THE REGIONAL REVIEW

SNOWY EGRETS

NATIONAL PARK SERVICE

REGION ONE

Richmond, Virginia

JANUARY-FEBRUARY 1941 **VOL. VI-NOS. 1&2**

THE REGIONAL REVIEW

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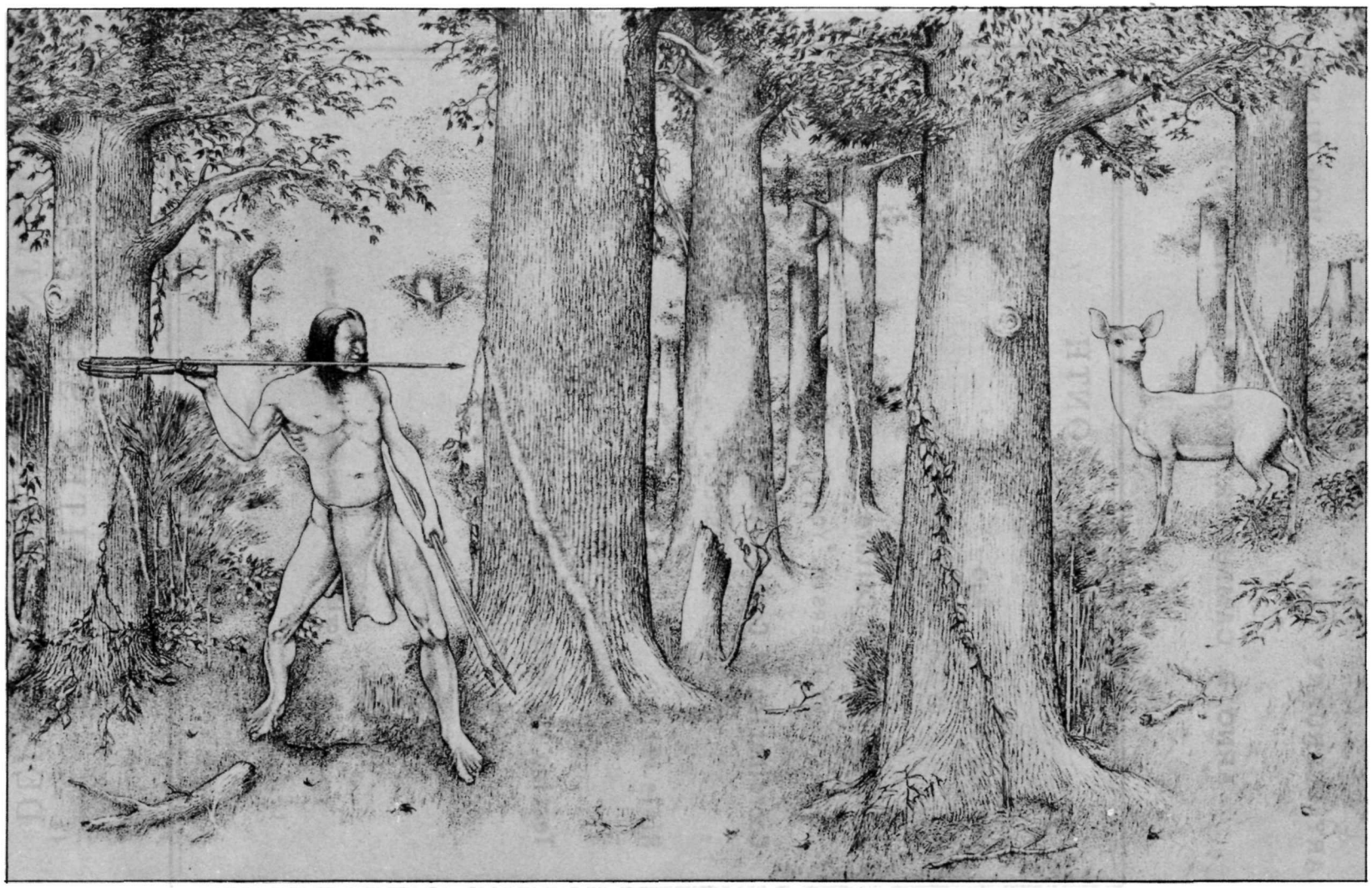
ARNO B. CAMMERER, REGIONAL DIRECTOR

THIS MONTH

THE UNITED STATES
DEPARTMENT OF THE INTERIOR
· NATIONAL PARK SERVICE ·
REGION ONE ~ RICHMOND, VIRGINIA



This illustration in the temporary museum at Ocmulgee National Monument shows a Swift Creek hunter ready to throw a javelin with the use of a throwing-stick

HUNTING 500 YEARS AGO

To Georgia Indians It Was A Business

BY CHARLES H. FAIRBANKS,
JUNIOR ARCHEOLOGIST,
OCMULGEE NATIONAL MONUMENT, GEORGIA

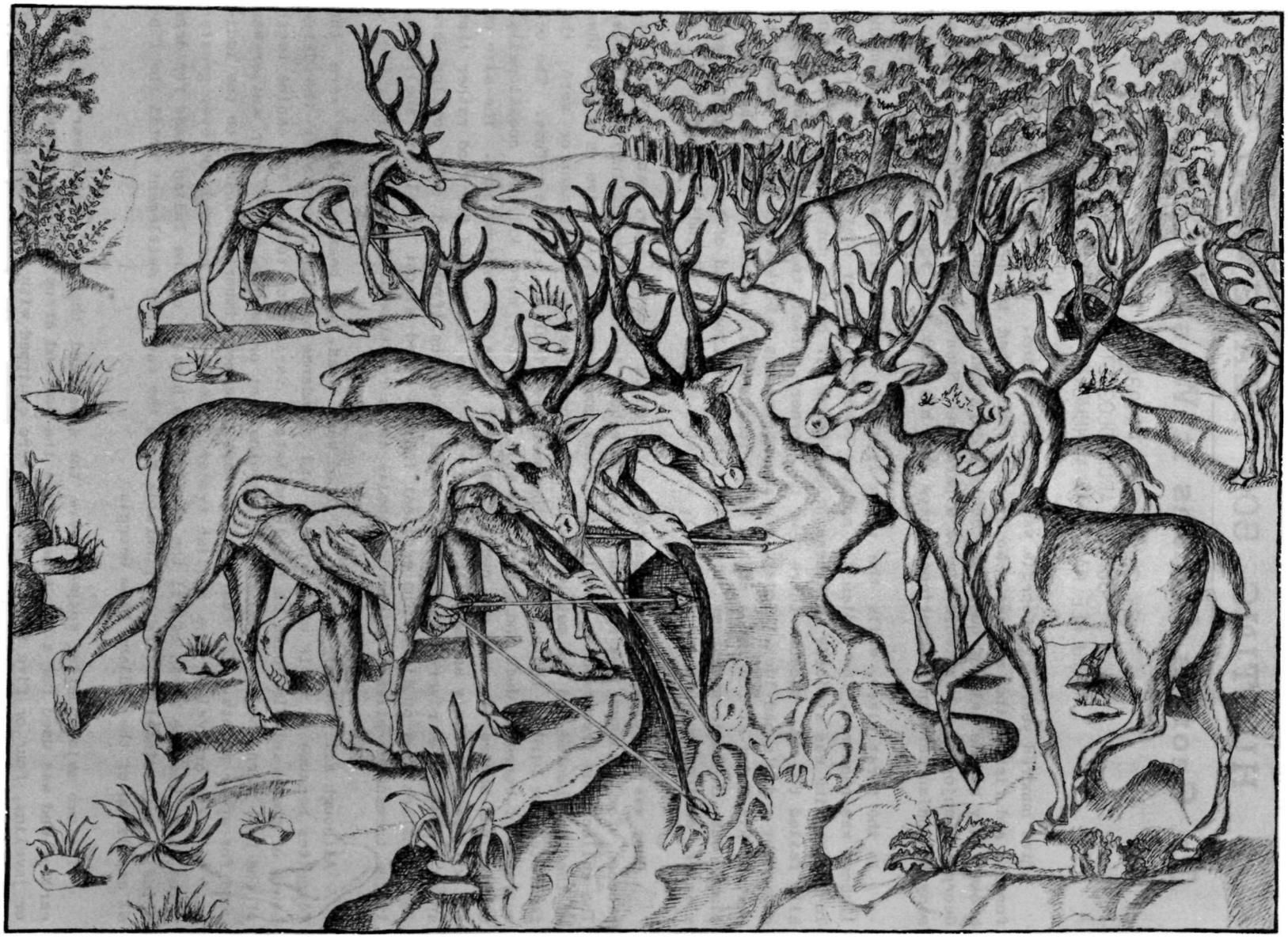
Five hundred years ago Georgia was an Indian land. Only the red men hunted the forests and fished the streams. No firearms disturbed the primeval silence, then broken only by the call of quail and duck. Modern hunters might expect that the first Georgians enjoyed a veritable Nimrod's paradise. Such was probably not the case as many an Indian certainly experienced days when his luck just would not work.

In the first place, while the woods literally swarmed with game and no hunting license was required, the Indian was not the care-free hunter that might be imagined. To him hunting was strictly a business proposition. If he did not kill game, he usually failed to eat, because there was no "corner" market to supply the deficiency caused by a day's bad luck. Today, the man who misses a buck loses little more than part of his shirt at the hands of his companions. Five hundred years ago the man who missed was in imminent danger of losing his reputation, and of being regarded as a slacker, an incompetent, and generally, a pretty sorry type of individual.

Game was plentiful, as is indicated by the bones of bear, deer, panther, wildcat, raccoon, fox, opossum, beaver, squirrel, and rabbit in the refuse of Indian villages. The collections preserved at Ocmulgee National Monument, Georgia, give us a good idea of the game hunted and the methods used. Turkeys either were abundant or were the favorite game bird as their bones are the most plentiful in village refuse. The occurrence of bones of duck and geese indicated that they were killed occasionally. Small birds apparently were not popular as their bones are seldom found. The size of the kill was certainly an important factor with those who hunted for food rather than sport. Along the rivers and coastal islands fish, shellfish, and even turtles were important articles of diet. The earliest Indians lived almost solely on shellfish, if the tremendous piles of discarded shells are a reliable indication.

Although all possible sources of food were used, the bear and deer were the favorites because of their useful hides and abundance of meat. Moreover, the large bones of these animals could be fashioned into a variety of tools. The canine teeth of the bear furnished material for making excellent ornaments, while deer antler was used for spear points. The deer was, perhaps, the most important animal to the Indian. With the arrival of the English traders, the deer skin assumed an even greater value as it was the basis of all the trade. The history of the Indian trade for deer skins is a fascinating story that unfolds from the earliest settlement until the final expulsion of the Indians from Georgia.

The two major hunting weapons were the spear and the bow. The spear was the earlier and was used for a long time before the bow and arrow were introduced. Spears or javelins, four or five feet in length, were equipped with stone heads, often four inches long and two inches wide. In order to increase the force and distance of the throw, the throwing-stick was extensively used. This useful little gadget was simply a hooked stick about 16 inches long with a hand-grip at the front end. It was usual-



ly balanced with a drilled and polished stone at the hook end. With this, the light javelin could be thrown with terrific force, resulting in severe wounds caused by the broad flint points. The javelin, especially when thrown with this stick, was never very accurate. Hence, the introduction of the bow and arrow was a distinct improvement. It took about 20 years to train a bowman thoroughly, and at least that long for the complete mastery of the javelin. This long training period was the most serious drawback to both the bow and spear.

Even with the bow, the early hunter was far from well equipped for the field. That used in Georgia was called the "self-bow", which means that it was of the most primitive type, being simply a tapered stave of ash or oak. It was probably much shorter than is often imagined. The pull was, perhaps, never more than 45 pounds, which is about the average for modern hunting bows. Thus, legends of the Indian's prowess with the bow are probably without foundation. The arrow was of wood or reed, provided with three split feathers. It was tipped with an antler or flint point, often of small size. With the increased accuracy and speed of the bow, it was possible to hit vital spots. Arrow points scarcely an inch long have been found imbedded in bone in such a way as to indicate that they were the cause of death. In his method of drawing the bow, or rather of releasing the arrow, the early Georgian was somewhat inefficient. He used only the thumb and forefinger rather than the three-finger-release method of Robin Hood and modern archers. While the former method seems logical, it results in the loss of both distance and accuracy.

The accompanying illustration is copied from a painting by the Frenchman, Jacques Le Moyne, who sketched the Indians of the Georgia and Florida coasts in 1565. It shows a group of hunters, dressed in skins, stalking deer. The artist has apparently decreased the distance from the hunters to their game in order to make the picture clearer, but they were probably able to get quite near the deer with these disguises. Almost every early traveler in the South described this method and it was apparently a favorite technique. It could not be advocated in the present day of firearms and careless shooting. Dogs were used to drive game, especially bear and deer. Usually the drives were community affairs and seem to have had a sort of picnic air. Various nets and snares were used for small game. It is probable, however, that they did not contribute much more than odds and ends to the diet.

We do not know much about early fishing because it did not leave many definite objects. Many Indians appear to have known the hook and line, and most of them also used nets and traps. Spears and even arrows were extensively employed and probably demanded exceptional skill. A favorite method was the use of native poisons which were placed in streams or overflow ponds. The powdered root of the Dwarf Buckeye was the most important poison, and one traveler records that about a bushel of the stuff poisoned fish for eight miles in one North Georgia stream. It appears to be a most unattractive way to fish, but probably did not greatly affect the taste of the product. Many early travelers describe artificial ponds near Indian villages which were used to hold excess fish until needed. Perhaps fish were regarded as a sort of emergency supply because they were stored easily in these ponds.

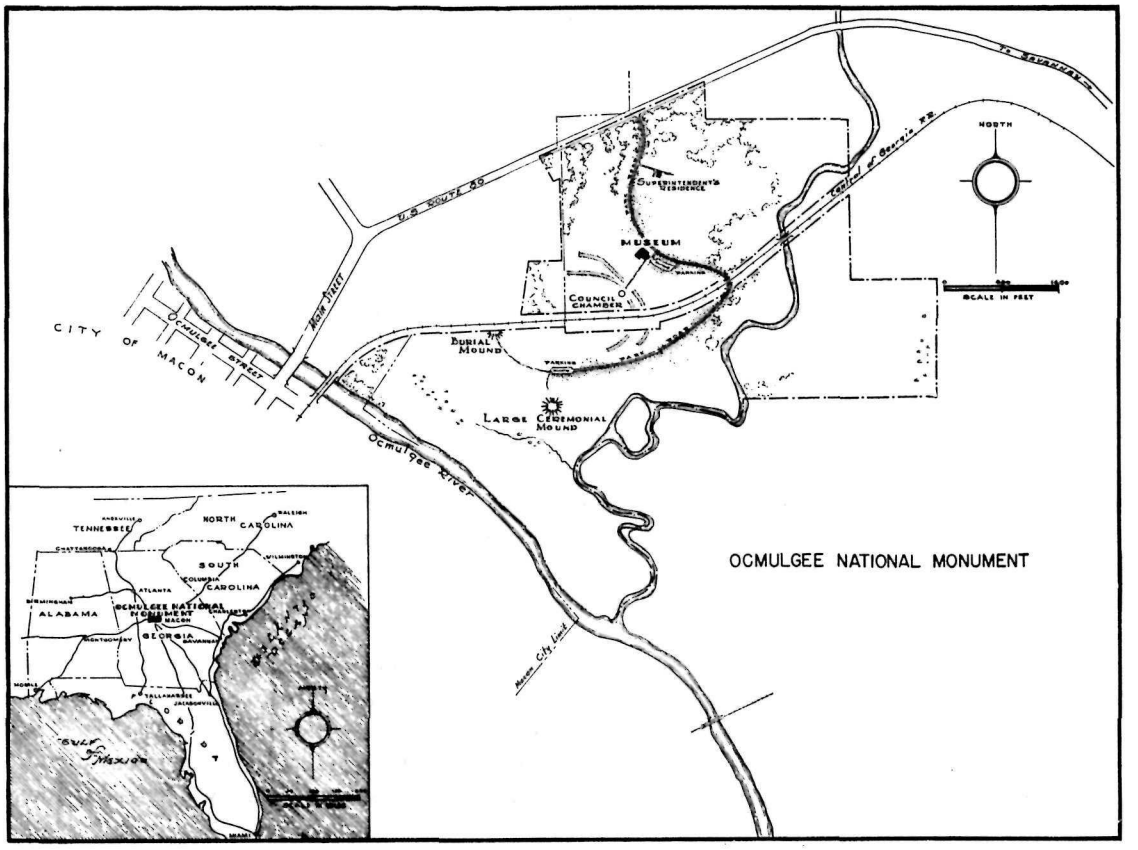
Birds were killed with the bow and arrow as well as snares, nets, and traps. The larger birds were naturally favored as game, and turkey seems to have been especially sought. Young birds were caught and tamed to be used as decoys. The eagle was killed less for the meat than for the feathers, which were used in ceremonies. The eagle feather-fan was a required article among the Creeks for nearly all religious or

public meetings. Other small game included the various land and water turtles. No specific techniques of catching turtles are recorded and it is probable that turtle chasing was left to young boys.

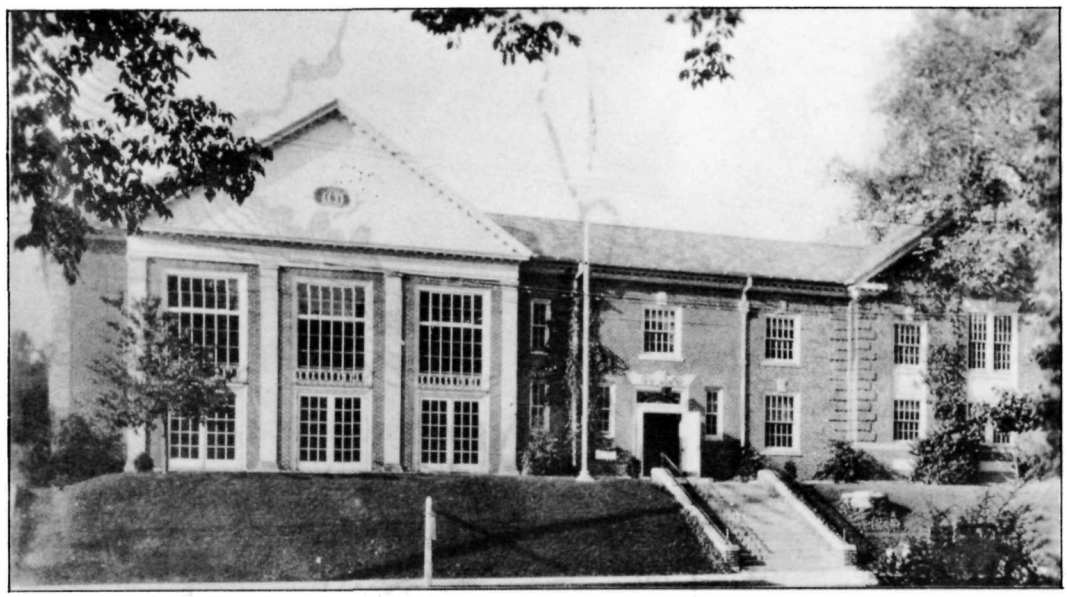
It is not exactly clear whether the Indian realized that uncontrolled hunting would soon deplete the animal population. Almost all of his hunting methods, however, acted as common-sense conservation measures. Most of the hunting was done in the fall and winter. In the case of bears, the Indian seems to have practiced actual conservation. Certain sections, known as favorite haunts of these animals, were closed periodically until the population again reached larger proportions. After several consecutive closed seasons for these areas the restrictions would be called off and several villages would unite in a big drive.

The Indian, by sharing all game equally, did much to help conserve the native animals and birds. No such thing as a "game-hog" was tolerated. All went hungry or shared what was available. Until the advent of the whites, and the beginning of commercial hunting for deer skins, no Indian ever killed more than was needed by his group. And no meat was ever wasted, except for small portions offered to the spirits. Of course the Indian regarded these morsels as well invested to insure good hunting and continued health. Certainly the Indian regarded hunting as a livelihood rather than sport and was not apt to carry it to excessive slaughter.

In spite of inadequate weapons, the Indians must have derived some pleasure from hunting. Of course the woods were full of spirits which had to be offered various scraps of game, but then the modern hunter has many little superstitions which do not spoil his sport.



River Museum Opens In Ohio



Campus Martius State Memorial Museum, Marietta, Ohio

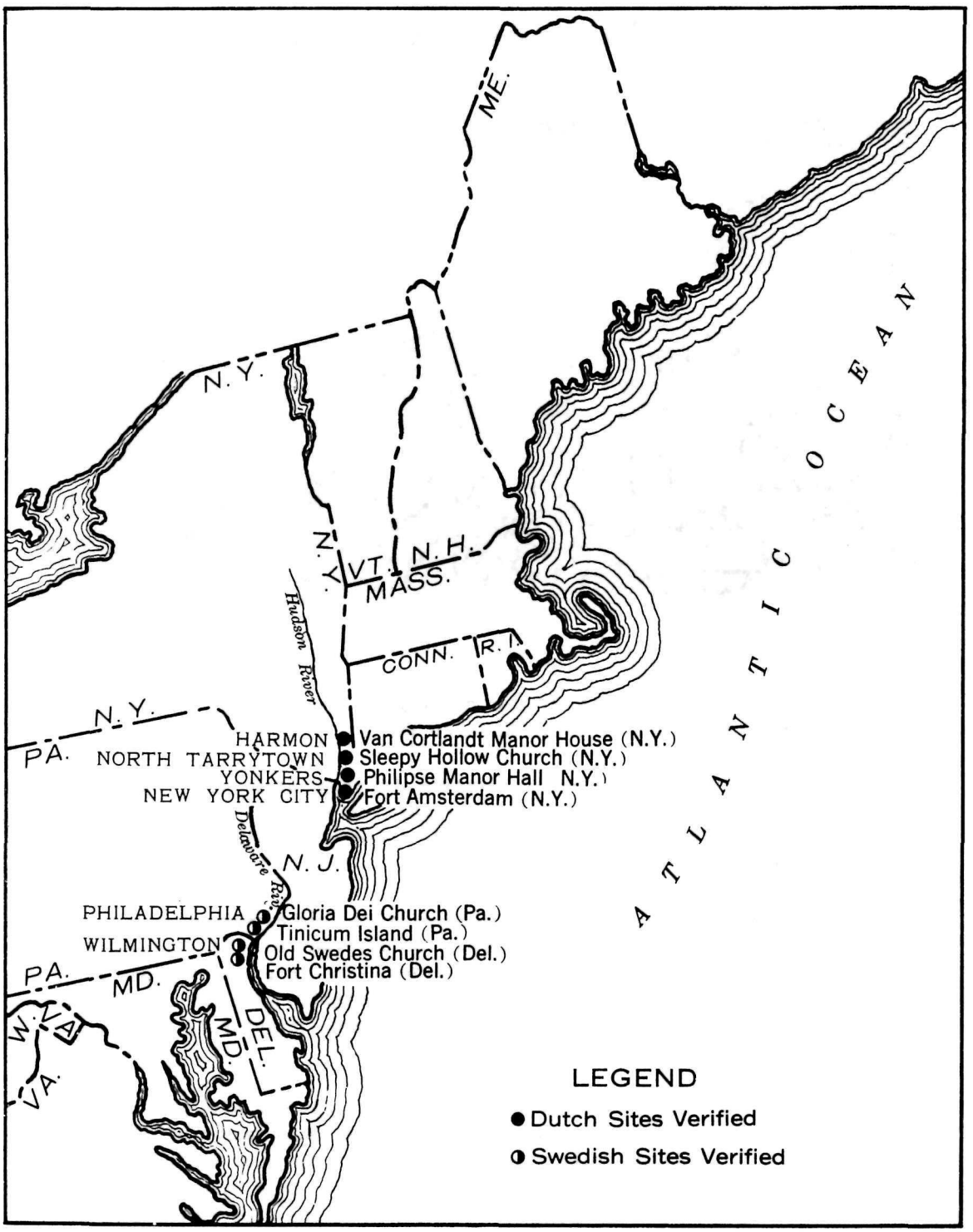
The first public River Museum in the country will be opened at Campus Martius State Memorial Museum, Marietta, Ohio, on March 16.

The Sons and Daughters of Pioneer Rivermen in cooperation with the Ohio State Archaeological and Historical Society have arranged a display of steamboat models, pictures, and relics representative of one hundred and thirty years of steamboat navigation on western waterways.

The river group which was organized in June, 1939, has a membership which ranges from coast to coast but it is composed largely of rivermen of the states drained by the Ohio and Muskingum Rivers and their tributaries. The purposes of this group are "perpetuation of the memories of pioneer rivermen; establishment of a river museum; preservation of river history; closer association among river folk; and loyalty to the ideals of the river fraternity".

At the annual convention the Sons and Daughters of Pioneer Rivermen in New Martinsville, West Virginia, Mr. B. D. Richardson of Malta, Ohio, was elected president; Mr. Robert Thomas, Clarington, Ohio, vice-president; Mr. Harry J. Maddy, Gallipolis, Ohio, treasurer; and Miss Elizabeth Litton, Clarington, Ohio, secretary. Captain Mary B. Greene, Cincinnati, only licensed woman pilot on the Ohio River was given the title of honorary president.

The River Museum to be opened at Campus Martius Museum is the latest major development to be completed by the Ohio State Archaeological and Historical Society. Mr. Arthur C. Johnson, Sr., is president of the Society, and Mr. H. C. Shetrone is director.



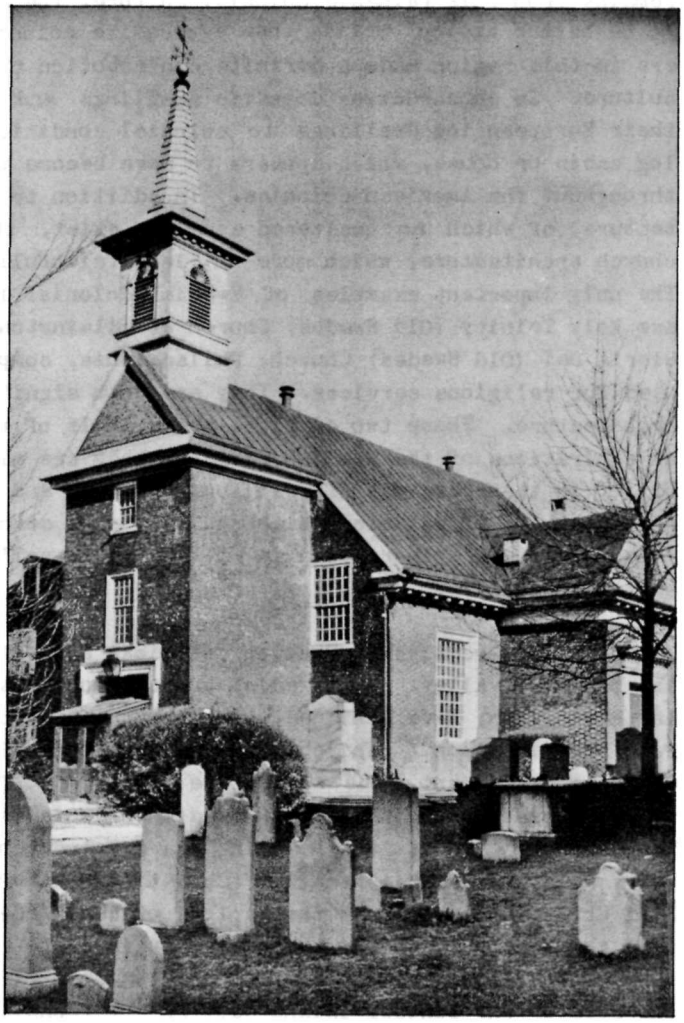
SIGNIFICANT HISTORIC SITES REPRESENTING DUTCH AND SWEDISH COLONIAL SETTLEMENTS IN AMERICA DURING THE SEVENTEENTH AND EIGHTEENTH CENTURIES

DUTCH AND SWEDISH CULTURE

In Colonial America

BY ROGERS W. YOUNG,
ASSISTANT HISTORICAL TECHNICIAN
BRANCH OF HISTORIC SITES
WASHINGTON

Historical thought in this country has gradually felt the need for a more adequate recognition of the valuable contribution of Dutch and Swedish culture and economy to the colonial life of America and its posterity. Bearing this in mind, it is believed that a consideration of certain historic sites associated with seventeenth and eighteenth century Dutch and Swedish settlements would be helpful in evaluating the influence of the two colonial cultures on our national development. While the sites exemplifying these cultures are representative of a smaller segment of American colonial life than that influenced by Spanish, English and, to a lesser degree, French culture, they are nonetheless important as remains of an essential part of our great colonial tradition and heritage. No definitive commemoration of every important phase of our colonial development could afford to ignore the national influence of a Dutch and Swedish colonial culture from which has sprung such figures as Pierre Van Cortlandt, Frederick Philipse, II, Philip Schuyler, Martin Van Buren, Theodore and Franklin Delano Roosevelt, John Morton and John Ericsson.



Gloria Dei Church
A view of Old Swedes Church from the southwest

Through the agency of the Dutch and Swedish pioneers in North America, two of the most important geographic regions on the eastern seaboard were opened for commercial development and permanent colonization. The Dutch in the Hudson Valley and the Swedish in the Delaware valley with their pioneer trading posts and later plantation settlements overcame the physical and human hardships of the wilderness and laid the

colonial foundation upon which the permanent English settlement of these regions was established in due course. While the actual period of Dutch and Swedish colonial sovereignty were comparatively brief, the influence of the culture and economy of these sturdy European elements continued dominant in both regions until the Revolution, despite their political control by the English. The penetration of the Dutch into New York and northern New Jersey, and of the Swedes into Delaware, eastern Pennsylvania and southern New Jersey provided these areas with a fundamental European culture which strongly influenced their subsequent development as English colonies and American states, and of which remains are observable even today.

Failure in the past to recognize the importance of Swedish contributions to American colonial life has resulted in the nearly complete disappearance of physical remains from this valuable colonial culture. The Swedes in the Delaware valley proved to be better agriculturists than aggressive colonists or traders, and as pioneer farmers in this region made a definite contribution to the development of American agriculture. In constructing domestic dwellings and farm buildings the Swedes adapted their European log dwellings to colonial conditions and introduced into America the log cabin or house, which appears to have become the prototype of all such structures throughout the American colonies. In addition to this unique type of domestic architecture, of which no unaltered examples exist, the Swedes produced an interesting church architecture, which more or less faithfully followed native Swedish designs. The only important examples of Swedish colonial institutional architecture existing are Holy Trinity (Old Swedes) Church at Wilmington, Delaware, completed 1699, and Gloria Dei (Old Swedes) Church, Philadelphia, completed 1700, both of which are still used for religious services. They are both significant examples of American colonial architecture. These two edifices are symbols of the innate piety and highest cultural aspirations of the Swedish element. They are also eloquent reminders of the Swedish belief in the principle of religious freedom, and their practice of religious tolerance in an age of religious bigotry. Although devoted to the service of Lutheranism, which the Swedes introduced in the Delaware valley, their walls ministered to all sects impartially.

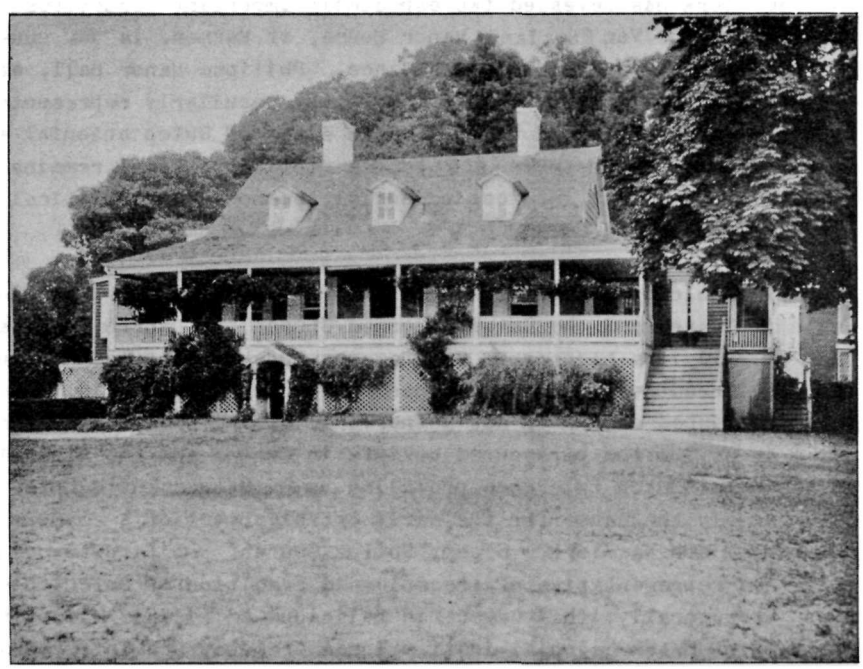
Physical remains of Swedish political activity have long since disappeared from the Delaware valley. The Swedish court structures, where colonial juries first sat in this region, have vanished, although their system of justice was adopted by William Penn for his colony. While no surface remains exist at the two seats of the Swedish Colonial government, the sites have received official recognition in recent years. Considerable public interest in Swedish colonial sites was engendered by the Swedish Tercentenary Celebrations held in Delaware and Pennsylvania during 1938. During that year, Delaware established Fort Christina State Park at Wilmington, on the site of Fort Christina, which was the capital of New Sweden from 1638 to 1643, and again from 1654 to the end of Swedish sovereignty in 1655. Tinicum Island (Pennsylvania), on the Delaware, was capital of the Swedish colony from 1643 to 1653. On a portion of the site of the Tinicum Island settlement, Pennsylvania established the Johan Printz State Park in 1938.

The establishment of Dutch and Swedish settlements in America was a small but nevertheless significant phase of the great European movement for colonization of the New World in the seventeenth century. Both colonies were proprietary provinces controlled by European trading companies. Although launched primarily to trade and colonize on the Delaware, the Swedish colony received poor support from Sweden and in the face of Dutch commercial competition turned to agricultural settlement and finally

relinquished to the Dutch all political sovereignty in the region. New Netherland was established during the Dutch struggle for control of the world carrying trade, and gave Holland a North American foothold in her growing competition with England. Designed primarily as a commercial venture expected to produce tangible profits from trade, the Dutch colony originally consisted of a series of trading settlements, with little effort being made to undertake agricultural colonization.

The course of Dutch settlement in America was influenced not only by its definite economic motive but also by the geography of the region selected for development. Along the mighty Hudson, from its mouth to the head of navigation, Dutch trading posts were established in the fertile valley and the region was loosely knit into a province by a natural highway which provided communication and transportation for merchandise. The natural point of deposit and transshipment of merchandise was at the mouth of the river and here logically was established the social, economic and political center of the colony in the settlement of New Amsterdam. To provide direct economic and political control of a widespread trading region, which also in claim at least embraced the Connecticut and Delaware valleys as well as the Hudson, a strong executive was placed at Fort Amsterdam, and little self-government was exercised by the outlying trading settlements until late in the Dutch period. Trade remained the paramount activity of the Dutch colony until about 1650 when efforts were underway to expand the Hudson frontier through agricultural colonization. Development of landed agricultural domains was first unsuccessfully attempted by the Dutch through the patroonship system. This social, economic and political experiment succeeded better in the hands of the Dutch element when the manor system was established during the English provincial period in New York.

The English conquest of 1664 brought Dutch sovereignty to an end, but for over a century afterward Dutch influence continued dominant in local political activity, social life, agricultural pursuits and architectural developments throughout much of New York and northern New Jersey. Although the British had absorbed the Hudson settlements when they proved a threat to the expansion of the English colonial empire, once the transfer of sovereign-



Van Cortlandt Manor House
Looking northward at the front of the Van Cortlandt Manor House. The nineteenth century wings may be seen at the rear of the main portion of the structure. The nineteenth century veranda masks the high front basement, which reputedly dates from the seventeenth century

ty was made the British did little to alter the pattern of culture and economy in the old Dutch colony. The most significant sites of Dutch colonial activity would include public and private structures exemplifying social life, commercial occupation and political organization. Few, indeed, are Dutch private structures remaining today which can be identified positively as ante-dating the English conquest of 1664. Of Dutch public structures erected prior to 1664, including the several forts and trading posts, there are no remains extant. Therefore, the chief sites worthy of present consideration will be found to have been established under Dutch influence and tradition between 1664 and 1776.

The political, economic, social, architectural and religious contributions made by Dutch colonial activity in America can be illustrated by certain significant sites. The site most representative of the centralized Dutch colonial government, commercial activity and colonial town society, is unquestionably that of Fort Amsterdam, the nucleus of New Amsterdam, the capital and trading center of New Netherland. While no remains exist at the site, it is in public ownership.

A notable contribution from Dutch colonial culture was an architectural form, reputed to be one of the earliest true indigenous designs evolved during the development of American architecture. This is the so-called Dutch colonial type, which was an adaptation of European Dutch design to meet colonial living conditions. Guided by the criteria of obvious age, architectural merit and historic value, a study of the examples of Dutch colonial domestic architecture now existing in northern New Jersey and New York has revealed two especially important structures in Westchester County, New York. The Van Cortlandt Manor House, at Harmon, is an unusually splendid example of a Dutch colonial country residence. Philipse Manor Hall, at Yonkers, on the other hand, is a fine and pretentious mansion, peculiarly representative of the architectural elegance attained by the elite class of Dutch colonial society. Furthermore, these two fine structures are representative physical remains of the manor or landowning system, that interesting social, economic and political entity of Dutch colonial society on the Hudson.

The colony of New Netherland made a contribution to colonial religious history when it introduced the Dutch Reformed Church into North America. Established in an age of religious bigotry in Europe, the Dutch colony was a landmark in the struggle for the freedom of religious conscience in the New World. Despite the existence of an established church in New Netherland, during the early Dutch period the colony became an asylum for persecuted beliefs in Europe and the other American colonies. The fundamental Dutch tolerance prevailed over Stuyvesant's brief religious tyranny and was largely the cause for the early establishment of a cosmopolitan atmosphere in New Amsterdam and New York. Sleepy Hollow Church, at Tarrytown, is perhaps the finest existing representative of the splendid tradition of Dutch colonial religious activity. Structurally, this venerable religious edifice is a distinctive and even unique example of Dutch colonial institutional architecture in the Hudson valley.

Public interest has long been manifested in the need for the preservation of Dutch colonial sites. In past years, the States of New York and New Jersey, certain cities and counties in these States, and patriotic organizations and societies have gradually acquired for preservation a select group of interesting examples of Dutch colonial architecture, which have valuable historical associations. This group includes several noteworthy houses deserving of special mention. As early as 1849 New

(Continued on page 19).

COORDINATION OF CONSERVATION PROGRAMS

BY CARL P. RUSSELL
SUPERVISOR OF RESEARCH AND INTERPRETATION

A hard-working married couple, European emigrants, had labored through a short favorable period in America, had prospered, and were returning to the land of their origin. They boarded a ship and traveled in style quite unknown to them when America-bound. Their cup of joy was full until their ship ran into a severe storm. The threat of the elements became heavier and rougher and finally the wife, terribly frightened, made her way to the pitching deck where her husband watched the tempest from the shelter of a glassed-in canopy.

"What shall we do," she cried "What shall we do? The ship is going to sink!"

"Well, should we worry?" he replied, "Let it sink, it don't belong to us."

Beyond question there has been something of the attitude of "it don't belong to us" on the part of a gigantic army of Americans who for three centuries have exploited the natural wealth of the country. Most of us can identify ancestors who in one way or another contributed to the exhaustion of America's natural resources. For generations it was the good old American custom for every citizen to extract from his immediate surroundings all that could be taken and then move on to new fields of exploitation. It was not until 1901 when Theodore Roosevelt became President that a public consciousness of conservation needs was developed. By 1908, conservation ideas had crystallized sufficiently to enable the President to conduct a White House Conference of the Governors of the United States. Explained Theodore Roosevelt: "It seems to me time for the country to take account of its natural resources, and to inquire how long they are likely to last. We are prosperous now; we should not forget that it will be just as important to our descendants to be prosperous in their time."

The Conference of the Governors in spite of the later disapproval of Congress accomplished its purpose in awakening general appreciation of conservation needs. In fact the word CONSERVATION entered upon national usage as a result of the conference. The Governors declared:

> We, the governors of the States and Territories of the United States of America in conference assembled, do hereby declare the conviction that the great prosperity of our country rests upon the abundant resources of the land chosen by our forefathers for their homes, and where they laid the foundation of this great nation.
>
> We look upon these resources as a heritage to be made use of in establishing and promoting the comfort, prosperity, and happiness of the American people, but not to be wasted, deteriorated, or needlessly destroyed.
>
> We agree that our country's future is involved in this; that the great natural resources supply the material basis upon which our civilization must continue to depend, and upon which the perpetuity of the nation itself rests.

We agree, in the light of the facts brought to our knowledge and from information received from sources which we cannot doubt, that this material basis is threatened with exhaustion. Even as each succeeding generation from the birth of the nation has performed its part in promoting the progress and development of the Republic, so do we in this generation recognize it as a high duty to perform our part; and this duty in large degree lies in the adoption of measures for the conservation of the natural wealth of the country.

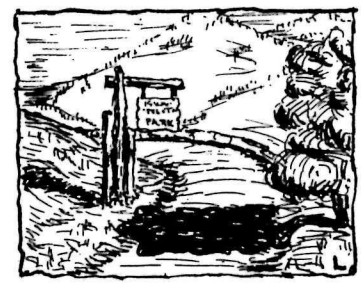
We declare our firm conviction that this conservation of our natural resources is a subject of transcendent importance which should engage unremittingly the attention of the nation, the States, and the people in earnest cooperation. These natural resources include the land on which we live and which yields our food; the living waters which fertilize the soil, supply power, and form great avenues of commerce; the forests which yield the materials for our homes, prevent erosion of the soil, and conserve the navigation and other uses of the streams; and the minerals which form the basis of our industrial life, and supply us with heat, light, and power . . .

We declare the conviction that in the use of the national resources our independent States are interdependent and bound together by ties of mutual benefits, responsibilities, andd duties . . .

We agree that further action is advisable to ascertain the present condition of our natural resources and to promote the conservation of the same; and to that end we recommend the appointment by each State of a commission on the conservation of natural resources, to cooperate with each other and with any similar commission of the Federal Government.

Probably no common word has greater variety of meanings today than does CONSERVATION. To some people the word always will suggest the Civilian Conservation Corps---those 1,500 camps of young men engaged in the restoration of the nation's depleted natural resources. To others it brings to mind the Soil Conservation Service---the great government bureau established for the purpose of saving our agricultural lands. To the hunter, trapper, and fisherman it means the protection and propagation for profit or sporting purposes of fish and game, a notable program guided by another government bureau, the Fish and Wildlife Service. To the farmer CONSERVATION means management of his woodlands, enrichment of his soil, perpetuation of his grazing lands, and care of his wildlife crop. The miner and petroleum specialist think of health conditions, safety for workers, efficiency and the prevention of waste in mines and the oil fields---conservation activities promoted by the Bureau of Mines, the Petroleum Conservation Division and the U. S. Geological Survey. The forest enthusiast, the lumberman, the paper manufacturer, the naval stores expert and the man who produces wood for fuel look to the U. S. Forest Service for guidance in their conservation matters. The stock grower is conscious especially of the conservation policies defined by the U. S. Grazing Service and the irrigationist looks to the Bureau of Reclamation for his management and policy of practices. The parks enthusiast and recreation leader turn to the National Park Service for leadership in their particular brands of conservation work.

There are, of course, many other special interests which focus upon the broad program of conservation and as might be expected these special interests have organ-



ized for the purpose of promoting their specific programs. I have a list of 178 private or citizen groups concerned with the conservation of natural resources, most of them nation-wide in their activities. The hundreds of local chapters of the Audubon Societies, Izaak Walton League, and the Federation of Outdoor Clubs are not included in this directory. A number of the national organizations publish journals that serve a mighty purpose in spreading the conservation gospel. The Conservation Departments of the 48 states provide a substantial framework upon which the far flung program of planning and management finds support, and out of the maze of interpretations of what it is all about has emerged a generally accepted definition of conservation, --- "wise use which recognizes our renewable natural resources as a crop and treats them as such." Hundreds of thousands of workers engage in the practical business of conserving our natural resources. Direction and coordination of this great army centers largely in the ten federal agencies previously mentioned; the Civilian Conservation Corps, the Soil Conservation Service, the U. S. Forest Service, the Fish and Wildlife Service, the Bureau of Mines, the Petroleum Conservation Division, the U. S. Geological Survey, the U. S. Grazing Service, the Bureau of Reclamation and the National Park Service. Within these units of the Federal government has developed a national plan under which citizens, institutions, states, and the national executives unite to conserve the natural values of America.

Many readers are acquainted with the plan of the President's Committee on the reorganization of executive departments. This committee has recognized conservation as a first objective of government quite as did Theodore Roosevelt in his first message to Congress in 1901. The present committee on reorganization has recommended the creation of a Department of Conservation to replace the Department of the Interior. Five years ago when President Roosevelt laid the cornerstone of the new Interior Building in Washington, he dedicated the structure to conservation. He said:

> Theodore Roosevelt, when I was a very young man, rose up and battled against the squandering of our patrimony. He, for the first time, made the people as a whole conscious that the vast national domain and the natural resources of the country were the property of the Nation itself and not the property of any class, regardless of its privileged status.
>
> Supported by an awakened country, which we find is beginning to realize the truth of the old warnings, we in our later days have devoted our thoughts and energies to the conservation of our God-given wealth. Employing every agency of government at hand to protect our birthright, we have in the past several years made advances far beyond the hopes of earlier-day conservationists. The battle goes on, and, as in the case of other battles, it is a battle against the law of opposition. That battle must be carried forward with renewed vigor if future generations are to receive the full benefits that are due.
>
> As I view this serviceable new structure, I like to think of it as symbolical of the nation's vast resources, and this stone that I am about to lay as the cornerstone of a conservation policy that will guarantee to future Americans the richness of their heritage.

At the time of the first budget hearings following the dedication of the Interior Department Building, Secretary Ickes made this statement:

> At this time, and properly so, we are concerned with the annual cash budget; that of dollars and cents we must take in in order to meet our outgo. But we have not yet projected our vision to encompass the larger question of our national assets. The fact is that we are guarding our coin purse and leaving our billfold open to be rifled by any and all.
>
> Why is it that this country can so easily run a fever over a budget and at the same time fail to realize that we have squandered and are squandering our priceless heritage of resources, which we could never replace? Why is it that we become hysterical over wasting crumbs and allow loaves to be purloined?
>
> The reason is that there never has been, and there is not today in the United States any one agency of government responsible for conserving our natural resources. There is no single central agency of government charged with this task.
>
> This condition should not endure. Fortunately, President Roosevelt, while engaged in balancing the budget, is looking ahead. He is concerned about the national wealth in our natural resources. He envisions a government which will guard those resources--the storehouse and depository of the Nation's future welfare.. As part of his plan to reorganize the executive departments in the interest of efficiency and economy, he has proposed that the name of the Department of the Interior be changed to that of Department of Conservation. Such a change would mean that for the first time in our history the conservation of our national resources would be made the responsibility of a major department of the government. Naturally we find this proposal bitterly opposed by those who have been given special priviliges in the past.

In the five years that have elapsed since the new Interior Building was dedicated some notable advances have been made to overcome the obstructions created by overlapping jurisdictions, bureaucratic jealousies, waste and inefficiency. The Biological Survey, the Bureau of Fisheries, and that part of the Soil Conservation Service which has to do with conservation on the public domain, have been transferred to the Department of the Interior. Seven of the ten major government agencies principally concerned with the Nation's conservation program now are under the administration of the Secretary of the Interior. There are some 250 million acres of the public domain in the continental United States under the Department of the Interior, an area larger than that administered by any other Department. The goal of coordinated effort has been more closely approached than ever before in the history of conservation in America. Good cooperation between public institutions, between the states themselves, between the states and nation, and between the agencies of the national government bids fair to provide the potent set-up required to effect true conservation of our natural resources. The recognition of a Department of Conservation, however, is still a desideratum.

As might be expected, it is that phase of conservation work done by the National Park Service which interests us most. By mandate of Congress the National Park Serv-

ice is responsible for the conservation of the scenery and all of the natural and historic objects within the national parks and national monuments. In the same breath, so to speak, the law which provides for the preservation of the native values also orders that the parks and monuments shall be thrown open to visitors. We must preserve the areas unimpaired yet within them we must entertain the public--a crowd of national parks enthusiasts which each year grows more tremendous. Last year 16½ million visitors used the national parks and monuments.

Obviously this horde of people cannot be accommodated in the wilderness parks without some impairment of natural values. The great problem of the National Park Service becomes one of judgment as to how to minimize that impairment. The question of roads and trails, for example, is always before us. There is an insistent demand to make every nook and corner in the national parks easily accessible by automobile. The vast majority of park visitors will not walk a half mile away from the roads, hotels, and lodges. Secretary Ickes has made a positive statement of policy in this connection:

> I am in favor of opening a liberal and representative section of every national park to those who, because of physical limitations, are confined to motor roads. I am even willing to make this same concession to those who cling to motor roads as a matter of choice. But let us preserve a still larger representative section in its primitive conditions, for all time, by excluding roads. *Limit the roads!* Make the trails safe but not too easy, and you will preserve the beauty of the parks for untold generations. Yield to the thoughtless demand for easy travel, and in time the few wilderness areas that are left to us will be nothing but the back yards of filling stations.

Numerous attempts have been made by some selfish interests to discard entirely the primary purpose of the National Park Service, the preservation of native values, in order that dams may be built for the impoundment of water within the parks; in order that mines may be developed or magnificent timber may be marketed. During the last World War pressure was exerted in the name of national need which resulted in the opening of certain western parks to cattlemen. War-time permits were granted to graze cattle in some of the parks just for the duration of the War but ten years elapsed before the grazing foothold gained under the guise of emergency could be broken, and it took nature many more years to restore the normal vegetation after the last steer was driven from the parks. It is important to note, too, that grazing in national parks cannot influence the economic situation in any important way. For example, in Sequoia National Park emergency permits were granted to graze 2,100 animals in the mountain meadows of that Sierra wonderland. One section--640 acres--of irrigated lands of the San Joaquin Valley would have supported more cattle than could have grazed on the entire area--many thousand of acres---of the national park.

The present strained situation of the nation holds new threats of raids on the national parks. Actually the parks contain little that will be needed should a crisis arise but there will be attempts made by impetuous citizens, well-meaning citizens, perhaps, but unwise in their disregard of the precious cultural nature of national park values. And, in all probability there will be demands from those purely selfish

individuals who under the guise of patriotism will seize for their personal gain such water rights, timber lands, mineral prospects, and grazing privileges as can be filched from the government. In 1916 the Olympic National Park project had progressed to a point which permitted of the introduction of legislation to establish the park. Perhaps the bills would have passed had there been no opportunity to sell airplanes. The Sitka spruce of the Olympic region was in demand for the manufacture of airplanes ---and the proposed park area contained stands of the valuable timber. The park was not created, but thousands of Sitka spruce trees were cut. Many of them today lay right where they were felled during World War I. It proved to be impractical to move them to the mills. Olympic National Park waited 22 years for the action that finally placed it in the galaxy of wonderlands administered by the National Park Service.

Employees of the National Park Service are sane in their duty to the nation. Not one of them would advocate the withholding of any park resource if it were needed to preserve America. But the incident of the waste of the Sitka spruce of the Olympic Peninsula provides a fair example of the unwise action that may be taken under pressure. The same forces that worked against conservation in 1916 may be felt again in the near future. Perhaps with all of us working together, we can forestall attacks on our national parks and on other resources upon which the welfare of our homeland largely rests. This can be done only by arousing an enlightened public opinion.

The contribution that national parks, state parks and historic shrines can make to the preparedness of the national mind is just now receiving the careful consideration of statesmen and conservationists, generally. It has become apparent that an important educational aspect is to be found in the public enjoyment of parks; that scenic and scientific appreciation, historical-mindedness, and national patriotism are intensified through their use. The National Park Service and many state park organizations have committed themselves to a policy of preserving, and presenting by striking examples, the comprehensive and varied story of earth forces and the progress of civilization in this country. From the standpoint of scope, the park programs now connect and constitute expression of much that is essentially American. In short, the national parks and state parks are situated most advantageously to develop a national perspective in social traditions and esthetic appreciation of all that America has and stands for. Making the wealth of national expression accessible and understood to millions of citizens is the great opportunity of federal and state park officials.

Conclusion

The era of the "cut down and get out" policy on natural resources in America is coming to a close. Public consciousness of conservation needs has been awakened and there still remains a vast hoard of wealth in the nation's natural coffers. Government bureaus, state agencies and hundreds of private organizations have defined a common objective of protection and wise use.

A large part of the conservation program in America is coordinated in the Department of the Interior. It is recommended by the President that the name of this Department be changed to the Department of Conservation. Such recognition of a distinct conservation unit in the executive set-up of the government would

1. Give conservation an authority heretofore lacking.

2. Promote increased consciousness of conservation as a government policy both in the minds of officials and among the people.

3. Place upon the personnel of the Department a definite responsibility for advancing the cause of conservation to the end that the resources of the United States may be used for the maximum benefit of the defense program and citizen welfare.

The philosophy of American conservation education is the philosophy of democracy. The parks program, national and state, may be one of the potent agencies in imparting an understanding of conservation objectives and the fundamental principles of American democracy. It works ideally toward preparedness of the national mind.

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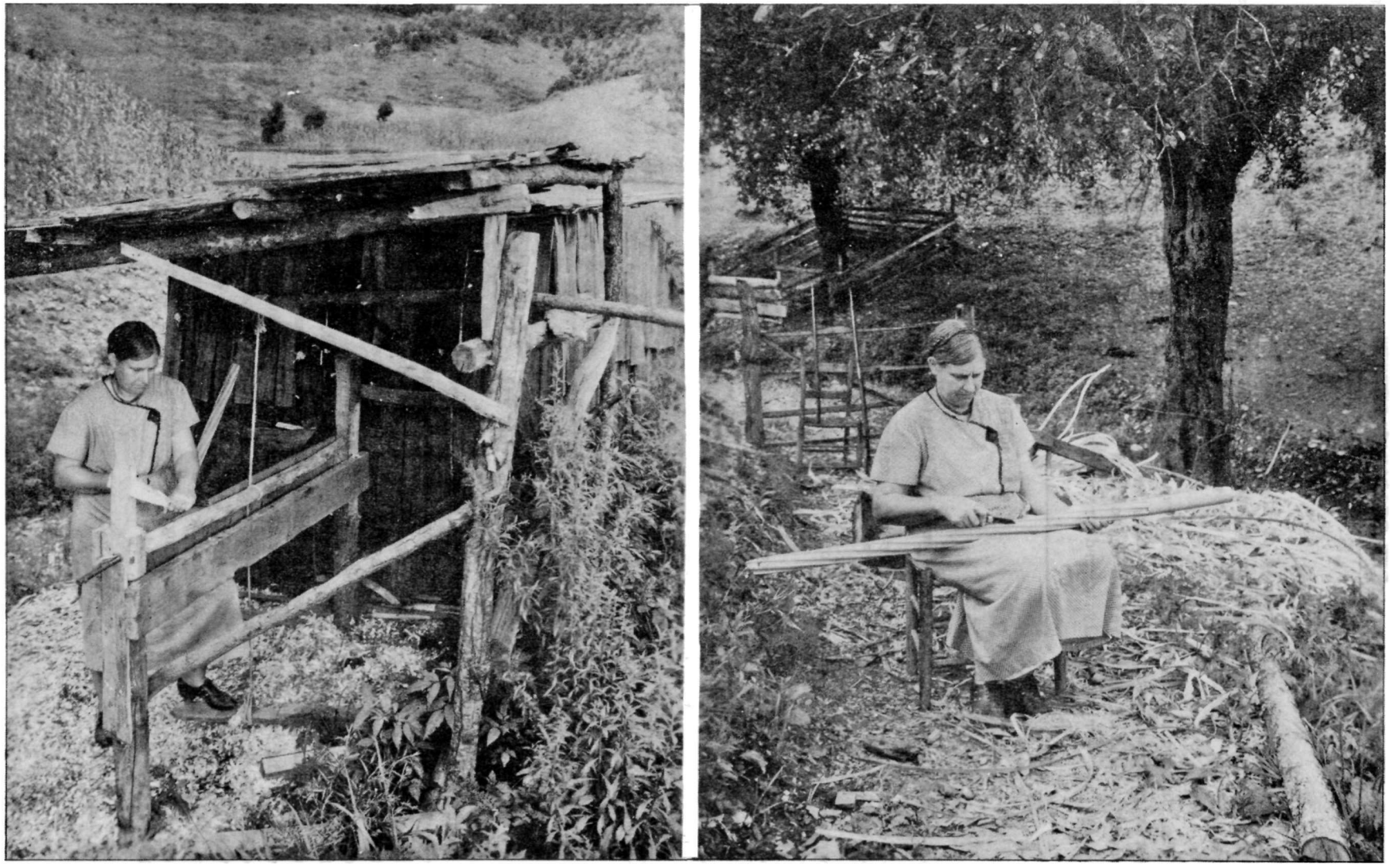
DUTCH AND SWEDISH CULTURE *(Continued from page 12).*

York acquired the Jonathan Hasbrouck House at Newburgh, which served as Washington's headquarters in 1782-1783, and is now maintained as a public museum. The De Clarke-De Wint House at Tappan, New York, Washington's headquarters in 1780 and 1783, is maintained as a museum by the Masonic Order. Philipse Manor Hall at Yonkers was presented to New York in 1908 and has been developed as a museum by the American Scenic and Historic Preservation Society which acts as custodian. The Britton-Cubberly House on Staten Island is maintained by the Staten Island Institute of Arts and Sciences. Included in the New York City park system and maintained as public museums are: the Cornell-Schenck House, Highland Park; the Pieter Lefferts House, Prospect Park; and the Van Cortlandt Mansion, in Van Cortlandt Park. In New Jersey, the state maintains the Zabriskie-Steuben House at New Bridge as a public museum. The Dirck Day House at Lower Preakness, New Jersey, Washington's headquarters, 1780, is owned and maintained by the Passaic County Park Commission.



Turning a rifling guide on a primitive lathe (left), and cutting out its spiral grooves

RIFLE MAKING
In The Great Smokies

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The rifled gun, the American rifle[1], or as it frequently is called, the Kentucky rifle, which in the hands of the sturdy settlers turned the tide against the Indians, was evolved largely in America.

The idea of rifling a barrel to make it shoot truer and harder was not new, to be sure. About 1550, Gaspard Zeller or Zollner, of Nuremberg, Germany, cut spiral grooves in the barrels of guns; but rifling in its perfected state is almost entirely an American development, a highly important step in the generation of the rifle which was designed specially to meet the conditions that existed in the wilds of the east central part of the United States. Indeed, this extraordinary arm evolved gradually to its highly perfected state in response to the demands of the hunters who used them, and the chief credit for the mechanical perfection of the American rifle apparently should go to the highly skilled rifle-makers of Lancaster County, Pennsylvania, who incorporated patiently, step by step, the suggestions of the pioneers who used it. The several characteristics which a rifle satisfactory for frontier use should possess were: (1), sturdiness combined with lightness and mobility; (2), rapidity in loading; (3), economy of ammunition; (4), accuracy and hard shooting for reasonable distances, and, (5), a report of small volume.

Preceding the perfection of the rifle, several accessory factors, each important in itself, had to be developed. Even-burning, uniform-grained, high grade powder had to be evolved. A patch, to facilitate the loading of the rifle and accuracy of delivery of the bullet was necessary; a device to cut the precise rifling in the barrel to give to the spherical bullet its spinning flight had to be invented, and required finally was perfection of the firing mechanism without which the rifled gun would be ineffective.

Primitive guns were merely tubes of iron closed at one end and fired by means of a burning stick applied to a touchhole. They were clumsy, inaccurate and ineffective. Next came the match lock, the essential feature of which was a movable arm capable of being raised and lowered, pivoted at one end on the side of the gun, and containing on the free end a slow burning fuse that was lowered by a simple mechanism into a small pan of powder connecting through the touchhole with the main charge in the barrel. The match lock was portable, capable of being aimed, but uncertain in wet or windy weather.

A later improvement in the development of the gun was the wheel lock, a device whereby a wheel was made to rotate by a spring mechanism in such manner that flint striking on steel, threw a shower of sparks into the powder pan and thereby set off the charge in the barrel. The wheel lock was heavier than the match lock but rather more certain in its firing ability.

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[1]The term American appears objectionable as being too comprehensive. It obviously applies equally well to that vast stretch of continent between Canada and Tierra del Fuego. Colonial rifle or Frontier rifle possibly would be preferable to American rifle.

Next came the snap haunce, a somewhat primitive progenitor of the flint lock, which was the method of ignition of the true early American rifle. The flint lock consists of three parts essentially--a hammer or cock having in its jaws a sharp flint, a frizzen or steel against which the flint is thrown when the trigger is pulled, and immediately below the frizzen, a pan containing powder to be ignited by the sparks from the fall of the flint. The fire in the pan is communicated through a touchhole to the main charge of powder in the barrel of the gun.

The final improvement in the fabrication of muzzle loading rifles was the introduction of the percussion cap. With the perfection of the percussion lock guns the art of rifle making by frontiersmen, mountaineers, and others living in the more remote areas of America came to an end. The machinery required to manufacture breech loading rifles with steel barrels to withstand the high velocities attained by smokeless powder was beyond their simple tools and primitive equipment.

These several essential details of the American rifle were evolved and nearly perfected before 1740, and the pioneer gunsmiths of the states of Kentucky and Tennessee, many of them coming from the Carolinas and Virginia, brought the art of rifle making with them. This art was handed down from father to son, together with the tools and other equipment, secrets of tempering and case hardening and certain accessory details which were kept jealously within the family. Certain of these details are of value both as a means of identification and as milestones in the ultimate development of the rifled gun.

The American rifle was often ornamented in a variety of ways with silver sights, silver inlays in the stock, and beautifully tooled and engraved trigger guards and patch boxes. The rifles made by the gunsmiths of the Great Smoky Mountains on the contrary were usually devoid of ornamentation. The mountain people, cut off from communication with the outside, had to rely upon their own resources and their hard lives were reflected in the simplicity and unostentation of the rifles which were made by them. Yet, in spite of their austere appearance, these rifles possessed those essential characteristics of a satisfactory and formidable weapon. They were sturdy but graceful, economical of ammunition, capable of rapid fire, accurate, and hard shooting.

Almost all the material necessary for the fabrication of the rifles was ready at hand in the Smoky Mountains---pure iron from the Cumberland Mountains for barrels, locks and triggers; seasoned curly maple or walnut from the forests for stocks; hickory for ramrods from the standing timber; and lead from local mines for bullets. The small amount of steel required for springs was retrieved carefully from worn out files, saws, or other discarded agricultural or mechanical implements.

The essentials of a rifle are: (1), the barrel: (2), the lock and trigger, which in the American rifle are entirely separate mechanisms; (3), the stock; and, (4), the smaller parts---sights, butt plate, thimbles for the ramrod, and brass or iron for the patch box and trigger guard.

The barrel was made from pure iron in one of three ways.

The first method: A solid bar of iron[2] of the required length and diameter (usually four feet long, octagonal, and from an inch to an inch and one quarter in

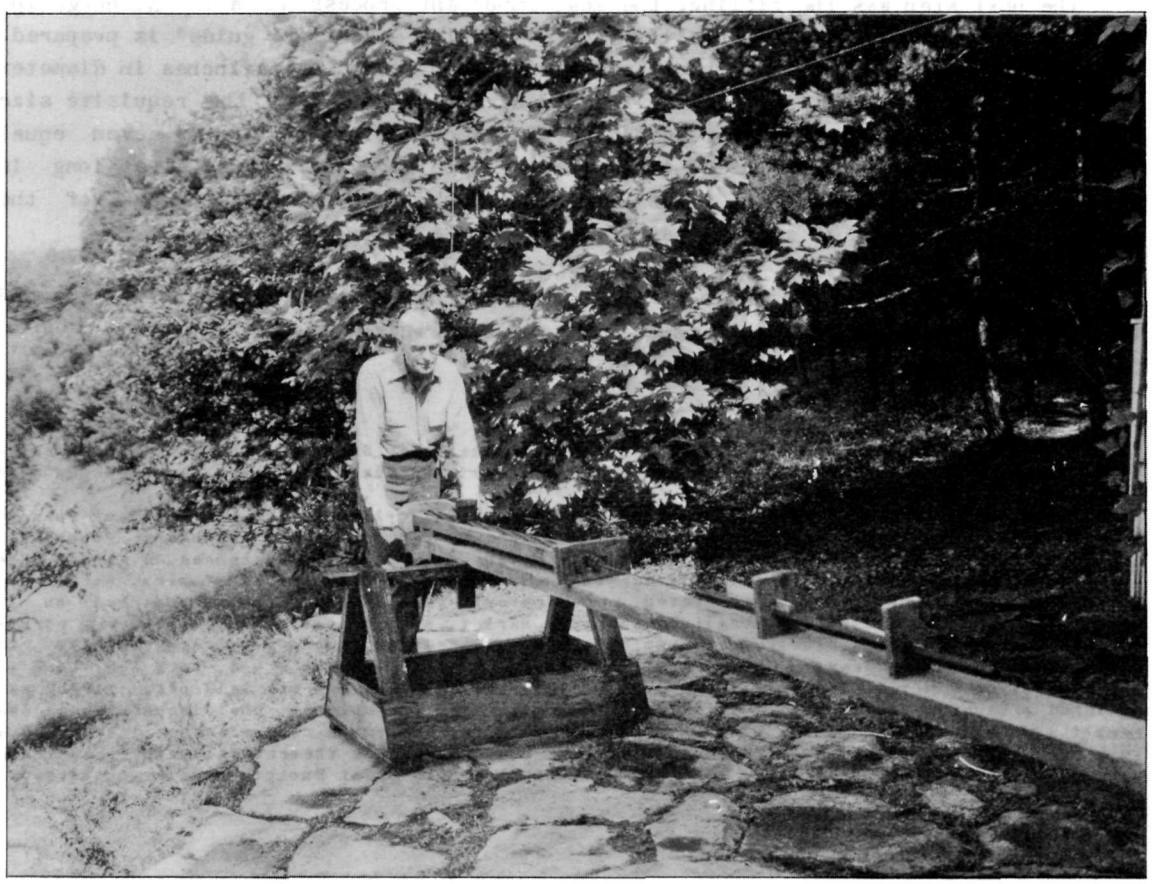
[2]The barrels of the rifles made in the Great Smoky Mountains were of pure iron. No steel barrels were ever manufactured. Indeed, the primitive tools of the rifle-maker were incapable of shaping steel.

diameter) was forged and shaped on anvil and grind stone. It was carefully bored longitudinally in a hand driven lathe.

The second method: Two halves that eventually would be a barrel, each about four feet long, an inch to an inch and a quarter wide, and about half an inch thick, were channeled with a swage on one longitudinal side to produce a semi-circular groove the entire length of the prospective barrel. Then the two halves were welded together, making a complete barrel with a hole through it.

The third method: A strip of iron some four inches wide, of the proper length and the thickness of the barrel wall was heated a few inches at a time and laboriously welded spirally about a steel mandril until the desired length was attained.

After the rifle barrel was made by any one of the three methods just described, the next step was to clean the bore and straighten the barrel. The bore was cleaned by means of a long bit, a rod of iron some four feet in length, having welded on one end a steel cutter, oblong in cross diameter, and with four sharp cutting edges, each some 10 inches in length. Ordinarily the cutting surface of a long bit is about a quarter of an inch in the lesser diameter and 3/8 of an inch in the greater, but the size depends largely upon the diameter of the bore of the gun. Running the length of one cutting surface of the long bit is a thin piece of hickory fastened on the narrower side in such manner that a thin shim can be placed underneath the middle of it.



Complete assembly for rifling a gun. Left to right: rifling guide, head block, rifling rod and barrel of rifle.

The cutting edges of the bit thus are kept in contact with the metal of the barrel, the slight offset produced by the hickory stick giving clearance for the shavings. The bit was turned in the barrel by hand or with a brace and gradually worked the length of the barrel and back again until it would cut no more. Then the shim was made a bit thicker in order to make the cutting edges of the bit press more heavily against the wall of the barrel, and the process repeated. The final result of dressing out with the long bit was a mirror bright hole through the barrel of the rifle, isodiametric and true.

Next the barrel had to be straightened. Frequently, during the several processes involved in the fabrication of the barrel as outlined, it became a bit bent. A good optical principle was relied upon to determine whether the barrel was straight. A fine linen thread, freed from "furze" (as one gunsmith expressed it) was threaded through the barrel and kept taut by a hickory rod, to which the projecting ends of the thread was tied. When the thread thus stretched inside the barrel, it was held up, preferably to the north, and pointed toward a white cloud. Looking through the barrel it readily could be seen whether the string touched at every point. If not, a few blows on the anvil, skilfully applied at the proper place, usually made the barrel true. The process was repeated if necessary. Obviously a crooked barrel would not make an accurately shooting rifle.

The next step was the rifling, the most important process of all. Although apparently complicated, it is in reality simple. First, a "rifling guide" is prepared. Ordinarily this is made from a round stick of timber two to three inches in diameter and some four and a half feet long. This is carefully turned to the requisite size in a lathe and then the circumference is divided accurately into five or seven equal parts[3]. A withe of pliant oak about one-quarter inch wide and some six feet long is then prepared. One end of the withe is fastened to the center of one end of the guide with a nail in such manner that it rotates freely.

Starting at one of the seven divisions, the withe is wrapped carefully around the wooden cylinder so that it makes exactly one symmetrical turn in the entire length. that is to say, one turn in approximately 48 inches.[4]

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[3]Most of the rifle barrels made by the gunsmiths of the Great Smoky Mountains had seven rifles or grooves. Some had five. With one exception barrels with six rifles were never encountered.

[4]Rifling guides were also laid off "mathematically". The cylindrically turned blank for the guide was marked off transversely every seven inches by pencil marks extending completely around. Next the circumference was divided into seven (or five) equal distances. A straight pencil line drawn from one end of the cylinder to the other end was the "datum" mark. From this datum mark as a starting point, the seven equal circumferential divisions were marked on the transverse bands. Calling the longitudinal datum mark 1, and indicating the other six circumferential marks 2 - 7, inclusive, and naming the transverse markings A - G, respectively, the guide was laid out by drawing a line from A - 1 to B - 2, to C - 3, to D - 4, to E - 5, to F - 6, and finally to G - 7. Similarly, A - 2, A - 3, A - 4, A - 5, A - 6 are laid off, giving as a finished product a guide having seven spirals on it, each one-seventh the circumference away from its neighbor and each one making a symmetrical turn about the circumference in exactly 48 inches. While the mathematical method of laying out a guide is theoretically more accurate than the withe method, the latter was used most often by the Great Smoky Mountain gunsmiths.

A pencil mark is then made along the side of the withe and this process is repeated for each one of the remaining divisions. When this step is complete there will be seven spiral marks (or five), equally spaced and symmetrical around the wooden cylinder and these indicate the twist or speed of the rifling. With each one of these seven symmetrical spiral marks successively as a guide, a second spiral line about a quarter of an inch away is drawn exactly parallel to each of the seven original sets of spiral markings. The wood between each of these seven paired prarallel lines is removed carefully to a depth of perhaps a half-inch, leaving as the final stage in the preparation of the guide a wooden cylinder having a set of seven symmetrical spiral bands each turning once in about 48 inches. At this stage the cylinder looks much like a long wooden threaded bolt. If the spiral or twist of the rifles were much sharper than one turn in 48 inches, the weapon would be ineffective. The bullet, as the mountain men say, "would strip its patch" at the higher speed of rotation. Consequently the majority of the rifles in the Great Smoky Mountains have a spin or twist of approximately one turn in 48 inches.[5]

Dressing out with a dressing stick

After the rifling guide is made as described, a "head block" is prepared. It is a piece of hard wood about an inch thick and five or six inches wide, having cut in it a hole which is the exact reverse of a cross-section of the rifling guide with its spiral bands. In other words, the head block bears the same relation to the rifle guide as a nut does to a bolt. Ordinarily the bearing surfaces in the head block were lined with leather which, when well greased, allow the ridges of the rifle guide to slip through with ease.

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[5] One of the best known of the later gunsmiths of the Great Smoky Mountains, Thomas MacCarter, made a rifling guide that turned once in about 35 inches. The guns made with this guide were said by contemporary gunsmiths to shoot harder than rifles bored with guides having one turn in 48 inches, but inasmuch as no authentic rifles made by MacCarter have been discovered thus far, no definite statements can be made

The rifling guide and head block are mounted on a stout timber long enough to hold both the barrel of the rifle and the full length of the rifle guide in one straight line. This timber is anchored firmly so that it is immovable, and the block is fastened permanently to it near one end in such manner that when the rifle guide is threaded through it, the latter can be moved back and forth its full length without undue vibration, imparting meanwhile the proper rotation to the rifling tool. The barrel is mounted in the exact axis of the guide, so aligned that the rifling tool, which will be described, will pass through the barrel in response to a back and forth motion of the rifling guide. A twist corresponding to the twist of the guide is imparted to the rifling tool, which in turn cuts the grooves or rifles in the barrel.

The rifling tool consists of a steel rod somewhat more than four feet in length and of a diameter a little less than the bore of the rifle. One end of this rod is fastened firmly to a chuck or slot in the end of the guide so that it will turn coincidentally with the guide. The other end, for a distance of some four inches, has cast upon it a lead block of exactly the bore of the rifle. This is done by winding a string about the end of the rifling rod to form a narrow band equal to the bore of the rifle. Then the rifling rod is inserted into the end of the rifling barrel for a distance of some four inches. Melted lead is poured around the rifling rod. The lead is kept from running down the barrel by the string barrier. When the lead is hard the rod is removed from the rifle. It will be seen that there is molded on the end of the rifling rod a lead plug of exactly barrel diameter.

The next step is to seat the "saw" in the lead plug. The saw is pictured most easily perhaps by visualizing a small section of a hack saw blade having some six or eight teeth. This saw is inserted in the lead plug in such manner that the teeth project slightly from the side, giving them only a limited clearance or cutting surface. It is necessary to have the long axis of the saw align precisely with the line of twist of the rifling. This is done by first threading the rifle guide into the head block; than the rifling rod is fastened by the clamp to the rifle guide and the other end of the rifling rod with its lead plug is pushed through the barrel of the rifle until about two inches project on the far side. Then, by means of a steel tool, whose width is exactly that of the width of the "saw", a longitudinal groove is cut in the lead plug. This is done by moving the lead plug back and forth by alternately pushing and pulling on the guide for the proper length, and deep enough so that the saw will be inset far enough to give rigidity. Ordinarily this depth is about one-sixteenth to one-eighth of an inch.

After the saw is put into its groove, with the teeth projecting but little, it is ready for use. The rifling guide is threaded through the head block, one end of the rifling rod is inserted in the end of the guide, and the other end carrying the lead plug and its saw, well lubricated with unsalted tallow, is inserted in the barrel. Drawing the rifling guide back and forth through the head block imparts the proper spin to the saw for the entire length of the barrel, and a spiral groove is cut, turning one in about 48 inches.

When the saw has cut the groove as deeply as it can, the guide is withdrawn from the head block and inserted again, one groove to the right, and the process repeated until all seven parallel grooves successively have been cut out. Then the saw is removed from the plug and raised up by putting a strip of paper at the bottom of the groove under the saw. Then the entire process is repeated. Eventually, when the rifles are cut "ten to fourteen papers deep," there results a barrel having on its in-

side seven spiral grooves, the counterpart of the rifling guide in so far as twist is concerned, and deep enough to transmit a spin to the bullet when the rifle is fired.

The newly rifled barrel has to be "dressed out" to smooth the rifles or grooves, and the ridges between these grooves, called the "lands". To perform this operation a "dressing stick" must be prepared. This is made upon a hickory rod somewhat less in diameter than the bore of the rifle. On one end of the hickory rod a lead plug is run in precisely the same manner as the original lead plug above described was run on the end of the rifling rod, the difference being, however, that this time the lead plug on the end of the dressing stick has the pattern of the rifles on it.

Making the rifle stock

A saw corresponding to the original saw is inserted in the lead plug in exact alignment with one of the rifles and midway between the ends, and a second saw, the width of the lands, and in exact alignment with one of the lands, is inserted also. This dressing stick, well greased, is drawn back and forth through the barrel until the rifles and lands are smooth and evenly cut. Usually from a day to a day and a half was required to rifle and dress out a barrel in this manner.

Strictly speaking, these rifles had no caliber in the ordinary sense of the word. Usually, however, four kinds of rifles were made: one of about .35 caliber (0.35) inch, which was called a squirrel gun; one about .40 caliber, called a turkey rifle; one about .45 caliber, called a deer rifle; and one of approximately .50 caliber called a bear gun.

After firing from 80 to 150 rounds it was often necessary to redress a rifle, that is, to resharpen the edges of the rifles and clean the lands. The redressing was done in the manner indicated above by means of a dressing stick provided with both rifle and land saws; and naturally the bore became a little larger. It was usually necessary also to cut off an inch and a half or thereabout from the breech of a rifle that had been fired this number of rounds because at the point where the powder actually burns, the iron gradually becomes eroded and an enlarged chamber forms which eventually would cause the bullet to shed its patch. The shooting age of a mountain rifle can be guessed approximately, therefore, by the length of the barrel.

To finish the barrel after the rifling is complete, several more steps are necessary. A thread has to be cut in the breech and in this is screwed the iron breech block which closes the rear of the barrel. Usually the breech block is made with a tang from two to four or five inches long. One or two holes, drilled in the tang, provide entrance for screws which fasten the barrel securely to the stock. Next, if the rifle was a flint lock, a touchhole had to be bored in the side of the barrel about one-sixteenth of an inch in front of the breech block. If the rifle was one of the percussion type, a hole was drilled and threaded barely in front of the breech block in which was fitted the side tube carrying the nipple for the percussion cap. Along the barrel two or three metal tabs were brazed lengthwise through which holes were made. Metal pins were driven through these to fasten the barrel securely to the stock. The addition of front and rear sights completed the barrel.

The front sight was usually of the knife type and the notched, immovable rear sight set ahead of the breech block some six or seven inches. This gave a long sighting base which accounts in no small measure for the accuracy of these remarkable weapons.

Trigger and lock mechanisms were made next. If the rifle were a flint lock, the hammer or cock had a screw clamp or vise in it to hold the flint which was always set in a piece of thin leather. A hinged frizzen was made of steel upon which the descending flint would strike a glancing blow, throwing the frizzen forward and allowing the sparks to fall in the small pan which was in front of and below the hammer and directly opposite the touchhole. The lock or hammer for a percussion rifle was of the orthodox shape familiar to everyone. Usually the striking face of the lock was hollowed out a bit to fit over the cap and deflect any sparks.

Ordinarily the triggers were double, there being both a set trigger and a hair trigger, the former behind the latter. A small screw between the two regulated the tension, and therefore the lightness of pull of the hair trigger. To manipulate the firing mechanism of a percussion cap rifle, the triggers were set, that is, the hind trigger, "the hindmost one" as the mountain people say, was pulled until it clicked. This set the hair trigger. Then the hammer was raised and, with a cap on the nipple and the gun loaded, the arm was ready for firing. A light touch sufficed to release the trigger.

The pattern of the original Kentucky rifles was a little different from that adopted by the mountain people, although the amount of drop in each was quite conspicuous. The butt plate was deeply hollowed out, the curvature being relatively greater on the top side. The butt plate was made either of brass or of iron. The reason for hollowing out the butt plate was said to be that the marksman could hook the butt of the rifle in the crook of his right elbow and shoot crosswise of his body, it being believed that in this manner the person, especially if behind a tree, offered a smaller target to an enemy than would be the case if the rifle were shot straight ahead from the shoulder.

Each mountain rifle-maker had a pattern or template from which he marked off the shape of his stock. The stock usually was made from curly maple or walnut, although other woods sometimes were used. It was either a half stock, in which case a wooden or an iron rib was fastened beneath the barrel from the tip of the stock to the muzzle, or a full stock, with the wood extended to the muzzle. The thimbles for the ramrod were next put in place, the ramrod extending through the stock parallel to the

barrel. All of the mountain rifles had a check piece on the left side of the stock, the pattern of which varied in accordance with the design of the different makers. Usually, however, the under side of the check piece was straight. This was used as a storage place to carry bees' wax or tallow. The pattern of the trigger guard was of individual design, some being quite ornate, others plain and simple.

The stock was finished with a hinged patch box on the right side extending from the butt plate forward, in some instances as much as six inches. The design and engraving of these patch boxes and workmanship of the hinged lid was often carefully done. Patch boxes were omitted from the later rifles made in the Great Smoky Mountains. Many of the rifles had a six-pointed star of German silver or iron on the top of the check piece.

Individual bullet molds were made for the rifles. Blanks for the two halves were beaten out of a piece of iron, hinged at the proper place with a rivet, and then the spherical cavity was cut by means of a "cherry". A cherry consists essentially of a sphere of steel the size of the bore of the rifle mounted through a slender shank to a bar of iron. The temper was drawn from such a sphere and the cutting edges, exactly like those of a dentist drill, were filed out laboriously. The cherry was heated and dropped into water (case hardened) which gave it an intensely hard surface. The halves of the bullet mold were opened, the cherry was rotated between the faces, either by hand or by a bit brace, and gradually a spherical cavity was ground out. As the cavity neared completion the narrow neck of the cherry cut a channel to the outside and this became the sprue through which melted lead was poured to make the bullet.

When a rifle was dressed out after a period of use, the bore became a trifle larger, and it was therefore necessary to enlarge the bullet mold to fit the new condition. Usually a new cherry was required. Time was a secondary factor with the gunsmiths of the Great Smoky Mountains. To make a new cherry, a dressing stick or, indeed, any of the multitudinous pieces of equipment for a mountain rifle, was all in a long day's work.

The charge of powder for these rifles deserves a word of mention. The formula one reads in the stories of old-time hunters was to put the round bullet in the palm of the hand and pour out just enough powder to cover it. This was an extremely crude approximation and no good rifleman ever relied upon such a primitive procedure. Ordinarily the charge was arrived at by trial and error. One method was to spread a cloth sheet or several papers on the ground and then to mount the rifle in a horizontal position some six inches above the paper and parallel to it. Various charges of powder were tried until a charge was found which would leave only a few grains of unburned powder. Provided the bullet was always seated with the same pressure, this charge ordinarily was accurate within reasonable limits.

Another method was to set up a target the standard distance for the mountain rifles (60 steps or yards) and fire a series of test shots, varying carefully the amount of powder with each shot until an amount was arrived at which would give the maximum accuracy. Then a powder charger was made, usually from a tip of a deer horn with a slight lip on it, which, when level full, would hold the requisite amount of powder.

For the most accurate shooting, however, the mountain men of the more modern times often took cartridge shells with bottle necks, especially those of approximate-

ly .32 caliber, since by means of the constricted neck they could get a somewhat more accurate measure of powder than could be had through the use of the wide mouthed deer horn measure just described. Usually rather fine powder, FFg, was preferred for the smaller caliber rifles when it could be had. For bear guns FF was used ordinarily.

The sights on the mountain rifles were not adjustable and inasmuch as the rifles were sighted ordinarily for 60 yards, it was necessary to make some allowance in elevation for shots over and under this distance. In the target matches, which were serious occasions, specially designed targets were used if the range were materially more or distinctly less than 60 yards. If the range were greater than 60 yards, obviously with a standard charge of powder the ball would drop somewhat at the point of impact. For shorter distances the ball would strike higher. In order to compensate for this the targets were made in the following manner: The distance was measured. If the range exceeded 60 yards, a diamond was cut in the paper about five-eighths of an inch on a side with the axis vertical. Beneath the diamond at the proper distance a V-shaped piece was cut out, the point of the V being uppermost and in a true line with two points of the diamond above. The paper thus prepared was tacked over a piece of white, freshly planed board which had a blackened area corresponding approximately to the area covered by the diamond and the cut. If a board was moistened and some powder rubbed on it, a satisfactory dull black smear could be made which showed up conspicuously against the white of the paper. In firing, the objective was to place the ball at the apex of the V-shaped cut, and the rifle was sighted at the bottom of the diamond, the distance between the sighting point (the diamond) and the prospective hitting point (the V) being determined from experience. If, for example, at a range of 80 yards the ball dropped an inch below the striking point at 60 yards, then the aim point or diamond on the target would be an inch higher than the V-shaped point where it was hoped the bullet would strike. For distances under 60 yards the target was reversed, the V being above the sighting diamond.

The rifle was loaded in this way: The barrel being clean, powder was taken carefully from the powder horn and poured into the charger. It is to be noted here that horn is a peculiarly good substance in which to store powder. It is waterproof, and therefore the horns of cattle were much sought for for this purpose. Inasmuch as the powder horns should curve around the body and not away from it, it was necessary to select the proper (left) horn of the animal to get this curvature. The stopper of the powder horn was always of leather.

After the charge of powder was removed from the powder horn, the stopper was replaced and the charge poured into the vertically held barrel. The rifle was tipped, so that the tube side was down, and given a few vigorous taps with the hand to force the powder into the tube and nipple. It should be remarked that during this operation the hammer is raised in order that there may be no impediment to the free passage of the powder up into the nipple. Then the hammer is lowered. Next the ball is introduced. A piece of cloth or patch of the right thickness is placed across the muzzle of the gun.[6]. Sometimes this cloth is lightly greased with unsalted tallow. Often it is moistened with sputum immediately before using. The bullet is pressed through the cloth into the bore of the rifle, carrying some of the cloth with it, until the bullet is just below the end of the muzzle of the gun. Then the free ends of the cloth are gathered up in one hand and severed carefully with a knife. This leaves

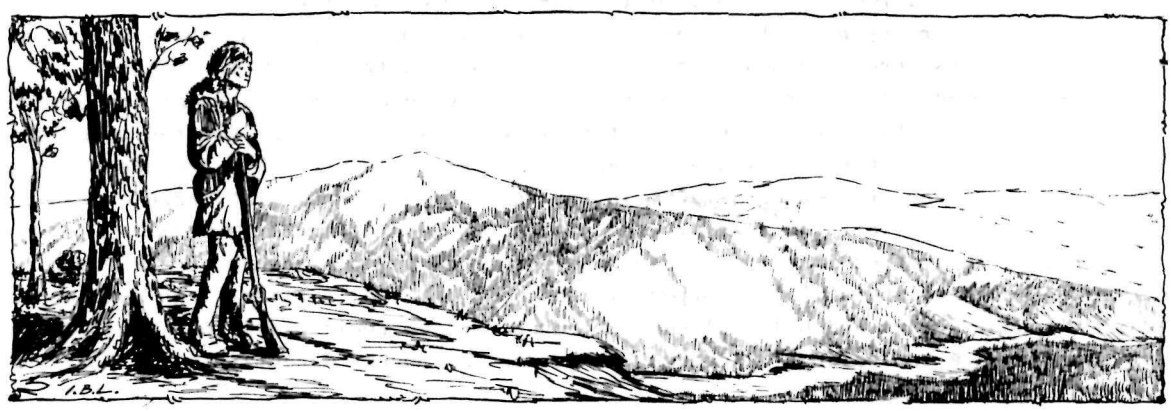
[6] Leather patches are often mentioned in stories. The mountain men practically never used leather. They did use thin bed ticking or heavy linen cloth.

the ball in the barrel enclosed in a perfectly fitting cloth patch which enters and follows the grooves or rifles. The ball is pushed down the barrel onto the powder with the ramrod, care being taken that the barrel is vertical so that the powder lies horizontally in the bottom until the ball is pressed firmly but not vigorously against the charge.

One reads in some books that the bullet is seated by repeated heavy blows until the ramrod springs up from the ball some four or five inches. No intelligent rifleman would ever do this. If the ball is deformed by undue pressure of the ramrod it will not shoot true. After the ball is in place the lock or hammer is raised and a cap inserted on a nipple, when it is certain that a grain or two of powder can be seen at the tip of the latter. It should be remembered here that the hole in the nipple should be only large enough to permit a grain of powder to come to the top. If the hole is larger several things may happen. First, some of the powder may be lost during the loading operation. Second, when the cap explodes the enlarged hole of the nipple permits considerable back pressure of the powder and some of the force of the explosion is lost. And in the third place, if the hole in the nipple is too large and the spring actuating the hammer is weak, the hammer may be violently forced backwards with an explosion of burning powder from the nipple. On the other hand, if the hole in the nipple is too small, powder does not come to the tip of the nipple, and the piece misfires.

While it has been stated above that the majority of rifles made in the Great Smoky Mountains and by rifle-makers in general were sighted at 60 yards, these arms were formidable up to 200 yards. This was shown most strikingly in the Battle of New Orleans where some 6,600 rifle men from Kentucky, Tennessee, and the Carolinas, armed with the American rifle, utterly routed some 14,000 British troops, armed with smooth-bore muskets, who had fought under Wellington at the Battle of Waterloo. Some 1,900 British were killed or seriously wounded in the main action. The American casualties numbered only 13.

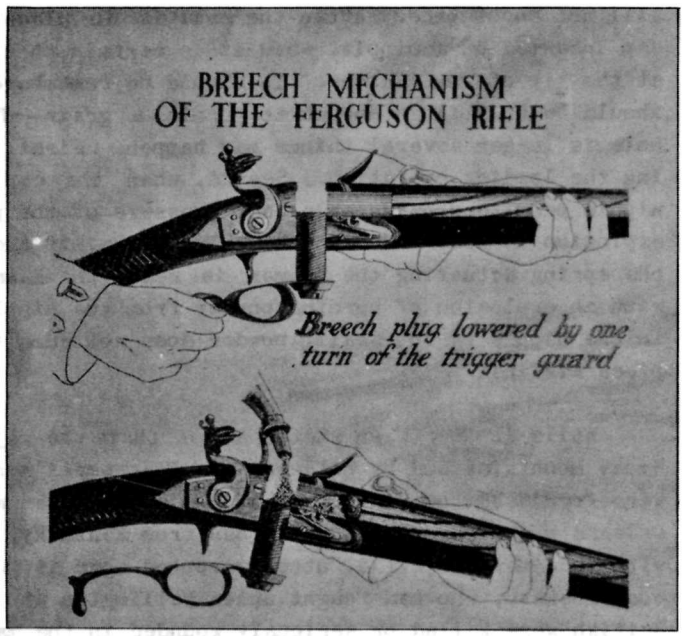
The muzzle velocity of these rifles with ordinary charges of powder is said to have been from 1,000 to 1,200 feet a second. In expert hands, up to 100 yards they were remarkably accurate. Even today some of the mountain men of my acquaintance, old in years, somewhat dimmed in sight, can make targets at 60 yards which would be creditable on any rifle range.



TESTING THE FERGUSON RIFLE

Modern Marksman Attains High Precision with Arm of 1776

BY ALFRED F. HOPKINS,
FIELD CURATOR, MUSEUM DIVISION



History records that on June 1, 1776, at Woolwich, England, Major Patrick Ferguson, of the British Army, demonstrated his newly devised breech-loading flintlock rifle to the astonishment of all beholders. Quite recently at the Washington laboratory of the Museum Division of the National Park Service beholders likewise were astonished at the shooting qualities of the Ferguson gun.

While it is understood that tests of this historic arm have been made in England within late years, it is believed that in this country the sinister crack of a Ferguson had not been heard since 1780 at the battle of Kings Mountain, South Carolina. An account of Major Ferguson and his patented breech-loading rifle has been published in *The Regional Review*[1] in connection with information concerning construction of the new museum at Kings Mountain National Military Park. The article provided illustrations of this extremely rare arm, an example of which the Service has been fortunate enough to acquire and which eventually will form a part of the historical exhibit at the museum.

Ferguson developed his rifle from two earlier types of breech-loaders, the Hardley and the Foster, upon which it was an improvement; and his gun has the distinction of being the first breech-loading arm used by organized troops of any nation. The piece is equipped with a breech-plug which passes perpendicularly through the breech of the barrel and this, having a quick-traveling screw thread, is lowered or raised by a single revolution of the trigger-guard acting as a lever. When the breech-plug is lowered, a circular opening is left in the top of the barrel just large enough to take a spherical bullet. In loading, the muzzle is held downward and the ball, fitting snugly, is dropped into the opening and permitted to roll forward to the front of the breech-chamber where it is stopped by the lands of the rifling. No wadding or patch is used. Powder and ball rolled to form a cartridge would prove only a hindrance and disadvantage in loading. A charge of powder is poured directly from a flask or

[1] Dr. C. P. Russell, "The American Rifle at the Battle of Kings Mountain." Vol. 5, No. 1, July, 1940, pp. 15-21.

horn into the opening behind the bullet, filling the chamber. One complete turn of the trigger-guard causes the breech-plug to rise, closing the opening and ejecting the superfluous grains of powder. When the flash-pan is primed, the piece is ready for firing. In the illustration the breech mechanism and method of loading are shown. Major Ferguson is accredited with loading and firing six shots in one minute.

No recent check is known to have been made upon the number of Ferguson rifles now in existence. They undoubtedly do exist but their number is probably small. Apparently only some 200 were made originally and their military use ended, due to lack of foresight, with the American Revolution. Six specimens were listed in 1928 as being in collections in this country and in England[2] of which one, probably two, were made by Newton, of Grantham, two by Egg, of London, and one each by Turner and Wilson, of London. These six guns varied somewhat in minor details.

A seventh specimen, the one now possessed by the Service at Colonial National Historical Park, Virginia, bears the name of F. Innis, Edinburgh. It is in exceptionally fine condition, showing much of the original metal finish, and is without replacements. The piece measures 4 feet 4 3/4 inches overall and weighs 7½ pounds. The barrel, slightly belled at the muzzle and not designed to carry a bayonet, is 37 inches long, rifled with eight grooves, and takes a ball of .655 caliber. The full-length combed walnut stock is checkered at the grip and has three brass thimbles and an engraved butt plate. On the lock plate forward the hammer, within a scroll, is the name F. INNIS, and this, with the addition of EDINBURGH, together with the proof mark and the view mark of the Gunmakers' Company of London, appears upon the barrel. The wooden ram-rod is horn-tipped and at the other end has a bullet worm enclosed within a screw cap. The arm was intended for an officer.

The recent tests conducted indoors at the Ford's Theater Laboratory were made to determine the exact method of loading the arm, about which there had been some question, and to learn something of its shooting qualities. Loading was found to be extremely easy, suggesting that with practice the record set by Major Ferguson might be attained readily. The ball, weighing approximately 500 grains, was dropped, without patch or wad, into the breech chamber. A charge of approximately one and one-half drams of Dupont "Fg" black powder was poured in behind it. Closure of the breech automatically gauged the charge, superfluous grains being ejected. The same powder, more finely ground, was used as priming. Several preliminary shots indicated that the rifle had precision and accuracy. Then, at a distance of 90 feet, three shots were fired in succession from a table rest by an expert marksman. Number one came within a half-inch, number two came within 4 inches, and number three within 1 3/4 inches of a 1 5/8-inch bull's-eye.

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[2] John Metschl, "Rudolf J. Nunnumacher Collection of Projectile Arms", Milwaukee Public Museum *Bulletin*, Vol. 9.

Fort Raleigh Becomes National Area

The site of the first English settlement in the New World - the Fort Raleigh section of Roanoke Island - now has been acquired by the National Park Service for permanent preservation. The place where America's first English child, Virginia Dare, was born 354 years ago will become Fort Raleigh National Historic Site.

Federal acceptance of title to the land which was donated by the North Carolina Historical Commission became effective simultaneously with the signing of an agreement with the Roanoke Island Historical Association, Inc., which provides for continuation of annual performances of the famous Paul Green pageant-drama, "The Lost Colony". This symphonic play, reenacting notable episodes from the tragic chronicle of the third expedition sent by Sir Walter Raleigh to implant English civilization in North America, is presented in an open-air theater within the original settlement area.

In addition to continuation of the drama-pageant of Paul Green, cooperative arrangements made by the Department of the Interior and the Roanoke historical group provides for uninterrupted operation of the Fort Raleigh Museum. The museum collection, which is housed in a building near the fort site, contains valuable books, maps, charts, and objects associated with the period of the first colony.

Inclusion of the northern extremity of Roanoke Island in the national park and monument chain will permit federal preservation of an area which is considered to rank second only to Jamestown, the site of the first permanent settlement, in its historical significance.

Roanoke Island is flanked by Croatan and Roanoke Sounds at the junction of Albemarle and Pamlico Sounds between the North Carolina mainland and the long chain of barrier islands which include world-famous Cape Hatteras, Manteo, the principal town, is reached over state highway No. 34 via the three-mile Wright Memorial Bridge at Currituck Sound.

The new national historic site will be a component of the proposed Cape Hatteras Seashore National Recreational Area, which embraces more than 100 miles of the barrier reef chain. It is a few miles from Kill Devil Hill National Memorial, site of the Wright Brothers' epochal first flight with a heavier-than-air machine.

As a national historic site, the Fort Raleigh area will be placed in the category of Hopewell Village in Pennsylvania, Salem Wharf and Custom House in Massachusetts, the Old Philadelphia Custom House, the Vanderbilt Mansion on the Hudson River, the Federal Hall Memorial (Subtreasury) in New York City, and Manassas National Battlefield Park and Jamestown Island in Virginia.


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