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Amos Long Jr.

Henry J. Kauffman

Robert P. Stevenson

Mark D. Howell

Hilda Adam Kring

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Contributors

MARK D. HOWELL is completing work toward a master’s degree in American Studies at Penn State/Harrisburg. A former newspaper editor, his current project is a cultural and historical study of stainless steel diners. He plans to pursue a doctoral degree in 20th century American material and popular culture, hoping to someday do research and teach on a collegiate level.

HENRY J. KAUFFMAN has contributed more than a score of articles to Pennsylvania Folklife through the years. He is also the author of many books, a partial listing of which includes Early American Gunsmiths, The Colonial Pewterer, The American Fireplace, The American Farmhouse, and American Copper and Brass. The extensive collection of American folk art and artifacts assembled by Mr. Kauffman and his wife Zoe is housed in the Rock Ford-Kauffman Museum on the grounds of Rock Ford Plantation in Lancaster.

HILDA ADAM KRING, Ph.D., now retired from the faculty of the Department of Literature and Communications Arts at Grove City College, Grove City, Pa., is the author of The Harmonists: A Folk Cultural Approach. Now a full-time hospital volunteer, she still finds time to do scholarly work and has just recently helped translate three cookbooks used by the Harmonists at Old Economy.

AMOS W. LONG, JR., is a farmer and retired teacher who holds degrees from Lebanon Valley College and Temple University. He is a recognized authority on Pennsylvania German culture, and has contributed numerous articles and photographs to Pennsylvania Folklife and other regional periodicals and newspapers over the last three decades. He is the author of The Pennsylvania German Family Farm (published by the Pennsylvania German Society), and Farmsteads and Their Buildings (Applied Arts Publishers), both published in 1972.

ROBERT P. STEVENSON, a journalism graduate of Pennsylvania State University, worked as a newspaperman in his early years. At the close of World War II, he was employed by Popular Science Monthly in New York City, and worked there in various editorial jobs for twenty-seven years before retiring in 1972.
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COVER:
The blacksmith was the most important colonial metalworker, but the tin- or whitesmith also made a valuable contribution. He turned out cheap and useful items—including the ubiquitous cookie cutter—indispensable in the rural home. This is tinsmith Charles Messner at work at the Kutztown Folk Festival.
From the years prior to and following the American Revolution until well into the nineteenth century, many members of village and farm households were involved in some sort of domestic industry on a full or part-time basis. Home and workplace were often one, as many, aside from being partly dependent on agriculture for their livelihood, were engaged in a variety of pursuits which fit into the pattern of rural life. There was a great demand for metal, wood, clay, leather, and cloth products, among others, and local artisans met that demand, engaging in a number of trades and crafts derived from or related to the land, the forests, and the streams.

Transportation problems and costs initially encouraged local production, as did the many taxes and prohibitions imposed by England. Pennsylvania was a colony rich in natural resources and, as demand expanded beyond local markets and methods of production, distribution, and communication improved, increased trade developed with surrounding communities and colonies. Even though most local producers were small, their output, combined with that of Philadelphia and other large towns, made Pennsylvania the chief center of manufactures in America in the eighteenth century.

**METAL WORKERS**

The most important metal worker in colonial communities was the blacksmith; every hamlet and village supported one or more. Almost everything made of iron was fabricated by him, and his output was determined largely by the needs of his customers and by the location and era in which he worked. Most of his products were functional, for he made, repaired, and sharpened tools for the farm and home, and for other artisans who worked with metal, wood, leather, cloth, and clay.

The blacksmith made or repaired items by increasing or decreasing the length, width, and thickness of a piece of iron. He altered, mended, pleated, punched, dressed,
welded, pointed, twisted, engraved, tapered, and joined (by riveting, collaring, pinning, screwing, or bolting) as necessary. Different temperatures were necessary to process the iron effectively, and a major responsibility was managing the fire in the forge so the proper heat would be obtained. Blacksmith forges varied in size, but their function was always the same — a few turns of the blower handle brought forth smoke and flying sparks, and in a short time the black heap of bituminous coal turned red.

A piece of iron was then heated and placed, red-hot, on the anvil where, after receiving many skillful blows with a heavy hammer, it began to take the intended shape. Anvils varied in shape, size, and weight, but seldom wore out; some served several generations of smiths. In addition to the forge, anvil, bellows (large hand-operated bellows were once common), blowers, water troughs or kettles, and perhaps a stove, the blacksmith had hammers, rakes, pokers, tongs, swages, chisels, bits, files, and other tools. There was also a wooden bench fitted with clamps and vises where much of the work was done.

A major job for some early blacksmiths was the making and repairing of iron tires for cart, wagon, carriage, and buggy wheels. These wheels were bound together by a hoop or rim of metal called a tire, or by several short, crescent-shaped pieces of iron called strokes. The wheel was held in a device provided for the purpose while the tire was placed over the wheel rim and hammered into place. Then it was immersed in water so the rim shrunk and bound the wheel tightly together. The blacksmith also fashioned bushings and fittings to prevent axle wear in the hub of the wheel, and made many other parts for wagons, carriages, and sleds. And, farmers and villagers relied on the smith to make and repair machinery, tools, and utensils as needed.

Locksmithing was also a branch of the trade, and by forging, tempering, and filing, most good blacksmiths could make all the parts of padlocks and simple rim locks. (Colonial locks were rim locks fastened to the inside face of the door.) Many also made nails; these were cut from square rods, and an expert could turn them out in large quantities even though each nail had to be pointed, cut, and headed by hand. During the coldest months when there was nothing more pressing to be done, it proved to be profitable slack-time work and good practice for apprentices.

The blacksmith took over the farrier's work of horseshoeing during the last half of the nineteenth century. Although much of the work of shoeing was done in the shop, the smith or farrier did go out on jobs, summoned to fasten or replace shoes that were loose or worn. A good blacksmith could make a shoe from a flat bar of iron; shoes varied in size and weighed as much as five pounds for the heaviest horses or oxen. It was extremely important that the hooves be properly prepared for the shoes, and the smith took care to remove all old nails, and to not enlarge any holes already present or cause any broken hooves. The shoes were attached by driving nails through holes in the shoes into the hoof and then clinching them over the hoof. Proper fit was important to prevent discomfort and lameness. Horseshoeing tools included knives, pincers, chisels, rasps, files (for preparing the hoof), a hoof rest or an iron stand to support the animal's leg, nails, and a farrier's hammer.

Blacksmithing was a laborious and dangerous occupation. The greatest hazards were burns and injuries, so for protection many smiths, like other metal workers, wore leather aprons that reached below the knees. Still, many had scars and crippled fingers, ample evidence of the perils involved. One usually became a skilled blacksmith after a period of apprenticeship, often of three years.
years. Even today, Harold Smith of Bellegrove, for example, still practices the trade which he learned from his father. Most of the other present-day blacksmiths I visited — William Heffley, Richland; George Winters, Grantville; David Kieffer, Frederickburg; Harry Mark, Mt. Pleasant; Albert Mark, Fontana; and Myles Lehman, Pine Grove — were very industrious, although well up in years.2

* * *

In addition to blacksmiths there were smiths who worked with tin, copper, brass, and silver. The tinsmith (or whitesmith as he was known in earlier years) made boxes, cylinders, and cones, or a combination of these shapes, from tin plate — sheet iron coated with tin to help prevent rusting. His tools were similar to those of other metal workers, and included shears, snips, nippers, pincers, punches, mallets, and files. With his tools he shaped, turned, rolled, lapped, hooked, and soldered. Most of the tinsmith’s products were useful and inexpensive: rain gutters, down spouts, chandeliers, lanterns, lamps, dippers, strainers, pails, cups, candle holders, candle molds, coffee pots, and, of course, cookie cutters.

These cookie cutters were very popular, and some were made in designs handed down for generations: animals, birds, flowers, stars, and geometric forms. Articles made from pierced or punched tin were also prized. Tinware made by Pennsylvania German craftsmen was intricately decorated with punched hearts, flowers, birds, and geometric designs; it was not painted. Most of the specialty tinware items turned out by early artisans are now eagerly sought after by collectors.3

There were relatively few coppersmiths in Pennsylvania. Most of their work was mere tinkering and most needed a second trade to make ends meet. Although copper was mined in Pennsylvania, the ore had many impurities in it which made early processing and smelting extremely difficult. At first the processed copper was flattened into sheets by hand with hammers; later a rolling process was used. And, as the native supply of copper became more readily available, coppersmithing became a more active trade.

Like the blacksmith’s shop the coppersmith’s shop was a noisy place. It too had a forge and hood, anvils, bellows, vises, shears, and a workbench where the metal was cut and shaped, and where patterns were made from paper, wood, or metal. From his copper sheets the smith made kettles, stills, boilers, pipe, pails, funnels, noggins, pots, pans, and tankards. Some coppersmiths also worked as braziers, although the zinc necessary to change copper into brass was not to be found in the colonies.

Nor was there much pewter made in the colonies, so a collection of pewter, brightly polished and proudly displayed, symbolized prosperity. Pewter consisted of tin alloyed with lead or copper and, later, antimony, which made a harder metal. Black pewter contained up to forty percent lead and could be used only for non-food and drink articles because of lead’s poisonous properties. Pewter was too soft for knives or forks, but was used for spoons, plates, chargers, platters, bowls, porringer, teapots, pitchers, tankards, buttons, buckles, and lamps. It could be readily cut, bent, stretched, compressed, and soldered. The pewterer’s shop and tools were similar to those of other metalsmiths except for his molds. Practically all American pewter was cast from molten metal and the craftsman’s pewter products were
The old Cornwall Furnace, completed in 1742, it made cannons for Washington’s army. (Drawing by Florence Starr Taylor; copyright Lebanon Steel Foundry)

no better than his molds.

Some colonial silversmiths made jewelry, but most limited themselves to making and repairing small items like porringer, spoons, ladles, snuffboxes, trays, and perhaps teapots, pitchers, coffeepots, and sugar bowls. The silverware was beautiful and valuable, with much of it being passed on to succeeding generations. The wealthy ate from silver and imported china, the poor from wooden trenchers and pottery mugs. The silversmith shaped his work in the same way as did the coppersmith and pewterer, using seaming, casting, and hammering.

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Gunsmiths were also important colonial craftsmen and the Pennsylvania rifle, the rifle of the frontier better known as the Kentucky rifle, was an important product of the period. It was a time when nearly every rural family owned a gun for protection and for hunting game. The rifle originated with Pennsylvania gunsmiths whose shops were located in and around Lancaster, then a gateway to the frontier. It was an area which offered an available supply of bar iron and gunstock timber, as well as a ready market.

Superior to the European models brought by German immigrants, the Pennsylvania rifle evolved out of necessity. Most shoulder guns were clumsily constructed flintlock muskets with bad sights and large bores; they took too long to load. With advice and pressure from woodsmen the barrel was lengthened to give greater accuracy and a longer range; the bore was reduced; the trigger was made sturdier; and balance and sight were improved. The result was a more accurate, effective, functional, and economical weapon. The rifle stocks were usually made from black walnut, maple, or persimmon wood, and many had a brass patchbox. The mountings were usually brass, often intricately engraved. Many Pennsylvania rifles were beautifully decorated with elaborate designs and metallic inlays, and were greatly treasured by their owners.

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In addition to the many metalsmiths who worked in their own shops were iron workers employed at forges, furnaces, and charcoal houses. Pennsylvania ranked high in the production of iron in America, for iron ore was found in many areas of the colony. Forges and furnaces were generally located close to where the ore was found (it was often found close to the surface), so such deposits furnished supplemental and full-time work for villagers and farmers. Such forges worked pig iron into bars which were sold to blacksmiths, and also supplied slit iron for making nails.
Ten-plate stoves were made in the Lebanon Valley, and were highly prized by Pennsylvania German families. (Drawing by Florence Starr Taylor; copyright Lebanon Steel Foundry)

Another major product of the iron forges was the stove plate, used in the construction of the plate stove with its Biblical scenes and its intricate, primitive designs. The Pennsylvania Germans were among the first to use such stoves. Without a back plate the stove was placed against an opening that led into the rear of the fireplace; that way two rooms could be partially heated. With the passage of time, a back plate, an opening for wood, and a stove pipe were added so the stove could be moved away from the fireplace and out into the room. Later an oven was added and the result was a cook stove, some of which had as many as ten plates. Other forge products were trivets, andirons, sadirons, gates, railing, fencing, scrapers, door knockers, latches, locks, hinges, brackets, weather vanes, griddles, pots, pans, kettles, and caldrons of various sizes. Aside from those which were transformed into modern mills, most of the old forges and furnaces were abandoned during the last century.

WOODWORKERS

In colonial America nearly everything that could be made of wood was; there was a constant need for lumber and woodworkers were among the most esteemed and useful of craftsmen. Metals were scarce and expensive so wood was used as a substitute for them and for glass and china. The first agricultural implements were made of wood except for those parts for which metal was absolutely indispensable. These implements had to be well balanced: strong enough to stand strain, yet light enough to handle. It required skill to produce them and many were made and repaired in the local carpenter’s shop.

The cabinetmaker, an expert joiner, made all kinds of household furniture, fixtures, and equipment. His shop was usually conveniently located behind his house or in a nearby structure. His tools were similar to those of other carpenters: hammers, saws, planes, augers, braces, bits, chisels, scrapers, spokeshaves, and drawknives, among others. The furniture he made was reasonably comfortable and more durable than present-day factory-made types. The best made furniture was held together with interlocking dovetail joints in which tenons and mortises are joined.

Among the items of furniture produced in the cabinetmaker’s shop were bedsteads, trundle beds, and cradles; corner and hanging cupboards; desks; clock cases; doughtrays; tables, including dropleaf, trestle, and tavern; footstools; benches of many types; chairs, Victor C. Dieffenbach’s drawing of “Old Dan Gerber’s plow,” as he remembered it from his boyhood days. “The entire plow was made of wood and partly covered with strips of iron or steel. It was not used anymore, but was in good condition when sold in the nineties.” (Pennsylvania German Archives, Ursinus College, Collegeville, Pa.)
including the rocking chair, characteristically American and principally from Pennsylvania where the earliest examples were found; dressers with open shelves and drawers; wardrobes (shrank); and bureaus and chests, especially dower chests, which were common.

Dower chests, gifts from fathers to daughters and used for the storage of linens, embroideries, quilts, glassware, and so forth, are among the most cherished pieces of furniture of this period. They were made of walnut or cherry usually with a natural finish, or of pine or tulip poplar; these were frequently painted. Some rested directly on the floor, others had four legs. Although the chests varied in size, they were generally four feet in length, and two feet in depth and width. They had a hinged lid and one to three drawers. The hinges and lock on the lid were usually handmade, the work of a local blacksmith.

The forests and wooded areas of Pennsylvania provided woodworkers with nearly inexhaustible supplies of many varieties of suitable timber. Until the middle of the nineteenth century, cabinetmakers worked mostly with native woods; mahogany and rosewood, which had to be imported from the West Indies, were used too, but less frequently, because of the cost. Especially popular were white pine, black walnut, and wild cherry. Other fruit and nut woods, and hickory, tulip poplar, birch, gum, ash, maple, and oak were also used. (Oak was used extensively in the last half of the nineteenth century in place of varieties now grown scarce and so more expensive.)

Hickory and maple were frequently used for chairs and bedsteads. White pine is soft, fine grained, and lightweight; it does not warp easily. Readily available in wide widths (widths not often found today) and easily worked, it was used for tables, cupboards, dressers, and other items where strength was not essential. Ash and hickory were chosen for agricultural implements, maple for spinning wheels, and laurel for weavers’ shuttles. Of course woods with beautiful grains were among the choicest. Wild cherry is excellent and was used often because it is harder than pine, has a fine grain, and is easy to work; moreover, its natural reddish-brown color, similar to rosewood and mahogany, gives a beautiful finish. Before wood was kiln dried it was laid away to season at the rate of two inches a year.

Much early nineteenth century and Victorian-era furniture was painted, and there was a liberal use of bright colors and decorations. Chairs, settees, and more occasionally cupboards, bureaus, and clocks, were especially likely to be painted. Stencils were often used after mid-century and artists were then no longer so much in demand. And, speaking of decorations, a great deal of time and skill went into carving and decorating (often with Pennsylvania German motifs) small items used in and around the home: sugar bowls, cups, butter molds, salt and snuff boxes, spoon racks, and so on.

The jackknife was an important personal item for the male population in years gone by, and in their spare time many men and boys made intricately carved and beautifully designed woodenware.

The early nineteenth century was also the time when factory-produced, standardized, machine-made furniture began to appear in rural village homes. This was partly because of a thirty percent tariff imposed by Congress on imported furniture, and also because of the development of veneering; the result was a lighter, less expensive, and less substantial product. By the end of the century practically all furniture was being produced commercially, forcing many cabinetmakers to close their shops and bringing to an end the era of beautifully and carefully handcrafted furniture. But, although some of that furniture has been banished to the attic in favor of more contemporary styles, much has been passed from one generation to another and can be found in present-day homes; it is also much sought after by collectors.

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During slow periods some cabinetmakers helped build houses. Some of the first houses constructed in colonial Pennsylvania retained many of the architectural features and building materials found or used in the settlers’ Old World homelands, but it was not long until logs were used to build the structure that was to become the universal home of the pioneer. Within a generation however, the log house was being replaced with larger, more accommodating frame, stone, or brick dwellings. Constructed with heavy timbers, a number of these houses still stand, serene and dignified, among those erected in more recent years.

Generally the rougher and heavier work of hewing and fitting the massive posts and beams, of mortising timbers, and attaching siding and roofing materials was done by the rough carpenter. The heavy timbers were shaped out of logs with a broad axe and adz, and the siding was planed by hand. Finishing carpenters and joiners did the interior and finishing work, hanging doors and windows, erecting staircases, placing paneling and wainscoting and other such jobs. Door and window frames and sashes were sometimes constructed on the job site; floor boards were planed smooth then tongue-and-grooved by hand. At times some of this work was done by the carpenter-cabinetmaker in his shop and then transported to the construction site.

Shaved wooden shingles were the successor to thatch and the universal roofing material for most early buildings, so there was a great and continuous demand for them. Shingle shaving was a task often pursued intermittently and was frequently regarded as a casual, part-time vocation. Almost any experienced carpenter or woodworker could shave shingles when necessary, and
Local carpenters hand bored pump logs and pipes, or used horses to help do the job. This is Victor C. Dieffenbach’s drawing of a treadmill. (Penna. German Archives, Ursinus College, Collegeville, Pa.)

many times it was a job done for extra income during periods of inclement weather, particularly during the coldest months. It required a heavy mallet, a straight frow used to rive or split the shingle from the block of wood, a good, sharp drawing knife, and a shaving, or shingle, horse, a device for clamping the shingle in place during the shaving process.

The shingle rived from the block of wood was from one-half to one-third of an inch thick. After being clamped on the horse, one end was shaved with the drawing knife to a thickness of approximately one-eighth of an inch. There was little or no time for hesitation or exactness; depending on his skill and speed, a worker could make several bundles a day.

Wood had to be free splitting for good results, and white pine timber was most commonly used because that is one of its properties. Cedar was better, but relatively scarce, and hemlock, too, made good shingles but was not used as much as white pine. Shaved shingles split with the grain were smooth, did not lie tightly against the roof, did not absorb water readily, and dried out quickly. They lasted longer than present-day sawed shingles which began to be produced on a commercial scale in the mid-nineteenth century. Although not as good as hand-shaved shingles, they were less expensive and thought to be better looking.

* * *

Some woodworkers — usually finishing carpenters and cabinetmakers — were involved in clockmaking, building entire clocks or supplying cases for clockmakers who installed imported timepieces in them. But many early clocks were made of wood, for a serviceable wooden clock could be made and sold for half the price of those made of brass which was not only expensive, but difficult to obtain. Properly maintained and kept in a dry place, a wooden clock would run a hundred years or more. Such clocks were made almost exclusively during the early part of the nineteenth century; some of the larger ones showed the time in seconds, minutes, hours, and days, and the shape of the moon at any given time.4

And, until crude machinery was devised to do the job, pump logs and pipes were hand bored by local carpenters. It was time consuming, monotonous work which involved much labor and required great skill, meticulous calculation, and unlimited muscle power. Some pump logs were turned out using horses on a treadmill, but logs twelve feet or more long required considerable time to bore accurately, even using horsepower. Later, pump logs and log water pipes were made commercially in sawmills until the last quarter of the nineteenth century. Locally the craft persisted for many years; the late William Merkey, for example, who lived near Bethel in Berks County, told me that during his earlier years he bored pump logs and built wooden pumps on a part-time basis in addition to his farming pursuits.
The cooper was an indispensable colonial wood­worker; using only a few simple tools he turned red and white oak, white pine, elm, and cedar into watertight vessels. He made barrels and casks used to hold meat, fish, flour, cider, whiskey, rum, molasses, whale oil, tar, pitch, and other commercial products. He made the tubs used for meat, butter, and laundry, and crafted buckets (including the old oaken one which hung in the well) and pails for water, milk, sap, and feed. In fact he made all sorts of containers as well as numerous other related necessities (as, for example, churns) for home and farm; indeed, he built anything formed of staves drawn together with wooden hoops.

The process began with logs being sawed into blocks. These blocks were then rived into staves (known as bolts) of proper thickness which were allowed to season for several months before being shaped and dressed. For some containers the staves were dressed only on the edge; for others the edges and both sides were planed. The edges were beveled and joined with near-perfect accuracy so the bottom would fit into the groove precisely cut to receive it.

The number of wooden hoops necessary was determined by the size and height of the vessel. They were shaved from hickory, white ash, or white oak saplings one-and-one-half to two inches in diameter; four to six hoops could be split from this size sapling. Notches in the hoops locked them together, and it took great skill to cut these correctly so the container would be watertight. Coopers took great pride in their work, particularly when external appearance was a factor. Some of their finest products were sanded smooth and given an outside coat of varnish.

Those containers produced by apprentices and other less-than-expert workmen were used for non-liquids, for in the days before paper bags, burlap sacks, and cardboard cartons, wooden containers were used to transport almost all commodities. Indeed, staves and headings were being handmade in large quantities in rural and more heavily populated areas until the last quarter of the nineteenth century; after that most coopers merely assembled machine-made parts.

Carts, wagons, and sleds were used on the farm and in the village from pioneer times. The large amount of metal work required on wagons and sleighs after the wood work was complete meant wagon making and blacksmithing were closely connected. The wheelwrights of this era concentrated their efforts on two-wheeled carts which were easier to get around obstructions than four-wheeled vehicles. With their large diameter wheels they had more clearance and, pulled by horses or oxen, rolled better over rough and muddy roads. They were also simpler; the connecting gear between the front and rear axle of four-wheeled wagons was more complicated to build.

The wagon maker used white oak, white ash and, to a lesser extent, hickory and elm for wagons and sleds. Either small trees or large limbs of selected white elm
were used for hubs, because it is among the hardest to split of all native timber. Short blocks of the desired length were sawed from such timber, shaped with a hand axe and drawing knife, and then bored to fit the axle and mortised for fitting the spokes. Great skill and patience were needed to assure the accurate and proper spacing of these mortises.

The standard number of spokes used was twelve for the front wheels and fourteen for the rear wheels. Split from straight-grained blocks of white ash or hickory cut to the proper length, they were shaped to the desired size and shape using a shaving-horse and a spoke shave. Then a spoke auger was used to shape the outer ends so they would fit the holes bored in the circular rim, or felly. The felly was sawed from an oak plank with a very narrow compass saw which could make a cut following a curved line. The pattern was scribed so that when put together with pin and dowel the pieces formed a complete and perfect circle. The inner end of the spokes were tenoned so as to accurately fit the mortises in the hub. A great deal of time, effort, and labor were involved before the wooden wheel was ready to receive the indispensable iron tire or metal rim, without which it could not carry a heavy load.

The ends of each axle also had to be shaped to fit a hole bored into the hub of the wheel. (Later, wagon wheel hubs had cast-iron linings to support the axle.) The axles were universally fitted with linchpins to keep the wheel in place. Linchpins were eventually replaced by machine nuts which were screwed on the end of the iron axle. Sleighs also had to be supplied with shoes and braces; all the metalwork required to complete the wagon or sleigh was done with the aid of the local blacksmith.

Wheelwrights — who also made such items as spinning wheels and spindles — found a place in the economy of Pennsylvania until the beginning of the twentieth century. Then, some of them became assemblers of factory-made hubs, spokes, and fellies. Occasionally, though, the connecting gear was still made in local shops with the aid of mechanically powered tools, which allowed them to be competitive with commercial production. But many wheelwright shops simply passed from the scene upon the passing of their owners. Such was the case with the business of the late Anson Stump, a well-recognized wheelwright from Berks County.

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Basketmaking played an important part in the colonial economy, since baskets of willow, oak splints, and rye straw in all sizes and shapes were widely used in the home and on the farm. Those made from cords of rye straw were, at one time, commonly used for baking. Floured dough was put into them to raise, and when it had risen sufficiently the baskets were turned upside down on the bake-oven shovel and the loaves inserted into the oven. Storage hampers, dome-shaped beehives, and other, similar, items were also made of rye straw.

Pealed willow shoots were the preferred material for making long-wearing baskets for home and farm use; such baskets were amazingly strong and extremely lightweight. To make them, artisans sought out the tough, flexible twigs of the osier willow which grows near streams. Since I have such willows growing near the stream in my meadow, I have been approached on several occasions by basketmakers or by those interested in supplying basketmakers.

For field and stable use, baskets were woven from splints of white oak or ash. It was important to select the right kind of timber — that which was knot free and had a straight, fibrous structure. When such logs were found, pieces were cut from them and these were thoroughly soaked in water before being pounded vigorously with a heavy hammer throughout their entire length. This pounding loosened the wood fibers so the splints could be cut; it was hard work, done in an era when workers did not shrink from such tasks. The late Fred Bieber from the Oley Valley, for example, made a living in this way for over fifty years; I knew him and have some of his baskets. But it is a way of life which no longer exists, and today such handmade woven baskets, the work of one-time local artisans, are available mostly at country auctions.

**LEATHER WORKERS**

In their raw state animal hides are simply unsuitable for most uses. Rawhide, though tough, stretches considerably when wet, has a tendency to decay rapidly when moist, and becomes extremely hard when dry. So tanning — the process of converting hides to leather — is one of the most ancient arts, and a time-honored craft. It is a process dependent on certain chemical reactions which one had to learn to control. Early tanners used an assortment of chemical and vegetable materials, some with better results than others. Oak and hemlock bark (or a mixture of the two) were the tannins most often used, and some thought oak bark superior, especially for making harness leather.

In colonial Pennsylvania hides were first tanned at home or on the farm, and before they were familiar with the tanning properties of oak and hemlock bark, some used a process of smoking, kneading, pounding and scraping similar to that used by the Indians to make animal skins soft, pliable, and durable. This practice was eventually discontinued after custom tanneries, operated mostly by farmers, were established within or near small rural communities. These flourished until about the middle of the nineteenth century, and leather was an important trading commodity in the state's pre-Civil War economy.

Of course the hides of domestic animals were tanned, and farmers and villagers hunted or trapped deer, elk, bears, wolves, foxes, beavers, otters, minks, muskrats,
and other animals, since these provided not only meat, but another source of income as well. For, depending on size, quality, and type, dry hides and skins brought a good price. Hides and furs were also a standard medium of exchange at the country store. Tanning was generally done on shares equally divided between the tanner and the farmer, hunter, or trapper. The tanner’s work was seasonal to a great degree; it was not until the fall or winter months when the farm butchering was done that most of the rawhides were assembled. But eventually the tanner accumulated a stock of finished leather which he may have sold for cash (although the amount of cash in circulation was unbelievably small), but which he most likely bartered.

When the tanner received a hide he took a sharp knife and cut or scraped the initials of the owner on the flesh side, near to where the tail was joined. Usually the next step was to trim off the appendages and remove all surplus fat and tissue with a fleshing knife. Cowhides were split along the back line, making two nearly identical sides; calfskins and sheep pelts were tanned whole. Then the hides were soaked in a lye solution made from wood ashes or lime water which helped to loosen the hair or wool, and make it easier to scrape off. (Cow hair could be sold to masons who mixed it with mortar.)

In the actual tanning process, a layer of ground or crushed bark was spread over the bottom of a large vat and covered with one or more hides; these were covered with bark and then more hides were added. This alternating of layers of bark and hides continued until the vat was full. For tanning purposes, the finer the bark, the better; early tanners pounded it with a heavy beetle or mallet. Later the work was done using a bark mill, similar in construction to a large bone or coffee mill. Still later the bark mill may have been fitted to a horse sweep; then an attendant fed pieces of bark into the mill while urging the patient steed onward. A cord of bark was needed to tan two hundred pounds of finished leather, the equivalent of approximately a dozen hides. Some mills could grind a cord an hour.

When the tanning vat was filled with bark and hides, water was added until all the contents were covered. Then, from time to time the hides were checked, repiled and more bark added, if it was thought necessary. Many early processors believed that prolonged soaking resulted in improved leather, and some tanners allowed the larger hides to soak in the tan vat for as long as six months. These vats were about six feet square and four feet deep, and even the smallest tannery needed several. They were built of planks and sunk into the ground so that the top extended slightly above the floor. They usually had a passageway between them, and there was always the danger, particularly for children and animals, of falling in and drowning.

After the hides were removed from the vat it was important to remove all the traces of lime, so after they were scraped free of hair they were soaked in a solution made by mixing chicken dung, salt, and water; a traditional formula among early tanners who attested to its efficiency. When that soaking was finished the hides were scrubbed and rinsed in clean water and hung indoors over beams or poles to dry. Drying could not be too rapid, and air had to be able to circulate freely around the hides so they would not mold. When dry, the leather was again scraped, curried, and rubbed with a mixture of oils. If it was to be darkened, lampblack or soot was applied to the grain or hair side and rubbed in thoroughly to give a smooth finish.

Sheepskins were frequently tanned by a dry process: rubbing the inside surface with a variety of approved formulas, usually consisting of mixtures of powdered alum, ashes, and salt; this allowed the skin to be dressed with the wool on. (Sheepskin jackets — the unpuled wool worn next to the body — kept wearers snug and warm in the coldest weather.) Or, if the wool was to be removed, sheep and lamb skins were moistened and stacked in piles so they would sweat; this loosened the wool so that it could be pulled.²

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The boot and shoemaker and the harness and saddle maker were all dependent on the work of the tanner; but though these vocations were closely related, and though the materials, tools, and equipment used were practically the same, they were seldom combined. Because of the custom of tanning on shares, tanners frequently had leather accumulate, and some had it converted into harnesses which were usually more readily saleable than shoes, for unlike shoes, they could be made adjustable. Many saddles and harnesses were made from leather produced from local hides.

The harness maker spent much of his time standing by a wide table on which the leather could be spread...
The harness maker's shop always had a good-size work table and an assortment of awls and knives. (Drawing by Walter W. Calvert; Farm Journal)

out, marked, and cut to the proper length and width. He had to know which part of the hide was best suited to different purposes. The late Frank Lesher, who had a shop in Lebanon, was a harness maker who learned the trade in his father's harness shop in Pittman. Frank's shop contained many homemade gadgets designed to make the work a little easier; most of the heavier equipment was on castors or tracks so it could be easily moved where needed. As his harness trade diminished, other phases of his business increased, for he also did automobile upholstery and replaced automobile tops before the time of metal roofs.

The terms shoemaker and cobbler are often used interchangeably, but a cobbler is really one who repairs shoes. During the very earliest period of colonial settlement the father or an older brother frequently made or repaired the family's footwear. But soon shoemakers became active and, until the time of the Civil War, most rural residents wore shoes made by a village or itinerant shoemaker. And, even after factory-made footwear was introduced, there were those individuals who refused to wear store-bought boots or shoes.

The shoemaker used an assortment of awls and knives which were kept razor sharp, and he also had a whetstone, a strap, hand-twisted flax, wax ends (thin, twisted cord composed of a number of waxed filaments, usually pointed with a bristle), a ball of wax, wooden pegs, nails, and pieces of leather within easy reach. (If the customer did not bring his own leather, the shoemaker supplied it from his stock.) Nearby, on the wall or on a rack, were wood or tin lasts or patterns arranged by size from large to small; from these he picked the one which best fit the client's feet, laid it on the leather, and cut it with a sharp knife.

During the nineteenth century and earlier it was common practice for shoemakers, particularly in rural areas, to make both the left and right shoe over the same last. The resulting "straights" might be worn alternately, thus reducing uneven wear, or always on the same foot, until they took on the shape of left and right. Even when shoes which conformed to the foot became available, they were rejected for a long time by country folks, who referred to them as crooked shoes.

To assemble the various pieces of the shoe after he cut them, the shoemaker sat on the end of a bench about five feet long and eighteen inches high. The sunken seat at one end consisted of a circular hole with leather nailed over it; the other end was divided into a number of compartments used to separate the various sizes of pegs and nails needed for the job. This end also usually had a clamp arrangement which held the leather in position for sewing, and which allowed both hands to be free to punch the holes with an awl and then draw through the threads. Many early shoemakers sewed with a stiff hog bristle waxed to the thread they were using. Such bristle needles served well because they could be passed through small and curved holes made in the leather. Later, straight and curved steel needles were used as needed.

The ankle-high shoe is a rather recent innovation; the early shoemaker made footwear which reached somewhere between above the ankle and the knee. Soles were fastened to the uppers with wooden pegs. A hole was punched for each peg with a short, heavy pegging awl, and the peg was driven into it with one blow of a broad-faced hammer. These pegs at first were whittled or split by the shoemaker, and it was not unusual for another member of the family to help him with the job. But it was not too long until they began to be made on a commercial scale in small factory-like shops. (Birch and maple made the best pegs.) Then they were sold by the quart in various sizes and at nominal cost.

Heavy cowhide was used for everyday work shoes, and a pair of outdoor worker's boots cost about three dollars (and considerably less when the customer supplied the leather) until after the Civil War. Good calfskin boots may have cost up to twice as much because of the softness of the leather and the additional patience, skill, and care required to make them. A good shoemaker could make a pair to a pair-and-a-half of boots or shoes in a day.

Many shoemakers grew stooped and round-shouldered from hunching over their workbench located at first, perhaps, in the corner of a room in the family dwelling. Later, as demand increased, an entire room may have been set aside, or a separate shop built to the side or behind the house. Some made shoes only during the coldest months, having other jobs the rest of the year. Or, if he had no custom work, the craftsman may have made several pairs of shoes to be sold or bartered for leather, foodstuffs, or household articles.

With the introduction of sewing machines after the mid-nineteenth century, merchants began to supply the leather, and shoes were made in shops, in quantity. In some instances, the upper portions of the shoes and the soles were factory made, and then distributed to workers who pegged on the soles or otherwise completed them at home. As a result, the shoemaker made
fewer and fewer pairs of boots and shoes, and did more and more repair work on factory-made footwear. By the time of the twentieth century, tanning or shoemaking on an individual or small-time basis had nearly ceased to exist.

CLAY WORKERS

Pottery making is one of the most fascinating of the manual skills because of the many forms into which the vessels can be made; it became an important home industry in Pennsylvania wherever a good quality of clay was to be found. Until the mid-eighteenth century, large quantities of pottery and enameled earthenware were imported from England and Holland. But by the turn of the nineteenth century many potters were producing Pennsylvania redware and stoneware; from native clay on a potter's wheel individual artisans made such items as bowls, jars, pots, crocks, lids, and other related items of tableware; their quality was widely recognized throughout the colonies.

Redware was made from a soft, wet clay whose color varied from very light to deep, dark red depending on its iron oxide content. Depending on the areas from which they were dug, other clays varied in color from shades of yellow to tan, blue, grey, and white. Fine particles of silica make clay stick together and make it easy to shape when wet; for this reason it is important it be free from pebbles and other unwanted materials. Certain clays produce a harder pottery, and some kinds crack more easily than others when heated. Both conditions could be improved with additives the potter included in his mixture. Thickened clay was stored in lumps in a damp area until needed, and before use was beat and kneaded to free it from air bubbles. If of a proper consistency, clay will yield to pressure and hold any shape imposed upon it whether on the potter's wheel or in a mold.

The potter's wheel (or _hefuraud_ in the Pennsylvania German dialect) on which the clay was turned is one of the earliest of mechanical devices. It consisted of a circular table which revolved on a vertical shaft with a kickwheel controlled by the potter's feet pushing slightly against a flywheel at the lower part of the shaft. Its function was to spin the clay around on center so the vessel being formed could be shaped perfectly round. With the clay spinning around, the potter was able to shrink or swell the mass with his hands, as he wished. The completed vessel was placed on a drying board, and when it was hard but still damp, handles could be added if desired. Slip decoration was also applied at the same time, but much of the pottery, known as _hefa_, made in the German-settled areas of Pennsylvania was without decoration. Most of the redware and grey stoneware was invariably plain in shape and design.

Slipware, a common type of pottery made by rural potters and found among the Pennsylvania Germans, had a design or designs made by applying a liquid mixture of light or dark colored clay and water. This was allowed to dribble from a small pitcher or trickle through a tube in the desired design over the darker or lighter surface of the pottery. Many of the designs were extremely crude, varying from wavy lines to the simplest of flowers and birds. Slipware was produced for both local and commercial sale until the mid-nineteenth century. Sgraffito-type pottery, a noted product of the Pennsylvania Germans but less commonly found, was made by dipping the entire vessel in white slip; then, when it had set up, much more ambitious and traditional designs such as tulips or _distelfinks_, were etched or scratched on the surface of the piece.

After the pottery had dried it was ready to be fired. A domed or circular brick kiln was generally used to bake the pottery, and it was important the kiln operator be familiar with the techniques of baking clay, which requires a very hot fire. After firing the pottery was glazed, since redware as it comes from the oven is porous and not very hard. The glaze was a mixture of red and white lead oxide and sand diluted to a water-like consistency. It was colorless and transparent, but could be tinted brown by adding manganese, or green by adding copper oxide. In addition many warm shades — red, orange, and yellow in various hues — were used, in part as a substitute for more elaborate decorations. After the glaze dried the pottery was re-fired and the lead oxide became vitreous. But lead glaze has poisonous effects and is detrimental to health if certain foods, particularly acid ones, are stored in lead-glazed containers for any length of time before consumption.

Grey stoneware gradually replaced redware because it needed no lead glaze, and because it was stronger and more watertight. The method of making it was similar to that employed for redware, but a grey-white or tan
clay containing a lot of silica was used. Some of the stoneware had a blue design made by cutting outlines in the clay while it was still damp and then filling these with a cobalt slip, or by brushing the slip on. Today when, with few exceptions, the potter's wheel has given way to molds, the pottery created by early craftsmen is much sought after by present-day collectors, and a contemporary potter, Lester P. Breininger of Robesonia, who has continued with this traditional craft form, finds his work receiving national acclaim.

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Occasionally, red soil and brick fragments are still turned up by the plow, indicating the location of a former brickyard or brick-burning site. Other areas show evidence of a depression created when clay was removed to make bricks for use in local construction; it was not uncommon to remove clay from an area as close as possible to the construction site. In many areas brickmaking began shortly after permanent settlements were established; bricks were used for fireplaces and chimneys, and oftentimes stone or brick houses replaced earlier, smaller wooden structures. Durable bricks could be made from most clays, and the many substantial brick buildings seen throughout areas of early settlement are evidence of their widespread use in construction.

Except for shovels, hoes, and molds which could be made locally, very little equipment and few supplies were needed to make bricks. Early molds were shallow wooden boxes, two-and-a-quarter to two-and-a-half inches deep with one or more partitions, lengthwise and crosswise, which divided the box into equal compartments, the size of the desired brick. There were also molds used to make fewer, larger, and thicker bricks used mostly for fireplaces, hearths, and bakeovens. (Early buildings with these structures still intact often show the quality of the early brickmaker's work, as well as he size of the bricks used.) The dimensions of most standard bricks, whether hand- or machine made, have varied only slightly through the years, from eight by four by two and one-half inches.

To form a brick the inner surface of the mold had to be completely covered with sand to keep the clay from adhering to it. When it was, the mold was filled completely with properly tempered clay and tamped to make sure it was solidly packed. After any surplus clay was scraped or cut off with a straightedge, the mold was turned upside down on a flat surface and tapped slightly, causing the bricks to loosen and drop out. After they had dried enough to withstand careful handling, they were placed on trays and taken to be piled on racks which protected them from sun and rain while allowing air to circulate among them. This curing process continued until the bricks were well dried.

For firing the bricks were placed in a square pile to make a kiln. This temporary kiln was constructed with an open space near the ground so wood could be inserted to feed the fire. The bricks were not laid up tight, because space was necessary so the hot gases from the fire could circulate throughout the kiln. The ideal was to have the entire pile brought to a bright red heat, although this was difficult to do in actual practice. Generally, it took a week to burn a kiln of brick, and after the kiln was cooled and disassembled any soft or unfinished bricks were separated and became part of another kiln for more firing.

A more specialized and less commonly found rural activity closely related to pottery and brickmaking was the making of red clay roofing tiles. Although there is evidence of these having been made in the colonies, most were imported from Europe for use on early roofs. The tiles were formed in a mold which measured from twelve and three-quarters to fourteen inches in length, six to six-and-a-half inches in width, and one-half to three-quarters of an inch in thickness. The tile face had small vertical grooves made by the tiler before the clay had set completely; these guided the flow of rain water away from the joints and toward the center of the tile below. A sturdy lug was molded to the tile's underside near the top center, allowing it to be attached to the horizontal lathes on the roof. The tiles were placed with the joints coinciding both vertically and horizontally, thus differing from the alternating joints found in the consecutive rows when shingles or slates are used.
LIME BURNERS

Before stone or brick houses and chimneys could be built or plaster could be used to smooth walls, it was necessary for lime to be burned. Lime was mixed with water to make whitewash, and in combination with sand to make mortar; it was also used to enrich the soil, and to remove impurities in the iron-making process. So lime burning was a thriving industry from the very beginnings of settlement, and in areas where there were limestone outcroppings or where it was readily quarried, lime-burning kilns were very common. Near coastal areas, lime was made from the shells of shellfish.

Wood-burning kilns were first used, and they were similar to the coal-burning kilns which succeeded them. For a small wood-burning kiln, an arched flue of large, flat limestones was laid at the bottom of the kiln which was then filled with pieces of limestone of varying sizes. Wood was ignited and fed into the bottom flue, and the heat and flame passed up and through the overlying stone and out the top. It might take up to a week to burn the stone, depending on the size of the kiln and weather conditions; it took nearly as long for the contents to cool enough to be removed.

Later and larger wood-burning kilns had an independent combustion chamber for the fire. These kilns, square or rectangular, were made by placing large limestones one on top of the other, without mortar, to the desired height; usually ten or more feet, depending on the amount of lime to be burned. They were built into the bank on a hillside so the top of the kiln was at ground level in the rear where a road allowed the limestone and fuel to be loaded into the shaft. At the base of the kiln in front was an opening through which the fuel was ignited; through which air passed for combustion; and from which the burned limestone was removed.

The dimensions of the cylindrical shafts (some of which were lined with brick) varied from eight to twelve feet in diameter across the top, and tapered to three or more feet at the bottom. Depths were often twelve or more feet, again depending on the amount to be burned.
A grate framework of iron bars was placed crisscross above the unloading trough near the bottom of the shaft. As the burned charge fell through the grate into the trough at the end of the burning process it was removed with a shovel or hoe. Such kilns required continual, day-and-night attention, but despite their disadvantages the wood fuel introduced additional moisture which resulted in a better quality lime. I can find no wood-burning kilns in existence today, however, for they have deteriorated, been demolished, or replaced with coal-burning kilns.

After coal was introduced and found to be a more practical fuel, converted kilns simplified lime burning and made it less costly, for coal-burning kilns received their entire charge at the beginning and, after being ignited, required very little attention until the process was complete. They were fired by placing kindling wood under the grate and a layer of dry firewood on top of the grate. A three-to-six-inch layer of coal was spread over the firewood and topped with a twelve-to-eighteen-inch layer of limestone. Layers of coal and limestone alternated, with the coal layers becoming thicker and the limestone layers thinner, until the shaft was filled.

The loaded kiln was sealed with clay, mud, sheet iron, or some other suitable material to help regulate the draft and prevent too rapid combustion; the lower the temperature at which the stone was burned, the better the lime. Again, depending on the size of the kiln and the amount of stone, the burning process took up to a week, with about the same amount of time required for cooling before the iron grate bars could be adjusted or lifted out to let the lime fall through so it could be removed.

Unlike wood-burning kilns, some small coal-burning kilns can still be found in rural areas, but most of them have been abandoned for more than a century. Many more have been destroyed or covered over, leaving little or no evidence of their existence.
FOREST WORKERS

Dense virgin forests covered the hills and valleys of colonial Pennsylvania with many varieties of both hard- and softwoods, some three or four feet in diameter and hundreds of years old. Major forest products were saw timber, cordwood, tanbark, and potash. Many villagers and farmers found fulltime or seasonal work—particularly in the late fall or winter months—in the forest, or in forest-related industries.

Producing charcoal—coaling as it was called—was at one time a large industry, employing many workers in Pennsylvania. Furnaces, forges, blacksmiths, metal workers, and other craftsmen whose work required high temperatures, used charcoal in the reduction of iron ore or in working with iron. So as a marketable commodity charcoal ranked high, always commanding a dependable cash market. At one time there were six charcoal furnaces within a radius of thirty miles in southeastern Pennsylvania: the largest was at Cornwall; others were the Elizabeth furnace at Brickerville; Colebrook; Mt. Hope; Swatara at Highbridge; and Manada at Manada Gap. Another well-established nearby operation was the Hopewell furnace at Morgantown. These furnaces were in operation before the mid-eighteenth century, and remained in business well into the mid-1800s. About the time of the Civil War, charcoal was supplanted by coal and coke.

Several thousand acres of wood were consumed annually during the period when the furnaces were in blast, for up to four hundred bushels (two-and-a-half tons) of charcoal were required to produce a ton of pig iron. Because of the great quantities of timber needed, not only were large tracts of woodland purchased outright, but wood leases were bought from farmers as well. Under these agreements the land was cleared of trees within a stipulated time, and then returned to the owner. This gave employment to a large number of wood choppers, colliers, and teamsters; and, for an additional charge, many farmers provided their mules, horses, and oxen to haul the timber and charcoal.

The late Peter P. Boyer of Quentin, whose father, Peter, and Uncle, Cyrus, were charcoal burners, told me how a section of woodland was cleared. Each cutter stepped off twenty-five paces (seventy-five feet) and then, staying in his own area, chopped down the trees and cut the timber into four foot lengths. (Any kind of timber could be used, but elm was considered especially desirable.) The cut timber was piled in measured ranks in the center of each cut strip and left to dry. The brush and small limbs were piled to the side of each strip, and these rows, about sixty feet apart, were a severe fire hazard when they dried. But when the brush was burned it provided a crude form of potash which at times was collected if there was a market for it. Many acres of woodland could be cleared in a short time when there were a number of workers on the job.

Most charcoal burners worked on contract from a local furnace or forge, and were paid on the basis of the
They began, in the spring of the year after the frosts had subsided, by selecting a place in the area of the chop­pings to build a hut; a site near a stream or spring was chosen if possible. Some burners had one or more helpers, and sometimes two burning pits were laid together with the hut built nearby so they might attend to two fires instead of one. The hut, usually circular in shape and about ten feet in diameter, was built of poles placed one against another (with a space left for an entrance and exit), standing on a slant and joined at the top. The entire structure was covered first with branches and leaves and then with sod or earth to make it water-tight. Cooking was done outside over a charcoal fire in a kettle which hung from a tripod, in a pan with legs, or in a pan which could be set on legs.

When the hut was finished a space about thirty feet across would be leveled off with a pick and shovel, and as many as thirty cords of wood would be transported to the site by wagon or sled. To burn the wood a frame was constructed which had a pole four-to-six-inches in diameter standing up through its center. After dry kindling was piled around the frame, the timber was stood on end on a slant around it. After the first tier reached a certain width, one of the men climbed on top to start a second, and then a third, tier; the completed cone-shaped pile of wood would be twelve feet or higher. The lower tier had a diameter of twenty or thirty feet, and the top tier from four to six feet, suggesting the shape of a straw beehive. Occasionally the pile may have had more than three tiers; some were known to have as many as five levels.

The conical pile was covered with leaves raked together in the area or brought to the site, and the leaves were covered with earth or sod to make the pile nearly air tight. A pole about six inches in diameter with notches cut into it and long enough to reach the top was laid against the side of the pile to be used as a ladder to get to the opening in the frame’s center; other openings were left in the earthen covering to allow additional draft at the beginning of burning. The upright center pole was then pulled out and fire was dropped into the hole, igniting the kindling below. As soon as the fire was well started, all the openings except the one at the very top of the pile were closed with earth or sod.

Then began the coaling process. Up until this time the work had mostly been routine, but from here on the skill of a charcoal burner was needed. He had to know how to control the fire, and that required much good judgment and vigilant care. The fire within had to be held to the smoldering stage, and to accomplish this the draft was regulated by placing wood across the hole at the top of the pile; it acted much as a damper does in a stove pipe. Some draft was necessary to keep the fire alive; too much draft consumed the wood to ashes.

On windy days the fire was frequently driven to one side of the pile, and the burner corrected this by boring holes in the side-covering with a strong stick or shovel.
handle. This created a draft which drew the fire toward all sides and to the center again. The fire also had to be drawn to the widest part of the pile on the ground and, if a blaze threatened to break through at any point, the opening had to be covered immediately with additional earth or sod. Indeed, the danger of slow-smoldering combustion turning to conflagration was so great the pile had to be watched constantly for ten days, the length of the cooling period. When there was more than one burner they took turns on the night watch, especially if there were high winds. As soon as one pile of wood was done, another was started, and the process repeated all over again.

The skill of the charcoal burner was determined by the amount of uncoaled wood remaining when the cooling process was completed; a good burner had very little. When uncovered, the pieces of wood were just as placed, but now they were black, charred, porous carbon. The charcoal was removed from the pile to further cool before being loaded onto the waiting wagons. Since charcoal is light the wagons to haul it were large, with boxes twenty feet long, four feet wide, and four feet deep; they were usually drawn by six mules. At loading time a ladder was placed against the wagon’s side, the charcoal was broken into pieces, put into large, split-hickory wood baskets which were carried (usually on the laborers’ heads) up the ladder and their contents dumped in the wagon box.

If all of the charcoal in a pit was not needed at one time, the remaining charcoal surrounding the opening was again covered with earth or sod, for fire was always a hazard; so much so in fact that there was a saying among burners that “charcoal was not safe from fire until the grass grew over it.” Fires even broke out occasionally on the loaded wagons. If near a spring or creek the teamster could put them out with water, but there were times when a major part of the cargo was unloaded or the entire load dumped. There were also those rare cases when the fire had progressed to such an extent the team had to be unhitched and the wagon and its contents left to burn.

There were usually two or three men in a crew of charcoal burners when several pits were kept going, and they had long days of work. On Saturday morning, after any waiting wagons had been loaded, work stopped and all but one of the men went home for the weekend. The man who remained to keep watch made the rounds among the fired pits several times a day, with usually a morning and evening climb to the tops to check the drafts and make any adjustments needed. Heavy rains sometimes caused the coverings to be washed away, and these had to be replaced without delay. Wind was also a problem, drying out and carrying off coverings, carrying sparks to nearby brush piles and burning already cut wood, and starting forest fires covering many acres of woodland.

Unless they were able to ride with one of the teamsters, those going home often had a walk which took several hours. It was not uncommon for a man to leave Saturday noon, arrive home late in the evening, and leave again Sunday noon in order to rest and be back on the job Monday morning. At home, one of his first desires was to take a bath (it was said a charcoal burner never tanned since the sun could not penetrate the coal dust that always covered him), shave, and have a good meal. During the week the quality of his food depended on how good a cook there was among the crew, but even in the best conditions a fair amount of coal dust was consumed with each meal. Small wonder that most charcoal burners expressed joy when the last pit was opened and the last charcoal was loaded in the fall, and they could return to their families.

**Potash — the crude potassium carbonate obtained by leaching wood ashes with water and evaporating the solution to dryness — was an important item in the colonial economy. It was used for making soap, scouring wool, bleaching and dyeing cloth, and glass manufacturing, among other purposes. A simple leaching vessel could be made from a section of hollowed-out log, preferably of some softwood like sycamore or gum. This trough was raised from the ground on blocks of wood or stones, with one end higher than the other. Leaves or straw were laid on the bottom, and wood ashes were spread over them. When water was poured over the ashes the leached liquid (lye) trickled through the sieve-like bottom into a holding vessel. Then the leachings were boiled in large iron kettles with bottoms thick enough to withstand the process of evaporating the lye into a solid mass. The kettles, thirty to forty-two inches across at the top, were hung over the fire in much the same manner as maple syrup was boiled.

Commercially, burning potash, like other kinds of lumbering, had its risks and uncertainties. The equipment needed was minimal, but large amounts of timber were a basic requirement. Softwoods yielded such small amounts of potash they were not deemed worthy of burning, but even among hardwoods yields varied considerably among the different species. Water elms, for instance, were considered among the best trees for the purpose, some having been known to yield several hundred pounds of crude salts; and, indeed, among its rich ashes might be found solid masses of fused potash pure enough to be thrown directly into the boiling kettle. Other good potash-producing hardwoods were ashes, maples, basswoods, hickories, and beeches. Depending on their quality, it took five to seven hundred bushels of ashes to produce a ton of potash.

The trees were chopped down, cut into convenient lengths, dragged or hauled along with the brush onto...
piles, and burned. Then the ashes were gathered and leached. All of this involved many days or weeks of work, but if a sudden heavy rainfall leached the ashes before they could be gathered it was a total loss. For this and other reasons (if, for example, a location or situation prevented timber from being marketed to advantage as lumber) numerous asheries were located throughout the colony and state. These were stone structures with an opening to stoke the wood and large enough to accommodate the burning operation. And sometimes brick ovens were built in which the crude salts, called black salts because of the carbon and other dark-colored impurities in them, were burned at high temperatures. This burning fused the mass into a bluish-white and much purer product known as pearlash. This commanded a higher price than the crude salts which were usually sold by the hundredweight.

Some asheries had workers with teams and wagons collecting ashes from the surrounding countryside where burning had taken place but where the owners themselves did not do any leaching or boiling. After the middle of the nineteenth century, Germany began to exploit its potassium deposits and the burning of timber for potash was discontinued.

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Maple sugar making, another enterprise dependent upon the forest, came at the end of winter when other activities were not as pressing. Cold, freezing nights followed by a season of warm, sunshiny days brought ideal sugaring weather. The sap was usually gathered sometime between February and April, with the exact time dependent upon location and weather conditions in a given year. But it was important to get the sap before buds appeared on the trees and it turned bitter, resulting in a poorer quality and quantity of sugar.

At first sap was collected by cutting a groove which extended downward several inches through the bark into the trunk of the sugar maple tree about four feet from the ground. Then a gash was cut into the bark at the bottom of the groove, and a thin splint of wood was driven into the opening. The sap collected in the groove, flowed to the lower end of the cut, over the splint and into a trough or other container. This partial girdling proved to be very destructive and was soon abandoned. The new method involved boring a hole with a small auger into the sap-bearing wood, and inserting a splice into the opening to guide the dripping sap into wooden or earthen vessels which held several quarts or even gallons of liquid.

Sugaring off was a pleasant rural diversion for young and old as spring approached; frequently it took on the nature of a neighborhood frolic. A level spot was chosen; two strong, forked saplings were set into the ground eight or more feet apart, depending on the amount of sap to be boiled; and one or more large iron kettles were hung from the cross pole which rested in the forks of the upright saplings. The sap was brought in buckets sometimes hung from yokes across the workers' necks, and up to twenty five gallons were poured into each kettle.
In colonial Pennsylvania honey was the most commonly used sweetener, and most rural families had a beehive in the yard. (Drawing by Walter W. Calvert; Farm Journal)

The sap was boiled over an open fire kept burning continuously all day and perhaps well into the night. One or more of the group was responsible for keeping a supply of dry wood available. Usually a cold or cloudy day was chosen; the degree of evaporation determined whether the final result was syrup or sugar. For higher efficiency, a temporary stone or brick enclosure may have been constructed in the open or within a shelter. Such stove-like enclosures to accommodate the kettles saved fuel by retaining heat and allowed fewer sparks to fall into the kettles.

The sap was boiled to a thick syrup and then strained while hot through a cloth into another container. Some of it was formed into cakes and, less frequently, some was stirred off in a granulated condition. Depending on weather conditions, the type of tree and sap flow, it took five to seven gallons of syrup to make one pound of sugar. Sugar maple trees vary greatly in the sugar content of their sap, as does the yield per tree. A good sized sugar maple yielded, on the average, about four pounds of sugar or three pints of syrup. Maple sugar was an important source of income until well into the nineteenth century, particularly in areas where the trees were abundant. Rural families depended on maple sugar and honey for sweetening until the beginning of that century when cane sugar became less expensive and more readily available. Excess amounts of maple sugar and syrup were often sold or bartered at the country store.

But until the early nineteenth century when cane sugar became less expensive and more readily available, the most commonly used sugar substitute was honey. It and beeswax were gathered from trees, logs, and stumps in wooded areas of the colony. The honeybee is not native to America, but was brought here from Europe by early settlers. Although some bees were kept in hives, swarms soon went wild and sought hollow trees in which to store their honey. Late summer and early fall were the best times for collecting it, but some individuals began seeking out promising locations in early spring by watching the straight-line flight of bees from blossoming trees to storage sites. Cutting down such trees was not without risk and at times was actually dangerous. Smoke was frequently used to drive the bees from the hive and to put them in a kind of stupor, thus reducing the risk of being stung.

That bees played an important role in the economy of early Pennsylvania is attested to by one observer who...
wrote in 1698: "Bees thrive and multiply exceedingly...the Swedes often get great store of them in the woods, where they are free for anybody. Honey is sold...for five pence per pound. Wax is also plentiful, cheap and a considerable commerce." Soon, not only were beehives a vital part of most farm orchards, they were also to be found in backyards in rural villages, where you would "scarce see a house but the south side [was] begirt with hives of bees which increase after an incredible manner."

"Bees were kept in a yard generally fenced off by itself from all other ground" and, at first, were housed in a section of hollowed-out log (beegum) up to two feet long set upright, with a cover attached for protection. The thick log wall provided good protection against the cold of winter, and the circular interior gave a natural shape to the honeycomb. Later, conical straw hives and boxes were used. These were made from heavy bands of rye straw bound together, one strand laid on top of another and each layer becoming slightly smaller to give the distinctive shape; they were made in various sizes.

Early box hives were constructed with one-inch boards, and also varied in size and depth. About the middle of the last century the commercially constructed, movable frame hive with cover appeared on the market. This made it possible to inspect the inside of the hive more easily and thoroughly without injury to the bees, and to add hives one on top of another for additional honey storage. Shortly after the standard frame hive was marketed, portable smokers, comb foundation, and honey extractors also became available. At about the same time, the Italian bee was introduced and soon interbred with the German bee, resulting in the species now dominant among beekeepers. Today, backyard hives have largely disappeared and apiculture has passed into the hands of large producers, specialists in the field.

TEXTILE WORKERS

In the colonial era when all members of the family were expected to be productive, women learned and practiced the skills necessary to produce homespun textiles at a very young age. Seldom could they be accused of idleness, for "spare" time was usually spent spinning or weaving, activities many enjoyed since they were apart from the regular household work. Homespun, too, provided a supplemental source of income since any excess could be bartered at the local store or with a peddler, or taken to a nearby town and sold. When, during the Revolutionary War, clothing and textile imports were curtailed, spinning and weaving acquired even greater importance.

Flax and wool fibers were the first to be used in the manufacture of homespun cloth and yarn, and much time and effort were required to obtain and prepare the raw materials. Flax was sown in early spring and was pulled up by its roots in mid-summer when it was two or three feet high. It is a hollow-stemmed plant with long, strong fibers — the only part of the plant of value for cloth manufacture — which run the entire length of the stalk. To extract the fiber the stalks were retted (partially rotted) in water for a period of ten to twenty days, depending on the temperature of the water and the maturity of the plant.

After the fiber was removed and properly dried its hard sheath and core were fragmented on a heavy wooden flax brake. This was a crushing device consisting of a scutching block and a blade comprised of a lower set of parallel planks and a second, upper set, which meshed with it. The upper set, hinged at one end, was brought down hard on the dried stalks which were laid across the block. Each handful of fibers was pounded vigorously between the two sets of blades until all the non-fibrous portions of the plant were thoroughly crushed and loosened. Then remaining bits of stalk were knocked from the fibers in a process called scutching or swinging — beating down on the flax with a large wooden knife as it lay over the scutching block, the end of an upright supported plank. The cleaned fibers were then pulled through progressively finer hatches, wood slabs uniformly studded with iron spikes about three inches long. The resulting grades of fiber (coarse, medium, fine), each with their own use, were now ready for spinning.

The spinner sat with one foot operating a treadle that turned the wheel. Two grooves in the edge of the wheel guided two belts, one turning the spindle, the other the bobbin that ran on the spindle which, because it had a slightly smaller pulley, turned just a little faster on its axle. This extra speed kept tension on the spun yarn and reduced tangles. The purpose of spinning was to twist the yarn, and a certain amount of skill was required in hand feeding the fiber smoothly to the spindle to prevent lumps or thin, weak spots in the yarn. Linen, the cloth woven from flax yarn, ranks high among the natural fibers for strength, durability, and beauty, but it does not provide the comfort and warmth of wool which was preferred for some uses. Together they accounted for almost all early domestic homespun; later they were supplemented with cotton.

Men did the shearing, but the washing, carding, spinning, bleaching, dyeing, and weaving of wool were usually women's and children's work. Wool contains large amounts of yolk, an oily secretion which makes up a considerable part of the total weight of the fleece, depending on its coarseness or fineness. It was scoured, or cleaned, by hand in a large washtub using homemade soap and a weak lye solution to remove all the oil and dirt. When dry, the now soft and fluffy mass was ready for carding which consisted essentially of forming the
wool into cylindrical rolls. With two cards, or combs, with sturdy wire teeth the wool fibers were combed out so they would lie lengthwise on the roll and parallel with each other; this allowed the rolls to be drawn out and twisted into yarn by the rapidly revolving spindle.

There is little resemblance between flax and wool spinning wheels in size or construction. The flax wheel was known as the little wheel, the wool spinning wheel as the great wheel; they also operated differently. To spin wool one alternately and rhythmically advanced and retreated while whirling the wheel with one hand and, with the other hand held aloft, manipulating the thread and guiding it onto the revolving spindle. When the spindle was full it was wound off onto a reel about six and a half feet in circumference. Forty revolutions of the reel, forty threads was a knot; ten knots made a skein — approximately twenty-five hundred feet. Producing four skeins meant many miles of pacing back and forth and was considered a good day's work.

Early looms, some made by local craftsmen, were essentially the same as those used in the Old World homeland. Large and clumsy, they were usually placed in a separate room. Not everyone did their own weaving; there were itinerant weavers, and nearly every rural village had one or more men who worked for so much a yard, or for a percentage of the finished product. Operating a loom meant throwing the shuttle, pressing down the treadles, and swinging the batten over and over again, many hundreds or thousands of times a day. Some weavers concentrated on special items such as rag carpets, woven in long strips, or coverlets. These coverlets, many with intricate and beautiful designs and some bearing the names of their makers, are among the most treasured heirlooms of present generations.

After homespun cloth was woven it had to be fulled. At first the heads of fuller's teasels gathered in nearby fields were used; their stiff, hooked spines raised and roughened the surface or nap of the cloth. Later, homespun fabrics were finished at a fulling mill. After linen was fulled it was often bleached by wetting it and subjecting it to long hours in the sun. For dyeing yarn or cloth there were a number of dyestuffs garnered locally: sassafras bark (yellow-orange); butternut bark (yellow); black walnut, red and black oak, and hickory bark, and hickory nuts, walnut shells and onion skins (yellow-brown); goldenrod (green); sumac berries (red-brown); madder and jewelweed (red) were some of the most common. Indigo, saffron, cochineal and other dyestuffs not available locally could be bought from peddlers or the local store.

Linen was used for sheeting, toweling, and shirting; blankets, dress materials, and winter garments were made of wool. And numerous items of clothing for both sexes were made from linsey-woolsey, fabric with a linen warp and a woolen woof. Such clothing tended to be scratchy, but it lasted a long time, even with very hard use. Factory-spun cotton warp came into use before home weaving disappeared, and then a cotton-linen cloth was made. Checkered and striped woven materials were popular for making dresses, aprons, shirts, spreads, and ticking.

The transfer of textile manufacturing from home to mill was a gradual process. Even though linen production adapted itself less readily than wool to machine manufacturing, it was first to be abandoned in the home because it was so arduous and time consuming; linen was largely replaced by factory-produced cotton. Homespun woolen products continued to be made a generation or more longer, the changeover beginning with families sending their wool to local mills to be carded and after it was spun and woven at home, to another mill to be fulled. But for some time after mills and factories began replacing domestic production, household industries continued supplying some clothing and home textile needs; the nineteenth century was well advanced before factory-produced goods exceeded homespun, and in remote areas home production persisted until mid-century.

**MISCELLANEOUS DOMESTIC INDUSTRIES**

Candlemaking was an important activity in colonial households. Tallow was saved throughout the butchering season and, while it was still hot after rendering, it was poured into pans to cool and harden. The fat of domestic and wild animals (deer, bears) was used, as was beeswax. Candlemaking began when enough tallow had accumulated, and was usually done in the kitchen or outdoors in the autumn. For dipped candles six or eight strands of tow or twisted cotton were attached to a rod several inches apart. These wicks were dipped into a kettle of hot tallow, and then the rods were hung between chairs or benches until the light coating of tallow cooled and hardened. The process was repeated over and over until the candles were the desired size.

Candles were also made in tin or pewter molds — slightly conical tubes joined in pairs or rows so that a number, usually somewhere between six and twelve, could be made at one time. Molds varied in size but were up to twelve inches deep with openings up to an inch in diameter on top, tapering to about three-quarters of an inch at the bottom (which would be the top of the finished candle), with an opening there big enough to allow the wick to pass through. The wick was fastened to a wire or stick laid lengthwise over the top of each row of openings in the mold. The wicks were cut to length, passed through the tubes, often with a large darning needle, and fastened securely with a knot that also sealed the hole. Molds were often set in cold water to chill the ends and prevent leakage at the knots before
the melted tallow was ladled or poured into them. After the tallow cooled and hardened, hot water was poured over the molds to loosen the candles.

A twelve-inch candle might burn up to twelve hours, but in order to obtain the brightest light the wicks had to be trimmed from time to time with scissors made especially for that purpose. Candles did not always burn evenly, but if there were soft tallow drippings they could be heated and rubbed into the skin to help heal rough, chapped hands, or used on cracked lips or sore noses. Even after kerosene (coal oil) lamps were introduced, many continued to prefer candles because of their fear of explosions and fire; because of the danger children were taught from the earliest age to be extremely careful with candles and lamps.

Fat was used to make soap as well as candles. It was put into a large iron kettle with water and lye and cooked about two hours, or until the contents thickened and separated from the brine beneath. It was important not to have the fire too hot, and the soap mixture had to be stirred continuously to prevent the contents from cooking out or setting fast. After the soap substance had risen to the top, a few handfuls of salt were usually added to clean it and lighten the color. Then it was ladled into molds or wooden containers to harden before being cut into blocks. The remaining brine could also be used for washing and cleaning.

Some city, town, and village dwellers were buying their soap from an itinerant supplier long before it was available at the country store. The soap vendor, like the candlemaker, exchanged soap for tallow, pork drippings, and other fatty wastes. I vividly recall the “soap man” stopping by my parents’ house to sell and exchange when I was a youth. Homemade soap was also bartered at the rural store so the storekeeper could have a supply for sale to those who did not want to make their own.

* * *

Broom making was mostly a fall or winter job. At first they were made of slender splints of wood (usually birch) with birch or ash handles. Later, a variety of sorghum or broom corn with long stiff panicles was grown; it made a much more flexible broom. Frequently the twine used in broom making was spun from flax. Today, Roy W. Heister of Fredricksburg, who has been making brooms for more than fifty years, uses the seed stems of earless corn which he receives in bales from Mexico as the basic material. They are dipped in a large tank of water and allowed to dry overnight before being worked; the heavy stems are used in the broom’s interior, the thinner, straw-like stems make up the outer surface.

Heister uses several different machines in making his...
brooms. The handle (imported from Jamaica) is inserted into a machine powered by a motor and pulley that rotates the handle on its axis while the long corn stems are tied to it with wire. Next, the broom is run over a machine with a revolving drum surface covered with comb-like teeth; then a sewing machine is used to bind the broom stems together, and another machine removes unwanted stems from the now nearly finished product. Although he does not make as many brooms as he once did, he says he still buys the best corn he can get, and makes the best brooms he can make.

* * *

Distilling was at one time a widely distributed home industry that for obvious reasons has disappeared from the rural areas where it once flourished. The wide distribution and generally small size of most stills show they were mainly to meet local demand. Although there were some total abstainers, most adult males drank on occasion, and liquor was served to the men at weddings, funerals, barn raisings, bees, and other festive occasions. Before the time of taxation and excise regulations, many areas of Pennsylvania were well known for their liquor which was available at very reasonable prices. Most early distillery operations were primitive and temporary. Whenever possible the stills were located near a spring with an abundant supply of water, for a great deal of water was needed for the mash tubs and to cool the condensing pipes. Corn, rye, and barley were the grains commonly used, and some early distillers made an apple brandy referred to as applejack.

A building which housed an early nineteenth century distillery is located on the property of the late Elam Becker along Pine Hill Road, northeast of Lititz. His great-great-grandfather, Christian Becker, and his great-grandfather, Henry Becker, were millers and distillers, as well as farmers. The Becker descendants have records of distillery activity dating back to 1795 when the Becker whiskey was sold in hogsheads and payment was received in shillings and pence. Henry Becker was also the inventor of an improved distilling apparatus, for which he obtained a patent.

* * *

It is often difficult today to find men and women who were involved in the above-mentioned rural and domestic industries, who knew someone who was. A generation or so ago it had been far easier to locate individuals who could tell in more authentic and elaborate detail the procedures followed by such artisans. But it is still the hope of this author that those with like interests will continue to make concerted efforts to further such research, despite the difficulties.
with proper allowance for varying barometric pressure. Province and corrugated bottoms to increase the area exposed to heat have replaced changed considerably through the years. Metal spouts and buckets mined by the way it froths and bubbles in the kettle or by pouring the big iron kettles. have replaced the wooden spiles and pails. from which such a sweet sap was obtained. of similar work in Europe, nor was there a comparable European tree are practically forgotten. At present the se indu strie s resource that was eventually to be limited. At present the se indu strie s and sold for u s e in tanneries. The average yield of bark was from fif­
tury, Penn­sylvania wa s the leading tanbark produc i n g state i n the
summer months, mostly June and July, when it could be easily
loosened from the wood. Sections of bark several feet long were dried
so ftwood s s uch a s pine, hemlock, fir, ba ss wood and willow were not
considered good for firewood. A cord of hardwood, 128 cubic feet the
accepted unit of measurement, will weigh from two to two and one­
oak, ash, maple, beech, birch and the fruitwoods rate highe s t. The
sy lvania G e rman Famil y Farm,

...
Collecting early Pennsylvania rifles is an extremely interesting pursuit. Their appeal lies partially in the fact that they were the best firearm of their day, and yet were produced by a group of peace-loving people of mixed European stock — Swiss, German, and French Huguenot — who settled in southeastern Pennsylvania. And early Pennsylvania rifles are interesting too because an unusually high quality of workmanship was required to produce them. Each rifle was designed and made by a craftsman skilled in the working of not one medium alone, but of all the materials used in the making of a rifle. To execute his work successfully he had to be competent in welding and boring the barrels, in working and carving the stocks, in shaping and engraving the brass, and in silversmithing and locksmithing.

The gunsmith had to know the function and requirements of each part of the rifle, and had to design the whole so the resulting product was an efficient weapon as well as a fine aesthetic expression of its maker; a maker who often repeated his work yet never made two rifles identical in detail. In addition to its use by frontiersmen like Daniel Boone, the Pennsylvania rifle played an important part in the French and Indian Wars, in the Revolution, and in the War of 1812. Finally outmoded by the breech-loading rifle, this famous firearm became a collectors' item and has, in many cases, been carefully preserved and handed from father to son for several generations.

In recent years interest in early Pennsylvania rifles and the men who made them has been revived. A few books have been written which contain some data about the rifles, but the biographies of most of their makers lie in complete obscurity. The paucity of information about them is due to several reasons which can be easily explained. Few eighteenth century rifles survived the tremendous demands made of them, not only in supplying the family larder with game, but in protecting the family against Indian forays and in two or three wars; thus the most tangible link between the makers and ourselves has been lost. Then too, many early craftsmen did not identify their rifles by placing their names on them; it is true, however, that the craftsmanship of some makers was so distinctive an unmarked rifle can be positively identified when compared with a marked specimen. And thirdly, the earliest rifles were frequently restocked, or at least changed to percussion type, so that many of the original characteristics can now be only a matter of speculation.

For the reasons stated above, to be able to find material for a biography of an eighteenth-century rifle maker is a unique experience. Not only are many interesting facts known about Jacob Dickert, but some rifles exist that were undoubtedly made by him alone, and there are also some that were made by him and his later associate, a Mr. Gill. And, the pattern of Dickert's foreign birth and subsequent migration to America was typical of the artisans of that period.

The records of the Moravian Church indicate Jacob Dickert was born in Mainz on January 9, 1740. In 1748 his family came to Pennsylvania and settled in Berks
County, but in 1756 they moved to Lancaster. Their motive for relocating to Lancaster may be attributed to a desire to live in one of the most flourishing boroughs of the time, a borough which had the added attraction of an established Moravian congregation. The move may also have been made to give Jacob the opportunity to apprentice himself to one of the local gunsmiths, who were more plentiful in Lancaster at that time than in any adjoining area.

We do know that it was about this time that Jacob Dickert began working in the gunsmithing business, for in 1795 he stated in an advertisement in a Lancaster newspaper: “Any person desirous of a supply of articles in the GUN-SMITH line, may depend upon being well suited, as said Dickert, by having forty years experience in that line is enabled to give all possible satisfaction. He carries on the Gun-Smith business as usual.” The age of sixteen years, Dickert’s age in 1756, was late to start as an apprentice, so it is possible he had been apprenticed to a gunsmith in Berks County, before he moved. His apprenticeship may, on the other hand, have been only for about five years, so that even if he started it in Lancaster he would have been able to finish it by the time he was twenty-one, the usual age for completing the apprenticeship period.

At the age of twenty-four Jacob Dickert married Johannetta Höfer, and on February 27, 1765, a son, Johannes, was born to the young couple. Johannes died on May 27, 1765, but on October 6th of the following year a daughter, Anna Maria, was born. It was

Dickert and Gill's 1795 advertisement in a Lancaster newspaper. (Courtesy Lancaster Newspapers)
Anna Maria’s husband James Gill, or their son Benjamin, who was later associated with Dickert in the gunsmithing business, and whose name appears with Dickert’s on the rifle barrels.

Since it is apparent that Dickert was at this time assuming the responsibilities of an established businessman, it is not surprising to find that he decided to become a citizen of his adopted country, as indicated by a naturalization document dated September 24, 1765. He doubtless met the requirement of seven years’ residence in America and, in lieu of taking an oath, subscribed to the “Affirmations and Declarations, according to the Act of Parliament, made in the thirteenth Year of the Reign of his Late Majesty King George, the Second . . . and thereupon was admitted to be his Majesty’s natural born Subject.” This important document is evidence of Jacob Dickert’s desire to become a bona fide resident of the community, and unquestionably his life was an asset to the place where he lived and worked.

The fact that his name appears on the naturalization paper as “Dickart” is a reminder that there is considerable confusion concerning the spelling of the gunsmith’s name; other variations found are Dechard, Dechert, and Deckerd. However, on all the guns examined by the author, and on all the church and legal documents (with the exception noted above), the spelling is Dickert.

Dickert must have foreseen the oncoming Revolution and the resulting demand for rifles, for in 1776 he and a partner, one John Henry, bought a parcel of land in Manheim Township, near Lancaster, and built upon it a boring and grinding mill. Of this transaction a deed book in the Lancaster County Court House contains a record which also includes the stipulation that the partners would not be allowed to grind grain in their mill. It is likely the original owner of the ground had erected a gristmill on the stream, and by inserting that restriction in the deed was thereby protecting his own business.

The building of the boring and grinding mill is ample evidence of Dickert’s success and foresight as a gunsmith. It indicates that after ten or fifteen years in the trade he was able to accumulate half the sum required to build a mill; it seems obvious he had the money for there was no mortgage on the property. The possession of the mill placed him in a position of advantage, assuring him adequate facilities not only for the boring and grinding of his own rifles, but also enabling him to bore barrels for gunsmiths not as fortunate or successful as he. His success is further attested by the fact that when his partner died in 1779, he was able to buy the second share in the mill from John Henry’s widow for 250 pounds.

The aforementioned marriage between Anna Maria Dickert and James Gill, a Lancaster merchant, took place in 1787. It seems that Dickert then combined his business with Gill’s, and the two operated a store on Queen Street, “in the well known dwelling house of said Dickert.” This meant the gunsmith’s stock was now augmented with a supply of groceries, dry goods, and, at least on one occasion, with an “assortment of large and elegant Looking-Glasses.” Combinations such as Dickert’s and Gill’s were not unusual in the eighteenth century; as a matter of fact they must have prospered, or so many people would not have followed the practice. This particular partnership was short-lived, however, for in May, 1796, Gill died. That Dickert continued with the business is indicated by the following advertisement which appeared in the Lancaster Journal on August 21, 1799:

Original document identifying Dickert as a citizen of Great Britain.
WANTED
2000 Musquet Locks and Barrels
The subscriber will contract with any person or persons, for any quantity of Locks and Barrels. No locks or barrels will be accepted unless a pattern is first had from the subscriber.

JACOB DICKERT, Gunsmith

WANTED
2000 MUSQUET LOCKS and BARRELS. The subscriber will contract with any person or persons, for any quantity of LOCKS and BARRELS. No locks nor barrels will be accepted unless a pattern is first had from the subscriber.

JACOB DICKERT, Gunsmith

Who has also for sale,
A large assortment of Dry Goods, suitable for the Season, as also a large and general assortment of grocires, which will be disposed of at the most reasonable rates for CASH.

This advertisement shows that Dickert was making large quantities of weapons for the army—specifically, an American version of the smoothbore flintlock known as the Charleville musket. Only one musket made by Dickert has been seen by the writer.

WHO ALSO HAS FOR SALE
A large assortment of Dry goods, suitable for the season, as well as a large and general assortment of groceries, which he will dispose of at the most reasonable rates for cash.

This request for 2000 barrels and locks indicates that Dickert was producing large quantities of military guns at the time, for they were to be used in an American version of the Charleville musket which had been secured from France for use in the Revolutionary War. The fact that Dickert was very active in the first decade of the nineteenth century is substantiated by Major James E. Hicks in his book United States Ordnance, which contains numerous letters from one Tench Coxe, purveyor of public supplies, to Jacob Dickert and his associates, as well as letters from the latter to Coxe. This correspondence shows that a group of Lancaster gunsmiths consisting of Dickert, Henry DeHuff, George Miller, Christopher Gumpf, John Bender, and Peter Gonter, pooled their resources and produced large numbers of rifles for the War Department. A letter of November 16, 1807, to Dickert and DeHuff indicates the type of rifle they made:

Gentlemen:
I have received the letters from the gunmakers of Lancaster dated Ocr. 27 & 28 and Novr. 5th.
The rifles I am instructed to purchase are to answer the following description. They are to be common, plain rifles substantially made. The barrel to be three feet two inches in length. The workmanship to be

Proof that Dickert was a prolific producer of Kentucky rifles.
such as to pass strict and rigorous inspection. The calibre as to fit a ball of half an ounce weight. The finishing (if the work be good and substantial) will be sufficient if not inferior to those commonly made for ordinary use. The barrels would be prefered round (instead of eight square) from the tail pipe or lower thimble to the muzzle; but of the thickness they would be otherwise. Except in the sharp angles, that is to say of the thickness they would be of in the flat part or the thinnest part of the octagonal barrels. The price that will be paid for the rifle complete, will be ten dollars cash.

I will thank the gentlemen for a decided answer as to time, price, & number as I mean to proceed.

I am Sirs,

Tench Coxe

An earlier letter indicates both the price paid for rifles at that time, and the policy of the government in allocating contracts for their purchase:

Mr. Henry DeHuff
Rifle Maker
Lancaster, Penna.

I have received your letter offering rifles at more favorable prices; I had determined to give chances to different persons in different places, because it is just among our fellow citizens and because it encourages the branch, but as you have offered upon moderate terms you can make a dozen of the brass mounted at $10.2/3 and three of the silver star and thumb piece at $11.17/100. This last sum being fifty cents more the brass mounted is as much higher than the silver were above the brass before. I am anxious to have the arms good and sightly. When finished they may be sent down to this place and will be inspected by the armorer.

I am Sir,

Tench Coxe

Occasionally, contracts were awarded when the buyer furnished the locks; in such cases the rifles cost $8.75.

The position of Jacob Dickert at that time shows he was considered a superior craftsman. In a report to the secretary of war, Coxe praises Dickert and his colleagues, saying they are capable of securing five thousand rifles in the Lancaster area. The two rifles by Dickert illustrated herein are an early pattern and can be considered fine specimens of Pennsylvania rifles. The raised carving on the stock of the first is appropriately designed for the area and skillfully executed. (The workmanship on some gunstocks is often superior to the carving found on important pieces of walnut and mahogany furniture, despite the fact that maple was much more difficult to cut.) There is also evidence of a silver star inlay which has been lost, but whose shape has been perfectly preserved. The great thickness of the stock at the butt plate, the style of the carving, the cylindrical shape at the small of the stock, and the star inlay all indicate that this gun is of the Revolutionary War period or earlier.

The second Dickert rifle shown is similar in feeling but has no raised carving on the stock. The patchboxes of both are typical of those used in Lancaster County at the time, and although slightly different in detail are obviously the products of the same craftsman. The delicate engraved loops and points on each side of the hinge are peculiar to the maker and can be regarded as his signature. The oval-headed iron screws are original and have not been replaced with brass screws as has frequently been done. “J. Dickert” can be plainly seen on the barrels of both guns.

In addition to being prominent in the gunsmith trade, Jacob Dickert was active in other business and community affairs in Lancaster. He was one of the subscribers to the Philadelphia and Lancaster turnpike, finished about 1790 and the first great highway built in America. Travelers reported seeing long lines of Conestoga wagons, heavily laden with produce from the country or merchandise from the city, using the thoroughfare. This improvement in the transportation system was doubtless an asset to all men doing business between the two cities, and certainly helped Dickert dispose of his rifles. Later, when the turnpike was continued to Middletown, he was one of the managers of the enterprise.

Moravian church records show that Jacob Dickert served its various church organizations for many years; for more than forty years, for instance, he was one of the Diener (workers or servers) at church love feasts. This indicates he was not only interested in the affairs of the church, but was an active participant in one of its most important and historic services. In 1822, when he died, his passing was noted in the church records as “due to old age.” The obituary in the Lancaster Intelligencer says that “He sustained the character of an honest Man, a good citizen, and an Exemplary Christian.”

APPENDIX I
A DICKERT GENEALOGY

I JACOB DICKERT, rifle maker
b. 1740, d. February 27, 1822; m. March 1764 to Johannetta Höfer (Hoeffer), b. in York, July, 1746, d. January 9, 1819.

II CHILDREN OF JACOB DICKERT
Johannes, b. February 27, 1765, d. May 27, 1765.

Anna Maria, b. October 6, 1766, d. February 8, 1806; m. July 26, 1787 to James Gill who died in May, 1796. Married again October 11, 1799 to Matthew Lewellen, b. May 13, 1775, in Tennessee.
III GREAT-CHILDREN OF JACOB DICKERT
Jacob D. Gill, b. May 23, 1788.

Benjamin D. Gill, m. April 16, 1816, to Amelia Mathilda Lemke, daughter of Christian Lemke and Anna Maria Demuth, b. November 9, 1768, daughter of Christoph and Elizabeth Demuth.

Maria Gill, b. February 17, 1794, d. November 25, 1818. m. September 5, 1811 to John Frederick Steinman, Jr., b. December 19, 1789, d. October 5, 1884; son of J. F. Steinman, Sr., b. in Bethlehem, December 7, 1752, d. October 17, 1823; wife, Sibilla Margaretta, b. 1753, d. October 17, 1823; wife, Sibilla Margaretta, b. 1753, d. October 17, 1823; wife, Sibilla Margaretta, b. 1753, d. October 17, 1823; wife, Sibilla Margaretta, b. 1753, d. October 17, 1823; wife, Sibilla Margaretta, b. 1753, d. October 17, 1823; wife, Sibilla Margaretta, b. 1753, d. October 17, 1823; wife, Sibilla Margaretta, b. 1753, d. October 17, 1823;

Samuel D. Lewellen, b. April 29, 1801.

IV GREAT-GREAT CHILDREN OF JACOB DICKERT
William L. Gill, photographer and inventor; son of Benjamin D. Gill and Amelia Mathilda Lemke.

Henrietta D. Steinman, b. 1813, m. George H. Bomberger.

George Michael Steinman, b. July 11, 1815, d. April 5, 1844.


Mary Gill Steinman, b. October 14, 1818, d. May 3, 1894; m. Elam D. Hurst, b. November 14, 1828, d. May 16, 1903.

V GREAT-GREAT-grandchildren of JACOB DICKERT
George Meyers Steinman, president of the Lancaster County Historical Society, 1896-1917.

APPENDIX II
From The 1850 Census of Lancaster County, Pa.

<table>
<thead>
<tr>
<th>Name</th>
<th>Occupation</th>
<th>Location</th>
<th>Place</th>
<th>Age Birth</th>
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<td>31 Olao</td>
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A century and a half ago, a woolen mill was a leading business in many Pennsylvania communities. It usually embraced all the steps necessary to convert raw wool into finished clothing. In a still earlier day, housewives often performed some, and perhaps all of these steps, with many homes having all the equipment necessary to do the job from start to finish. Old-time carding wheels may still be found in antique shops, for after the wool was washed it was carded — an instrument with bent-wire teeth drew fibers from the wool. Then, spinning wheels were used to spin these fibers into thread, and a loom was used to weave the wool thread into cloth.

Pioneer families in America often converted this homespun directly into articles of clothing or bedding, but because of the roughness of the cloth they were uncomfortable to wear or use. To overcome this, a fuller worked his magic on the cloth. Webster’s Dictionary defines fulling as “the process of shrinking and thickening woolen fabric by application of moisture, heat, friction, and pressure that causes the fabric to felt.” Felt is a firm woolen cloth.

Webster’s also defines a fulling mill as “a factory where cloth is fulled.” In early England, fulling mills existed apart from woolen mills. In the early United States, however, fulling operations usually were included in what was broadly known as a woolen mill. Here, the owner or operator of a woolen mill was a manufacturer. But a century ago, he was also commonly known as a “fuller,” even though fulling was only a small part of the manufacturing process. And a woolen mill might be known as a fulling mill, even though by Webster’s precise definition it definitely was not.

The operations of the three Western Pennsylvania
woolen mills to be described in this article can be considered typical of all. These mills were located at Clarksville, on the border between Greene and Washington Counties; on Georges Creek, two miles upstream from New Geneva; and on Muddy Creek, near Carmichaels, Greene County. All were operated by water power, and their output was woolen cloth, blankets, and articles of clothing.

Two types of mills came into being toward the end of the twelfth century — windmills and fulling mills. The latter began to operate first in about 1185, but they never became common. But through the years it was found that fulled cloth always far longer than ordinary homespun.

To prepare homespun for use, fulling parties (sometimes called "kicking parties") were common in rural regions in the 1700s and earlier. Typically, a half dozen young men and the same number of girls were invited to the party. A floor, perhaps in a barn, was cleared and six strong chairs were placed in a circle, each tied to its neighbor with rope.

The young men sat down in the chairs after removing their shoes and socks and rolling up their trousers. The bundle of cloth to be fulled was first wet with soapsuds and then placed at the center of the circle of bare feet. Kicking began at once, driving the wet bundle around and around the circle. From time to time more soapsuds were poured on. Kicking stopped when the goods had been shrunk to the width and length desired. While the young men were drying their feet and donning their shoes, the girls wrung out the pieces of cloth and hung them on a line to dry. All of this took place with lots of laughter and happy joking.

During the 1800s woolen mills definitely were needed in Western Pennsylvania. Farmers kept thousands of sheep on the hill farms of Greene, Washington, and Fayette Counties. In Greene, which occupies the southwestern corner of the state, sheep raising continued to be common up until the time of World War II.

The woolen mill at Clarksville was one of the earliest and most important in Western Pennsylvania. In his Local History of Greene County and Southwestern Pennsylvania, A.L. Waychoff says it was the first one in Greene County, established early in the 1800s by Sherlock Negus. An 1876 Clarksville map shows F.B. Ross as the owner. The flowing waters of Ten Mile Creek provided its power. Buildings of this mill remained standing until the time of World War I.

Ellis Bailey Stevenson, the present writer's great-grandfather, served his apprenticeship as a fuller in the Clarksville mill. Ellis, the eldest son of Asa and Priscilla Gregg Stevenson, was born near Carmichaels, Greene County, in December 1804. Ellis grew up in Clarksville, went to school there, and by his early manhood was proficient enough in his trade so that he could strike out on his own.

His choice of location was across the Monongahela River in Fayette County. Soon after arriving there, Ellis married, probably in 1829, his bride being Permelia Eberhart, born July 10, 1813. Permelia, usually known as Millie, obviously was a hardy woman, for she eventually bore thirteen children.

Nelson's Biographical Dictionary and Historical Reference Book says Stevenson moved to Fayette County in 1828. The information is contained in a biography of William A. Stevenson, Ellis's eldest son. This book was published in 1900 while William was still alive, so William apparently supplied the biographical facts.

Concerning Ellis, the biography continues: "Ellis Stevenson was a fuller of woolen goods. He rented a shop near Smithfield, which he operated for three years. In 1832, he removed to Georges Creek, where he purchased a site, and erected a woolen mill in which he manufactured cloth of various textures. In 1859, a heavy flood destroyed the mill, including his fine machinery. He never rebuilt, but continued to live there (in the adjoining home) until his death in 1879."

During his 27 years as operator of this mill, Ellis built up a moderate fortune. In his final years, he worked as a farmer and at the same time speculated in real estate.

The Stevenson mill was built about two miles up Georges Creek from New Geneva, a village located on the Monongahela River. The mill was south of the creek in Springhill Township. It sat just upstream from the bridge that carries the road leading up Tomcat Hollow.

Ellis Stevenson bought his mill equipment from a mill that Albert Gallatin had established late in the previous century along Georges Creek near New Geneva. Gallatin, a Swiss immigrant, laid out that village, named it for his hometown, Geneva, Switzerland, and established his home at Friendship Hill, an estate just south of the village. (The Gallatin home is now open to the public as the Friendship Hill National Historic Site.)

Nelson notes that "the early settlers of Fayette County had hand cards, small spinning wheels, some of which are treasured parlor relics now, and hand looms with which to work their flax and wool into linen and cloth. A half century later when population and products justified, the skilled fuller made his appearance in every locality to erect a fulling mill on some convenient stream . . . Albert Gallatin, in 1795, established a fulling mill on Georges Creek, but it ran only a short time."

Considering the date, this may have been the first such mill west of the Alleghenies.

Historian Nelson goes on to report that Gallatin eventually "sold his mill to Ellis Stephenson [sic], who moved it higher up Georges Creek. Above him (on
Georges Creek) were Long's (afterwards Stacy's) and Brownfield's carding factories." It may have been one of these that Ellis Stevenson rented for three years before building his own mill.

During at least one period, Stevenson went outside his own family for help in operating his mill. The 1850 Census lists as a member of the Stevenson household one John McAdams, a fifty-year-old weaver, who had been born in Ireland. The same Census shows Ellis as a manufacturer, and says that his three eldest sons were employed in the mill. These were William A., Ellis Bailey Jr., and Mark. In the 1860 Census, a year after the flood swept away his mill, Ellis Stevenson listed himself as a farmer.

When wool was converted into cloth, one of the first and most important steps was its cleaning. Oddly enough, human urine was sometimes used in this step. Oldsters in the New Geneva area have told me that while the Stevenson mill was operating, urine was collected regularly from the chamberpots of inns and hotels in the region. The acidity of the urine had a cleansing effect.

And, at some point during the manufacturing process, dyes were used. In some cases, the yarn itself was dyed. Thus, with yarns of different colors, fabrics with different designs could be woven. Or the finished fabric could be dyed a desired color.

With the coming of railroads and the easier distribution of goods, inland woolen mills began to have a difficult time competing with city factories. This may have been a reason Ellis Stevenson did not reestablish his mill after the flood disaster. His home, on higher ground and not touched by the flood, remained standing until the early 1900s. Only a few stones and earthen foundations mark mill and home site today.

Wool milling remained a lucrative trade, however, for two of Ellis Stevenson's sons. Both William A. and Alfred Presley continued in the business at mills in Greene County, Pennsylvania, and in Clark County, Missouri. They even returned to Clarksville and worked in the mill where their father had gotten his start. In Clarksville, William A. Stevenson apparently rented the mill there from the Ross family. At any rate, he operated it for six years — from 1860 until 1866. One of William's descendants reports that woolen cloth made in this mill during those years was largely used to make blue uniforms for the U.S. Army during the Civil War. 4

Soon after the war ended, William A. and his younger brother, Alfred Presley, emigrated to Clark County, Missouri. Some of their relatives had previously settled there. In Missouri, the brothers went into business together, operating a woolen mill on the Des Moines River at Athens, 12 miles from Kahoka. The brothers ran this mill for six years.

Because of family problems, in 1873 William A. Stevenson decided to return to Pennsylvania, and Alfred Presley came with him. On returning, William

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William A. Stevenson,
1830-1902
Earthen dam that remains today on site where Ellis Bailey Stevenson operated a water-powered woolen mill from 1832 until flood on Georges Creek washed it away in 1859.

A. bought the Greene Woolen Mills located on Muddy Creek, near Carmichaels, in an area known locally as "Little Chicago." To operate the mill, William was joined by his brother, Alfred Presley, and his own son, also named Alfred Presley. The Stevensons continued to operate this mill for the next twenty years or more — until the early 1890s. During this period they bought wool brought in by farmers from all over Greene, Washington, and Fayette Counties.

The Caldwell Atlas of Greene County, published in 1876, has a lithograph of this mill. Its caption notes that the Stevensons manufactured "cassimeres, satinetts, jeans, flannels, blankets, cloths & stocking yarn." (Cassimeres are smooth twilled fabric; satinetts are a satin-like cloth.) A granddaughter of William A. Stevenson recalled in 1975 that older relatives had talked of grain also being milled there. One or both of the Alfred Presleys did the grain milling, she said. At times, women members of the Stevenson families also worked in the mills.

The Directory of the Monongahela and Youghiogheny Rivers, published in 1859, lists several woolen mills, two of them in the city of Washington, Pennsylvania. On pages 136 and 142, this publication reports that a mill built thirty years earlier by Thomas Good was then being operated by David Campbell. The mill was located on Beau Street west of First. The report adds: "It contains, among other machinery, two double carding machines, a 36-inch condenser, and one 112-spindle jack. The works are driven by a steam engine with an eight-inch cylinder."

The second Washington mill was Best's Woolen Factory, at First and Beau. In 1859 it was owned by two widows, Mrs. James D. Best and Mrs. Samuel Best. The report said the factory "contained one roll machine, one breaker, one 16-inch condenser, one spinning jenny of 72 spindles, one twister for yarn with 60 spindles, and three hand looms. Both of these establishments make yarns, blankets, and satinetts."

The Directory also reported that what was probably the largest woolen mill in Western Pennsylvania was then standing idle because of "the title to the property being in dispute." The idle mill was located at New Haven, a borough opposite Connellsville on the
Ellis Stevenson's home, located near the mill, may have stood in the background here.

Youghiogheny. The brick building was four stories high and measured thirty by seventy feet, plus a new wing of nearly the same dimensions. This mill had a double steam engine and "the finest woolen machinery."

None of the old-type woolen mills are operating in Pennsylvania today. Nevertheless, if you so wish, you can still see one such mill doing its old-time job. This is an exhibition mill, originally built in the 1830s. It is located in historic Sturbridge Village, in Sturbridge, Massachusetts.

ENDNOTES

4 Ruth Long, Pekin, Illinois; William A. Stevenson's granddaughter.
5 Ibid.
Leonard Sensenig builds high quality furniture with the help of his three oldest sons. Pictures in front of their 1968 Chevrolet panel truck are Leonard, David (15), Joseph (13), and Nathanael (11).

The idea of a folk craftsman using power equipment and assembly-line construction techniques may shatter popularly held notions about traditional woodworking, for consumers often envision the lone artisan, surrounded by wood chisels and mallets, working diligently by the light of a kerosene lantern. Most think of such a craftsman as one of the rural poor — perhaps a farmer by day — who builds a chair, for example, in the exact same fashion as his great-grandfather did generations before.

In Beyond Necessity: Art in the Folk Tradition, author Kenneth Ames notes that folk art, a term which may be expanded to include folk crafts, is affected by such “myths.” According to Ames, “folk art enthusiasts have created a communal fantasy world that distorts the integrity of both the objects and people originally associated with them.” Contemporary craftsmen must compete with factories, and today’s business environment allows no room for fantasy; to earn a living with your hands at a traditional craft now requires cultural adaptation and strategic planning. This is how furniture maker Leonard Sensenig of McAlister-ville, Pennsylvania, does business.

Leonard, along with his wife and their nine children, lives near the northern end of Juniata County, between Harrisburg and State College. Just behind their house is Leonard’s workshop, complete with a storage barn for supplies and a showroom for finished pieces. The Sensenigs specialize in chairs, but also make tables, desks, hutches, gun cabinets, and jelly cupboards.

Leonard Sensenig does not call himself a traditional craftsman, although his background would suggest that he is; he learned his craft informally by imitation and demonstration on his family’s farm in Ephrata; by watching other woodworkers in Lancaster County; and through experimentation with a small piece of his father’s woodworking equipment. His early furniture — built despite his lack of experience — was made from scrap wood and fashioned with no particular style in mind.

Reminiscing about these early years, he remembers that “my father bought one of these Rockwell Unisets, just a very small piece of equipment; the saw, the joiner, the jigsaw, [and] the drill press, all run by one motor, like one unit. I tinkered around with that a good bit as a boy. We just had farm boards laying around, nothing fancy, but I built chairs.”
David Sensenig works on a corner hutch specially ordered by a customer. David and his younger brothers manage to work in the shop before leaving for the

Later, in search of a job, Sensenig put his name in at a small chair-making shop in Lancaster. The boss there wanted an inexperienced employee: someone, according to Sensenig, “he could teach right.” Leonard Sensenig was, of course, just what the boss was looking for, and within three weeks he was hired and introduced to the art of woodworking.

He spent about three years at the chair shop, learning to make furniture by watching others and polishing his skills. Then, while working in Lancaster he received a call to become a school teacher in Juniata County, providing he and his family were willing to relocate. This was in 1975, and Sensenig eagerly accepted the career change: “The Goodwill Mennonite Church needed a teacher for their school, and they asked me to teach. I [had] often thought I’d enjoy that. That’s what got us out here. I taught for five years. Over the summer we worked at the shop [and] built up our [woodworking] business. After five years I still thought it was kind of premature to get out on my own, [and have] my only source of income here in the shop. [But] we struck out, and the business immediately picked up. I was soon here full time.”

Goodwill Mennonite School, which is located just a few miles from their home in McAlisterville.

All the furniture made by the Sensenigs is what is thought of as “colonial” in style. Each piece is made with only the finest lumber, is built to withstand daily use, and is constructed with longevity in mind. Like the skillful craftsmen of generations before who borrowed urban furniture designs and altered them to meet the needs of their rural society, Leonard Sensenig knows what his customers want, and is able to make it for them. And, again like his skilled predecessors, his products exhibit a sense of rural pragmatism, in style as well as in decoration. For him, as for the Kentucky chair-makers described by Michael Owen Jones (The Hand Made Object and Its Maker), “appearance and durability . . . are requirements of useful design.”

Colonial-style furniture is quite common in Central Pennsylvania where there are many farmhouses over a hundred years old. It is also a region which prides itself on its chair-making tradition; since colonial days it has been known for furniture produced by workmen of German heritage. These are some of the reasons Leonard Sensenig makes a traditional yet not textbook style of “colonial” furniture; it explains the Windsor-like appearance of many of his chairs, a style popular with his
This belt sander was built for Leonard Sensenig by an Amish neighbor. Leonard has found that this "homemade" piece of equipment works better than mass produced products. The lower belt allows for flexibility, while the upper roller swings on an arm to maintain needed tension. This design makes it possible for almost any piece of wood, no matter what its shape or size, to be sanded smooth.

American Windsors originated in Philadelphia and were stylish from 1760 to 1800.4 American Windsors developed quite independently from other new styles, and even differed from their English counterparts which had a similarly shaped, though thinner, seat. Their durability made Windsors a favorite with innkeepers, and they were commonly found in public buildings.4 As already noted, Leonard Sensenig knows what the people who buy his furniture want; that they value strength over style. So his version of the Windsor, for example, almost always has a plank-bottom seat, a type of construction known for its durability. In addition to the Windsor, Sensenig also makes bow-back and pressed-back chairs, with the pressed backs (actually engraved or embossed backs) bought from a shop in Lancaster. The clearly superior workmanship of Sensenig-made furniture is often what first brings business to the family, and it is also what keeps bringing people back. It is what creates loyal customers, many of whom realize quality, while the upper roller swings on an arm to maintain needed tension. This design makes it possible for almost any piece of wood, no matter what its shape or size, to be sanded smooth.

Because of his commitment to quality, Sensenig uses only top quality solid wood for his furniture, unlike many larger producers who use lower grades of lumber or even pressed wood like flakeboard. But, as he explained to me, he can still often undersell bigger companies: "Another furniture store had a clawfoot table and six pressed-back chairs special-sale priced [at] $1,799; [it was supposed to be] solid oak — I believe it was advertised as oak — and we have an [oak] set here that runs right around $1,200. So I thought, I'll just take a look at that. So I drove out to take a look, and yes, there it was sitting in the showroom, but the table was flakeboard with veneer on it. So, [even] for solid wood at a regular price, they [the potential customer] could have got it for five hundred dollars less."

In fact, Sensenig so prizes his reputation for quality he takes whatever steps he deems necessary to maintain
Joseph Sensenig applies glue to slats of wood that will eventually be clamped together, allowed to dry, and then marked with a pattern and cut into chair seats.

it, even going so far as to eliminate pine from his supply of building materials. According to him, it is a wood which makes for short-lived tables and chairs, so “we don’t use any pine. We have in the past, but [even though] there are people who request pine chairs — well, there’s no way that we’ll build a pine chair. You can go to the furniture store and get one that’ll last six months; one reason is because it’s pine [and] it’s just too soft. [It’s the] same with tables. If it’s too soft you can’t get the screws to hold [and] the joints will wear. We’re going to stand behind what we’ve built, [and] with pine we can’t do it.”

According to Sensenig, the poor quality of pine pieces is just one of the negative aspects of large-scale furniture manufacturing. Another is the need for high-speed assembly line work. He has found assembly-line furniture construction to be a breeding ground for problems: “The biggest single point, especially [with] chairs, that I notice, is that factory [-made] chairs are almost always stapled together. There’s a staple inside the rung, through the leg [and] into the rung, and to me, that’s an admission that the joint is not right. If it fits right, there shouldn’t be a staple there. They cut them [the legs] to

Already glued and clamped seats can be seen to the extreme left; they await marking and cutting.

fit loose, so they can put them together quick, I suppose. I don’t know. I’ve never asked them why, but it’s to hold them in, I suppose, until the glue dries . . . Several years ago, I built a chair, just for my own satisfaction, without any glue . . . It was solid . . . But it does take more time, and there’s times that pieces do break . . . [and] it takes a little bit of work to get things filed together. But the chair’s meant to hold up by far longer than anything that’s stapled together.”

Dedication to superior quality takes much time as well as much effort. The efficiencies of assembly-line techniques decrease the amount of labor required to build a piece of furniture, whether it be as simple to make as a stool, or as involved as a dining-room hutch. So in order to increase his overall productivity, Sensenig has purchased several woodworking tools which make his workshop more efficient. A few of the additions are a drill press, a table saw, and several belt sanders, one built by an Amish neighbor. Although it takes away from the “folk” nature of furniture building, this equipment allows him to make the best possible use of the help he has. It means all the individual parts — as for instance, all the chair rungs — for an entire month’s
The Sensenig’s workshop and showroom are located behind their home in McAlisterville, Pennsylvania. As the business grew, so did the shop’s need to expand. The showroom, which used to be located inside the Sensenig’s house, is now in the cinder block addition on the extreme left of this photograph. Other areas in the workshop include storage space, a spray room, and a drying room. In addition, the Sensenigs have added a metal storage barn to handle excess materials and finished products. They are planning a change in location, as the entire operation will be moved into a large building vacated by a local grocery/hardware store.

There are other strategies, too, that Leonard Sensenig uses to save money. In addition to the already-mentioned pressed backs he buys for chairs, he also purchases pre-cut turnings to use for chair legs and backs. Although it means money going out, it is economical in the long run, for it saves a great deal of time that would otherwise have to be spent adjusting and readjusting the lathe. The use of purchased turnings also helps keep chair styles to a minimum, for another way Sensenig remains efficient is by limiting the different kinds of chairs he makes.

To some extent this limiting of styles continues a long practice among folk craftsmen, but today’s artisans often have a different reason than their predecessors for following it: “In the past the folk builder might have built traditionally because he knew no other way. The mass media have provided today’s folk builder with a comparative knowledge of popular culture, so that while he may adhere to a traditional pattern without reflection, he is more likely to continue building in a folk fashion because he feels that it is the best — most lasting, most moral — way to build.”
This is certainly the case with Leonard Sensenig, who acquired those sentiments while working in Lancaster where, "the plank-bottom chair was] the only thing we built. Just like we have here [in his shop] with the big seat . . . There was variation of style within that plank-bottom idea, but that was the only style . . . It includes these that we call the old flat spindles, the high backs, [and] the arrow back . . . but they’re all heavy seats . . . There’s basically one style."

As he went on to explain, it is not that the plank-bottom chair is the easiest to build, but rather that it is the most durable, and so is often used for rockers and armchairs. Learning to make it (and the wisdom of making it) was beneficial to Sensenig, especially since his business reputation rests upon the strength of his finished products.

The lessons learned and the skills acquired while working in Lancaster and in his own business are now being passed on to his sons. The five oldest boys all spend time working in the shop, and a sixth son, still too small to operate equipment, is starting the learning process by hammering nails into scraps of wood. Of course this readily available workforce helps keep the payroll manageable, and means there is more capital available for the business.

But more important than that to Leonard Sensenig is the fact that he is passing the arts of woodworking and furniture making on to his children and so preserving the folk quality of his business. The process helps to unite the family, binding them together with a strong sense of purpose. Certainly one might expect that it would be so, since "it is not uncommon, of course, for a craft to be handed down within one family for several generations. Indeed, it would seem natural that a boy growing up would help his father and that a father would be interested in teaching his craft to his son." While this is now happening in the Sensenig family, it is not enough for sons to learn their father’s skills. They must also learn to accept change, for changes in technology will require changes in praxis — the technical process normative in culture by which production is accomplished. Mass production techniques streamline construction, making work done by hand slow and inefficient.

Nevertheless, this attention to traditional skills, as passed from father to son, is vital; it bridges the gap be-
Jonathan and Michael Sensenig, Leonard's youngest sons, outside the shop's spraying and drying room. A finished set of dining room chairs with embossed backs can be seen drying in the background. This style of chair is very popular with Leonard Sensenig's customers.

tween generations while managing to push the craft toward the future. Leonard Sensenig is able to focus his instruction by having his sons work in the shop. There they learn their father's methods and are able to form an appreciation for the level of quality that he demands.

But although his business means a great deal to him, Sensenig refuses to push the boys into maintaining it. Their involvement in the shop will be entirely up to them, for he wants them to do what will satisfy them the most, whether that means they take over the family business, go to work for someone else, or open their own furniture shop. If they do go out on their own he would simply hire workers to replace them, even though that might not be easy: "... chairmaking is bound to attract few individuals, because, like any process of making things, it requires considerable interest in and commitment to the creative act."

Still, he refuses to pressure his sons, and this freedom of choice helps to keep the business running smoothly, reducing tensions and negative feelings which could ultimately affect output and product quality. Sensenig recognizes this, and that is why, according to him: "It's totally up to them, what they want to do. You push them into it and they don't altogether enjoy it, why, that's not good for them or the business." His oldest boy will be finished with his formal schooling after this next school year, when he completes the tenth grade; he spent part of his summer helping a local farmer which provided him with an enjoyable change of routine. Since he is confident his son's career choice will be well considered, Sensenig will support him in his decision, no matter what it turns out to be.

But fortunately, the Sensenig sons are showing a great deal of interest in the furniture-making business already. During my visit they were in the middle of turning out fifty jelly cupboards. Listening to Leonard Sensenig talk about them and their achievements, it is easy to tell he is appreciative of them and their work; that their well-being is his main concern. Speaking of the jelly-cupboard project, he said: "It's time to run fifty
[of them] through again. So that’s the boys working at it pretty much. I don’t really have much in it, ... They can handle it. Next week I think it’s going to look more like fifty jelly cupboards. They’re starting to put [the pieces] together now. They worked at it [but] not hard, not full time, this last week. They got the sides, the tops, most of the shelves, [and the] frames all together. They are coming along real good, I thought.”

As the foregoing suggests, the Sensenigs can establish their own work hours, unlike many of those who are not self-employed. They take advantage of this by making weekends times of family togetherness; times when the family comes first. Saturday is usually the best day of the week for making sales, but Leonard manages to make time for family activities by staying close to the showroom and workshop without actually going inside and working. This emphasis on family is a direct result of the Sensenigs’ Biblical beliefs. In both their personal and business lives their strong dedication to family and community, and to thrift and industry, can be easily seen.

Efficiency is one factor helping to keep the Sensenigs competitive in the business world; frugality is another. They waste nothing; even the sawdust and wood chips generated in the manufacturing process are collected and used by a local farmer as cattle bedding. By using every possible bit of the lumber they buy, the Sensenigs can cut their overhead costs and pass those savings on to their customers. They economize in other ways as well: all three of their personal and business vehicles are well-worn and plain black, with the shop’s name and telephone number emblazoned on one van.

Nor, despite strong sales, do they take large salaries out of the business. Instead, they live on a modest income, opting to keep their money where it can be used to finance upcoming projects. This practice suits the Sensenigs, who, with their Mennonite background, are used to a simple way of life. And it was particularly helpful during their early years in business, when everything made was put back into the shop. “I guess the federal government would say we were living in poverty,” Leonard said. “We’re satisfied with less income than most people. It’s a way of life that we don’t splurge or be extravagant; we make everything count.”

By eliminating the need for high profits the Sensenigs, like other folk craftsmen, are better able to compete against much larger rivals. By keeping overhead low, they can make their retail prices more than competitive while still making money on each sale. All of this is possible without their having to forsake their high standards which, fortunately for them, some consumers are still able to recognize.

“I was at another furniture store some distance from here,” Leonard told me. “[They had] a cherry table and six chairs, I don’t remember what the price was, but [it was supposed to be] solid cherry, [and it had] a pretty good price on it for solid cherry. . . . But getting to look at it [I noticed] it was poplar underneath with a cherry veneer. And the salesman was emphatic that it was solid cherry! It was a good cover-up, but [nevertheless] it was not solid cherry. I thought, someone is going to pay solid-cherry [prices] for that. . . . [There are] some people, I guess, [who] realize and know what they’re looking for, and that’s our customer.”

What does the future hold in store for the contemporary folk craftsman? To begin with, not all will adopt modern techniques. Personal feelings will cause some, like second-generation stonemason Michael Durlauf, Jr. from Indiana, to forego modern methods. With Durlauf, modernity was forsaken in order to retain the dignity to be found in handmade, custom-cut gravestones. And, as folklorist Simon Bronner has noted: his “creations attracted attention, for Michael did not work for the uniformity of the factories. The news of death in this traditional community in transition . . . carried the need for a personal objectification. . . . [for it was] a place where people knew one another, but a place where their roles were put in question as each new factory went up.”

But those like the Sensenigs who do adapt still must compete with firms able to mount advertising and marketing campaigns that cost millions of dollars; firms able to locate their showrooms along choice sections of highway, often in or around urban areas with high volumes of daily traffic. To stay competitive in these circumstances is not easy; new or different strategies must always be considered.

In Leonard Sensenig’s case, the need to keep current means considering the purchase of a building along the main road — Route 235 — that connects McAllisterville and East Salem with Routes 22 and 322. It is a building which formerly housed a grocery/hardware store. “We have a lot more pieces we’d like to get in here [the showroom],” he explains, “but we’re just as full as we can get. So we are considering moving now . . . [considering] moving the shop . . . to Schlegel’s store . . . if everything is clear with the neighbors there, we’ll probably be moving about New Year’s. Well, that’s $30,000 worth of advertising right there, the location . . . [In the new building] every area, the lumber shed, the spray room, the work area, and the showroom, will be approximately three times what we have here. We could use it.”

The move to the new location will make the Sensenigs’ store easier for customers to find and reach, and the increased traffic past the premises will make many more potential customers aware of their existence. The
only advertising they have now is a small wood sign along Route 235, and a small brown billboard just before the East Salem exit on Routes 22-322. Leonard Sensenig says someone once told him: "If you'd re-locate along a main road, you'd have more work than you'd know what to do with," and the family is expecting the move to lead to increased business.

Although this would be a significant asset for them, they do not foresee having to hire additional outside help; theirs will continue to be a folk-based business, an enterprise which will still look to the family for the inspiration, ideas, strength, and labor necessary to run it. The move to the new building will merely increase business and working space, making their operations more efficient and cost effective.

Leonard Sensenig and his family have managed to successfully combine their love of traditional furniture and woodworking with the personal opportunities afforded by America’s free enterprise system. This merger of craftsmanship and commerce provides them with a challenge; the challenge of remaining competitive against very much larger businesses; of being able to make a living producing quality furniture in the shadow of large corporations.

The Sensenigs are well-equipped to meet that challenge, for one can truly say of them what has already been said of their fellow Mennonites: "...in the possession of the sounder virtues they are surpassed by none. They are sober, honest, industrious, peaceable, and religious — withal among the most useful citizens of the land." Their intention is not to become wealthy; they are intent on keeping the family together, on maintaining their religious values, and on satisfying customers by building and selling fine furniture at the lowest possible prices. In doing so, they create lasting reminders of America’s furniture-making heritage.

ENDNOTES

5Comstock, p. 130.
6Jones, pp. 153-54.
10Jones, p. 169.
11Bronner, p. 98.

WORKS CITED

WHO IS IN THE KITCHEN?

by Hilda Adam Kring

Like all museums, Old Economy of the German Harmonist* heritage located in Ambridge in southwestern Pennsylvania, is always bursting with ideas and projects. One of the latest is the keen interest in translating a cookbook, published in 1831 in Reutlingen, Germany, with the unwieldy title: The Housewife as Manager in the Kitchen, Pantry and the Kitchen Garden; A Manual for Housewives-to-be and Home Economists, Especially in Small Cities and in the Countryside by Caroline Eleanor Grebitz.

We chose this volume from many because on the fly leaf were copied two cake recipes. Experience tells that one only writes in cookbooks that are in constant use.

Not only does the book offer recipes for all kinds of entrees, vegetables, fruits, desserts, and beverages, it also offers directions for canning and preserving anything edible, as well as some not so edible to most modern tastes. By the latter I refer to the fact that absolutely NOTHING was wasted from an animal just butchered. 'Nuff said!

Grebitz also gives much kitchen advice. I would assume because of the lack of turning on the water tap, cleanliness was promoted by constant admonition of wiping the meats, vegetables, and fruits (not the hands) with a clean towel. Of course, water was around. Frequent mention was made that river water was best for cooking. (This may have been a comparison to cistern water.) A very popular cooking liquid was vinegar or wine. It may have been half and half.

Going back to cleanliness, it should be noted that most recipes called for cleaning the sugar, for sorting the raisins from twigs, and the like. I would assume that those recipes that did not mention it took cleaning for granted. Sometimes the recipes also would say: "Be sure the utensil is free from all fat." Without detergents that may have been a problem, but they used ash for proper cleaning.

*The Harmonists were a group of about 800 Germans (they never seemed to have an accurate count) who lived together, sharing their lives and material goods in order to find a deeper realization of their common commitment to Christ as they understood it from Acts II and IV and Revelation.

Separating from the liturgical persuasions, mostly Lutheran, they searched for a new home in William Penn's "Holy Experiment." Their first home, established in 1804-5, was in Harmony, Butler County. This lasted until 1814-15 when the need for better marketing of their goods called them to the Wabash in Indiana. There their second Harmony lasted until 1825-26 when "the call" came for a return to Pennsylvania. This time they settled on the Ohio, eighteen miles from Pittsburgh. They called the place Economy - a divine Economy because not only were these moves economic, but also religious. An intertwining of shrewd business transaction and a probing of Biblical questions was a constant with George and Frederick Rapp, leaders of the group.
cleaning.

Advice was also given for success with the recipes. Recipe #927 states: "--- to avoid quick browning sprinkle with sugar after baking." Another admonishes to place eggs in warm water before using. Bad ones would rise to the top. Only fresh butter should be used.

All this concern makes one wonder about health. And concerned they were. They found that currant juice was good for fever (#1149); carrot juice for tuberculosis, phlegm, and coughing (#1164); and gelatins for any upset stomach (#1058).

For an antacid they had recipe #1199 — carminative — which called for: "a handful of Roman chamomile, elderberry blossoms and mint; two and a half ounces of orange peel; one and a half ounces each of juniper berries and calamus root; an ounce of bay leaves, and a pinch of zehr root. Cut and crush everything and cover with eight cups of good brandy and some water. Filter. Cook a half pound of sugar in a cup of water. After the

For further digestive problems they had recipe #1156 — juniper juice. "Crush coarsely fresh, ripe juniper berries. Put them in a copper kettle and cover the berries with water. Stir constantly with a wooden spoon while cooking it over a mild fire. If you boil the juice over a hot fire the juice may not be tasty. Press through a linen cloth and keep the juice in bottles. The juice and butter is very good for your digestion. You may use one part berry marmalade to two parts of good wine and eat three or four spoonsful following a meal or just before going to bed at night.

"The juniper marmalade is made by cooking the juice for one half hour. Let drain through a linen cloth. Reheat the juice and cook to the thickness of honey. You may add sugar."

The Harmonists ostensibly led a very quiet life. But even this can get on one's nerves. Recipe #1200 — Whiskey for Health — calms nerves. "Take an ounce each of tormentill, baldrian (valerian), gentian and three ounces of angelika. Let it distill for three days with a quart of brandy. Filter." [According to the Random House Dictionary of the English Language — College Edition — i. valerian is also called all heal. Any herb of the genus Valerian having white or pink flowers and a root that is used medicinally. 2. a drug consisting of or made from the root, formerly used as a nerve sedative and antispasmodic.]

Move over pharmacist! It seems the Harmonists had their own "pharmacy" in the kitchen.
The following courses in Pennsylvania German Studies are now offered through the Evening Division of Ursinus College, Collegeville, Pa. 19426. Persons interested should write to the college or call (215) 489-4111 ext. 2218 for more information.

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