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History of Tanning in the State of Maine

George Archibald Riley
University of Maine

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A HISTORY OF TANNING
IN THE
STATE OF MAINE

A THESIS

Submitted in Partial Fulfillment of the
Requirements for the Degree of
Master of Arts (in Economics)

By

George Archibald Riley
A.B., Tufts College, 1928

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University of Maine

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CHAPTER I

EARLY BEGINNINGS OF TANNING
IN MAINE

"In writing of a manufacture so ancient as that of leather, it is desirable to begin with a delineation of the historical background; and yet it is difficult to do so with success, since, in earliest historical times the art had attained such a development that its details were no longer a matter of curiosity; hence little information of its methods has been preserved. We know, from actual specimens, that in Rome, presumably in Greece, and certainly in the still earlier civilization^{of} Egypt, leather was used for most of the purposes for which we use it to-day."¹

In writing of the manufacture of leather in the state of Maine, it is proper to begin with an historical account of the aboriginal inhabitants of the territory

1. Proctor, Henry R., The Making of Leather. New York. 1914. p.1

that we now occupy. Long before the messengers of white-man civilization first furled their sails along the rock bound coast of Maine, an art of leather-making was well known to the native peoples of the territory, and the product of their art was used for many purposes. Among the Indians of our state soft tanned ^{deer skin,} for instance, was used in the making of clothing. The men wore leggings or kilts and a sleeved shirt made of leather, and the women, a skirt and jacket made of the same material. Of course both wore moccasins.

Considering the extent of the Indian population (probably about twenty-five thousand at the advent of the white man) and their many uses of leather, a brief consideration of the Indian tanning methods is justified at the beginning of this thesis on the historical development of the industry in the state. Furthermore, it is not improbable that some of the early leather production processes were taught to the first white settlers by the Indians. As a basis for that statement note the following quotation from Weeden's Social History Of New England.

"The excellent brain-tanned deerskin, which the Indians taught the early colonists to prepare, served well for garments. Leather clothing was worn, by laborers and

servants especially." ² Indeed a history of tanning and leather manufacture in the state of Maine would be incomplete without mention of the use of leather made by the aboriginal inhabitants together with the methods that they used.

The history of leather manufacture discloses that leather has been made by three processes or with three classes of substances. First, there is that process in which the hides and skins are combined with tannin and tannic acid, a process which is fully described in an appendix of this thesis; secondly, there is that process in which skins are chemically treated, by mineral salts such as alum; and thirdly, there is the process in which skins are combined with oils and fatty substances. This last process of preparing leather by permeating hides and skins with oils and fatty substances is probably the oldest method of leather manufacture. It is that which in earlier times was most largely followed. It was the method used by the Indians of this State, the Abnakis and the Etchemins.

The Indian tanning method was rather a laborious one, but as the women of the tribe did the work, the

2. Weeden, William B., *Economic and Social History of New England 1620-1789*. Vol.I. p.228. Cambridge, 1891

young braves and the older men did not object. There is a painting by George Catlin entitled Tanning Hides at Crow Camp in the American Museum of Natural History in New York, and a reproduction can be found in Indian Crafts and Indian Lore,³ by J.H.Salomon. It depicts two Indian women at work on a hide that has been staked out in front of a wigwam while a young brave of the tribe basks in the sunshine, enjoying his leisure.

The women, according to the account of the Indian tanning process related in this book by Salomon, took the fresh skin and soaked it in water overnight. They next staked it out on the smooth ground, the hair side down. The stakes were driven down around the hide about six inches apart and it stretched as tightly as possible. Clinging to it were pieces of flesh, fat, and tissue. This was removed by a first treatment that might have been called fleshing, for which a sharp instrument was used. If the hide dried in this process, it was moistened by water.

When the upper surface was clean and smooth, the hide was probably allowed to dry and bleach in the sun for a couple of days. The next step was to soak the hide again, turn it over, and once more stake it out, this time

3. Salomon, Julian Harris, The Book of Indian Crafts and Indian Lore. New York. 1928. p. 93.

with the hair side up. The hair was probably scraped off in the same manner as the flesh. If the hair did not come off easily, it was necessary to resoak the hide - this time in wood-ashes and water, it being left to soak in the mixture overnight. In the morning every trace of the wood ashes was washed out in cold water and it was staked out again. The hair could then be removed with little effort. This side of the skin was allowed to dry and bleach in the sun for two days, which completed the process and left the rawhide ready for use.

To make soft tan buckskin the hide was first put thru the rawhide process described in the previous paragraph. The rest of the treatment was probably more difficult. The animals' brains and liver were mixed together for a tanning mixture and cooked. While the hide was staked on the ground, the cooked mixture was thoroughly worked into it, first on one side and then on the other. This was done by means of the hands and a smooth round stone. After the mixture had been spread evenly over the hide by this method, the stakes were withdrawn and the hide rolled or folded. It was then left overnight to allow the tanning mixture to soak in. The next day it was washed in cold water and dried, causing the hide to shrink and thicken. So, before graining, it was pulled and stretched to its original shape. On this process two women usually worked together. To grain the

hide its entire surface was rubbed with a rough stone. Finally, the hide was worked back and forth with a sea-saw motion over the limb of a tree. The friction in this process, it is supposed, generated the heat which dried the skin and gave it a smooth texture.

The buckskin process was thus completed, but in addition the hide usually was smoked. Some Indians claimed that smoking made the skin dry out soft and smooth after it had been wet. Smoking, of course, colored the skin a light yellow, tan, or dark brown, according to the length of time it was smoked and the kind of skin. To smoke, the hide was formed into a conical bag and suspended over a smudge fire. The fire was built in a specially constructed pit, and after it had burned down to a good bed of coals, punk, rotten wood, and chips of green wood were piled on it. A small hole was tunneled under from one side to keep the fire supplied with air. The hide had to be watched constantly to see that it smoked evenly and that the fire did not blaze up. A good smudge turned the skin yellow in ten or fifteen minutes, and dark brown in about three-quarters of an hour. It was sometimes smoked on one side, frequently on both.⁴

4. See Salomon, Op. Cit., pp. 102 - 106 for a more complete description.

To what extent the early white settlers of Maine adopted the Indian methods is problematic. It is more than possible that the skins of deer and other native animals were adopted for use by methods resembling those of the aborigines. However, we cannot assume that the process was widespread. Among the first arrivals from England there were many carpenters, masons and other artisans. Research into occupational statistics would probably disclose a fair number of tanners, or of persons of the "jack-of-all-trades" type who pursued the tanning methods developed in England at that time.

Next there is presented the few traces of the tanning industry in the State of Maine in the seventeenth and eighteenth centuries discovered by research into town histories and other historical material. It is a very meagre account, but one must realize the scarcity of the population in the State in those early days. With a population of 12,000 in 1760 one would not expect the extensive development of an industry such as existed in a state like Massachusetts with a much greater population in a very much smaller area. "There were, in 1760," according to Coolidge and Mansfield, "but thirteen incorporated

townships, which formed little more than a streak along the coast from Kittery to Pemaquid.⁵ Furthermore, the immigration movement into the State of Maine did not reach large proportions until after the Revolutionary War. The population of the State in 1760 was only 12,000. In 1800 the population had increased to 151,719.

Despite the paucity of the population there are a few historical evidences of leather making in the early days.

The first trace of any tannery in the State of Maine is that of one which must have existed in ancient Pemaquid. This place was first settled about 1609. "The colony increased and flourished until King Phillip's war, 1675, when it was destroyed. At the close of that war, the place was re-settled and continued to flourish till King William's war, when it suffered a second demolition and burning. The fort was taken, 1688, the buildings were burnt, the inhabitants slain, or driven away, or taken captive, and the place lay desolate for thirty years."⁶

"Up from the bank of the river..... is a low swampy place where were tan-pits, the sites of which are

5. Coolidge, A.J. and Mansfield, J.B., A History and Description of New England. Vol. 1, p.16 Cambridge, 1859.

6. Cushman, David Q., The History of Ancient Sheepscot Bath, 1882. p. 23.

easily ascertained, and the bottom planks of which are plainly felt, by running a sharp stick down three or four feet. Many of the side planks of these pits have been taken up, by curiosity seekers, and carried away. But enough is remaining to show what kind of a people that was who place them there. Tan was found there, and also the ruins of a bark mill when the last settlers moved on there. In parts of this entire territory, are broken pottery, pipes, sea coal, charcoal, Dutch bricks, etc....

.....These works (including the tan-pits) belong to the people of whom we have been writing."

A somewhat varied account of these tan-pits on the present site of the town of Bristol is given by Coolidge and Mansfield."There are some interesting relics of an ancient settlement in this town, about three-quarters of a mile above the site of Phip's fort. One of them is an earthwork, situated on a high bluff, as seen in the engraving (engraving p. 71), having every appearance of the remains of a fort; but offer no conjecture as to when it was erected, or by whom, or for what purpose. Some antiquaries, who think they have sufficient proof of the settlement of New England by a Scandinavian colony prior to the time of

7. Cushman, Op. Cit., pp. 22,23.

Columbus, attribute the work to them. There are also in close proximity to the earthwork, the remains of a tannery, - now a bog of about an acre, grown up with rushes. The vats are filled up, though the linings are still preserved. With the aid of poles these vats can be felt in their length and breadth. The more reasonable of the matter is, that this earthwork was constructed by the early settlers as a place for the storage of provisions, and such other property as they might possess; and that the old tannery was built at or about the same time.⁸"

There are frequently antiquarians as in the case of the old fort and tan pits at Pemaquid who are trying to discover something prehistoric, some relics of the existence of a civilized people before the numerous Indian tribes. They point out that no mariners were so adventurous as the Northmen or Scandinavians, and that in A.D. 1002, according to an Icelandic chronicle, a Norwegian vessel, commanded by Captain Lief Ericson, sailed from Iceland for Greenland and then along the present shores of New England. Perhaps they were responsible for the old tan pits at Pemaquid, but it is not very likely. The more reasonable solution is that the tan pits are the remains of the early English settlement of 1609.

8. Coolidge and Mansfield, Op. Cit., Vol. I, p.72

One other conjecture comes up in reference to the remains of these tan pits at Bristol. It is stated by Coman in An Industrial of the United States and in other industrial and economic histories of the United States that the first tannery in New England was erected at Lynn, Massachusetts in 1629.⁹ Is it possible that the discovery of these old tanning vats at Bristol on the site of ancient Pemaquid might challenge this statement? This is simply advanced as a matter of conjecture. One thing we do know, however, from the brief statement of its history already given is that Pemaquid was first settled in 1609 and was "a place justly celebrated in the early history of New England, as one of the most important settlements in the coast."

The history of tanning in the early days of Maine, in the seventeenth and eighteenth centuries, as previously stated, is exceedingly fragmentary. Town histories are strangely silent on many matters that the economic historian would be glad to find out more about. The reason for this must be that tanning in the early days was not a very pretentious industry in the state and thus was often overlooked. A good example of this lack of early material

9. Coman, Katharine, Industrial History of the United States. New York. 1915. p.67

is contained in a history of York, Maine. This statement occurs; "The manufactures are small and insignificant, and have never to any extent occupied the attention of the people."¹⁰ It then mentions the existence of a woolen mill, a shingle mill, a step ladder factory, a brick yard, and a carriage shop, all of which existed at one time or another in the town. On another page, in very small print, we find reference to a tannery that existed in 1713. In another history of York, Maine, by G. Alex. Emery, published in 1874, there was no allusion to this tannery of 1713 although some other industrial and mercantile facts about the town are given.

There was another seventeenth century tannery in Falmouth. In a history of Portland, by William Gould, the author alludes to George Bramhall's tan yard. Mention is made of this tan yard in connection with the Indian war of 1688, for in that conflict George Bramhall died from wounds. "Mr. Willis in his history gives an extract from B. York's deposition of 1759 which furnishes some additional particulars:

'I well remember that said George Bramhall was shot by the Indians about ye same time in ye fight over

10. Clayton, W. Woodford, History of York County. Philadelphia, 1880. p.231.

on Capt. Brackett's farm, and said Brackett was also killed at the same time at his own house on Back Cove, and said Bramhall was brought over after ye fight to the neck near Fort Loyal, and put into Capt. Tyngs' house to the best of my remembrances, and died the next day of his wounds; and his son and other help they got, brought a number of hides from ye house and tan pits to said neck: and I remember said George Bramhall left three sons, Joseph, George, and Joshua, and I think a daughter, who all moved to the westward with their mother soon after." 11

Coolidge and Mansfield state that, "after the conclusion of peace in November, 1678, George Bramhall purchased the hill which yet bears his name, and prosecuted the tanning business." 12

The tannery at York, in the year 1713, has already been referred to. Here is the record given by Clayton:

"York, July 15, 1713..... Laid out to Nicholas Sewall half an acre of land for a tan yard, granted to him the 23rd day of March last past by said town of York with the privileige of the spring of water between the new and the old meeting-house, where the said Sewall's tan yards now are, and bounded as follows, viz; beginning at a stake standing at the northward corner of Mr. Moody's little field, on that side of the way, and runs from thence six poles to a white oak stake marked on four sides (by Moody's land) thence northwest thirteen poles to another white oak stake marked on four sides, then northwest six poles to a stake standing by the way that leads to the old meeting house from the county road, and is bounded by said road to the stake first above mentioned.

The spring of water named is well known to many present, and many here can remember the tannery named

11. Gould, William, Portland In The Past. Portland. 1889 p. 143.

12. Coolidge and Mansfield, Op. Cit., Vol. I, p.143

when it was in operation." ¹³

In this account of an early tannery in the town of York the fact may be noted that the privilege of using a spring of water was granted by the town to Nicholas Sewall. The early tanneries of necessity had to be near a spring or a stream of pure water, for considerable water was used in the hemlock bark tanning process. Benjamin Blodgett, who for a number of years operated the tannery at Bucksport, one of the three remaining tanneries in the state, tells the story of a tanner in olden times who was seeking a location for his business. Coming upon a likely spot near a large spring, he discovered a house not far distant and dependent upon the spring for its water supply. He went to the house and asked for a drink of water which was readily given him. Then much to the housekeeper's surprize the tanner asked if he might look inside her tea kettle. He did this to see if there was any residue from the water of the spring such as iron salts or lime that would interfere with the tanning process. One of the requirements for tanning with hemlock bark, if a good grade of leather is to be produced, is plenty of smooth water free from chemicals.

13. Clayton, Op. Cit., p. 220.

In a History of Saco and Biddeford by George Folsom we read that "the first mechanic within the limits of the present village, whose name has reached us was one Samuel Dennet, a tanner, from Kittery, Maine. He came as early as 1738, and lived opposite Spring's Island, where his son¹⁴ built a saw mill and a gristmill, 1795." From this brief statement we gather that there are names of many mechanics and tanners in early times that have never reached us, and in the second place that a tanner sometimes combined another trade or occupation with his own.

In the History of Sanford, Maine by Edwin Emery there is the following account: "As far as we have been able we have found the names of the original grantees of the settlers lots, and the early residents of the town. The settlers' lots were granted to the following persons on the dates noted:-

No. 12 Joshua Cane, York, tanner, May 1, 1739 15
 No. 39 Christopher Pottle, York, tanner, Mar. 15, 1743"

On page 26 is the record of the following settlers:

"1743. Christopher Pottle, York, tanner.
 1750. John Urin, Greenland, N.H., cordwainer and
 tanner." 16

14. Folsom, George, History of Saco and Biddeford.
 Saco. 1830. p.262.

15. Emery, Edwin, History of Sanford, Maine 1661-1900
 Fall River, Mass. 1901. p.24,25.

16. Ibid., p. 26.

We also find in the same volume the following,
 "On an old country road over Mount Hope to Lebanon, the Bennetts built a mill before 1785. Some years later, Daniel Chadbourn, Levi Chadbourn, and Nathaniel Quint had a tannery on the privilege."¹⁷

In the history of Kennebunk, one of the old York County towns there is a description of a tannery established in the year 1740.

"Samuel and John Shackley, brothers, shoemakers, and tanners, became residents of this town about 1740. Samuel purchased a tract of land opposite Caleb Kimball's grant and erected a house thereon, also a tannery. He had seven children, viz, John, Richard, Joseph, Ebenezer, Thomas, Mary and Heziah. Thomas was deformed; Ebenezer was quite small (four feet and two inches in height), was a shoemaker by trade and kept a small store, near the village bridge, for many years, where he accumulated a few thousand dollars; he was peculiar, but honest in all his dealings and a good citizen.

John Shackley (1740) located himself about a mile north of his brother and erected a dwelling house and outbuildings, also a tannery, near the confluence of Alewife Brook with the Kennebec River." 18

Additional evidence of the early importance of the tanning industry may be seen in the following:

"Among the industries carried on by the early settlers of Windham was that of tanning. The first person to exercise that handicraft in this town was doubtless John Robinson, a native of Dover, N. H., who came here about 1765, and bought the farm now owned by Mr. Joseph Nugent, on what is now called 'Gray Road.' He had a small

17. Emery, Op. Cit., p. 213

18. Remich, Daniel, History of Kennebunk from its Earliest Settlement to 1890. 1910.

tannery which he operated in connection with his farm. He was a quaker of the old school and died a worthy member of that denomination, Aug. 21, 1800. His son, Timothy was born here in 1767, was also a tanner and currier; and, in 1794, settled on the farm afterwards owned by his son, the late Oliver Robinson. Timothy had a tannery near the town road, directly in front of the well and near his dwelling house, where he carried on the business for many years. He was a Quaker, noted for his strict honesty and systematic methods. He died June 5, 1851, and is buried in the old Quaker Burial Ground near Windham center.

Timothy Robinson was a shoe maker, as well as a tanner, and united the two trades, having a shop near his tannery and giving employment to a few journeymen and apprentices. He was succeeded by his son Isaac, who remained here a few years. Isaac Robinson sold out to his brother Oliver, and located in some eastern town where he carried on the making of boots and shoes until his death.

On coming into possession of the property, Oliver Robinson closed the old tannery and gave his attention to the manufacture of boots and shoes, which business he greatly enlarged." 19

In this volume on Windham by Samuel Dole from which the above quotation is taken, there is also an interesting note on the early footwear.

"The footwear of the early settlers was vastly different from that worn by their descendants; modern boots were worn by but few and were costly articles; hence, the greater part of the people wore shoes made of stout leather and hand sewed. Such a thing as a pegged shoe was then unheard of. In the winter, men wore heavy home-knit buskins, which effectually protected their ankles from the cold and snow. The writer well remembers several old gentlemen who could never be induced to wear boots, but who clung to the old-fashioned shoes and buskin as long as they lived,

19. Dole, Samuel Thomas, Windham in the Past. Auburn, Maine. MCMXVI. p. 240, 241

claiming that they were more comfortable than the modern article, the shoe." 20

It is recorded in Coolidge and Mansfield (p. 363) that Winthrop was incorporated in April, 1771; and that the first town meeting was held on the twentieth of May in the same year, at the inn of Squier Bishop. Soon after this, Nathaniel Fairbanks built a tannery near Deacon Metcalf's but afterwards carried on business at the village. "It has been claimed by his (Col. Nathaniel Fairbanks) descendants that he was the first to tan and curry hides in Kennebec County. His first plant was at the corner near the Metcalf cemetery. The dwelling built by him is still standing. In 1880 he moved his works to the village and settled on this privilege, using power solely for grinding bark." 21

A particularly interesting point about this account is that in the early days water power was sometimes used for the grinding of bark. When we come to the account of tanning in the early history of Gorham, it will be discovered that still another method was used.

Another account of early tanners in the present Kennebec county is contained in the story of the town of

20. Dole, Op. Cit., p. 236

21. Stackpole, Everett, History of Winthrop, Maine. Auburn, Maine. 1925. p.199.

of Hallowell.

"On the east side of the river the Howards traded at the fort, and Henry Sewall at the eddy near the town landing. Next above him Thomas Sewall (1784), who was a tanner, had built the house now owned by Thomas Lombard, and in the ravine where the foundry is, had a tan house and vats." 22

This is the earliest account of tanning in Hallowell. However, there were other early tanners. In an account of tax assessments in the town for the year 1792 is the following account:

"The business at the Fort, with the valuation of their places of business and capital, 'in addition to the common valuation,' taken from an estimate of property in Hallowell prepared this year (1792) by the assessors, were as follows:

Peter Parker, house, tan-house and bark - 80lbs.

Seth Williams, house, tan-house, and barn - 60 lbs. capital - 100 lbs. Business at the Hood.

John Beerman, tan house - 30 lbs. Other buildings and land belongings 25 lbs. Capital 60lbs.

Ebenezer Church, a tan house.

John Beenan had his tannery near the center of the present business street, at the corner of Water and Central streets." 23

In Franklin County we have the account of an early tanner by the name of Samuel Sewall.

"About 1786 Samuel Sewall settled in Farmington. He located himself where John Morrison now lives, at the lower extremity of the town. He commenced tanning on his place - being one of the first tanners in the town. He built the first mills at the place, about 1792. He built the house now occupied by Mr. Morrison

22. North, James W., History of Augusta, Maine. Augusta, 1870. p. 190

23. Ibid., p. 240

sometime previous to this date. Mr. Sewall became an acceptable preacher and sold to Mr. Morrison about 1815, after which he devoted himself to the duties of the ministry in different places." 24

A very interesting account of early tanning is found in the History of Gorham, Maine by Hugh D. McLellan.

"For some years after the settlement of the town it was the custom for almost every house-holder each fall to kill a 'beef creature,' and to have the skin tanned to make shoes for the family.

Probably the first tanners in Gorham were William Cotton and his brother John. Their father, Deacon William Cotton of Falmouth, was a tanner and it seems reasonable to suppose that the sons learned their trade from him. William Cotton lived above Fort Hill on the thirty acre 65, on the back end of which he had a tan-yard where he tanned the cow hides and calf-skins of his neighbors. This yard has entirely disappeared. The entrance to it was by a two-rod road (now discontinued) running west from the Fort Hill road, between lots 65 and 121.

In a Gorham tax bill for 1792 we find the names 'Hunt, the tanner,' and 'Clark, the tanner.' As this is the first mention of either men's name, the probability is that they both came to town about this time.

Capt. Oliver Hunt in 1794 purchased the thirty acre lot 18 on South Street. His tan-yard and buildings were at the western end of where the present railroad bridge now is, and when the railroad was built and the cut made, all traces of this yard disappeared. Capt. Hunt had there a mill to grind his bark: this consisted of an upright stone standing on its edge revolving on an axle, and slowly crushing the bark beneath it as it was drawn around by an old horse. Although doing a good business, Capt. Hunt's yard was but a small affair to one of our modern yards." 25

In this account of tanning in the history of Gorham we have a good picture of usufacture in a Maine community

24. Parker, Thomas, History of Farmington, Maine - From Its Settlement to the Year 1846. Second Edition, 1875. p.38.

25. McLellan, Hugh D., History of Gorham, Maine. Portland. 1903. p. 360.

in the eighteenth century. At that time most commodities including leather were made for the user direct and from raw materials, moreover, that he provided. "For some years after the settlement of the town it was the custom for almost every house-holder each fall to kill a 'beef creature,' and to have the skins tanned to make shoes for the family." This constitutes the earliest development of the leather industry in the state with the exception of the early colonist who tanned his own leather. In that case the family not only possessed the raw materials, but did all the work, and ultimately consumed the product. This has been a predominate kind of manufacture among peoples in a settled village community. A more advanced stage in manufacture is illustrated by the appearance of a tanner in the community as in the case of these early Maine communities. The raw materials were taken to some outsider who, with his own labor and his own tools, worked them up into a finished product.

Probably almost every community of any size in Maine in early times had its tanner as it had a shoemaker, a blacksmith and a hatter. Along a stream might be found a tannery as well as a saw mill or a grist mill or a starch factory. The tanneries grew in numbers and importance

because of the great demand for leather in the various uses to which it was put by the early settlers. "In a primitive and self-sufficing community leather is used for many things which in a more advanced stage are made of other materials. Thus not only were harness, saddlery, traces, belts for wheels, boots and shoes, gloves, and similar articles made of leather, but also vests, doublets, and breeches for men, and jerkins, petticoats, and aprons for women. Hinges for doors, straps in lieu of springs for coaches, and even bed coverings were made of leather."²⁶

In the second place there were tanneries in the state of Maine in the early days because the communities in those days tended to be self-sufficient. That is, there were no particular places in the United States where the tanning industry was centralized. There was no system of transportation whereby hides could be gathered from far and wide into one center, tanned, and shipped to the manufacturers of leather goods. If the community was to have leather, there was need for a local tanner. If the community was to have shoes, there was need for a local or an itinerant shoemaker. A good description, though a little extreme, of a self-sufficient Maine community in the early days is furnished

26. Bogart, Ernest Ludlow, Economic History of the American People. New York. 1930. p. 115.

in the history of the town of Andover, Maine. "The families had to be self supporting, providing by their own industry almost every article required by them. The colonists who went from the Old to the New Andover, were from the want of roads, and the distances to be traversed, cut off from all markets. Every family received nothing of any account from abroad, except salt, rum, a little tea, coffee, and tobacco, and iron rods for nails, which had to be turned out by hand. At an early period in Andover every family had to clothe itself from head to foot, as well as feed itself."²⁷

In the third place there were tanneries in the state of Maine in the early days because of the presence of the right raw materials. Farming was the principal occupation and the poorest farmer would have a cow. The hides of cattle and the skins of wild animals furnished the raw material for tanning. Almost as essential as the hides and the skins was the tan bark. Every Maine community had access to plentiful supplies of the tan bark, of the hemlock and the oak.

Unfortunately, there is practically no quantitative data on Maine industry before 1810. We cannot make any

27. History of Andover, Maine. Centennial Supplement of the Rumford Falls Times. pp. 8,9, Rumford Falls.

reliable estimate of the number of tanners in Maine prior to that date. It is to be assumed that the number increased at about the same rate as the growth of population. In 1810, it was estimated that the number of tannery enterprizes was over 200. From the descriptions of the tanners given in the various local histories it is evident that their business was entirely local, their custom arising from the trade area surrounding the town in which the tannery was located. We shall find that it did not begin to partake of the nature of a large-scale industry until the middle of the nineteenth century.

CHAPTER II

THE PERIOD OF LOCALIZED TANNING

1800-1840

As a brief preface to a statistical consideration of the tanning industry in the state of Maine between the years 1800 and 1840, a paragraph is inserted from A Survey of the State of Maine, in reference to its Geographical Features, Statistics, and Political Economy, by Moses Greenleaf, published in 1829. According to Greenleaf:

"No authentic accounts are known to exist from which the amount of all the various manufactures of the State can be accurately known; and to collect any tolerable account of them, from individual information, would be next to impracticable. At the census of 1810, a return was made of the principal articles of manufacture but it was deficient in several counties, and probably in many towns in every county; besides this, many articles were not innumeraled, some which are manufactured to a considerable extent. In 1820 the returns made to the Legislature, by the assessors of the several towns, exhibit the number and kinds of the principal manufacturing establishments, but give no account of their annual products. These two sources are all, from which can be derived any extended and comprehensive view of the manufactures of the State; yet by comparing them with the population, and taking into consideration the circumstances and advantages of the State in respect to its agriculture, commerce, and fisheries, we may arrive at some general comparative

idea of its manufacturing interests; which is as much as, in the present state of information on the subject, can be expected." 1

"The present state of information" which Greenleaf has compiled seems to be the best source of information at hand on manufacturing statistics between the years 1800 and 1840. Obviously it has its limitations and is incomplete in some respects. However, it is the most reliable information available and from it may be derived conclusions of some importance.

At the outset of this chapter an introductory table summarizing the leather industry in the state of Maine from 1810 to 1840 may be helpful in giving first of all a general picture of the tanning industry in the state of Maine during this period. It will be noted that there are some blank spaces in the table due to a lack of information under certain headings, and it will also be noted that there are no figures available before eighteen hundred and ten.

1. Greenleaf, Moses, A Survey of the State of Maine in Reference to its Geographical Features, Statistics and Political Economy. Portland, Maine. 1829. pp. 272, 273.

TABLE 1. SUMMARY OF THE LEATHER INDUSTRY IN
 THE STATE OF MAINE, 1810-1840²

<u>Year</u>	<u>No. of Establishments</u>	<u>Value of Product</u>	<u>Capital Invested</u>
1810	200	\$231,174	
1820	248		\$99,200
1830		308,000	
1840	395	443,846	571,793

From this table one may note an increase of nearly one hundred per cent in the number of tanning establishments in the state between 1810 and 1840. Since there was one of the greatest increases of population between 1800 and 1810 in comparison with other decennial periods and since, at the beginning of the century, the market was still in good part local, we might not be wrong in assuming an increase in the number of establishments, value of product, and capital invested for this decennial period for which there is no statistical record. In the History of Androscoggin County edited by Georgia D. Merrill it is recorded how David Plumer came to the town of Wales from Gorham in the year 1808 and "settled on the farm adjoining that of Benjamin Fogg on the south. Mr. Plumer

2. Sources for this table are as follows: 1810, Greenleaf, Op. Cit., p.274; 1820, Ibid., pp. 276,282; 1830. Ibid., p. 283; 1840, United States Census, 1840.

was a tanner and a shoemaker as well as a farmer, trades that in those early days were pursued by the same person to a great extent." ³ There were many other unrecorded instances of new tanning businesses in this period from 1800 to 1810. L.R. Wells in his Industrial History of the United States makes a statement in confirmation of the probable increase of tanneries with the increase of the population. Writing of the first half of the nineteenth century in the United States, he says, "As in colonial days small tanning enterprizes followed the spread of population in later times." ⁴ A table presented on page 36 of this present chapter shows that in 1820 there was a distribution of tanneries in accordance with the spread of the population, and on that basis something similar may be assumed for the period 1800 to 1810.

In reference to the value of the product it is interesting to note that it increased in about the same ratio as the number of establishments. In 1840 the number of establishments lacked only three of doubling the figures of 1810; so also the value of the product in 1840 was lacking fourteen thousand dollars of doubling

3. Merrill, Georgia Drew, History of Androscoggin County, Maine. Boston. 1891. p. 490.

4. Wells, L.R., Industrial History of the United States. New York. 1922. p. 184.

the same item in 1810. As-is set forth later on in this chapter, the average amount of capital invested in tanneries in the state of Maine during this period increased, but the average value of the product per establishment remained the same. It may be concluded that during this period the tanning industry, measured by the ratio of the capital invested to the value of the product, was unaltered by machinery and new processes.

Though there were doubtless a few mechanical and chemical improvements in the manufacture of leather between 1800 and 1840, they had little effect, especially upon the quantity output of the industry. Bishop, in his History of American Manufactures gives a list of the leading patents issued for every year between 1800 and 1840. There were some improvements in the manufacture of leather. For instance for the year 1812, "to William Edwards, Northampton, Mass., three patents, viz. (Oct. 19), one for tanning, and one for the roller for preparing leather, and (Dec. 30) one for tanning sole leather. These were all capital improvements of Mr. Edwards. The rolling machine, particularly, is still in use in nearly its original form, and gives to leather the finishing process, by which it acquires that smoothness of surface

and solidity of texture peculiar to hammered leather."⁵
 Furthermore it might be noted that "Patent or Jappaned
 Leather, was about this time (1826) made in Newark, N.J.,
 by Seth Boyden, an ingenious citizen, who obtained letters
 patent for several improvements in manufactures. He
 erected a factory for making Patent Leather, which he
 was probably the first in the United States to make."⁶
 Though there were some patents issued in the field of
 leather manufacture in this period, one is impressed
 with the smallness of the number. The tanners of 1840,
 in Maine and elsewhere, were using about the same tools
 and about the same processes as the tanners at the
 beginning of the nineteenth century. This theory is
 borne out by a statement in the Maine Reference Book
 for 1845. "This state has made but little progress in
 manufacturing on a great scale, notwithstanding the
 abundance of her water power, the cheapness of fuel
 and labor, and the facilities of intercourse and
 transportation. Establishments for the manufacturing
 of leather, iron castings, gunpowder, paper, lime,

5. Bishop, J. Leander, A History of American Manufactures.
 Philadelphia, 1864. Vol. II. p. 189.

6. Ibid., p. 311.

salt, wool, and cotton, have been commenced."⁷

The word "establishments," in the sense used, apparently means factories. The distinguishing characteristic of such a business would be the employment of several men by an owner or master in a building somewhat larger than the one-man or two-man business, typical of the earlier stages of the industry. It is significant that by 1840 this type of enterprise had just "commenced." The implication clearly is that such establishments were few in number.

It is interesting to note the amount of capital invested and the average size of tanneries by counties for the years 1820 and 1840. The following table presents those figures:

7. Reference Book of the State of Maine, 1845. Boston. 1845. p. 32.

TABLE 2. CAPITAL INVESTED AND AVERAGE SIZE OF TANNERIES⁸
BY COUNTIES FOR THE YEARS 1820 AND 1840.

<u>Counties</u>	1820		1840	
	<u>Capital Invested</u>	<u>Average Size</u>	<u>Capital Invested</u>	<u>Average Size</u>
Aroostook	-	-	1,300	650
Cumberland	21,200	399	59,825	1229
Franklin	-	-	21,000	700
Hancock	3,600	400	18,410	876
Kennebec	17,200	400	151,579	3524
Lincoln	17,200	400	38,055	809
Oxford	7,200	400	9,600	369
Penobscot	2,000	400	135,150	6435
Piscataquis	-	-	2,000	222
Somerset	5,600	400	16,775	838
Waldo	5,200	400	52,425	2816
Washington	2,800	400	11,400	814
York	<u>17,200</u>	400	<u>54,283</u>	537
Totals	99,200		571,793	

Though the figures in this table for 1820, taken from Greenleaf's Survey of the State of Maine, are not

8. Sources for this table are as follows: 1820, Greenleaf, Op. Cit., p. 282; 1840, United States Census, 1840.

accurate, they are the most reliable that can be secured. From the figures listed in the table it will be noted that in 1820 Cumberland led the other nine counties in the amount of capital invested, and that Kennebec, Lincoln, and York were in second place. Despite boundary changes and the increase in the number of counties from ten to thirteen in the twenty-year period to 1840 Kennebec, Cumberland, and York were again among the first four in the amount of capital invested. However, in 1840 Kennebec was first; Penobscot, second; Cumberland, third; and York, fourth. In this period the greatest increase in tanning was made by Penobscot County. It was an increase from \$2,000 invested in 1820 to \$135,150 in 1840 or over six thousand per cent. Furthermore, it moved forward from last place in leather production in 1820 to second place in leather production in 1840. Waldo County also made a distinctive increase from \$5,200 to \$52,425.

The distribution of tanneries in the state of Maine by counties is shown in the following table. There were changes in county boundaries during the period, but they were not important enough to invalidate the usefulness of all the figures in comparing the location of the establishments.

TABLE 3. DISTRIBUTION OF TANNERIES BY COUNTIES WITHIN
 THE STATE OF MAINE FOR THE YEARS 1820 AND 1840⁹

<u>Counties</u>	<u>1820</u>	<u>1840</u>
Aroostook	-	2
Cumberland	53	45
Franklin	-	20
Hancock	9	21
Kennebec	43	43
Lincoln	43	47
Oxford	18	26
Penobscot	5	21
Piscataquis	-	9
Somerset	14	20
Waldo	13	26
Washington	7	14
<u>York</u>	<u>43</u>	<u>101</u>
Totals	248	395

The following is a table giving the ranking of the various counties of Maine in reference to distribution, capital invested, and average size for the two years 1820 and 1840:

9. Sources for this table are as follows: 1820, Greenleaf, Op. Cit., p. 276; 1840, United States Census, 1840.

TABLE 4. THE RANK OF THE COUNTIES OF MAINE IN LEATHER PRODUCTION BASED ON NUMERICAL DISTRIBUTION, CAPITAL INVESTED, AND AVERAGE SIZE FOR THE YEARS 1820 AND 1840.

<u>Counties</u>	<u>Numerical Distrib.</u>		<u>Capital Invested</u>		<u>Average Size</u>
	<u>1820</u>	<u>1840</u>	<u>1820</u>	<u>1840</u>	<u>1840</u>
Aroostook	-	10	-	13	10
Cumberland	1	3	1	3	4
Franklin	-	7	-	7	9
Hancock	9	6	6	8	5
Kennebec	2	4	2	1	2
Lincoln	2	2	2	6	8
Oxford	3	5	3	11	12
Penobscot	8	6	8	2	1
Piscataquis	-	9	-	12	13
Somerset	4	7	4	9	7
Waldo	5	5	5	5	3
Washington	7	8	7	10	6
York	2	1	2	4	11

The following table gives the distribution of tanneries per 10,000 population of the various counties. While the distribution of tanneries does not follow that of population exactly, it is evident that there is some

uniformity. There appears to have been very little centralization of the tanning industry in any one particular locality at this time. This also further supports the theory that the distribution of tanneries during the early part of the nineteenth century was commensurate with the spread of the population.

TABLE 5. DISTRIBUTION OF TANNERIES BY COUNTIES PER
10
10,000 OF THE POPULATION IN 1820.

<u>Counties</u>	<u>Number of Tanneries</u>	<u>Proportion to 10,000 population</u>
Cumberland	53	11
Hancock	9	5
Kennebec	43	10½
Lincoln	43	9½
Oxford	18	7
Penobscot	5	4
Somerset	14	6
Waldo	13	6
Washington	7	5
York	43	9½
Total	248	Average 8¼

10. Greenleaf, Op. Cit., p. 276.

While investigating the local distribution, it is not unreasonable to assume that in many of the Maine communities, statistically represented in the foregoing tables, the tanneries were an important factor in the prosperity of the towns. It was probably true in various Maine communities as is written of the old town of Kennebunk. "Theophilus Hardy was a tanner and erected a dwelling house, now standing, and the several buildings required in the prosecution of his business.....
Hardy formed a copartnership with Jotham Perkins in 1809. The partners were industrious, temperate, enterprising men and with sufficient means at their command to carry on a large business without incurring pecuniary embarrassment. We think the same may be said of all tanners who have carried on business in this town. Until circumstances that could not be avoided or overcome rendered our location an ineligible one for its successful prosecution, the business was very remunerative. From 1800 to 1830 the tanneries were an important factor in the prosperity of the town."¹¹

Behind the statistics of these local tanneries are a number of very human episodes such as that contained in

11. Remich, Daniel, History of Kennebunk from its Earliest Settlement to 1890. 1910. p. 350.

a very short sketch of the town of Columbia, by Evi Leighton, on the coming of an early tanner to Washington County. The statement is not pretentious, but it tells the story of the emigration, the industry, and the success of one of the early tanners in Washington County. "Joseph Crandon was born in New Bedford, Mass., in 1802, and after enjoying a whaling voyage, learned the tanner's trade. As a journeyman tanner he drifted down into Columbia, Me., and hired with Daniel Townsley to work in his tan yard. He was a steady, industrious young man and soon captured for his first wife, Ruth, a daughter of Thomas Ruggles. He soon bought out Mr. Townsley."¹²

Every figure in a statistical chart represents a story something like this one. In a few typewritten pages collected together under the title of Tanneries of Maine, by Marion F. Quinn, is to be found much of the material contained in local town, city, and county histories on local tanneries.¹³

What was the relative importance of Maine in leather production among the leading leather producing state of the Union in 1810?

"By the Census of 1810, which returned the number

12. Centennial Historical Sketch of the Town of Columbia. p. 17,18. Machias, Me. 1896.

13. Quinn, Marion F., Tanneries of Maine. Unpublished, Maine State Library. Augusta, Maine. 1931.

of tanneries in each State and Territory except Massachusetts, North Carolina and East Tennessee, New York had 876, Pennsylvania 715, Virginia 442, Connecticut 408, Kentucky 267, New Jersey 248, New Hampshire 236, Ohio 217, Vermont 205, The District of Maine 191. Massachusetts returned 299 from seven counties. Five of the most important - Suffolk, Essex, Middlesex, Plymouth, and Nantucket - were not returned. All the remaining states and territories were below 100. The entire number in the Union was 4,316, and the value of the leather made, \$8,388,250. The number of establishments returned in 1850 was 6,363, and the value of their manufacture, \$32,861,796." 14

From this we gather that in 1810 Maine ranked tenth among the states in the distribution of tanneries and had about five per cent of the number operating in the United States. From the standpoint of the value of the product Maine produced only 2.7 per cent of the total leather production in the United States. These figures show that the average size of the enterprizes located in Maine was considerably smaller than the average for the country as a whole. The large tanneries of the period were elsewhere. Also it is to be noted that between 1810 and 1850 the value of leather manufacture in the whole country increased 291 per cent while the number of tanneries increased only by fifty per cent. This would indicate increased size.

In reference to the tanning industry for the year 1810 Bishop states that,

"Tanneries everywhere existed, some of them on a large

14. Bishop, J. Leander, A History of American Manufactures. Philadelphia, 1864. Vol. II. p.462.

scale; one establishment employing a capital of \$100,000. One third of the hides used in the great tanneries of the Atlantic states were imported from South America, and cost five-and-a-half cents a pound, while in England they cost seven cents. The bark to tan them cost in England nearly as much as the hides, but in America not one tenth as much. Some superior, or particular kinds of English leather were annually exported. Some of the American leather was of inferior quality, but it was generally better made in the Middle than in the Northern or Southern States. The tanneries of Delaware employed a capital of \$120,000 and ninety workmen, and made annually \$100,000 worth of leather. Those of Baltimore numbered twenty-two, of which seventeen had together a capital of \$187,000, and tanned annually 19,000 hides, and 25,000 calf skins. Morocco leather was made in several places from sheep and imported goat skins, and deer skins - an article of export - were dressed and manufactured in sufficient quantity for the country." 15

Large scale production in the tanning industry was developed in New York State at an early date:

"In April, 1817, the General Manufacturing Law of the State of New York, was so amended, chiefly through the agency of Gideon Lee, as to enable the manufacturers of Morocco and other leather to become incorporated under the act, with capital not exceeding \$60,000, to be located only in Greene and Delaware counties.

Under this law, the 'New York Tannery' was organized in May, by an enterprising company, and under the superintendence of William Edwards and Son, a tannery calculated for five thousand hides - the first wholly under cover in the United States - was erected at Hunter, in Greene County, on the Schoharie kill, twenty miles west of the Hudson, and in the midst of the hemlock forests of the Catskill Mountains, having twelve hundred acres of land

attached. The first leather was sent to market from this region in the autumn of the next year." 16

At a later date, however, larger tanneries were built in Maine. In fact, the largest tannery in the United States, that at Winn, was located in the state of Maine. 17 "In its initial stages the leather business of the United States was comprised in the development of the tanning industry, first of New England, then of New York and Pennsylvania, and later of Michigan, Wisconsin, and other Mid-Western States. As early as 1657 Roxbury, now a part of Boston, was noted as a tanning center. Tanning establishments gradually crept westward as the forest was cleared and the oak and hemlock bark used in the tanning process was exhausted. Late in the seventeenth century the shipbuilding industry of Massachusetts had so depleted the forests of oak and hemlock that the tanning business soon left the State and went to Maine, Canada, New York, and Pennsylvania, where there were adequate supplies of bark. Very soon the small tanneries began to be superseded by larger establishments. These were combined into larger enterprizes, until finally the tanning business, closely knit with the production of domestic cattle for

16. Bishop. Op. Cit., pp. 238, 239.

17. The Wealth and Industry of Maine for the Year 1873. First Annual Report. Augusta, Maine. 1873. p. 177.

18

hides, became centralized."

That some of the tanning business left the state of Massachusetts and went into Maine, New York, and Pennsylvania between 1810 and 1840 is supported by the following table that states the number of tanneries existing in the various states of the Union for those years.

TABLE 6. NUMERICAL DISTRIBUTION AND RANK OF TANNERIES
AMONG THE LEADING LEATHER PRODUCING STATES BETWEEN 1810-1840

<u>States</u>	1810		1840	
	<u>Number</u>	<u>Rank</u>	<u>Number</u>	<u>Rank</u>
New York	876	1	1,216	1
Pennsylvania	715	2	1,170	2
Virginia	442	3	660	4
Connecticut	408	4	179	12
Massachusetts	299 (plus)	5	355	9
Kentucky	267	6	387	8
New Jersey	248	7	195	13
New Hampshire	236	8	251	11
Ohio	217	9	812	3
Vermont	205	10	261	10
District of Maine	191	11	395	7
Tennessee	-	-	454	5
Indiana	-	-	428	6
United States	4,316		8,229	

Since the tanneries in some of the counties of Massachusetts are not included in the figure for 1810, it is

18. Van Norman, Louis E., The Story of Leather and its Uses. Review of Reviews. Vol. 40. 1909. p.454.

not improbable that the number of tanneries actually decreased in Massachusetts between 1810 and 1840. At best, there was very little increase. On the other hand, there can be noted the increase in this thirty year period in the number of tanneries operating in Maine, New York, Pennsylvania, and some of the western states, particularly Ohio. During this period the number of tanneries in the United States nearly doubled.

There is no comparable basis for ranking the importance of the tanning industry in Maine along with the other industries of the state for 1810. However, for 1820 from the standpoint of capital invested the industries of the state would rank as follows:

TABLE 7. CAPITAL INVESTED IN SHOPS, MILLS, AND OTHER
19
MANUFACTURING ESTABLISHMENTS IN 1820.

1. Saw Mills	\$495,600
2. Shops and Work Houses	353,200
3. Grist Mills	285,200
4. Tanneries	99,200
5. Carding Machines	84,000
6. Fulling Mills	59,600
7. Pot and Pearl Ash Works	25,500
8. Distilleries	14,500
9. Rope Walks	11,800
10. Cotton and Woolen Factories	11,000
11. Bake Houses	4,600
12. Slitting Mills	4,000
13. Iron Works and Furnaces	2,000
14. Spinning Machines	850
15. All other Mills	8,400

From this table it will be seen that tanneries, even in the year 1820, ranked as the fourth industry of the state, based on the amount of capital invested. Following

19. Greenleaf, Op. Cit., p.282.

the table in Greenleaf's Survey of the State of Maine from which the preceding table is arranged, there is the statement:

"The estimated cost of the establishments enumerated in this table, it is believed, is in most cases rather below than above the truth. In several it is stated from a knowledge of facts; but in some it is merely conjectural, having, however, for a guide, the value affixed to them by the Legislature, in the year 1820, as compared with the value of others, the cost of which is better known." 20

An estimate of the annual value of manufactures in the state for the year 1829 is also made by Greenleaf in the same volume. Preceding the table Greenleaf has the following statement of explanation. "From the statement of the amount and value of manufactured articles in Table I, with a conjectural allowance predicated upon the increase of the population since 1810; and from other sources, an estimate of the probable annual value of manufactures, since 1820, is formed as in Table VI." 21

20. Greenleaf, Op. Cit. p. 283.

21. Ibid., p. 283.

TABLE 8. ESTIMATE OF THE ANNUAL VALUE OF
MANUFACTURES, 1829.

1. Cloths, all kinds	\$1,528,600
2. Ships and Vessels	1,037,000
3. Cordage	312,800
4. Leather	308,000
5. Distilled Spirits	213,000
6. Shoes and Boots	182,000
7. Hats	160,000
8. Nails	135,000
9. Skins Dressed	73,500
10. Soap	42,200
11. Saddlery	33,900
12. Tallow and Sperm. Candles	30,700
13. Pleasure Carriages	12,000
14. Paper	12,000
15. Flax-seed Oil	4,000
16. Augers	3,000
Total Enumerated	\$4,088,000

Following the table is this statement of further explanation:

"It will be observed that the foregoing comprises but a part of the manufactures of the state; and omits

some, of which the annual products very considerably exceed many of those which are enumerated. Of those omitted are lime, marble, bricks, iron castings, edge-tools and other manufactures of iron, brass and copper foundry, tin, gunpowder, cabinet work and household furniture, casks and other wooden ware, clocks, silver-ware and jewelry, combs, &c. It is known that most of these are manufactured to a very considerable extent, but no account, or estimate of their amount has been obtained." 22.

The following table will give by counties for the year 1840 the number of hands employed, sides of sole leather produced, sides of upper leather produced as well as the amount of capital invested and the numerical distribution of the tanneries of the state already given in a previous table:

22. Greenleaf, Op. Cit., p. 284.

TABLE 9. STATISTICS ON THE TANNING INDUSTRY OF MAINE
BY COUNTIES FOR THE YEAR 1840.

Counties	No. of Tanneries	Capital Invested	Hands Employed	No. sides Sole	No. sides upper
Aroostook	2	\$ 1,300	2	760	150
Franklin	45	59,825	213	7,201	8,835
Cumberland	20	21,000	28	2,110	3,160
Hancock	21	18,410	32	2,409	5,986
Kennebec	43	151,670	99	53,902	11,271
Lincoln	47	38,055	53	5,685	6,068
Oxford	26	9,600	23	1,697	1,781
Penobscot	21	135,150	67	5,566	19,215
Piscataquis	9	2,000	13	537	777
Somerset	20	16,775	31	3,339	4,520
Waldo	26	52,425	71	32,819	8,569
Washington	14	11,400	20	1,441	4,785
York	101	54,283	102	6,281	10,739
Total	395	\$571,793	754	123,747	85,856

Thus, the number of tanneries in the state in 1840 was 395, an increase in twenty years of 147. The average capital invested per tannery had increased from \$400 to \$1,447.58, although the number of hands employed, 754, averaged less than two to an establishment. The table shows

123,747 sides of sole leather and 85,856 sides of upper leather produced, or a total of 209,603 sides or 104,802 hides tanned, an average per tannery of 265. Thus it may be seen that to 1840, and in fact for several years later, the tanneries in Maine were generally of moderate dimensions. The large establishments that were built in Eastern Maine after the Civil War were then unknown.

As a conclusion to this chapter on the tanning industry in the state of Maine between 1800 and 1840, there is given a brief summary of the industry from the publication of the Bureau of Industrial and Labor Statistics for the State of Maine for the year 1896.

"Originally the larger part of the State of Maine was well timbered with hemlock, and from the early days of its settlement the business of converting raw hides into leather has been carried on to a considerable extent. As early as 1810 there were, in the then District of Maine, 200 tanneries where 55,153 hides and skins were tanned and dressed, producing \$231,174 worth of finished leather. This would give an average of 275 hides and skins tanned, and a value of \$1,155.87 to each tannery. In early days tanneries must have been more of a neighborhood accomodation than an industry to give employment to labor. At most, only a few hides were purchased, for a considerable part of the year's operation was custom work. Home slaughtered hides and skins were brought in to be tanned for home use, and the shoemaker made his rounds from house to house among the farmers to work up this stock of finished leather into a year's supply of foot wear for the female as well as the male portion of the family. 23

CHAPTER III

THE RISE OF LARGE SCALE MANUFACTURE

1840-1880

The tanning industry in the state of Maine grew in importance from 1800 to 1840 as shown by the figures and tables presented in the last chapter. But in the period from 1840 to 1880, especially the twenty years prior to 1880, it was destined to rise to national importance. Maine's importance in leather production was in this period all out of proportion to its population. It is interesting to contrast Maine's rank in population with its ranking in this industry. In 1840 Maine ranked as the eleventh state in population, but in leather production it ranked fifth. In 1860, Maine ranked as the twenty-first state in the former, but in the latter fifth; in 1870, twenty-second in population, fourth in leather production; in 1880, twenty-seventh in population, fifth in leather production. If Maine was losing rank in population in this period, the state was gaining in the leather industry and constantly growing in importance. Hides came to Maine to be tanned from the southern and western states.

Indeed, hides came to Maine from all over the world, even from such distant places as China and Australia. The following table gives the relative importance of Maine in the tanning industry compared with the other states:

TABLE 10. RELATIVE IMPORTANCE OF MAINE IN LEATHER

PRODUCTION COMPARED WITH OTHER STATES, 1840-1880.

(Cap. inv. and val. of prod. in thousands of dollars)

1840			1860		
<u>State</u>	<u>Rank</u>	<u>Capital Invested</u>	<u>State</u>	<u>Rank</u>	<u>Value of Product</u>
New York	1	\$3,907	New York	1	\$22,481
Pennsylvania	2	2,783	Pennsylvania	2	14,412
Massachusetts	3	1,024	Massachusetts	3	12,864
Ohio	4	975	Ohio	4	3,096
Virginia	5	835	Maine	5	2,230
Maryland	6	713			
Maine	7	572			

1870			1880		
<u>State</u>	<u>Rank</u>	<u>Value of Product</u>	<u>State</u>	<u>Rank</u>	<u>Value of Product</u>
New York	1	\$36,569	Pennsylvania	1	\$41,747
Massachusetts	2	33,458	Massachusetts	2	38,862
Pennsylvania	3	28,899	New York	3	34,720
Maine	4	4,911	New Jersey	4	15,475
New Hampshire	5	3,840	Maine	5	9,915

In the 1870 and 1880 census reports the business of tanning and currying is separated. However, the figures in the above table for 1870 and 1880 represent the total leather production and include both tanning and currying.

But regardless of the exact basis of the figures for those years, they represent very clearly the relative importance of Maine in tanning and leather production, and furthermore are comparable with the 1860 figures because they are on the same basis.

Another table further illustrates the rise to importance of the state of Maine in leather production on a percentage basis with the total production in the United States:

TABLE 11. PROPORTION OF THE TOTAL VALUE OF LEATHER PRODUCTS IN THE UNITED STATES PRODUCED IN MAINE, 1840-1880.
(thousands of dollars)

<u>Year</u>	<u>United States</u>	<u>Maine</u>	<u>Per Cent, Maine</u>
1840	\$33,134	\$ 443	1.33
1860	113,685	2,230	1.96
1870	157,236	4,912	3.12
1880	202,659	9,915	4.88

While the population of Maine was only 1.29% of the total population of the United States in 1880 Maine was producing about five per cent of leather manufactured in the country.

Although the leather industry in the country between

1860 and 1870 increased 38.8%, the leather industry in the state of Maine increased 120.2%. The percentage of increase in that decennial period for the state of Maine was also greater than the percentage of increase in the two leading leather producing states, New York and Pennsylvania. In the decennial period of 1870 to 1880 the leather industry in Maine enjoyed an overwhelming increase compared with all the leading states and the United States as a whole. While the percentage of increase in the country as a whole was only 28.8%, and in the leading state of Pennsylvania only 44.4%, the per cent of increase for this state was 101.8%. The percentage of growth in leather production in leading leather producing states is represented in the following table:

TABLE 12. RATE OF GROWTH IN LEATHER MANUFACTURING IN
LEADING LEATHER PRODUCING STATES, 1860-1880.

<u>State</u>	<u>Per Cent of Increase Based on Value of Product</u>	
	1860 to 1870	1870 to 1880
Massachusetts	167.9	16.1
Maine	120.2	101.8
New Hampshire	141.0	20.5
New York	62.6	- 5.0
<u>Pennsylvania</u>	<u>100.5</u>	<u>44.4</u>
United States	38.3	28.8

In a history of Foxcroft, Maine, reference is made to Deacon Farnham's tannery that operated between 1840 and 1880. "Deacon L. O. Farham's tannery was also in operation about this time, a building that was twice burned and twice rebuilt." That statement is a good indication of the vitality of the tanning industry in the state of Maine during this period. As well as being an industry of national significance, it was one of the leading industries of the state. This is observed by noting the relation of leather to other products manufactured

1. Sprague, John Francis, Foxcroft, Maine. 1812-1912.
Dover, 1917. p. 74.

in the state of Maine between 1840 and 1880. In 1840 leather products ranked sixth in the industries of the state as is set forth in the following table of the leading ten industries of that year:

TABLE 13. VALUE OF LEADING PRODUCTS OF MAINE, 1840.
(thousands of dollars)

1. Mills, flouring, grist, saw, oil	\$3,162
2. Ships	1,845
3. Cotton Goods	970
4. Houses	733
5. Bricks and Lime	622
6. Leather Products	444
7. Woolen Goods	412
8. Furniture	205
9. Carriages	174
10. Granite, Marble, etc.	99

According to the census of 1860, the value of leather production was over two million dollars and ranked as the third industry in the state.

TABLE 14. VALUE OF THE LEADING PRODUCTS OF MAINE, 1860.
(thousands of dollars)

1. Lumber, planed and sawed	\$ 6,730
2. Cotton Goods	6,236
3. Leather Production	2,231
4. Boots and Shoes	1,911
5. Woolen Goods	1,717
6. Clothing	1,680
7. Flour and Meal	1,635
8. Sugar Refining	1,350
9. Ship-building	1,138
10. Paper, printing, and wrapping	950

The situation in 1870, taken from the census reports for that year, shows the relation of the value of leather products to the other leading products of the state. The leading products of the year are summarized in the following table:

TABLE 15. VALUE OF THE LEADING PRODUCTS OF MAINE, 1870.
(thousands of dollars)

1. Textiles	\$22,017
2. Lumber	15,622
3. Food	10,575
4. Leather Production	4,911
5. Boots and Shoes	3,870
6. Clothing	3,120
7. Foundry Products	2,876
8. Shipbuilding	2,801
9. Lime	1,742
10. Quarry Products	1,620

1880 was the peak year of leather production in the state of Maine from the standpoint of leather production in terms of the value of the product. In this year leather production in the state of Maine was the second ranking industry. The following table gives the list of the leading industries in the state of Maine for 1880:

TABLE 16. VALUE OF THE LEADING PRODUCTS OF MAINE, 1880.
(thousands of dollars)

1. Cotton Goods	\$13,319
2. Leather Production	9,915
3. Lumber, Sawed	7,934
4. Woolen Goods	6,686
5. Boots and Shoes	6,120
6. Grist Mill Products	3,966
7. Shipbuilding	2,910
8. Paper and Wood Pulp	2,773
9. Foundry Products	2,233

As the foregoing tables disclose, the period from 1840 to 1880 was a period of rapid growth in the leather industry in the state of Maine. It rose from the sixth ranking in the state in 1840 to the second in 1880. Between 1860 and 1880 its rise was particularly spectacular. The following table shows the steady rise in the percentage of leather production to the total production in the state between 1840-1880:

TABLE 17. PRODUCTION OF LEATHER GOODS COMPARED TO THE
TOTAL PRODUCTION IN MAINE, 1840-1880.
(thousands of dollars)

<u>Year</u>	<u>Total Production in Maine</u>	<u>Amount of Leather Produc- tion</u>	<u>Per Cent of Leather to Total</u>
1840	\$10,271	\$ 443	2.31
1860	38,193	2,231	5.83
1870	79,479	4,911	6.06
1880	79,829	9,915	12.4

In any exact summary of the leather and tanning industry in the state of Maine between 1840 and 1880 a distinction should be made between tanning and some of the finishing processes such as currying because tanning was not the whole of the industry in those years. For instance in 1880 the tanning of leather in terms of the value of the product amounted to 7,915 thousand dollars, whereas the total leather production of the state amounted to 9,915 thousand dollars. Due to the absence of any official figures separating the value contributed to the product by the various processes, it is difficult to compile a satisfactory table separating tanning from the other leather manufacturing processes. However the

following table is an attempt to do that with the best figures that are available:

TABLE 18. A SUMMARY OF THE LEATHER AND TANNING INDUSTRY
IN THE STATE OF MAINE, 1840-1880.
(thousands of dollars)

<u>Year</u>	<u>No. of Estab.</u>	<u>Value of Product</u>	<u>Capital Invested</u>	<u>Hands Employed</u>
1840:				
Total leather	395	\$ 443	\$ 571	754
1860:				
Total leather	146	2,231	860	747
Tanneries	144	2,189	852	735
1870:				
Total leather	179	4,911	1,865	1,020
Tanneries	123	4,009	1,609	1,000
1880:				
Total leather	120	9,915	2,988	1,688
Tanneries	83	7,530	2,970	1,667

In 1840 there were close to four hundred tanneries in the state of Maine. This can be gathered from the above table because at that time tanning and the finishing processes were carried on mostly in the same establishments. In point of numbers 1840 was the year of greatest expansion. Thereafter the number more or less steadily declined, while up to 1880 the value of the product, the capital invested, and the number of hands

employed increased by leaps and bounds. It is interesting to note that "In 1840, York county alone contained 101 tanneries, an average of four to each town, giving employment to 102 men, while the state showed 395 tanneries, producing 209,603 sides of leather. Now a single tannery in the county of Aroostook approximates that amount, returning 200,000 sides as the annual output." ² Between 1840-1880 while the number of tanneries steadily decreased, the average size of the tanneries greatly increased. "As hemlock was cut off and bark became scarce in the older settled counties, the small tanneries, which had existed from the early days, dropped out of existence one after another, and where we had at one time over 400 in the State, to-day less than forty of all descriptions exist, and where formerly the annual output barely averaged \$1,000, at the present time the same item ranges from \$65,000 to \$70,000." ³

In the Industrial and Labor Statistics for 1896 there are two pages on the tanning industry in Maine between 1860 and 1880. It is particularly valuable for its interpretation of the United States census, differen-

2. Industrial and Labor Statistics, Maine. 1896. p. 57.
3. Ibid. p. 54.

tiating tanning from other leather production processes and furnishing the basis for table 18 of this chapter.

"Taking the figures of 1860 we find the number fallen off to 144, a decrease in the number in twenty years of 251. These had an invested capital of \$851,975, an average of \$5,916 per tannery; 735 hands were employed, being an average crew of five, while the output amounted to \$2,188,904 or an average of 15,200 to each establishment. The cost of material used amounted to \$1,495,049 and wages paid \$222,484 for the year.

In 1870 the number of tanneries were reported at 123, being twenty-one less than ten years before. In the census of this year the business of tanning and currying was separated. Seventy-six establishments are reported as being engaged in tanning as well, and are included in the number above given. The capital invested in the tannery business is given as \$1,606,704, while but \$2,400 additional is given on account of currying establishments. The value of the product of the tanneries is \$3,779,227. Deducting from this \$853,073, the value of the tanned hides and skins curried, and adding \$1,082,554, the value of the product of the currying establishments, would give \$4,008,708 the actual value of all the finished products whether curried or simply rolled.

In tanning, 781 hands were employed, receiving for the year \$285,882 in wages, while in currying, 219 hands are reported but no item of wages given. Of hemlock bark, 63,470 cords were used, valued at \$428,476, and average of \$6.75 per cord. During the year, 864,600 sides and 669,850 skins were tanned. Out of this, 62,135 skins and 200,715 sides of leather were curried. The skins before currying were valued at \$143,780, an average of \$2.31 each, and the sides of leather at \$709,203, an average of \$3.53 each.

The census of 1880 again separates the business of tanning and currying, but by combining the figures and eliminating such as are duplicated the volume of business is fairly shown. This census reports eighty-three tanneries, being forty less than in 1870. Thirty-four of these are also engaged in currying leather. The following figures are given:

	Tanning	Currying	Total
Number of Establishments.....	83.....	34.....	117
Capital Invested	\$2,459,700..	\$ 510,900..	\$2,970,600
Hands employed.....	1,393.....	274....	1,667
Wages paid.....	\$464,904.....	\$99,094..	\$563,998
Value of product.....	\$7,100,967..	\$2,612,350..	\$9,713,317

The above totals give an excess of the actual business in the items "Number of establishments," "material used," and "value of product." In the first instance the thirty-four currying establishments are doubtless included in the number of tanneries, hence this total should be eighty-three. The value of the tanned hides and skins used by the carriers is not given in this census, but reckoning on the basis of 1870, where actual values are given, this item would amount to \$2,183,784, and, as this duplicated in the cost of material and also in the value of the product, it should be deducted from both items. Taking the business as a whole this would give the actual cost of material used \$5,641,953 and the value of the product \$7,529,533.⁴"

The following table gives a picture of the distribution of leather manufacturing establishments in the state of Maine by counties between 1840 and 1880:

4. Industrial and Labor Statistics, Maine. 1896. pp. 55,56.

TABLE 19. DISTRIBUTION OF LEATHER MANUFACTURING ESTABLISHMENTS IN MAINE BY COUNTIES, 1840 - 1880.

Counties	1840	1860	1880
Androscoggin	1	7	4
Aroostook	2	1	4
Cumberland	45	12	10
Franklin	20	5	3
Hancock	21	13	9
Kennebec	43	26	18
Knox		3	4
Lincoln	47	3	2
Oxford	26	9	7
Penobscot	21	17	12
Piscataquis	9	5	2
Sagadahoc		6	1
Somerset	20	14	7
Waldo	26	7	5
Washington	14	5	10
York	101	11	8

The above table depicts the decline in the number of tanneries in the older counties of York and Cumber-

land. In the forty year period from 1840 to 1880 the number of leather manufacturing establishments in Cumberland County declined from forty-five to ten and in York County from one hundred-and-one to eight. However, the movement of leather manufacturing from the western to the eastern part of the state in this forty year period cannot be truly represented by the above table because the size of the tanneries differed so greatly. There are no figures available on the value of leather production in the various counties which would be a true index of the real movement in the tanning industry from the western to the eastern counties. However, it is well known that the largest tanneries of this period, with one or two exceptions, were in the four eastern counties of Penobscot, Hancock, Washington, and Aroostook. The earliest figures available, the 1873 publication of the Industrial and Labor Statistics, corroborates this. There were no tanneries in the western part of the state to compare in size with those located in the eastern county of Penobscot.

"Penobscot County shows the largest amount of capital employed in the industry, thirteen establishments, giving a total of \$762,000; value of production, \$1,352,480. One establishment in the town of Kingman in that county tanned 1,000 tons, or 150,000 sides of leather, value \$550,000.

In the town of Winn, another establishment, which is the largest tannery in the United States, has tanned 700 tons of sole leather, valued at \$350,000." 5

The same source gives the following description of these two large tanneries of Penobscot County:

"Kingman:

F. Shaw & Bro., cap., \$120,000; water pow., 200h.; mac. emp., 18; stock used, bark, 10,000 cords; val., \$55,000; hides, 75,000; val, \$360,000; total val., \$415,000; production, leather, 150,000 sides, or 1,000 tons; val., \$550,000; m.emp., 75; wages during the year, \$35,000; av. weekly wages, \$9; 12 mos. in operation; market, Boston.

Winn:

Henry Poor & Son, cap., \$550,000; steam pow., 3h.; mac. em., 66; vats, 450; production, sole leather, 700 tons; val., \$350,000. (This tannery is the largest in in the United States. Other particulars omitted.)" 6

Contrast the above with the largest tannery in either York or Cumberland Counties, that at Gorham:

"Gorham:

Hinckley Brothers & Benson, capital \$3,500; steam power, 30 horsepower; mac. emp., 50; val. of production, \$45,000." 7

"Prior to 1860 several tanneries of quite respectable proportions had been built, but the war and the prosperous times which followed stimulated this industry, and the next fifteen years saw a score or more of immense sole leather plants established in the eastern part of the state." 8 Before 1860 there was a tannery at Lowell .

5. Industrial and Labor Statistics, Maine. 1873. p. xxi.

6. Ibid., Kingman, p. 166; Winn, p. 177.

7. Ibid., p. 35.

8. Industrial and Labor Statistics, Maine. 1896. p. 54.

in Penobscot County which was the forerunner of the large scale enterprises that came soon after. It was built in 1855 and 1856 by Webb and Cummings and was the first of the large sole leather tanneries that were built in eastern Maine. This early tannery later became the property of Henry Poor & Son. In 1893 it was sold to the United States Leather Company.

In 1873 William Plaisted was operating two large tanneries - one at Princeton and the other at Lincoln. The following account from the Bureau of Industrial and Labor Statistics indicates the size of the tannery at Princeton in 1873:

"William Plaisted & Son, cap., \$20,000; steam pow., 42 h.; stock used, hides, 20,000; val., \$60,000; bark, 3,000 cords; val., \$120,000; m. emp., 40; wages during the year, \$18,000; av. weekly wages, \$9; 12 mos. in operation; market, leather tanned for Boston parties." 9

After exhausting the supply of hemlock bark in the vicinity of their tannery at Stetson, Plaisted & Son came to Lincoln in 1869, where they erected a large tannery. In a History of the Town of Lincoln by Dana Willis Fellows there is a paragraph on this large tannery erected by William Plaisted & Son and also a brief account of the predecessors of the firm.

"Ira Fish gave William Barnes a bond for a deed of one acre of land just below the dam on the easterly side of the stream at the village on the 8th of March, 1828. Barnes erected, or perhaps had already erected, tannery buildings, a residence, and probably other buildings on this land, and began the business of tanning. The buildings were burned in 1841, but were rebuilt at once and the business continued till 1860, when Barnes went away, having sold the property to Joseph Burland, who continued that business probably till about the time of his death.

William H. Walker built and began the tanning business on the Cumbolassee Stream at the bridge in 1843. He continued till 1860, when he went to New Hampshire. The building was later used for various purposes, both manufacturing and residential, but it disappeared many years ago.

Finally, William Plaisted & Son built the large tannery at the village in the fall of 1870. This was run with success for many years, but in the winter of 1898-99, it was destroyed by fire." 10

It might be added that a few years after its construction this tannery at Lincoln went into the hands of Henry Poor & Son.

Besides the tanneries at Lincoln, Lowell, and Winn another large tannery was operated by Henry Poor & Son at Medway. The Poores built this tannery themselves in 1870. Though not so large as that at Winn, which they also operated, it was up to date and value of the product was about the same.

Besides the large tanneries operated by Henry Poor & Son, there were the so-called Shaw tanneries (F. Shaw &

10. Fellows, Dana Willis, M.D., History of the Town of Lincoln, Maine. Lewiston, Me. p. 120.

Bros.) located at Vanceboro, Princeton, Grand Lake Stream, Eaton, Kingman, Brookton, and Forest City."These had been built at different times from 1869 into the early seventies, some by the Shaws themselves, and others by different parties and were purchased by the Shaws."¹¹

The tannery at Vanceboro was built by the Shaws and in 1873 made this return:

F. Shaw & Bros., (no ret. of cap.); water power., 100 h.; mac. emp., 14; stock used, hemlock bark, 6,000 cords; val., \$30,000; production, sole leather, 600 tons; (no ret. of val. of production); m. emp., 50; wages during the year, \$24,000; av. weekly wages, \$8; 12 mos. in operation; market, Boston." 12

The large tannery at Kingman was built in 1871 by Shaw and Kingman. "The place which then contained but few settlers, was known as Independence Plantation, but when the town was incorporated in 1873, it was named in honor of R. S. Kingman, one of the tannery firm. A few years later, Mr. Kingman retired, and the tannery became the property of F. Shaw & Bros."¹³ The large tannery at Princeton is an example of a tannery built by another that later came into the hands of F. Shaw & Bros. As is indicated (page 14 of Industrial and Labor Statistics, 1873),

11. Industrial and Labor Statistics, Maine. 1896. p. 62.

12. Ibid., 1873. p. 238.

13. Ibid., 1896. p. 63.

the tannery at Princeton in 1873 was operated by William Plaisted & Son. Later it was sold to the Shaw interests.

The large tannery at New Limerick in Aroostook County was built by Charles and Willis I. Shaw, father and son, in 1875. The yard contained about two hundred and fifty vats with a capacity for seven hundred and fifty tons of finished leather annually. Charles Shaw & Son were also operating the one large tannery outside of the eastern counties in 1873, that at Burnham in Waldo County.

"Burnham:

Charles Shaw & Son, cap. \$85,000; water power, 20 h.; stock used, bark, 2,500 cords; val., \$1,600; hides, 160 tons; val., \$64,000; total val., \$83,100; production, 250 tons sole leather; val., \$100,000; m. emp., 20; wages during the year, \$15,000; 12 mos. in operation; market, Boston." 14

In 1880, George W. Collins built and nearly completed a tannery at Bridgewater, but it remained idle until 1884, when it was bought by Charles P. Church.

These few pages on some of the large tanneries of the period included in this chapter bring to the fore the names of some of the large owners and operators. With the exception of the large tannery at Burnham, the

foregoing paragraphs of this chapter show that the greatest amount of leather production was carried on in the large sole leather tanneries of Penobscot, Washington, Hancock, and Aroostook counties.

The market for the product of these large sole leather establishments was Boston, and it is interesting to note the manner in which the tanneries in eastern Maine were affected by the Boston market. The following is taken from the Industrial and Labor Statistics publication for the year 1873:

"In consequence of the great Boston fire, our Maine tanners anticipated a lively demand for their product, which, together with the increase of shoe factories in this State, led to unusually large purchases of imported hides at high prices. The result was, the demand was not active, business has been dull, and large stocks of all grades have accumulated, and in many instances sold less than cost." 15

As Maine tanneries depended upon the hemlock bark for tanning, there is included in Appendix I of this thesis a description of the manner in which hemlock bark was procured, under the title of A Description of the Peeling, Yarding, and Hauling of Hemlock. As the tanning of sole leather was the most important part of the tanning industry in Maine when it was at its height,

15. Industrial and Labor Statistics, Maine. 1873. p. xxi.

a complete description of the process is given in Appendix II.

In conclusion it may be pointed out that Maine came to rank so highly among the other states in the tanning of leather in the seventies and eighties because of the abundance of accessible bark. "Sole leather is always tanned where bark is comparatively cheap, while upper leather and such others as are sold by the square foot, where weight is no object, may, by using a much less quantity of bark, be profitably tanned where bark is much more expensive."¹⁶

There follows a statistical summary of the tanning industry in the state of Maine from 1810 to 1890. It sets forth the story of this industry for a period of eighty years and also suggests the beginning of the decline, which is to be the subject of the next chapter.

16. Industrial and Labor Statistics, Maine. 1896. p. 67.

TABLE 20. SUMMARY OF THE TANNING INDUSTRY IN THE
STATE OF MAINE BETWEEN 1810 AND 1890.

<u>Year</u>	<u>No. of Estab.</u>	<u>Hands Employed</u>	<u>Capital Invested</u>	<u>Value of Product</u>
1810	200	-	-	\$231,174
1820	248	-	\$ 99,200	308,000
1840	395	754	571,793	-
1860	144	735	851,975	2,188,904
1870	123	1,000	1,609,140	4,008,708
1880	83	1,667	2,970,600	7,529,533
1890	51	911	-	3,363,672

CHAPTER IV

THE DECLINE OF THE TANNING INDUSTRY

1880-1930

In an historical account of the town of Windham reference is made to a tanner by the name of Samuel Mayberry who operated a tannery in that town with success for a long term of years. He died in 1889, and it is written, "no one succeeded him, and the art of making leather cannot now be included among the industries of the town." That statement indicates exactly the situation in many Maine towns. Even in those communities in the eastern part of the state where the large tanneries once thrived, "the art of making leather cannot now be included among the industries of the town." Having a capacity of five hundred sides, or three and one-half tons of leather daily, and employing a large number of people, the tannery at Kingman resulted in the incorporation of that town. With the passing of the tannery and with no other industrial ventures coming in to take its place, the burden of town government finally became too great a load for the remaining inhabitants to bear.

There follows an account of Kingman that appeared recently in the Bangor Daily News:

"Kingman, April 2 (1935) - At the town meeting on Saturday, the town voted to accept the emergency act passed by the Legislature, entitled, 'An act to provide for the surrender by the town of Kingman of its organization.'

The only officer elected besides the moderator, was a clerk. Kingman is now an unorganized plantation.

It was organized as McCrillis plantation in 1859, changed to Independence plantation in 1866 and incorporated as a town in 1873." 1

Similar situations developed in several other small communities where tanneries once provided the livelihood for several hundred workers and their families. Notable examples are Medway, Winn, Forest City, and Grand Lake Stream. In other cases, such as Lincoln, Princeton, and Vanceboro, other industries took up the slack so that the passing of the tanneries did not result in community decay. Maine has its "ghost towns" just as the mining states of the far West. The peak of the industry was reached in 1880. After that date, and especially after the severe depression of the early 'nineties, the decline set in at an accelerating pace. It is the purpose of this chapter to portray the passing from the scene of this industry which once contributed so greatly to the industrial importance

1. Bangor Daily News, April 2, 1935.

of Maine. Looking first at the decline of Maine in the ranks of the leading leather producing states, it will be seen that whereas Maine ranked fifth in leather production in 1880, with the value of the product close to ten million dollars, it dropped to ninth place in 1890, fifteenth in 1900, and eighteenth in 1910 and 1920. The following table of the leading leather producing states for the years mentioned above shows this steady decline of the state of Maine in leather production:

TABLE 21. RELATIVE IMPORTANCE OF MAINE IN LEATHER

PRODUCTION, 1880-1920.
(thousands of dollars)

1880			1890		
<u>State</u>	<u>Rank</u>	<u>Value of Product</u>	<u>State</u>	<u>Rank</u>	<u>Value of Product</u>
Pennsylvania	1	\$51,747	Pennsylvania	1	\$49,932
Massachusetts	2	38,862	Massachusetts	2	27,771
New York	3	34,720	New York	3	23,378
New Jersey	4	15,475	Wisconsin	4	11,162
Maine	5	9,915	New Jersey	5	10,466
			Illinois	6	8,241
			California	7	5,729
			Kentucky	8	3,488
			Maine	9	3,364

1900			1910		
<u>State</u>	<u>Rank</u>	<u>Value of Product</u>	<u>State</u>	<u>Rank</u>	<u>Value of Product</u>
Pennsylvania	1	\$55,615	Pennsylvania	1	\$77,926
Massachusetts	2	26,067	Wisconsin	2	44,667
New York	3	23,205	Massachusetts	3	40,002
Wisconsin	4	20,074	New Jersey	4	28,431
New Jersey	5	13,747	New York	5	27,642
Delaware	6	9,400	Michigan	6	15,331
Illinois	7	7,847	Illinois	7	14,911
Maine	15	2,451	Maine	18	1,905

TABLE 21. CONTINUED.

1920		
<u>State</u>	<u>Rank</u>	<u>Value of Product</u>
Pennsylvania	1	\$211,389
Massachusetts	2	129,595
New York	3	98,094
Wisconsin	4	94,762
New Jersey	5	78,012
Illinois	6	60,324
Delaware	7	50,138
Michigan	8	45,801
Ohio	9	25,008
West Virginia	10	23,827
*Maine	18	3,359

From this table may be seen not only the decline of the state of Maine in leather production, but also the rise to importance of certain mid-western states such as Wisconsin, Michigan, and others. "In its initial stages the leather business of the United States was comprised in the development of the tanning industry, first of New England, then of New York and Pennsylvania, and later of Michigan, Wisconsin and

* The increase in the value of product from \$2,451,000 in 1910 to \$3,359,000 in 1920 can be ascribed wholly to the great war-time increase in prices. The increase occurred while the number of tanneries was decreasing from twenty-three to sixteen (see Table 27).

other Mid-Western States."²

While the leather industry was declining in importance in the state of Maine, it was increasing in importance in the country as a whole. Writing in the Review of Reviews in October, 1909, Louis E. Van Norman said, "The production and manufacture of leather is a very big business all over the world. In the United States the traffic in raw leather alone ranks third in the commercial enterprises that engage the attention of our people. If we consider, however, in addition to leather as raw material the details of the different articles manufactured from it and base a calculation upon the number of people employed and the variety of operations, the business of manufacturing articles from leather is the largest and most important in the United States. Despite this fact, the inquirer after facts concerning leather is amazed to find how little has been written on the subject. This seems the more surprising, since it is of leather that are made so many articles absolutely necessary for the modern American's everyday use and comfort."³

The following table, on a percentage basis, illus-

2. Van Norman, Louis E., The Story of Leather and its Uses. Review of Reviews. Oct., 1909. p. 454.

3. Ibid., p.449.

trates the rise of the leather industry in the leading states and its decline in Maine by decennial periods from 1880 to 1920:

TABLE 22. RATE OF GROWTH IN LEATHER MANUFACTURE IN LEADING LEATHER PRODUCING STATES, 1880-1920.

<u>State</u>	<u>Per Cent of Increase, Value of Product</u>			
	1880 to 1890	1890 to 1900	1900 to 1910	1910 to 1920
New York	-32.4	-.7	18.7	259.2
Pennsylvania	19.5	33.4	40.1	171.3
Massachusetts	-28.3	-6.1	52.5	223.7
New Jersey	-32.4	31.4	107.1	178.5
Wisconsin	25.8	70.5	119.9	119.9
Illinois	5.8	-4.7	92.0	392.8
Maine	-66.1	-27.1	-24.3	73.6
United States	-18.3	22.9	56.6	138.4

It is seen from the above table that there was a constant decline in Maine's importance in leather production, determined on a percentage basis. There was an increase in the decennial period 1910-1920, but that increase has already been explained (see foot note, page 79). The leather industry in Maine had

so steadily declined since 1880, that the increase between 1910 and 1920 is without importance. The national insignificance of Maine in the leather industry in 1920 is described in the following table:

TABLE 23. PROPORTION OF THE TOTAL VALUE OF LEATHER PRODUCTS IN THE UNITED STATES PRODUCED IN MAINE, 1880-1920.
(thousands of dollars)

<u>Year</u>	<u>United States</u>	<u>Maine</u>	<u>Per Cent, Maine</u>
1880	\$202,659	\$9,915	4.88
1890	165,649	3,364	2.03
1900	203,673	2,451	1.20
1910	380,270	1,905	.50
1920	906,071	3,359	.35

This table portrays the decline of Maine as a contributor to the total leather production of the United States, a decline from about five percent in 1880 to a third of one per cent in 1920. At the present time (1935) that decline has become even more greatly accentuated. There are now only three establishments in the state engaged in the primary manufacture of leather.

"In New England the tanning industry is largely localized in northeastern Massachusetts. The principal

tanning sections are located in a territory within a 40-mile radius from the city of Boston. The southern part of Essex County, with Peabody and the neighboring towns of Danvers and Woburn as its principal center, is the recognized tanning region of New England. There are important tanneries also in Salem, Lynn, Lowell, Norwood, Winchester, and Worcester. The state of Massachusetts had all but 19 of the 137 New England tanning establishments reported by the 1925 census. In Connecticut and in Maine there were five establishments each; there were also 6 reported in New Hampshire, 2 in Rhode Island, and 1 in Vermont.

Massachusetts thus accounts for all but a small proportion of this activity in New England. In the country as a whole Massachusetts is surpassed only by Pennsylvania, whose manufacturing income from this source in 1925 was only \$1,500,000 greater, although in value of products Pennsylvania surpassed Massachusetts by \$17,000,000. The other important leather-producing states are New York, Wisconsin, New Jersey, and Illinois, in the order given. The output of each of these states exceeded \$30,000,000, while that of Massachusetts exceeded \$70,000,000.

Boston has the largest sole-leather market in the world. This has existed since early times and has developed with the growth of the boots and shoe industry

of New England. Eighty-five per cent of the country's leather production goes into the manufacture of footwear. Most of the New England tanning is of stocks for upper shoe leather. There are also a number of establishments which tan sheepskins. Philadelphia is the principal market of the United States for goatskins and for kid leather, and most of the tanneries in the Pennsylvania area are engaged in making these types of leather."⁴

The following table taken from the Department of Commerce publication entitled The Industrial Structure of New England is presented in this chapter to complete the picture of Maine's relation to the other states in leather production:

4. The Industrial Structure of New England. U.S. Dept. of Commerce Publication. Edited by Charles E. Artman. Washington, D. C. 1930. p. 411.

TABLE 24. LEATHER, TANNED, CURRIED, AND FINISHED, IN
 5
 THE NEW ENGLAND STATES, 1925 AND 1927.

<u>State and Year</u>	<u>Establishments</u>	<u>Wage Earners</u>	<u>Wages</u> (thousands of dollars)	<u>Value of Product</u> (thousands of dollars)
Massachusetts:				
1927	115	10,768	\$14,588	\$77,649
1925	118	10,438	14,178	70,708
Connecticut:				
1927	4	163	224	1,454
1925	5	158	210	1,479
Maine:				
1927	5	175	181	832
1925	5	149	170	634
Total:				
1927	124	11,106	\$14,993	\$79,936
1925	128	10,745	14,558	72,821
New England:				
1914	151	11,159	\$ 6,463	\$51,454
1904	186	10,397	5,165	39,064
United States:				
1927	494	52,924	\$67,887	\$494,255
1925	532	53,043	66,762	462,014
New England as per cent of U.S. in 1925:	24.1%	20.3%	21.8%	15.8%

The decline in the tanning industry in the state of Maine was not entirely a matter of loss in rank among

the other states of the union, but was also a decline in rank among the leading industries of the state. Table 25 showing the leading industries of the state from 1880 to 1930 describes very well the decline of leather production from the second ranking industry of the state in 1880 to an industry of slight importance in 1920 and 1930.

TABLE 25. VALUE OF LEADING PRODUCTS OF MAINE IN
RELATION TO LEATHER PRODUCTION, 1880-1920.
(thousands of dollars)

1880		1890	
<u>Product</u>	<u>Value</u>	<u>Product</u>	<u>Value</u>
All Industries	\$79,830	All Industries	\$95,690
Cotton Goods	13,319	Cotton Goods	15,317
Leather Products	9,916	Boots and Shoes	10,335
Lumber, Sawed	7,934	Lumber Mill Products	10,907
Woolen Goods	6,686	Woolen Goods	7,521
Boots and Shoes	6,120	Leather Products	3,364
Grist Mill Products	3,966	Clothing	3,317
Shipbuilding	2,910	Paper and Pulp	3,281
Paper and Wood Pulp	2,773	Shipbuilding	2,818
Foundry Products	2,223		

TABLE 25. CONTINUED.

1900		1910	
<u>Product</u>	<u>Value</u>	<u>Product</u>	<u>Value</u>
All Industries	\$127,361	All Industries	\$176,029
Lumbering	14,903	Paper and Pulp	33,950
Cotton Goods	14,631	Lumber Products	26,125
Boots and Shoes	12,296	Cotton Goods	21,932
Woolen Goods	11,633	Boots and Shoes	15,509
Leather, tanned, curried, and finished	2,451	Wool, Worsted, and Felt Goods	14,490
		Leather, tanned, curried, and finished	1,905
1920		1930	
<u>Product</u>	<u>Value</u>	<u>Product</u>	<u>Value</u>
All Industries	\$456,822	All Industries	\$391,751
Paper and Pulp	93,917	Paper and Pulp	133,571
Cotton Goods	56,564	Woolen Goods	31,782
Boots and Shoes	48,059	Worsted Goods	22,120
Woolen Goods	42,442	Boots and Shoes	38,932
Lumber and Timber Products	23,515	Leather, tanned, curried and finished	2,500
Worsted Goods	17,886		
Leather, tanned, curried and finished	3,330		

From 1880 onward there was a somewhat irregular, though marked, falling off in the proportion of leather goods to the total production of the state. In 1880 the primary manufacture of leather amounted to 12.4 per cent of the total production of the state. In 1920 the primary manufacture of leather did not amount to even three-quarters of one per cent of the total production of the state. This decline is described in the following table:

TABLE 26. PROPORTION OF LEATHER GOODS TO THE TOTAL PRODUCTION IN THE STATE, 1880 to 1920.
(thousands of dollars)

<u>Year</u>	<u>Total Production in Maine</u>	<u>Amount of Leather Prod. in Maine</u>	<u>Per Cent Leather Prod. to total Prod.</u>
1880	\$ 79,829	\$9,916	12.42%
1890	95,689	3,364	3.52
1900	127,361	2,452	1.92
1910	176,029	1,905	1.08
1920	456,822	3,359	.73

The decline in the local distribution of tanneries by counties is represented in the following table:

TABLE 27. THE DISTRIBUTION OF TANNERIES BY COUNTIES
WITHIN THE STATE OF MAINE, 1880-1935.

Counties	1880	1890	1900	1910	1920	1930	1935
Androscoggin	4	2					
Aroostook	4	3	3	2	2	1	
Cumberland	10	8	4	3	3		
Franklin	3	3	1	1			
Hancock	9	8	3	1	1	1	1
Kennebec	18	10	8	4	3	1	1
Knox	4	1					
Lincoln	2	1	1	1		1	
Oxford	7	7	2	1	1		1
Penobscot	12	12	6	6	3		
Piscataquis	2	1					
Sagadahoc	1	2	1				
Somerset	7	3	1	1			
Waldo	5	3	1	1	1		
Washington	10	7	2	1			
York	8	3	2	1	2	1	
Totals	104	74	35	23	16	5	3

Between 1880 and 1900 the number of tanneries in the four eastern counties, where the large units were located, declined from thirty to fourteen, or over fifty per cent. These events, together with the curtailment of production in those that continued to operate was the immediate cause for the decline in production from a figure close to ten million dollars in 1880 to two and one-half million dollars a year in 1900. In this twenty year period at least four important tanneries were destroyed by fire. In July, 1896 the tannery at Bridgewater in Aroostook county then owned by Charles P. Church was consumed by fire. The one at Beddington in Washington county, owned by E.E. Church & Company, was destroyed by fire in September of the year 1895. A few years previous the tanneries at Winn, to which reference has already been made as the largest tannery of its times in the United States, and the one at Amherst in Hancock county, owned by Buzzell & Rice, were also destroyed by fire. Principally of wood construction, fire was a constant menace to the tanneries, and often the descriptions of these establishments includes the facilities for fighting fire. One tannery, for instance, was described as having most excellent fire fighting facilities. "Water pipes reach every part of the establishment with couplings for hose

at convenient points, a large force pump giving the re-
 quired pressure."⁶

In 1880 a large new tannery was built at Bridgewater by George W. Collins. In 1884 this tannery was "bought by Charles P. Church, who operated till July, 1886, when it was consumed by fire. Mr. Church at once rebuilt on a somewhat larger scale, and was ready to resume operations in October of the same year, since which time it has been run continuously, (written in 1896) yet on account of the depression in business and fluctuations in the market, but little has been done the present season."⁷

Incidentally, it should be noted that this tannery at Bridgewater marked the northermost point of industry in Aroostook county. The reason for this was that the northern part of Aroostook county contains very little hemlock. However, around Bridgewater, at the time of the construction of the Collin's tannery, there was a plentiful supply of bark.

The other large tannery built after 1880 was that at Island Falls. Proctor & Hunt built this tannery as late as 1893. Of it is written, "This is easily the largest

6. Industrial and Labor Statistics, Maine. p. 61.

7. Ibid., pp. 59,60.

establishment of its kind in the State and has a capacity of some 700 sides or nearly five tons of leather daily. The length of the building is 670 feet and the leach house 180 feet, while the hide house has a storage capacity of 15,000 whole hides. There are thirty-six vats for soaking hides, sixty-four for handling and 300 lay away vats, making a total of 400 vats. Steam is used, two engines, one fifty horse and eighty horse, furnish the motive power. There are four fifty horse power boilers and one of 150 horse power, but a part of the steam is used for heating and other purposes besides that going direct to the engines." ⁸ This tannery at Island Falls was the last of the large sole leather tanneries built in the eastern part of the state, and was the last to continue in operation.

In the article by Van Norman in the Review of Reviews for October, 1909 to which reference has already been made in this chapter, the author writes of "From Small Tannery to Leather Trust." "Very soon the small tanneries began to be superseded by larger establishments. These were combined into larger enterprises, until finally the tanning business, closely knit with the production of domestic cattle for hides, became centralized. The control

8. Industrial and Labor Statistics, Maine. 1896. p. 61.

of the entire business finally emerged, in the last decade of the past century, in the hands of two great combinations, which with their subsidiary companies practically do the greater part of the "heavy" leather business of the country. These commercial enterprises are known as the United States Leather Company, established in 1893, and the American Hide & Leather Company, organized in 1906.⁹ This movement "From small tannery to Leather Trust" is well illustrated in Maine. The leather industry in this state commenced with a number of small one-man tanneries. Later, the large-scale enterprises developed. Before the end of the nineteenth century the United States Leather Company had bought up some of the large sole leather tanneries of the state. The following item appeared in the Bangor Daily Courier, July 1, 1896:

"Boston, June 30 - The Boston News Bureau says to-day: While papers have not been signed, sealed, and delivered turning over the eight tanneries operated by C. W. Clement, trustee for the creditors of Fayette, Shaw & Co., to the United States Leather Company, negotiations, it is understood, have been practically concluded.

The terms of the trade have not been made public but we understand from reliable sources that Mr. Clement will turn over to the United States Leather Co. in round numbers, 2,500,000 pounds of hemlock leather, all grades, at an estimated value of \$300,000.

9. Van Norman, Op. Cit., p. 454.

The representatives of the United States Leather Company, and one for Mr. Clement have been examining the Shaw tannery leather in Boston, between \$20,000 and \$40,000 worth, with the view of taking it over. It is not probable that the total purchases, including bark, land, tanneries, and leather, will exceed \$1,000,000." 10

Among the tanneries included in this deal were the so-called Shaw tanneries situated at Vanceboro, Princeton, Grand Lake Stream, Brookton, and Forest City. The United States Leather Company had previously, on the tenth of May, 1893 taken over from Henry Poor & Son three other large tanneries, situated in Lincoln, Medway, and Lowell. However, the United States Leather Company did not operate for a very long period in the state of Maine. By 1910 they had ceased operation in all of the large tanneries purchased from the creditors of the Shaws and from Henry Poor & Son. In fact, in 1910, there were in operation only two tanneries in Aroostook, one in Hancock, six in Penobscot, and one in Washington. Of these ten tanneries, with the exception of the one at Island Falls, none were among the large sole leather tanneries of the seventies and eighties. In the twenty-three tannery enterprises listed in 1910 there were employed a minimum of two and a maximum of ninety men. The enterprise employing the latter

10. Bangor Daily Courier, July 1, 1896.

number was the one survivor of the sole leather tanneries, that at Island Falls. In the Maine Register for as late as 1919-20 there appears the following advertisement:

Frank W. Hunt & Co.
 Tanner of Sole leather
 Tannery at Island Falls, Me.
 Central Office at 118-128 Lincoln St.
 Boston, Mass. 11
 Capacity - 2000 sides per day.

The tannery at Island Falls was the last large sole leather tannery to be built in the state of Maine and the last to be abandoned.

In the state of Maine there are at present only three tanneries, all making sheepskin and located at Bucksport, in Hancock county; Clinton, in Kennebec county; and Canton, in Oxford county. Penobscot county, formerly the greatest county of all from the standpoint of tannery enterprises, does not contain a single tannery at the present time. Such is the decline to insignificance of an industry that once ranked as the second largest industry of the state.

The chapter is concluded with a table summarizing the decline of the leather industry in the state of Maine:

11. Maine Register, 1919-20. Portland, Me. p. 344.

TABLE 28. SUMMARY OF THE LEATHER INDUSTRY IN MAINE,

1880 to 1920.
(thousands of dollars)

<u>Year</u>	<u>No. of Establishments</u>	<u>Value of Product</u>	<u>Capital Invested</u>	<u>Hands Employed</u>
1880	120	\$9,915	\$2,987	1,393
1890	51	3,364	2,232	690
1900	31	2,452	1,376	623
1910	17	1,905	1,729	456
1920	9	3,359	2,507	355

CHAPTER V

SUMMARY AND CONCLUSION

Having traced the development of the tanning industry in Maine from its origin through the stages of growth and subsequent decline, it is now possible to summarize the most important factors contributing to its economic history. In many respects, the industry resembles that of another important sector of Maine's economic life, the building of wooden sailing vessels. There has always been a certain amount of color and romanticism about the shipping business that has given birth to a considerable body of literature on that industry. On the contrary, there has been little about smelly hides and prosaic tan-bark to attract the attention of either the novelist or the historian. Tanning, in a measure, has become the "forgotten industry." And yet, our statistical material plainly shows that, from a standpoint of economic importance, it deserves to have its history recorded. Together with shipbuilding and "long lumber", tanning has practically ceased to exist in Maine.

In the early days tanneries existed in the state

of Maine for three reasons. First, there was the great demand for leather in the various uses to which it was put by the early settlers. As we have already observed, "In a primitive and self-sufficing community leather was used for many things which in a more advanced stage are made of other materials. Thus not only were harness, saddlery, traces, belts for wheels, boots and shoes, gloves, and similar articles made of leather, but also vests, doublets, and breeches for men, and jerkins, petticoats, and aprons for women. Hinges for doors, straps in lieu of springs for coaches, and even bed coverings were made of leather." ¹ Some of the early fire hose used in the city of Portland was made of leather. Because of the great variety of uses for leather in early times there was a considerable market for leather products, nearly all of which were supplied by the local tanner.

In the second place there were tanneries in the state in the early days because the communities tended to be self-sufficient. In the early history of the tanning industry in Maine small local tanneries were scattered throughout the state, more or less in accordance with the

1. Bogart, Ernest Ludlow, Economic History of the American People. New York. 1930. p. 115.

distribution of the population, to provide leather for local consumption. That is, if there had been no local tanners, there would have been no leather to satisfy the local demand, because of the forced self-sufficiency of each community. That wasthe economy of the times.

In the third place there were tanneries in the state of Maine in the early days because of the presence of the right raw materials. The important raw materials were the local supply of hides and tan-bark. As we have already observed, the latter was to be had in abundance. "Originally the larger part of the state of Maine was well timbered with hemlock, and from the early days of its settlement the business of converting raw hides into leather has been carried on to a considerable extent." ²

The rise of the Maine leather industry to national importance, ranking as it did alternately fourth and fifth for a period of twenty years between 1860 and 1880, can be attributed largely to the increased operation of the large sole leather establishments in the eastern part of the state. The upper leather tanneries that existed in various parts of the state were very

2. Industrial and Labor Statistics, Maine. 1896. p. 53.

inferior in size and the number of the men that they employed when compared with the large sole leather tanneries. The great importance of the leather industry in the state at its peak can largely be attributed to the latter. The sole leather tanneries located in the state of Maine primarily because of the abundance and the consequence cheapness of the hemlock tan-bark in the eastern counties. Sole leather tanneries also differed from those manufacturing upper leather in that a much greater amount of tan-bark was needed in the manufacture of the former. The most important consideration was to locate where the tan-bark was cheap, as in the eastern counties of the state of Maine.

In the second place, as an explanation of the rise of the tanning industry in the state of Maine, it must be remembered that prior to 1880 the important chemical methods of tanning sole leather had not been devised. It was after 1880 that the employment of chromium compounds and quebracho extract, for instance, reduced the cost of manufacture of sole leather and began to compete seriously with the tan-bark process.

In the third place, to account for the rise of the tanning industry in the state of Maine, it must be remembered that the rise was partly a reflection of the

high prices which followed the Civil War. "Prior to 1860 several tanneries of quite respectable proportions had been built, but the war and the prosperous times which followed stimulated this industry, and the next fifteen years saw a score or more of immense sole leather plants established in the eastern part of the state."³

Coming now to an explanation of the decline of the industry in the state, we can also discover three important reasons. First, there was the steady but gradual impoverishment of the state in its original immense tracks of hemlock. In 1896 it was written that "tanning with hemlock bark as an important industry is rapidly declining in the state of Maine. The immense tracks of hemlock which have been stripped during the last forty years with such a reckless hand can never be reproduced, and the area yet remaining will, in a very few decades at most, be left barren of this valuable growth, when other materials for tanning purposes must be sought or else the industry will disappear from our midst."⁴ This prophecy that the tanning

3. Industrial and Labor Statistics, Maine. 1896. p. 54.

4. Ibid., p. 57.

industry would "disappear from our midst" was very quickly borne out and the exhaustion of tan-bark that was profitably available contributed to its speedy demise.

In the second place, a decline in leather production in the state of Maine set in after 1880 because after that date the art of leather manufacture took on an entirely new departure. New methods replaced the old tan-bark method of leather production that at one time flourished in the state of Maine. "The manufacture of leather from skins by tanning them by vegetable extracts containing tannin requires months if a good quality of leather is to be obtained. Since 1880 the art of manufacturing leather has taken an entirely new departure. Chemists have sought and found various processes by which the natural gelatin of the hides by the effect of mineral substances is rendered insoluble and nonprustescible. The use of chromium compounds greatly shortens and cheapens the manufacture of leather." ⁵ Leather manufacture by various chemical processes and vegetable tanning by extracts such as the quebracho extract from South America, which has been claimed to make the best leather in the world, had

5. United States Census, 1900. Vol. X. pp. 805,806.

their part to play in undermining the old tan-bark leather industry that once operated so prosperously in the state of Maine.

In the third place, and finally, the natural location of the tanning industry in New England, not now dependent upon the close proximity of immense tracks of hemlock tan-bark, is in eastern Massachusetts. "The development of new methods of tanning by chemical processes has led to the concentration of tanning activity in a reduced number of large plants, while the growth and concentration of the meat-packing industry and changes in the sources of supply of hides and skins for tanning have brought about a high degree of localization of the industry in certain sections of New England and of other states.....In New England the tanning industry is largely localized in north-eastern Massachusetts. The principal tanning sections are located in a territory within a 40-mile radius from the city of Boston. The southern part of Essex County, with Peabody and the neighboring towns of Danvers and Woburn as its principal center, is the recognized tanning region of New England. Massachusetts thus accounts for all but a small proportion of this activity in New England. In the country as a whole Massachusetts is surpassed only by Pennsylvania, whose income from this source in 1925 was

only \$1,500,000 greater, although in value of products Pennsylvania surpassed Massachusetts by \$17,000,000. The other important leather-producing states are New York, Wisconsin, New Jersey, and Illinois, in the order given. The output of each of these states exceeded \$30,000,000, while that of Massachusetts exceeded \$70,000,000,"⁶ Under changed conditions, Maine has no natural advantages for the continuation of the tanning industry. The cities within a radius of fifty miles from Boston are favored by adequate water and rail facilities. Moreover, the concentration of an extensive shoe manufacturing industry within the same section makes the transportation of the finished leather less costly. While shoe manufacturing is not an unimportant industry in Maine, the volume of heavy leather consumed is not sufficient to warrant the continuation of leather tanning on a large scale in this state. Furthermore, lumber authorities agree that there are no grounds whatever for new hemlock growth within even the present century being sufficient for a revival of the tanning industry, even if other factors were not unfavorable to its resumption.

6. The Industrial Structure of New England. U.S. Dept. of Commerce Publication. Edited by Charles E. Artman. Washington, D.C. 1930.

Thus, for the reasons stated the tanning industry in the state of Maine has declined from the second ranking industry of the state in 1880, the peak year in its operation, to an industry of practically no importance or significance in 1935. The tanning industry in Maine seemingly has had its day and now, in 1935, with only three comparatively small sheep skin tanneries in operation in the whole state, has practically ceased to exist. Such is its rise and decline and almost total eclipse.

Expressions of regret are frequently voiced about the "wastefulness" of the tanning industry. This attitude is grounded on the fact that it was not an uncommon occurrence for the bark to be stripped from fallen trees and the tree itself left in the woods to rot. Hemlock was not as desirable for long lumber as spruce and pine. As long as the latter species of wood were available at low cost, it was often unprofitable to bother with hemlock logs far removed from streams or roads. From an economic point of view, this was inevitable. However, the desirability of control by the State over practices that are plainly against the interests of society in its fundamental right to enjoyment of natural resources which are of a public nature should be emphasized. The tanning industry

in Maine is an outstanding example of the insecurity of communities and individuals whose welfare is dependent on a limited supply of raw material and menaced by the development of new processes that caused a shift to other sections of the country.

APPENDIX I

A DESCRIPTION OF THE "PEALING,¹ YARDING,
AND HAULING OF HEMLOCK BARK"

"When it is considered that some of our largest Maine tanneries consume from 10,000 to 12,000 cords of bark annually, it will be seen that all important thing in their location is a plentiful supply of hemlock, easily accessible, and as the most of these works are pushed out into the forests years in advance of the advent of railroads the bark must be hauled in by teams, and as long hauls are very expensive the greater part of the bark comes from within a radius of twenty miles. A territory of this size well timbered with hemlock will, however, supply a large tannery from twenty-five to thirty years. A tannery company locating, usually secures by purchase such tracts of hemlock land as they can buy at a reasonable price in their vicinity but have to depend on outside parties for a considerable part of their supply, yet with a large amount of their own stumpage to fall back on they can regulate the price and prevent a combination of other land

1. Industrial and Labor Statistics, Maine. 1896. p. 72. (The reader will note the incorrect spelling of the words "peel" and "peeling" in the quotation, peal and pealing being frequently used.)

owners, great and small, from making a corner on bark. Bark is largely purchased from outside parties at a fixed price delivered at the tannery, the average price at our tanneries in eastern Maine not varying much from \$6.00 per cord; though many of the larger land owners sell their stumpage outright, the price of which has increased somewhat as the supply decreases, and in fair locations is now held at from \$2.00 to \$2.25 per cord. The work of peeling, yarding, and hauling bark, and incidentally the cutting up, hauling, and driving of the peeled hemlock lumber gives employment to a large number of men and teams and puts a large amount of money in circulation, yet it is a transient business, for, unlike spruce, when once cut over, hemlock does not readily reproduce itself, and when the bark supply is exhausted, unless it can be brought from a distance by rail at a reasonable price, the site is abandoned and the buildings left to decay. Such has been the fate of nearly all the large tanneries in the older settled sections of the State.

Bark peeling is carried on generally by a large crew under a competent foreman or boss, the number of men varying according to the size of the job or number of cords of bark to be peeled. From one thousand to two thousand cords are often covered in a single contract. The peeling season begins in May and lasts for about three months, or,

as it is generally reckoned bark peelers, "from the full moon in May to the full moon in August." As the work is all done in warm weather expensively built camps are not necessary. Rough board camps covered with coarse sheathing paper are often constructed for the shelter of the men but often large tents are used instead. This is probably the more economical camp as a tent well cared for will last for several years and can be moved at pleasure from place to place. Wages the present season for bark crews will average about \$20.00 per month and board. Men are fed with wholesome and hearty food and are furnished four meals a day, breakfast and supper at the camp and forenoon and afternoon luncheons in the woods in the immediate vicinity of their work. A man cook is employed, with a sufficient number of assistants called cookies. The cook has full charge of his department and attends directly to bread making and in fact the cooking generally, while the cookie chops wood, brings water, washes dishes, carries the luncheons and does such other work and render such assistance as the cook may direct. A good cook always commands good wages, and a man who can satisfy the crew with well cooked food and understands the art of economy is a very valuable man to his employer, for some cooks will waste more good material than their wages would amount to. The time worked amounts to eleven hours per

day, beginning at half past five and ending at half past six, allowing an hour each for the two luncheons.

The gang of men are divided into crews of four; a chopper, a knotter, a ring and splitter and a spudder. The first three use the common ax while the fourth uses an implement called a spud. The spud in its general make up is like a carpenter's chisel, though the neck between the socket and blade is much longer and blade and the blade much shorter and not so thick as the chisel. The blade is some two and one-half inches broad, rounded somewhat on the edge and ground thin, and curved a little downward so as to follow the convex surface of the log when it is forced under the bark. In the socket is fitted a wooden handle making the whole tool, including handle some three feet in length. With an ax a ring is cut around the tree near the roots and again four feet up, then the bark is split down one side from ring to ring, when the spudder inserts his spud into the slit and forces the bark from the tree. The chopper then fells the tree and then the knotter trims it of all its branches. Formerly, when bark was plenty, but few limbs were removed and the top left unpeeled, but the present practice is to trim and peel, as the saying goes, "to the top bud." Ringing and splitting, both done by one man, is simply dividing the bark into four feet lengths by cutting a ring

around the now fallen-tree, and splitting it along the top of the log, when it is ready for the spudder who follows closely with his spud and the tree is soon peeled. With thick, coarse bark and drying weather the day's peeling is piled on skids the last thing before quitting work at night, but in damp weather it is left flesh side up until the weather clears and dries the moisture. Thick bark can be piled in a greener state than thin without damage by moulding, as the coarse ross or outer coating which gives the bark its rough appearance, admits a free circulation of air, while on thin bark the ross is fine and makes too compact a mass for drying readily. On the other hand, bark should not be allowed to dry too much before piling, for as soon as the drying process commences the flesh side begins to contract, and, if left for a few days, the flake of bark would be drawn up into a close roll, and, becoming hardened, could not again be flattened out. A crew of bark peelers will average about three-fourths of a cord, peeled and piled, to a man, though some extra good men may go as high as a cord per day.

As the bark is put up in small piles near the tree from which it has been stripped, irregularly scattered over the whole territory covered, it must needs be collected in larger piles along roads, so as to be convenient for loading on teams when the time for hauling to the tannery arrives. For this purpose parallel roads are cut some

thirty to forty rods apart, and all converging to a single main road, leading often to some highway. Upon these parallel roads the bark is yarded during the fall months. A yarding crew consists of three men; a swamper, a teamster, and a jumper tender with a horse and jumper. The swamper cuts out a narrow road, not necessarily straight, but winding in and out among the logs and brush, so as to get near the small piles of bark scattered here and there; the teamster drives or leads the horse, and jumper tender, as his name indicates, tends the jumper or sled on which the bark is hauled out. As the jumper has no thills, but is drawn by a chain attached to the whiffletree, it must necessarily be turned and lifted about by hand, hence the jumper tender. The jumper is of simple and rustic construction, and is generally made at the camp where it is used. Two spruce saplings are hewn out of the required length, four two-inch holes are bored through each, and the two connected by hard-wood saplings or bars, some four feet in length. This makes the top or frame-work of the sled. A hard-wood sapling, evenly split, makes a pair of runners or shoes, which are bent on by inserting one end into a augur hole, bored diagonally in the forward end of the sill, and held in place by uprights inserted

in corresponding holes bored in the sill and shoe. With stakes fitted into holes bored in the top of the sills, the jumper is complete and ready for use. Should the shoes wear out, as they often do, by being dragged over logs, gravel, and often jagged rocks, it is but a short job to split out, bore and bend another pair, and the sled is good as new.

With this outfit the bark is gathered in small loads, varying from one-fourth to three-fourths of a cord, and hauled out to the nearest parallel road, where it is deposited in long piles along the roadside. In this way the men work from day to day until the whole is yarded. The bark is generally surveyed on the yards, before being hauled.

Midges, mosquitos, black flies, and one or two kinds of larger flies, are very annoying to bark peelers, though they are not very troublesome after the middle of July. Various preparations have been used to ward off these pests, but a mixture of tar and lard, rubbed thickly over the face, hands, neck, or any exposed part of the person, is now very generally used, and with good effect.

Bark hauling commences as soon as there is snow enough to make good sledding, and wagon sleds, that is, sleds with two pairs of runners, are almost invariably used. The

rack, fixed on the runners, is usually sixteen feet long, and at each corner of the bottom frame-work is a flattened stake made fast to the sill, the upper end of which is bored with small holes for a distance of one or two feet. Two long poles or binders, one on each side, morticed at the ends so as to slip down on the stakes, serve to keep the bark in place when loaded. When a sufficient amount of bark has been put on for a load, the binders are slipped on to the stakes and sprung down closely, and held in place by a wooden pin put through one of the holes in the stake above the binder. Should the load settle on the road, the binder may be sprung down a peg and the pin inserted in a new hole. Two cords of bark is about the average load with a pair of horses of medium weight in fair sledding. Much of the bark, as before stated, is hauled direct from the yard to the tannery, but since the European & North American Railroad was built into northern Penobscot and Washington counties, and the Bangor & Aroostook road into Aroostook county, large quantities of bark are landed near the railroad at convenient points, where the bark is conveyed by cars to the tannery more cheaply than by teams. This, of course, benefits only those who are located on the line of the railroads. Considerable bark is shipped by rail from this eastern

section to the sheepskin and upper-leather tanneries in other parts of the State.

Bark haulers, that is, a man and team of two horses, ordinarily receive from thirty-five to forty dollars per month and board, sometimes, for an extra good team, a little higher."

APPENDIX II

A DESCRIPTION OF THE PROCESS OF
TANNING SOLE LEATHER¹

"The dry hides are first soaked from three to five days in vats filled with water, which softens them sufficiently to be worked in the hide mill. As they are taken out of the vats, one by one, they are split along the back, thus making two sides of each hide. A hide mill is of simple construction, consisting of a shallow box some six feet or more in length, into which are placed side by side, two short timbers filling the width and about one half of the length of the box. The tops of the timbers are shorter than the bottoms thus giving a downward slope to the ends which are thickly studded with blunt iron spikes one inch in length. Each of the short timbers is attached to a long upright, the tops of which are hung so that when power is applied they vibrate back and forth, the uprights appearing like two huge legs with the short timbers as feet with their iron toes, which, when a quantity of hides are placed in each end of the

1. Industrial and Labor Statistics, Maine. 1896. p. 64.

box, with water continually dripping from pipes upon them, vibrate back and forth kicking and beating them, the spikes serving the double purpose of turning the hides over and over and further softening them by their constant beating. They are thus milled from one to three hours until pliable enough to handle well, when they are hung in the sweat vaults. The sweat vaults are close, dark, narrow rooms, and of sufficient height for men to work standing. Here the hides are thickly hung until a vault is filled and the door is closed. They remain from four to eight days, or until the hair and scurf are loosened by a natural heating process which throws off large quantities of ammonia and other gases. While in the vaults the hides must be carefully looked after, for a little over heating, which is nothing more nor less than the commencement of decomposition, will seriously damage them in a very short time. A thunder shower will very materially hasten this process, and during times of much electrical disturbance in the atmosphere the vaults are often visited during the night and hides removed, as a delay until morning might cause serious damage. After the sweating process is completed the hides are again milled for several hours, which still further softens them and beats off most of the hair. They are then taken to the beam. Each workman or beamster has his beam

or work bench. Its surface is convex from right to left and slopes downward from the workman. On this the hide is spread flesh side up, where by a dexterous handling of the flesher every particle of flesh adhering to the skin is quickly removed. It is then turned hair side up and with the beam knife all the scurf and hair is removed. This is called graining. The beam knife is of the finest steel and carries an edge like the best razor so that any hair which does not start is smoothly shaven from the skin. The hides, now smooth and clean on both sides, are ready for coloring, which is done by placing them in vats containing the dye or coloring liquor, where they remain about thirty minutes. They are now ready for the acid process. Up to this point the fiber of the hide is too compact to allow the tanning liquor to "take" as it is called, and if the tanning process were proceeded with in this state the tannin would act only on the outer surface. The acid process opens up the pores of the hide and "plumps" or gives it a spongy appearance so that it will take the tanning liquor as a sponge takes water. There are two ways in common practice in bringing about this result, one known as the acid process and the other the sour liquor process. In the former case, a strong acid is diluted to the proper consistency to produce the desired result;

in the latter, the hides are placed in a liquor which is allowed to sour or form a natural acid which produces the same result on the hide. Thirty-six hours is sufficient for the acid process, but the sour liquor process takes longer. The hides are now put through a handling process to remove the acid. Being placed in vats containing a weak liquor, they are handled with hooks, being changed from one vat to another until all the acid disappears. Some tanneries have an ingenious way of hastening the process of removing the acid by forcing air, by force pump, into the bottoms of the vats, which keeps the liquor and hides in a constant commotion like a boiling pot. From two to six days completes the handling process, when they are ready for the yard or lay away vats where the tanning process proper is carried on.

Leaving the hides here all ready for tanning, another branch of the work will be noticed, that of preparing the liquor in which the hides are tanned. The material used in the sole leather tanneries in Maine is almost wholly crude hemlock bark, but little if any hemlock extract, except in upper leather and sheep tanneries, being used. The bark is unloaded from railroad cars or from teams in the immediate vicinity of the bark mills or grinders into which it is feed by workmen. In some cases the bark

is thrown from the car or team upon an endless chain by which it is carried to a feed table slightly elevated above the mouth of the mill. From one to three mills are used according to the size of the tannery. The ground bark is conveyed to the leaches generally on endless belts, but in some cases it is blown through tubes by a powerful fan. The bark is steeped any where from twenty-four to sixty hours, the time differing at different tanneries or by a variation in the process of extracting the strength from the bark. New processes have been introduced in some tanneries where it is claimed a much larger per cent of tannin is procured than by the old process. The liquor is then drawn off into cooling vats where it is left for about twenty-four hours to cool, when it is pumped to the yard and into the lay away vats into which the already prepared skins are immersed and the process of tanning commences. Vats are built of plank, and, ordinarily, are seven by nine feet, by five and one-half feet in depth, and will hold about 150 sides. Sole leather is put through six different liquors, remaining long enough to absorb all the strength of each.

The time occupied in tanning varies according to circumstances from four to six or eight months, and if in no hurry for the finished leather it sometimes remains in

the vats a whole year. The object is to give the skin all the tannin it will take not only to thoroughly preserve and make it firm, but to give it weight as well, as sole leather is always sold by weight. For this reason sole leather is always tanned where bark is comparatively cheap, while upper leather and such others as are sold by the square foot, where weight is no object, may, by using a much less quantity of bark, be profitably tanned where bark is much more expensive.

As the prepared skins take the tannin much more rapidly at the commencement of the process, the time they are allowed to remain materially increases in each succeeding liquor in which they are placed. In the first liquor they remain from four to seven days, in the second from nine to twelve days, in the third from fourteen to seventeen days, in the fifth from thirty to thirty-five days, and in the sixth from thirty-five to forty days, though they may remain with some benefit for a longer period. As the hides, divided along the back into halves or sides, as before stated, and which are now gradually assuming the appearance of sides of leather, are thrown one by one into the vat, a man with a shovel throws a small quantity of leached tan bark upon each, not on account of any virtue remaining in the bark but to hold the sides

apart so as to allow a free access of the liquor to all parts, as otherwise they would make a compact mass that no liquor could fully penetrate.

When the tanning process is fully completed the leather is taken from the vats and placed in an open-work cylinder upon which water is copiously showered as the cylinder revolves, thus washing off the great bulk of tan bark or any other substance which may adhere to it. It is then removed to a table where each side is carefully gone over with a scrub brush to remove any foreign substance remaining, after which it is hung up and allowed to drain for twenty-five hours when it is ready for oiling. Cod oil is applied to the grain side of the leather, and as it goes from the oiling table it is laid in piles four or five feet high and covered with canvas where it remains from three to six days or until the oil is thoroughly absorbed. It is then hung up for drying, where it remains, according to the state of the weather, from four days to two weeks. The next process is to prepare the leather for rolling. This is done by dampening it with water and allowing it to remain in large piles for about four days or until the moisture is evenly distributed throughout the mass, after which workmen go over it piece by piece and with proper tools straighten out all wrinkles,

more or less of which will be found along the legs and head of every skin, then the grain side is lightly sprinkled with water when it is ready for rough rolling. This work is done on a large continuous table, built along one side of the building, well lighted by windows, each table accomodating from two to six workmen, according to the size of the tannery and amount of leather produced. The implment for rolling consists of a metallic truck or roller fixed on the lower end of an upright beam which is made to vibrate immediately over a plate fixed in the table top, the plate being slightly concave to correspond with the line of vibration of the roller. The side of leather is placed grain side up between the roller and plate, when with a lever managed by the foot of the rollman the plate is brought firmly up giving the desired pressure, and as one part becomes sufficiently rolled, he eases up on the lever which relieves the pressure, another part is brought under the roller, the pressure is again applied and the work continued until the whole surface of the side is rolled. The leather being damp, this rolling simply compacts the fiber and lays the grain, leaving the surface still in a comparatively rough and unfinished state. It is hung up for about twenty-four hours or until the outer surface becomes sufficiently dry to receive the

final rolling, which gives the smooth glossy appearance to the finished leather. Each beamster and rollman has his own private mark which is required to be cut or stamped on every side of leather they handle so that any defects in their work are readily detected. The leather is then thoroughly dried, when it is weighed and the name of the tannery and weight are stamped upon each piece, when it is ready for shipment."

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