

Slavery, Work, and the Geography of the North Carolina Naval Stores Industry, 1835–1860

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THE METHODS EMPLOYED IN HARVESTING TURPENTINE COMBINED WITH the geography of the southeastern North Carolina pine forests created special difficulties for mid-nineteenth-century naval stores producers and even more daunting challenges for their laborers. The expansion of naval stores production after 1830, the various procedures involved in harvesting turpentine, the size and location of the turpentine forests, and the ways that these three factors affected slave management practices created a unique “work and . . . manner of life” for laborers in the naval stores industry. Although nineteenth-century observers and twentieth-century historians have remarked that workers commonly preferred labor in turpentine forests to that in plantation fields, in fact, the labor force of the naval stores industry, which was composed predominantly of slaves, endured harsher working and living conditions than bondsmen on a typical agricultural plantation and, as a result, resisted their treatment. The experiences of laborers in the turpentine forests and camps therefore represent a unique facet of the slave experience.

An analysis of slave labor in the naval stores industry supports Ira Berlin and Philip D. Morgan’s argument that “the legacy of slavery cannot be understood without a full appreciation of the way in which slaves worked.”¹ These historians maintain that, because slavery was above all an institution of forced labor and slaves spent most of their time at work, studies that focus on slave families, religion, and culture while important, describe only a portion of the bondsman’s life. If

¹ William Parham to James R. Grist, May 1, 1854, James Redding Grist Papers (Special Collections Department, William R. Perkins Library, Duke University, Durham, N.C.) (quoted phrase in first paragraph); and Ira Berlin and Philip D. Morgan, “Labor and the Shaping of Slave Life in the Americas,” in Berlin and Morgan, eds., *Cultivation and Culture: Labor and the Shaping of Slave Life in the Americas* (Charlottesville and London, 1993), 3.

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work was the central component of the slaves' existence, it should become the center of scholarship on slavery. New studies, Berlin and Morgan argue, should examine the various labor requirements and the numerous and complex factors that shaped slave work and should consider "the requirements of particular crops and crafts, which shaped the nature of the workforce, the organization of production, and the division of labor." These factors should be studied in relation to the geography of the production site, the size of the slave labor force, the proportion of slaves, free blacks, and whites in the labor group, and the system of slave management used.²

Such an analysis reveals that the experiences of turpentine workers conform to Robert S. Starobin's generalized description of industrial slavery. Starobin finds that most industrial slaves were men, although some women and children also worked in this area. The majority of these workers lived not in large cities but in rural areas and small towns and on plantations. Generally these slaves were owned by their employer; only one-fifth were hired. But in extractive industries, such as turpentine making, an integrated workforce of owned and hired slaves and a few white laborers was common. Like agricultural slaves, industrial slaves were commonly managed by overseers or drivers, not their owners or employers.³ However, Starobin writes that "working conditions were usually worse than those for laborers engaged in southern farming, since industrial development often demanded longer and harder working days than did plantation agriculture."⁴ Starobin argues that "the tendency to drive industrial slaves to the utmost, and to feed, clothe, and shelter them at subsistence levels, as well as the inadequate medical knowledge of the time, contributed to a tragic incidence of disease and fatality in virtually all industrial occupations."⁵ "The rigors of bondage and the hazardous nature of southern industries," Starobin concludes, revealed that the conditions experienced by industrial slaves were very different from those of plantation laborers.⁶

Ronald L. Lewis and Charles B. Dew question Starobin's conclusion that industrial slavery was "the most brutal phase of the regime."⁷

² Berlin and Morgan, "Labor and the Shaping of Slave Life," 3.

³ Robert S. Starobin, *Industrial Slavery in the Old South* (New York, 1970), 11–12 and 138.

⁴ *Ibid.*, 36.

⁵ *Ibid.*, 63.

⁶ *Ibid.*, 37.

⁷ Ronald L. Lewis, *Coal, Iron, and Slaves: Industrial Slavery in Maryland and Virginia, 1715–1865* (Westport, Conn., and London, 1979), 8.

Dew, who studied slaves in the iron foundries in Virginia, and Lewis, who examined slave labor in the coal and iron industry in Virginia and Maryland, argue that Starobin's generalizations do not apply to life and labor at the forge. Lewis shows how these industrial slaves challenged their masters' authority and consequently improved their quality of life by negotiating extra rations, gaining more autonomy, and receiving payment for work performed beyond their normal tasks. Similarly, Dew's work, especially his *Bond of Iron*, demonstrates that in iron manufacturing the slaves' skill and determination, combined with southern iron producers' desire to maintain an appeased, and thus more reliable, labor force, created a middle ground in which those in bondage could exercise some control over their working conditions, family affairs, and livelihoods.⁸ Lewis and Dew convincingly substantiate their conclusions about iron manufacturing and coal mining; these findings may be valid for cotton mills, salt works, and the chemical industry as well. But they do not hold entirely true for the naval stores industry, an enterprise that operated in isolated forests and was less "industrial" than iron manufacturing.

Scholars have different ideas about whether naval stores production was an industry or an unusual form of agriculture.⁹ The schedule and methods of harvesting raw turpentine resembled an agricultural practice, but the techniques for refining this material more closely compared to those of an industry. The naval stores production first demanded multiple and systematic sweeps through pine forests to prepare trees for the collection of raw turpentine and to keep the resin flowing during the harvest season, just as agricultural fields required

⁸ *Ibid.*; and Charles B. Dew, *Bond of Iron: Master and Slave at Buffalo Forge* (New York and London, 1994). See also Charles B. Dew, "David Ross and the Oxford Iron Works: A Study of Industrial Slavery in the Early Nineteenth-Century South," *William and Mary Quarterly*, 3d. Ser., XXXI (April 1974), 189–224; Dew, "Disciplining Slave Ironworkers in the Antebellum South: Coercion, Conciliation, and Accommodation," *American Historical Review*, LXXIX (April 1974), 393–418; and Dew, "Sam Williams, Forgemaster: The Life of an Industrial Slave in the Old South," in J. Morgan Kousser and James M. McPherson, eds., *Region, Race, and Reconstruction: Essays in Honor of C. Vann Woodward* (New York and Oxford, 1982), 199–239.

⁹ This ambiguity is evident in the *Encyclopedia of Southern Culture's* treatment of naval stores. In this work Percival Perry's article "Naval Stores" is included in the section on agriculture; however, the topic is also considered in the section dealing with industry in Ronald L. Lewis's article "Antebellum Industry" and in Thomas F. Armstrong's "Timber Industry." This situation may be explained by southern industry's having developed from agriculture and having remained closely linked to it. The industry of the antebellum South consisted primarily of processing agricultural crops and extracting products such as naval stores. Charles Reagan Wilson and William Ferris, eds., *Encyclopedia of Southern Culture* (Chapel Hill and London, 1989), s.v. "Naval Stores" by Percival Perry, 39–40, "Antebellum Industry" by Ronald L. Lewis, 721–22, and "Timber Industry" by Thomas F. Armstrong, 753; Starobin, *Industrial Slavery*, 10; and Peter Kolchin, *American Slavery, 1619–1877* (New York, 1993), 176.

periodic trips through them for plowing, planting, and hoeing. Moreover, the harvest of raw turpentine involved several operations on the same tree each season, just as tobacco harvests involve picking leaves from the same stalk at different times. However, some tasks performed on each tree required skill, precision, and strength. Moreover, naval stores production also required a complicated distilling process to refine the raw turpentine. A turpentine enterprise, therefore, in some ways resembled a sugar plantation. In her analysis of slave use in the mid-nineteenth-century Cuban sugar industry Rebecca J. Scott explains that mills “were integrated units, combining the growing of cane and the manufacture of sugar from its juice. Work on a sugar plantation involved elements of both field and factory but differed from other forms of agricultural and industrial work.”¹⁰ Like raw turpentine or resin, which had to be collected and distilled, sugar cane had to be cut, gathered, and hauled to the sugar house where it was processed. As with sugar production described by Roderick A. McDonald and J. Carlyle Sitterson, naval stores manufacturing had an “industrial” phase, which employed a minority of the total number of laborers involved in the enterprise. Most laborers worked in the “agricultural” sector of the operation.¹¹ Therefore, while slaves who labored at turpentine distilleries and perhaps also sugar mill workers may have had experiences similar to those of skilled slaves who worked at iron forges, the lives of naval stores laborers generally resembled those of agricultural bondsmen. If anywhere an understanding of slavery is dependent on an examination of “particular crops and crafts,” as Berlin and Morgan suggest, it is with the naval stores industry. To begin to understand the “work and . . . manner of life in making turpentine,” however, it is necessary first to learn what naval stores are and how the industry evolved.

Since ancient times, naval stores have been vital commodities for shipbuilding. Originally defined to include hemp, flax, masts, spars, planking, tar, and pitch, the term “naval stores” by 1800 referred only to tar, raw turpentine, and their derivatives—spirits of turpentine, rosin, and pitch. Tar, produced by firing pine branches and logs in slow-burning kilns, and pitch, made by boiling tar, were used primar-

¹⁰ Rebecca J. Scott, *Slave Emancipation in Cuba: The Transition to Free Labor, 1860–1899* (Princeton, 1985), 24.

¹¹ Roderick A. McDonald, *The Economy and Material Culture of Slaves: Goods and Chattels on the Sugar Plantations of Jamaica and Louisiana* (Baton Rouge and London, 1993), 11–14; J. Carlyle Sitterson, *Sugar Country: The Cane Sugar Industry in the South, 1753–1950* (Lexington, 1953), 134–44; Scott, *Slave Emancipation in Cuba*, 28; and “List of Negroes Belonging to Mr. John W. Grist,” 1860, Grist Papers.

ily for nautical purposes. Tar was applied to ropes (or rigging) on sailing vessels to reduce their decay; pitch was painted on the sides and bottoms of wooden ships to prevent leakage. Raw turpentine, also known as resin or gum, is the sap of conifer trees. Before the early nineteenth century, spirits of turpentine, distilled resin, had only minor uses. It was employed for medicinal purposes, as an external rub, a laxative, and a flea repellent, and also as a waterproofing application for leather and cloth. Rosin, not to be confused with resin, is the residue that remained in the still after the raw turpentine finished distilling. Like spirits, it had few uses.¹²

Between 1805 and 1830 a gradual shift in production emphasis occurred within the naval stores industry. Tar and pitch production declined, while the harvesting of crude turpentine and the manufacture of spirits of turpentine increased in response to various new sources of demand. The rubber industry, which used spirits of turpentine as a solvent, grew rapidly. In addition, soap manufacturers found that rosin of reasonable quality, when added to strong lye, was an economical ingredient in their product. The greatest demand, however, came from consumers of camphene. This popular illuminant, also known as camphine, Teveline, and palmetto oil, was a mixture of turpentine and alcohol and became widely used beginning in the 1830s. Until 1860, when the large-scale production of kerosene was developed in Pennsylvania, camphene remained the cheapest form of lighting and burned in homes and hotels and along city streets, including those in the nation's capital.¹³

Reacting to these new sources of demand, the naval stores industry expanded rapidly in the 1840s and 1850s. North Carolina led the nation in production. In 1840 the state made 95.9 percent of the naval stores produced in the United States. According to an 1847 *De Bow's Review* report, the state annually produced 800,000 barrels of turpentine with an estimated market value of \$1,700,000 to \$2,000,000. This report also indicated that the turpentine industry employed four to five

¹² Michael Williams, *Americans and Their Forests: A Historical Geography* (Cambridge, Eng., and other cities, 1989), 83; Sinclair Snow, "Naval Stores in Colonial Virginia," *Virginia Magazine of History and Biography*, LXXII (January 1964), 75; Percival Perry, "The Naval-Stores Industry in the Old South, 1790–1860," *Journal of Southern History*, XXXIV (November 1968), 511; F. André Michaux, *The North American Sylva, or a Description of the Forest Trees of the United States, Canada and Nova Scotia . . .*, translated by Augustus L. Hillhouse. Vol. III (Paris, 1819), 139–43; G. Melvin Herndon, "Naval Stores in Colonial Georgia," *Georgia Historical Quarterly*, LII (December 1968), 426; and Thomas Gamble, comp., *Naval Stores: History, Production, Distribution and Consumption* (Savannah, 1921), 29–30.

¹³ Perry, "Naval-Stores Industry," 512–14; Williams, *Americans and Their Forests*, 158; and "The Southern Pine Forests—Turpentine," *De Bow's Review*, XVIII (February 1855), 191.

thousand laborers and operated 150 stills. By the late 1850s naval stores had become “the South’s third largest export crop . . . exceeded only by cotton and tobacco.” Production in North Carolina continued to increase, and by 1860 the state produced 96.7 percent of the naval stores in the United States. The total value of crude and distilled turpentine made in the state was \$5,311,420. In 1850 the United States Census listed 444 North Carolina tar and turpentine makers; by 1860 it listed 1,114.¹⁴

During these years, naval stores production was concentrated almost exclusively in the southeastern quarter of the state. Although during the first decades of the eighteenth century the industry had developed in southeastern North Carolina and northeastern South Carolina, after 1730 it migrated northward to the Albemarle Sound area. During the nineteenth century, production shifted once again, this time south to the Cape Fear valley, which became the center of the antebellum industry. The Albemarle Sound area—an active production region during the eighteenth century—had a number of longleaf pines, which are the best trees from which to harvest resin, but stands of these pines grew thickest in the southern half of the state. The longleaf pine prefers the dry, sandy clay subsoils found in southeastern North Carolina. Here, the 1,500-mile-long pine belt begins in earnest and stretches through South Carolina, Georgia, Florida, southern Alabama and Mississippi, and portions of Louisiana and east Texas. As North Carolinians moved southwest to settlements along tributaries of Pamlico Sound, they found the new area more suitable for naval stores production. Soon, naval stores from as far north as Edgecombe and Nash Counties were coming by raft down the Tar River to Washington, North Carolina, and from areas further south down the Neuse River to New Bern. By 1846 Washington had seven distilleries with a total of fifteen stills requiring 600 barrels of crude turpentine a day. In that year the town exported 238,340 barrels of naval stores with a value of \$643,738. The trees south of the Cape Fear River, ignored by planters for more than a century, were retapped during the late 1830s. The industry developed and spread rapidly throughout the 1840s and swept up the river in the 1850s into Cumberland and Harnett Counties. The Cape Fear was an invaluable waterway, flowing through the

¹⁴ Lewis Cecil Gray, *History of Agriculture in the Southern United States to 1860* (New York: 1941), 936; Perry, “Naval-Stores Industry,” 515, 524, and 525 (quotation); Williams, *Americans and Their Forests*, 160; “The Turpentine Business,” *De Bow’s Review*, IV (October 1847), 257; U.S. Department of Commerce, *The Seventh Census of the United States: 1850* (Washington, 1853), 318; and U.S. Department of Commerce, *Population of the United States in 1860* (Washington, 1864), 363.

heart of the longleaf pine country and on to Wilmington. Although New Bern and Washington remained significant naval stores trading centers, by the early 1850s Wilmington was the most important port for these products.¹⁵

Improved transportation methods, especially the railroad, also directed the naval stores trade toward Wilmington and aided in the industry's expansion. By November 1838 a 64-mile track ran from Wilmington, along the bank of the Cape Fear River, and northeast into Duplin County. The Wilmington and Weldon Railroad was finished in 1840 and ran through the center of the longleaf pine forest. In 1856 the North Carolina Railroad, running from Goldsboro to Charlotte, provided transportation to the interior forests. It offered farmers a quick, safe, convenient, and relatively inexpensive means of getting their product to market. These railroads permitted producers to expand their operations beyond immediate water routes, and the value of land close to depots soared. Another transportation improvement, a plank road called the "Appian Way," was completed in 1854 and stretched 129 miles from Fayetteville west to Bethania in Forsyth County. It aided overland transportation from the interior (west to east); the Wilmington to Weldon Railroad served the needs of the Carolina coastal plain (north to south).¹⁶

Technological advances also aided naval stores expansion. In 1834 the adaptation of the copper still by the industry brought revolutionary changes to turpentine operations, changes not unlike those that the cotton gin brought to plantation cotton farming. Lighter, more portable copper stills, patterned after those used by scotch whiskey distilleries, freed raw turpentine producers from their reliance on heavy iron stills and permitted distillation operations to be carried out where the turpentine was harvested, which in turn eased transportation and reduced costs. No longer required to haul heavy barrels of raw turpentine to port, producers could save money by shipping the

¹⁵ Harry Roy Merrens, *Colonial North Carolina in the Eighteenth Century: A Study in Historical Geography* (Chapel Hill, 1964), 91; Kenneth B. Pomeroy and James G. Yoho, *North Carolina Lands: Ownership, Use, and Management of Forest and Related Land* (Washington, 1964), 15; W. W. Ashe, *The Forests, Forest Lands, and Forest Products of Eastern North Carolina* (Raleigh, 1894), 74 and 76; Ann Sutton and Myron Sutton, *The Audubon Society Nature Guides. Eastern Forests* (New York, 1985), 110–12; Williams, *Americans and Their Forests*, Figure 2.5, p. 31; Frederick Law Olmsted, *A Journey in the Seaboard Slave States* (New York, 1856), 338; John MacLeod, "The Tar and Turpentine Business of North Carolina," *Monthly Journal of Agriculture*, II (July 1846), 13; "Trade of Washington," *Tarboro (N.C.) Press*, January 21, 1846; and Perry, "Naval-Stores Industry," 519.

¹⁶ William S. Powell, *North Carolina Through Four Centuries* (Chapel Hill and London, 1989), 286–90; Perry, "Naval-Stores Industry," 515 and 520; and Ashe, *Forests, Forest Lands, and Forest Products*, 76–77.

lighter, more valuable barrels of spirits of turpentine and transporting rosin only when its price was high enough to bring a profit. Since the industry was no longer limited to areas adjacent to navigable water, where it had once been confined, its range of operation was extended.¹⁷ These new technological and market advantages attracted producers, who put their laborers to the difficult and heavy tasks of turpentine production.

Turpentine procedures relied on the structure and seasonal cycles of the pine tree. The trunk of this tree contains a system of minute horizontal and vertical intercellular tube-like spaces known as resin canals or ducts. When the tree reaches maturity, these passages become lined with a tissue, epithelium, from which resin (raw turpentine) is secreted. This resin flows only when the weather is warm, beginning about mid-March, increasing to its peak around July and August, and tapering off near the first of November or with the initial frost.¹⁸

Beginning in November and ending around the first of March, workers performed the first and most important procedure, *boxing*. Using a special axe with an elongated head, workers cut a hole or box, eight to fifteen inches wide and three to four inches deep, at the base of a pine tree trunk. The boxes were cut down at an angle and could hold one to two quarts of raw turpentine. Strong men could be trained to become adequate boxers in several days, and the amount of work performed by box cutters varied with the skill of the worker and the demands of the producer and overseer. All agreed that new hands could not cut as many boxes as experienced ones and that driving them to do so would result in low-quality boxes and inadequate yield from the orchard.¹⁹ Those planning to enter the business were advised that “beginners will not cut at first more than 50 boxes a day, and there is nothing gained by tasking them too high, until they have got well used to the proper shape and size of boxes.”²⁰ An experienced laborer

¹⁷ John Drew, “The Early Days of the Naval Stores Industry,” *Naval Stores Review*, XCI (November–December 1981), 16; Stephen J. Pyne, *Fire in America: A Cultural History of Wildland and Rural Fire* (Princeton, 1982), 149; Charles H. Herty, “The Turpentine Industry in the Southern States,” *Journal of the Franklin Institute*, CLXXXI (March 1916), 341; Pomeroy and Yoho, *North Carolina Lands*, 14; and Ashe, *Forests, Forest Lands, and Forest Products*, 76.

¹⁸ A. J. Panshin *et al.*, *Forest Products: Their Sources, Production and Utilization* (New York, 1962), 439–40; and Michaux, *North American Sylva*, III, 139.

¹⁹ “Turpentine: Hints for Those About to Engage in its Manufacture,” *De Bow’s Review*, XIX (October 1855), 486; Guion Griffis Johnson, *Ante-Bellum North Carolina: A Social History* (Chapel Hill, 1937), 487; “Production of Turpentine in Alabama,” *De Bow’s Review*, VII (December 1849), 560–61; and “Product of Turpentine at the South,” *ibid.*, XI (September 1851), 303.

²⁰ “Turpentine: Hints for Those About to Engage in its Manufacture,” 486.

was expected to cut 75 to 80 boxes a day or 450 to 500 a week. However, exceptional workers could cut 90 to 100 a day. One producer boasted that his best boxers had been known to cut 125 a day.²¹

The number of boxes cut in a day also depended on the number of daylight hours. As days grew longer, workers were usually expected to cut more boxes. The size of the pines and their distance from each other also determined the hand's task. Because larger trees could support more than one box, laborers could spend more time cutting and less time walking from tree to tree. The distance of the trees from one another also influenced walking time. If trees grew far apart, workers spent a larger portion of their time walking to them. These factors also influenced the other operations in naval stores production.²²

Laborers had to use care when cutting boxes. First they decided the number of boxes to cut into the pine, which depended on the tree's size. Pines less than one foot in diameter could not support a box as readily as larger trees could. If these smaller ones were to be tapped, they could have only one small box because a full quart-size box would cause the tree to fall or to decay prematurely. The width of the box depended on the size of the tree; larger trees could support larger boxes, and trees of great size could support multiple boxes, sometimes as many as three. In such cases the ideal placement of the boxes was side by side with four inches of bark between them and a third or more of the tree's face left uncut for its support. In no case could the box extend into the heart of the tree.²³

Second, workers had to adapt boxing methods to their employer's particular specifications. Some producers preferred the boxes cut at the swell of the root so they would remain safely away from the heart. For smaller trees the box began six to eight inches from the ground and for larger trees ten to twelve inches from the ground. Other producers found boxes cut as high as eighteen inches from the ground more beneficial. Although increasing the risk that the heart of the tree

²¹ Johnson, *Ante-Bellum North Carolina*, 487; "Turpentine: Hints for Those About to Engage in its Manufacture," 486; MacLeod, "Tar and Turpentine Business of North Carolina," 14; "Product of Turpentine at the South," 303; "Production of Turpentine in Alabama," 561; "The Manufacture of Turpentine in the South," *De Bow's Review*, VIII (May 1850), 452; "The Pine Forests of the South," *De Bow's Review*, After the War Series, III (February 1867), 196; and James Battle Avirett, *The Old Plantation: How We Lived in Great House and Cabin Before the War* (New York, Chicago, and London, 1901), 67.

²² Professor Percival Perry of Wake Forest University, interview by author, Winston-Salem, N.C., April 9, 1991 (notes in author's possession).

²³ "Turpentine: Hints for Those About to Engage in its Manufacture," 486; "Turpentine: Product of the South," *De Bow's Review*, XVIII (January 1855), 61; "Production of Turpentine in Alabama," 561; MacLeod, "Tar and Turpentine Business of North Carolina," 14; and "Pine Forests of the South," 196.

might be cut, putting the box farther off the ground insured against rain washing into it. Boxes that sat damp during the winter months could cause disease and decay at the tree's base.

The position of the box also depended on the configuration of the tree. If a tree leaned, the best location for the box was on the side opposite the direction of the lean. Not only did this side generally have the most prominent root, but it was also the only position that guaranteed a sufficient amount of raw turpentine would reach the box. If a box was located anywhere else on such a tree, the gum would fall outside the box in increasing amounts as the scarred face moved up the trunk with every harvest season. When the shape of the tree permitted, producers found that placing boxes on the north side was beneficial. This protected gum in the the box from evaporation caused by the sun's heat and ensured a higher grade of gum, which would produce more spirits.²⁴

After the boxes were cut they had to be *cornered*. This task, usually performed around the first of March with an ordinary axe, involved removing a one-inch triangular chip from the top two corners of the box. Each corner could usually be cut with two strokes. One gash rose diagonally from the apex of the box and the other rose perpendicularly from the corner of the box. The axe cuts had to be precise, because the angle of the corners guided the gum into the box. While some producers calculated that workers should corner 500 to 600 boxes a day, others reckoned the task at 600 to 800 boxes.²⁵

Once they had been cornered, the boxes began to fill with gum and had to be *dipped* four to seven times each season. This operation utilized a *dipper*, an instrument with a spade-shaped blade and a handle. The harvester collected gum by thrusting the dipper into one end of the box, pushing it to the bottom, and bringing it up to the opposite side—all in one quick motion. The sticky contents of the box adhered to the flat surface of the dipper. Although this was a light task requiring little physical strength, it was a dirty operation that smeared the workers' hands and clothing with gum.²⁶

²⁴ "Manufacture of Turpentine in the South," 452–53; "Turpentine: Hints for Those About to Engage in its Manufacture," 486; and A. W. Schorger and H. S. Betts, *The Naval Stores Industry* (Washington, D.C., 1915), 16.

²⁵ MacLeod, "Tar and Turpentine Business of North Carolina," 14; Schorger and Betts, *Naval Stores Industry*, 16; "Product of Turpentine at the South," 303; and "Turpentine: Hints for Those About to Engage in its Manufacture," 486.

²⁶ MacLeod, "Tar and Turpentine Business of North Carolina," 14; "Turpentine: Hints for Those About to Engage in its Manufacture," 486–87; "Product of Turpentine at the South," 303–4; Schorger and Betts, *Naval Stores Industry*, 17; and "Pine Forests of the South," 197.

The dippers' task depended on the age of the boxes. Because newer boxes produced more gum than older ones, more time was required for emptying the buckets and fewer boxes could be dipped.²⁷ Workers could manage dipping 10,000 to 12,000 older boxes and perhaps as few as 8,000 new ones a week. Like boxing, the size of the task varied with the individual producer. While some found 1,800 boxes a day sufficient, others apparently tasked their laborers as high as 3,000. Workers could be expected to fill from four to seven barrels with raw turpentine a day. Truly exceptional dippers could fill ten. While the average hand produced 175 to 225 barrels a season, the best could fill 300.²⁸

A pine would bleed only as long as its wound was fresh. Within seven or eight days the gum crystalized at the opening of the wounded resin ducts, and so fresh wounds were required about once a week.²⁹ *Chipping*, as this operation was called, was done with a *hacker* or *shave*, a circular piece of iron with a sharp lower edge and a two-foot handle. It involved cutting the bark away just above the box and extending the cut to the corners or outer edges of the box. Each new chip, located just above the last one, extended the face of the box upwards after each task. With each stroke, the chipper cut a one-fourth inch furrow-like gash through the bark and into the sapwood. A narrow scar, one-half inch up the surface, could emit just as much gum as a broader one and lengthened the tree's years of productivity. Because each chip was cut at the upper edge of the last one, the oldest orchards contained trees with faces extending up twelve to fifteen feet. Producers sought well-trained workers for the task since the skill of the chippers determined how many years an orchard could be harvested. If the gashes were too deep, the tree's life was shortened; if the cut was too

²⁷ Other factors could affect the dipping. In 1855 *De Bow's Review* reported that "An early or backward spring or fall, long drouths, during which the tree almost stops running, or heavy driving rains which fill the boxes with water and float out the turpentine, all have their effect on the number of drippings [*sic*], which depends otherwise on the frequency and care with which chipping is done." "Turpentine: Hints for those About to Engage in its Manufacture," 487.

²⁸ Michaux estimated that three thousand trees could yield seventy-five barrels of raw turpentine and twenty-five of scrape a season if they were dipped five to six times. Michaux, *North American Sylva*, III, 141; "Pine Forests of the South," 197; Johnson, *Ante-Bellum North Carolina*, 488; William Kauffman Scarborough, ed., *The Diary of Edmund Ruffin*, Vol. I: *Toward Independence, October, 1856-April, 1861* (Baton Rouge, 1972), 52; MacLeod, "Tar and Turpentine Business in North Carolina," 14-15; "Turpentine: Hints for Those About to Engage in its Manufacture," 487; and "Turpentine," *Southern Cultivator*, IV (November 1846), 172.

²⁹ In fact, 67 percent of the total resin flow occurs within twenty-four hours of the cut and tapers off sharply afterwards. Nelson Courtlandt Brown, *Forest Products: The Harvesting, Processing, and Marketing of Materials Other than Lumber, Including the Principal Derivatives, Extractives and Incidental Products in the United States and Canada* (New York, 1950), 184.

broad, the face would soon rise out of reach and the tree could no longer be harvested. Moreover, producers required that this difficult task be executed with considerable speed. Although some producers calculated that chipping 800 to 1,000 faces a day for average laborers and 1,200 to 1,500 for better workers was standard, others found that 12,000 to 17,000 faces a week were possible for the average chipper. A few extraordinary laborers were reported to have chipped 20,000 faces a week.³⁰

The season's last chipping occurred in mid-October and the last dipping around the first of November. After this, *scraping* began. *Scrape* was gum that had hardened to the face, lost much of its spirits in evaporation, and was therefore only half as valuable as liquid gum. Workers used a small blade attached to a long handle to dislodge scrape from the face. They then gathered it in a specially designed box. When collecting scrape, laborers would drag or roll these boxes through the forest, lean the open end against the tree, just below the face, and pull the scrape down into them. Each box held 100 to 150 pounds of scrape. After the boxes were full of scrape, it was transferred into rosin barrels, pounded in, and hauled to the still. Scrape collecting was usually completed around December or January.³¹

When the boxes stopped filling and the scrape had been collected, the turpentine laborers' work was still not finished. If new pine forests were to be opened for the next season, the strongest and most skilled laborers began cutting boxes immediately. The laborers who were not boxing cleared grass, pine straw, and tree limbs from the bases of trees and burned the debris. Still others collected the timber needed to make the barrels for the next season.³² In 1851 *De Bow's Review* reported that, "like the engagements of a farm-hand, in always finding something needful to be done in every day of the year, and something that should not be neglected; so with the turpentine hand, the whole year

³⁰ Ruffin, "Notes of a Steam Journey," *Farmers' Register*, VIII (April 30, 1840), 251; "Product of Turpentine at the South," 304; "Manufacture of Turpentine in the South," 453-54; Nollie Hickman, *Mississippi Harvest: Lumbering in the Longleaf Pine Belt, 1840-1915* (University, Miss., 1962), 123-24; "Turpentine: Hints for Those About to Engage in Its Manufacture," 487; MacLeod, "Tar and Turpentine Business of North Carolina," 15; Olmsted, *Journey in the Seaboard Slave States*, 342; Avirett, *Old Plantation*, 67-68; and Schorger and Betts, *Naval Stores Industry*, 17.

³¹ MacLeod, "Tar and Turpentine Business of North Carolina," 15; "Manufacture of Turpentine in the South," 453; "Product of Turpentine at the South," 304-5; Ruffin, "Notes of a Steam Journey," 251; and Schorger and Betts, *Naval Stores Industry*, 18.

³² Benjamin Grist to Allen Grist, January 21, 1851, Grist Papers; and "Turpentine: Hints for Those About to Engage in its Manufacture," 488.

has its various demands upon him in their proper season, so that there is no time to spare from his turpentine crop.”³³ Similarly, in 1846 a producer writing from Wilmington noted that “the hands who tend turpentine have no time for any other business.”³⁴ If the turpentine production was part of the operation of a traditional agricultural plantation, some laborers were used for work unrelated to turpentine. Joining the field hands, turpentine laborers sometimes opened ditches, cleared new ground, trimmed hedgerows, mended fences, and repaired roads. James Battle Avirett, whose father owned Richlands Plantation in Onslow County, wrote that only “by joining these two industries, the orchards and the plantation,” could the plantation be maintained.³⁵

Certainly, distillers, who were the most highly skilled turpentine workers, were too busy for such tasks. To insure a high-quality product, they distilled the gum and scrape as quickly as possible. Stills were located near streams, which provided water to cool the condensing tube, or *worm*, the long, coiled tube in which the spirits of turpentine were transformed into a liquid. Distilleries were often two-story structures. A wood or oil furnace was at ground-level, and a copper still sat above it on the second floor. Although these stills ranged in capacity from five to thirty barrels, Frederick Law Olmsted calculated that the average was ten barrels. To *charge* or fill them, barrels were brought to the second floor, often by rolling them up a ramp, and the distiller removed the head of the still and dumped in the gum. He then replaced the head, connected it to the condensing tube, and put the tube in its tank to cool while the turpentine distilled. When everything was ready, the furnace was fired. Generally the distilling process lasted two or two and one-half hours.³⁶

Because antebellum producers had not learned to add water, which would have aided the distilling process, distillers had to cope with serious difficulties. In the absence of water, raw turpentine, which is 75 percent rosin and 25 percent spirits, does not boil until it reaches 363°F. However, rosin begins to decompose when it reaches 392°F.

³³ “Product of Turpentine at the South,” 305.

³⁴ “Turpentine,” *Southern Cultivator*, IV, 172.

³⁵ Avirett, *Old Plantation*, 68–69 (quotation on p. 69).

³⁶ Olmsted, *Journey in the Seaboard Slave States*, 344; “Production of Turpentine in Alabama,” 561; and “Interview With Fitzhugh Lee Tatum,” by Ruth L. Stokes, October 19, 1974, transcript (Southern Historical Collection, Wilson Library, University of North Carolina at Chapel Hill), 1. Although Tatum is describing experiences at a pinewoods distillery in the early twentieth century, the still was the same as those used in the antebellum era. Panshin *et al.*, *Forest Products*, 453; and Schorger and Betts, *Naval Stores Industry*, 29.

coloring the spirits yellow and thus lowering the quality. Therefore, the distiller had a margin of safety of only 29°F. Making his task even more challenging is the property of resin that causes its temperature to rise rapidly as it distills. Only rarely, then, was more than a portion of the turpentine distilled before the rosin began to decompose. Because the temperature of the rosin was critical in the process, distillers needed to know exactly when to extinguish the furnace; but the stills had no gauges, and workers had to rely on other methods to monitor the progress of the gum. One was to collect the distilled emissions from the worm in a clear drinking glass and then examine the proportion of water and turpentine. (Gum releases water as it distills.) A second method was for the distiller to place his ear against the lower end of the worm where he could hear the gum boiling. An experienced worker could determine from the sounds what stage the gum had reached.

Workers who could perform this complicated distilling process were scarce. A white distiller earned up to \$600 a year, a large sum when compared to the usual overseer's annual wages of \$300. A hired slave distiller was generally more expensive than a less-skilled turpentine worker. Evidence suggests that head distillers were usually white, although their assistants were likely to be skilled slaves. As the naval stores industry grew during the 1840s and 1850s, distillers became harder to find, and producers advertised for their services. Some producers even attempted to train their own slaves.

The distillation of gum resulted in two products: rosin and spirits of turpentine. During distillation a mixture of 90 to 95 percent spirits of turpentine and 5 to 10 percent water flowed from the worm into a fifty-gallon barrel. Because turpentine is lighter than water, it floated to the top where it could run off into another barrel or be dipped off. Rosin remained in the still. When the distilling of a charge was completed, the rosin was drained from the still through a gate at the bottom. It flowed through a series of screens, which filtered out wood chips, dirt, and other foreign matter, and into a cooling vat. If the hot liquid rosin did not cool and become more viscous before it was put into barrels, considerable loss could occur through leakage. After the liquid had cooled sufficiently it was dipped into barrels for shipment.³⁷

³⁷ Schorger and Betts, *Naval Stores Industry*, 12–14 and 30–31; Panshin *et al.*, *Forest Products*, 453; Tatum interview, 1 and 4; Hickman, *Mississippi Harvest*, 126; Olmsted, *Journey in the Seaboard Slave States*, 345–46; "Production of Turpentine in Alabama," 561; Percival Perry, "The Naval Stores Industry in the Ante-Bellum South, 1789–1861" (Ph.D. dissertation, Duke University, 1947), 45; and "Notice," *New Bern (N.C.) Newbernian*, January 6, 1852.

A large number of barrels were used to ship naval stores, and therefore coopers were vitally important to the industry: as a general rule, every fifth man in a naval stores operation was a cooper. Unlike distillers, most coopers in the turpentine industry were slaves. They were in constant demand and were among the more expensive turpentine laborers. Coopers worked all year. They constructed barrels during harvest season, and during the off season they collected timber for the next year's staves. Barrels for rosin were cheaply made with loose pine staves, and because craftsmanship was not important, a cooper could make eight to ten of these barrels in a day. Raw turpentine barrels, though, were more carefully constructed. With a forty-gallon capacity, these barrels were made from good pine staves and fastened with six light iron hoops. Spirits of turpentine barrels usually held forty to forty-five gallons and were also built with great precision. They were made of well-seasoned white oak staves and were tightly looped with strong iron hoops. To protect against leakage, these barrels were given a coat of glue, and the exteriors were thickly varnished or painted. While ordinary coopers could be trusted to make rosin and gum barrels, only expert coopers could make spirit barrels, which normally required half a day to assemble.³⁸

Although not as important as the turpentine industry during this period, tar production continued in the antebellum years. Tar was produced by two different methods. One, the "east country" method, had developed in Europe and created the highest-quality tar. It involved removing the bark of pine trees from ground level up to eight feet, with four inches of bark left on the north side of the trunks. After standing this way for a year, the trees were cut down and their pitchy bottom sections burned in a large ground kiln to produce tar. But southerners typically used a second, cruder method, which—although faster and less labor intensive—provided lower-quality tar. This method involved placing fallen limbs and pieces of pine wood, cut into two-to three-foot sections, into a kiln, consisting of a shallow twenty-foot diameter pit with a clay floor that sloped downward toward the center. A gutter with an opening even with the kiln floor extended from the center of the pit out to eight or ten feet beyond. Workers placed the

³⁸ Olmsted, *Journey in the Seaboard Slave States*, 340; "Turpentine: Hints for Those About to Engage in its Manufacture," 488; Perry, "Naval Stores Industry in the Ante-Bellum South," 45; "Pine Forests of the South," 197–98; "Production of Turpentine in Alabama," 561; MacLeod, "Tar and Turpentine Business in North Carolina," 16; and Avirett, *Old Plantation*, 65.

wood into this pit in a circle, then piled it up and out into a mound. This was covered with pine straw and earth, leaving a small opening at the top where the fire was first kindled. When completed, the above-ground portion of these kilns often measured twenty-five to thirty feet in diameter and were ten to twelve feet high. When they were fired, the top was kindled first. As the combustion penetrated down, the top hole was covered and vents were made in the walls. After a day of burning, the tar began to flow. It fell to the bottom of the kiln, slid to the center, and out through the gutter. From the gutter it drained into a ditch or trough and was then dipped into casks. Firing tar kilns required more patience than skill. Building them demanded modest technical knowledge, and monitoring the fires meant keeping an occasional eye on the flow of tar and the amount of smoke. But the waiting was long. A kiln that produced 100 to 130 barrels of tar burned for eight or nine days. To prevent either of two extremes—the fire breaking out and consuming the wood without producing tar or the fire going out—workers watched the kilns day and night.³⁹

Until the 1840s the naval stores industry had been dominated by small farmers whose families performed these tasks themselves. But increased profitability gradually attracted wealthy planters who operated on a larger scale and employed slave labor.⁴⁰ On January 25, 1853, the Fayetteville *Observer* reported that the population of Cumberland County “has increased about 1000 since the first of the present month—about 300 whites and 700 slaves having come here from all parts of the State to engage in the turpentine business.”⁴¹ By the late antebellum period the industry’s labor force had come to consist mainly of slaves. Producers could either hire slaves or use their own, and many chose to do both. Such combined workforces were more common in southern industry than in agricultural enterprises.⁴² In 1859 Ben Williams, who produced turpentine in North Carolina and Geor-

³⁹ Snow, “Naval Stores in Colonial Virginia,” 78; MacLeod, “Tar and Turpentine Business of North Carolina,” 17–18; Michaux, *North American Sylva*, III, 143–44; and “Journal of a French Traveller in the Colonies, 1765,” *American Historical Review*, XXVI (July 1921), 734.

⁴⁰ Perry, “Naval Stores Industry,” 516; Ashe, *Forests, Forest Lands, and Forest Products*, 74–75; and Merrens, *Colonial North Carolina*, 90.

⁴¹ “The Tide Turned,” *Fayetteville Observer Semi-Weekly*, January 25, 1853.

⁴² Kenneth M. Stampp, *The Peculiar Institution: Slavery in the Ante-Bellum South* (New York, 1956), 71; Robert S. Starobin finds that in extractive industries, such as turpentine, an integrated workforce of owned and hired slaves was common. Starobin, *Industrial Slavery*, 12 and 138; and Rosser Howard Taylor, *Slaveholding in North Carolina: An Economic View* (Chapel Hill, 1926), 38–40.

gia, employed “about thirty or thirty-five hands besides his own.”⁴³ As the industry grew, hiring slaves became more common and expensive. In the 1840s and 1850s the Francis Harper heirs of New Bern hired out slaves to turpentine producers. In 1849 they received \$56.50 for “Amas” and \$49.50 for “Haywood.” In 1852 Amas and Haywood were each rented for \$125, and by 1853 Amas’s hiring price had risen to \$175. This increase corresponds with a 1853 Fayetteville *Observer* report indicating that the annual cost of hiring a good naval stores laborer was \$150 to \$175. By 1860 skilled turpentine workers were hired for as much as \$250.⁴⁴

Although relatively few female slaves worked in the antebellum naval stores industry, women and their children did perform certain tasks, especially dipping. Because dipping required less physical strength, women and children could gather the gum, freeing the strongest workers for more taxing jobs. Most of the jobs—boxing, chipping, and cornering—demanded considerable strength; therefore, men dominated the labor force.⁴⁵ As the *Southern Cultivator* reported in 1846, “the same boxes will stand tending or chipping from eight to ten years, which labor is performed by males, both white and slave, women and children not being very serviceable.”⁴⁶

Naval stores producers turned to slave management techniques to organize and control their labor force. Under slavery, two distinct methods of labor management developed: the task system and the gang system. Under the latter, plantation owners gave a gang of slaves an allotment of work that they were expected to complete as a group. This worked best in the open fields where the overseer had a clear view of their performance. Where slaves could not be closely supervised, producers preferred the task system. Under this method, individual slaves worked at an allotted task. Each slave could set the pace, taking as little or as much time as necessary to complete the assignment, as long as it was performed to the producer’s satisfaction.⁴⁷

⁴³ Sarah Hicks Williams to her parents, November 7, 1859, Sarah Hicks Williams Papers (Southern Historical Collection).

⁴⁴ Percival Perry, “Naval Stores Industry in the Ante-Bellum South, 1789–1861,” 42–43; Slave Hiring Agreements, 1849, 1852, 1853, Francis Harper Papers (Special Collections Department, Perkins Library, Duke University); “High Prices,” Fayetteville *Observer Semi-Weekly*, February 1, 1853; “List of Negroes belonging to Mr. John W. Grist and Worked by Grist and Strikney,” 1860, Grist Papers.

⁴⁵ “Pine Forests of the South,” 197; Johnson, *Ante-Bellum North Carolina*, 488; and Account Book, 1846–1849, Daniel W. Jordan Papers (Special Collections Department, Perkins Library, Duke University).

⁴⁶ “Turpentine,” *Southern Cultivator*, IV, 172.

⁴⁷ Stamp, *Peculiar Institution*, 54–55.

Because dipping, chipping, and boxing required workers to fan out in all directions through the expansive pine forests, producers found that the task system worked best for harvesting turpentine. Many of these forests were large and isolated, such as one in Onslow County, which covered twenty-two thousand acres. To organize the tasks, producers marked off turpentine orchards in grids of continuous blocks. They created these blocks or *crops* by blazing a line of trees and further dividing each crop with rows of stakes placed at fifty-yard intervals, cutting the forest into half-acre squares.⁴⁸ Without such a division, reportedly, “the overseer of several hands cannot possibly inspect their work with any accuracy, nor can the hands, however faithful, avoid skipping a great many boxes in *cornering, dipping, and chipping*.”⁴⁹

Even though their workers were organized under the task system, producers expressed concern that isolation in the forest would allow laborers to work slowly and carelessly. Some worried that, unless they were carefully watched, their chippers would cut only the obvious trees around the perimeter of their allotment and would neglect those in the center that were more difficult to detect.⁵⁰ *De Bow's Review* informed producers that “it is important . . . to see that the hands perform their task properly, and not allow them to mislead you, as they will frequently do, by saying that they perform their task, without half doing so.”⁵¹ Producers were also advised that “in task work like this [turpentine], constant watchfulness will be necessary to insure faithful execution of the work.”⁵²

In most situations slaves preferred the task system to gang labor, for it afforded a relative degree of autonomy. This system worked best in areas such as rice fields and turpentine forests where the tasks were clearly marked. Laborers could work at their own pace and enjoy free time if their job was completed early. Although their work was inspected, they escaped the persistent driving that gang laborers endured. However, the quality of each hand's work was more easily monitored. Despite their preferences, agricultural slaves most com-

⁴⁸ Avirett, *Old Plantation*, 64; Hickman, *Mississippi Harvest*, 122; “Turpentine: Hints for Those About to Engage in its Manufacture,” 486–87; Johnson, *Ante-Bellum North Carolina*, 487; David S. Cecelski, “The Shores of Freedom: The Maritime Underground Railroad in North Carolina, 1800–1861,” *North Carolina Historical Review*, LXXI (April 1994), 187.

⁴⁹ “Turpentine: Hints for Those About to Engage in its Manufacture,” 487.

⁵⁰ Johnson, *Ante-Bellum North Carolina*, 487; and Hickman, *Mississippi Harvest*, 124–25.

⁵¹ “Manufacture of Turpentine in the South,” 453.

⁵² “Pine Forests of the South,” 196.

monly worked in gangs. They remained under the constant surveillance of a driver or overseer who kept them working at a brisk pace. All laborers, no matter how well or fast they worked, continued their labor until all workers in the gang were discharged in the evening. They had no way of earning incentive payment for hard work or free time for work completed early. Nor did the gang laborers have any opportunity to develop self-reliability or to exercise control over their work schedules; every workday was the same as the one before.⁵³

Many producers believed that their slaves preferred task work in the turpentine forest over gang labor in agriculture. One remarked, "no set of hands have ever been known to willingly leave it and go back to cotton."⁵⁴ Olmsted found "the negroes employed in this branch of industry . . . to be unusually intelligent and cheerful."⁵⁵ Accepting these claims, the leading historian of the naval stores industry, Percival Perry, writes that "once trained in turpentine operations, blacks preferred turpentine to other forms of farm labor because it was based on the task system and they were somewhat more independent in their work."⁵⁶ He also writes that "turpentine plantation slaves worked as part of a production team, yet at an individual task, rather than in gang labor. This may have contributed to a sense of independence, responsibility, and greater contentment."⁵⁷ While Perry's description of labor under the task system is correct, his general assumption that this made work in the turpentine forest more pleasant than agricultural labor is questionable. Both the task and gang systems had advantages and disadvantages, but "in the long run," as Kenneth M. Stampf maintains, "the rigors of either system were determined by the demands of masters and overseers."⁵⁸ The type of work and amount of labor expected of turpentine slaves greatly affected the relative difficulty of their tasks. Moreover, Perry fails to consider important factors related to the isolation of the camps—the realities of work that significantly shaped the lives of slaves.

Although turpentine workers did not endure the same drudgery that

⁵³ Stampf, *Peculiar Institution*, 54–56.

⁵⁴ "Turpentine Making," *Soil of the South*, V (December 1855): 357–58, quoted in Perry, "Naval Stores Industry in the Ante-Bellum South, 1789–1861," p. 39.

⁵⁵ Olmsted, *Journey in the Seaboard Slave States*, 348.

⁵⁶ Wilson and Ferris, eds., *Encyclopedia of Southern Culture*, s.v., "Naval Stores," by Percival Perry, 39.

⁵⁷ Randall M. Miller and John David Smith, eds., *Dictionary of Afro-American Slavery* (New York, 1988), s.v., "Naval Stores Industry," by Percival Perry, 521.

⁵⁸ Stampf, *Peculiar Institution*, 56.

gang laborers did, the task system, as used by naval stores producers, denied the slaves the "community in labor as well as in life generally" that they so desired.⁵⁹ On many agricultural plantations the task system facilitated this preference. Slaves who received allotted rows to hoe in cotton fields worked closely with other slaves, as did those laboring in adjoining rice patches. However, in the turpentine forests, workers encountered a different situation. Because producers marked their tasks in half-acre squares, and boxers, chippers, dippers, and scrapers were assigned several tasks, laborers were placed at considerable distances from one another and lacked social interaction to break the monotony of their work.

For many turpentine laborers, loneliness did not end with their work day. Taking advantage of mid-nineteenth-century transportation improvements, producers purchased virgin forests and moved their stills, overseers, laborers, and equipment into isolated camps. "The demand," Olmsted explained in the 1850s, "has increased . . . and the business has been extended into the depths of the forest."⁶⁰ The camps were commonly so far away from agricultural plantations that males in the labor force had no regular contact with their families and, for the most part, no female companionship. Most turpentine workers were men, and the uneven sex ratio left them lonely and miserable. They were separated from their relatives and friends and had no opportunity to start their own families. In discussing the lamentations of lonely slaves, Genovese writes, "Their hollers provided a counterpart to plantation work songs, but ranged beyond a direct concern with labor to a concern with the most personal expressions of life's travail. As such, they created a piercing history of the impact of hardship and sorrow on solitary black men."⁶¹

Labor incentives were commonly used in the naval stores industry to stimulate these lonely and unhappy workers to greater productivity and to encourage them to work during their own time. These incentives came as cash rewards for completing more than their assigned tasks and as time off for finishing tasks early. Because such tasks as boxing and chipping were vitally important and overseers had difficulty monitoring each hand's work, incentives helped to assure that slaves performed work properly. In 1854 producer Ben Williams was

⁵⁹ Eugene D. Genovese, *Roll, Jordan, Roll: The World the Slaves Made* (New York, 1974), 324.

⁶⁰ Olmsted, *Journey in the Seaboard Slave States*, 339.

⁶¹ Genovese, *Roll, Jordan, Roll*, 324.

so pleased with his workers that he paid some of them as much as fifty dollars during the season. At Richlands Plantation, laborers could earn from forty to sixty cents by continuing their work on Saturdays. To encourage speed, tasks were designed to allow a free day (usually Saturday) in the work week.⁶² James B. Avirett wrote that laborers “must be stimulated to their best work . . . by so regulating their work that a portion of each week is their own to do as they please with.”⁶³

As with expansive agricultural plantations, large turpentine operations relied on overseers or foremen to be watchful. Usually referred to as “woodsriders,” these men rode through the forest on horseback inspecting each worker’s task. Given the distance of each laborer from other workers, a single overseer could supervise no more than twelve slaves.⁶⁴ Because the overseers’ success was often measured by the amount produced under their supervision and not by the health of the slaves under their care, they usually drove the laborers hard. In August 1854 an overseer employed by James R. Grist reported: “I shall dow [*sic*] all in my power to make all I can for I am Working for my self as well as for Grist + Daves for my work has to be my recommendation in the State sow [*sic*] it is to my interest to make all I can.”⁶⁵ Another letter reports that “I am driving a head + doing all I can to get as much done [of] the turpentine as feasible.”⁶⁶ This fast-paced driving was especially true in the case of hired slaves. While their labor was highly valued, their welfare was only of temporary interest to their employers and overseers.⁶⁷

Moreover, “the hired slave,” so commonly used by producers, according to Kenneth Stampp, “stood the greatest chance of subjection to cruel punishments as well as to overwork.”⁶⁸ Their employers had little incentive to treat them kindly. Peter Kolchin in *American Slavery* explains that being hired out placed slaves “under the authority of someone who lacked the owner’s incentive to treat them decently; the

⁶² *Ibid.*, 314; Starobin, *Industrial Slavery*, 100–102; Hickman, *Mississippi Harvest*, 124; Miller and Smith, eds., *Dictionary of Afro-American Slavery*, s.v. “Naval Stores Industry,” by Percival Perry, 521; Sarah Hicks Williams to her parents, December 20, 1854, Williams Papers; and Avirett, *Old Plantation*, 68.

⁶³ Avirett, *Old Plantation*, 70.

⁶⁴ Sandra Jo Forney, “‘Kin to Kant’: Naval Stores Production as a Major Industry of the Nineteenth Century,” *Women in Natural Resources*, IX (1987), 17; and “Pine Forests of the South,” 196.

⁶⁵ R. M. Wadsworth to James R. Grist, August 11, 1854, Grist Papers.

⁶⁶ Benjamin Grist to James R. Grist, October 21, 1855, *ibid.*

⁶⁷ Stampp, *Peculiar Institution*, 82–84.

⁶⁸ *Ibid.*, 185.

hirer-slave relationship was far more fundamentally utilitarian than that between master and slave.”⁶⁹ Because the slaves’ time was the commodity that was purchased and the value and overall well-being of the slaves was of financial concern only to their owners, employers generally sought to extract as much work as possible from hired slaves and gave little attention to their welfare. This meant that their work hours were long and their shelter, clothing, and provisions lean. Robert S. Starobin writes that under these circumstances “conflicts between masters and employers of industrial hirelings occasionally arose.”⁷⁰ Too, the use of hired slaves in an isolated setting, combined with the environment of the turpentine forest and the migratory nature of the industry, created living conditions for the naval stores slaves that were comparably worse than those of bondsmen in agriculture. Because of their isolation, turpentine operations were often hidden from travelers and were seldom visited by anyone but the owner of the operation. With no witnesses to their treatment of laborers, naval stores producers experienced little outside pressure to provide properly for them.

One example of the turpentine slaves’ poor living conditions was housing. In the decades before the Civil War the quality of plantation slave quarters ranged from relatively roomy cottages with brick or stone fireplaces and glazed windows to one-room log cabins with dirt floors and chimneys crudely fashioned of clay and sticks.⁷¹ The latter were, in the words of Stamp, “cramped, crudely built, scantily furnished, unpainted, and dirty”; housing for turpentine laborers was probably even worse.⁷² Plantation quarters were built for extended use (as long as the plantation operated), but turpentine operations, which were in a forest and usually distant from the plantation, lasted for no more than ten years. Therefore housing was temporary, often little more than sheds. In similarly transitory operations such as fishing, shingle, and lumber camps, the quarters were only crude lean-tos.⁷³ They were, according to Starobin, “barely wide enough for five or six men to lie in, closely packed side by side—their heads to the back wall, and their feet stretched to the open front, close to the fire kept up

⁶⁹ Kolchin, *American Slavery*, 110.

⁷⁰ Starobin, *Industrial Slavery*, 131.

⁷¹ Kolchin, *American Slavery*, 114; and Robert William Fogel and Stanley L. Engerman, *Time on the Cross: The Economics of American Negro Slavery* (Boston and Toronto, 1974), 115–16.

⁷² Stamp, *Peculiar Institution*, 294.

⁷³ Starobin, *Industrial Slavery*, 60; and “The Dismal Swamp,” *Harpers New Monthly Magazine*, XIII (September 1856), 451.

through the night. The roof is sloping, to shed the rain and where highest, not above four feet from the floor."⁷⁴ Cabins built to house turpentine workers in the early 1900s, reportedly much like those inhabited by enslaved turpentine laborers, "were one room huts, made of pine poles and possessing neither floors, doors, nor windows."⁷⁵

Turpentine slaves appear to have been more poorly clothed than those working in agriculture. Each plantation hand commonly received four shirts, four pairs of pants, and one or two pairs of shoes each year. Every several years they were issued a hat or blanket. But in the naval stores industry, producers did not always use this distribution pattern, especially not for the slaves they hired.⁷⁶ Owners tried to ensure that their slaves received proper clothing by including instructions in their contracts. One owner stated: "Those who hire them will be bound to furnish the males Three Suits Clothes one to be of woolen, one pr. shoes, and two if worked in Turpentine one pr. of stockings + one Hat + blanket. . . . All to be new and well made."⁷⁷ But these instructions were not always followed. An angry slave owner wrote to the turpentine producer who had hired his slaves, "My Negroes told me they had not got all their clothing, their hats Blankets & c."⁷⁸ One turpentine producer in Fayetteville presented his slaves with clothes as needed, which caused clothing to be unevenly distributed. One slave, Bill, received two pairs of pants, two shirts, a pair of shoes, and a blanket. Another, Obey, received two pairs of pants, two shirts, a pair of shoes, and a coat. But Lewis was given only one pair of pants.⁷⁹ Such clothes were usually made of "Negro Cloth." Manufactured primarily in northern mills, this cloth was durable and sturdy but uncomfortably rough.⁸⁰ Plantation mistresses often sewed their slaves' clothes, but larger and more organized operations employed slave women for this task. In some cases the slaves made their own clothes. Evidence suggests that clothes for turpentine workers were made at

⁷⁴ Starobin, *Industrial Slavery*, 60.

⁷⁵ While the cabins described were built for laborers in the Mississippi turpentine forests, they serve to illustrate the most likely conditions of housing for slaves in the North Carolina operations. Hickman, *Mississippi Harvest*, 147 (quotation) and 152; and Forney, "'Kin to Kant,'" 17.

⁷⁶ Kolchin, *American Slavery*, 114; Fogel and Engerman, *Time on the Cross*, 116–17; and Starobin, *Industrial Slavery*, 54–57.

⁷⁷ Contract to Hire Out Slaves, 1849, Harper Papers; and Miller and Smith, eds., *Dictionary of Afro-American Slavery*, s.v. "Naval Stores Industry," by Percival Perry, 521.

⁷⁸ Starobin, *Industrial Slavery*, 57.

⁷⁹ Task Book, 1849–1851, Tillinghast Family Papers (Special Collections Department, Perkins Library, Duke University).

⁸⁰ It was also very inexpensive. In 1849 a *De Bow's Review* article estimated the annual expense for a turpentine hand's food and clothing would be \$30. "Production of Turpentine in Alabama," 561. See also M. Jones to James R. Grist, November 5, 1860, Grist Papers.

the forest camps. On Ben Williams's Georgia plantation the white women made clothes for the agricultural laborers but not for the turpentine workers. James Grist shipped cloth directly to one of his turpentine camps in Columbus County.⁸¹

Holidays, especially Christmas, were important to slaves. Masters customarily gave them at least one or two days off and sometimes a week or more. Many masters allowed their slaves to have a feast and some gave them presents.⁸² But hired slaves, who worked some distance from their homes, and workers such as turpentine slaves, who labored in camps many miles from their master's house, were often not allowed to return home on special occasions.⁸³ One slave owner wrote to the turpentine producer who had hired his slaves, "I am quite willing . . . that they should remain with you during the Christmas holidays. It can do them no good to come home. . . . and . . . their stay will be so short, that they cannot expect to enjoy themselves much."⁸⁴ However, evidence suggests that producers permitted limited holiday celebration in the camps. For Christmas 1860 the slaves in one turpentine camp received "2 hogs + a barrel of Flower [sic] + potatoes so they can have a dinner . . ." ⁸⁵

This Christmas dinner menu differed little from the provisions issued to turpentine slaves for every other day of the year—cornmeal flour and salt pork, which served as the dietary staples for naval stores laborers as well for agricultural slaves. But unlike plantation operators, who often raised much of their slaves' food supply, naval stores producers typically purchased provisions for their workforce.⁸⁶ Olmsted observed, "Few turpentine-farmers raise as much maize as they need for their own family; and those who carry on the business most largely and systematically, frequently purchase all the food of their hands. Maize and bacon are, therefore, very largely imported into North Carolina . . ." ⁸⁷ When these supplies arrived, usually by boat

⁸¹ Stamp, *Peculiar Institution*, 290–91; M. Jones to James R. Grist, November 5, 1860, and "List of Negroes Belonging to Mr. John W. Grist," 1860, Grist Papers; Genovese, *Roll, Jordan, Roll*, 551; and Sarah Hicks Williams to her parents, December 10, 1853, January 16, 1858, and March 25, 1859, Williams Papers.

⁸² Stamp, *Peculiar Institution*, 365; and Genovese, *Roll, Jordan, Roll*, 573.

⁸³ According to Sarah Hicks Williams in Georgia, the slaves who worked in the distant turpentine orchards still considered their master's plantation their home. Sarah Hicks Williams to her parents, March 25, 1859, Williams Papers.

⁸⁴ Starobin, *Industrial Slavery*, 95.

⁸⁵ Benjamin Grist to James R. Grist, December 25, 1860, Grist Papers.

⁸⁶ Stamp, *Peculiar Institution*, 282; and Olmsted, *Journey in the Seaboard Slave States*, 338.

⁸⁷ Olmsted, *Journey in the Seaboard Slave States*, 338.

or railroad, they were locked in storehouses. Because purchasing food was the largest cost of supporting a slave, producers kept rations at a subsistence level, especially when they hired slaves and therefore had less self-interest in their workers' welfare. Plantations, where food was more often produced, afforded slaves greater opportunity to raid smokehouses, chicken coops, orchards, dairies, gardens, and corn fields. Turpentine workers found stealing food more difficult. Naval stores laborers did have one advantage over plantation slaves, who, during their free time, commonly hunted and fished to supplement their diet. Because they worked in the forest, turpentine slaves had more opportunity to catch wild animals and collect edible herbs. Squirrels, possums, raccoons, rabbits, and turtles were plentiful in the turpentine orchards and occasionally supplemented the workers' diet. Yet despite these advantages, the naval stores laborers received poorer provisions than agricultural workers.⁸⁸

Drinking water, unlike wild game, was often scarce in the forests. Where clear, flowing streams ran through the pines, workers had little difficulty obtaining water; but, often, there were no such streams. Many workers justifiably feared drinking from the murky, slow-moving streams that they commonly found in the woods. Instead, they carried a hollow reed straw that they used to suck the water collected in turpentine boxes after rains, but during particularly dry seasons, rain water was not available. Moreover, this practice was dangerous. Evidence suggests that laborers suffered from digestive problems, probably caused by ingestion of turpentine.⁸⁹ James Battle Avirett reasoned that the water from the resin boxes was safe, "impregnated as it is with the turpentine," because it "reaches . . . his liver and keeps him healthy."⁹⁰ Although Avirett's assertion is doubtful, scholars have either accepted or refused to question the claims of observers and producers that "the turpentine business is considered a very healthy employment for hands."⁹¹ Donnie D. Bellamy writes: "It appears that the naval stores industry was not hazardous to the slaves' health. The authorities agree with John B. Avirett that the slaves of the turpentine or-

⁸⁸ *Ibid.*, 338; M. Jones to James R. Grist, November 5 and 12, 1860, Grist Papers; Starobin, *Industrial Slavery*, 51; Stampp, *Peculiar Institution*, 282; Genovese, *Roll, Jordan, Roll*, 486–88 and 599–606; Hickman, *Mississippi Harvest*, 150; and Fogel and Engerman, *Time on the Cross*, 110–11.

⁸⁹ Hickman, *Mississippi Harvest*, 150; Avirett, *Old Plantation*, 69; and Benjamin Grist to James R. Grist, July 17, 1860, Grist Papers.

⁹⁰ Avirett, *Old Plantation*, 69.

⁹¹ "Turpentine: Hints for Those About to Engage in Its Manufacture," 488.

chards were generally healthy."⁹² In his 1947 dissertation Percival Perry states that "the turpentine business was considered extremely favorable to health and long life"⁹³ But the nineteenth-century accounts on which these assumptions are founded were either based on inaccurate observations or were simply biased promotional literature. Turpentine is a local irritant and a central neural depressant. Its ingestion probably induced flux, a form of dysentery common among turpentine workers, which was characterized by abdominal pain, inflammation of the intestine, tenesmus, and frequent stools. However, because the lethal dose of turpentine for adults is four to six ounces, ingestion through the drinking water was rarely fatal.⁹⁴

Laborers came into contact with turpentine in other ways. When laboring in the forests, workers' "hands and clothing become smeared with the gum"⁹⁵ Raw gum is extremely sticky and difficult to clean off. While its adhesion to workers' clothing was only a nuisance, its contact with their skin could cause dermatitis. Treatment of this skin irritation is ineffective until the offending agent is removed. Laborers who found themselves afflicted during the harvest season had to wait until November for a cure.⁹⁶

Fumes were another problem. Even workers in the pine forests were exposed to turpentine fumes, but those who labored around the stills had the greatest contact. The still had a pungent turpentine smell that workers could "feel" in their throats.⁹⁷ While no direct evidence indicates physical harm from such exposure, current medical research indicates otherwise. Twentieth-century workers have developed occupational asthma when exposed to such high concentrations of these fumes. Some have shown neurological damage and intellectual impairment. Moreover, laboratory tests reveal a higher mortality rate among the progeny of rats exposed to turpentine fumes. With these

⁹² Donnie D. Bellamy, "Slavery in Microcosm: Onslow County, North Carolina," *Journal of Negro History*, LXII (October 1977), 344.

⁹³ Perry, "Naval Stores Industry in the Ante-Bellum South, 1789–1861," 39.

⁹⁴ Robert E. Gosselin *et al.*, eds., *Clinical Toxicology of Commercial Products: Acute Poisoning* (4th ed.; Baltimore, 1976), s.v., "Turpentine," 315; Hickman, *Mississippi Harvest*, 151; and *Dorland's Illustrated Medical Dictionary* (25th ed.; Philadelphia, London, and Toronto, 1974), 482 and 602.

⁹⁵ "Pine Forests of the South," 197.

⁹⁶ Michael G. Carraway, Museum of the Cape Fear, brief telephone interview by author, April 6, 1991; Perry interview; *Industrial Toxicology* (3rd ed.; Acton, Mass., 1974), s.v., "Turpentine," 477–78; and David N. Holvey, ed., *The Merck Manual of Diagnosis and Therapy* (12th ed.; Rahway, N.J., 1972), 1459–60.

⁹⁷ Carraway interview; Tatum interview, 5. One of James R. Grist's slaves suffered from sores in his throat, but the cause was not reported. F. Strikney to James R. Grist, February 26, 1861, Grist Papers.

discoveries, strict regulations of such solvents are recommended to prevent tissue lesions in workers and to protect pregnant women.⁹⁸

Turpentine laborers often sought to cure themselves of maladies such as flux by relying on medicines made from forest products. A tea made from the leaves of the yellowtop plant treated flux. The leaves of the dollarleaf plant were also supposed to remedy dysentery. Butterfly weed was thought to cure diarrhea, while sufferers of rashes, burns, and other skin ailments drank smartwood tea.⁹⁹ In some cases, overseers reluctantly permitted sick or injured slaves to visit a doctor or return to their owner's home plantation for care and rest. After "boy Moses" had suffered from sores in his throat for several weeks, his overseer wrote, "though I regret very much to have him off the place[,] . . . I would suggest to let him go back to the doctor at once . . . as he is not fit to work in turpentine."¹⁰⁰ In 1860 one slave working for James R. Grist in Cumberland County missed work because of a cold, and another, Ruffin, was allowed to rest from his work for a week. When another hand was kicked in the face by a mule and badly cut, he also rested a week.¹⁰¹

Another hazard to slaves was the explosive nature of stills and their flammable contents. Given the difficulty of regulating these crude devices, distillers could not always determine the pressure generated by the evaporating spirits of turpentine. Therefore, explosions and fires were common and could kill or seriously injure anyone close by.¹⁰²

The wilderness conditions of the turpentine forests contributed further to harsh working conditions. Wild animals, poisonous snakes, malarial mosquitoes, ticks, and chiggers found in the pine woods could make turpentine production a miserable, and sometimes hazardous, occupation. The heat and humidity of the southeastern North Carolina coastal plain added to the difficulties. In 1854 turpentine laborers fainted in the forest from these extreme conditions. Moreover, workers could easily lose their direction in the expansive pine forests. In 1859 a hand from an operation in Georgia became lost in the woods

⁹⁸ M. S. Hendy, B. E. Beattie, and P. S. Burge, "Occupational Asthma Due to an Emulsified Oil Mist," *British Journal of Industrial Medicine*, LII (January 1985), 54; Per Gregersen *et al.*, "Neurotoxic Effects of Organic Solvents in Exposed Workers: An Occupational, Neuropsychological, and Neurological Investigation," *American Journal of Industrial Medicine*, V (1984), 214; and Joaquin Garcia-Estrada, Antonio Rodriguez-Segura, and Pedro Garzon, "Cerebral Cortex and Body Growth Development of Progeny of Rats Exposed to Thinner and Turpentine Inhalation," *General Pharmacology*, XIX (1988), 470.

⁹⁹ Hickman, *Mississippi Harvest*, 150-51.

¹⁰⁰ F. Strikney to James R. Grist, February 26, 1861, Grist Papers.

¹⁰¹ M. Jones to James R. Grist, November 12 and December 16, 1860, Grist Papers; and Sarah Hicks Williams to her parents, October 21, 1860, Williams Papers.

¹⁰² Starobin, *Industrial Slavery*, 43; and Avirett, *Old Plantation*, 70.

and wandered for nearly six days before finding his way home. Despite a week of nursing care, he died of fever brought on by hunger and exposure. Because he worked in a turpentine forest, his master had not noticed his absence for three days. In another instance, a hired slave, Willis, drowned and another slave, Jack, almost drowned when they tried to remove turpentine casks from a remote platform near a swollen river.¹⁰³ In such cases, the isolation and loneliness of the turpentine forests, combined with heavy work demands, poor housing, inadequate clothing and food, and unhealthful and dangerous labor conditions, made the slaves' already difficult work and manner of life unbearable.

Some slaves reportedly resisted these terrible conditions. According to Edmund Ruffin, producers believed the fires that occasionally roared through the pine forests were "committed by the negroes who would have to attend the trees, to collect turpentine, which labor they dislike very much, because it is solitary."¹⁰⁴ Further evidence of the discontent comes from the stories of runaway turpentine slaves. Although it is impossible to determine the frequency of escapes, evidence of slaves fleeing the James R. Grist operations suggests such acts were not uncommon. In all cases these slaves cited harsh living and working situations as their reason for flight. Two hired slaves, John and Albert, ran away from a turpentine operation in 1853 because they were "over worked and not well fed." John reached Greenville, North Carolina, "in a most exhausted condition," but Albert lost his way. The slaves' owner blamed their harsh treatment for their escape.¹⁰⁵ That same year a turpentine cooper ran away when he and his partner were whipped for working too slowly.¹⁰⁶

The most dramatic story of escaped turpentine slaves involved two brothers, Ned and Colin, who were purchased from their owner in Sussex County, Virginia, by a slave trader in Richmond. When James Grist bought them, "they were sent off into the pine woods to make turpentine." But they "could not stand the work and the life before them and ran away" in 1854. While they were running across a bridge near Fayetteville, someone shot at them and probably wounded Colin. The two slaves then ran in different directions and became separated.

¹⁰³ Starobin, *Industrial Slavery*, 42; Thomas D. Clark, *The Greening of the South: The Recovery of Land and Forest* (Lexington, Ky., 1984), 22; James R. Grist to Allen Grist, September 17, 1852; R. M. W. to James R. Grist, August 11, 1854, Grist Papers; and Sarah Hicks Williams to her parents, March 25, 1859, Williams Papers.

¹⁰⁴ Scarborough, ed., *Diary of Edmund Ruffin*, I, 52.

¹⁰⁵ L. F. N. to James R. Grist, August 18, 1853, Grist Papers.

¹⁰⁶ C. Jones to James R. Grist, August 23, 1853, *ibid.*

Colin reached Greenville, North Carolina, and worked on the Seaboard Railroad until he was caught by a search party later that year. Ned reached the home of a planter, William Parham, who was a neighbor of his former master in Sussex County. When Ned arrived, he was very sick and Parham nursed him back to health. While Ned recovered, Parham wrote to Grist, informing him of Ned's condition. According to Parham's letter, Ned vehemently disliked the work in the turpentine forest. Parham reported that "the work and the manner of life in making turpentine he cannot stand, it is hard work and would kill him by piecemeal, and he had rather be killed at once." Parham advised Grist "not to put him to getting turpentine again, he will cause you more trouble than profit, but sell him at once." He concluded that Ned would be best suited for the New Orleans slave market where a sugar producer would likely buy him.¹⁰⁷

"The work and the manner of life in making turpentine" from which Ned and Colin fled was much like that of other industrial slavery occupations described by Starobin. Contrary to assertions made by Perry and others, work in naval stores tended to be more grueling than labor in agriculture. Environmental factors played a major role in the harsh conditions of turpentine making. As geographically isolated and expansive enterprises, turpentine orchards possessed spatial attributes considerably different from those of agricultural operations. Given the size of the pine forests and the methods of harvesting resin, producers could not permit workers to labor in groups. Instead, slaves were forced to spread out widely throughout the forest where their tasks were individually assigned. Since tasks were clearly marked in half-acre blocks, overseers could effectively monitor and evaluate each worker's performance. Although slaves generally preferred task work because of the relative degree of autonomy it offered, in the naval stores industry, this independence was accompanied by solitude. The industry denied social interaction to break the monotony of the job. Such loneliness did not end with the workday. The camps were commonly so far distanced from agricultural plantations that the male-dominated labor force was prevented from regular interaction with their families and largely denied female companionship. Too, because few visitors journeyed to the isolated camps, production operators and overseers received little social incentive to properly care for their slave laborers, especially for the many hired bondsmen. This lack of supervision contributed to relatively poor housing and food provisions

¹⁰⁷ William Parham to James R. Grist, May 1, November 14, and 20, 1854, *ibid.*

for the laborers. The natural setting of the turpentine orchards also accounted for these conditions. Owners found it unfeasible to raise food at the camp sites. Instead, food was hauled into the forests by producers who tended to keep rations at a subsistence level. Unlike many plantation slaves, turpentine laborers lacked the opportunity to supplement their diet with food raided from local smokehouses, chicken coops, and cornfields and gathered from their own garden plots. However, because they labored in the forest, workers possessed more of an opportunity to hunt wild animals and collect edible herbs. The migratory nature of the industry discouraged producers from constructing substantial cabins to house their workers. Instead, laborers could take refuge only in crude shed-like lean-tos that could be easily dismantled, moved, and reconstructed. The unique attributes of the naval stores industry created conditions greatly inferior to those on agricultural plantations, conditions that inevitably led to misery and discontent among the slaves, who after the first decades of the nineteenth century, made up most of the industry's workforce.