; Isaac Potts; George Richards; Robert B. Scott; Henry Simons; Adam F. Sylvestor; T. W. Simpers; Samuel Ware; D. G. Wilson, J. Childs & Co.; and William Woods. Three of the above makers--William Wood, Henry Simons, and Wilson, Childs & Co.--had advertisements in the directory that stated that they gave "prompt attention" to orders from, in addition to the U.S., South America, the West Indies, Texas, and Mexico.[29]

Wilson, Childs & Co. (figures 13 & 14) had been in business in Philadelphia since 1829, when Wilson, a wheelwright, and Childs, a blacksmith, formed a partnership. The firm built the prototype

of the six-mule army wagon, designed by Major George H. Crosman of the Quartermaster's Department shortly after the Mexican War. Once Crosman's design (notable primarily for its use of interchangeable parts) was adopted by the Army, Wilson, Childs & Co. manufactured many of the wagons subsequently used by the military in the West.[30] Percival G. Lowe, a civilian wagonmaster with the Quartermaster's Department in the 1850s, wrote that "Until the Mormon War [1857], nearly all the Government wagons used at Fort Leavenworth were made in Philadelphia--'The Wilson Wagon,' so called--and they were absolutely perfect."[31]

Beginning in the 1860s, large freight wagons manufactured by Wilson, Childs & Co. were imported by August Staacke of San Antonio, Texas, for use in the overland trade between that city and Chihuahua, Mexico.[32] In fact, an 1867 advertisement of Wilson, Childs & Co. lists "Chihuahua Wagons" as one of the many vehicle types available from its factory.[33] However, these wagons appear to have been slightly larger than those employed on the Santa Fe Trail. According to Texas freighter August Santleben, the wagons "were constructed to withstand the wear and tear of the rocky and mountainous roads in western Texas and Mexico, and they could not be used to advantage elsewhere on account of their weight, which was estimated to be about four thousand pounds."[34]

Although firms like Wilson, Childs & Co. continued to sell wagons to western customers through the 1860s, and undoubtedly later, the dominance of Pennsylvania-made freight wagons (I am referring to *civilian* wagons here) appears to have waned considerably beginning in the 1850s, if not earlier. This was due primarily to competition from wagon makers in other states, especially Missouri and Illinois, some of whom were conveniently located at Trail outfitting points.[35] The increasingly large numbers of freight wagons employed each year in the West drove the wagon-making business, and encouraged the establishment of additional shops and factories. One man wrote of the Santa Fe trade in 1848 that "Very little of the stock or wagons ever return [from New Mexico], which keeps up the demand for wagons and stock."[36] And those wagons that did make more than one 800-mile trip could not be expected to last for long. Isaac Jones Wistar, in Independence in 1849, remembered seeing in "some low-lying ground and meadows adjacent, at least fifty or more acres of old and worn-out Santa Fé wagons ... falling to decay."[37] Less than a decade later, a total of 9,784 wagons are reported to have traveled to New Mexico from Kansas City in one year alone.[38] Although some of these were certainly Pittsburgh-made, Pennsylvania's near monopoly of the business of the early 1840s was never to return.

Notes

1. Thomas J. Farnham, *Travels in the Great Western Prairies, the Anahuac and Rocky Mountains, and in the Oregon Territory* (New York: Greeley & McElrath, 1843), 4.

2. As quoted in Louise Barry, *The Beginning of the West: Annals of the Kansas Gateway to the American West, 1540-1854* (Topeka: Kansas State Historical Society, 1972), 449.

3. Josiah Gregg, *Commerce of the Prairies*, ed. Max L. Moorhead (Norman: University of Oklahoma Press, 1954), 24. In 1883, merchant Reuben Gentry was interviewed by a Santa Fe newspaper concerning his many years in the Mexican trade. In regard to an 1843 trading expedition of Gentry's, the article stated that "The goods occupied 12 'prairie schooners,' for Pittsburgh freight wagons, as they were sometimes called, from the place where the wagons were purchased." "An Old Timer: Reuben Gentry a Pioneer Pays a Visit to the Scenes of his Youth," *Santa Fe New Mexican Review*, September 27, 1883 (reprinted in *Wagon Tracks 5* (Quarterly of the Santa Fe Trail Association), (February 1991): 24-25).

4. See Lewis E. Atherton, *The Frontier Merchant in Mid-America* (Columbia: University of Missouri Press, 1971), 85-86.

5. Wagons could be disassembled for shipping by steamboat (sometimes referred to as shipping in "knock-down" fashion). However, Francis Parkman's description of Santa Fe wagons on the steamboat *Radnor* in 1846 suggests that he saw wagons that were largely intact: "Her upper-deck was covered with large wagons of a peculiar form, for the Santa Fé trade, and her hold was crammed with goods for the same destination." Francis Parkman, *The Oregon Trail*, ed. E. N. Feltskog (Madison: University of Wisconsin Press, 1969), 2.

6. Seymour Dunbar, *A History of Travel in America* (New York: Tudor Publishing Company, 1937), 203.

7. Don H. Berkebile, *Carriage Terminology: An Historical Dictionary* (Washington, D.C.: Smithsonian Institution Press, 1978), 110 and 375. The definitive work on the Conestoga is George Shumway and Howard C. Frey, *Conestoga Wagon, 1750-1850: Freight Carrier for 100 Years of America's Westward Expansion* (York, Pa.: George Shumway, 1968). See also John Omwake, *The Conestoga Six-Horse Bell Teams of Eastern Pennsylvania* (Cincinnati: The Ebbert & Richardson Co., 1930); Arthur L. Reist, *Conestoga Wagon: Masterpiece of the Blacksmith* (Lancaster, Pa.: Forry and Hacker, 1975); and Ron Vineyard, *Virginia Freight Waggons, 1750-1850*, Colonial Williamsburg Foundation Library Research Report Series #345 (Williamsburg, Va.: Colonial Williamsburg Foundation Library, 1994).

8. Ron Vineyard, *Virginia Freight Waggons*, 1750-1850, 141 and 190-191.

9. Today, the name "Conestoga" is commonly applied to almost any old covered wagon. However, the author has been unable to locate evidence that the term was used generically in the first half of the nineteenth century. "Conestoga" or "Conestoga wagon" does not appear in John Russell Bartlett's *The Dictionary of Americanisms* (1849), which suggests that the term was not in general or common use. Although the majority of nineteenth-century observers were hardly transportation scholars, the available evidence, particularly the 1846 description of Conestogas provided by Frank Edwards (see below), and the several artists' renderings reproduced in this study, indicates that the term "Conestoga wagon" was being used correctly at the time. On a similar note, the term "Pennsylvania wagon" may not have referred simply to the wagon's place of origin. It is possible that the term may have been used to indicate a Conestoga-style wagon, which was in widespread use in Pennsylvania during this period.

10. Farnham, *Travels in the Great Western Prairies*, 15.

11. Lewis Garrard, *Wah-to-Yah and the Taos Trail* (1850; reprint ed., Norman: University of Oklahoma Press, 1955), 12.

12. Rufus Sage, *Scenes in the Rocky Mountains*, ed. LeRoy R. Hafen, and Ann W. Hafen, *The Far West and the Rockies*, Historical Series, vols. 4 & 5 (Glendale, California: Arthur H. Clark Co., 1956), 4:125.

13. Lieutenant James W. Abert, *Abert's New Mexico Report, 1846-'47* (Albuquerque: Horn & Wallace, 1962), 120.

14. [Charles Hallock], "The Seige of Fort Atkinson," *Harper's New Monthly Magazine 15* (October 1857): 641; and Barry, *The Beginning of the West*, 1106. George A. F. Ruxton's novel, *Life in the Far West* (New York: Harper & Brothers, 1855), 66, includes the following description of traders' wagons in a camp near Independence, Missouri: "Upward of forty huge wagons, of Conostoga and Pittsburg build, and covered with snow-white tilts, were ranged in a semicircle, or rather a horse-shoe form, on the flat, open prairie, their long "tongues" (poles) pointing outward; with the necessary harness for four pairs of mules, or eight yoke of oxen, lying on the ground beside them, spread in ready order for "hitching up." Ruxton traveled the Santa Fe Trail in 1847, and his novel was first published in book form in 1849.

15. Frank S. Edwards, *A Campaign in New Mexico with Colonel Doniphan* (Philadelphia: Carey and Hart, 1847), 79-80.

16. See Josiah Gregg, *Diary and Letters of Josiah Gregg*, ed. Maurice Fulton, 2 vols. (Norman: University of Oklahoma Press, 1941 and 1944), 1:133-145. For a discussion of the artists who created the illustrations for *Commerce of the Prairies*, see David J. Weber, *Richard H. Kern: Expeditionary Artist in the Far Southwest, 1848-1853* (Albuquerque: University of New Mexico Press, 1985), 7 and 291, n. 12.

17. Even if the artists for *Commerce of the Prairies* based their engravings on the work of others, it is clear from statements left by John Bigelow, who was hired by Gregg to edit his manuscript for publication, that the Santa Fe trader/author, if not a perfectionist, was at the least a stickler for accuracy. Gregg "always had the critics of the plains before his eyes," wrote Bigelow, "and would sooner have broken up the plates and reprinted the whole book than have permitted the most trifling error to creep into his description of the loading of his mules or the marshaling of one of his caravans ...." Judging from the following extract of a review that appeared in the Missouri *Independence Journal*, it seems that Gregg ably satisfied the "critics" he most respected: "Perhaps one of the highest encomiums which could be passed upon this work, is the universal commendation that it receives from all those who have visited Santa Fe, and who have had opportunities of becoming acquainted with Mexican manners, prairie life, and the Indians of the plains; and there are many such here." Gregg, *Diary and Letters*, 1:142, n. 33, and illustration opposite 188.

18. Pauline Fowler to Mark L. Gardner, Independence, Missouri, February 20, 1989.

19. See David Boutros, "The West Illustrated: Meyer's Views of Missouri River Towns," *Missouri Historical Review 80* (April 1986):304-320.

20. *Edward Kern Diary, 1851* (HM 4276), Huntington Library, San Marino, California.

21. M. Rondé, "Voyage Dans L'Etat de Chihuahua, (Mexique)," *Le Tour Du Monde 4* (1861):147.

22. I should note here that for many years the provenance of this important engraving has been a mystery. It has previously been known only as a curious illustration in an 1888 work of fiction entitled *Great Grandmother's Girls in New Mexico*, by Elizabeth Champney (the engraving appeared with just enough of the image cropped on the bottom to leave off the names of the engraver and artist). I speculated about the illustration's significance in an article on Conestoga wagons published in 1989, but it was not until pursuing my research for this study that I discovered, quite by chance, Rondé's account with its excellent engravings buried in the bound volumes of *Le Tour Du Monde*.

23. S. Jones, *Pittsburgh in the Year Eighteen Hundred and Twenty-Six* (Pittsburgh: Johnston & Stockton, 1826), 78.

24. Isaac Harris, *Harris' Pittsburgh Business Directory, for the Year 1837* (Pittsburgh: Isaac Harris, 1837).

25. Isaac Harris, *Harris' Pittsburgh & Allegheny Directory* (Pittsburgh: A. A. Anderson, 1839).

26. Isaac Harris, *Harris' Business Directory of the Cities of Pittsburgh and Allegheny* (Pittsburgh: A. A. Anderson, 1844); Samuel Fahnestock, *Fahnestock's Pittsburgh Directory for 1850* (Pittsburgh: Geo. Parkin & Co. Book and Job Printers, 1850); and *Pittsburgh Business Directory and Merchants and Travelers' Guide* (Pittsburgh: Jones & Co., 1854).

27. "Pittsburgh: Her Manufactures, Commerce, and Railroad Position," *Merchants' Magazine and Commercial Review 30* (June 1854): 691.

28. *Invoice Book (Owens & Aull), February 14, 1846-1847*, p. 36, in James Aull Business Records, 1825-1851, Coll. #3001 (microfilm), Western Historical Manuscript Collection, Columbia, Missouri.

29. John G. O'Brien, *O'Brien's Philadelphia Wholesale Business Directory ... for the Year 1844* (Philadelphia: King & Baird, Printers, 1844), 113-115.

30. J. Leander Bishop, *A History of American Manufacturers from 1608 to 1860*, 2 vols. (Philadelphia: Edward Young & Co., 1864), 2: 564.

31. Percival G. Lowe, *Five Years a Dragoon* ('49 to '54) and Other Adventures on the Great Plains (1906; reprint ed., Norman: University of Oklahoma Press, 1965), 243.

32. August Santleben, *A Texas Pioneer: Early Staging and Overland Freighting Days on the Frontiers of Texas and Mexico*, ed. I. D. Affleck (New York: The Neal Publishing Company, 1910), 64 and 109.

33. Shumway and Frey, *Conestoga Wagon*, 1750-1850, 180.

34. Santleben, *A Texas Pioneer*, 109. The exact dimensions of these Chihuahua wagons, as remembered by Santleben, will be provided elsewhere in this study. See also Roy L. Swift and Leavitt Corning, Jr., *Three Roads to Chihuahua: The Great Wagon Roads that Opened the Southwest, 1823-1883* (Austin, Texas: Eakin Press, 1988).

35. *The Kansas City Western Journal of Commerce* noted on July 3, 1858, that of over 1,200 wagons that had departed thus far that season for the West, the majority had been purchased in St. Louis, Chicago, Springfield, and Pittsburgh.

36. Septimus Scholl to Rodney M. Hinde, Jackson County, Mo., April 23, 1848, in Isabel Stebbins Giulvezan, ed., *A Collection of Letters Written by the Scholl Family and Their Kin, 1836-1897* (St. Louis, 1959), 26.

37. Isaac Jones Wistar, *Autobiography of Isaac Jones Wistar, 1827-1905* (Philadelphia: The Wistar Institute of Anatomy and Biology, 1937),

38. *Western Journal of Commerce*, June 19, 1858.

III

WAGON MAKING IN MISSOURI UNTIL CIRCA 1855

GENERAL DESCRIPTION

By necessity, Santa Fe traders, fur trappers, emigrants, military expeditions, and various travelers either passed through or began their western journeys from various Missouri towns, among them St. Louis, Franklin, Lexington, Independence, and Westport. Merchants and mechanics located in these communities were obviously in an extremely advantageous position to capitalize on this steady traffic. They did so in what was known as the "outfitting trade": the selling of various needed supplies for an overland trip, including clothing, firearms and ammunition, fresh foodstuffs, saddles, horses, mules, and oxen--and, eventually, wagons and carriages.

Independence became the primary outfitting point for Santa Fe expeditions soon after it was laid out in 1827, but several years passed before wagon-making became a significant industry. At first, local blacksmiths made minor repairs or modifications to wagons that were purchased elsewhere and shipped to that place (a common job was the resetting of wheels). Beginning in the 1840s, however, Independence supplied a considerable number of locally made wagons for the "commerce of the prairies." Statistics for the Santa Fe trade published by an Independence newspaper in 1844 show that out of a total of 92 wagons estimated to have traveled down the Santa Fe Trail that season, 50 were made in Independence. And, according to the paper, the town's wagon makers had orders for 75 wagons for the following spring.[1]

The demand for iron for wagons was such that in March 1846, Independence merchants W. & J. McCoy wrote to the proprietors of the Meremac Iron Works, near present-day St. James, Missouri, inquiring as to the price and availability of various types of iron. The letter was written on behalf of a local blacksmith who had "worked up during the past year 32 Tons of Iron for the Santa Fe trade. His prospects the coming one is better than usual and he has contracts out at present for from 20 to 30 large waggons to be completed by June." The merchants added that a "Mexican Trader has just come in and has engaged from our Blksmiths [sic] 34 waggons & pays cash on their delivery."[2] Four years later, Independence boasted "several large Wagon and Carriage Manufactories in which are between 40 and 50 forges."[3] German traveler Julius Froebel found the town in 1852 "surrounded by wheelwrights' shops, large premises filled with new waggons, painted red, green, or blue ...."[4]

Among the very early wagon makers in Independence was Lewis Jones (figure 15). Jones established a blacksmith shop on the town square in 1827, and for several years in the 1830s he

worked as the government blacksmith for the nearby Shawnee Indian Tribe. The number of wagons he produced for the Santa Fe trade was probably minimal, for he appears to have eventually quit the life of a smith to partake of other business opportunities, including trading expeditions to New Mexico and Chihuahua, beginning in 1829. He also built the Nebraska House Hotel in Independence in 1849.[5]

Independence wagon makers active in the 1840s included John W. Modie, Robert Stone, Andrew J. Hoyal, and Robert Weston.[6] In 1845 and 1846, Modie published an advertisement in *The Western Expositor* (figure 16) in which he stated that he would keep "on hand all the different sizes of *Mule and Ox Wagons*, suited either for the Mexican trade, or the Emierants [sic] to Oregon or California."[7] Andrew J. Hoyal, formerly of the wagon-making firm of Hoyal & Bean, gave notice in the same paper in 1846 that he was "prepared to fill orders for Santa Fe, Oregon and California wagons, made in the most substantial manner of the very best materials."[8] Trader James Josiah Webb purchased approximately five wagons from Robert Stone in the spring of 1846, taking them all the way to San Juan de los Lagos, Mexico. Webb arrived back in Independence with four of the wagons the next year and dropped them off with Stone for sadly needed repairs--they had traveled 8,000 miles.[9]

Eleven individuals and/or firms are listed as wagon makers in the 1850 industrial census for Jackson County, Missouri: G. I. (or G. J.) Biggs, Frederic Klaber, Leven P. Wills, James C. Mason, George Rider, Dennis Dale, Shaw & McClellen (listed as wagon and carriage makers), David Vance, Benjamin Dresser, Enoch Moore, and Henry Long.[10] Seven of the shops were relatively small operations, employing only one to three people apiece. The remaining four manufacturers employed more workers, and, significantly, they each have an additional entry in the census as blacksmiths. For example, James C. Mason is listed as a blacksmith with 16 workers and then as a wagon maker with six, thus making a total of 22 individuals employed in his overall operation. Of course, the advantage of running both blacksmith *and* wagon shops was that one firm could produce an entire wagon. Traditionally, a wagon maker fashioned only the wooden parts of a vehicle and then sent his work off to a blacksmith to be "ironed" (skeins for axle-trees, bands and tires for wheels, various hooks, chains, etc.). In some cases, an arrangement or partnership existed between the two craftsmen whereby the sale price of the finished wagon would be divided. Probably more often, however, the wagon maker simply figured the blacksmith's fees into his prices.[11] This system still prevailed with some of the smaller shops in Independence at this time. For example, blacksmith Thomas C. Peers's annual product is listed simply as "Iron 50 Wagons." The value of this work is given as $1,750, which indicates that Peers received roughly $35 for each wagon ironed.[12] This practice soon disappeared as large wagon "manufactories" became the norm.[13]

In a very short time during the 1850s, a former Tennessee slave rose to become the leading wagon manufacturer in Independence. Hiram Young came to Missouri as the property of a George Young, but in 1847 he purchased his freedom, afterwards settling in Liberty, Missouri, with his family before finally locating in Independence about 1850. Young is listed in the 1850 population census for Jackson County as a carpenter. By the next year, however, he had established himself as a manufacturer of ox yokes and freight wagons for government contractors and others. Sometime before July of 1854, Young took on a partner, another free black by the name of Dan Smith. Yet

this partnership, operating under the firm name of Young & Smith, lasted only until August of 1855. After the firm's dissolution, Young continued in the wagon-making business "on his own hook."[14]

By the late 1850s, Young had captured a respectable share of the business with overland freighters, his wagons competing successfully with those produced in much larger cities. Percival G. Lowe remembered that "Contractors and nearly all big freighters crossing the plains used wooden axle wagons made by Murphy or Espenscheidt [Espenschied] of St. Louis, or Young and others of Independence, Missouri, and were able to carry their 6,000-pound loads anywhere."[15] William B. Napton, who traveled the Santa Fe Trail with a freight caravan in 1857, stated that the wagons in their "train were made by Hiram Young, a free negro at Independence, and they were considered as good as any except those with iron axles."[16] In 1860, Young employed 25 people in his large wagon and yoke factory.[17]

As noted by Lowe, St. Louis wagons were also popular among freighters. In fact, St. Louis wagons saw service on the Santa Fe Trail at least as early as 1825.[18] Of all the wagon makers of St. Louis, Joseph Murphy (figure 17) is by far the best known today. Indeed, his wagons have become an integral part of Santa Fe Trail lore, often being referred to as the "standard" plains freighter. (This is especially interesting considering that no Murphy freight wagon is currently known to exist, nor are there any surviving images identified as depicting Murphy wagons.) As it turns out, much of the legend that has grown up around Murphy, particularly his supposed development of a "monster" wagon used by Santa Fe traders in the 1840s, is not substantiated by primary sources.

Murphy, a native of Ireland, apprenticed in the shop of St. Louis wagon maker Daniel Caster from 1819 to 1825. After completing his apprenticeship, he worked for short periods under James Earl, John B. Gerard, Samuel Mount, and Edward Harrington before establishing his own business on June 22, 1826.[19] According to Murphy's surviving account books, much of his livelihood for the first several years consisted not of constructing wagons but in the repairing of a variety of vehicles, including wheelbarrows. He took on such piecemeal work as replacing handles in hammers and augers; constructing cart wheels on order; and, for local farmers, fashioning and repairing plows.[20] Actually, this type of work was an important side business for many wagon makers.

The first reference to a Santa Fe wagon in the Murphy business records appears in the account of a Jacob Jarrett under date of March 19, 1827: "by Making santafee waggon .... 27.00."[21] A number of historians and writers have mistakenly interpreted this entry to mean that Jarrett purchased the wagon. However, it is clear from a close study of Murphy's accounts that Jarrett was an employee of Murphy who *made* the wagon, thus receiving a $27 credit for his work.[22] Murphy employed several wagon makers over the years, and instead of the employees working jointly to fill various wagon orders, it is evident that they were assigned wagons to make individually. They then received a credit in the account books for the completed vehicles. One of many examples of this system is the 1849 account of Murphy employee Henry Beters, who received a $75 credit "by Making 4 heavy Santa fee wagons."[23]

After the Jarrett entry of 1827, the next specific reference to a Santa Fe wagon does not appear in Murphy's records until 20 years later. However, Murphy did not consistently identify wagons intended for use on the Santa Fe Trail in his accounts.[24] Also, there is an unfortunate gap in the

Murphy records from December 1840 until May 1847--the very same period that supposedly saw Murphy's "monster" wagons gain premier status among merchants and freighters on the Santa Fe Trail.

The Murphy legend has its origins in an article by Emily Ann O'Neil Bott entitled "Joseph Murphy's Contribution to the Development of the West," published in the *Missouri Historical Review* in 1952.[25] According to this article, when New Mexico Governor Manuel Armijo imposed a new customs duty of $500 per wagon in 1839, Santa Fe traders would have been "ruined" but for Murphy, who began building them a much larger wagon. Bott then quotes a description of this new wagon written by Murphy's son, Anselm, in 1938. Following is the quote as it appears in Bott's essay:

> "... The wheels were seven feet high, the height of the bed was such that a man standing inside would barely disclose the top of his head. The wagon was moved by four pair of oxen. The rim of the wheels were eight inches wide, the spokes, young oak saplings, and the tongue was fifty feet long. The wheels were not bound with iron, which could not be obtained."[26]

Contemporary accounts do indeed confirm the impact of Governor Armijo's new policy on wagon size. Josiah Gregg writes in his *Commerce of the Prairies* (1844) that "the traders soon took to conveying their merchandise only in the largest wagons, drawn by ten or twelve mules ...."[27] David H. Coyner, in *The Lost Trappers* (1847), states that to "take the advantage of this regulation, the traders have wagons made that will contain seventy or eighty hundred weight, with very wide tire."[28] A more conservative estimate of the hauling capacity comes from Lieutenant James W. Abert, who encountered a train of 42 wagons on the Cimarron Route of the Santa Fe Trail in 1845, "most of them capable of carrying 5000 lbs. The wagons are made large on account of the duty being charged per wagon."[29] It is significant, however, that no contemporary source gives Murphy (or any wagon maker, for that matter) credit for the innovation of larger wagons on the Trail. In fact, Murphy wagons are not mentioned in any extant 1840s Santa Fe Trail accounts. And if Murphy is to be credited for single-handedly providing the means for the merchants to take advantage of Governor Armijo's duty, then how does one explain the numerous wagons that Southwest traders continued to purchase yearly in Pittsburgh, Independence, and elsewhere?

There are also major problems with Anselm Murphy's description of the "monster" wagon. First, a wagon tongue 50 feet long is simply ludicrous (unless it served double duty as a flagpole). Also, such a large wagon, fully loaded, would obviously require more than four yoke of oxen to pull it. And the eight-inch width of the wheels is questionable, particularly the subsequent assertion by historians that this width became standard for Santa Fe Trail freight wagons. Certainly it was possible, although impractical, for a wagon maker to construct such wheels (and contrary to Murphy's statement, iron was available at the time for the tire, although it undoubtedly would have required the welding together of several pieces). But because wheels had to be "dished" (figure 18) in order to withstand lateral shocks, and consequently mounted on the axle at a slant so that load-bearing spokes rested in a vertical position, very wide wheels would necessarily take on an exaggerated conical shape that would create resistance when pulled in a straight line. Also, in forming a rut in wet conditions, wider wheels displace more soil in order to reach a hard bottom, thus again creating additional resistance. More resistance or drag translates into more strain on draft stock.[30]

Significantly, contemporary references from the 1840s and later consistently note tire widths that are far narrower than the eight-inch width claimed by Anselm Murphy. In 1845, James M. Maxey wrote from Independence to James Frazier Reed, advising him that if he intended "to go by Santefee -- you had better in the first place get you a large waggon made about 3 inches on the tread and will beare about 6 thousand pounds ...."[31] Even Murphy's own account books fail to provide evidence for the use of wide wheels. Of all the wagons described in the Murphy accounts (1847-1853) that can be safely identified as intended for the Santa Fe trade, the largest specified tire width found was 3½ inches. The remainder are 3 inches or less. If the 8-inch width was truly ideal, one would expect to see its continued use on freight wagons, especially by the man who is credited with developing the prototype. And although there is the David H. Coyner reference to large wagons with "very wide tire," we are left to guess at what Coyner judged to be wide. Would a freight wagon tire be considered "very wide" when compared to, say, a carriage wheel?[32]

In the absence of any primary evidence, one must conclude that the colorful story of the "invention" of a huge Murphy wagon in response to Governor Armijo's per-wagon duty is largely false. Certainly a wagon with all the dimensions and features provided by Anselm Murphy never existed, and it definitely did not become the standard plains freighter. (Anselm was not yet born when this episode is supposed to have taken place, so his information obviously did not come from personal observation.[33]) However, it is probable that Murphy constructed some of the large wagons known to have been used by the traders in the 1840s. Like any wagon maker, he built vehicles to his customers' specifications. But, contrary to the legend, he was not alone in this endeavor. Wagon makers from Pittsburgh and Independence undoubtedly filled orders for large wagons, too.

Another feature of the Murphy legend is his reputation as a "painstaking master craftsman."[34] It seems that no Murphy product was less than perfect. According to one writer, his "wagons were made of only the best selected, well seasoned lumber ...."[35] In this regard, there is contemporary evidence that Murphy did manufacture a superior product. The St. Louis *Missouri Republican* reported in 1850 that "of all the wagons taken to Santa Fe this year, those only that were manufactured in this city, by Mr. J. Murphy, have withstood all the injurious effects of the heat."[36] Yet an 1856 letter from a Santa Fe merchant reveals that Murphy, human after all, could experience the occasional problem with quality control. "I am told," wrote John Kingsbury to his partner, "that many of Murphy's Waggons turned out mean last year. [Henry] Connelly had 6 out of 7 new ones entirely used up."[37]

Although I have attempted to strip Murphy of much of the myth that surrounds him, there is no denying that he was one of the important manufacturers of wagons used on the Santa Fe Trail. Indeed, by the late 1850s, there is little doubt that his wagons were among the few actually favored by freighters. His surviving business records, which only go to 1853, contain several accounts with Southwest traders, both Mexican and American, including Richard Owens, Alexander Barclay, Branham & McCausland, Seth E. Ward, Beck & Brent, and F. X. Aubry. Murphy also received numerous government contracts for wagons. According to the 1850 industrial census, Murphy's business employed 25 men, and had an annual product of 400 wagons and drays valued at $32,000.[38] An 1894 account (published seven years before the wagon maker's death) claims that "over 200,000 wagons were built by Mr. Murphy [or] under his immediate supervision."[39]

Although this figure is probably far too high, it does reflect Murphy's preeminence as a wagon maker.

Through the years, several other wagon makers operated in St. Louis in addition to Murphy, although, with many of them, it is difficult to determine how much of their business was with Santa Fe traders and contract freighters. The 1850 St. Louis city directory lists 11 individuals under the heading of wagon makers: Christian Augustin, Benj. M. Backensto, Saml B. Bellis, Peter Conrad, Fredk Hackman, Joseph Jahla, H. W. Knollhoff, John F. Knollhoff, Joseph Murphy, Henry Steidman [or Steidemann], and James Virden.[40] However, this list appears to represent only those wagon makers who paid for the directory listing. Statistics from the U.S. census for 1850 show 32 wagon makers, with a total of 121 hands employed and an annual production of $146,585.[41] According to the industrial census, the two largest St. Louis wagon manufacturers after Murphy were Jacob Scheer and John Kern, and neither appear in the directory listing. Scheer had an annual product in 1850 of 200 wagons with an estimated value of $12,000, while Kern is listed as a blacksmith and wagon maker with an annual product of 150 wagons valued at $14,500.[42]

Among those wagon makers not found in the 1850 industrial census but believed to have begun manufacturing wagons during this period are Louis Espenschied and John Cook. Espenschied, a native of Germany, established a blacksmithing business in St. Louis in 1843. At what time he expanded to wagon-making is unknown. By the late 1850s, however, his freight wagons were among the most popular makes on western trails.[43] W. L. Kuykendall, in discussing the government freighting contracts of Russell, Majors, & Waddell, wrote that to "properly handle the contract there was required the employment of hundreds of big Murphy and Espenschied wagons made in St. Louis, each with a capacity of ten thousand pounds .... " (Kuykendall may have overestimated the hauling capacity.[44]) During the Civil War, Espenschied provided large numbers of wagons and wagon wheels for the Union army.[45]

John Cook supposedly established a wagon manufactory in St. Louis in 1848 (figure 19), and 10 years later it was said to be "one of the largest houses in the western country." Cook manufactured wagons, carts, drays, and wheelbarrows "of every description and quality." It was also claimed that "Every thing is superintended by the proprietor in person, materials of the most reliable character only allowed to be used, and workmen of superior skill and experience employed in every department of their work." Cook also manufactured army wagons during the Civil War.[46]

There was one aspect of the wagon-making business that was the same in both Independence and St. Louis in 1850: wagons were made by hand. The only steam-powered wagon shop found in the industrial census for 1850 was one operated in the Missouri State Penitentiary at Jefferson City by lessees Price, McKee & Co.[47] Interestingly, the annual product for the steam-powered prison shop was 115 wagons, only slightly more than a quarter of Joseph Murphy's production, which was without steam-powered machinery. Steam-powered wagon factories had been in place in Pittsburgh for years; by the early 1860s, they were much more common in Missouri.

MISSOURI WAGON MAKERS IN NEW MEXICO

A few Missouri craftsmen traveled the Santa Fe Trail and set up shop in the Southwest, although documentation is slim. Perhaps the earliest wagon maker to leave the States behind was B. D. Long, who apparently joined a Santa Fe trading venture in 1830. His story is known only because he left two outstanding notes with merchant James Aull of Lexington, Missouri. In 1833--by which time it was clear that Long had remained in Mexico to practice his profession--Aull instructed his agent in Santa Fe to attempt to collect on the debt. Long, Aull believed, was "working somewhere in the 'lower country.'"[48] The outcome of this bill-collecting effort is not recorded. Nor, unfortunately, is any additional information available on Long and his activities.

Much more information is available on blacksmith James Pool. A native of Virginia, Pool was employed variously as a gunsmith and blacksmith at the Delaware Agency in Kansas from 1830 to 1833, and in 1841 he served as the blacksmith at the Neosho Subagency.[49] Pool eventually located in Independence, Missouri, near the town's southwest corner. Recorded in the Jackson County deed books is a deed of trust executed on May 20, 1846, in which Pool mortgaged all the tools in his shop, including two "full and complete sets" of blacksmith's tools, and a cherry bureau and eight-day metal clock in his home against a promissory note for $180.[50] Pool's exact movements after this date are unclear.[51] By 1849, however, he was operating in Santa Fe. In September of that year, Pool's shop repaired nine freight wagons for the firm of St. Vrain & McCarty to the amount of $207.86. When $98.36 of this debt went unpaid, Pool took the merchants to court. Included in the surviving district court case file is a valuable itemized statement showing some of the various repairs made, as well as charges for sundry wagon parts and accessories.[52]

James Pool is listed in the 1850 U.S. census for New Mexico as a blacksmith residing in Santa Fe with real estate valued at $40,000--an incredible amount considering the small promissory note he executed just four years earlier in Independence.[53] There is no evidence that Pool ever made wagons, either in Independence or Santa Fe, although his shop was probably capable of such work. If Pool did construct any wagons in Santa Fe, they would have been quite costly compared to those manufactured in the East, where many sources of timber and iron were readily available to wagon makers. Pool undoubtedly had plenty of business just repairing a portion of the many vehicles that annually came down the Santa Fe Trail.

THE LOOK OF THE MISSOURI WAGON

It should now be obvious that there is considerable information on who was making freight wagons in Missouri. What is not so readily available is conclusive evidence that associates a particular style or design with Missouri wagons. Were Missouri wagons during the period preceding the Civil War similar in design to their Pennsylvania counterparts--what we might call a Missouri Conestoga? Or were Missouri craftsmen turning out something quite different?

An interesting postcard (figure 20) exists, dated 1912, which features a sketch of a "'Prairie Schooner' Santa Fe Trail Wagon, made complete at [Francis] Hahn's wagon shop, south of Westport." Because it is evident that the wagon pictured is a Conestoga, this would seem to be conclusive evidence that Missouri wagon makers were producing Conestoga-type wagons. However, the caption goes on to say that the "Side boards with mail box [tool box?], showing hand made wrought iron nails may be seen at 432 Westport Ave.," which leads one to suspect that all that was really left of Hahn's wagon were the sides of the body or bed. But what about the complete wagon in the sketch? It is now clear that the postcard sketch was actually based on a published photo of a Conestoga wagon (figure 21), not the Hahn wagon remnants. The State Historical Society of Missouri has a copy of this photographic image, credited to *The Missouri Magazine*, and their caption reads "Wagon, in which Ky. Immigrants Came to Jacksonville, Randolph County, Missouri." It is possible, of course, that the photographic image was copied, because the sides of the Hahn wagon resembled the wagon in the photo, and it was desirable to portray the Hahn wagon as it originally appeared. Then again, the artist may have simply found the photo handy, and have copied it with no thought to accuracy. Unfortunately, the fate of the Hahn wagon pieces is unknown to the author.

An 1859 directory advertisement for Joseph Murphy featuring an intriguing cut of a Conestoga-type wagon (figure 22) is well known. Not so well known is the fact that this very same cut appears on an 1853 bill head of J. T. Johnson & Co., of Boonville, Missouri. The bill head was printed by Keemle & Hager of St. Louis.[54] It is unclear if the cut was made in St. Louis or was purchased from an engraver or founder in an Eastern city. The cut may indeed be representative of the wagons being produced in 1853, but there is not enough evidence to proclaim it as an example of a Missouri-made wagon. Its repeated usage does suggest that the Conestoga style had come to exemplify the typical American freight wagon.

Although conclusive proof is lacking, it is doubtful that Missouri wagon makers were turning out vehicles radically different in look or style from wagons of the Eastern United States, at least during the first three decades or so of the history of the Santa Fe Trail. The Conestoga was the standard freighter in the East from the early 1800s through the 1840s. That its distinctive design received acceptance outside of Pennsylvania is evidenced by the fact that these wagons, or variants thereof, are known to have been manufactured in Virginia, and it is believed that they were being built in New Jersey, Maryland, and Ohio as well.[55] Also, the simple fact that Santa Fe traders purchased large numbers of Pennsylvania wagons must have had some influence on wagon makers competing for this business in Missouri. Another influence, and one that has not been previously examined, must have been the wagon-making tradition, or "school," within which the individual makers learned their craft. For example, if a wagon maker apprenticed in a shop in the East that made Conestoga-type freighters, would he not make similar wagons in Missouri, at least to the extent that they met the needs of his customers? Would that wagon maker then train his apprentices in the same tradition?

With the above in mind, the birthplaces of Missouri wagon makers, as found in the U.S. census for 1850, can be intriguing. Of course, there is no way of determining from the census records whether or not a wagon maker served his apprenticeship in the state or country of his birth (Joseph Murphy, for example, was born in Ireland but apprenticed to a wagon maker in St. Louis). Still, the very high number of Missouri wagon makers with birthplaces east of the Mississippi River suggests that

there may have been a very strong Eastern influence in their work. Thirty-eight individuals were found in the 1850 U.S. census for Jackson County (not to be confused with the industrial census of the same year discussed above) whose occupations were listed either as wagon maker or wheelwright (only three of the total were the latter).[56] Following is a list of their birthplaces given in the census with the number of craftsmen who claimed each.[57]

Virginia	9
Kentucky	8
Tennessee	5
Pennsylvania	3
Germany	3
Missouri	2
North Carolina	2
Ohio	2
Ft. Laramie	1
Indiana	1
Massachusetts	1
South Carolina	1

The author was unable to review the entire census for St. Louis County; however, six of the 11 wagon makers listed in the St. Louis city directory for 1850 were located. Of these, two were born in Germany, and one each in Missouri, New York, Virginia, and Ireland. Living in the household of wagon maker Henry Steidemann, a native of Germany, were five other wagon makers, obviously employees, two of whom were sons. All five were born in Germany. Joseph Murphy's household also included five wagon makers, who were natives of Ireland, Germany and New York.[58] Louis Espenschied, it will be recalled, was a native of Germany.

Again, except for a very few individuals, it is impossible to ascertain how many of these wagon makers received their training in their native states or countries. However, of those craftsmen whose careers are documented, perhaps the most interesting case is that of Independence wagon maker Jacob Leader. Leader was born in Lancaster County, Pennsylvania, in 1814, and, when about age 17, learned the wagon-making trade there. Lancaster County is located in a region firmly linked with the classic Conestoga; its Conestoga River Valley is believed to be the source of the wagon's famous name. It is highly probable that Leader learned his craft building Conestogas. Leader moved to Pittsburgh in 1834, and then to St. Louis the next year. After remaining in St. Louis for only a few months, he moved to Illinois. Sometime between 1835 and 1839, he located in Independence, Missouri, but only for about a year. Leader returned once more to Illinois, where he was married in 1839, before finally settling again in Independence in 1840. In the latter place, Jacob Leader became "the head of [Robert] Weston's wagon-making division," where he could easily have produced Conestoga-type wagons for the Santa Fe trade.[59]

Conestoga style freighters, whether Missouri- or Pennsylvania-made, seem to have disappeared from use on the Santa Fe Trail sometime in the 1850s--a period that also saw increased mechanization in wagon shops. Wagons were needed by the hundreds, and quickly. The curved, raved body of the Conestoga must have been extremely time-consuming and labor-intensive, particularly its complex

joinery. Thus, a new freighter evolved--what will here be called the Santa Fe wagon, with a simpler design, reminiscent of the Conestoga in some respects but noticeably different in others. The Santa Fe wagon became the standard on the Santa Fe Trail, and it was produced by makers in several states. That wagon will be examined in chapter 5 of this work.

Notes

1. *Independence Journal*, September 19, 1844, as quoted in *The Merchants' Magazine and Commercial Review 11* (November 1844): 475. It is not clear if these wagons were all freight wagons.

2. W. & J. McCoy to Massey & James, Independence, Mo., March 20, 1846, Lucy Wortham James Coll., Western Historical Manuscript Collection, Columbia, Missouri.

3. *St. Louis Missouri Republican*, March 27, 1850.

4. Julius Froebel, *Seven Years' Travel in Central America, Northern Mexico, and the Far West of the United States* (London: Richard Bentley, 1859), 216.

5. Pearl Wilcox, *Jackson County Pioneers* (1975; reprint ed., Independence, Mo.: Jackson County Historical Society, 1990), 170; Louise Barry, *The Beginning of the West: Annals of the Kansas Gateway to the American West, 1540-1854* (Topeka: Kansas State Historical Society, 1972), 221, 245, 300, 317, and 574; and *History of the Arkansas Valley, Colorado* (Chicago: O. L. Baskin & Co., 1881), 663-664.

6. *The History of Jackson County, Missouri* (1881; reprint ed., Cape Girardeau, Mo.: Ramfre Press, 1966), 170 and 646; Wilcox, *Jackson County Pioneers*, 171-173 and 276; and *The Western Expositor* (Independence, Mo.), January 31 and July 18, 1846.

7. *The Western Expositor*, January 31, 1846.

8. *Ibid.*, July 18, 1846.

9. James Josiah Webb, *Adventures in the Santa Fe Trade, 1844-1847*, ed. Ralph P. Bieber, Southwest Historical Series, vol. 1 (Glendale, Calif.: Arthur H. Clark Co., 1931), 179, 281, and 300.

10. *Products of Industry, 1850*, Jackson County, Missouri, pp. 96-101 (microfilm), State Historical Society of Missouri, Columbia. The industrial census does not identify every individual wagon maker in Jackson County; only those businesses with products purported to amount to $500 or more per year were enumerated. Also, the occupation designation for some individuals is somewhat questionable. For example, David Vance is listed as a wagon maker, yet his annual product is listed solely as 600 yokes, no wagons. Additionally, Robert Weston is listed as a blacksmith (with six individuals employed), but his operation is shown as having an annual product that included 12 wagons valued at $1,200. For an abstract of the above census, see Joanne Chiles Eakin, *Farmers and Merchants Census, 1850, 1860, and 1870*, Jackson County, Missouri (Independence, Mo., 1992), 113-114.

11. H. David Condron, "The Knapheide Wagon Company, 1848-1943," *The Journal of Economic History 3* (May 1943): 34-35.

12. *Products of Industry, 1850, Jackson County, Missouri*, p. 96. It appears that the making of ox yokes and wagon bows at this time fell largely to "mechanics." Nelson Low is listed in the industrial census as a mechanic with an annual product

of 2,500 wagon bows valued at $500. Another mechanic, Thomas M. Burgess, is enumerated with an annual product that included 1,200 ox yokes (value: $1,200) and 2,400 ox bows (value: $200), in addition to 50 wheels and 200 chairs.

13. John Cook, who established a wagon manufactory in St. Louis in 1848, added "a large blacksmith shop" to his operation in 1853 because "complaints ... had been made to him of the bad manner in which the iron work was executed. In having the blacksmithing done under his immediate supervision, he was enabled to obviate for the future all such complaints." Taylor & Crooks, *Sketch Book of Saint Louis* (St. Louis, Mo.: George Knapp & Co., 1858), 251-252.

14. William Patrick O'Brien, "Hiram Young: Pioneering Black Wagon maker for the Santa Fe Trade," *Gateway Heritage 14* (Summer 1993), 57; Mrs. Hattie E. Poppino, ed., *Census of 1850, Jackson County, Missouri* (Kansas City, Mo.: Mrs. Hattie E. Poppino, 1959), 140; and *Missouri*, vol. 16, p. 510, R. G. Dun & Co. Coll., Baker Library, Harvard University Graduate School of Business Administration.

15. Percival G. Lowe, *Five Years a Dragoon ('49 to '54) and Other Adventures on the Great Plains* (1906; reprint ed., Norman: University of Oklahoma Press, 1965), 255.

16. W. B. Napton, *The Santa Fe Trail, 1857* (1905; reprint ed., Arrow Rock, Mo.: The Friends of Arrow Rock, 1991), 6.

17. Eakin, *Farmers and Merchants Census*, 115.

18. See the discussion of the wagons for the 1825 government survey in chapter 1 of this study.

19. Emily Ann O'Neil Bott, "Joseph Murphy's Contribution to the Development of the West," *Missouri Historical Review 47* (October 1952), 19; James Cox, *Old and New St. Louis: A Concise History of the Metropolis of the West and Southwest, with a Review of its Present Greatness and Immediate Prospects* (St. Louis: Central Biographical Publishing Co., 1894), 490-491; and *Account Book, 1825-1836*, p. 1, Joseph Murphy Collection (microfilm), Missouri Historical Society, St. Louis (hereinafter cited as JMC).

20. See *Account Book, 1825-1836*, JMC.

21 *Ibid.*, 18. An additional account for Jarrett is found on page 21.

22. The sum of $27 is far too low for the purchase of a wagon at this time. Recall from chapter 1 that William Becknell's wagon is said to have cost $150 in Missouri in 1822.

23. *Day Book, 1847-1853*, p. 159, JMC.

24. For example, an 1850 entry records the sale of 12 large ox wagons "to go to Santafee." Yet, wagons purchased by freighter F. X. Aubry the following year, obviously for use on the Santa Fe Trail, were not identified as such in the accounts.

25. *Missouri Historical Review 47* (October 1952): 18-28.

26. Bott, 22. The quote is from a monograph entitled "Joseph Murphy," which was privately printed by Anselm. I have not examined this monograph. W. Earl Givens, who has conducted much research on Murphy and his wagons, provided me with the 1938 date of publication.

27. Josiah Gregg, *Commerce of the Prairies*, ed. Max L. Moorhead (Norman: University of Oklahoma Press, 1954), 79-80.

28. David H. Coyner, *The Lost Trappers*, ed. David J. Weber (Albuquerque: University of New Mexico Press, 1970), 150.

29. James W. Abert, *Through the Country of the Comanche Indians in the Fall of the Year 1845*, ed. John Galvin (San Francisco: John Howell, 1970), 21.

30. See the discussion of wide versus narrow wheels in Youatt's *History, Treatment, and Diseases of the Horse ... with a Treatise on Draught* (Philadelphia: J. B. Lippincott & Co., 1874), 436-441.

31. Dale Morgan, ed., *Overland in 1846: Diaries and Letters of the California-Oregon Trail*, 2 vols. (1963; reprint ed., Lincoln: University of Nebraska Press, 1993), 2: 474.

32. Wide-wheeled wagons are also associated with freighter Benjamin Holladay. According to Holladay biographer Ellis Lucia, the Missouri freighter personally made wheels for his wagons with iron tires 10 and 12 inches wide! Historian Henry Pickering Walker speculates that these wagons "were probably built by Murphy and carried five tons each." These wagons, the story goes, enabled Holladay "to make three trips a season, breaking all records for the Santa Fe Trail." Again, the author has been unable to locate any primary sources that substantiate this account, and Ellis's book is absent of footnotes. See Ellis Lucia, *The Saga of Ben Holladay: Giant of the Old West* (New York: Hastings House, 1959), 31-32; and Henry Pickering Walker, *The Wagonmasters: High Plains Freighting from the Earliest Days of the Santa Fe Trail to 1880* (Norman: University o Oklahoma Press, 1966), 96-97.

33. Transportation historian W. Earl Givens has come to a similar conclusion, believing that if the "monster wagon" actually did exist, only a very few were ever made, "and they had little or no use on the Santa Fe Trail." Correspondence of W. E. Givens with Marc Simmons, Doug Thamert, Charles Bennett, and Mark Gardner, 1991. Copies provided courtesy of Mr. Givens. In a 1989 article, the author suggested that Anselm's description might be applied to the Murphy wagons of a later period--say the late 1850s--yet it is clear that his dimensions do not agree with what is known of these wagons as well. Suffice it to say, probably no one will ever know what Anselm Murphy was talking about. See Mark L. Gardner, "Conestogas on the Santa Fe Trail," in Gardner, ed., *The Mexican Road: Trade, Travel, and Confrontation on the Santa Fe Trail* (Manhattan, Kansas: Sunflower University Press, 1989): 96, n. 22

34. Walker, *The Wagonmasters*, 97. Walker's sole source of information on Murphy is Bott's article.

35. James Malcolm Breckenridge as quoted in Bott, 23.

36. *St. Louis Missouri Republican*, September 28, 1850, as quoted in Walker D. Wyman, "Freighting: A Big Business on the Santa Fe Trail," *The Kansas Historical Quarterly 1* (November 1931): 20.

37. Jane Lenz Elder and David J. Weber, eds., *Trading in Santa Fe: John M. Kingsbury's Correspondence with James Josiah Webb, 1853-1861* (Dallas: Southern Methodist University Press, 1996), 33.

38. *Products of Industry, 5th Ward, City of St. Louis, St. Louis County, Missouri, 1850*, p. 284.

39. James Cox, *Old and New St. Louis*, 491.

40. James Green, *The Saint Louis Business Directory for the Year of Our Lord 1850* (St. Louis: M'Kee Printer, 1850), 94.

41. "The Trade and Commerce of St. Louis in 1850," *Merchants' Magazine and Commercial Review 24* (March 1851): 316.

42. *Products of Industry, 1850, 3rd Ward, City of St. Louis*, p. 268, and 2nd Ward, City of St. Louis, p. 245.

43. Lloyd Espenschied, "Louis Espenschied and His Family," *Bulletin of the Missouri Historical Society 18* (January 1962): 89 and 93-94; and Lowe, *Five Years a Dragoon*, 255.

44. Kuykendall, Judge W. L. *Frontier Days: A True Narrative of Striking Events on the Western Frontier* (N.p. [probably Denver]: J. M. and H. L. Kuykendall, 1917), 63.

45. Espenschied, "Louis Espenschied and His Family," 96-98.

46. Taylor & Crooks, *Sketch Book of Saint Louis* (St. Louis, Mo.: George Knapp & Co., 1858), 251-252; and Espenschied, "Louis Espenschied and His Family," 96.

47. *Products of Industry, 1850, Cole County, Missouri*, p. 50.Lewis E. Atherton, "Business Techniques in the Santa Fe Trade," Missouri Historical Review 34 (April 1940): 340.

48. "Official Roster of Kansas, 1854-1925," Collections of the Kansas State Historical Society 16 (1923-1925): 724-725 and 728; and Barry, *Beginning of the West*, 183 and 220.

50. Jackson County Deed Record, vol. L, p. 340, Jackson County Clerk's Office, Independence, Missouri.

51. There is a James M. Pool listed as a private in the muster rolls of the Jackson County company of the First Regiment Missouri Volunteers, who was accepted into the service at Fort Leavenworth on June 6, 1846. However, it seems unlikely that Pool would have volunteered for a 12-month stint when he had a promissory note that would come due before the end of his enlistment. William Elsey Connelley (ed.), *War with Mexico, 1846-1847: Doniphan's Expedition and the Conquest of New Mexico and California* (Kansas City: Bryant & Douglas Book and Stationery Co., 1907), 530 and 533.

52. James Pool vs. St. Vrain & McCarty, Case File #275a, District Court Records (1850), Santa Fe County, New Mexico State Records Center and Archives, Santa Fe.

53. *Seventh U.S. Census, Santa Fe County, New Mexico*, 347.

54. "The Cover," *Bulletin of the Missouri Historical Society 8* (April 1952): 225.

55. See Ron Vineyard's excellent study, *Virginia Freight Waggons, 1750-1850*, Colonial Williamsburg Foundation Library Research Report Series #345 (Williamsburg, Va.: Colonial Williamsburg Foundation Library, 1994); and George Shumway and Howard C. Frey, *Conestoga Wagon, 1750-1850: Freight Carrier for 100 Years of America's Westward Expansion* (York, Pa.: George Shumway, 1968), 12-13.

56. My source was Poppino, ed., *Census of 1850, Jackson County, Missouri*. Poppino claims to have found a total of 40 wagon makers in the 1850 census. Although her book was examined page by page, it is quite possible that five individuals could have been missed, which is the difference between our two figures. However, we do agree on the number of wheelwrights.

57. I corrected one entry, that of Jacob Leader, a wagon maker who was born in Pennsylvania. He is incorrectly given in the census as a native of Illinois. Not included in the list are five carriage makers (three born in Pennsylvania, two in Virginia) and one coach maker (born in Virginia).

58. *Seventh U.S. Census, City of St. Louis, Missouri, 5th Ward*, 214 and 215.

59. *History of Jackson County, Missouri, 1874-1875*; Marilyn Ruth Crosswhite McLaughlin, "Independence, Jackson County, Missouri, c. 1827-1844: With Emphasis on Independence as Staging Area for Westward Commercial Movements" (M. A. Thesis, University of Washington, 1971), 149; and Wilcox, Jackson County Pioneers, 171 and 173.

IV

FREIGHT WAGONS UNTIL CIRCA 1855

GENERAL DESCRIPTION

In this section are gathered together the various features of--and, when available, specifications for--Trail wagons of this period, as are identified in a wide range of primary sources, which are supplemented at times with secondary works. Unfortunately, no one primary source provides every detail of a Trail wagon's construction (far from it, actually). Yet by piecing together the scattered references in journals, account books, court records, and the occasional artist's rendering, several distinctive characteristics clearly emerge.

WAGON BODY / BED

As detailed in chapter 2, the curved, raved bodies of Conestoga wagons (figure 23) are well documented in contemporary accounts and artwork. The bodies of the wagons pictured in the M. Rondé engraving, "Chariots de Chihuahua" (figure 10), clearly have sides with three horizontal rails and a number of vertical uprights--a distinctive characteristic of the Conestoga wagon. However, a departure from the classic Pennsylvania Conestoga design is visible on the front end-gate of one of the Rondé wagons. The top and middle rails of this end-gate are straight or without curvature; Pennsylvania Conestogas have front end-gates with the top and middle rails downbowed and rear end-gates with the top rails bowed upward (figures 3 and 24). It is worth noting that the straight end-gate top rails are a feature common to Virginia-made Conestogas.[1]

Side boards, which were attached to the top rail on each side of the body to increase hauling capacity, were standard with Conestogas, and were undoubtedly common with Santa Fe Trail wagons as well. The 1851 Kern drawing pictures one wagon that appears to have side boards in place.

An additional feature of the Conestoga is a tool box, usually attached to the left side of the wagon body. A tool box is visible in two contemporary illustrations (figures 6 and 8) that are

Trail related. The Hahn wagon (discussed in chapter 3) was supposed to have had "side boards with mail box," which in reality was probably a tool box. At some point it appears that the tool box was

made as a separate unit that was suspended from the rear of the wagon by chains, thus allowing it to be easily removed (see chapter 6). A feedbox was also attached to the wagon in the same fashion.

Classic Pennsylvania Conestogas display many decorative details, in both the iron and woodwork. Whether or not Conestoga-type wagons used on the Santa Fe Trail contained such decorative work is unknown. It seems questionable, however, particularly considering the speed with which the wagons were being turned out, as well as the fact that many of the wagons did not remain in the original owners' hands for more than a trip or two.

Dimensions for the bodies of Santa Fe Trail wagons of this period are virtually unrecorded in the primary sources consulted.[2] Frank Edwards's otherwise valuable description of "Conestoga or Pennsylvanian" wagons on the Chihuahua Trail in 1846 provides a measurement of height, which is obviously exaggerated. Edwards stated that the wagons he saw measured, vertically, 18 to 20 feet to the top of the "end-hoops."[3] This, of course, would make the wagons taller than they were long.

Dimensions are known for several surviving Pennsylvania Conestogas of various sizes. Don Berkebile states, in his *Carriage Terminology*, that the Conestoga "body is frequently twelve to thirteen feet long on the bottom, and sixteen to seventeen feet at its top (exclusive of bows)."[4] The width inside the wagon body is typically 42 inches.[5]

Primary sources reveal little about the types of wood used to construct Santa Fe Trail wagons of this period. Woods used in the bodies of the Pennsylvania Conestoga were white oak, poplar, and ash.[6]

BOWS / COVERS

Wagon bows support the cloth covering; their number depends upon the size of the wagon. Conestogas, according to Berkebile, can have from eight to 12.[7] The wood favored for bows seems to have been hickory.[8] Spread over the wagon bows, as one observer noted in 1839, were "two or three thicknesses of woolen blankets; and over these, and extended to the lower edge of the body, is drawn a strong canvass covering, well guarded with cords and leather straps."[9] Josiah Gregg provides even more detail regarding the wagon covering:

> "[I]n order to make a secure shelter for the cargo, against the inclemencies of the weather, there should be spread upon each wagon a pair of stout Osnaburg sheets, with one of sufficient width to reach the bottom of the body on each side, so as to protect the goods from driving rains. By omitting this important precaution many packages of merchandise have been seriously injured. Some have preferred lining the interior of the wagon-body by tacking a simple strip of sheeting all around it. On the outward trips especially, a pair of Mackinaw blankets can be advantageously spread betwixt the two sheets, which effectually secures the roof against the worst of storms. This contrivance has also the merit of turning the blankets into a profitable item of trade, by enabling the owners to evade the customhouse officers, who would otherwise seize them as contraband articles."[10]

Osnaburg, according to a modern reference work on fabrics, "is the name of a fabric originally woven in the city of Osnabruck in north west Germany. At one time it was made of linen but now it is a rough, strong, plain-woven, cotton cloth ...."[11]

AXLES / AXLE-TREES

Wooden axles were the norm for this period; oak and hickory were the preferred raw materials.[12] Some axle dimensions are found in Joseph Murphy's account books. Seth E. Ward's ox wagon, purchased in 1847, was equipped with 5-inch axles. Two ox wagons built for an unnamed Mexican in 1849 had 5¼-inch axles, and three six-mule wagons constructed the following year had 4¼-inch axles.[13] According to modern-day wagon maker Doug Thamert, these are measurements of width taken between the axle-arms.[14]

One feature of the axle should be explained. Attached to each axle-arm were two metal skeins (also called clouts). The skein was an iron strip mounted lengthwise on the top and bottom of the axle-arm to receive the wear of the wheel's hub (figures 25 and 26). Owens & Aulls' 1846 invoice with wagon maker Cyrus Townsend of Pittsburgh included "12 Bottom skeins" (costing $1 each), probably because the bottom skein received most of the wear.[15] The wheel was held in place on the axle-arm by a linch pin, which slipped through a slot at the end of the arm. The same Owens & Aull invoice also contains the purchase of 40 linch pins. At Santa Fe in 1849, St. Vrain & McCarty purchased 30 linch pins from blacksmith James Pool.[16]

No evidence was found of the use of the thimble skein during this period. The thimble skein was a single piece of thin iron (later steel) that completely enveloped the wooden axle-arm; it was made for use with either a linch pin or nut (figure 27). Thimble skein freight wagons were being offered by 1860.[17]

According to trader James Josiah Webb, iron axles were introduced on the Santa Fe Trail in 1845:

> "Solomon Houck had bought a lot of wagons in Pittsburg, and among them were two heavy wagons with iron axles--a new experiment for freight wagons and one looked upon as quite hazardous. What if an axle should break or get badly sprung on the plains? No chance of fitting a wooden axle to the box for an iron one, or straightening the iron one if badly bent. Wagons were scarce, and Houck proposed selling one of these; and after due consideration I made up my mind to take the risk. This, I believe, was the first freight wagon with iron axles that ever went over the plains, and Mr. Houck followed some weeks after with the second -- the mate to it. Gradually they came into use for the Santa Fe trade, but not for the low country."[18]

The first reference to iron-axle Trail wagons in Joseph Murphy's account books is in two 1851 entries recording wagons built that year for F. X. Aubry.[19]

Primary references are contradictory regarding the iron axle's utility. Percival G. Lowe wrote that one army contractor's Utah-bound train in 1858 "had much trouble with wagons; some wheels broken down -- iron axle wagons."[20] Wagon maker Doug Thamert surmises that the iron-axle wagons did not have the elasticity or springiness of wooden-axle wagons, thus the shocks of the road were primarily absorbed by the wheels.[21] Lowe went on to say that "Contractors and nearly all big freighters crossing the plains used wooden axle wagons made by Murphy or Espenscheidt of St. Louis, or Young and others of Independence." Trail traveler William B. Napton stated that Hiram Young's wagons were "considered as good as any except those with iron axles." Unfortunately, Napton's meaning can be interpreted two ways: Young's wooden-axle wagons were inferior only to wagons with iron axles; or Young's iron-axle wagons were inferior to all other wagons.[22]

It should be noted that, if iron axles were used on wagons with Conestoga styled bodies--and this may have been the case with Houck's Pittsburgh wagons--then this would comprise a significant modification of the classic Conestoga wagon, which is only known with wooden axles.

WHEELS / TIRES

Wheels were made up of a hub, spokes, and felloes (rim). The felloes were bound with an iron tire. On a Conestoga wagon, "Front wheels average forty-five inches in diameter, while those in the rear are often sixty inches or more."[23] Hubs were usually made of elm and white oak; oak was standard for spokes and felloes.[24] Randolph Marcy, writing in 1859, recommended wheels made of Osage Orange as "best for the plains, as they shrink but little, and seldom want repairing." But because this wood was difficult to obtain "in the Northern States, white oak answers a very good purpose if well seasoned."[25]

An essential component of the wheel sometimes noted in contemporary wagon makers' accounts from this period is the "box"--or, more correctly, the axle-box--a cast iron bushing set into the hub to receive the wear of the axle-arm. The axle-box, like the axle, came in various sizes. Joseph Murphy sold a large ox wagon to Richard Owens, "Santafee trader," in 1847 that had 5-inch axle-boxes (a diameter measurement at the widest point of the bushing). The 1846 Owens & Aull invoice includes one and a half sets of "Wagon Boxes" for $2.52.[26] This *axle*-box should not be confused with the wagon body or bed, also commonly called a "box."

Numerous contemporary references provide tire dimensions. As noted in an earlier chapter, James M. Maxey wrote from Independence in 1845, advising James Frazier Reed that if he intended "to go by Santefee--you had better in the first place get you a large waggon made about 3 inches on the tread and will beare about 6 thousand pounds ...."[27] A written deposition for Santa Fe blacksmith James Pool's 1850 court case against St. Vrain & McCarty, in which James Pool was attempting to obtain payment for repairs made to nine freight wagons, contains the following:

> "The waggons that were returned were not the waggons that they repaired[.] the waggons that they repaired had not pole tongs in them with the bark on them and one of the waggons

> the wheels are not alike [--] some of the wheels are two and a half inch tread others of three inch tread of the same waggon[.]"[28]

Joseph Murphy's accounts usually provide tire dimensions. Richards Owens' 1847 ox wagon had tires 3 inches wide by ¾ inch thick. Tires made the following year for two wagons "for [the] Santafee trade" were 3 inches wide by 7/8 inch thick. Four "heavy Santa fee wagons" made in 1849 had tires 3½ inches wide. F. X. Aubry's iron-axle wagons of 1851 rolled out of the shop with tires 2½ inches wide.[29] In 1856, wagon maker Hiram Young mortgaged "Twenty five large new Santafe Wagons [with] two and a half inch tread."[30]

Because Mexican traders used American-made freight wagons almost exclusively, a Mexican presidential decree of 1842 that prohibited the use of wagons with wheels less than 8 inches wide or carrying freight of more than 5,000 pounds met considerable protest from Chihuahua merchants. According to historian Max L. Moorhead, the Mexican merchants complained to the central government, insisting

> "... that not only their commercial livelihood but also their very defense depended upon these newly acquired vehicles; whereas pack mules were easily stampeded by attacking Indians, the wagons made excellent parapets; and the narrower tires did no harm whatsoever to the roads of northern Mexico, which were natural highways and never had to be resurfaced or improved artificially. On the strength of such arguments as these the national authorities agreed to submit the regulation to the congress for possible amendment in 1846 and meanwhile to allow a number of Chihuahua traders to use American wagons, but the outbreak of the war with the United States in that year prevented further modification. Actually this objectionable regulation was never enforced in the northern provinces."[31]

BRAKES

No references have been found relating to brakes on Santa Fe Trail freight wagons of this period, although brakes were being added to some classic Conestogas beginning about 1830.[32] Instead of brakes, rough locks and drags were employed to slow vehicles on steep grades.[33]

TONGUES / POLES

In early horse- and mule-drawn wagons, the tongue was solidly attached to the front hounds (figure 25). Known as a "stiff tongue," it would stick straight out, suspended above the ground. However, the "drop tongue," which pivoted up and down, was decidedly more popular in the West because of the uneven nature of trails.[34] Randolph Marcy recommended a type of drop tongue when he wrote that the "pole of the wagon should have a joint where it enters the hounds, to prevent the weight [of

the wagon] from coming upon it and breaking the hounds in passing short and abrupt holes in the road."[35] Joseph Murphy was referring to wagons with drop tongues when he recorded "loose tong ox wagons" in his account books.[36]

Two important early Santa Fe Trail wagon images, those by Kern and Rondé (figures 9 and 10), picture Conestoga-type wagons with drop tongues. Because the classic Pennsylvania Conestoga is believed to have been constructed only with a tongue "rigidly fixed to front hounds," this is another significant modification of the Conestoga design.[37]

This is perhaps the best place to note the primary difference between a mule wagon and an ox wagon. A mule wagon comes with a doubletree mounted on the front hounds of the wagon. Attached to the doubletree are two singletrees, and it is to these singletrees that the traces of the harness are attached. For each additional span of mules (or horses) a spreader bar with two singletrees is needed. When more than four mules are used, a fifth chain is secured to an end ring on the end of the tongue, and to the other end of this fifth chain is attached an additional spreader bar and singletrees.[38] On an ox wagon, there is no doubletree, nor are spreaders and singletrees used. Instead, an ox wagon is equipped with a hook attachment on the end of the tongue to which the ring of a double ox yoke is secured. If additional yokes were needed, which was generally the case with freight wagons, a chain runs from the extra yokes, and is attached to the front axle of the wagon. Stiff and drop tongues can be found on both ox and mule wagons.

COLORS / DISTINGUISHING MARKS

On the classic Conestoga wagon, the "running gears ... were painted red, though the shade varied to orange if red lead was used, while the bodies ranged from dark blue to gray-blue."[39] This traditional color scheme held true for western wagons as well. It will be recalled from chapter 1 that George Sibley's survey wagons were painted "light blue." An 1840 colored lithograph of the St. Louis waterfront features a Conestoga wagon with a blue body.[40] A large ox wagon valued at $200, which was the object of an 1847 court case in Platte County, Missouri, was described as having "a blue bed & red running gears."[41] In 1852, Julius Froebel described Independence's wheelwrights' shops as "large premises filled with new waggons, painted red, green, or blue ...."[42]

Early on, some wagon makers signed or otherwise identified their finished products; however, this became much more prevalent after 1860, with the increased rivalry between various wagon manufactories. Hiram Young is supposed to have "branded his wagons with 'Hiram Young and Company,' as well as the initials of the purchaser."[43] A surviving wagon provision box in the local museum in Weston, Missouri, is stenciled with the St. Louis maker's name and address (see chapter 6).

HAULING CAPACITY

The hauling capacity of the very early freight wagons on the Santa Fe Trail is unknown. J. Evarts Greene stated in a paper published in 1893 that Trail wagons made before Governor Armijo's per-wagon duty of 1839 hauled "from one to two tons each," but he gives no authority for this information.[44] James Hall described the Conestoga wagons hauling goods from the Atlantic cities to Pittsburgh in the 1820s as "carrying from thirty-five to fifty hundred pounds each."[45] According to Trail journalist Matt Field, one wagon in the train he was accompanying in 1839 abruptly overturned in Raton Pass, "leaving twenty-five hundred weight of merchandise in the water, while the relieved mules dashed up the bank with the wheels."[46] Yet this may not have been the maximum hauling capacity of the wagon.

Writing in 1844, after the implementation of the per-wagon duty, Josiah Gregg stated that of late years he had "seen much larger vehicles employed, with 10 or 12 mules harnessed to each, and a cargo of goods of about five thousand pounds in weight."[47] Lieutenant James W. Abert provides the same estimate for Trail wagons in 1845.[48] Also that same year, James M. Maxey wrote his now-familiar letter from Independence recommending a large wagon that would "beare about 6 thousand pounds."[49] Military contractors' wagons numbering 335 hauling supplies to Santa Fe in 1850-1851 averaged 5,235 pounds per wagon.[50]

John Russell Bartlett, writing in 1854, noted that the "large Missouri wagons" used in the Chihuahua trade carried "from five thousand to five thousand five hundred pounds" each.[51] Percival G. Lowe wrote that contractors using wooden-axle wagons made by Murphy, Espenschied, and Young in the late 1850s were "able to carry their 6,000-pound loads anywhere."[52] Although the 6,000-pound load became the norm for Santa Fe Trail freight wagons, it was definitely not the maximum load. William B. Napton states that the Hiram Young wagons in his train in 1857 were "designed to hold a load of seven or eight thousand pounds of merchandise each."[53]

PRICE

William Becknell's 1822 wagon is supposed to have cost $150. Over 20 years later, in 1846, 15 Pittsburgh wagons purchased by Owens & Aull were priced at $149.47![54] Joseph Murphy's account books are a good source for wagon prices. In 1848, Murphy sold to Pierre M. Chouteau of Kansas City "4 ox wagons for the Santafee trade/Bowed off with provision Boxes at the/rate of 130.00 Each." Two years later, Murphy made for Beck & Brent of Lexington, Missouri, 12 large ox wagons "to go to Santafee at 165 Dollars Each" and "3 lighter wagons at 145 Dollars Each." In 1854, John Russell Bartlett estimated that the "large Missouri wagons, which carry from five thousand to five thousand five hundred pounds, cost about two hundred dollars each."[55]

An 1852 deposition by trader John S. Jones provides a revealing assessment of the worth of wagons in New Mexico. According to Jones, in the spring of 1851, the firm of J. S. Lightner & Co. sold to William O. Ardinger & Co., at Santa Fe,

> "a lot of thirteen second-hand wagons, and their teams of six mules each, for between $750 and $800 each; and, as nearly as deponent recollects, at the price of seven hundred and ninety and odd dollars each. That he estimated the wagons at $160 each, the mules at $90 to $100 each, and the harness at $7 per set. Deponent says that the wagons referred to were not the largest sized wagons usually taken to New Mexico, being about 3,500 pounds freight; that a larger class of wagons, of from 4,500 to 6,000 pounds freight, cost more in the States and bring a better price in Santa Fe. That large sized wagons are the only ones used in [the] trade to New Mexico, and are generally in demand in August and September of each year, when they are required principally for the southern trade, and that they bring at these times one hundred and sixty dollars each. That wagons in good repair, in demand in New Mexico, bring their full value; but when not in demand they cannot be sold at any price, and a sale cannot be forced."[56]

Notes

1. George Shumway and Howard C. Frey, *Conestoga Wagon, 1750-1850: Freight Carrier for 100 Years of America's Westward Expansion* (York, Pa.: George Shumway, 1968), 11-12; and Ron Vineyard, *Virginia Freight Waggons, 1750-1850*, Colonial Williamsburg Foundation Library Research Report Series #345 (Williamsburg, Va.: Colonial Williamsburg Foundation Library, 1994), 138-139.

2. Dimensions are given for a wagon in Joseph Murphy's earliest account book, in an undated entry that falls between accounts of 1826 and 1828, although there is no evidence that the wagon was ever intended for the Santa Fe trade. The vehicle was presumably ordered by a Mr. Rider, and the "whole length of the bottom sides" of the wagon was to be 9 feet 6 inches, and the width 3 feet 5 inches. It was to have a "lose tongue" 11 feet long. The height of the rear wheels was to be 4 feet 10 inches, and the front wheels 3 feet 8 inches. The tread was to be 1½ inches wide. Because the wagon was to have a doubletree, it is clear that it was intended for use with horses or mules. Unfortunately, such detailed dimensions as those provided for Mr. Rider's wagon (of which the above is a only a summary) are an aberration in the Murphy account books. Joseph Murphy's order books, which were the proper place for recording the dimensions of wagons ordered, have not survived. See *Account Book, 1825-1836*, p. 6, Joseph Murphy Collection (microfilm), Missouri Historical Society, St. Louis (hereinafter cited as JMC).

3. Frank S. Edwards, *A Campaign in New Mexico with Colonel Doniphan* (Philadelphia: Carey and Hart, 1847), 79-80.

4. Don H. Berkebile, *Carriage Terminology: An Historical Dictionary* (Washington, D. C.: Smithsonian Institution Press, 1978), 110.

5. See Shumway and Frey, *Conestoga Wagon, 1750-1850*, 191-192.

6. John Omwake, *The Conestoga Six-Horse Bell Teams of Eastern Pennsylvania* (Cincinnati: The Ebbert & Richardson Co., 1930), 72; Shumway and Frey, *Conestoga Wagon*, 182 and 188; and taped comments of Doug Thamert, April 10, 1996, in the author's collection.

7. Berkebile, *Carriage Terminology*, 110.

8. Omwake, *Conestoga Six-Horse Bell Teams*, 75.

9. Thomas J. Farnham, *Travels in the Great Western Prairies, the Anahuac and Rocky Mountains, and in the Oregon Territory* (New York: Greeley & McElrath, 1843), 15.

10. Josiah Gregg, *Commerce of the Prairies*, ed. Max L. Moorhead (Norman: University of Oklahoma Press, 1954), 27.

11. Martin Hardingham, *The Fabric Catalog* (New York: Pocket Books, 1978), 65.

12. A sale of seven pieces of "Hickory Axle-tree stuff" is found in one of Joseph Murphy's 1847 *Day Book* entries. *Day Book, 1847-1853*, p. 12, JMC.

13. *Day Book, 1847-1853*, pp. 22, 189, and 508, JMC.

14. Thamert comments, April 10, 1996.

15. *Invoice Book (Owens & Aull), February 14, 1846-1847*, p. 36, in *James Aull Business Records, 1825-1851*, Coll. #3001 (microfilm), Western Historical Manuscript Collection, Columbia, Missouri (hereinafter cited as JABR).

16. James Pool vs. St. Vrain & McCarty, Case File #275a, District Court Records (1850), Santa Fe County, New Mexico State Records Center and Archives, Santa Fe.

17. See advertisement for P. Schuttler's Chicago Wagon Manufactory in Smith & DuMoulin, *Illinois State Business Directory, 1860* (Chicago: J. C. W. Bailey & Co., 1860), 460.

18. James Josiah Webb, *Adventures in the Santa Fe Trade, 1844-1847*, ed. Ralph P. Bieber, Southwest Historical Series, vol. 1 (Glendale, Calif.: Arthur H. Clark Co., 1931), 129-130. Webb contradicts himself later in his account, page 300, when he states that "No iron axles were run on the prairie for carrying freight until 1848."

19. *Day Book, 1847-1853*, pp. 417 and 418, JMC.

20. Percival G. Lowe, *Five Years a Dragoon ('49 to '54) and Other Adventures on the Great Plains* (1906; reprint ed., Norman: University of Oklahoma Press, 1965), 255.

21. Thamert comments, April 10, 1996.

22. W. B. Napton, *The Santa Fe Trail, 1857* (1905; reprint ed., Arrow Rock, Mo.: The Friends of Arrow Rock, 1991), 6.

23. Berkebile, *Carriage Terminology*, 110.

24. John S. Foggett, "The Manufacture of Carriage Wheels," *Carriage Journal 15* (Summer 1977): 236-238; and Thamert comments, April 10, 1996.

25. Randolph B. Marcy, *The Prairie Traveler: A Hand-Book for Overland Expeditions* (New York: Harper & Brothers, 1859), 26.

26. *Day Book, 1847-1853*, p. 13, JMC; and *Invoice Book (Owens & Aull), February 14, 1846-1847*, p. 36, JABR.

27. Dale Morgan, ed., *Overland in 1846: Diaries and Letters of the California-Oregon Trail*, 2 vols. (1963; reprint ed., Lincoln: University of Nebraska Press, 1993), 2: 474.

28. James Pool vs. St. Vrain & McCarty, Case File #275a, District Court Records (1850), Santa Fe County, New Mexico State Records Center and Archives, Santa Fe.

29. *Day Book, 1847-1853*, pp. 13, 88, 159, 417 and 418, JMC.

30. *Jackson County Deed Record*, vol. Y, p. 106-109, Jackson County Clerk's Office, Independence, Missouri.

31. Max L. Moorhead, "Spanish Transportation in the Southwest, 1540-1846," *New Mexico Historical Review 32* (April 1957): 119.

32. Berkebile, *Carriage Terminology*, 110.

33. See Nick Eggenhofer, *Wagons, Mules and Men: How the Frontier Moved West* (New York: Hastings House, 1961), 42-44.

34. See Berkebile, *Carriage Terminology*, 340. For a good illustration of drop tongue construction see Eggenhofer, *Wagons, Mules and Men*, 112.

35. Marcy, *The Prairie Traveler* (New York: Harper & Brothers, 1859), 26.

36. *Day Book, 1847-1853*, p. 249, JMC.

37. See Shumway and Frey, *Conestoga Wagon*, 1750-1850, 12.

38. See Shumway and Frey, *Conestoga Wagon*, 1750-1850, 142.

39. Berkebile, *Carriage Terminology*, 110.

40. John W. Reps, *Saint Louis Illustrated: Nineteenth-Century Engravings and Lithographs of a Mississippi River Metropolis* (Columbia: University of Missouri Press, 1989), 34.

41. William Ellis vs. Phineas Skinner, Case File Drawer "1848/March," Circuit Court Records, Platte County Courthouse, Platte City, Missouri.

42. Julius Froebel, *Seven Years' Travel in Central America, Northern Mexico, and the Far West of the United States* (London: Richard Bentley, 1859), 216.

43. William Patrick O'Brien, "Hiram Young: Pioneering Black Wagon maker for the Santa Fe Trade," *Gateway Heritage 14* (Summer 1993), 61.

44. J. Everts Greene, *The Santa Fe Trade: Its Route and Character* (Worcester, Mass.: Press of Charles Hamilton, 1893), 17. One word of caution when examining primary accounts that include estimates of tonnage. In the mid-nineteenth century, a ton could equal either 2,000 pounds ("short ton") or 2,240 pounds ("long ton"), depending on the state or region. See Delos W. Beadle, *The American Lawyer*, and *Business-Man's From-Book* (New York: Phelps, Fanning & Co., 1853), 355.

45. James Hall, *Letters from the West; Containing Sketches of Scenery, Manners, and Customs*; and *Anecdotes Connected with the First Settlements of the Western Sections of the United States* (1828; reprint ed.; Gainesville, Florida: Scholars' Facsimiles & Reprints, 1967), 35.

46. Matt Field, *Matt Field on the Santa Fe Trail*, ed. John E. Sunder, collected by Clyde and Mae Reed Porter (Norman: University of Oklahoma Press, 1960), 161.

47. Gregg, *Commerce of the Prairies*, 24.

48. James W. Abert, *Through the Country of the Comanche Indians in the Fall of the Year 1845*, ed. John Galvin (San Francisco: John Howell, 1970), 21.

49. Dale Morgan, ed., *Overland in 1846: Diaries and Letters of the California-Oregon Trail*, 2 vols. (1963; reprint ed., Lincoln: University of Nebraska Press, 1993), 2: 474.

50. See Report of the Quartermaster General in H. R. Ex. Doc. 2, 32nd Cong., 1st sess., 1851 (Serial 634), p. 296. I am indebted to Harry Myers for bringing this document to my attention.

51. John Russell Bartlett, *Personal Narrative of Explorations and Incidents in Texas, New Mexico, California, Sonora, and Chihuahua*, 2 vols. (1854; reprint ed., Chicago: The Rio Grande Press, 1965), 2: 436.

52. Lowe, *Five Years a Dragoon*, 255.

53. Napton, *The Santa Fe Trail*, 1857, 6.

54. *Day Book, 1847-1853*, p. 13, JMC; and *Invoice Book (Owens & Aull), February 14, 1846-1847*, p. 36, JABR.

55. Bartlett, Personal Narrative, 2: 436.

56. U.S. Congress, House, Thomas S. J. Johnson. Mr. Ready, from the Committee of Claims, made the following Report, H. R. Rep. 85, 33rd Cong., 1st sess., 1854 (Serial 742), 5.

V

THE SANTA FE WAGON 1860-1880

GENERAL DESCRIPTION

"A regular wagon of the first magnitude, capable of carrying 6,500 pounds," reported the *Westport Border Star* in 1860, "is what we here call a 'Santa Fe wagon,' from the fact that so many trains of these wagons are continually leaving Westport and Kansas City for Santa Fe, New Mexico." The *Border Star* devoted an entire article to the manufacture of these wagons at a new steam wagon factory in Westport, Missouri, operated by Minor T. Graham, thus providing the best contemporary description of the typical Santa Fe freight wagon of this period known to exist. According to the *Border Star*,

> "Some of the dimensions of these wagons would supprise [sic] an Eastern man. The diameter of the larger wheel is 5 feet 2 inches, and the tire weighs 105 pounds. The reach is 11 feet and the bed 46 inches deep, 12 feet long on the bottom and 15 feet on the top, and will carry 6,500 pounds across the plains and through the mountain passes."

Although these specifications deviate little from those given for Conestoga-type wagons in chapter 4, the Santa Fe wagon differed significantly in design from its Conestoga predecessor: The Santa Fe wagon of the 1860s did not have the famous curved or downbowed body of the Conestoga; its bottom and top were straight. And although it does technically have a raved body, it is a *very* simplified raved body. Yet, as the *Border Star's* dimensions make obvious, the Santa Fe wagon did retain the outward-canted end-gates, front and back.

This type of wagon was certainly not limited to the Santa Fe Trail. However, it is probable that the freight wagon described by the *Border Star* was originally developed for use on the Santa Fe Trail. And there is ample illustrative evidence that the wagon was indeed prevalent on that route for many years. For that reason, and for lack of a better name, the *Border Star's* appellation has been retained for this study."[1]

The above wagon type appears in the earliest known photograph of Santa Fe Trail wagons, the now-famous view of the Elsberg & Amberg train on the plaza in Santa Fe in October, 1861 (figure 29, especially the larger wagon in this image). This same wagon is also featured quite dramatically in a photograph (figure 30) of the D. & B. Powers train from Leavenworth corralled on a Denver street on June 20, 1868. Perhaps the best image for discerning details of the Santa Fe wagon's construction, however, is the photograph (figure 31) of the Otero & Sellar warehouse at Hays City, Kansas, taken circa 1867.

A distinguishing characteristic that emerges in all the images is the triangular configuration of three wooden uprights, or cleats, on the wagon's side panels. In the center of the panel, a wide upright runs vertically from the bottom of the wagon side to near its top edge. On each side of this upright are two more uprights that run at an angle from the panel's bottom edge until meeting at the top of the vertical upright, thus forming what looks like two triangles. Additional uprights are sometimes found on the side panels of these wagons, but they are narrower and do not emerge as distinctly in images as the triangular configuration, which provided extra strength to the body, as well as preventing the boards of the side panel from shifting.

Other features visible in the Otero & Sellar photograph are two wide vertical uprights on the end-gate; two horizontal iron through-rods running across the end-gate, connecting the wagon sides; seven bows, generally with two bow staples per bow on a side; and two stringers attached to bows (the second wagon pictured has a single ridge pole or stringer). The wagons in the Otero & Sellar image are not equipped with brakes; however, what appears to be a brake lever is visible on the larger wagon in the 1861 view of the Elsberg & Amberg train in Santa Fe. Brakes are also clearly seen on some of the wagons of the D. & B. Powers train in Denver in 1868. Brakes were no doubt an option for purchasers of wagons. In another photo of the Otero & Sellar warehouse (figure 32) taken just before or after the image already discussed (unfortunately, this photo is of poor quality), several wagons that are visible have drop tongues. A drop tongue is also quite clear in an excellent engraving (figure 33) of a Santa Fe wagon, entitled "Ship of the Plains at Anchor," from a sketch circa 1875.

A Santa Fe wagon of the 1860s is pictured in a modern photograph (figure 36) taken at the now-defunct Pioneer Village Museum in Salt Lake City, Utah. It appears that this wagon had a removable side board--a feature that is suggested in some contemporary images. The wagon has wooden axles with wheels that are secured by linch pins, and it is equipped with a brake. Note also that a number can be seen painted on the side of the wagon, which was important in matching bills of lading with the appropriate wagons. Unfortunately, the current location of this wagon, which would answer many questions in regard to freight wagon construction of this period, is unknown.[2]

The Santa Fe wagon seems to have changed relatively little during the last 20 years of the Santa Fe Trail's history. It is depicted in an engraving (figure 37) of the Chick, Browne & Co. store and warehouse at Granada, Colorado, circa 1873. It is clearly delineated in two engravings (figures 33 & 34) in A. C. Wheeler's *The Iron Trail*, published in 1876 (one of these is the "Ship of the Plains at Anchor" mentioned above). And it is also visible in a view of Raton Pass made in 1879 (figure 38), just a year before the railroad reached Santa Fe.

MAKERS OF THE SANTA FE WAGON

The *Border Star* noted that a "large portion of these [Santa Fe] wagons are manufactured at St. Louis and at establishments in Indiana and Illinois, and are forwarded here by water." Among the prominent wagon manufacturers in St. Louis during the last two decades of the Santa Fe Trail's

history were of course Joseph Murphy and Louis Espenschied (both discussed in chapter 3). On July 6, 1861, St. Louis wagon makers Louis Espenschied, Jacob Kern, Jacob Scheer, and John Cook wrote to the Assistant Quartermaster of the army at St. Louis, offering to furnish the army with

> "6 mule wagons 2 1/2 inch Iron Axles 12 inch Box with substantial Wagon beds for the Sum of One hundred & twenty five Dollars each. These wagons are warranted to carry 5000 to 6000 lbs each and are used by the Freighters to New Mexico & Utah ...."[3]

In 1863, the St. Louis forwarding and commission firm of Glasgow & Brother purchased "8 *Carros completos para 10 Mulas*" [eight wagons completed for ten mules] from Louis Espenschied for New Mexico merchant Felipe Chaves. The cost was $140 per wagon.[4]

Murphy's wagons were undoubtedly similar to the products of Espenschied. William F. Cody remembered that

> "the wagons used in those days by Russell, Majors & Waddell were known as the 'J. Murphy wagons,' made at St. Louis specially for the plains business. They were very large and were strongly built, being capable of carrying seven thousand pounds of freight each. The wagon-boxes [read "bodies"] were very commodious--being about as large as the rooms of an ordinary house--and were covered with two heavy canvas sheets to protect the merchandise from the rain. These wagons were sent out from Leavenworth, each loaded with six thousand pounds of freight, and each drawn by several yokes of oxen in charge of one driver."[5]

An 1870 chattel mortgage from Trinidad, Colorado, includes "two 'Murphy' wagons sometimes called 'sixty Hundred' wagons," evidence that the 6,000-pound load was standard.[6]

In 1870, 163 carriage and wagon-making establishments were operating in St. Louis. They employed 1,106 hands, and turned out in one year products valued at $2,044,547.[7] Exactly how many of these shops produced wagons for the Santa Fe trade is unknown; probably only a handful catered to this specific clientele.

On the western border of Missouri, Hiram Young (discussed in chapter 3) was a major manufacturer until the outbreak of the Civil War, after which he fled the volatile wartime conditions of Independence and set up shop a safe distance away in the town of Leavenworth, Kansas. There he continued to produce his popular wagons, presumably on a more limited scale. Young returned to Independence after the war, but his wagon-making operation never achieved its former prominence (he eventually entered the lumber business).[8] As noted above, Minor T. Graham established his "Steam Wagon Factory" in Westport in 1860. According to the *Border Star*, Graham's factory consisted of "four departments, employing thirty-five men, and turning out fifty-three wagons per month." Following is the *Border Star's* description of his factory:

> "In looking through the shops we find a series of machines, that with the human hand and an arm of steam do all the work upon a wagon, the mortices, tenents, felloes, grooves, scrolls, etc., etc., and in addition to this a gang of knives that work in one of Daniel's planers give the finishing touch to all the axles, bolsters, tongues, and other heavy timber about a wagon. -

> - These machines consist of a morticer that in eighteen minutes make all the mortices for a set of hubs -- a job that would occupy a man all day and even then he could not do the work with near the nicety and exactness that the machine does. Then comes the planer, spoke lath, upright drill, tenenting machine, the knives of which revolve three thousand times a minute cutting tenants of any size, felloe saws, scrolls saws, a swinging saw that cuts the lumber crosswise, and which is a most ingenious contrivance, four circular saws, grind stones, and other machinery for finishing work. All of these machines are new and of the latest and best patterns, and after once witnessing the amount of labor they perform in a time that you can compute in minutes, one no longer wonders at the rapidity with which the steam machines turn out the strong and unwieldy looking wagons."[9]

How long Graham remained in business or even how his Santa Fe wagons were received among freighters are unknown for the present. He mortgaged his factory in 1861.[10]

Despite the advent of large and productive factories such as Graham's, some smaller makers continued to turn out a steady stream of vehicles. Among the unsettled accounts of Jackson County wagon maker Christian Glunz, as noted in his estate inventory of 1866, are found the names of several Trail merchants and freighters who had been his customers (and debtors): Samuel Watrous & Co., Charles W. Kitchen, Franz Huning & Co., and Epifanio Aguirre.[11] In 1870, Jackson County had 24 carriage and wagon-making establishments, employing a total of 109 hands, with products valued at $150,255 (compare this to $2 million-plus produced in St. Louis). Santa Fe wagons were probably only a very small portion of this total, however; the prominent makers in St. Louis and those in Illinois, Indiana, and Michigan appear to have monopolized the business at this time.

One visitor to Kansas City about 1861 toured the "camping ground of the immense caravans of Russell, Majors & Co." He found

> "several acres covered with the enormous wagons that are used in the prairie trade .... It was to me something of a sight to see such a number of *land ships*. They will carry from seven to ten thousand pounds, and are drawn by from three to six yokes of oxen. They are covered when loaded, so as to protect the goods from the rains. I examined them, and found them made many hundreds of miles to the east. I saw a large number which came from Michigan. They are strong, heavily ironed and massive wagons."[12]

The Michigan wagons were made by Austin & Tomlinson of Jackson, Michigan, which had operated a factory there since 1852.[13] On January 12, 1861, the Denver *Rocky Mountain News* carried an advertisement for the Michigan Wagon Depot of St. Joseph, Missouri--the western outlet for Austin & Tomlinson wagons. Their agent, B. F. Lathrop, called particular attention "to our Iron Axle Waggons, which we think are unsurpassed for durability and lightness of draught." The editor of the *Rocky Mountain News*, always glad to welcome new advertisers, commented in another column that "These wagons are justly celebrated for their strength and durability, and as they have been extensively used by Alex Majors, Train & Co., and other heavy freighters in the Pike's Peak trade, there can be no doubt of their excellence and adaptation to the trials of a trip across the Plains."

Of all the Illinois wagon manufacturers, Peter Schuttler of Chicago probably contributed the largest percentage of freight wagons used on Western trails, including the Santa Fe Trail. He had established a shop in Chicago in 1843.[14] Schuttler advertised his Chicago Wagon Manufactory in the *Illinois State Business Directory*, 1860, proclaiming that he had "the largest and best stock of Wagons in the West." More important, Schuttler listed some of the sizes of wagons available: wagons with iron axles, either 2 or 1¾ inches; thimble skein wagons with 3¾- or 3½-inch boxes; nut skein wagons with 3½- or 3¾-inch boxes; and washer linch pin wagons with a 3¾-inch box.[15] The use of thimble skein wagons in the West at this time is confirmed by Eugene F. Ware, who remembered that the freight wagons he observed on the Central Overland Route in 1864 "had wooden axles, and were of what they called the thimble-skein variety." These wagons, Ware noted, employed a linch pin on the axle. The skein itself was

> "lubricated with tar, and the tar bucket hung on the rear axle. At every ranch were lift-jacks, so that these wheels could be raised, taken off, and the axles lubricated. The wind and whirling sand and dust made it necessary for this to be frequently done."[16]

When contemporary accounts refer to Indiana wagons, it is safe to say that they are speaking of the products of the famous Studebaker brothers, Henry and Clem, who established a shop in Great Bend in 1852. The carriage and wagon factory that they developed operated under the name of H. & C. Studebaker until 1868, when it became the Studebaker Brothers Manufacturing Company. One history of the business states that in "1872 the firm hired 325 men and built 6,950 vehicles. By 1874, they employed 500 men and were turning out 11,050 vehicles."[17] The *Rocky Mountain News* announced on March 18, 1874, that D. K. Wall, "who has an extensive wagon and blacksmithing establishment on Fifteenth Street," had made arrangements with the Studebaker Brothers "to sell their wagons and buggies in the territory of Colorado." The news item reveals that wagon makers were still trying to cope with an age-old problem:

> "Mr. Wall's long residence in this western country has taught him that it is necessary to construct woodwork in a peculiar manner in order to make it withstand the climactic influences. In view of this he prevailed upon the Studebaker company to construct their wagons in the future so that they will stand our climate perfectly. This is a great point gained and gives this wagon a great superiority over many others made East and sold here."

The *Rocky Mountain News* went on to comment that "The factory at which these wagons are made is probably the largest of its kind in the United States."

A rare 1876 price list for Studebaker Brothers contains an engraving (figure 39) of their freight wagon, intended "For Western, Southwestern and Northwestern States and Territories."[18] The wagon pictured has the triangulated uprights typical of the Santa Fe wagon (and additional bracing), although the end-gates do not flare outward like many of the wagons in contemporary Santa Fe Trail images. Straight or vertical ends allowed for the convenient coupling of two wagons together.[19] Colonel Homer W. Wheeler, wagonmaster for several wagon trains freighting from the end of the Kansas Pacific Railroad to Denver in 1869, referred to the rear wagon in these tandem rigs as "trails." The tandem freighters were drawn by 10 and 12 yoke of oxen, he recalled, and the "large wagons with their trails each held from ten to twelve thousand pounds of freight." In difficult

terrain, the freighters "would cut off the 'trail' and return for it after all the rough spots had been passed."[20] Although tandem rigs did see use on the Santa Fe Trail, the pictorial evidence indicates that individually drawn wagons were a more common sight (for example, see figures 35 and 38).

The 1876 Studebaker price list provides valuable information on some of the dimensions of their freight wagons. The page featuring the Studebaker freight wagon is reproduced in this study (figure 39), so only a summary will be given here: Four varieties of thimble skein wagons were offered, ranging from 4-inch axles to 5-inch--the larger the axle, the greater the hauling capacity. The 4-inch thimble skein wagon had a bed 12 feet long, 3 feet 8 inches wide, and 38 inches deep. The tire was 2 inches wide and was available in a 7/8- or 1-inch thickness. The capacity for this wagon was 6,000 pounds. Its price was $165. The 5-inch wagon had a slightly taller body, a 2½-inch tire width, and a capacity of 9,000 pounds. This wagon cost $220. The one iron-axle wagon listed with the above freighters had a 2½-inch axle, and could haul 8,000 pounds. At $220, it was priced the same as the 5-inch thimble skein wagon.

Heavy loads were not uncommon during the later years of the Santa Fe Trail. In 1872, a St. Louis-bound Mr. Coffin "met no less than two hundred wagons, each carrying about nine thousand four hundred pounds of freight, general merchandise, going from Kit Carson [Colorado] to New Mexico. Each wagon was drawn by twelve mules ...."[21] One should not assume that these were the 9,000-pound Studebakers mentioned above, for the overloading of wagons was probably quite commonplace. Richens Lacy ("Uncle Dick") Wootton claimed that to "put six or eight thousand pounds on a wagon was not loading uncommonly heavy, and frequently we put as high as ten thousand pounds on a wagon."[22] One does wonder about the accuracy of many estimates of the weight of loaded wagons, however--there were no weigh stations on the Santa Fe Trail.

Not all Santa Fe wagons hauled merchandise. These freighters were also used to transport buffalo hides (figure 40). Plainsman John R. Cook remembered that

> "Each wagon had on a big rack, built like hay-racks. The hides were piled in this rack with a lap and boomed down tight like a load of hay. I have seen 200 bull-hides piled on one wagon. A dry bull-hide, as a rule, would weigh about 50 pounds. So the reader may have some idea of a train of six yokes of oxen to the team, lead and trail wagon to each team, the lead wagon hauling nearly 200 hides, and the Trail hauling from 100 to 150."[23]

THE CHIHUAHUA WAGON

As noted in an earlier chapter, the Chihuahua wagon was larger and heavier than the Santa Fe wagon. It was used primarily on the route between San Antonio, Texas, and Chihuahua, Mexico. Its dimensions, as remembered by freighter August Santleben, are given here for the sake of comparison.

The hind wheels measured 5 feet 10 inches in height, and the tire was 6 inches wide and 1 inch thick; the front wheels were built like them, but they were 12 inches lower. The axles were of solid iron, with spindles 3 inches in diameter, and all the running gear was built in proportion, for hard service. The wagon bed was 24 feet long and 4½ feet wide, and the sides were 5½ feet high. Wagon-bows were attached to each, and over them two heavy tarpaulins were stretched, which hung down around the sides, thoroughly protecting the freight. On these covers, the train-owner's name was painted, and beneath, a number, from one upwards, to distinguish the wagons, in which freight was loaded as it was entered on memorandum. The woodwork of these wagons was painted blue, and the iron-work was black.

Every wagon was furnished with a powerful brake, which was used to regulate the speed when going down steep hills; and two heavy chains were provided that were attached to the wagon-body for use in cases of necessity. Occasionally, accidents happened to a brake and the heavily loaded wagon would become uncontrollable, with the result that mules and driver were often crushed to death under the wheels.

The beam that constituted the brake was 7 feet in length and 6-by-8 inches square, and it was made out of choice hickory timber. It was placed beneath the wagon-box, before the hind wheels, in two heavy iron stirrups that were secured to the frame on each side by heavy braces or bolts. A block of wood was fastened near each end, which pressed against the wheels when the lever was manipulated by the driver in his seat. When necessary, he could control the motion of the wagon according to the grade by forcing the brake against the wheels until they ceased to revolve, or check them at will with a motion of his hand, as easily as a motorman controls his car.

An average load for such wagons was about 7,000 pounds; generally, however, with 10 small mules attached, 16 bales of cotton was a load, because it could be transported with more ease.[24]

It is interesting to note that Santleben indicates that the Chihuahua wagon had a seat for the driver. Santa Fe wagons had no such seat. Teamsters rode the nigh wheeler with mule-drawn wagons and walked alongside those drawn by oxen.

THE CALIFORNIA FREIGHT WAGON

The February 1860 issue of *Hutchings' California Magazine* contains a very interesting engraving titled a "Large Mule Team Going Out of Stockton, Often Called 'Prairie Schooners'" (figure 41). It pictures a very large wagon with a trail wagon attached. The lead wagon has curved lines and outward-canted end-gates reminiscent of the Conestoga. The lead wagon is equipped with a brake. A tool box is attached to the front end-gate of the lead wagon, and what appears to be a feedbox is suspended from the Trail wagon. The wagons are drawn by six pairs of mules. According to the accompanying article on Stockton, California, "One of the principal features connected with the commerce of this city, is the number of large freight wagons, laden for the mines; these have, not

inappropriately, been denominated 'Prairie Schooners,' and 'Steamboats of the Plains.' Some of these have carried as high as 32,000 pounds of freight."[25]

Little is known about the California freight wagon. Surviving examples have not been located at present, although an identical wagon does appear in something of a museum setting (old mission?) in two postcards in the author's collection that date to the early 1900s (figure 42). Very similar wagons may also be seen in action in the 1931 Paramount movie *Fighting Caravans*, which was filmed in California.

There is no evidence that the above type of freight wagon used in California ever saw service on the Santa Fe Trail. However, it is interesting for comparison, as a contemporary of the Santa Fe wagon.

Notes

1. A. D. M. Draper noted that in 1861 "Our wagons were the huge, old-fashioned kind, nicknamed 'Santa Fe Schooners.' Of miscellaneous freight they held about 6,000 pounds, a fair load for those days. I am about five feet six high, and when standing on the wagon tongue could just reach the top of the front endgate. The wagon covers were made of heavy twilled cotton and doubled." As quoted in *Lower Cimarron (Wagon Bed) Spring Study* (Santa Fe: National Park Service, n. d.), 10.

2. The Pioneer Village Museum of Salt Lake City was purchased several years ago by the Lagoon Corporation, and moved to Farmington, Utah. According to the current curator, Mr. Howard Freed, some artifacts did not make the transfer, and the wagon in question appears to fall into that category. However, Mr. Freed states that there are three similar freight wagons in his collection, although they are in very poor condition. This discovery was made so late in this study that the author has been unable to personally view these vehicles. Telephone conversation with the author, November 13 and 21, 1996.

3. As quoted in Lloyd Espenschied, "Louis Espenschied and His Family," *Bulletin of the Missouri Historical Society 18* (January 1962): 96.

4. Factura prepared by Glasgow & Brother, March 31, 1863, José Felipe Chaves Papers, University of New Mexico Library, Special Collections, Albuquerque. In 1858, Glasgow & Brother purchased 20 wagons ($132 each) of maker Jacob Kern for Felipe Chaves. See Factura in Glasgow & Brother statement of June 30, 1858.

5. William F. Cody, *Buffalo Bill's Own Story of His Life and Deeds*, "Memorial Edition" (N.p.: John R. Stanton, 1917), 46.

6. *Las Animas County Deed Record*, vol. 2, p. 451, Las Animas County Courthouse, Trinidad, Colorado.

7. Francis A. Walker, *Ninth Census – Volume III: The Statistics of the Wealth and Industry of the United States...from the Original Returns of the Ninth Census...* (Washington, D. C.: Government Printing Office, 1872), 689.

8. William Patrick O'Brien, "Hiram Young: Pioneering Black Wagon maker for the Santa Fe Trade," *Gateway Heritage 14* (Summer 1993), 64-65.

9. *Westport Border Star*, June 23, 1860.

10. *Jackson County Deed Record*, vol. 37, p. 136-138, Jackson County Clerk's Office, Independence, Missouri.

11. *Inventories, Sale & Appraise Bills, Book B*, p. 168, Jackson County Probate Records, Independence, Missouri. The estate inventory of Westport wagon maker Frederick Klaber, who also appears to have died in 1866, is in the above Book B, pp. 195-202. Both of these important documents provide useful information on wagons and wagon materials and their values.

12. John Warner Barber and Henry Howe, *Our Whole Country: or the Past and Present of the United States, Historical and Descriptive*, 2 vols. (Cincinnati: Henry Howe, 1861), 2: 1289.

13. Ken Wheeling, "Trans-Mississippi Transport: Part VII -- The Schuttler Wagons: Triumph and Tragedy," *The Carriage Journal 30* (Spring 1993): 156.

14. Wheeling, "The Schuttler Wagons," 154.

15. Smith & DuMoulin, *Illinois State Business Directory, 1860* (Chicago: J. C. W. Bailey & Co., 1860), 460.

16. Eugene F. Ware, *The Indian War of 1864* (1911; reprint ed., New York: St. Martin's Press, 1960).

17. Stephen Longstreet, *A Century on Wheels: The Story of Studebaker, A History, 1852-1952* (New York: Henry Holt and Company, 1952), 2, 26, 38, and 43.

18. Reprinted 1967 by Newburg-Historical Publishers, Cleveland, Ohio. It should be noted that this same engraving is also reproduced on another page of the price list, and given the title of "The Nevada Iron Axle Wagons."

19. See William E. Lass, *From the Missouri to the Great Salt Lake: An Account of Overland Freighting*, Nebraska State Historical Society Publications, vol. 26 (Lincoln: Nebraska State Historical Society, 1972), 14-16. Schuttler freight wagons of the 1870s also had straight ends for this purpose. Wheeling, "The Schuttler Wagons," 155.

20. Homer W. Wheeler, *The Frontier Trail, or from Cowboy to Colonel* (Los Angeles: Times-Mirror Press, 1923), 52.

21. Out West (Colorado Springs), July 18, 1872, quoted from the *St. Louis Missouri Republican.*

22. Howard Louis Conard, "Uncle Dick" Wootton: The Pioneer Frontiersman of the Rocky Mountain Region" (Chicago: W. E. Dibble & Co., 1890), 327.

23. John R. Cook, *The Border and the Buffalo: An Untold Story of the Southwest Plains*, ed. Milo Milton Quaife (Chicago: The Lakeside Press, 1938), 218.

24. August Santleben, *A Texas Pioneer: Early Staging and Overland Freighting Days on the Frontiers of Texas and Mexico*, ed. I. D. Affleck (New York: The Neal Publishing Company, 1910), 109-111.

25. As quoted in R. R. Olmsted, ed., *Scenes of Wonder & Curiosity from Hutchings' California Magazine, 1856-1861* (Berkeley, Calif.: Howell-North, 1962), 379.

VI

WAGON REMNANTS

No documented Santa Fe Trail wagons are known to survive today. However, bits, pieces, and accessories can be found in various museum and private collections. The author has seen examples of freight wagon running gears--apparently dating to the period of the Trail--at the Fort Francisco Plaza Museum in La Veta, Colorado, and Fort Garland State Historic Site in Fort Garland, Colorado. However, the provenance of both is uncertain. Several iron wagon parts were recovered from archeological excavations at Bent's Old Fort National Historic Site, on the Raton Route of the Santa Fe Trail, in the early 1960s.[1] The author has been unable to personally examine these.[2]

A pseudo-freight wagon (figure 43) may be found in the collections of the Fort Leavenworth Frontier Army Museum. This vehicle's running gear is supposed to have been constructed from parts "salvaged from Russell, Majors and Waddell wagon shops in the corral area originally used by the R, M and W Government Freighting Contractors."[3] The "reproduction" was built for the museum by John and William McGlinn around 1937. It is not known how the McGlinns determined the style or design of the wagon simply from the running gear "parts." Nor is it known exactly which parts were the originals found in the "corral." The body is built to resemble the raved body of a Conestoga wagon, but it is far from true Conestoga construction. Simply put, it is a spurious vehicle, which is only mentioned here so as to prevent scholars and others from misconstruing it as an authentic Santa Fe Trail freighter.

At least three freight wagons, possibly dating to the 1860s or 1870s, are in the collections of the Lagoon Corporation's Pioneer Village at Farmington, Utah. Their condition is said to be poor, and their provenance is unknown. It should be noted that any true freight wagon of the nineteenth century is rare. Unfortunately, the existence of these wagons was not discovered until this study was in its final draft. It is hoped that this lead will be pursued at a future date.

Two wagon provision or tool boxes survive that were used with plains freight wagons. One is in the collections of the Weston Historical Museum in Weston, Missouri, and is supposed to have belonged to freighter Benjamin Holladay (figure 44). The box has a hinged lid that once had a hasp. It is 45-7/8 inches long (slightly longer on the top); and 15-5/8 inches tall at the back, and tapering to 12 inches in the front. The box's bottom side is 13 inches wide. The lumber used to construct the box appears to be pine, and is 7/8 inch in thickness. Suspended from the wagon with chains are found hand-forged hooks, mounted on each side, by which the box was suspended from the wagon with chains. The exterior of the box is painted a shade of blue or blue-green, and the ends are reinforced with iron strips. The most interesting feature of this box is the name of the maker stenciled in red on the front panel: "H. ESPENSCHIED & Co./No. 148 Broadway/ST. LOUIS, MO." The firm of Henry Espenschied & Company is first listed in the St. Louis city directory of 1866, which is a good indication that the box dates to 1866 or after.[4]

The other provision box (figure 45) is in a private collection in New Mexico, and it has a very intriguing history. According to family tradition, it was once attached to a wagon belonging to merchant Antonio José Chávez, and it was holding some of Chávez's money intended for Eastern purchases when he was robbed and murdered on the Trail in 1843.[5] Although the author has not personally examined the Chávez box, it appears that it is nearly identical to the Holladay box. It is possible, of course, that the Chávez box actually dates to a later period.

Curiously, these provision boxes are not distinguishable in contemporary illustrations and photographs. However, Sir Richard F. Burton, writing in 1862, states that "A long covered wooden box hangs behind [the wagon]: on the road it carries fuel; at the halt it becomes a trough, being preferred to nose-bags, which prevent the animals breathing comfortably; and in the hut, where every part of the wagon is utilized, it acts as a chest for valuables."[6]

Notes

1. See Jackson W. Moore, *Bent's Old Fort: An Archeological Study* (Denver: State Historical Society of Colorado and Pruett Publishing Co., 1973).

2. I made two visits to Bent's Old Fort to view this collection but, unfortunately, authorized staff members were unavailable to assist me.

3. Museum Catalogue Sheet, Fort Leavenworth Frontier Army Museum.

4. Loyd Espenschied, "Louis Espenschied and His Family," *Bulletin of the Missouri Historical Society 18* (January 1962): 98. Henry Espenschied was a brother of Louis.

5. Marc Simmons, *Murder on the Santa Fe Trail: An International Incident, 1843* (El Paso: Texas Western Press, 1987), 74.

6. Richard F. Burton, *The City of the Saints and Across the Rocky Mountains to California* (1862; reprint ed.; Niwot: University Press of Colorado, 1990), 22.

VII

DEARBORNS, PERSONAL VEHICLES, AND PROVISION WAGONS

When the 1824 caravan set out for Santa Fe, it contained "2 road waggons, 20 dearborns, 2 carts and one small piece of cannon."[1] During the first decade or so of the trade, Dearborns, pulled by two horses or mules, were used primarily to carry a prospective merchant and his merchandise. Colonel John Glover met returning Santa Fe trader Simeon Switzler in Saline County, Missouri, in 1826, and reported that his "cargo" had been "a dearbourn and $300 worth of domestic cottons."[2] Yet, as the Conestoga freighters came into general use, the Dearborn's role changed to that of personal vehicle for traders and seekers of health and adventure. However, although numerous references to Dearborns exist in the Santa Fe Trail literature, detailed specifications are elusive. Transportation historian Don Berkebile has described the Dearborn (figure 46) as "A light SQUARE-BOX WAGON having two seat-boards and a standing top .... This carriage was developed early in the nineteenth century, and is said to have acquired its name because General Henry Dearborn used one in the field." The Dearborns of the early nineteenth century were probably of "slightly heavier build than the later types." Unlike the freight wagons of the period, the Dearborn was equipped with springs.[3]

A problem inherent in any discussion of Dearborn wagons is the fact that several other names were used by Santa Fe Trail travelers to describe what was often the same or a very similar light spring or top wagon (a wagon with a standing top), including "Jersey wagon," "Carryall," and "dug out." In 1839, Matt Field traveled in a "carryall" pulled by mules and packed with trunks, carpet bags, cigar boxes, pistols, fishing rods, blankets, and so forth. They had purchased the vehicle in Independence.[4] George W. Kendall traveled to New Mexico in 1841 as a member of the Texan-Santa Fe Expedition, in "a neat Jersey waggon, drawn by two mules, and covered so as to protect us from the sun and rain during the long marches." He also refers to his vehicle as a "Jersey carry-all."[5] In 1852, the U.S. mail was transported over the Santa Fe Trail in "a heavy Jersey wagon."[6]

When amateur scientist Frederick Adolphus Wislizenus left for a trip down the Santa Fe and Chihuahua trails in 1846, he took with him a "small wagon on springs, to carry my baggage and instruments, and [to serve] as a comfortable retreat in bad weather."[7] That same year, merchant William Henry Glasgow described his personal vehicle as a "'dug out' or carriage." On May 24, he wrote a letter to his sister while sitting in the carriage, "with the seat upon my knees for a table."[8] Two other merchants on the Trail that spring, Samuel Owens and James Aull, had purchased from Cyrus Townsend of Pittsburgh five "Sleeping Wagons" at $120 each.[9] Were these Dearborns, or simply baggage wagons?

Susan Magoffin, in her famous diary of 1846-1847, mentions that her personal vehicle was a "little Rockaway carriage" drawn by two mules and that her servant, Jane, traveled in a Dearborn, which

indicates that there was a difference between these two vehicle types.[10] The Rockaway is said to have been developed by a Jamaica, Long Island, carriage maker about 1830. An illustration of a Rockaway of 1845 (figure 47) shows the vehicle with two seats and roll-up sides or curtains that could be let out and fastened in inclement weather (a feature common to Dearborns as well). There was also a very similar vehicle called a Germantown Rockaway. An illustration of an 1847 Germantown Rockaway (figure 48) shows it to be slightly longer, with an awning or storm hood for the driver.[11] Add endnote 213 or 231 here.] The Germantown Rockaway resembles a Dearborn wagon, and it is not unlikely that it would, at times, have been referred to as a Dearborn on the Trail. It is also important to note that there was a good deal of "borrowing" between styles, which explains the similarities often found in these light spring wagons (figure 49).

A duly impressed volunteer/correspondent in the Army of the West reported that Susan Magoffin's brother-in-law, James Magoffin, reached Bent's Fort in 1846 "in a buggy! Think of that--in a buggy!"[12] Also, a party of topographical engineers traveled to New Mexico that year "in a carriage, altering the same to make it suitable for the conveyance of their instruments." The same correspondent mentioned above described the vehicle as "a handsome spring car, with four mules harnessed to it."[13] Obviously, a great deal of variation could exist between personal vehicles, even of the same style. After all, Dearborns and similar vehicles were often made to order, and could thus incorporate any custom work desired by the buyer.

Personal vehicles were also used by Mexicans. George W. Kendall noted the arrival of a caravan at San Miguel in 1841 "direct from St. Louis, owned by one of the Chavez family, a rich and powerful connection in New Mexico. Chavez himself, in a neat buggy waggon, accompanied his men."[14] In 1846, George A. F. Ruxton encountered Manuel Armijo on the Chihuahua Trail; the New Mexican governor was riding in an "American dearborn."[15]

A few contemporary images depict Dearborns or Jersey wagons in the Southwest. The engraving from *Commerce of the Prairies*, entitled "March of the Caravan" (figure 5), depicts two light square-box wagons. Although quite small in the engraving, thin supports for the flat, standing top can be discerned. The sides are open, which would be the case when the curtains were rolled up and tied. Still, the engraving leaves much to be desired. A lithograph (figure 50) depicting Kendall's Jersey wagon appears in his *Narrative of the Texan Santa Fe Expedition* (1844). However, the artist, J. W. Casilear, was not a member of the expedition. The curtains of the wagon seem much too billowy, the wheels are not correctly proportioned, and other details do not ring true--although it is apparent that Casilear, like the artist for Gregg's work, was attempting to draw the same type of square-box wagon. Three Jersey wagons manufactured in New Jersey are pictured in an 1853 engraving (figure 51) that features several carriages. However, it is not known if western Jersey wagons were identical to these.

Perhaps the best image that pictures a personal vehicle on the Santa Fe Trail is a sketch (figure 52) made by William J. Hinchey, who traveled to Santa Fe with Bishop John Baptist Lamy in 1854. It is a moonlight scene of a parked carriage. Clearly visible on the carriage is a panel in the center of the body that is fastened down. Note also the body's curved sill, or bottomside. This carriage looks very much like a light Rockaway (figure 53), as illustrated in an 1860 article on American carriages originally published in England.[16]

Another personal vehicle, one that developed in the later decades of the Santa Fe Trail's history, was the civilian ambulance. William Woods Averell remembered a military train on the Santa Fe Trail in 1857 in which there were "a dozen married officers who had private ambulances for their wives. These ambulances were marvels of strength and perfect in appliances and adaptations to the uses of a family. They were thoroughly weatherproof and could be converted into sleeping chambers in rough weather."[17] A seat that could be converted into a bed was one of the distinguishing characteristics of the civilian ambulance.[18] Mamie Bernard Aguirre remembered very well the ambulance she and her family traveled the Santa Fe Trail with in 1863:

> "We rode in ambulances which were as comfortable as carriages, costing $500 apiece and built so they could be turned into beds at night just as a 'sleeper' seat is arranged on trains nowadays. They had boxes in the back seat for clothes, pockets on the sides in the doors which opened as hack doors do; in these pockets were brushes, combs and a looking glass. Under the front seat was another and there were two seats facing each other inside so that six people could be comfortably seated."[19]

The ambulances in Aguirre's party may have been constructed at W. U. Wiley's carriage factory in Kansas City. His advertisement in the Kansas City directory of 1860-1861 stated that he dealt in barouches, rockaways, phaetons, buggies, hacks, and "Ambulances for the Plains, Manufactured to order of all kinds."[20] Health-seeker James Ross Larkin traveled the Santa Fe Trail in 1854 in an ambulance manufactured by Finlay & Dougherty of St. Louis. Its cost was $202.[21]

Some personal vehicles were simply small covered wagons. Three sketches by William J. Hinchey (figures 54, 55, and 56) depict these wagons, which were part of Lamy's caravan of 1854. They are definitely not large freighters. Some of Lamy's wagons may have been constructed by Joseph Murphy. In Murphy's day book is a transaction of July 10, 1852, with "Revd Bishop of Santa fee." The bishop purchased three four-mule wagons with double covers for a total price of $290.[22] Regular freight caravans also might travel with small-sized wagons, intended for the clothing and bed rolls of the teamsters, food and mess kits, and other personal items. An 1846 report on the number of vehicles that had traveled to Santa Fe that year included 12 "kitchen wagons" in the statistics.[23] The Magoffin caravan of that same year included what Susan called simply "a baggage wagon."[24] Richens Lacy Wootton recalled that in his caravans "we always had an ambulance in which we carried some of our provisions, and had room for a teamster, or any one else traveling with the train, who might happen to get sick along the road."[25]

In conclusion, when it comes to personal vehicles, it is apparent that they could be as different as the people who used them. This fact is aptly conveyed in the *Missouri Intelligencer's* comment regarding the 1825 Santa Fe Trail caravan: "The wagons and carriages, of almost every description are numerous."[26]

Notes

1. Meredith Miles Marmaduke, "Santa Fe Trail: M. M. Marmaduke Journal," ed. Francis A. Sampson, *Missouri Historical Review 6* (October 1911): 3.

2. John Glover, "Westward Along the Boone's Lick Trail in 1826, The Diary of Colonel John Glover," ed. Marie George Windell, *Missouri Historical Review 39* (January 1943): 193.

3. Don H. Berkebile, *Carriage Terminology: An Historical Dictionary* (Washington, D. C.: Smithsonian Institution Press, 1978), 121.

4. Matt Field, *Matt Field on the Santa Fe Trail*, ed. John E. Sunder, collected by Clyde and Mae Reed Porter (Norman: University of Oklahoma Press, 1960), 74-75.

5. Kendall, George W. *Narrative of an Expedition across the Great South-Western Prairies, from Texas to Santa Fe*, 2 vols. (London: David Bogue, 1845), 1: 72 and 85.

6. Louise Barry, *The Beginning of the West: Annals of the Kansas Gateway to the American West, 1540-1854* (Topeka: Kansas State Historical Society, 1972), 1099.

7. Frederick Adolphus Wislizenus, *Memoir of a Tour to Northern Mexico, Connected with Col. Doniphan's Expedition, in 1846 and 1847* (1848; reprint ed., Albuquerque: Calvin Horn, 1969), 5.

8. Mark L. Gardner, ed., *Brothers on the Santa Fe and Chihuahua Trails: Edward James Glasgow and William Henry Glasgow, 1846-1848* (Niwot: University Press of Colorado, 1993), 78. Another reference to a dug out can be found in a letter written by Joseph P. Hamelin from Chihuahua, Mexico, in 1847. See James Aull and Robert Aull, "Letters of James and Robert Aull, ed. Ralph P. Bieber, *Missouri Historical Society Collections 5* (1928): 297.

9. *Invoice Book (Owens & Aull), February 14, 1846-1847*, p. 36, in James Aull Business Records, 1825-1851, Coll. #3001 (microfilm), Western Historical Manuscript Collection, Columbia, Missouri.

10. Susan Shelby Magoffin, *Down the Santa Fe Trail and into Mexico: The Diary of Susan Shelby Magoffin, 1846-1847*, ed. Stella M. Drumm (New Haven: Yale University Press, 1926), 25. I am indebted to Marc Simmons for bringing this reference to my attention, and to Doug Thamert for providing me with an abundance of material on Rockaways.

11. For a discussion of a history of the Rockaway, see Ezra M. Stratton, *The World on Wheels; or Carriages, with their Historical Associations from the Earliest to the Present Time* (1878; reprint ed., New York: Benjamin Blom, 1972), 444-446.

12. *St. Louis Daily Reveille*, September 8, 1846.

13. *Jefferson Inquirer* (Jefferson City, Mo.), June 24, 1846; and St. Louis Daily Reveille, July 3, 1846.

14. Kendall, *Across the Great South-Western Prairies*, 1: 351.

15. George A. F. Ruxton, *Adventures in Mexico and the Rocky Mountains* (London: John Murray, 1847), 110.

16. "Carriage Building in America," *Carriage Journal 2* (Summer 1964): 31.

17. Edward K. Eckert and Nicholas J. Amato, eds., *Ten Years in the Saddle: The Memoir of William Woods Averell, 1851-1862* (San Rafael, Calif.: Presidio Press, 1978), 89.

18. See Berkebile, *Carriage Terminology*, 18.

19. Mamie Bernard Aguirre, "Spanish Trader's Bride," *The Westport Historical Quarterly 4* (December 1969): 10.

20. *Kansas City Directory, and Business Mirror, for 1860-61* (Indianapolis, Ind.: James Sutherland, 1860), 68.

21. Barton H. Barbour, ed., *Reluctant Frontiersman: James Ross Larkin on the Santa Fe Trail, 1856-57* (Albuquerque: University of New Mexico Press, 1990), 4, 124, and 137 n. 2.

22. *Day Book, 1847-1853*, p. 525, Joseph Murphy Collection (microfilm), Missouri Historical Society, St. Louis.

23. Barry, *The Beginning of the West*, 642.

24. Magoffin, *Down the Santa Fe Trail*, 25.

25. Howard Louis Conard, *"Uncle Dick" Wootton: The Pioneer Frontiersman of the Rocky Mountain Region* (Chicago: W. E. Dibble & Co., 1890), 325.

26. *Missouri Intelligencer*, June 19, 1825.

FIGURES

1. "Santa Fe Traders." From *Scenes of American Wealth and Industry ... For the Instruction of Children and Youth,* Boston, 1833. (Courtesy of the Harvard University Library.)

2. Conestoga wagon. Half-plate daguerreotype, circa 1849--earliest known photograph of a Conestoga wagon. Collection of George R. Rinhart. (Copy print courtesy of William Welling.)

3. Large Pennsylvania Conestoga wagon. In the collections of the Hagley Museum at Wilmington, Delaware. (Courtesy of the Hagley Museum and Library.)

4. Pennsylvania Conestoga wagon, without its cloth cover. Currently on display at Fort Larned National Historic Site, Kansas. Note the decorative tool box on the side of the wagon--a feature associated with the classic Conestoga. (Author's photograph.)

5. "March of the Caravan." Engraving from the 1855 edition of Josiah Gregg's *Commerce of the Prairies*. Engraving is identical to the image that appeared in the first edition of Gregg's work in 1844. (Courtesy of the State Historical Society of Missouri.)

6. Independence, Missouri. Engraving from *The United States Illustrated: The West,* New York, 1853. (Courtesy of the Kansas State Historical Society.)

7. "A Caravan Encampment upon the Plains." Drawing (artist unknown) from *Short Ravelings from a Long Yarn, or, Camp and March Sketches of the Santa Fe Trail (1847)*, by Benjamin Taylor.

8. Colonel Alexander W. Doniphan's Missouri volunteers crossing the Jornada del Muerto, 1846, showing Conestoga wagon (far right). Drawing (artist unknown) from *Journal of William H. Richardson, a Private in Col. Doniphan's Command.* Second edition, 1848.

9. Barclay's Fort, New Mexico, August 9, 1851. Sketch by Edward Kern. (Courtesy the Henry E. Huntington Library and Art Gallery.)

10. "Chariots de Chihuahua." Engraving based on a sketch by M. Rondé. From *Le Tour Du Monde*, vol. 4, 1861:147.

11. William M'Cague's advertisement in *Harris's General Business Directory of the Cities of Pittsburgh & Allegheny,* 1847.

12. Cyrus Townsend's advertisement in *Harris' General Business Directory, of the Cities of Pittsburgh and Allegheny*, 1841.
13. Portrait of David G. Wilson, Philadelphia wagon maker. Author's collection.

14. Advertisements of Philadelphia wagon makers in *O'Brien's Philadelphia Wholesale Business Merchants and Manufacturers' Directory ... for the Year 1853.*

15. Lewis Jones (1799-1876), Independence blacksmith and entrepreneur. (Courtesy of the Local History Center, Public Library, Canon City, Colorado.)

16. Advertisement for Independence wagon maker John W. Modie in *The Western Expositor,* January 31, 1846.

17. Joseph Murphy (1805-1901), St. Louis wagon maker. Author's collection.

18. Wheels with and without dishing. The dished wheel is on the bottom. Illustration from *Youatt's History, Treatment, and Diseases of the Horse ... with a Treatise on Draught.* Philadelphia, 1874.

19. John Cook's St. Louis wagon manufactory. From *Sketchbook of Saint Louis,* by Taylor & Crooks, 1858.

20. "Santa Fe Trail Wagon, made complete at [Francis] Hahn's Wagon shop, south of Westport." 1912 postcard. (Courtesy of the Jackson County Historical Society.)

21. "Wagon, in which Ky. Immigrants Came to Jacksonville, Randolph County, Missouri." Originally published in *The Missouri Magazine.* (Courtesy of the State Historical Society of Missouri.)

22. Advertisement for Joseph Murphy in *The St. Louis Directory for 1859.* (Courtesy of the State Historical Society of Missouri.)

23. Conestoga wagon. Drawing by Donald W. Holst. From *Contributions From the Museum of History and Technology, Smithsonian Institution, 1959.*

24. Details of Conestoga wagon. Drawing by Donald W. Holst. From *Contributions From the Museum of History and Technology Smithsonian Institution,* 1959.

25. Details of Conestoga wagon running gear. Drawing by Donald W. Holst. From *Contributions form the Museum of History and Technology, Smithsonian Institution,* 1959.

26. Axle-arm, showing top and bottom skein and linch pin. Illustration from *Conestoga Six-Horse Bell Teams, 1750-1850,* by John Omwake, 1930.

27. Wooden axle with steel thimble skeins. Note that both the nut and linch pin thimble skein are illustrated. From *Sligo Iron Store Co. Catalog,* circa 1890.

28. Wheels, or "travelers," used by wagon makers to measure the circumference of wagon wheels and tires. From *Sligo Iron Store Co. Catalog,* circa 1890.

29. Isberg & Amberg wagon train on plaza in Santa Fe, New Mexico, October 1861. (Courtesy of the Museum of New Mexico.)

30. D. & B. Powers train from Leavenworth, corralled on a Denver street, June 20, 1868. (Courtesy of the Colorado State Historical Society.)

31. Otero & Sellar warehouse, Hays City, Kansas, circa 1867. (Courtesy of the Museum of New Mexico.)

32. Otero & Sellar warehouse, Hays City, Kansas, circa 1867. (Courtesy of the Kansas State Historical Society.)

33. "Ship of the Plains at Anchor." From *The Iron Trail*, by A. C. Wheeler, 1876.

34. "Ship of the Plains in Dock," La Junta, Colorado, circa 1875. From *The Iron Trail* by A. C. Wheeler, 1876.

35. "Ship of the Plains at Sea." From *The Iron Trail*, by A. C. Wheeler, 1876.

36. Santa Fe wagon once in the collections of the Pioneer Village Museum in Salt Lake City, Utah. Current location unknown. (Courtesy of the St. Joseph Museum, St. Joseph, Missouri.)

37. Chick, Browne & Co. store and warehouse at Granada, Colorado, circa 1873. From an envelope. Author's collection.

38. Raton Pass, Colorado. After a sketch by Henry Worrall. From *Frank Leslie's Illustrated Newspaper*, August 23, 1879. (Courtesy of the Pueblo Library District.)

39. Page from 1876 price list of Studebaker Brothers' wagon makers, Great Bend, Indiana.

40. Santa Fe wagons loaded with buffalo hides, 1874. (Courtesy of the Kansas State Historical Society.)

41. "Large Mule Team Going Out Of Stockton [California], Often Called 'Prairie Schooners.'" From *Hutchings' California Magazine*, February 1860.

42. Stagecoach and a large California freight wagon. 1906 postcard. Author's collection.

43. Reproduction freight wagon in the collections of the Fort Leavenworth Frontier Army Museum. (Courtesy of the Frontier Army Museum.)

44. Wagon provision or tool box made by Henry Espenschied & Company, St. Louis, circa 1866. Collections of the Weston Historical Museum, Weston, Missouri. Author's photograph.

45. Wagon provision box believed to have belonged to Antonio José Chavez, circa 1843. Private collection. Photo by Marc Simmons.

46. Dearborn wagon of 1878. From *American Carriages, Sleighs, Sulkies, and Carts*, by Don H. Berkebile, 1977.

47. Rockaway of 1845. From *The World on Wheels; or Carriages, with their Historical Associations from the Earliest to the Present Time*, by Ezra M. Stratton, 1878.

48. Germantown Rockaway of 1847. From *The World on Wheels; or Carriages, with their Historical Associations from the Earliest to the Present Time*, by Ezra M. Stratton, 1878.

49. Jump Seat Top Wagon. From *G. & D. Cook & Co.'s Illustrated Catalogue of Carriages*, 1860. This vehicle of the light spring wagon class is among the types of personal vehicles that traveled the Santa Fe Trail. It could also be called a Dearborn.

50. "Incident on the Prairies." Artist's conception of Kendall's 1841 Jersey wagon. Lithograph from *Narrative of the Texan Santa Fe Expedition*, by George W. Kendall, 1844. (Courtesy of the Special Collections, Tutt Library, Colorado College.)

51. "The Coach-Makers' Guide," 1853. Note the three Jersey wagons on the bottom row. (Courtesy of the Library of Congress Rare Book and Special Collections Division.)

52. Carriage on the Santa Fe Trail, 1854. Sketch by William J. Hinchey. (Courtesy of the St. Louis Art Museum.)

53. Light Rockaway of 1860. Originally published in *The Carriage Builders and Harness Makers' Art Journal*, July 1860.

54. "Making a Crib for the Mules." Sketch by William J. Hinchey, 1854. (Courtesy of the late Kathryn Hinchey Cochran.)

55. "The Camp at Good Spring." Sketch by William J. Hinchey, 1854. (Courtesy of the late Kathryn Hinchey Cochran.)

56. Wagon. Sketch by William J. Hinchey, 1854. (Courtesy of the St. Louis Art Museum.)

57. Army ambulance and army wagons near Trinidad, Colorado. 1866 sketch. Original in the collections of Rodgers Library, Highlands University, Las Vegas, New Mexico.

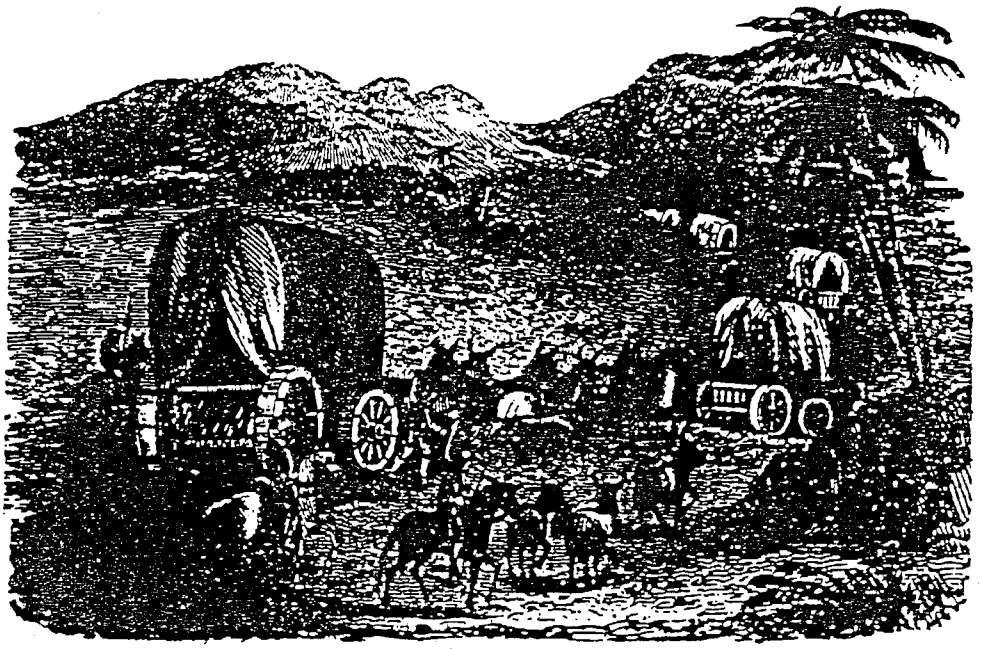
58. Army mule wagons. Site unknown. Daguerreotype, circa 1850. (Courtesy of the Collection of the Newport Historical Society, Newport, Rhode Island.)

Figure 1

IN

PRODUCE, MANUFACTURES, TRADE,

THE FISHERIES, &c. &c.



Santa Fe Traders

FOR THE INSTRUCTION AND AMUSEMENT

OF

CHILDREN AND YOUTH.

BOSTON:
ALLEN AND TICKNOR.
1833.

Figure 2

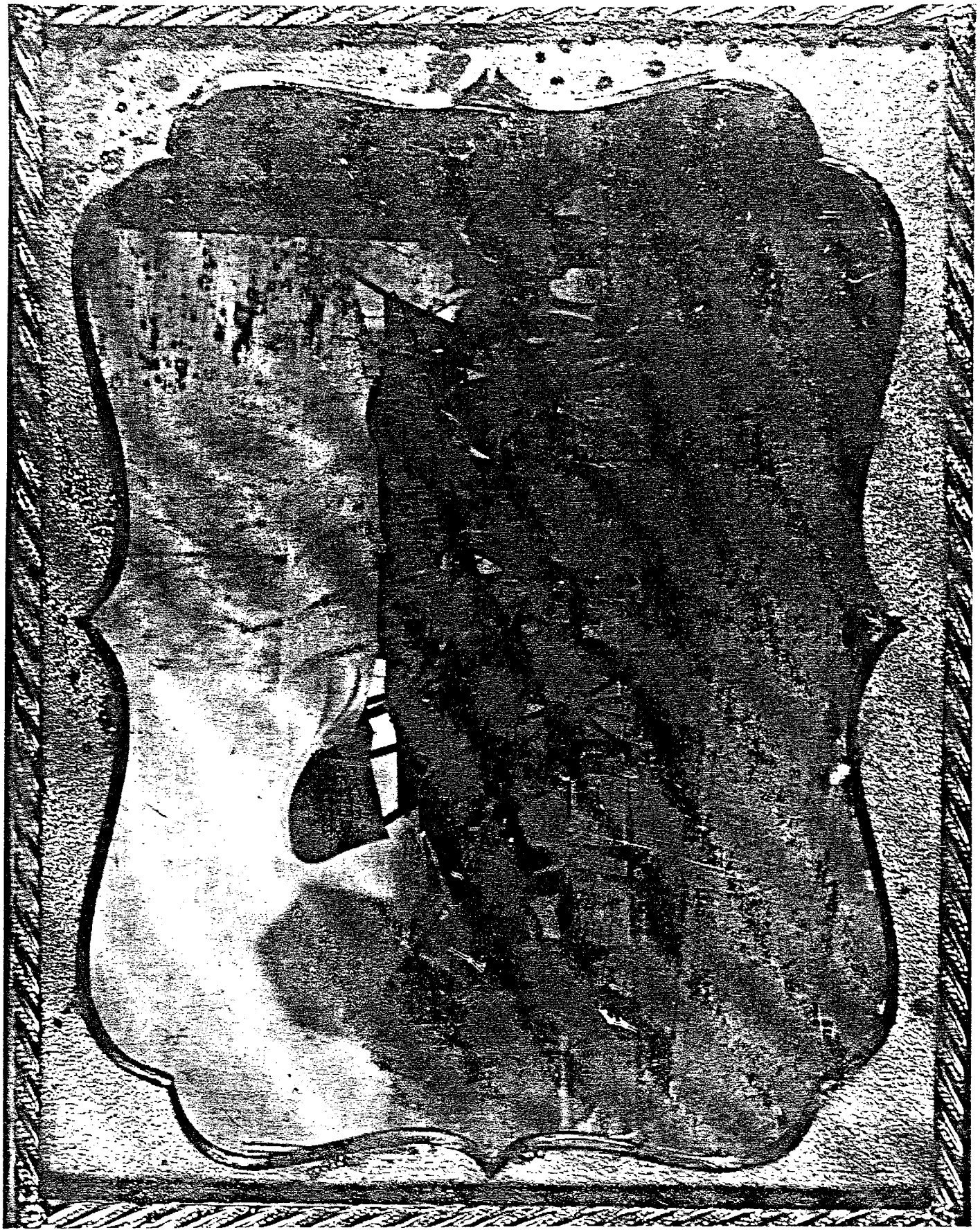


Figure 3

Figure 4

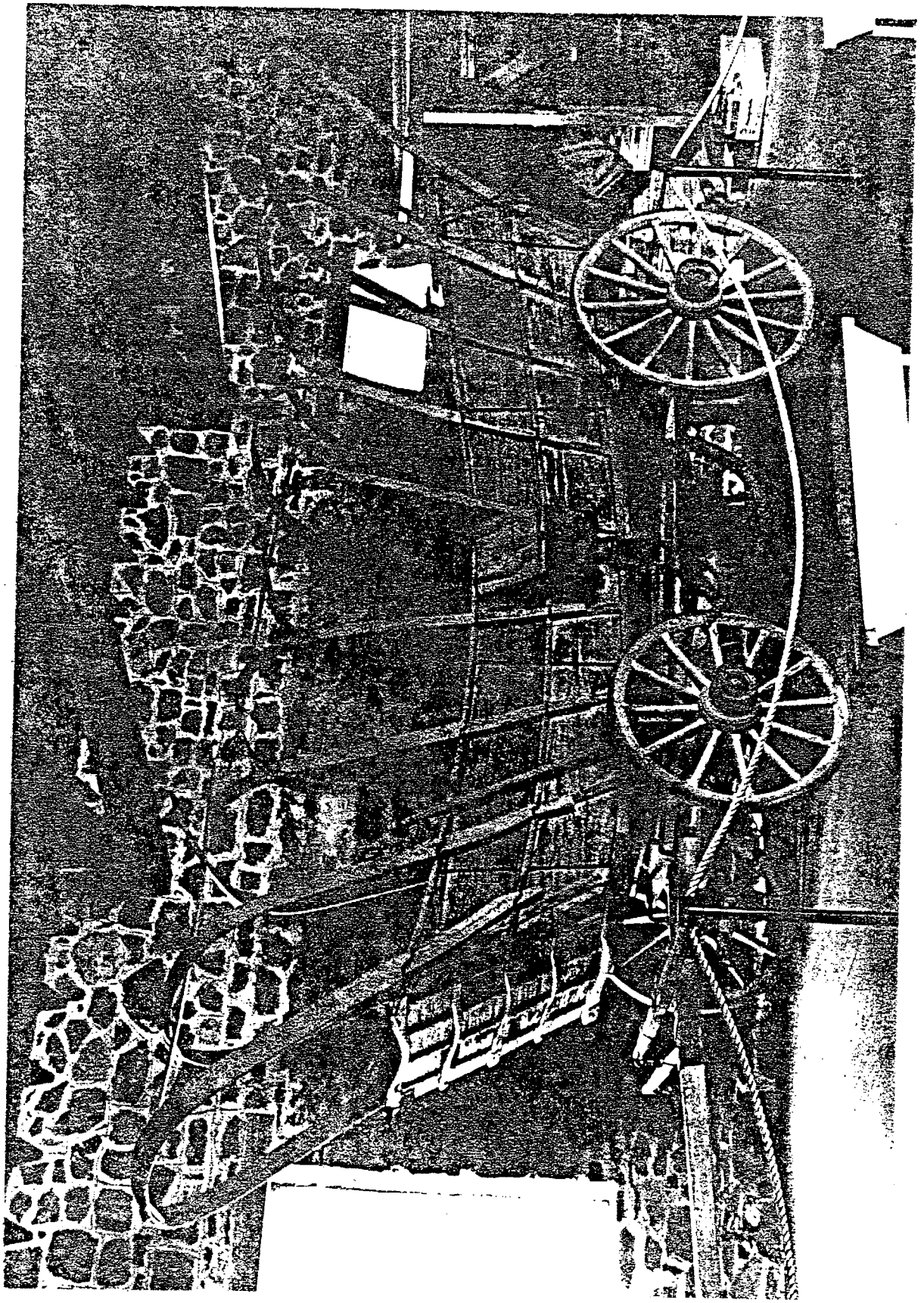


Figure 5

Figure 6

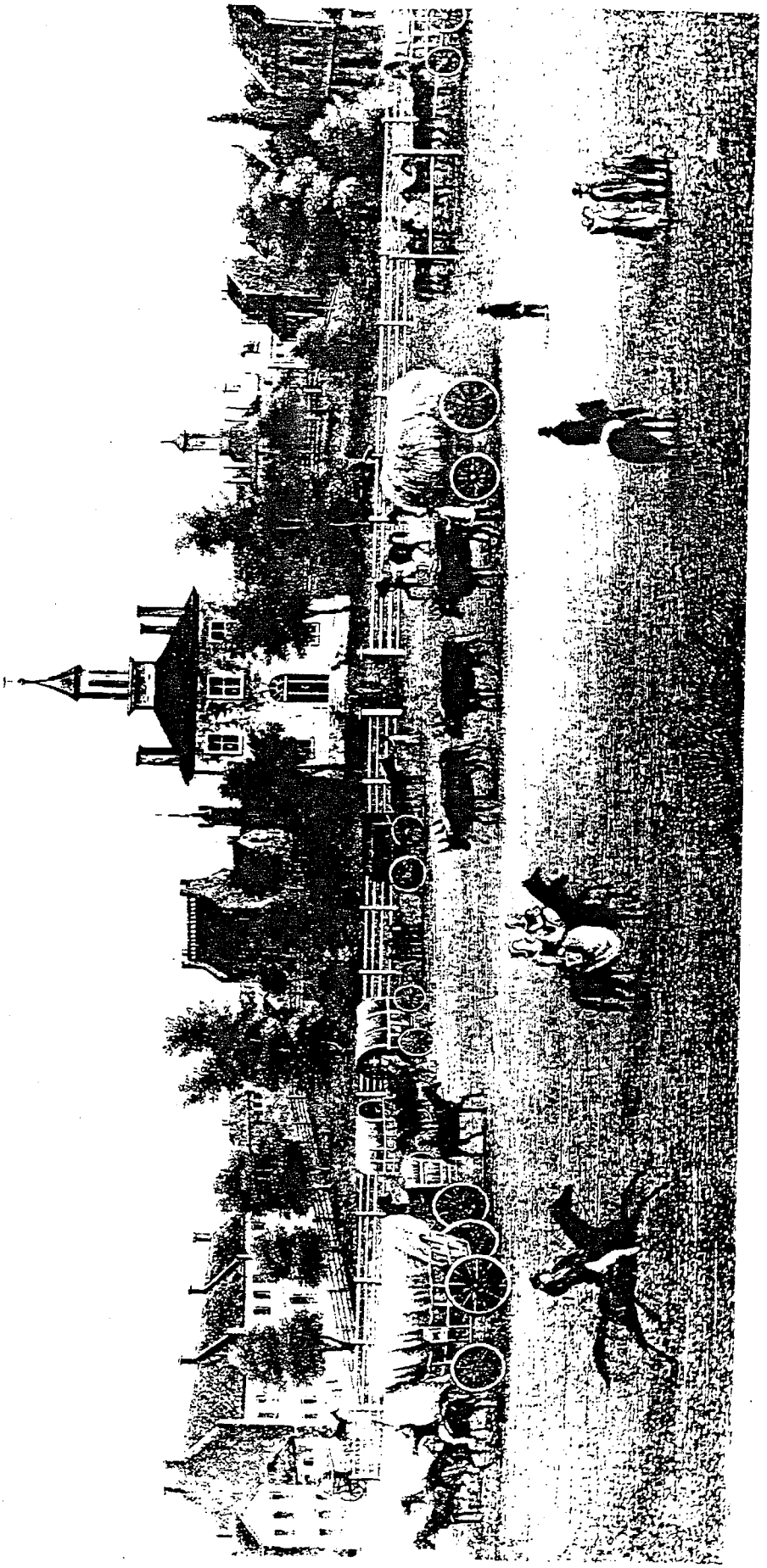


Figure 7

A Caravan Encampment upon the Plains.

Figure 8

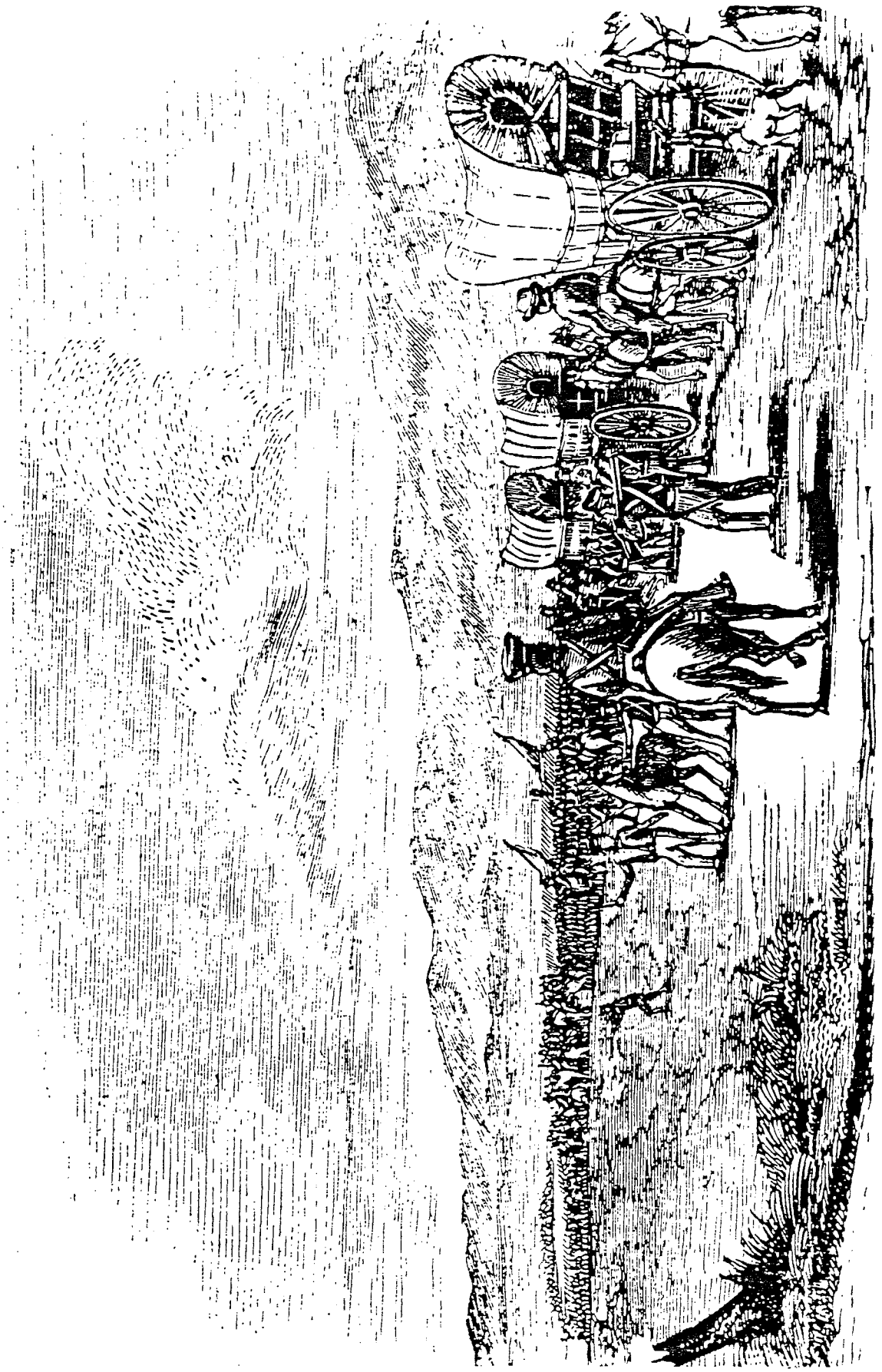


Figure 9

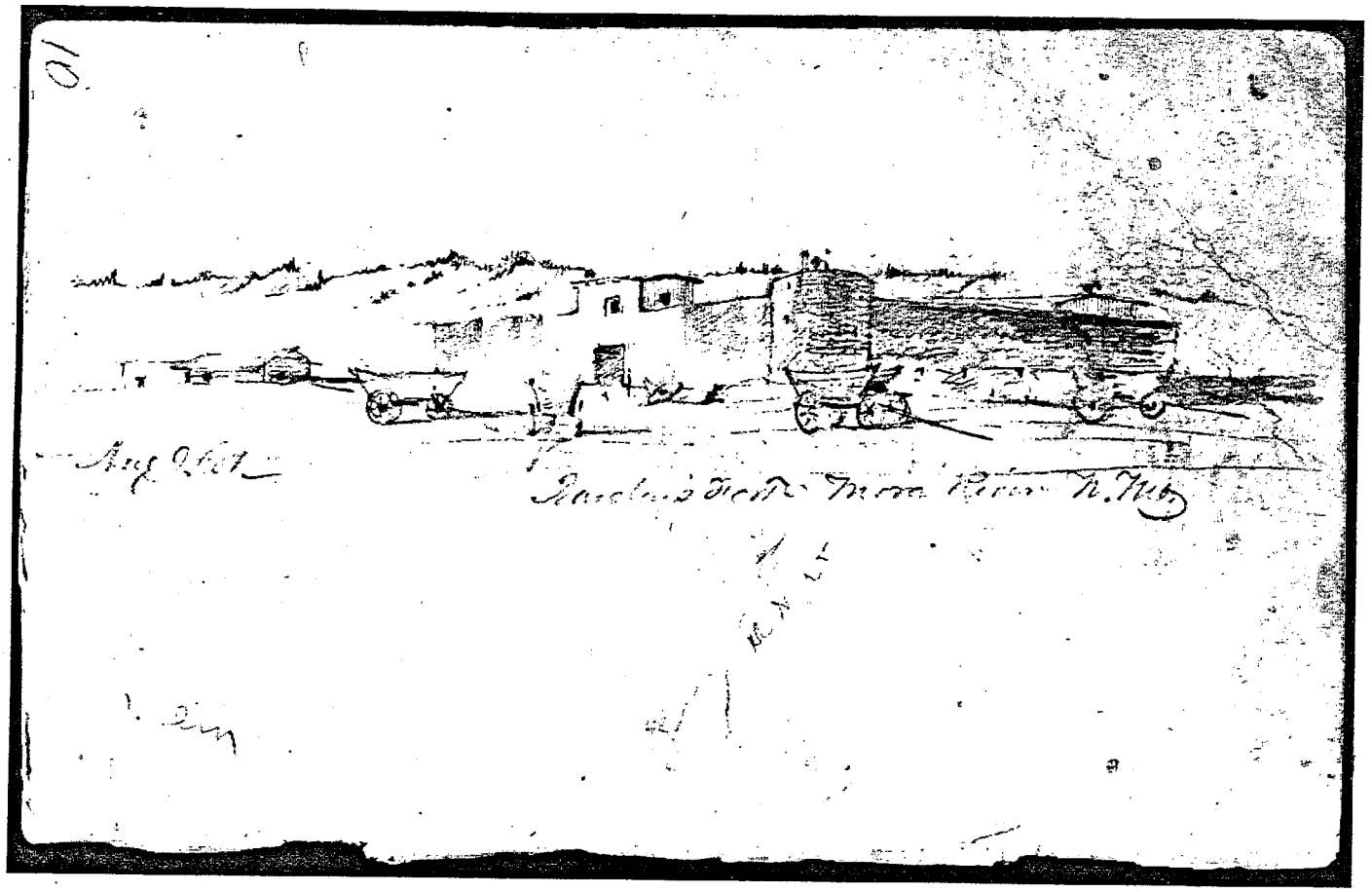
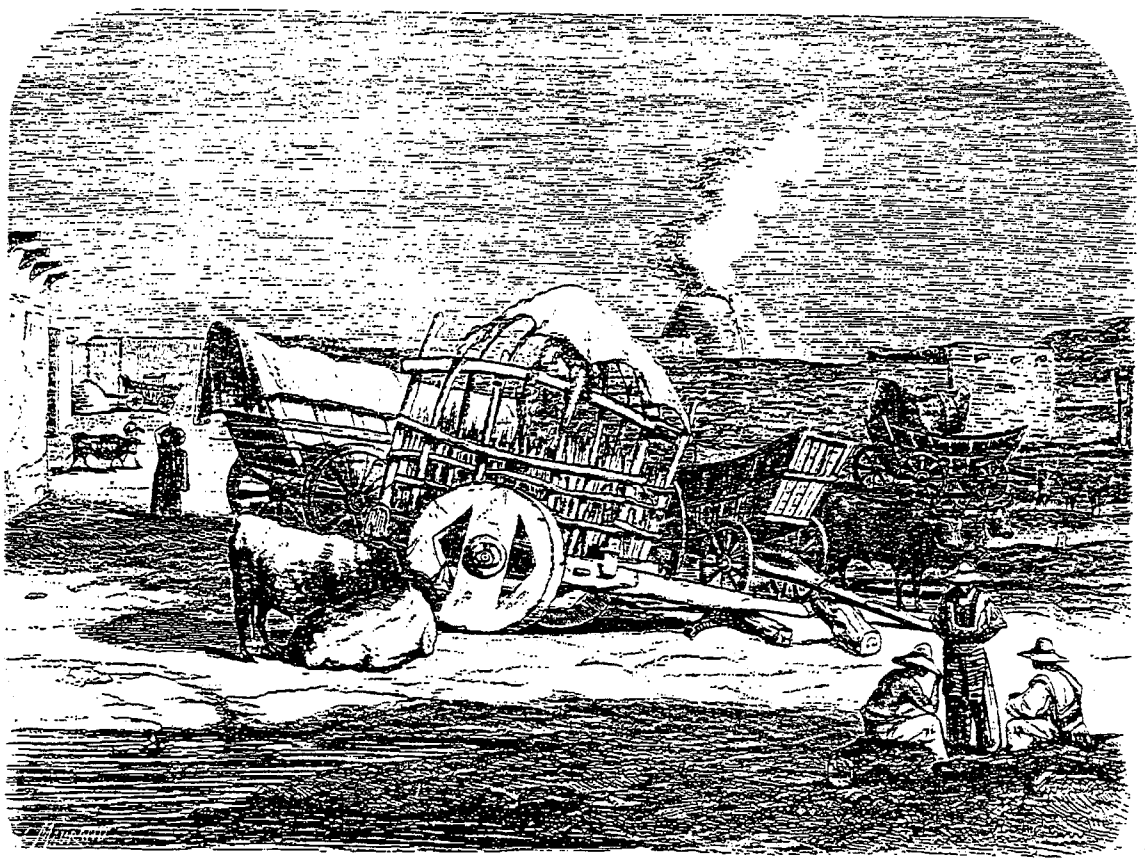


Figure 10



Chariots de Chinuahua.

Figure 11

WM. M'CAGUE,

Manufacturer of

WAGONS, CARTS, DRAYS, TRUCKS,

TIMBER WHEELS, &C.

Head of Seventh Street,

PITTSBURGH.

Work of all kinds kept on hand, or made to order.

JOCOB WEAVER.

WINE STORE.

No. 16, *Market Street,*

Corner of Front,

PITTSBURGH.

Figure 12

FOR SALE

BY ISAAC HARRIS,

No. 120, *Liberty Street,*

Pittsburgh.

And generally by agents in all the principal cities and towns throughout the West.

MANCHESTER WAGON FACTORY.

CYRUS TOWNSEND,

(*Successor to Townsend & Radle,*)

WHOLESALE AND RETAIL

Carriage, Sleigh, Wagon, Cart,& Timber Wheel

MANUFACTURER:

Warehouse, St. Clair Street,

Adjoining the Bridge,

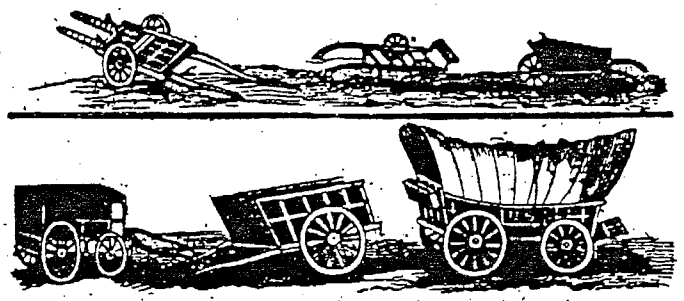
PITTSBURGH, PA.

Figure 13

Engd by A

Figure 14

BEGGS & ROWLAND,



WHEELWRIGHTS,

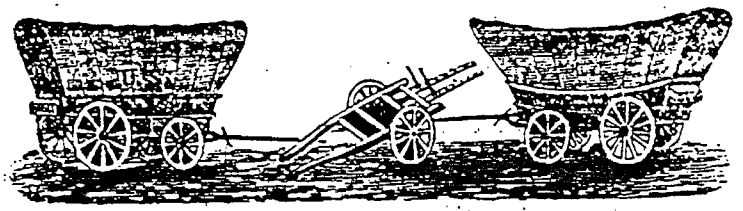
Nos. 220 and 222 North Front Street.

PHILADELPHIA.

Where they continue to manufacture extensively, and in the most substantial manner for home use and exportation, every description of Light and Heavy Wagons, Drays and Carts, Timber Wheels and Wheelbarrows. Orders from any part of the United States, South America, West Indies, Texas and Mexico, will meet prompt attention and will be executed on the most reasonable terms. Planters and others may depend upon the most satisfactory attention, care and despatch, being paid to all their orders for wheelwright work by addressing their commands to them at their establishment above mentioned.

D. G. WILSON, J. CHILDS & CO.,

WHEELWRIGHTS,



No. 305 North Third Street,

BETWEEN NOBLE AND TAMANY STREETS,

PHILADELPHIA.

Where they continue to manufacture extensively and in the most substantial manner, for home use and exportation, every description of light and heavy Wagons, Carts, Drays, Timber Wheels, Ox Carts, Wheels and Wheelbarrows, all of the very best materials and workmanship.

Orders from any part of the United States, South America, West Indies, and Mexico, will meet prompt attention, and will be executed on the most liberal terms.

Planters and others may depend upon the most satisfactory attention, care, and despatch being paid to all their orders for Wheelwright work, by addressing their commands to them, at their establishment above mentioned, or to their Agents, D. G. Wilson, No. 24 Perdido st, New Orleans; Messrs. Barnwall & Filler, Mobile.

Figure 15

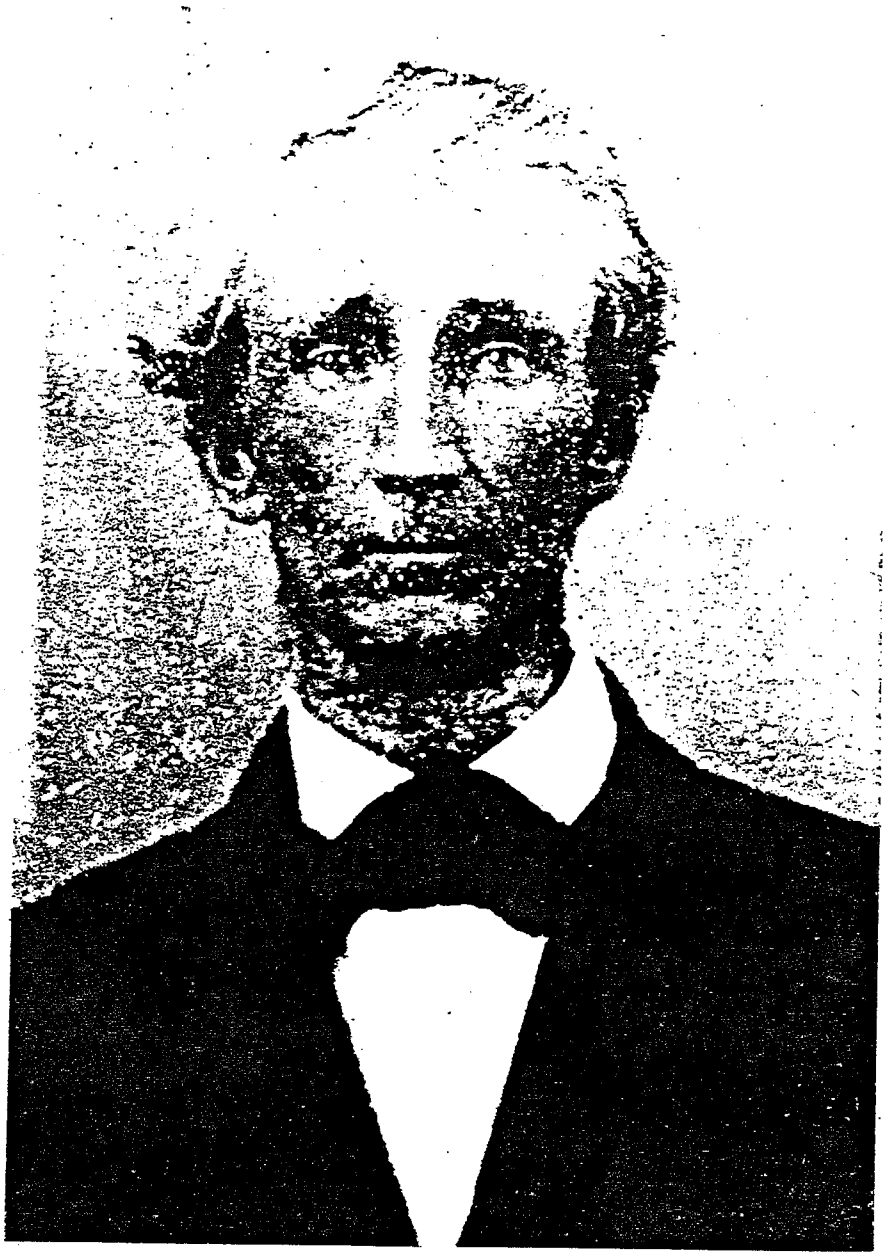


Figure 16

NOTICE

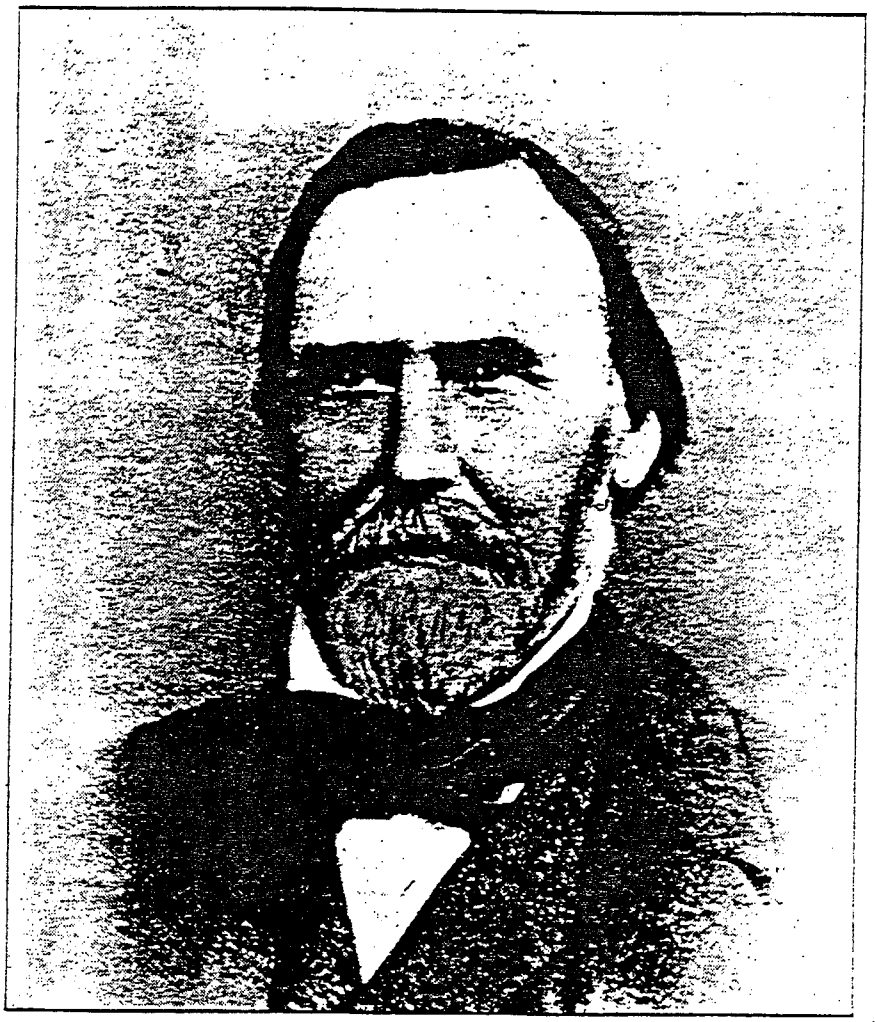
To Santa Fe Traders and Oregon EMIGRANTS.

THE subscriber is now prepared to execute all orders in his line of business, and will keep on hand all the different sizes of *Mule and Ox Wagons*, suited either for the Mexican trade, or the Emigrants to Oregon or California.—He is also prepared to supply the Farmers with all the various kinds of farming utensils, and at prices that cannot fail to please.—Having on hand between 15 and 20 tons of assorted Iron, and wagon boxes of all sizes, he respectfully invites all wishing to purchase and to have good work done, to give him a call. Remember the old established stand on Main street, opposite the Locust Grove Hotel.

JOHN W. MODIE.

October 25, 1845. 3m7

Figure 17



JOSEPH MURPHY.

Figure 18

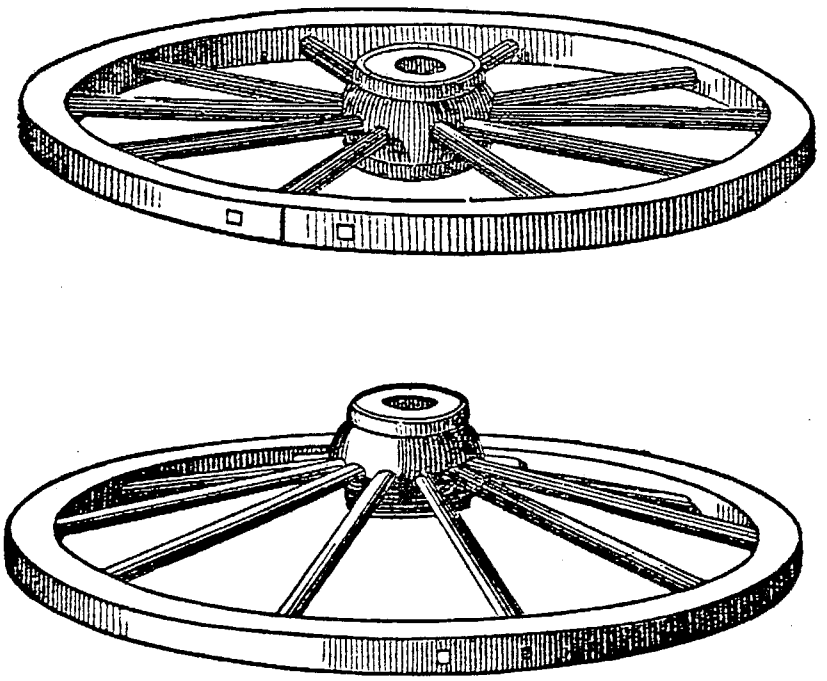


Figure 19

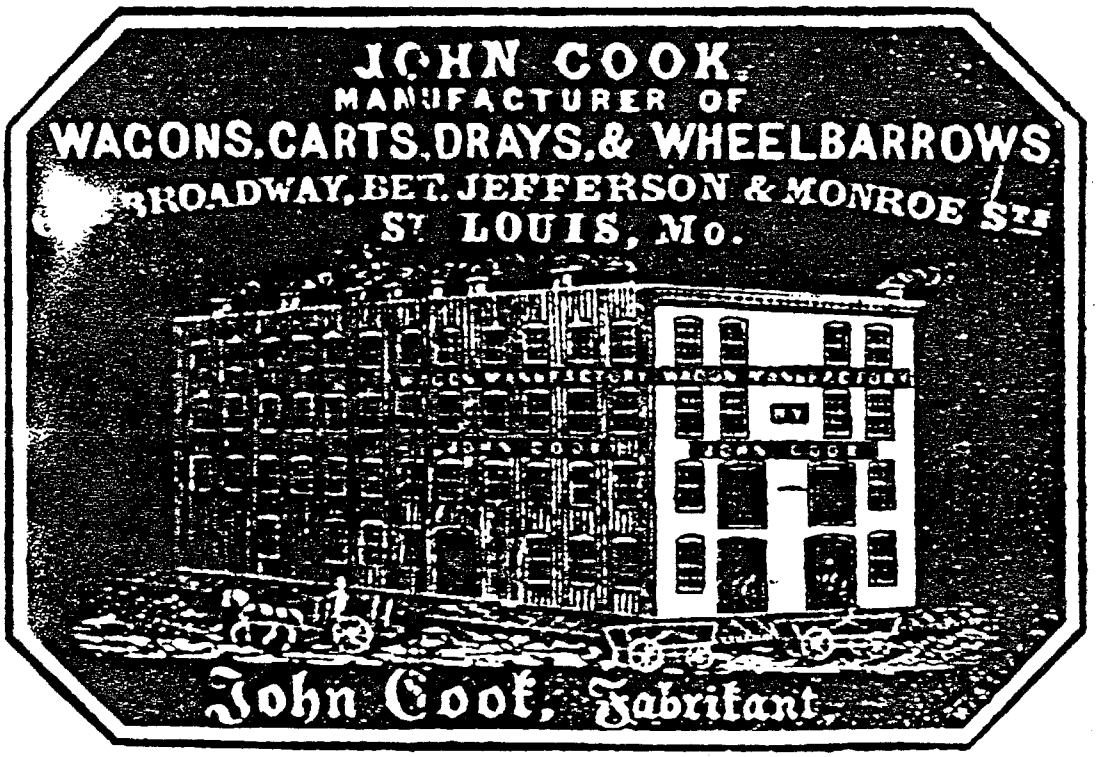
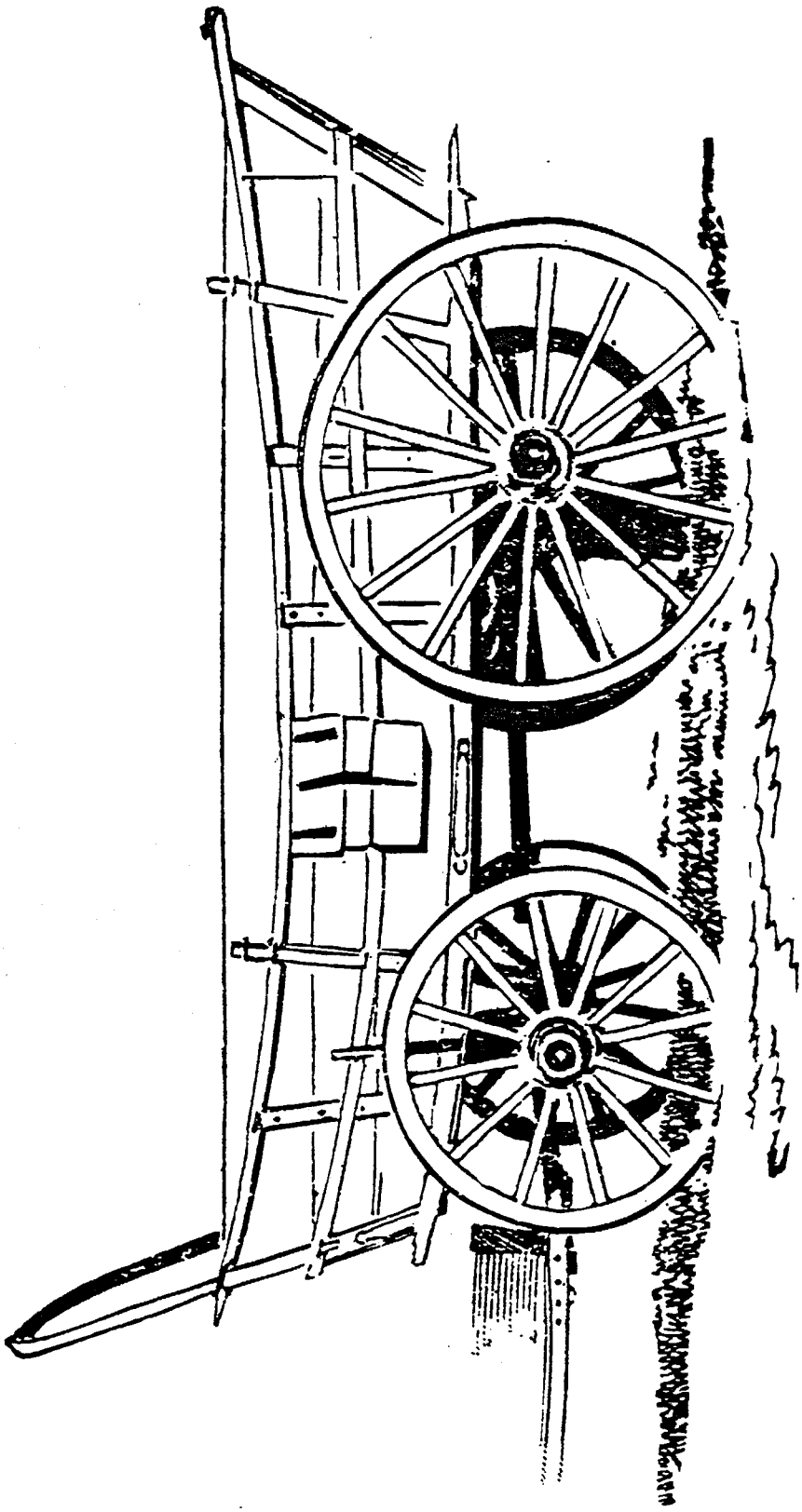

JOHN COOK
MANUFACTURER OF
WAGONS, CARTS, DRAYS, & WHEELBARROWS
BROADWAY, BET. JEFFERSON & MONROE STS
ST LOUIS, MO.
John Cook, Fabricant

Figure 20



Sketch of "Prairie Schooner" Santa Fe Trail Wagon, made complete at Hahn's wagon shop, south of Westport. Side boards with mail box, showing hand made wrought iron nails may be seen at 432 Westport Ave. Copyright 1912

Figure 21

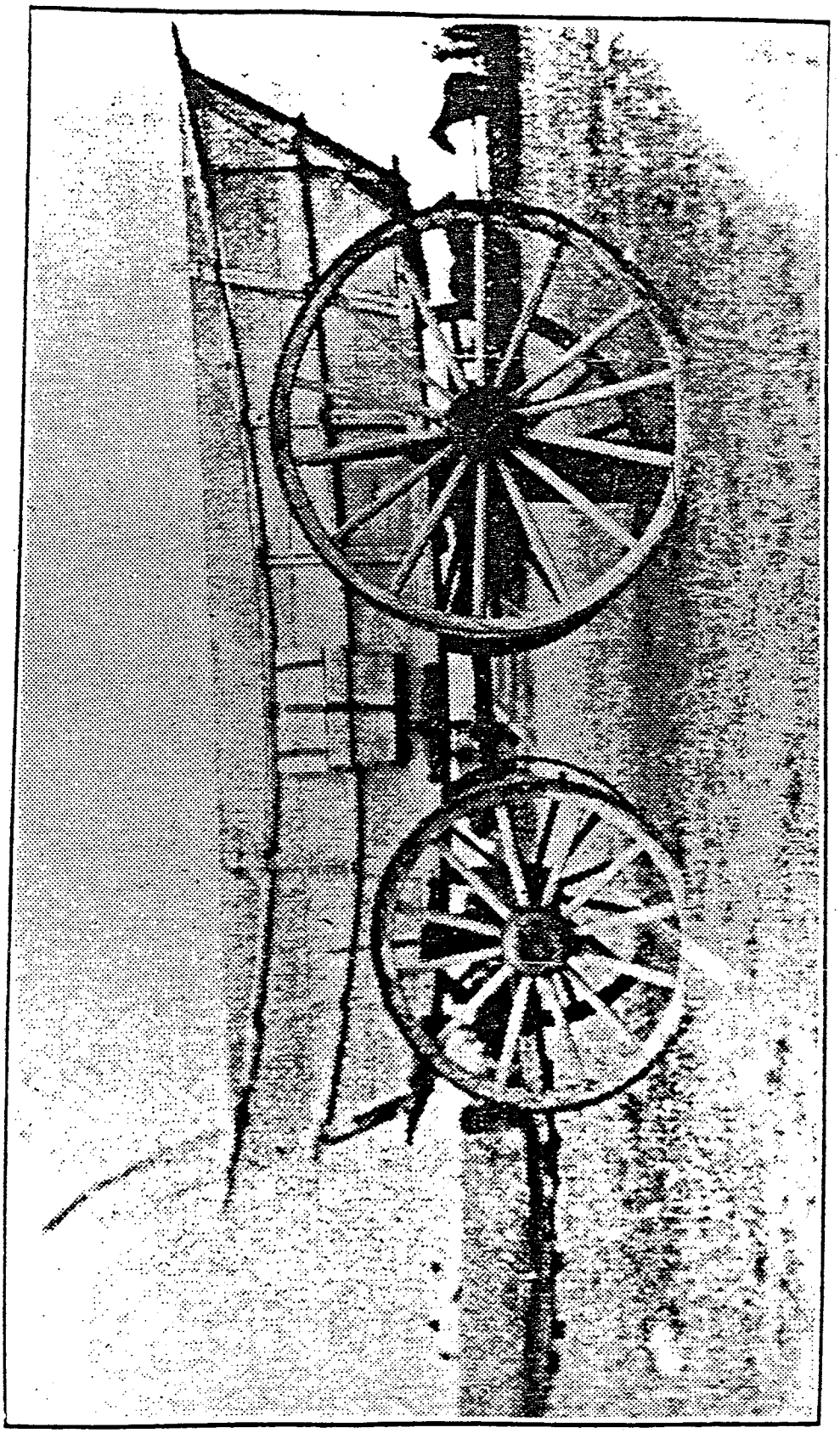


Figure 22

J. MURPHY,

WAGON MANUFACTURER,

No. 362 Broadway

NORTH OF O'FALLON

SAINT LOUIS.

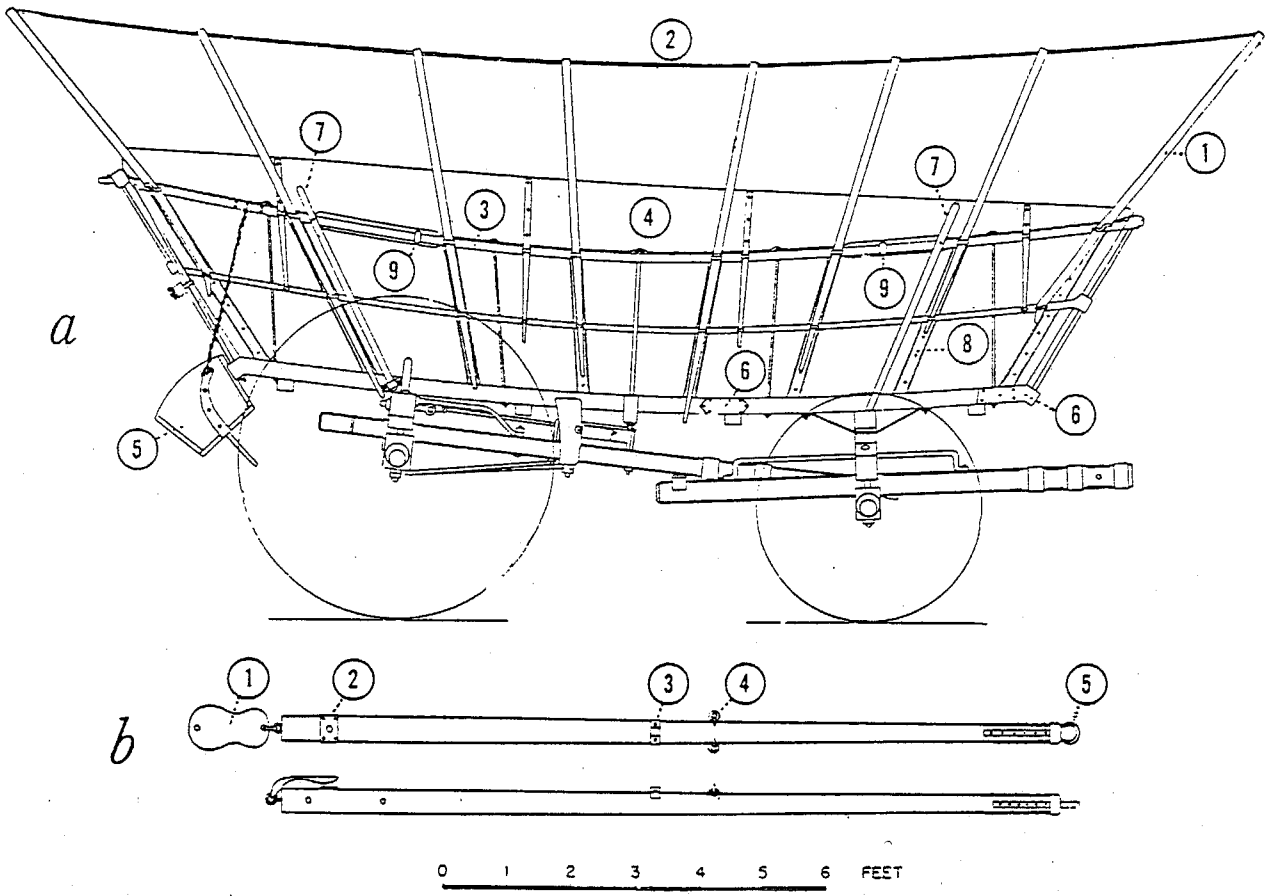


Figure 8.—FREIGHT-CARRYING WAGON OF THE PERIOD 1800–1820. (*Drawing by Donald W. Holst.*)

This drawing and those of figures 9 and 10 are from specifications, sketches, and photographs, now in the files of the division of transportation, U. S. National Museum, taken in 1925 by Paul E. Garber from a wagon then the property of Amos Gingrich, Lancaster, Pennsylvania. This wagon is illustrated in John Omwake's *Conestoga six-horse bell teams*, 1750–1850, Cincinnati, 1930, pp. 57, 63, 87.

a: Bed and running gear, right side: 1, Bows for supporting cover. 2, Ridgepole, or stringer. 3, Top rail, with bow staples and side-board staples. 4, Side-boards, removable. 5, Feedbox in traveling position. 6, Rubbing plates to prevent wheels wearing wooden frame. 7, Side-board standards, forming framework of sides (on the inside, a few of these sometimes project a few inches above the top rail to support the side-boards). 9, Securing rings for the ends of the spread chains, two of which span the bed to give extra support to the sides against inside pressures.

b: Tongue, or pole, top and side views: 1, doubletree hasp, shown in proper position over the doubletree in the lower drawing: the hammer-headed doubletree pin goes through it, then through the doubletree and the tongue. 2, Wear plate for doubletree pin. 3, Feedbox staple; in use, the feedbox is unhooked from the rear, the long pin on one end of the box is passed through the hole for the doubletree pin, and the lug on the other end of the box is slipped through the staple. 4, Hitching rings, for securing horses while feeding. 5, End ring.

Figure 24

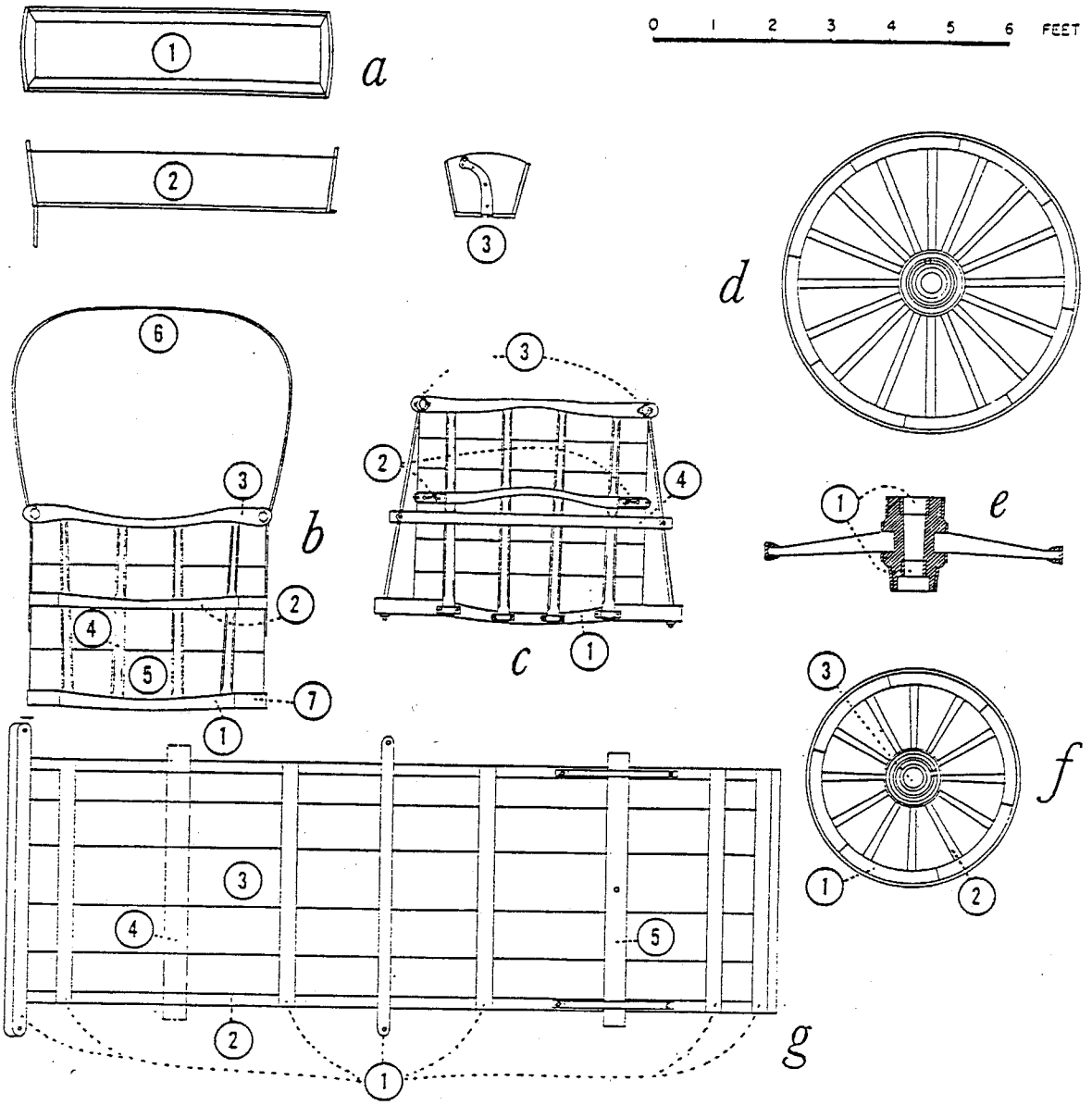


Figure 10.—Details of the Freight-Carrying Wagon, 1800–1820, of Figure 8. (*Drawing by Donald W. Holst.*)

a: Feedbox: 1, Top. 2, Side, showing pin and lug for securing to tongue. 3, End, showing bracket into which the chains hooked for traveling.

b: Front end panel: 1, Bottom end rail. 2, Middle end rail. 3, Top end rail. 4, Standard, or upright, forming end framing. 5, End boards. 6, Bow. 7, Corner plates.

c: Rear end gate: 1, Staples for end-gate standards. 2, End-gate hasps and hooks. 3, Pins to secure gate to upper side rails. 4, Crossbar to give extra support to end gate.

d: Rear wheel.

e: Cross section of wheel: 1, Boxings, of cast iron, wedged in hub to take wear of axle.

f: Front wheel: 1, Felly, or felloe. 2, Spoke. 3, Hub, or nave.

g: Floor of wagon, from under side: 1, Cross-beams, the center and rear ones being heavier, and projecting at the ends to hold the iron side braces visible in figure 8,*a*. 2, Bottom side rails. 3, Floor-boards. 4, Position of rear bolster when bed is on running gear. 5, Front bolster, showing hole for kingpin.

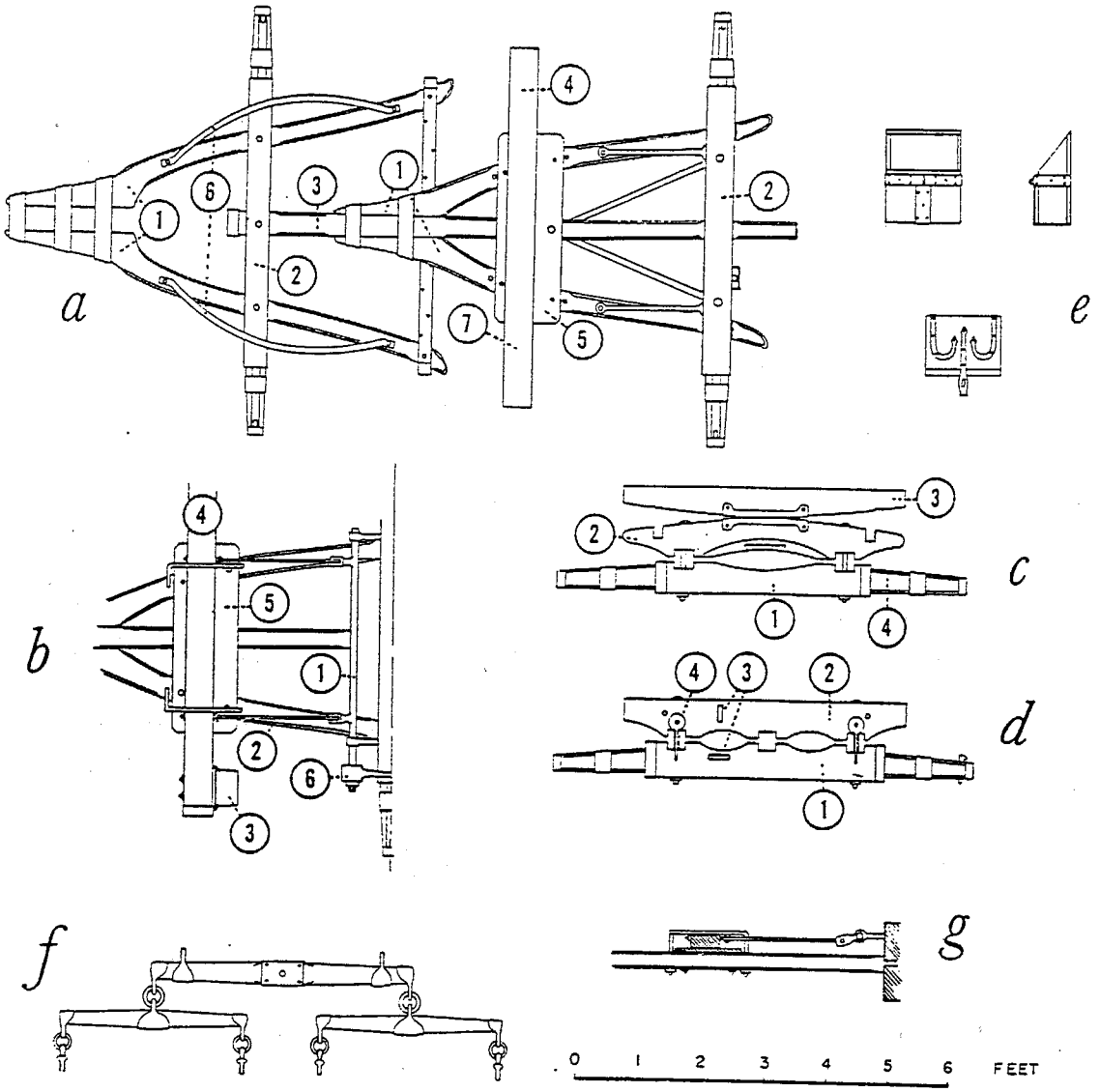


Figure 9.—DETAILS OF THE FREIGHT-CARRYING WAGON, 1800–1820, OF FIGURE 8. (*Drawing by Donald W. Holst.*)

a: Running gear, top view: 1, Front and rear hounds. 2, Bolsters, with axletrees directly underneath. 3, Coupling pole. 4, Brake beam. 5, Brake-beam shelf, or support. 6, Segments forming the fifth wheel; these prevented the bed from toppling, or swaying excessively on turns. 7, Rear brace for front hounds, to keep tongue from dropping.

b: Brake mechanism, detail: 1, Brake rocker bar, with squared end for brake lever. 2, Rods connecting rocker bar to brake beam. 3, Rubber, or brakeshoe, made of wood, often faced with old leather. 4, Brake beam. 5, Brake-beam shelf, or support. 6, Brake lever, often 4 or 5 feet long.

c: Front axletree and bolsters, front view: 1, Axletree. 2, Bolster, showing wear plates. 3, Upper bolster, actually part of the wagon bed. 4, Axle, showing ironing.

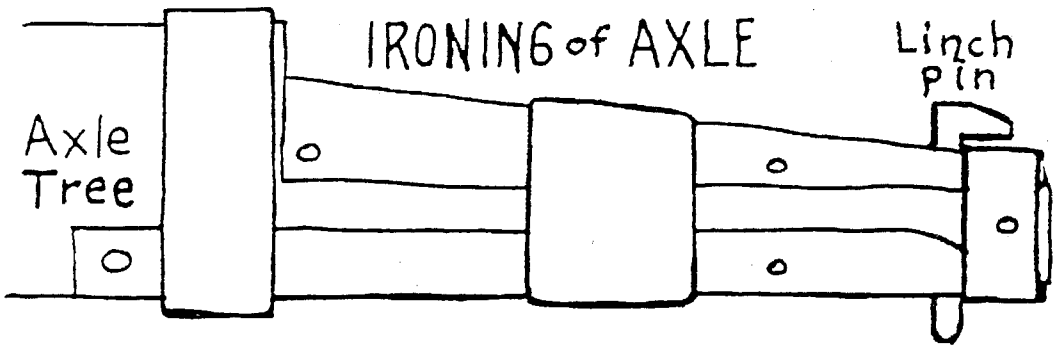
d: Rear axletree and bolster, rear view: 1, Axle tree, showing linchpin in position in right axle. 2, Bolster. 3, Hook and staple for holding bucket of tar used in lubricating axles. 4, Hound pins.

e: Toolbox, showing front, end, and top; it was secured to left side of wagon.

f: Doubletree, with singletrees attached.

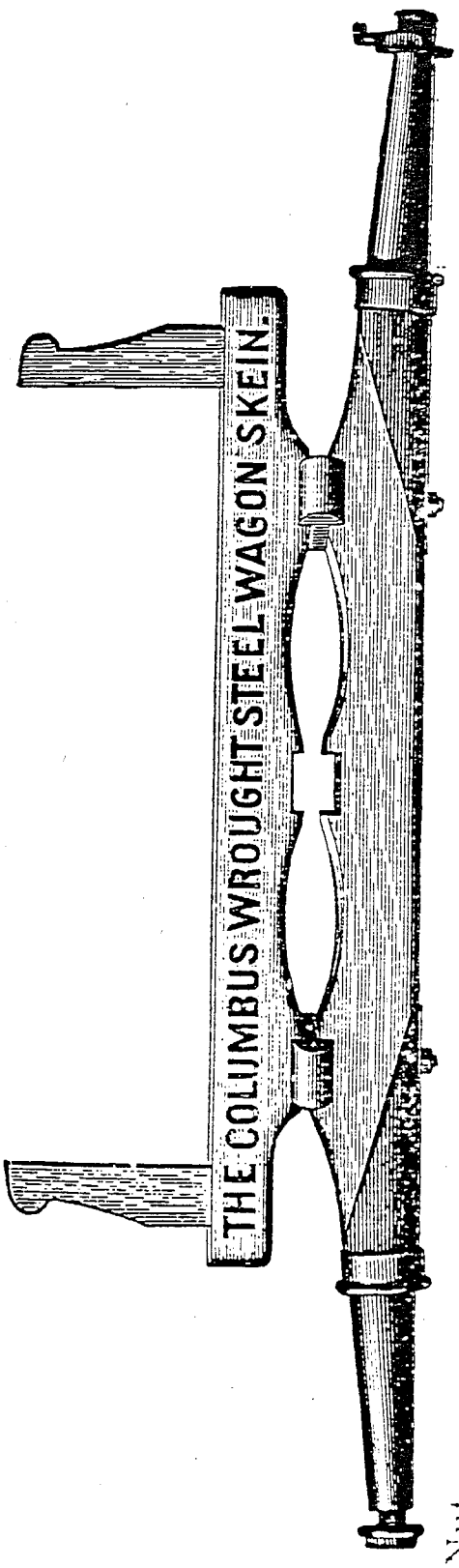
g: Brake mechanism, side view.

Figure 26



Drawings by H. K. Landis from originals at the Landis Valley Museum.

Figure 27

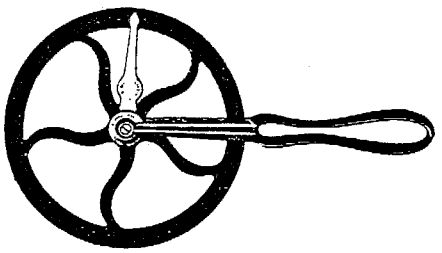


Showing Columbus Steel Skein on Wagon.

Figure 28

TIRE MEASURING WHEELS.

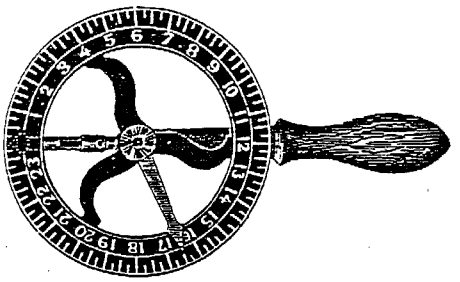
THE "GREEN RIVER."



This is a perfect running wheel, turned carefully in a lathe and sold cheaper than a smith can afford to make it. It is 21 inches in circumference; accurate and strong, and for ordinary work will answer just as well as a higher priced and more handsomely finished wheel.

Price, each.....$1.25

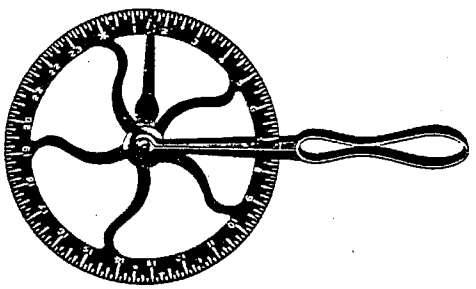
THE "LION."



This Wheel is made of composition metal, nickel plated, and is provided with both a pointer and a pencil, which does away entirely with the use of chalk. We furnish this wheel, which has a circumference of 24 inches, with an iron handle similar to that on the "Lightning Wheel."

No. 1—With Pencil. Price, each.....$1.65
No. 2—Without Pencil. Price, each..... 1.45

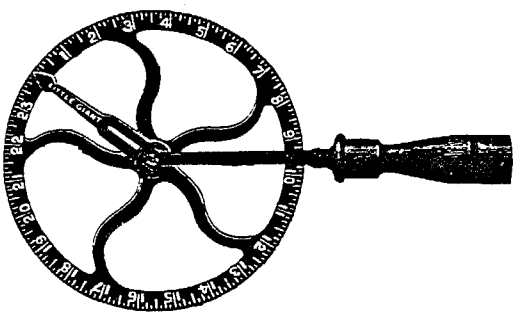
THE "LIGHTNING."



This Graduated Tire Wheel, a drop forging, is made so that the figures and lines are raised above the surface of the wheel and cannot be filled or defaced with rust or dirt; it is a perfect running wheel, turned carefully in a lathe, exactly 24 inches in circumference and accurately graduated.

Price, each.....$1.50

THE "LITTLE GIANT."



This Wheel has a cherry wood handle; all other parts are made of malleable iron, finely polished. The pointer is held in place by friction, so that it can be set instantly, and will not get loose. The circumference of wheel is exactly two feet, graduated by one-eighth of an inch.

Price, each.....$1.50

Figure 29

Figure 30

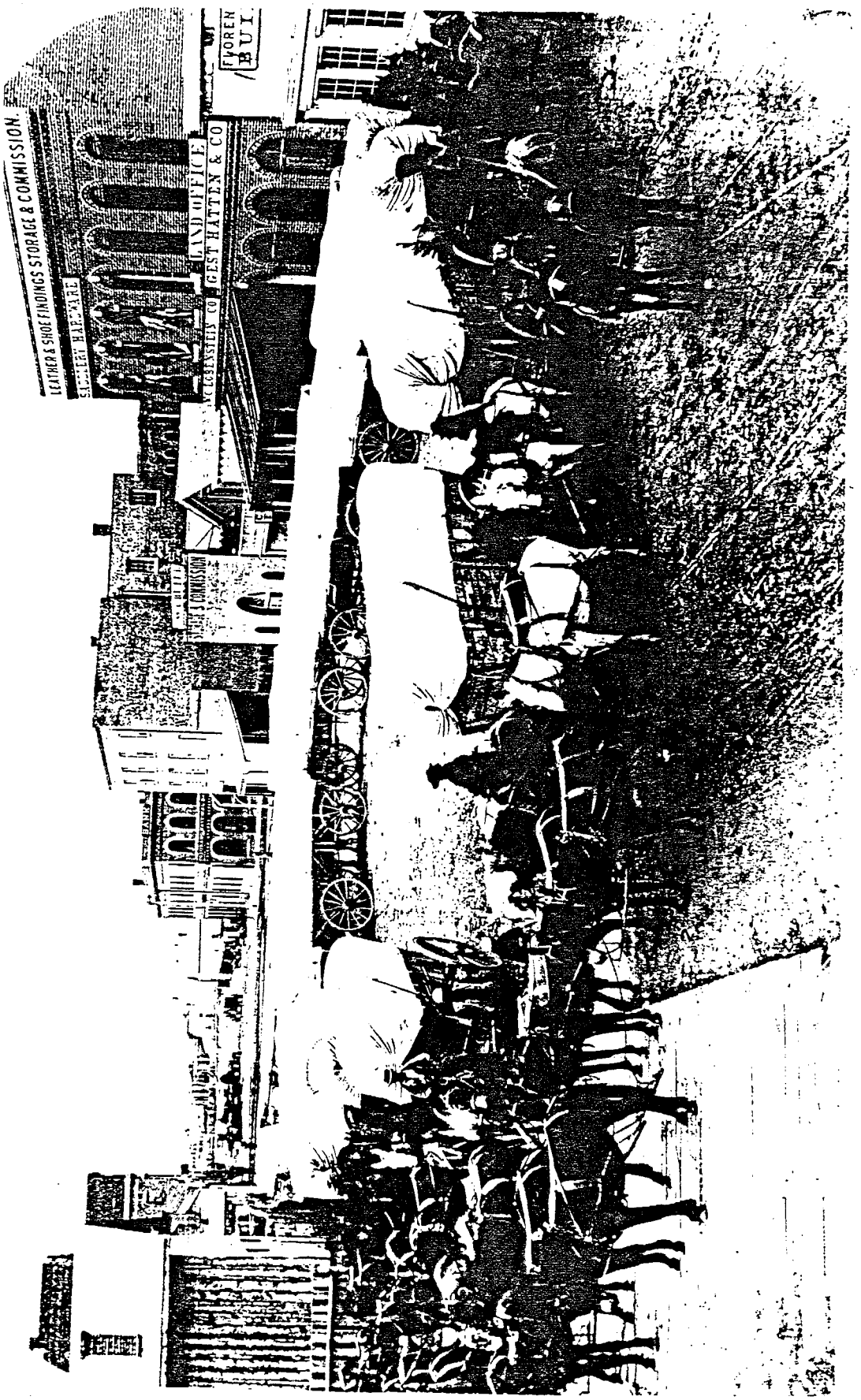

LEATHER & SHOE FINDINGS STORAGE & COMMISSION
LAND OFFICE
GEST HATTEN & CO

Figure 31

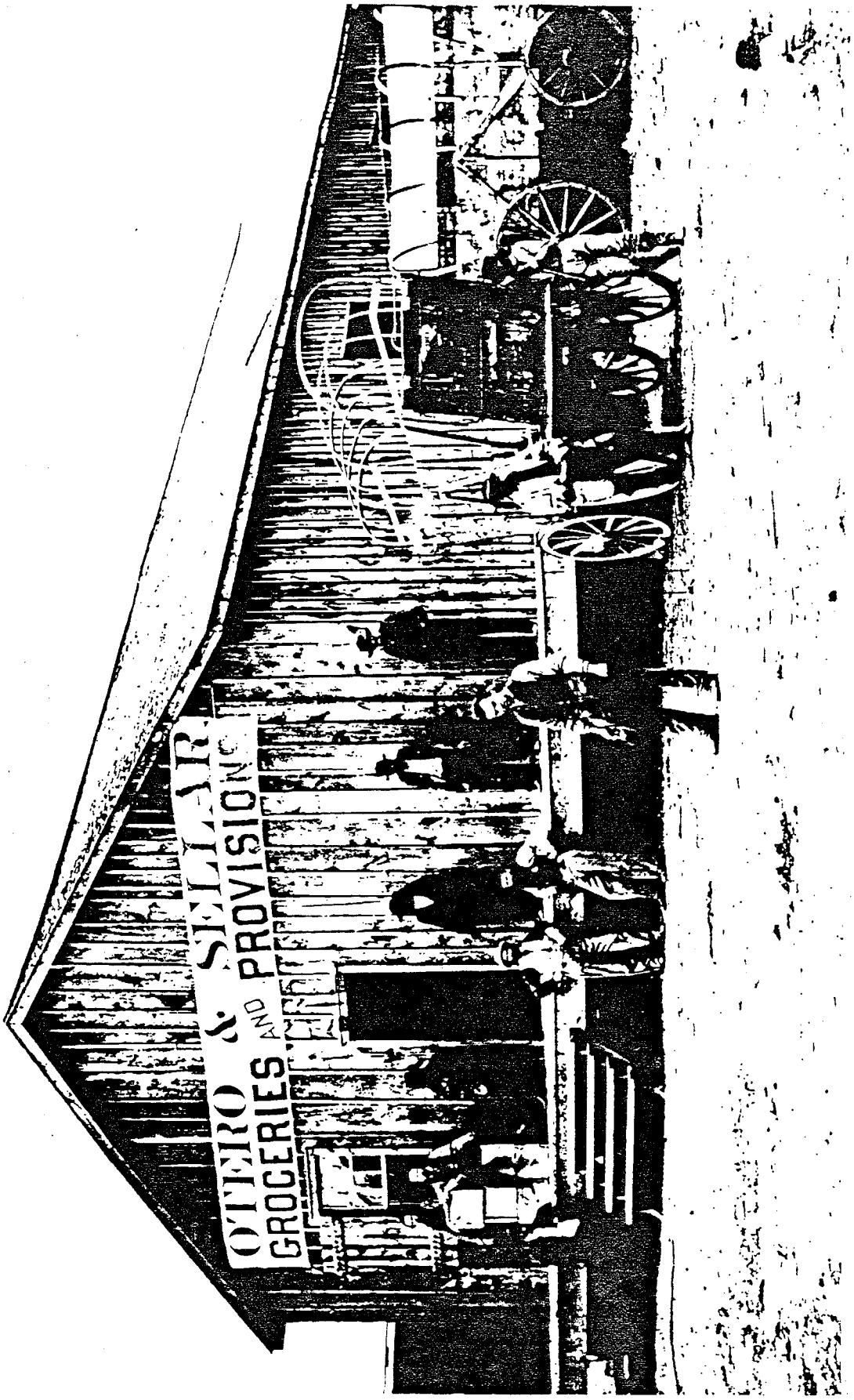


Figure 32

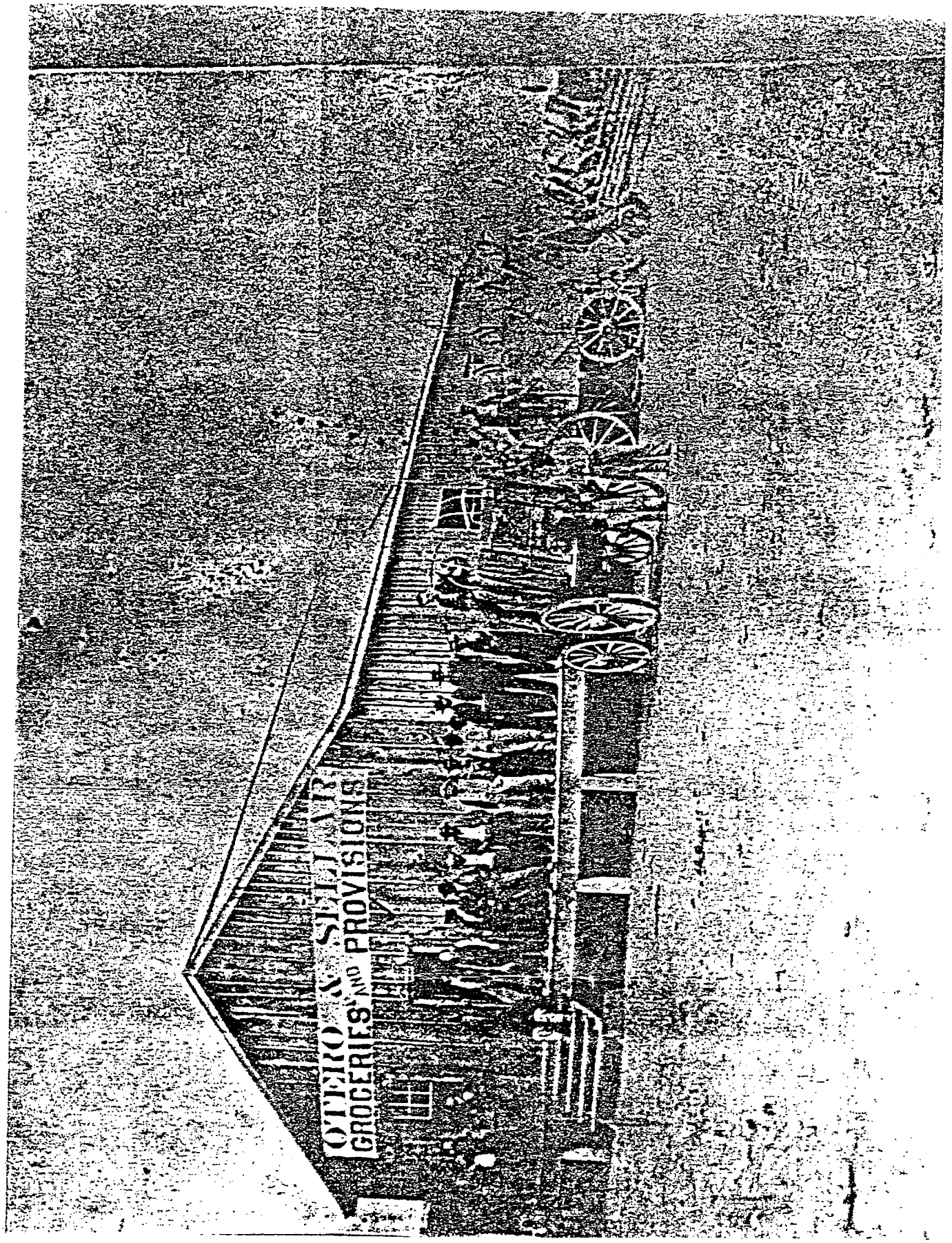
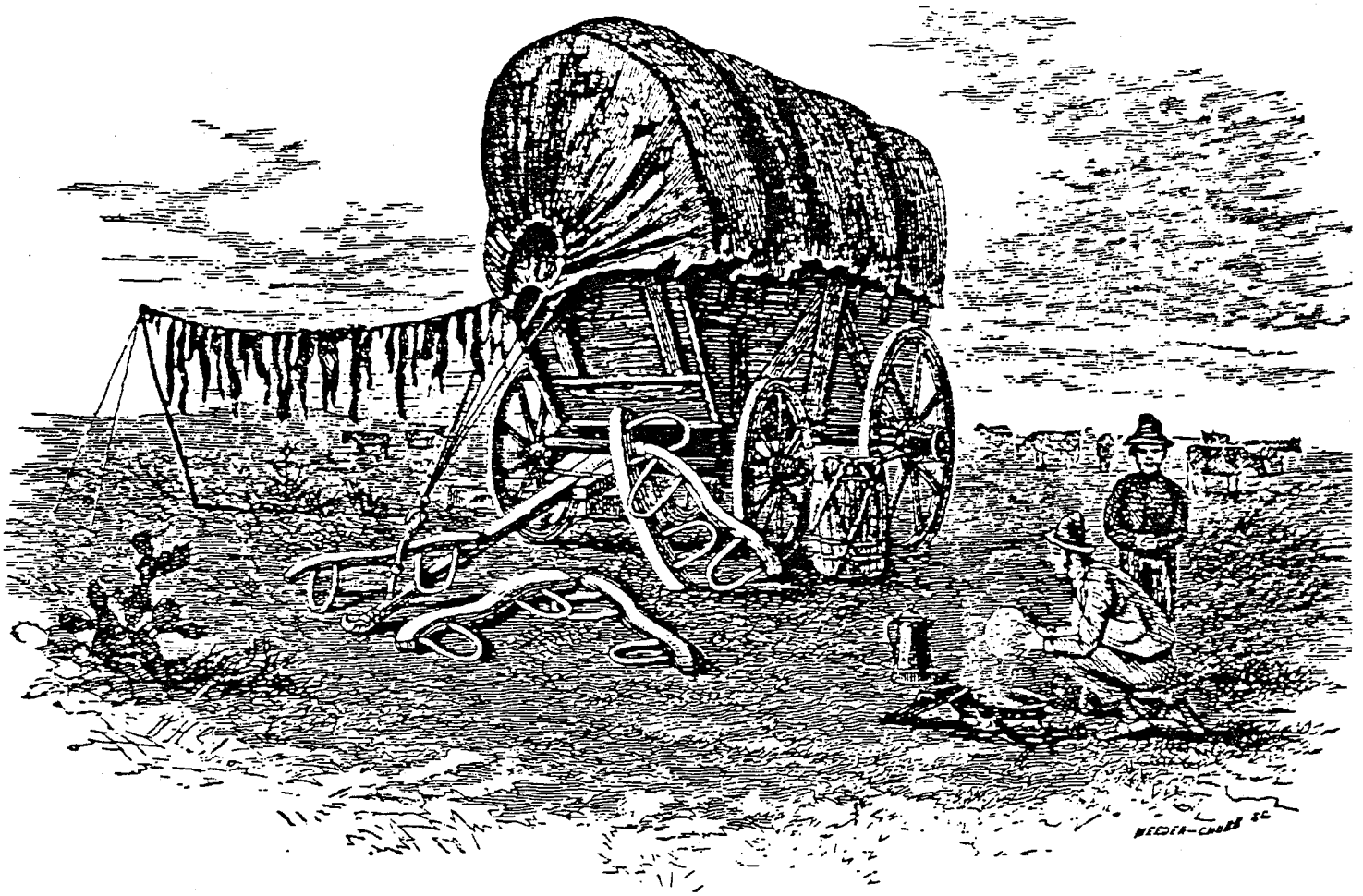


Figure 33

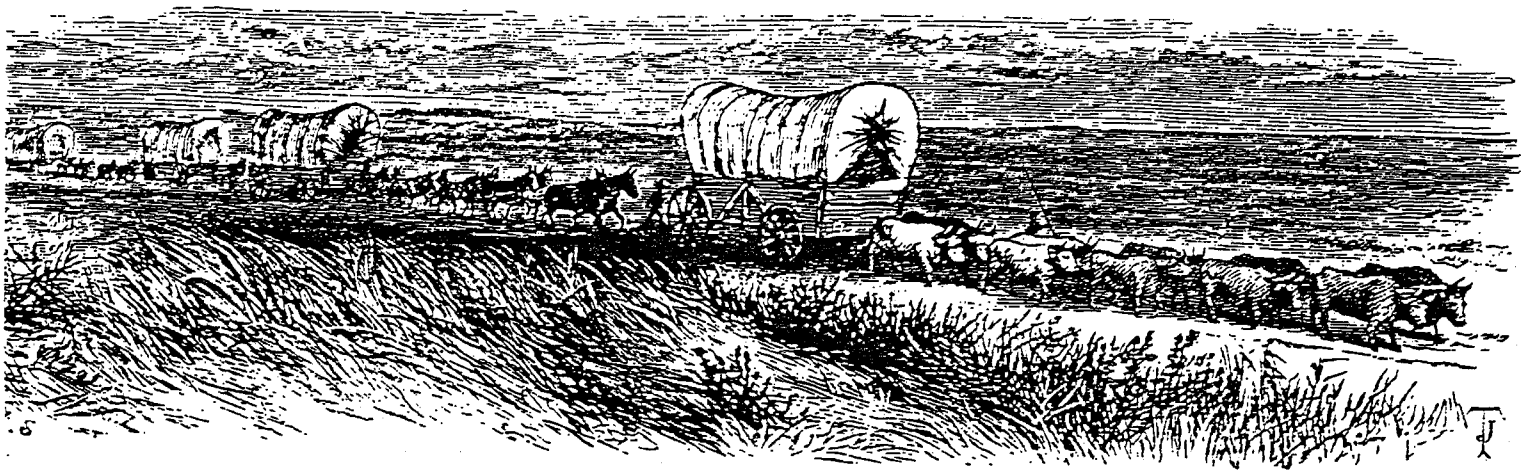


SHIP OF THE PLAINS AT ANCHOR.

Figure 34

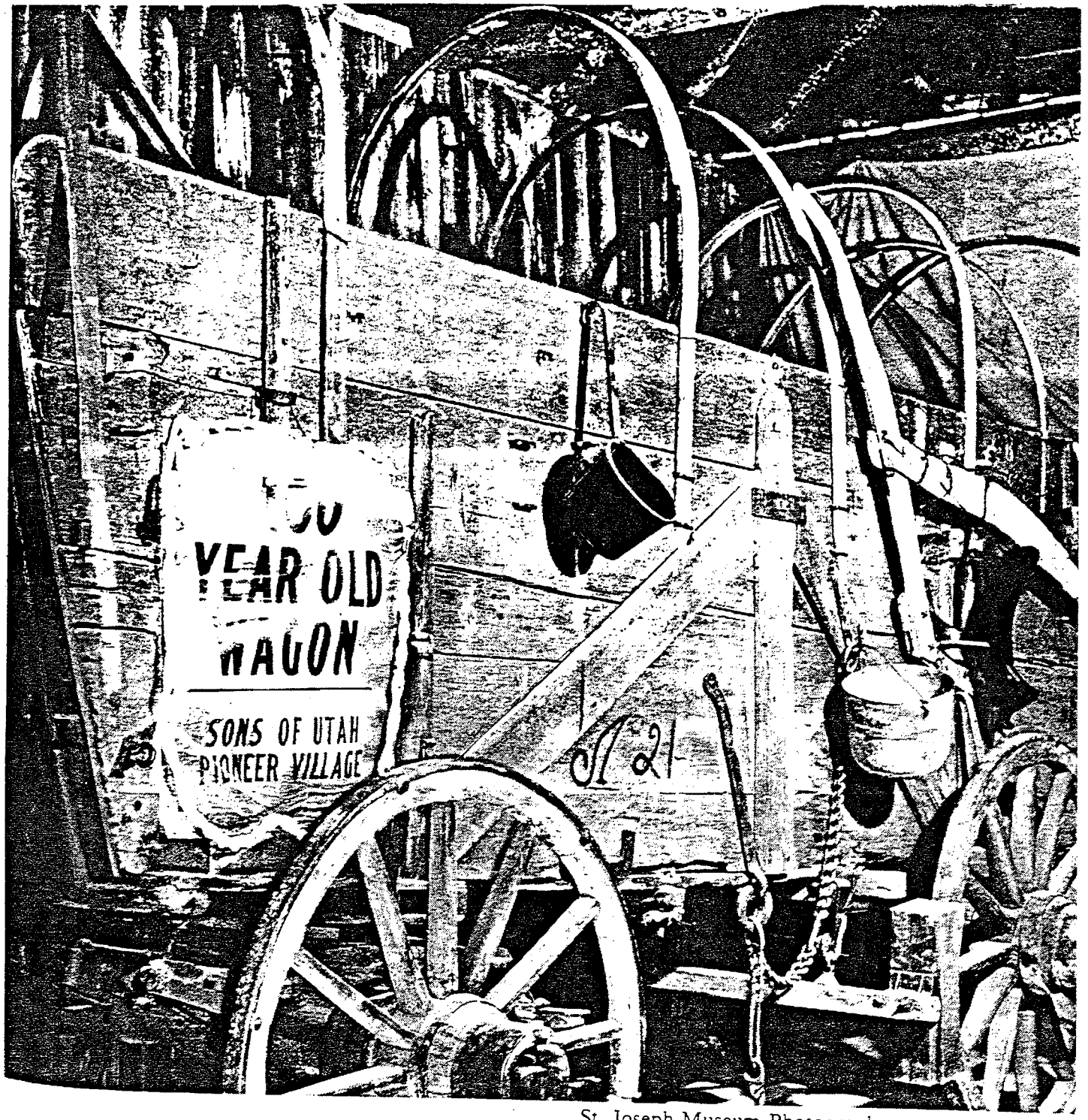
SHIP OF THE PLAINS IN DOCK.

Figure 35



SHIP OF THE PLAINS AT SEA.

Figure 36



St. Joseph Museum Photograph

This prairie schooner is typical of those in which the Mormons trekked to Utah. It is in the Pioneer Village Museum in Salt Lake City.

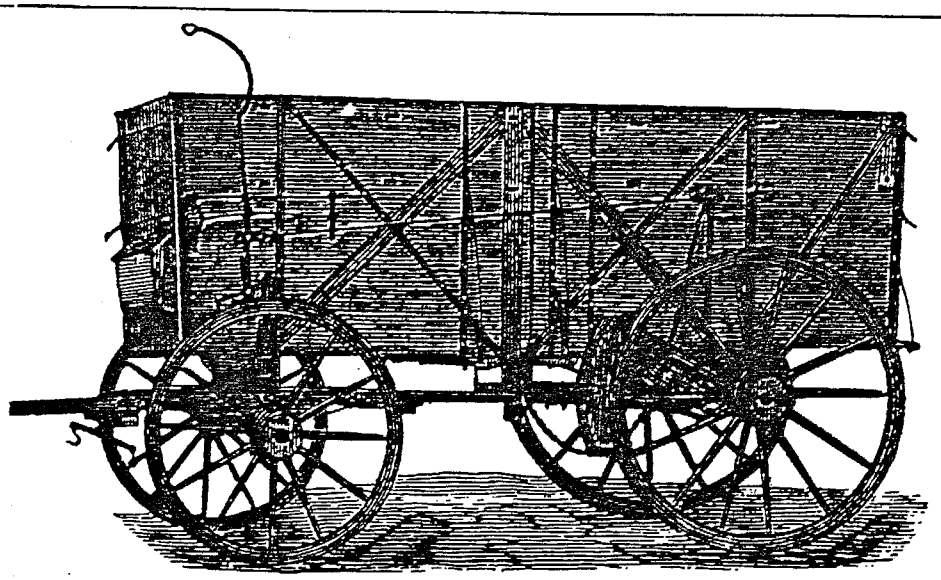
Figure 37

COMMISSION AND FORWARDING MERCHANTS
FOR Colorado, New Mexico, Arizona & Chihuahua.
WAGONS, PLOWS, &c.
Agricultural Implements
CHICK, BROWNE & CO.
WHOLESALE GROCERS
WHOLESALE GROCERS
DEALERS IN HIDES, WOOL & PELTS
OF ALL KINDS.

Figure 38

COLORADO.—NORTH END OF THE RATON SWITCHBACK AND TUNNEL NEAR TRINIDAD, ALSO SHOWING THE OLD SANTA FÉ TRAIL OVER RATON PASS.—FROM A SKETCH BY H. WORRALL.

Figure 39



FREIGHT WAGONS.

For Western, Southwestern and Northwestern States and Territories.

Discount.....

Size	DESCRIPTION.	Price
4 inch.	Thimble Skein. Beds, 12 ft. long; 38 in. deep, 3 ft. 8 in wide; Tire, 2x⅞ and 1 in. Whiffletrees, Tongue Chains, Bows and Bow Staples, California Brakes. Capacity, 6000 lbs. -	$165 00
4¼	Thimble Skein. Bed and fixtures same as 4 in. Tire, 2¼x⅞ and 1 in. Capacity, 7000 lbs.	180 00
4½	Thimble Skein. Bed, 12 ft long; 42 in. deep; 3 ft. 8 in. wide; Tire, 2½x⅞ and 1 in. Capacity, 8000 lbs. Complete as above - -	200 00
5 inch'	Thimble Skein. Same dimensions and fixtures as above. Capacity, 9000 lbs. - -	220 00
2½	Iron Axle. Same dimensions and fixtures as 4½ Thimble Skein. Capacity, 8000 lbs. -	220 00

N. B.—The above wagons will be fitted up to order. Price varying accordingly.

Figure 40

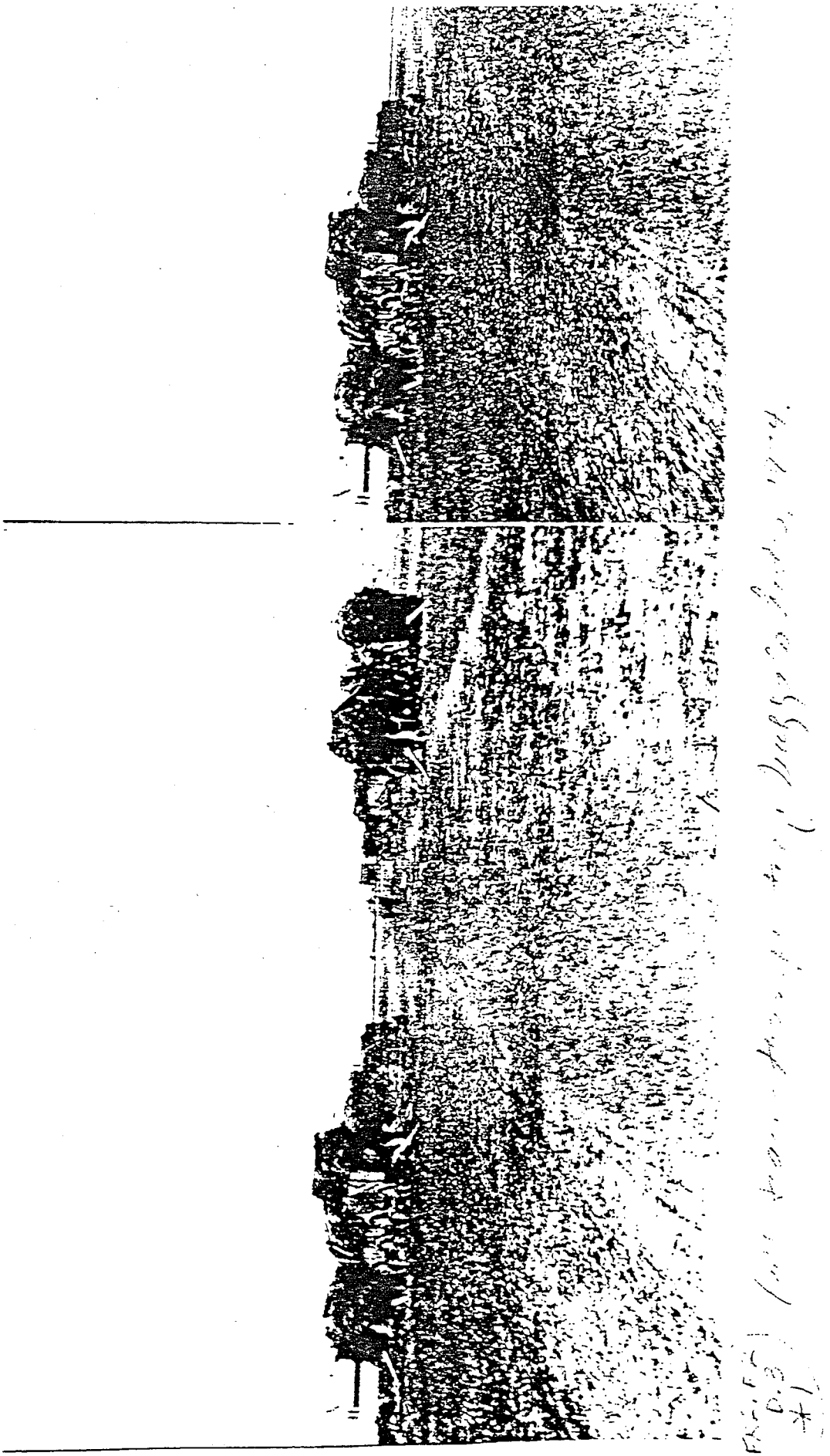


Figure 41

LARGE MULE TEAM, GOING OUT OF STOCKTON, OFTEN CALLED "PRAIRIE SCHOONERS."

Figure 42

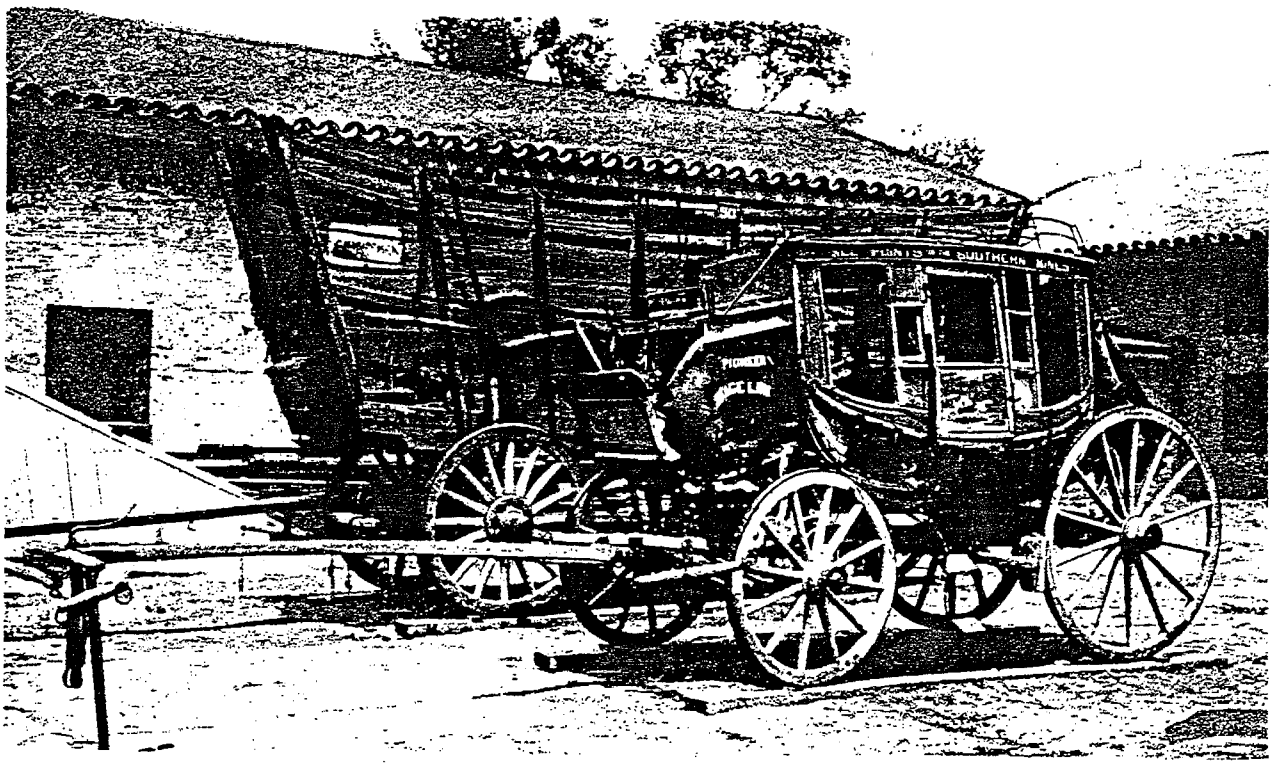


Figure 43

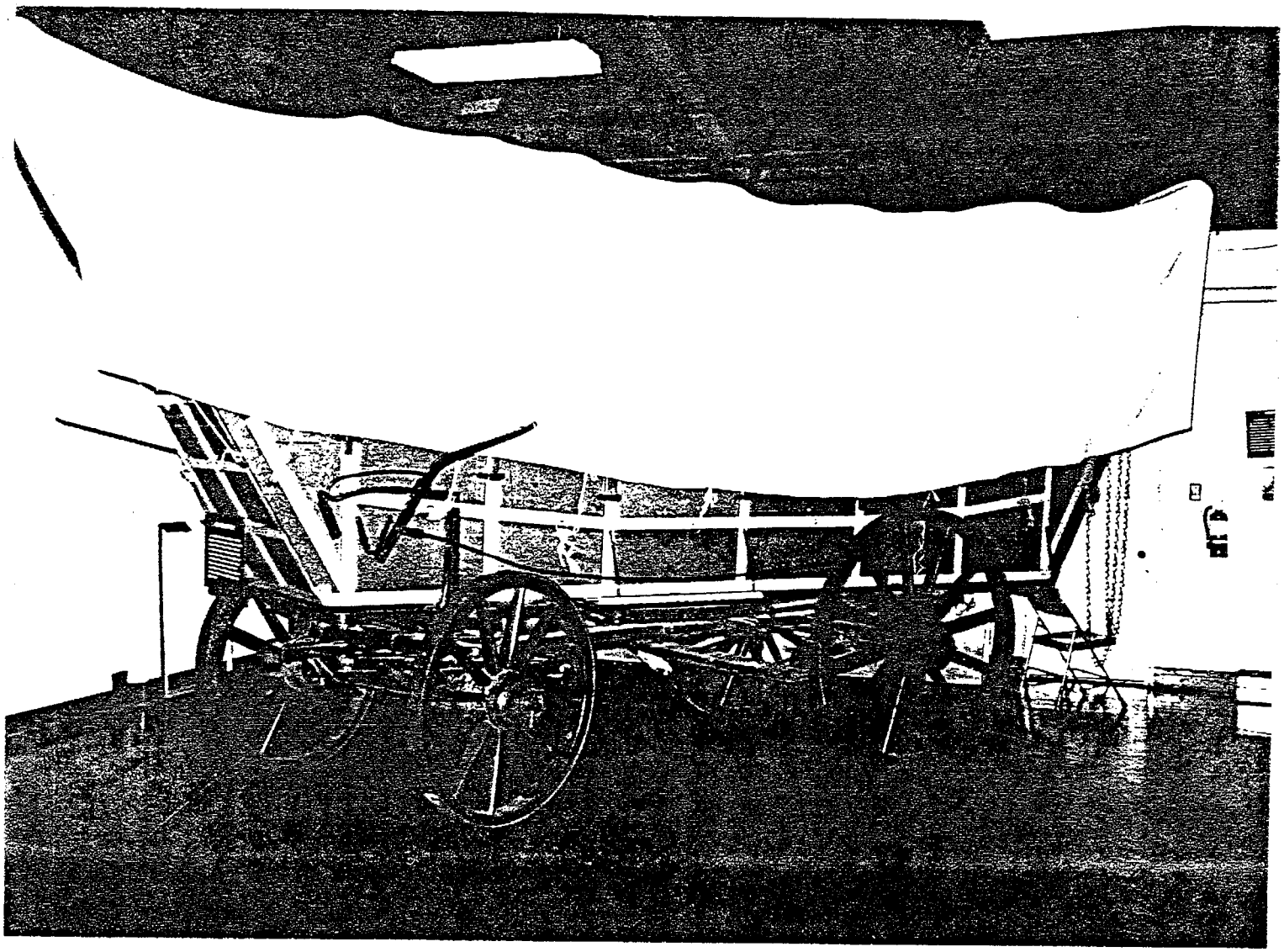


Figure 44

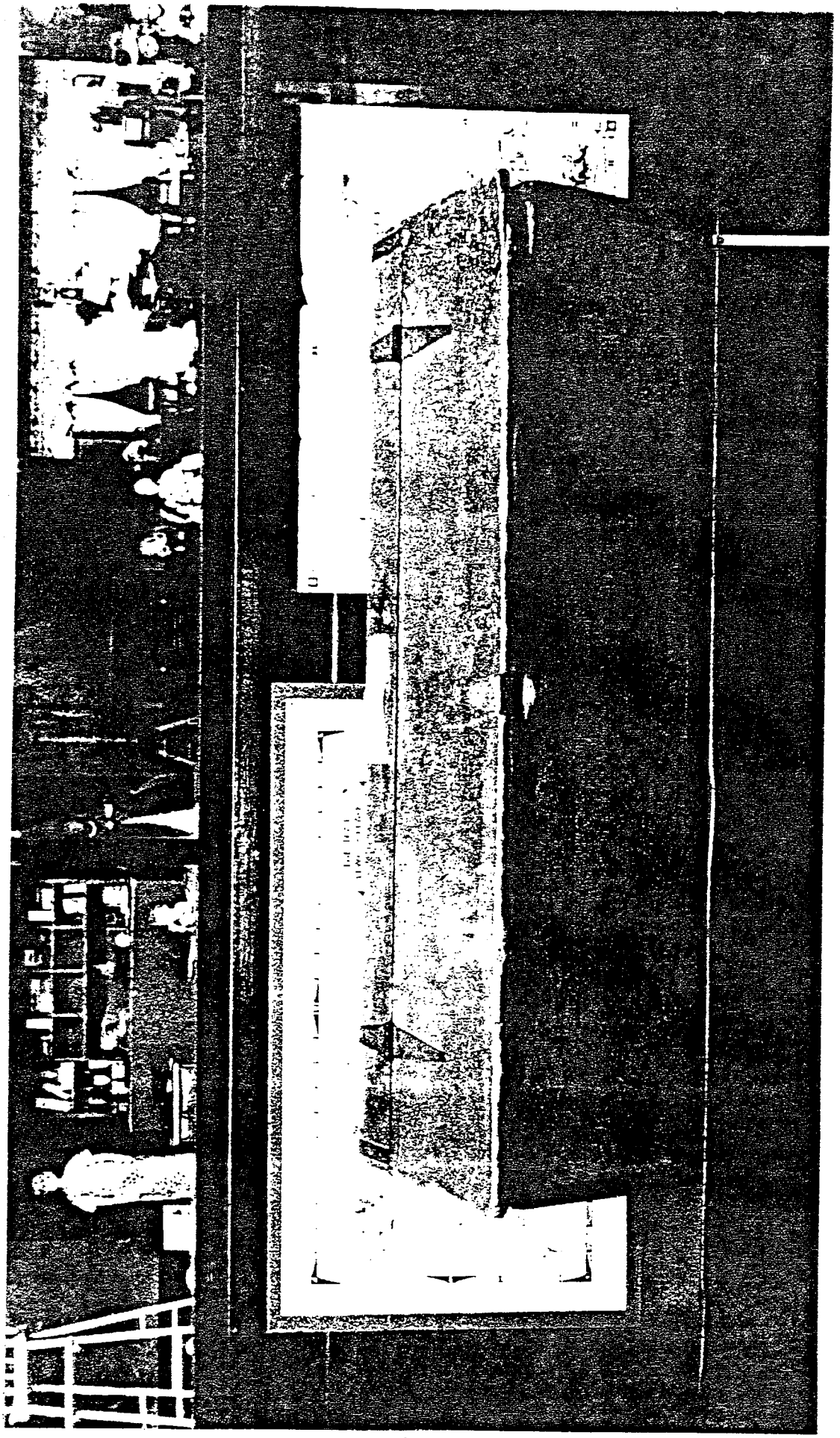
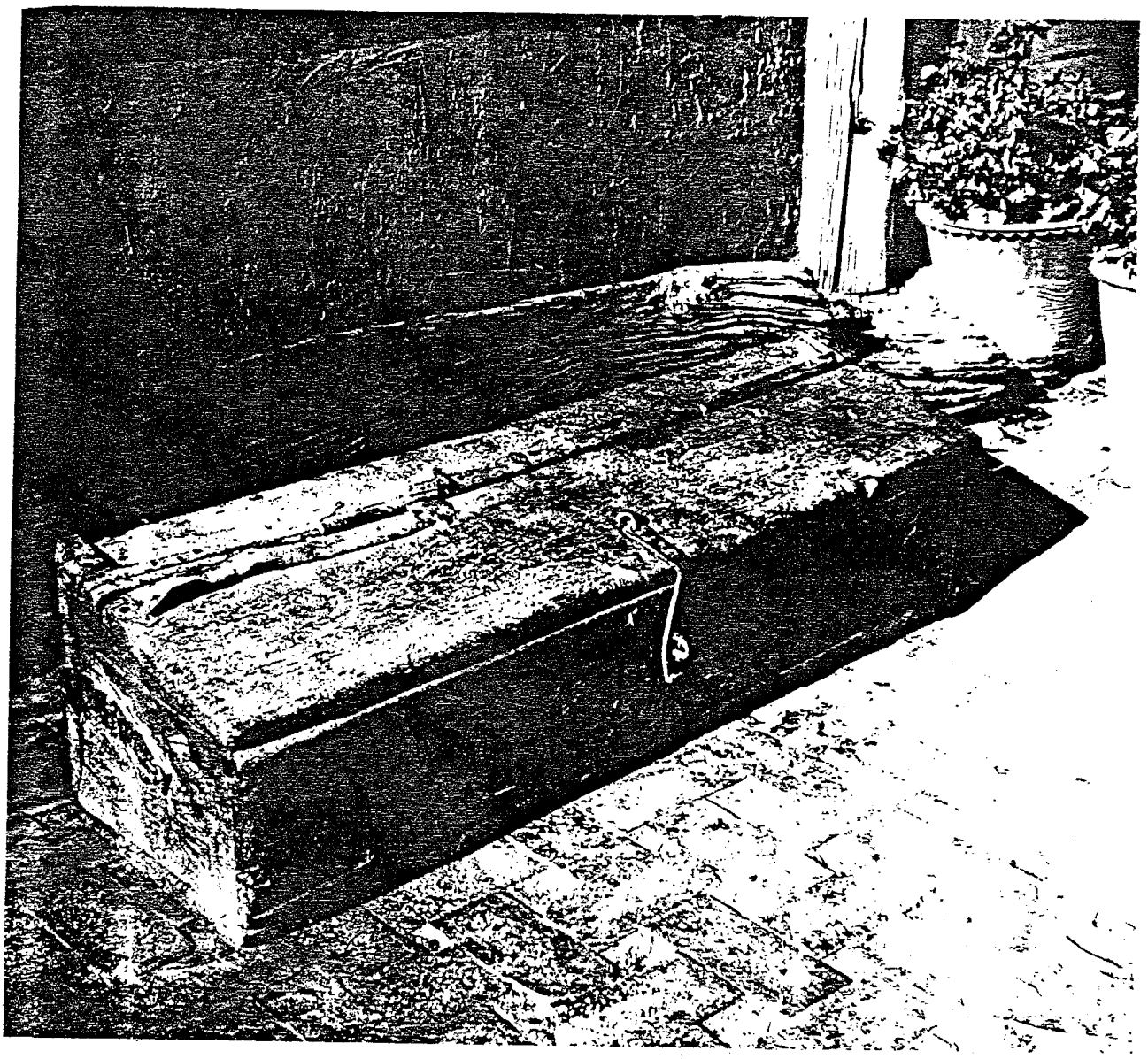
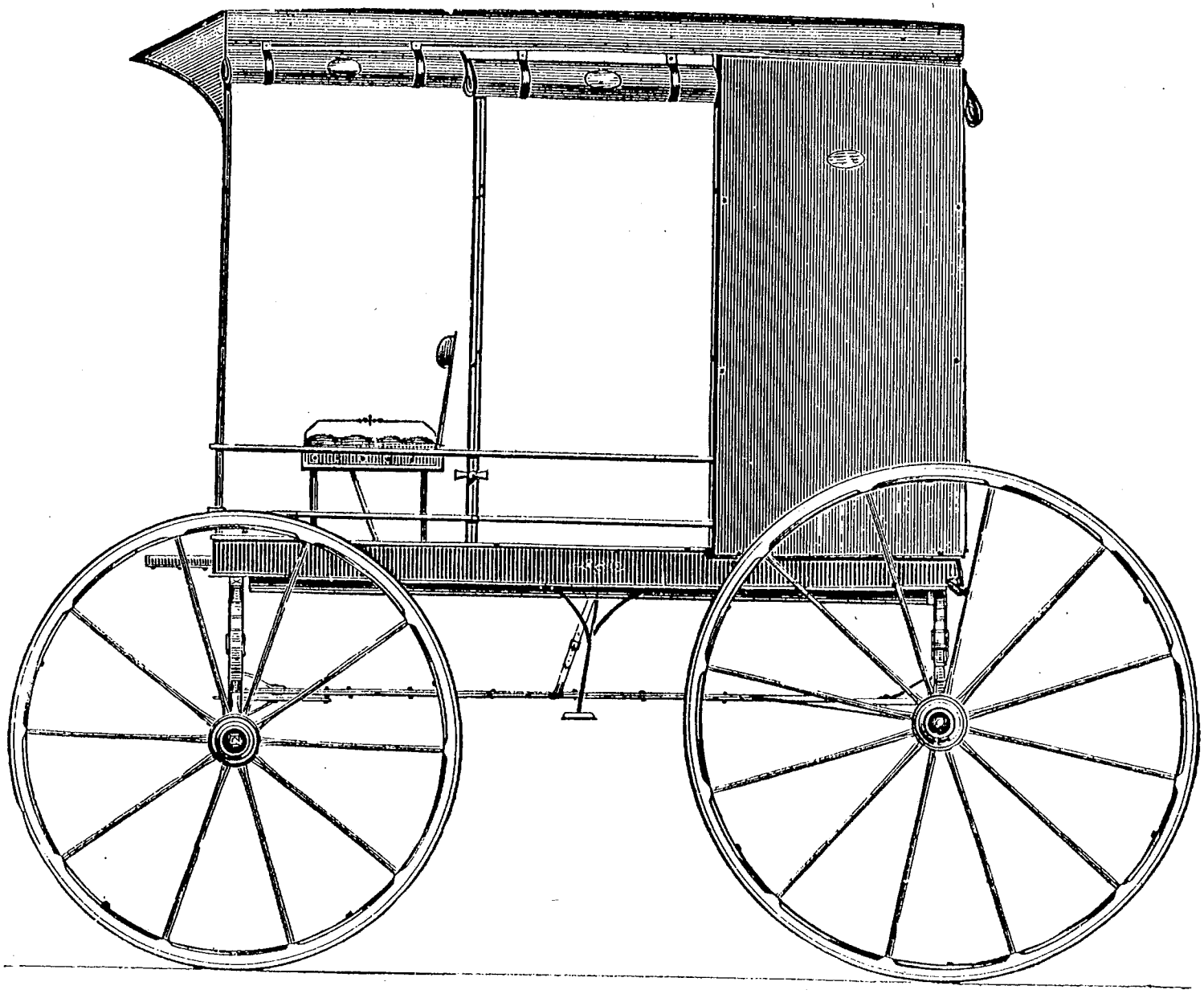


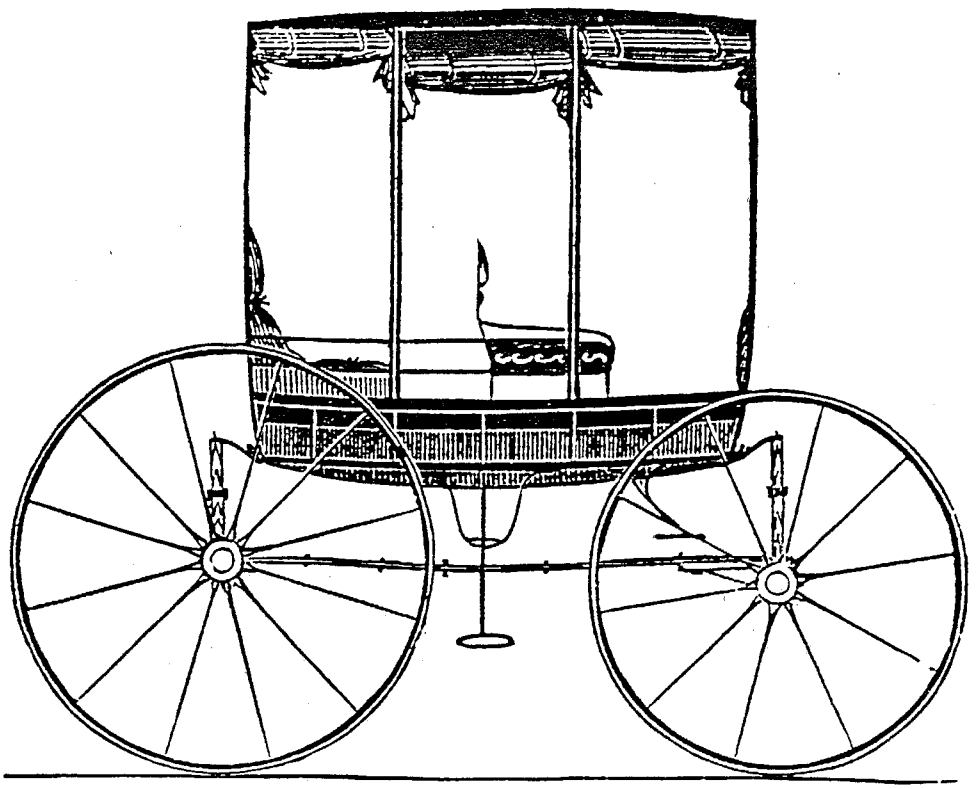
Figure 45





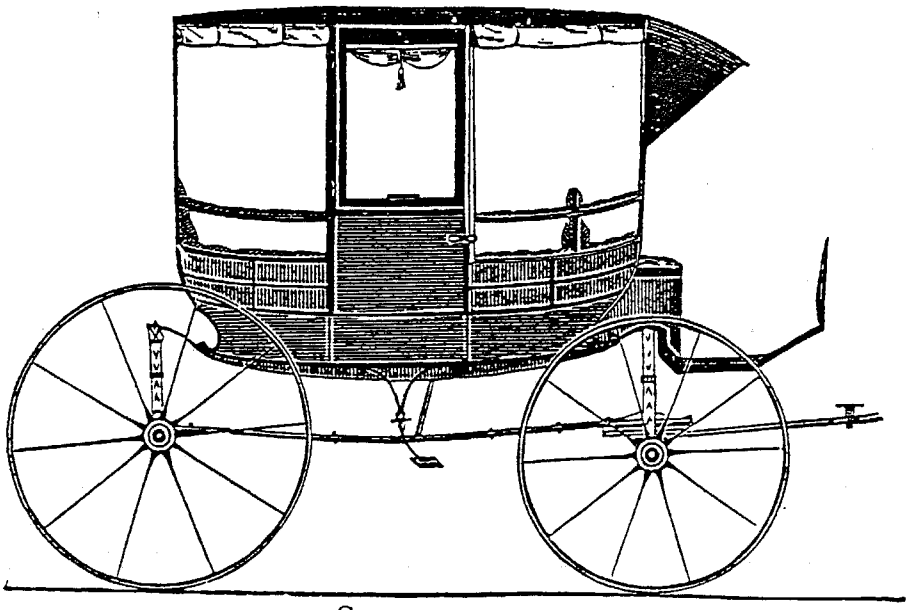
50. DEARBORN WAGON. The original form of this wagon developed early in the 19th century, and was supposedly named because General Henry Dearborn used one in the field. The rear portion of the one shown here is enclosed by a curtain, like those in a rolled-up position on the front and middle sections. During the last quarter of the century this vehicle was also called a depot wagon. Black body. Olive green carriage striped black. Blue cloth trimming. Wheels 43″ and 48″. *The Carriage Monthly,* vol. 14, Feb. 1878, pl. 89.

Figure 47



ROCKAWAY.

Figure 48



GERMANTOWN.

Figure 49

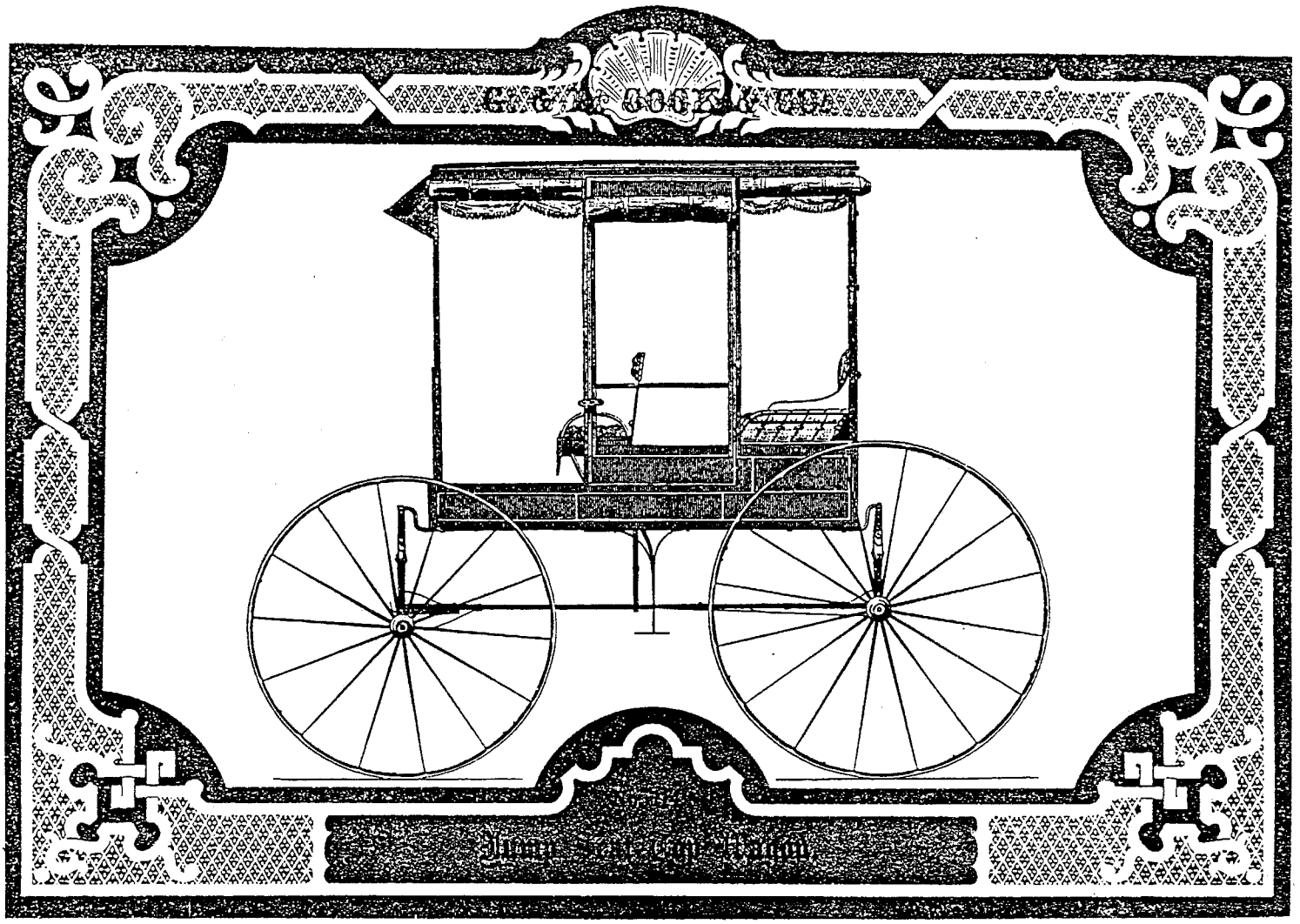


Figure 50

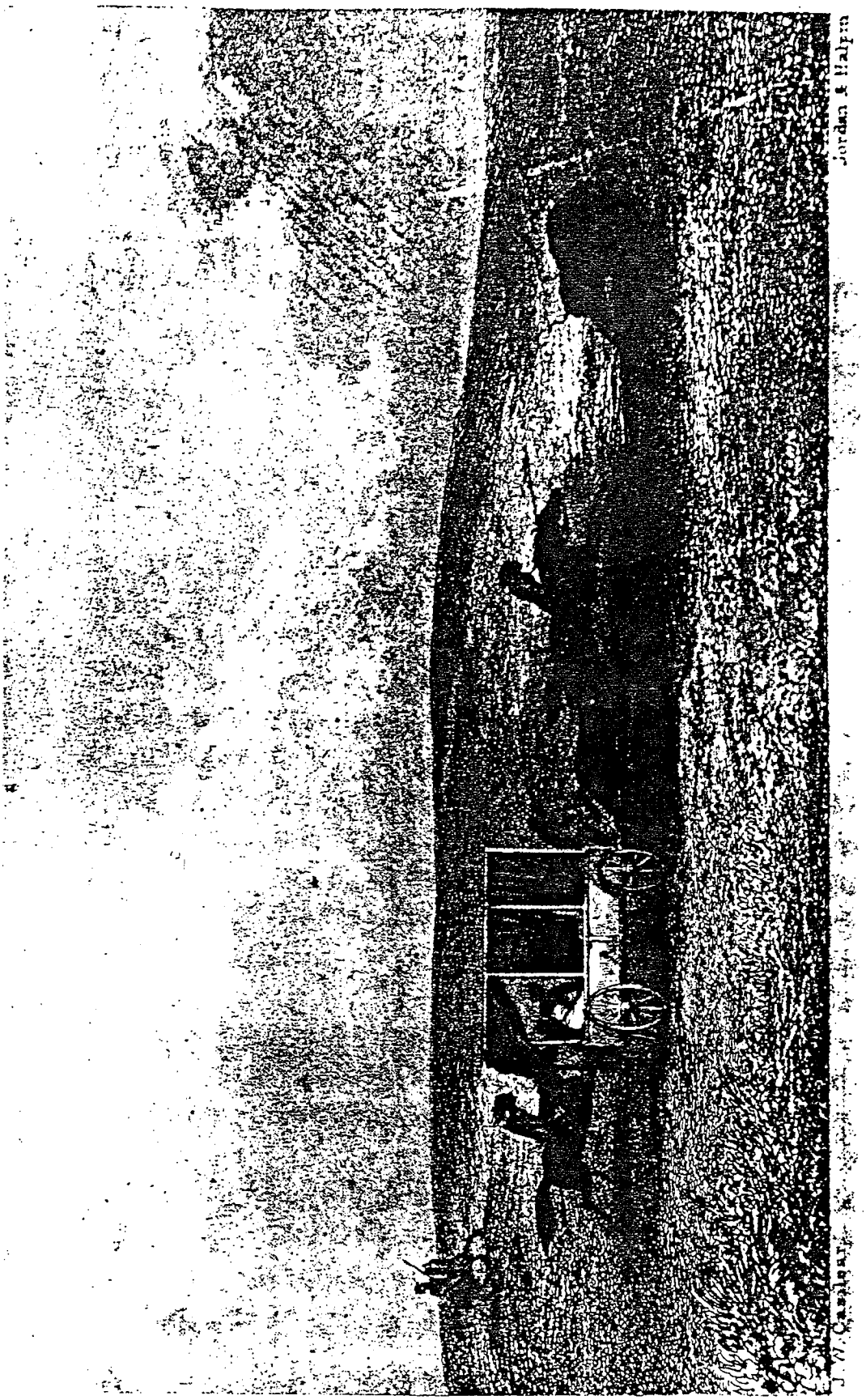


Figure 51

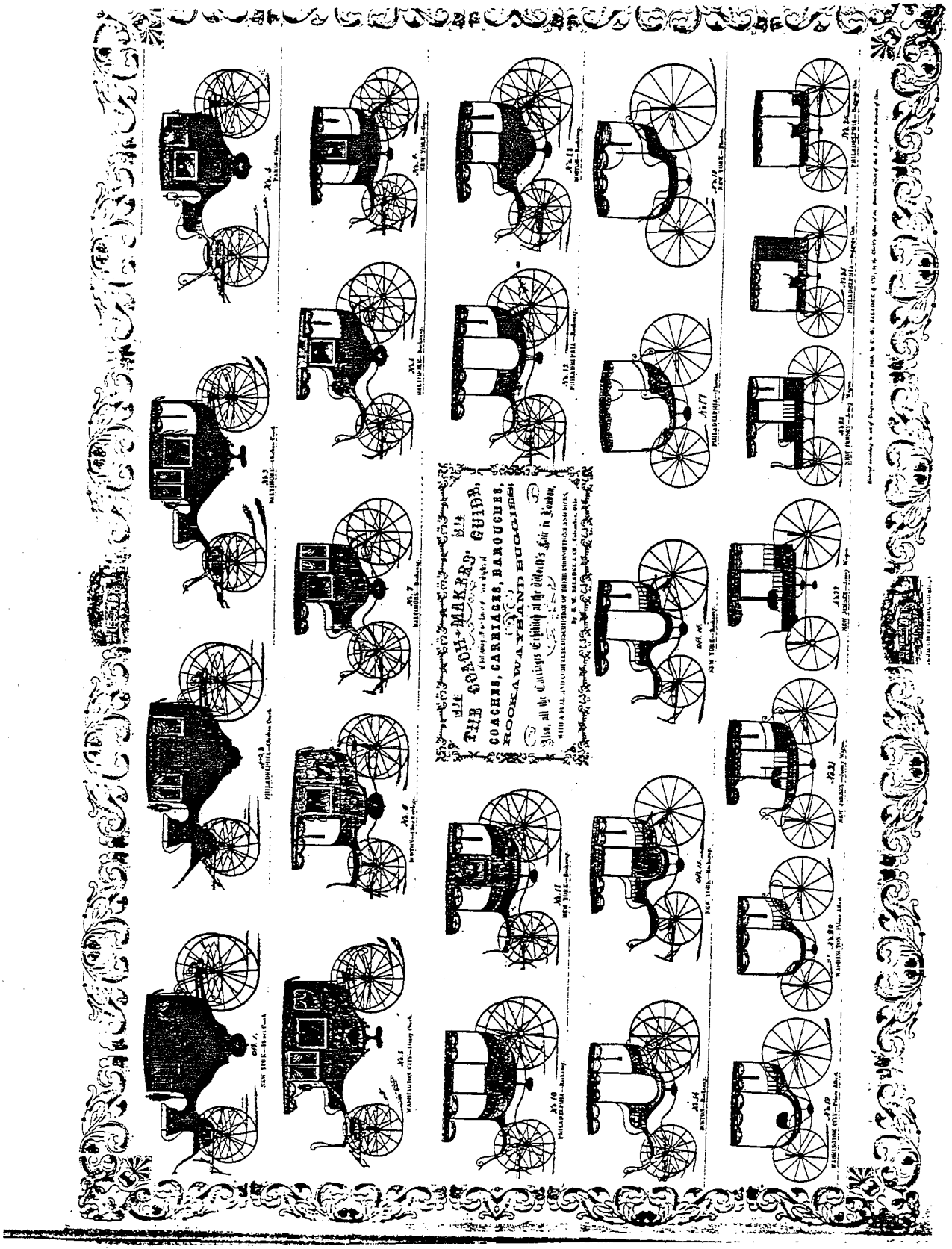

THE COACH-MAKERS' GUIDE,
COACHES, CARRIAGES, BAROUCHES,
ROCKAWAYS AND BUGGIES!

Figure 52

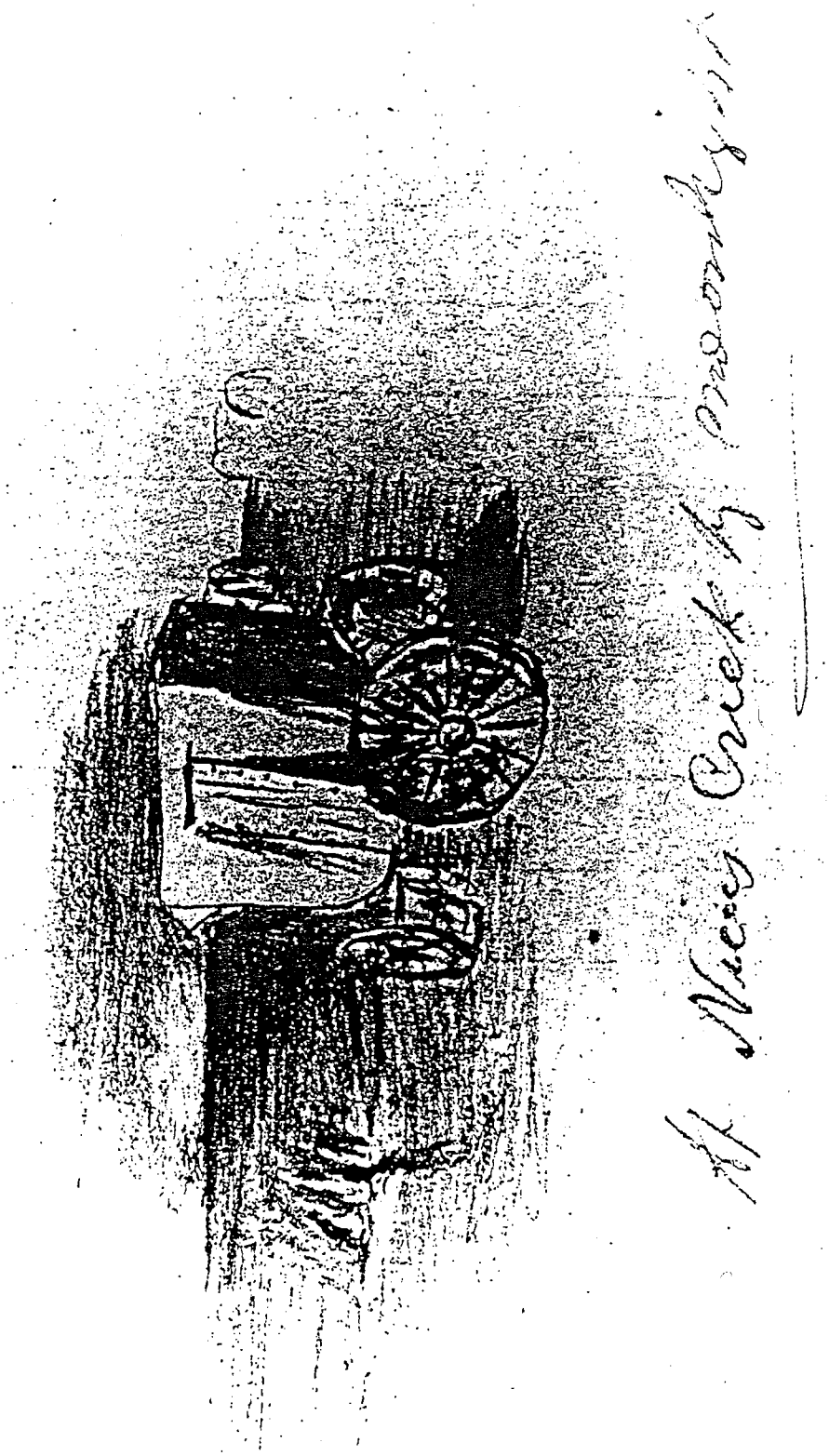
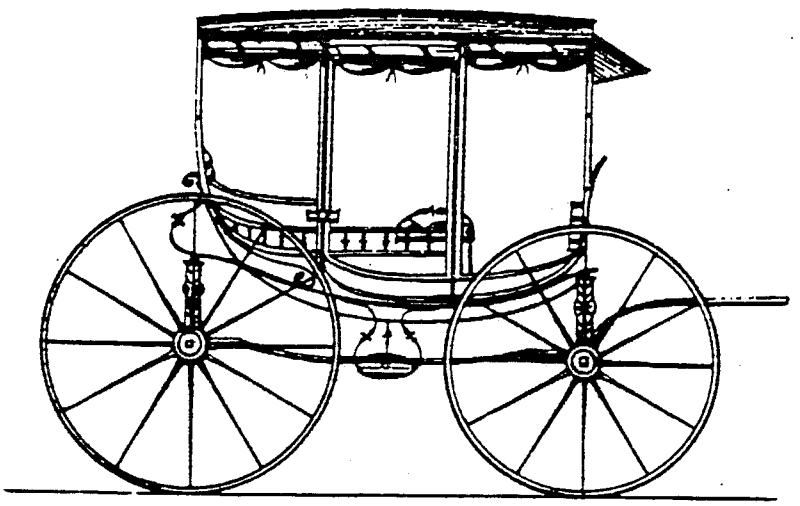


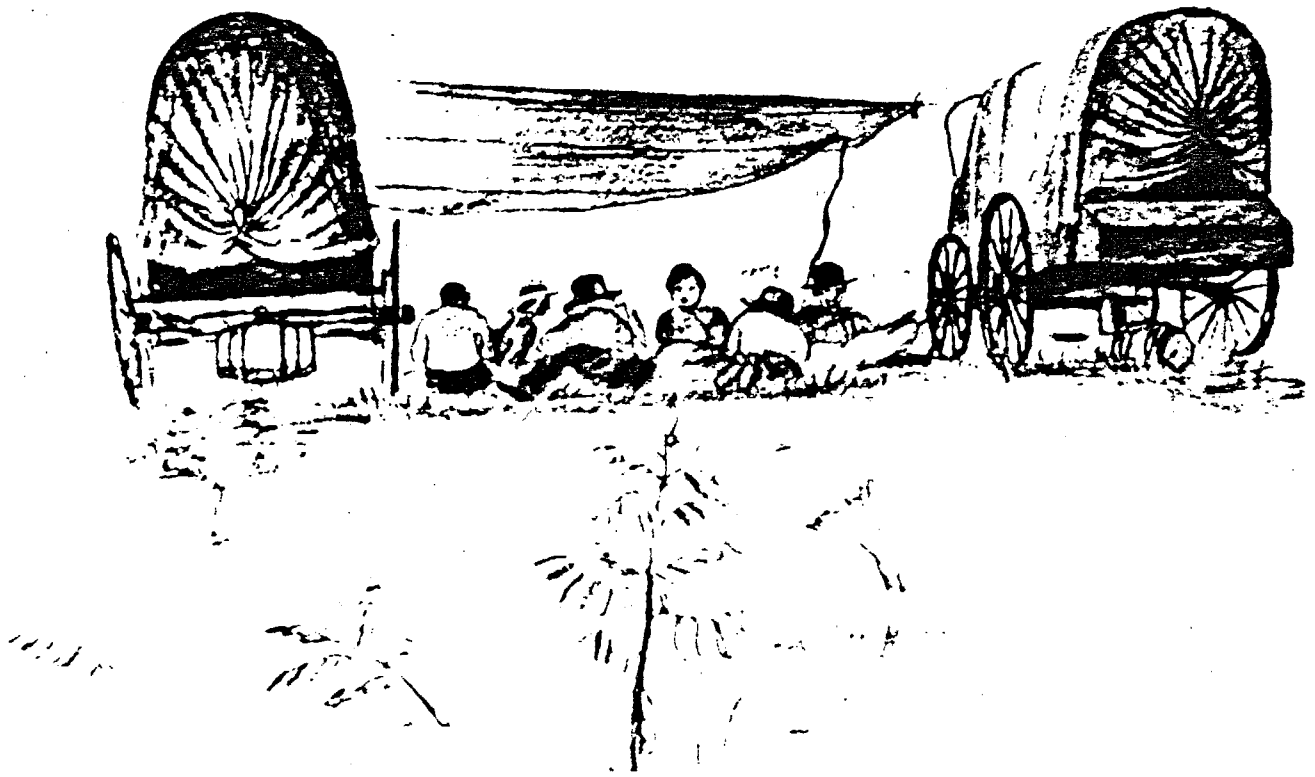
Figure 53



LIGHT ROCKAWAY

FIG. 2

Figure 54



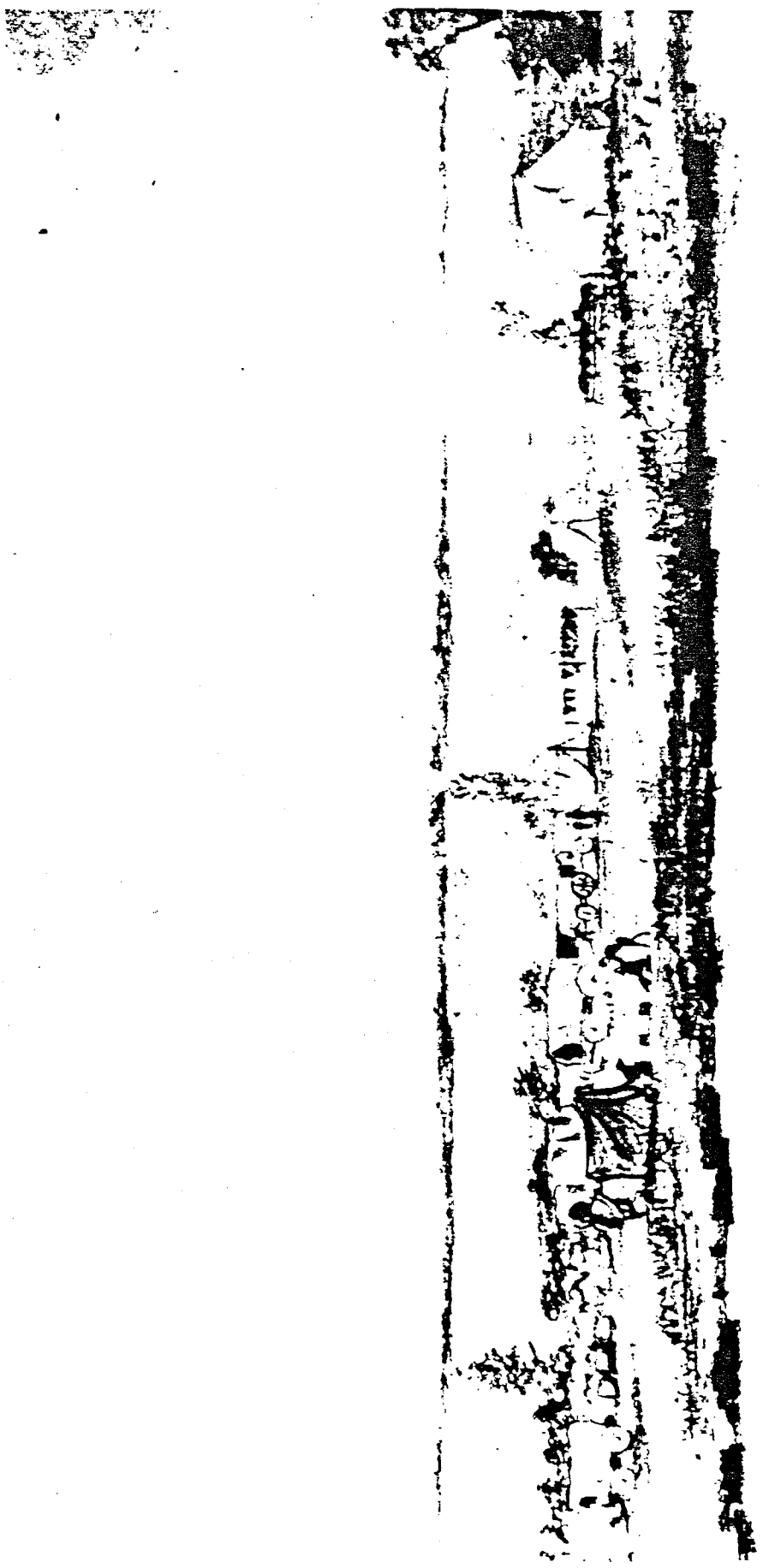
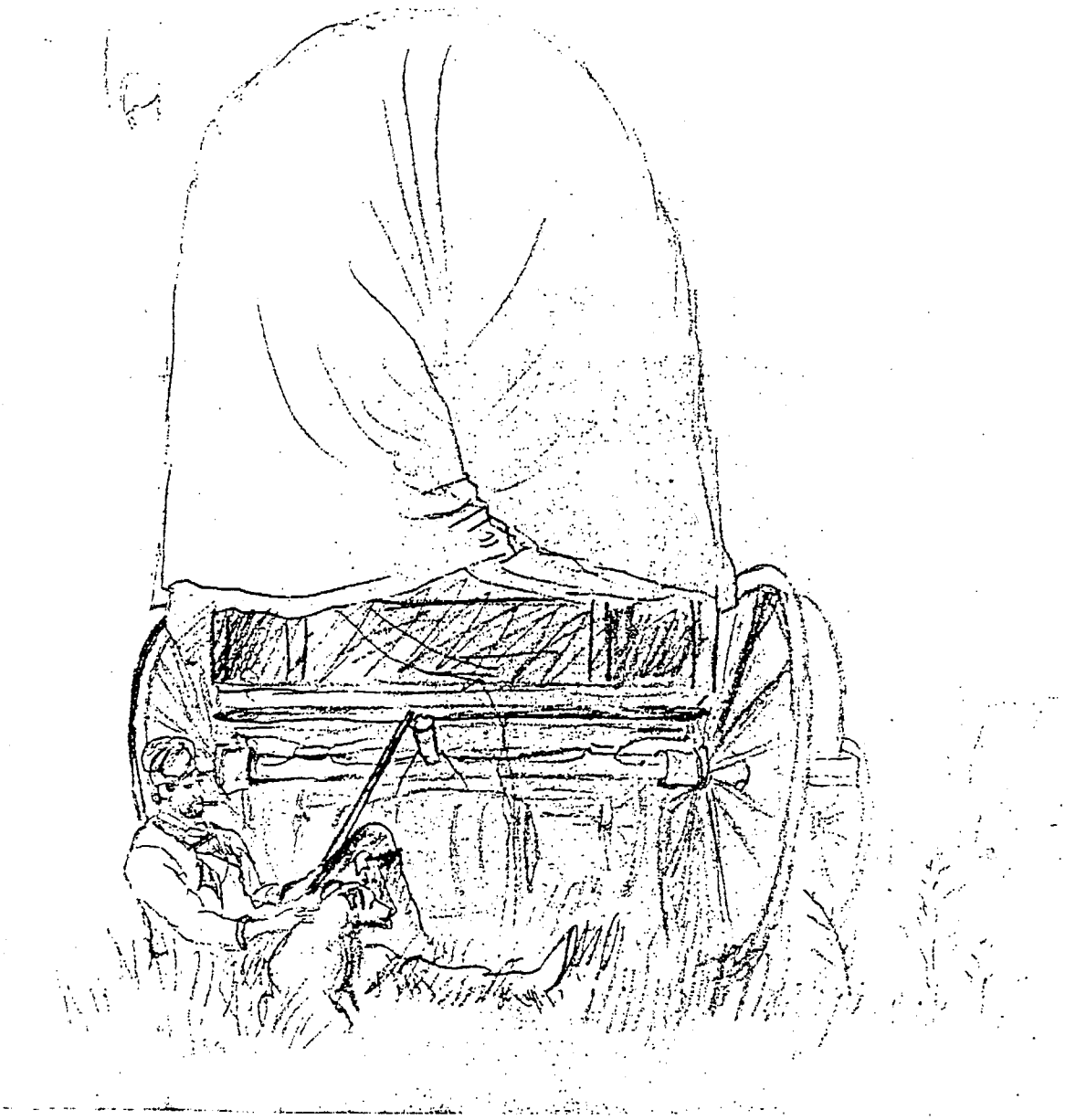


Figure 55

Figure 56



DRAWING of Fisher's Peak and Lieutenant Lane's camp mentioned by the author on page 137: "Our tents were pitched in full view of Fisher's Peak in 1866, and we remained a day in the pretty camp. A soldier drew a picture of it for one of the children, which is still in my possession. Our own tents, wagons, ambulance, and buggy made a little village by themselves, and I have a feeling of homesickness when I look at my picture."

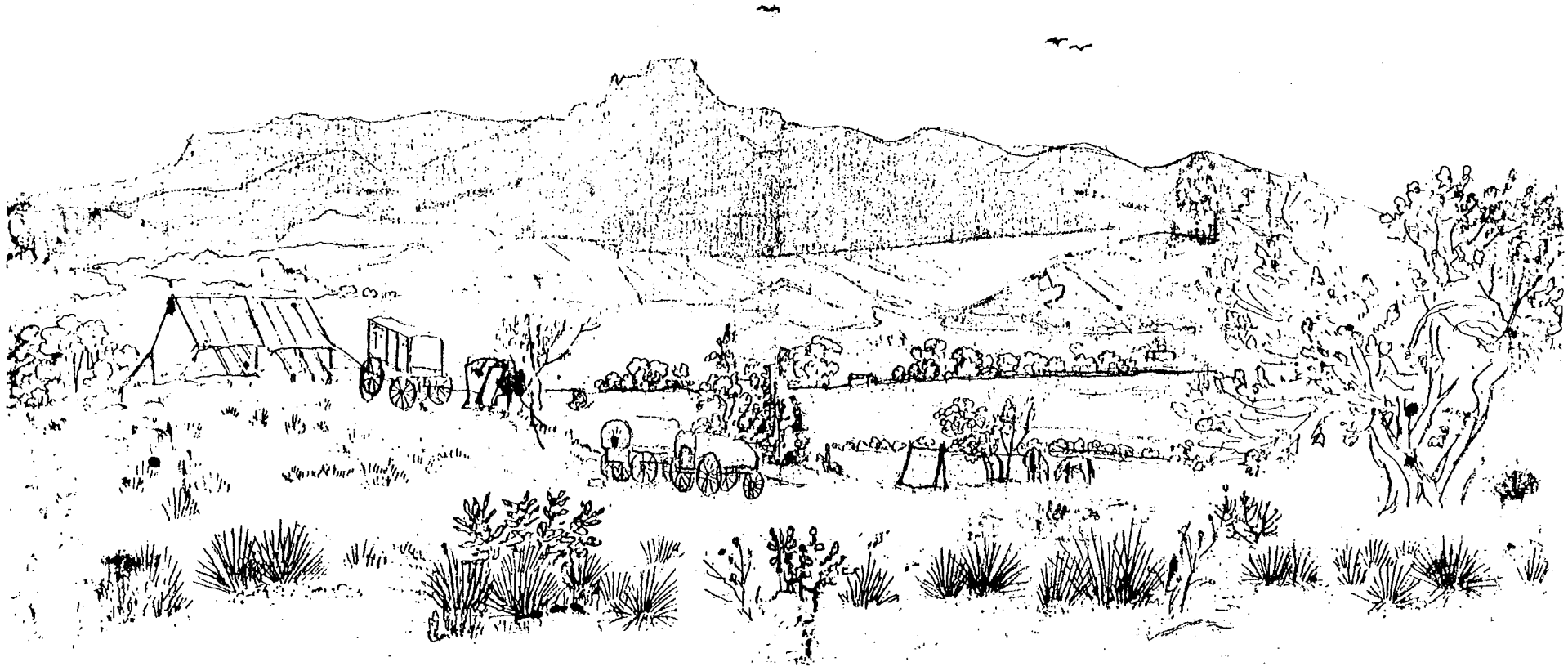
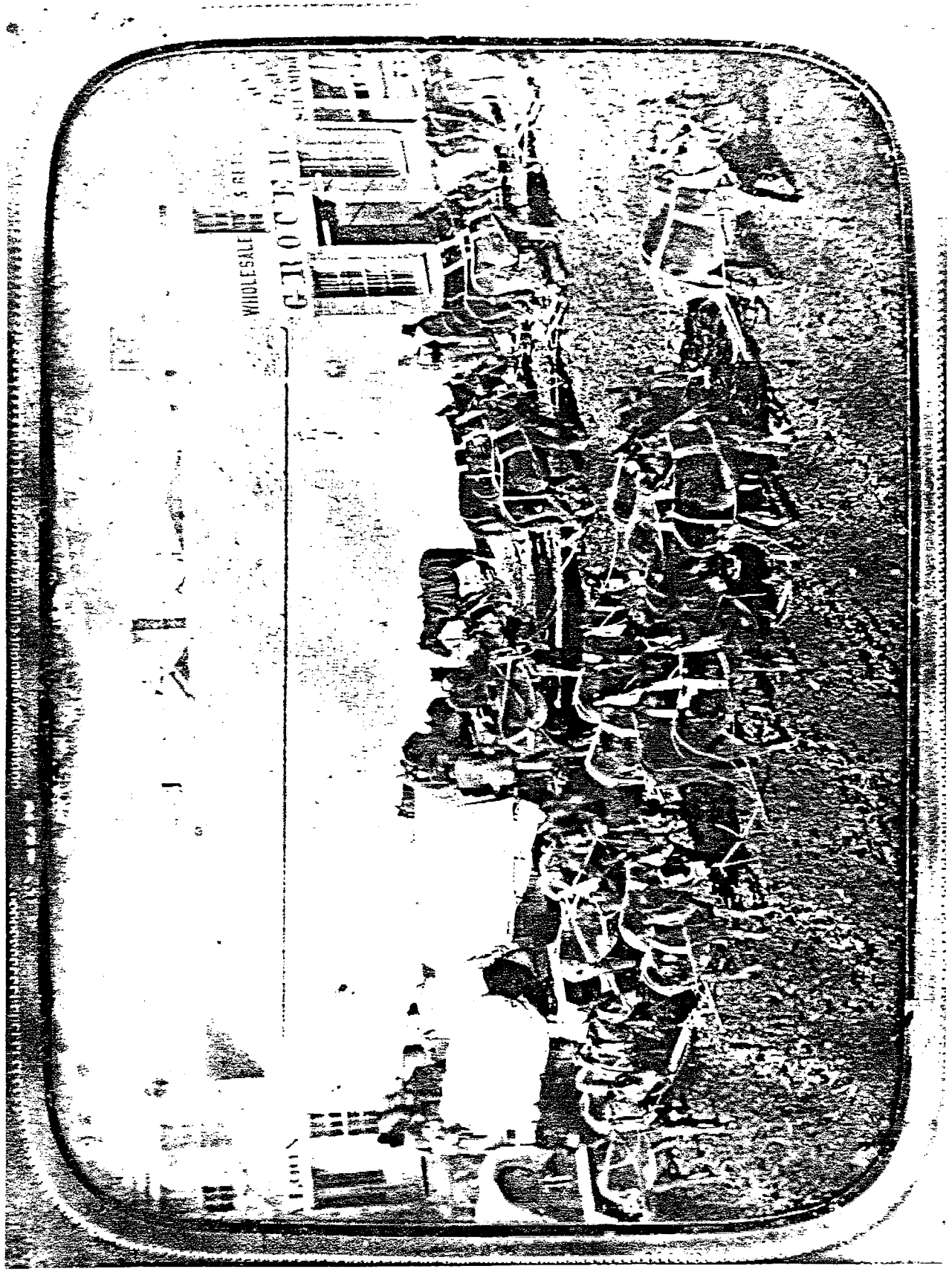


Figure 57

Figure 58



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APPENDIXES

A: *ROLLING STOCK OF THE PLAINS*

B: *SPECIFICATIONS FOR SIX-MULE ARMY WAGON, 1878*

A: ROLLING STOCK OF THE PLAINS

Following is the complete article on Santa Fe wagons that appeared in the *Westport Border Star* (Westport, Missouri), June 23, 1860, p. 2, cols. 1 & 2.

ROLLING STOCK OF THE PLAINS
Facts Respecting Western Commerce

In our issue of the 2nd ult., we referred somewhat at length to a particular branch of trade incident to the commerce of the plains and the mountains--the ready made clothing outfit of men engaged therein--and showed with statistics computed from authentic sources, that the amount of ready made clothing purchased annually by men who follow the plains for a livelihood amounted to $270,000. In further considering the details of this commerce, we now purpose [sic] to furnish our readers with an abstract of the grandest feature of this overland traffic--the rolling stock of the prairies; and as this term, when applied to railways embraces the motive power, or their iron horses, we know no good reason why we should not use it in its most extended signification when applied to our over-land transportation and include the motive power, horses, oxen, and mules.

It will be reccollected [sic] that our estimate of the number of wagons employed in hauling the merchandise yearly sent forward over the plains was five thousand, though as we said before, there are a number of old freighters who think this number far too small. But as we wish to be within bounds in any statements we may make, calculated to attract the attention of business men, and perhaps enlist their capatal, [sic] we give the number of wagons engaged in the transportation of freight across these plains to Mexico, the Forts, the Mountains and Utah, at *five thousand*, with a tonage equal to 32,500,000 pounds. What this merchandise consists of, where purchased, and by whom sold and consumed will constitute the subject matter of another article, our object now being to give all the information possible about the rolling stock, and to so prepare that information as to enable our readers east or elsewhere, who may not be familiar with the plains and the mode of transport, to understand the subject.

A regular wagon of the first magnitude, capable of carrying 6,500 pounds is what we here call a "Santa Fe wagon," from the fact that so many trains of these wagons are continually leaving Westport and Kansas City for Santa Fe, New Mexico. During the spring and summer and part of the fall months we see hundreds of them every day, but as yet, have never attempted to furnish an accurate description of either wagon or train.

A large portion of these wagons are manufactured at St. Louis and at establishments in Indiana and Illinois, and are forwarded here by water. Within the year, however, a factory has been erected in our own city, under the immediate control and proprietorship of Mr. M. T. Graham, from whom we gather the following information concerning the construction of these "prairie schooners." -- In this establishment there are four departments, employing in all thirty-five men, and turning out fifty-three wagons per month. The expense of keeping a concern of this character in "full blast" would be about $200 per diem, or $65,000 per year.

The material for the construction of a wagon is obtained mostly in the counties of Clay and Jackson, Missouri, Wyandotte county, Kansas, and Indiana, and is consumed into "shaped lumber" at the factory, when it then undergoes a seasoning process before being worked up. As in factories for the construction of locomotives, every thing is reduced to a system--as it is in these "shops," and in the various departments, machine shops, painting room, furnishing and trimming room, and lathe room, we find men engaged on some particular part of a wagon.

In looking through the shops we find a series of machines, that with the human hand and an arm of steam do all the work upon a wagon, the mortices, tenents, felloes, grooves, scrolls, etc., etc., and in addition to this a gang of knives that work in one of Daniel's planers give the finishing touch to all the axles, bolsters, tongues, and other heavy timber about a wagon.--These machines consist of a morticer that in eighteen minutes make allthe mortices for a set of hubs--a job that would occupy a man

all day and even then he could not do the work with near the niceity and exactness that the machine does. Then comes the planer, spoke lath, upright drill, tenenting machine, the knives of which revolve three thousand times a minute cutting tenants of any size, felloe saws, scrolls saws, a swinging saw that cuts the lumber crosswise, and which is a most ingenious contrivance, four circular saws, grind-stones, and other machinery for finishing work. All of these machines are new and of the latest and best patterns, and after once witnessing the amount of labor they perform in a time that you can compute in minutes, one no longer wonders at the rapidity with which the steam machines turn out the strong and unwieldy looking wagons. Some of the dimensions of these wagons would supprise [sic] an Eastern man. The diameter of the larger wheel is 5 feet 2 inches, and the tire weighs 105 pounds. The reach is 11 feet and the bed 46 inches deep, 12 feet long on the bottom and 15 feet on the top, and will carry 6,500 pounds across the plains and through the mountain passes. When ready for a voyage a wagon has an amount of rigging equal to many small water crafts. This consists of bows, yokes, ox bows, sheets, chains, ropes, extra spars in the shape of tongues, axles and bolsters, kegs, bolts, nuts and a number of tools.

Such in brief is a prairie wagon--one of the freight cars in the valley stock equipment of overland commerce. When merchandise is forwarded in these cars they go out in trains of from eighteen to thirty-three, and sometimes fifty wagons, and are propelled by a team of six yoke of strong and heavy cattle--stock that is accustomed to the plains, many trains, however, use mules and we can safely estimate this motive power at *seventy thousand* head of live stock--all mules and oxen. The value of the rolling stock is no less than $3,000,000! More than equal to the rolling stock of some of the longest and best railroads in the Union. To keep this stock moving requires about six thousand men, including wagonmasters, teamsters, agents, &c., at a cost of $180,000 a month, or $2,160,000 a year.

These, then are some of the features and figures of a branch of business in the West, that is done over the great thoroughfares of the plains, creating a commerce that would be enhanced a hundredfold by railway facilities.

B: SPECIFICATIONS FOR SIX-MULE ARMY WAGON, 1878

SPECIFICATIONS

FOR

SIX-MULE UNITED STATES ARMY WAGON,

(Covered.)

The *front wheels* (12 spokes, to have a 3-inch tenon) to be 3 feet 10 inches high, hubs 10 inches in diameter in center, 8¼ inches in front of hubs, and 14¼ inches long. *Hind wheels* (14 spokes, to have a 3-inch tenon) 4 feet 10 inches high; hubs 10¼ inches in diameter and 14¼ inches long; felloes 2½ inches wide and 2¾ inches deep; cast-iron pipe boxes 12 inches long, 2½ inches at large end and 1⅞ inch at small end; tire 2½ inches wide by ⅝ inch thick, fastened with one screw-bolt and nut in each felloe; hubs made of gum, locust, or the best white oak, well seasoned; the spokes and felloes of the best white oak, free from defects; each wheel to have a sand band and linch-pin band 2¾ inches wide of No. 8 band-iron, and two driving bands—outside band 1¼ inch by ¼ inch thick, inside band 1 inch by $\frac{3}{16}$ inch thick; the hind wheels to be made and boxed so that they will measure from the inside of the tire to the large end of the box 6½ inches, and front wheels 6⅛ inches in a parallel line, and each axle to be 3 feet 11⅝ inches from the outside of one shoulder-washer to the outside of the other, so as to have the wagons all to track 5 feet from center to center of the wheels. Axle-trees to be made of the best quality refined American iron, 2½ inches square at the shoulder, tapering down to 1½ inch in the middle, with a ¼-inch king-bolt hole in each axle-tree; washers and linch-pins for each axle-tree—size of linch-pins, 1 inch wide, ⅝ inch thick, with a hole in each end; a wooden stock 4¼ inches wide and 4 inches deep, fastened substantially to the axle-tree with clips on the ends, and with two bolts 6 inches from the middle, and fastened to the hounds and bolster (the bolster to be 4 feet 5 inches long, 5 inches wide, and 3½ inches deep) with four ¼-inch bolts.

The *tongue* to be 10 feet 8 inches long, 4 inches wide, and 3 inches thick at front end of the hounds, and 2¼ inches wide by 2¾ inches deep at the front end, and so arranged as to lift up; the front end of it to hang within 2 feet of the ground when the wagon is standing at rest on a level surface; the tongue-cap to be ⅛-inch round iron, welded into iron 2 inches by ¼, 15 inches long, bolted with three bolts $\frac{5}{16}$ inch diameter.

wide over axle-tree, and to retain that width to the back end of the tongue; jaws of the hounds 1 foot 8 inches long and 3 inches square at the front end, with a plate of iron 2½ inches wide by ⅜ inch thick, fastened on the top of the hounds, over the back end of the tongue, with a ½-inch screw-bolt in each end, and a plate of iron of the same size turned up at each end 1½ inch, to clamp the front hounds together, and fastened on the under side and at front end of hounds with a ½-inch screw-bolt through each hound, and a ½-inch bolt through tongue and hounds in the center of jaws to secure the tongue in the hounds; a plate of iron 3 inches wide, ¼ inch thick, and 1 foot 8 inches long, secured on the inside of jaws of hounds with two bolts ⅜ inch, and a plate of same dimensions on each side of the tongue, where the tongue and hounds rub together, secured with two rivets; a brace of ⅜-inch round iron to extend from under the front axle-tree and take two bolts in front part of the hounds, same brace ⅜ inch round to continue to the back part of the hounds and to be fastened with two bolts, one near the back end of the hounds and one through the slider and hounds, and within 2 inches of slider on wagons finished; a brace over front bolster 1½ inch wide, ¼ inch thick, with a bolt in each end to fasten it to the hounds; the opening between the jaws of the hounds to receive the tongue 4¾ inches in front and 4½ inches at the back part of the jaws.

The *hind hounds* 4 feet 8 inches long, 2¾ inches thick, and 3 inches wide; jaws 1 foot long where they clasp the coupling-pole; the bolster 4 feet 5 inches long and 5 inches wide by 3½ inches deep, with steadying iron 2½ inches wide by ⅜ inch thick, turned up 2½ inches, and fastened on each end with three bolts ⅜ inch; the bolster stocks and hounds to be secured with four ½-inch screw-bolts, and one ½-inch screw-bolt through the coupling-pole; a substantial stay under each back hound and axle to form a clasp under each, and bolted to hound 18 inches forward of axle, and two rivets through each end of coupling-pole.

The *coupling-pole* 9 feet 8 inches long, 3 inches deep, 4½ inches wide at front end, (which will be strapped with ⅝ by 1¼-inch iron, extending back 9½ inches,) and 2¾ inches wide at the back end; distance from the center of king-bolt hole to the center of the back axle-tree 6 feet 1 inch, and from the center of king-bolt hole to the center of the mortise in the hind end of the pole 8 feet 9 inches; king-bolt 1¼ inch diameter, of best refined iron, drawn down to ¾ inch where it passes through the iron axle-tree; iron plate 6 inches long, 3 inches wide, and ⅜ inch thick on the double-tree and tongue where they rub together; iron plates 1½ by ¼ inch on the sliding-bar, fastened at each end by a screw-bolt through the hounds; two bolts to pass in sliding-bar within 3 inches of hound. Front bolster to have plates above and below 11 inches long, 3½ inches wide, and ⅜ inch thick, corners drawn out and turned down on the sides of the bolster, with a nail in each corner and four countersunk nails through plate, and sand-board and plate underneath; two bands on the hind hounds 2 and 2½ inches wide, of No. 10 band-iron; the rub-plate on the coupling-pole to be 8 inches long, 1¾ inch wide, and ¼ of an inch thick.

Tongue, hounds, coupling-pole, axle-beds, and bolsters to be of best quality white oak, well-seasoned; double-tree 3 feet 10 inches long, single-tree 2 feet 8 inches long, all well made of hickory, with an iron ring and clip at each end; the center clip to be well secured; lead-bar and stretcher to be 3 feet 2 inches long, 2¼ inches wide, and 1¼ inch thick; lead-bar stretchers, and single-trees for six-mule team to be of the best quality of hickory; the two single-trees for the lead mules to have hooks in the middle to hook to the end of the fifth chain; the wheel and middle pair with open rings to attach them to the double-tree and lead-bar; the fifth chain to be 10 feet long to the fork; the fork 1 foot 10 inches long, with the stretcher attached to spread the forks apart; the links of the double-tree, stay and tongue-chains ⅝ of an inch diameter; the forked chain $\frac{7}{16}$ inch diameter; the fifth chain to be $\frac{7}{16}$ inch diameter to the fork; the fork to be $\frac{5}{16}$ inch in diameter; the links of these and the lock-chains to be not more than 2¼ inches long; a cross chain $\frac{7}{16}$ inch diameter, with key and ring, will be required to cross the bed.

The *body* to be straight, 3 feet 6 inches wide, 2 feet deep, 10 feet long at the bottom, and 10 feet 6 inches at the top, sloping equally at each end, all in the clear or inside; the bed-pieces to be 2½ inches wide and 3 inches deep; front pieces 2⅜ inches deep by 2½ inches wide; front and cross-pieces to have ½-inch rivet in each end, 1 inch from side rail; tail-piece 2½ inches wide and 3 inches deep, and 4½ inches deep in the middle, to rest on the coupling-pole; top rail 1⅝ inch thick by 1⅛ inch wide; lower rails 1⅛ inch thick by 1⅛ inch wide; three studs and one rail in front, with a seat on strap-hinges to close it up as high as the sides; a box 3 feet 4 inches long, the bottom 5 inches wide, front side 9½ inches deep and 8½ inches at the top in parallel line to the body, all in the clear, to be substantially fastened to the front end of the body; to have an iron strap 1 inch wide passing round each end, secured to the head-piece and front rail by a rivet in each end of it passing through them; the lid to be fastened to the front rail with two good strap-hinges, a strap of ⅝-inch iron around the box ½ inch from the top edge and one near the bottom, and two straps, same size, on the lid near the front edge to prevent the mules from eating the boxes; to have a joint hasp fastened to the middle of the lid, with a good wooden cleat on the inside, a strap of iron on the center of the box with a staple passing through it to fasten the lid to; eight studs and two rails on each side; one bolster fastened to the body, 6 inches deep and 4 inches wide at king-bolt hole; bolster to be fastened to body with a ½-inch bolt in each end; front part of bolster to be 16 inches from front side of front end of

sill, and to have a stay under each end and secured to bottom of sill by two bolts; iron rod in front and center of $\frac{11}{16}$-inch round iron, with a head on the top of rail and nut on lower end; iron rod and brace behind, with shoulders on top of tail-piece, and nuts on the under side, and a nut on top of rail; a plate $2\frac{1}{2}$ inches wide, of No. 10 band-iron, on tail-piece, across the body; four screw-bolts through each side stud, and two screw-bolts through each front stud; bolts to be $1\frac{1}{4}$ inch by $\frac{1}{4}$ inch to secure the lining-boards, one bolt through each end of the rails; floor $\frac{7}{8}$-inch oak boards, well fastened to body-bars by wrought nails clinched at bottom; sides $\frac{7}{8}$-inch white pine; tail-boards $\frac{1}{4}$ inch thick, of white pine, to be well cleated with five oak cleats riveted well and strong at each end through the tail-board; an iron plate 3 feet 8 inches long, $2\frac{1}{2}$ inches wide, and $\frac{1}{4}$ inch thick on the under side of the bed-piece, to extend from the hind end of the body to 8 inches in front of the hind bolsters, to be fastened by the rod at the end of the body by the lateral rod, and two $\frac{3}{8}$-inch screw-bolts, one at the forward end of the plate and the other about equidistant between it and the lateral rod. A $\frac{1}{4}$-inch round iron rod or bolt to pass diagonally through the rails between the two hind studs to and through the bed-piece and plate under it, with a good head on the top and nut and screw at the bottom, to be at the top 1 foot 6 inches from inside of tail-board, and on the bottom 10 inches from the hind rod. An iron clamp 2 inches wide, $\frac{1}{4}$ inch thick around the bed-piece, the center bolt to which the lock-chain is attached passing through it, to extend 7 inches on the inside of the body, the ends, top, and bottom to be secured by two $\frac{3}{8}$-inch screw-bolts, the middle bar at the ends to be flush with the bed-piece on the lower side. Two lock-chains secured to the center bolt of the body, one end 11 inches, the other 2 feet 6 inches long, to be of $\frac{3}{8}$-inch round iron; feed-trough sides of yellow pine, to be 4 feet 6 inches long from out to out, the bottom and ends of oak; sides $8\frac{1}{2}$ inches deep, 8 inches wide at bottom, and 12 inches wide at top of feed-box, all in the clear, or inside; well ironed with a band of hoop-iron around the top, one around each end, and three between the ends; strong and suitable irons to fasten them on the tongue when feeding; a good strong $\frac{1}{4}$-inch chain to be attached to the top rail of the body, secured by a staple with a hook to attach it to the trough. The running-gear and the frame-work of the body to be neatly chamfered and rounded.

Brake.

Brake-bar to be made of best white-oak, $2\frac{3}{4}$ inches thick by 7 inches wide, 5 feet 9 inches long; to be made parallel 2 feet 6 inches, then tapered on front side at each end to $5\frac{1}{2}$ inches. Each end of bar on back side to be gained $\frac{1}{4}$ inch deep and 7 inches long, to receive the brake-shoe, so that the front of the brake-block will be on a line with the back of the bar.

Brake-shoe of flat iron on each end 6 inches long, $2\frac{1}{4}$ inches wide, $\frac{1}{4}$ inch thick, bent around 2 inches on each side to receive a brake-block. Bolted to the brake-bar with two $\frac{1}{2}$-inch bolts each.

Brake-blocks to be made of best oak, $3\frac{1}{2}$ inches thick, 6 inches wide, 15 inches long, curved to fit the wheels; tapered gains to be cut on each side of sufficient depth and width so as to fit in the above-described shoe and leave the full surface of the blocks presented to the wheel.

Brake-roller to be of $1\frac{1}{4}$-inch round iron, 5 feet 4 inches long, and about 18 inches, drawn down to $1\frac{1}{2}$ by $\frac{3}{4}$ inch, with two $\frac{7}{16}$-inch holes in the end, 4 inches apart. Two bracket stops 1 by $\frac{1}{2}$ inch, welded on the roller-bar, the first one 2 inches from the end, and one 2 feet 4 inches from the end; these are to keep the roller from shifting lengthwise between the brackets. Two fulcrums, $1\frac{1}{2}$ by $\frac{3}{4}$ inch at roller-bar, drawn to 1 by $\frac{1}{2}$ inch $1\frac{1}{4}$ inch from the end, forming an eye $1\frac{1}{2}$ inch round by $\frac{1}{4}$ inch, with hole for $\frac{1}{2}$-inch bolt; the first fulcrum welded on the bar $7\frac{1}{2}$ inches from the end of the roller, the other $23\frac{1}{2}$ inches, and the fulcrums to measure $4\frac{1}{2}$ inches from the center of the hole to the center of the roller-bar when finished; the flat end of the bar bent up in a gentle curve in the round part at right angles for a lever 2 feet high; the roller to measure 3 feet 6 inches from out to out when bent, and the top of the lever to stand 10 inches back of a straight line when the fulcrums hang perpendicular in place.

Brackets.—Two brackets which hold the roller-bar in place should be 2 feet 5 inches long, of $\frac{3}{8}$-inch round iron, with a clip-tie welded on $1\frac{1}{4}$ by $\frac{1}{4}$ inch with holes in, to take the hind axle bolts; then 7 inches from the axle form an eye on the brackets $2\frac{1}{2}$ by $\frac{1}{4}$ inch, with a hole in $1\frac{3}{16}$ inch to receive the roller-bar; then 6 inches of the front end flattened to bolt to the hind hounds with two $\frac{1}{2}$-inch bolts each, this also taking the place of the hind axle braces.

Brake hangers.—Two brake-bar hangers 3 feet 2 inches long whole length; top end $1\frac{1}{2}$ by $\frac{1}{4}$-inch iron, welded to 1 foot 2 inches of 2 by $\frac{1}{4}$-inch iron, with a T welded on the bottom end $1\frac{1}{4}$ inch wide, $\frac{1}{4}$ inch thick, $4\frac{1}{2}$ inches long, with one $\frac{11}{16}$-inch hole in each, 5 inches from the bottom end, slightly countersunk on both sides, with $\frac{1}{2}$-inch round iron link $9\frac{1}{2}$ inches long in the clear, with a 3-inch eye-bolt welded in the lower end to bolt through the brake-bar, 3 inches of the top end bent over the top rails and bolted to the top. Middle and bottom rails with three $\frac{3}{4}$-inch bolts, 4 feet 10 inches from the front end of the body; the top of the brake-bar to hang 3 feet $4\frac{1}{2}$ inches from the top of the body.

Lever bracket.—One lever bracket $5\frac{1}{2}$ inches long, $\frac{3}{8}$-inch round iron, with a $\frac{3}{8}$-inch collar welded on $3\frac{1}{2}$ inches from one end, with screw and nut to bolt through the center of the bed-piece or bottom rail, 17 inches from the front end of the body, with nut, washer, and screw on the outer end to take the lower end of the brake-lever.

[illegible] feet long, 1¼ by 7/16-inch iron, ¼-inch hole in the bottom end; with three 7/16-inch draw-rod holes 3 inches apart; the first one 10½ inches from the center of the bottom hole; the lever-catch 3½ inches long formed 20 inches from the center of it to the center of the bottom hole, a 2-inch eye on the top-end; the lever drawn down to 1 by 5/8 inch under the eye, and tapered back 15 inches; the top of the lever bent in an ogee shape 6 inches forward of a straight line.

Brake-ratchet, whole length 3 feet four inches, one piece, 2 by ¼-inch iron, 15 inches long, with 8 teeth, 1½ inches from center to center and 1 inch deep, welded to one piece of 1¼ by ⅜-inch iron, 11½ inches long, bent around edgewise 2½ inches from the front tooth on a circle of 2½ inches, on a parallel line with the ratchet side, then bent 4 inches of the end out edgewise at right angles; then bent the same 4 inches down square to fit the front stud on the body and bolted to it with two ⅜-inch bolts; then weld on the back end of the ratchet 15 inches of ½-inch round iron, and on the end of this weld a T 1 foot long, 1⅛ by 5/16-inch iron, 4 inches from the lower end of it. This T to have a hole in each end to fasten to the top and middle rails with two ⅜-inch bolts, a guard 21 inches long of ½-round iron to fasten to the ratchet on a parallel line 1½ inch from the teeth to keep the lever from whipping against the cover of the wagon; the outer edge of the teeth in the ratchet to stand out 4 inches clear of the body studs.

Draw-rods.—Two draw-rods 2 feet 7 inches long, ⅝-inch round iron, with slot clevis made of 1½ by ¼-inch iron on one end to fasten to the roller fulcrums with two ½-inch bolts; the front end to have screws cut 10 inches long, and to pass through the brake-bar, with a nut on each side of the bar, which will allow the bar to be let out or taken up as the blocks wear out.

Brake-rod to be ½-inch round iron, with clevis formed on each end of 1½ by ¼-inch iron, to connect the brake together with two ⅜-inch bolts.

Six bows, of good ash or oak, 2 inches wide and ½ inch thick, with three staples to confine the ridge-pole to its place; two staples on the body to secure each end of the bows; one ridge-pole 12 feet long, 1¼ inch wide by ⅝ inch thick; two rings on each end of the body to close and secure the ends of the cover; a staple in the lower rail, near the second stud from each end, to fasten the side cords; the cover to be of the first quality cotton duck, 10-oz., 28½ inches wide, army standard, cut 15 feet long and four widths of material, made in the best manner, with four hemp cords 30 inches long on each side and one through each end 13 feet long to close it at both ends. The outside of the body and feed-trough to have two good coats of white lead, colored to a blue tint; the inside of them to have two coats of Venetian red paint; the running-gear and wheels to have two good coats of Venetian red darkened to a chocolate color; the hub and felloes to be well pitched instead of painted, if required.

An extra *king-bolt* and two extra *single-trees* to be furnished with each wagon, the king-bolt and single-trees similar in all respects to those belonging to it.

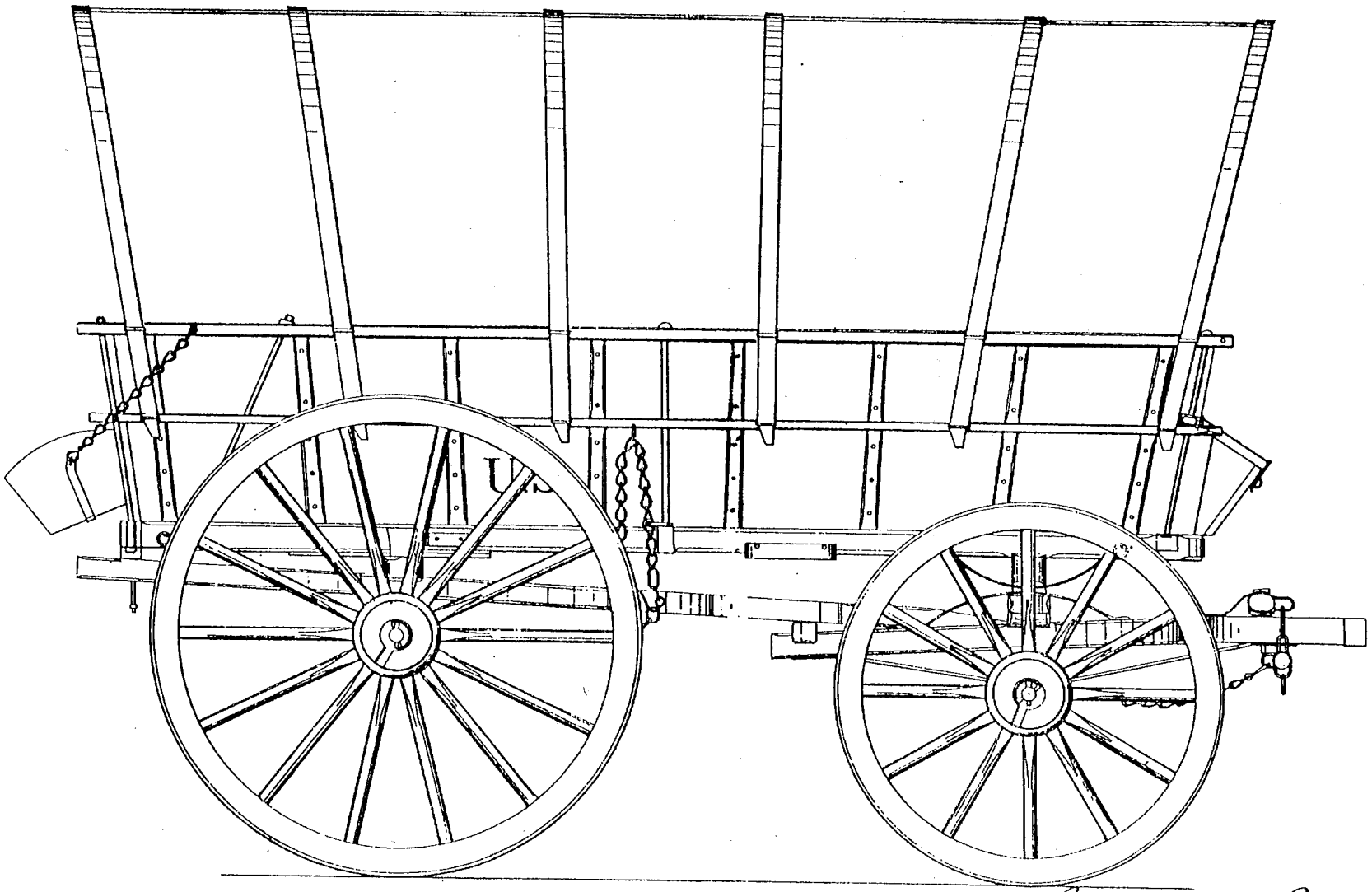
Each side of the body of the wagon to be marked U. S., and numbered as directed; all other parts to be lettered U. S.; the cover, feed-box, bolts, and linch-pins for each wagon to be put up in a strong box (coopered) and the contents marked thereon. Each wagon to be marked with the name and residence of the maker.

It is agreed and distinctly understood that the wagons are to be so constructed that the several parts of any one wagon will agree and exactly fit those of any other, so as to require no numbering or arranging for putting together, and all the materials used for their construction to be of the best quality, all the wood thoroughly seasoned, and the work in all its parts faithfully executed in the best workmanlike manner.

The work shall be inspected from time to time as it progresses by an officer or agent of the Quartermaster's Department, and none of it shall be painted until it shall have been inspected and approved by said officer or agent authorized to inspect it.

Weight of wagon about 1,950 pounds.

Plate. 1.

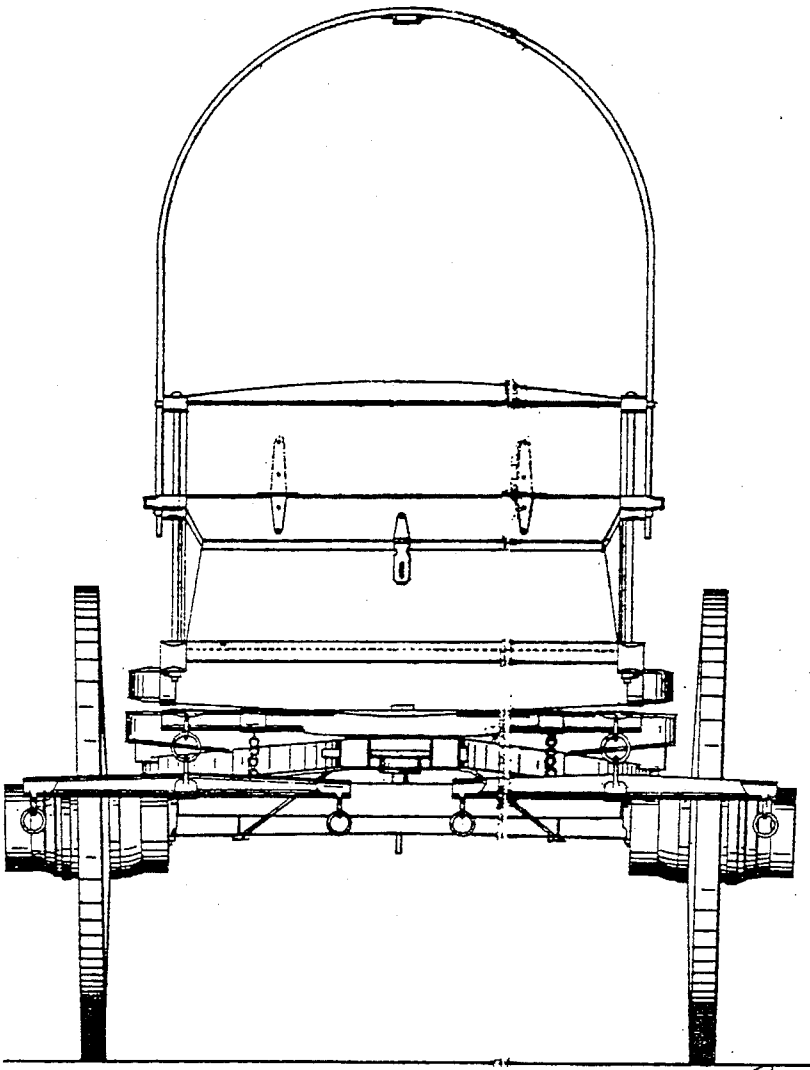


Side Elevation

Six Mule U.S. Army Wagon.

Quartermaster General
Brt Major General U.S.A.

Plate. 2.



Front Elevation

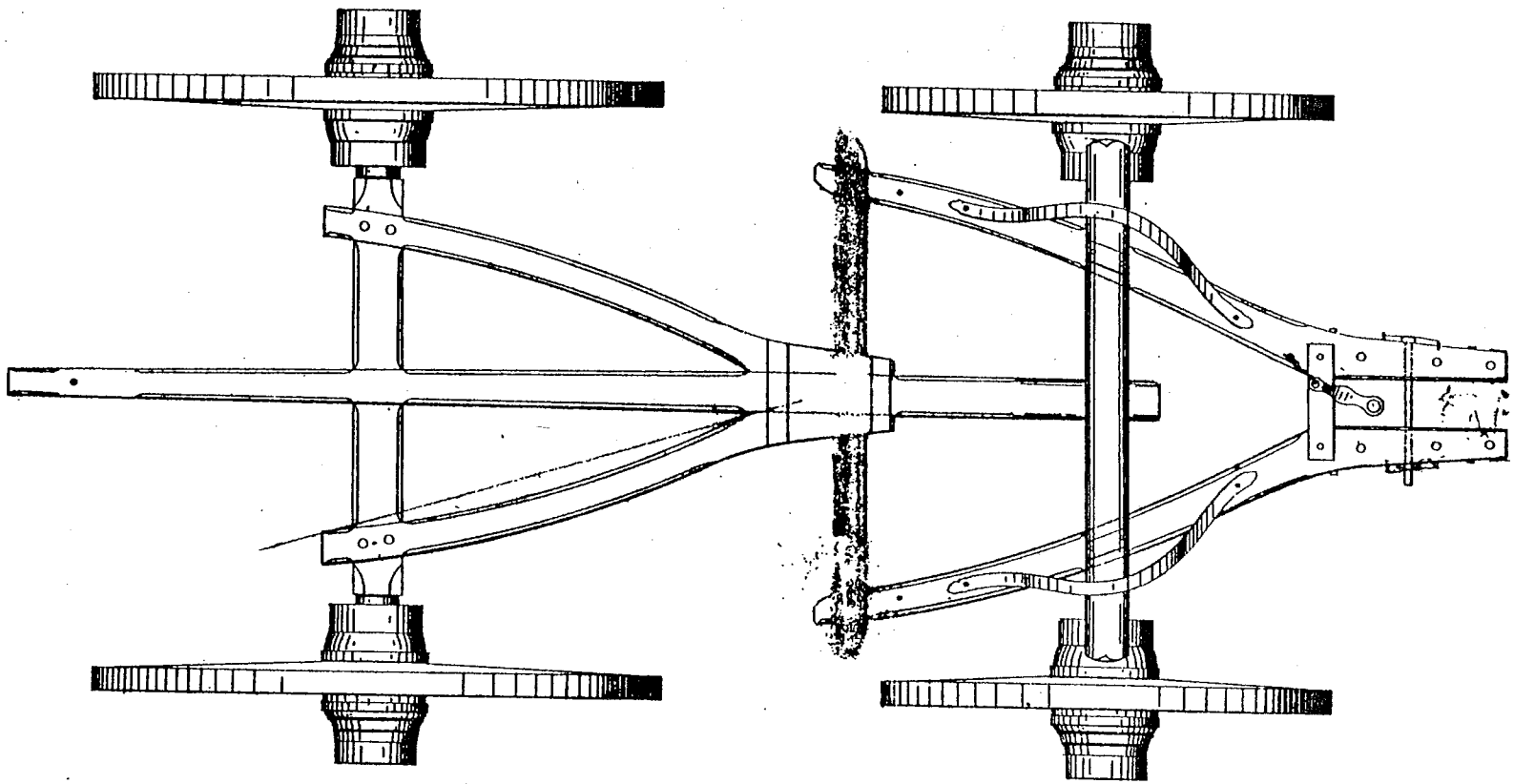
Six Mule U.S. Army Wagon.

Quartermaster General
Bvt. Major General U.S.A.

12" 6" 0 1 2 3 4 5 ft

J.H. Lunckes del.

Plate. 4.



Top View of Run[illegible]ar.

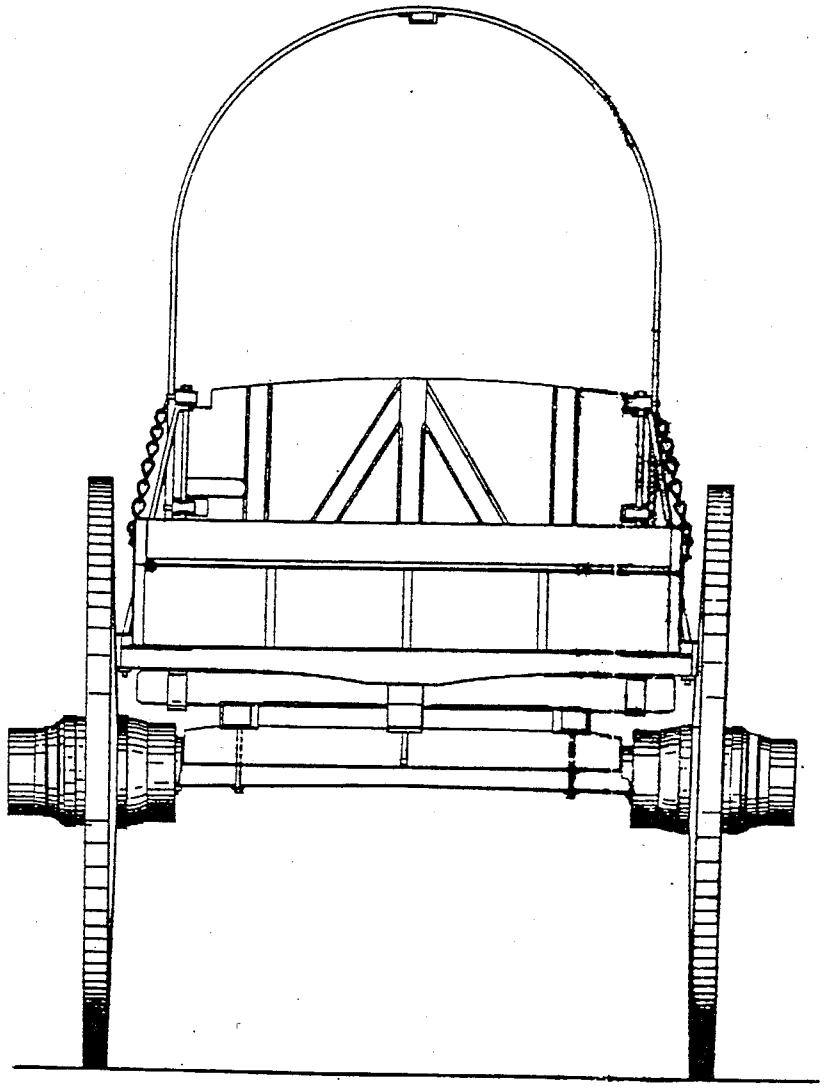
Six Mule U. S. Ar[illegible] Wagon

12 6 0 1 2 3 4 5 ft

M C Meigs

Quartermaster General
Bvt. Major General. U.S.A.

Plate. 5.



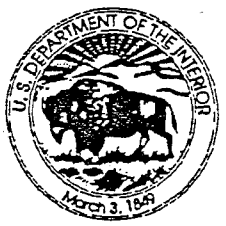
Rear Elevation

Six Mule U.S. Army Wagon.

Quartermaster General
Bvt. Major General U.S.A.

L.H. Zuncker del.

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.



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