Washington's Winter at Valley Forge

CERTAINLY there never was a more fearful epoch in the history of the nation than that of Valley Forge. The new government hung by a thread, the thread of single man, George Washington. There was no glamour of glory to lighten the burden of suffering, no excitement of battle to spur men through the sloughs of despair. There was nothing but to lie there on the uninviting heights along the Schuylkill and freeze and starve, many to the very death, others pulling through with tortures worse than death. And after months of that, the band of patriots, on June 19, 1777, followed General Washington in pursuit of Cornwallis, leaving literally a trail of blood from bare feet! It was a march that never stopped until the surrender at Yorktown.

For details of their suffering one can look here and there into the old diaries of the brave men who spent the winter there. Surgeon Waldo, of the Eleventh Connecticut Militia, wrote:

"December 18.—Universal thanksgiving—a roasted pig to-night! The army are poorly supplied with provisions, owing, it is said, to the neglect of the commissary of purchases. The Congress have not made their commissions valuable enough. Heaven avert the bad consequences of these things!

"December 22.—Lay excessive cold last night. My eyes are started out of their orbits like a rabbit's eyes, occasioned by great cold and smoke. 'What have you got for breakfast, lads?' 'Firecake and water, sir.' 'The Lord send that our Commissary of Purchases may live on firecake and water until their glutted stomachs are turned to pasteboard.'"

He continues in this strain day after day, telling of deaths, of meals passed by because there was nothing to eat, of wholesale resignations of officers, of his learning to darn stockings and "make them look like knit work." On January 1, 1778, he writes: "New Year. I am alive; I am well!" and, indeed, it was a wonderful thing, and cause for exclamation.

Washington, himself, gives some evidence in his writings. In September, 1777, when on the way toward Valley Forge, he wrote: "At least one thousand men were barefooted and performed the marches in that condition." Of another day he said: "Few men have more than one shirt; many only the moiety of one, and more none at all."

When the dreary winter was at its height, under date of February 16, 1778, Washington wrote:

"For some days past there has been little less than a famine in the camp. A part of the army has been a week without any kind of flesh, and the rest three or four days. Naked and starved as they are, we cannot but admire the incomparable patience and fidelity of the soldiers that they have not been more alarmed by their sufferings to a total mutiny and dispersion."

"We must remember that Washington's command at this time numbered only 17,000 men. Four thousand of them were unfit for duty from lack of clothes. Not more than five thousand of the whole number could be considered effective fighting men. The well fed and clothed British threatened from nearby Philadelphia, and the danger of a sudden attack added to their cup of bitterness.

"Yet, amidst all this suffering, day after day," writes Lossing in one of his Revolutionary histories, "surrounded by frost and snow, patriotism was still warm and hopeful in the hearts of the soldiers, and the love of self was merged in the holy sentiment of love of country. It was one of the most trying scenes in the life of Washington; but a cloud of doubt seldom darkened the serene atmosphere of his hopes. He knew that the cause was just and holy, and his faith and confidence in God as a defender and helper of the right were as steady in their ministrations of vigor to his soul as were the pulsations of his heart to his limbs. In perfect reliance upon the Divine Providence he moved in the midst of crushed hopes and planned brilliant schemes for the future."

To the visitors who toil up the hill to the intrenchments of Valley Forge, after a visit to the quaint little house in which Washington made his headquarters, the most astonishing thing about the encampment is that a century and a quarter of effort by the elements has failed to make any impress on the solid earthworks. The rifle pits are filled with dead leaves, trees have grown on the hills that were once cleared of timber in order to give the sharpshooters a view of the points in danger of attack, and some of the advanced posts are distinguishable only because of the signs describing them; but the lines of trenches are as plainly discernible as though Washington's army had only just marched out of the camp.

Fort Huntington, with its fringe of tall trees, stands grim as ever in the foreground as one looks down from an angle of the intrenchments, and it requires little imagination to see the mouths of the cannon pointing out of the embrasures and the gleam of the sentry's bayonet as he parades behind the wall. From this angle the valley stretches in peaceful beauty, two or three old-fashioned houses the only structures in sight, and the white column erected by the Daughters of the all around, the most conspicuous mark on the pastoral landscape.

With a map of Valley Forge encampment, made in Washington's time, Revolution to the dead, who lie buried every point can be located, every fort traced, even the positions occupied by the various State troops definitely fixed. There are several schemes of restoration, from an active military post to the exact reproduction of the original encampment. The latter plan has the most followers just now, and will probably be adopted. It will not be hard to arrange the camp in the form it assumed when the Colonial troops settled down to await the coming of spring. It has also been suggested that each State undertake to restore that portion in which its own soldiers lived. These, however, are questions for the future.

Valley Forge is twenty-four miles from Philadelphia. Washington's headquarters is still preserved. The building is of brick and bears the marks of the Revolutionary era in scores of ways. The antique door with massive knobs and locks and the windows with small square panes show the antiquity of the structure. The main hall, furnished with an old settee, leads to a reception-room, and back of this is the room where Washington established his business office. These two rooms have new floors, but the floors in all the other rooms of the building are the same that were there when the house was occupied as the commander-in-chief's headquarters. A narrow door leads to a brick-floored kitchen with roomy fireplace and a log wing which was built after Washington took possession. A steep stone stairway leads from the kitchen to a cellar which was built by the owner of the place, John Potts, as a place of refuge for his family in case of surprise by the Indians.

The building is full of interesting relics, including the old furniture, the window seat, under which the State documents were kept, the cupboard full of relics picked up on the old camp ground, and the clock which hung in Washington's office.

A narrow road leads to the place where McIntosh's men were encamped and then runs parallel to the river to the remnants of the old intrenchments and breastworks. These are in some places marked by ridges of broken stone, but for a long distance the earthworks are still intact and are flanked by trees which have grown there since the Continental soldiers abandoned the place.

The fortification known as the Star Redoubt is near by. A line of breastworks extended along the ridge on which the forces under Muhlenburg Weeden, Patterson, Learned, Glover and Poor were encamped, and another line protected Wayne and Scott. All these points are embraced in the territory which the association wishes to include in the national park.

The shield emblazoned with the stars and stripes of the United States is slightly hollowed out to fit around the top of a twisted paper case for sweet bread and cream, or a chicken or mush room pate. These are shown by caterer and confectioner for use on Washington's Birthday.

Washington's Headquarters at Valley Forge.

Washington and Baron Steuben Walking Through the Camps at Valley Forge.

General Huntington's Headquarters.

Welcome to the day return—ing,
Dearer still as ages flow,
While the torch of Faith is burning,
Long as Freedom's altars glow!

See the hero whom it gave us
Slumbering on a mother's breast;
For the arm he stretched to save us,
Be its morn forever blest!

—Oliver Wendell Holmes.

From a drawing by Howard Pyle.

But, oh, his men! Whom day by day he saw
Dying for lack of bread and beds of straw.
And yet, it was enough to heroes such as these.

THE ATHENAEUM PORTRAIT OF WASHINGTON.

After painting the crowned heads of Europe, Stuart confessed that he lost his self-possession when Washington first sat for him. The first attempt was a failure. He afterwards painted several portraits, of which this is unquestionably the best.

By Gilbert Stuart.

London pays about $8,000,000 a year to keep criminals in check.

WASHINGTON AT VALLEY FORGE.

From an old print still preserved there

TOWER OF VICTORY, Newburgh.

Erected to commemorate the disbandment of the victorious American Army at Newburg, N. Y., in 1783.

THE PRODUCTION OF OIL OF WINTERGREEN

BY HAROLD DAY FOSTER,
Forest Assistant, U. S. Forest Service

THE "oil of wintergreen" of commerce is the product of the distillation of an etherial oil. It was formerly obtained from the leaves of the wintergreen or checkerberry (Gaultheria procumbens, Linn.). But the production of the oil from this species has been largely discontinued owing to the great cost of gathering the plant in sufficient amounts. Almost all of the "natural oil" now on the market is obtained from the sweet birch (Betula lenta, Linn.).

This tree has a wide botanical distribution in the Eastern United States, but it is in the southern Apalachian Mountains that it occurs at its best. Here it is found as a timber tree of some importance, and is lumbered for its wood, which is used in the manufacture of furniture. The bark alone is utilized in distilling the oil, and in some regions where the tree does not attain to sufficient size to make good saw stock, or for local reasons there is not a satisfactory market for the lumber, the bark is peeled from the felled trees, which are then discarded. The following notes on the distillation of birch oil apply to the industry as it was observed in McDowell County, North Carolina:

In this region the hardwood forests are being lumbered and the merchantable trees of the many species which occur here are being taken out. Some birch lumber is sold to the furniture trade, but as a rule birch is a poor seller, and only a few trees in this section are large enough to make good lumber. Distillation of the oil is carried on by local residents. The lumber company charges the distillers twenty cents for every tree cut, deducting this amount from the proceeds of the sale of the crude oil.

After felling the trees they are peeled while green. It is essential that the bark be green, for if it is allowed to dry out before being used it becomes worthless for distilling purposes owing to the rapid evaporation of the etherial oil. The bark is stripped from the trunk and stump and the larger limbs, but the twigs and the bark of the smaller branches are not used. The bark is brought to the distillery and put on the floor around which there is a narrow strip of lumber forming a shallow box. Here it is chipped up fine with axes. Everything about the distillery and the methods of distilling are simple to the point of crudeness.

The distillery most commonly consists of a floor on which the bark is chipped, and one or more vats or stills with their condensers, and these are roofed over with a rude framework of poles covered with hemlock bark. This shed serves to protect the birch bark from the drying sun, and the fires from rain, as well as shielding the workers from the weather.

The stills are three feet wide by four feet long and three feet deep. They are constructed of wood with cast-iron bottoms and steam-tight tops or covers. The still is placed in position on two parallel rows of flat rocks one under each side of the box, leaving a space underneath on which fire is placed. The smoke escapes through a vent or low chimney of flat rock at the rear.

Inside the box and about four inches above the iron bottom is a grating of wooden strips four inches wide and placed about one inch apart. Under this grating water is boiled by a fire placed on the ground under the iron bottom, and the chipped bark rests on the grating. The grating thus keeps the bark out of the water and the steam alone, as it rises through the still filled with bark, extracts the oil.

After filling the still with finely chipped bark the top is placed on and held firmly in position by sticks and wedges. The steam rising through the grating and permeating the bark extracts and vaporizes the oil and carries it to the top and through an iron pipe or worm. This "worm," however, is not coiled as in the condensers of liquor stills, but is a simple straight iron water pipe. In some cases it is bent to form a connection with the side of the vat; in other cases a wooden plug is wedged into the opening of the vat, through which an auger hole is bored, taking a right angle turn in the centre of the block of wood. In the other side of the plug, at right angles to the side against the vat, the straight pipe is inserted, thus obviating the necessity of bending the pipe and plugging the opening in the vat around the pipe.

The iron pipe is laid in a trough through which the water from a brook is deflected. The steam and vaporized oil passing in mixture into the worm is condensed there, and the resulting water and oil trickles by drops into a glass jar placed over the end of the pipe. Over the mouth of the jar is stretched a piece of cloth through which the oil and water are strained.

The oil sinks to the bottom of the jar as a dark red aromatic oil, and the smoky water from the worm remains on top, being lighter. As the jar overflows the water passes by a trough to the boiler in the bottom of the still, where it is boiled over again. In this way, besides keeping the boiler filled automatically, there is the additional advantage that any unseparated oil which has failed to precipitate in the jar returns to the still to be again vaporized and condensed.

When the jar is about half full of oil—an amount which is equivalent to about one and one-half pounds of crude oil—all the oil is extracted. The bark is then shoveled out and discarded and the still refilled. About twenty-four hours of boiling is required to extract all the oil, and to get the best results it is said the water should be kept boiling continuously. This is never done, however, at least in the region studied.

The oil is sold by the distillers at local drug stores. It is sold by the pound Troy weight, thirteen fluid ounces to the pound. These stores sell it in New York and other Eastern markets twelve ounces to the pound. The stores claim that they are obliged to buy it at thirteen ounces to the pound on account of its averaging one ounce of water and other foreign matter per pound, which they have to remove.

The price of crude oil changes with the market. It is sometimes as low as $1.25 a pound and again the price will run as high as $3 per pound. The storekeepers in the local towns ship it in three-gallon cans in its crude form to the chemists in New York and other Eastern cities, selling it at an advance of about twenty-five to thirty per cent. more than they paid for it.

The wholesale chemists refine it and sell it as "essential oil of wintergreen." This is the "natural oil." "Artificial oil" is made by a purely synthetic process in the laboratories. Chemically, it is exactly the same, and being produced at less expense sells at a much lower price. The price of the natural oil, as quoted by a wholesale chemist, April, 1905, was $2.50 per pound, while the artificial oil was quoted at seventy-five cents. These were prices on oil sold in small amounts. In twenty-five-pound cans the price was $1.85 for the natural oil, and the artificial oil sold for fifty cents in five-pound bottles, or forty-two cents in fifty-pound cans. Larger quantities were sold at correspondingly lower figures.

I was told that a birch tree twelve inches in diameter yields $2.25 worth of crude oil. Taking this as the average price per pound of thirteen fluid ounces and considering twelve inches as the average size of the trees felled for the purpose, the average tree will yield one pound of oil. I was unable to get a statement as to the amount of chipped bark obtainable from a single tree, but since a vat full, equivalent to thirty-six cubic feet, yields one and one-half pounds of oil, and an average tree yields about one pound, it is safe to say that the bark from the average tree will fill the still two-thirds full, equivalent to twenty-four cubic feet of chipped bark which yields one pound of oil.

Deducting twenty cents, the price paid per tree to the owner of the timber, from the price realized on the oil it will produce, or say $2.20, the profit to the producer of the crude oil is $2 per tree or per pound of thirteen ounces. When it is considered that two-thirds of twenty-four hours, or sixteen hours are spent in distilling one pound of oil, besides the labor and time involved in felling the tree, chipping the bark and feeding the fire, the actual returns are not great. When two or more stills are in operation at the same distillery, as is usually the case, the question of time involved is not of as great weight, since it takes no more time to distill three pounds of oil from three stills than it does one pound from one still, but the larger distillery entails a greater labor to chip a larger amount of bark and to keep the vats full and the fires fed. Usually, however, the labor in the process involved is not considered by the distiller from its economic standpoint.—Forestry and Irrigation.

THE BLESSING OF COLD.

Belief Expressed by Dr. Robert Peter in the Healthfulness of Low Temperature.

In the Medical Era, Dr. Robert Peter maintains that cold is a blessing when you learn to endure it. He points out that its endurance can be acquired gradually if begun early in the season. He does not believe in coddling the body with woolens. "Better keep blood in circulation by outdoor exercise," says he, "so that if heavier clothing should really be needed the body will not require its encumbrance too much."

Graduated baths, with friction, he tells us, will harden the body very much, especially when followed by vigorous exercises in graded temperatures. "I know a man," says he, "who is always astir and who wears not even a shirt, but only blue jeans and blouse, all the year round. He has his windows open all the year round, day and night, no fire, and thoroughly enjoys it. While this is an extreme case, it shows how one can inure himself to cold."

Dr. Peter expresses the conviction that the subjects of ventilation and heating, which are important factors in the winter months, are not as well understood as they might be, and he attributes much of the illness during the inclement part of the year to the foul air and fuel gases, to which the baneful effects of indoor life are mainly due. According to him conditions should be reversed, and it would be wiser to camp out and bask in the winter sun and to stay at home in the summer shade.

"As to ventilation," says he, "it can never be overdone, and especially is this true at night. Our bedrooms should be well ventilated. One-third of our lives is spent in them. A bedroom with southern exposure is probably best in winter and it is a cheer and godsend. It is death to germ life. It will cut short a cold or catarrh and the white plague cannot lurk there. As we need the shade in summer, we need the sun in winter.

After a consideration of the diet, which should be more stimulating at this season of the year, the author emphasizes the fact that the respiratory organs mostly stand the brunt of the winter diseases. The doctor believes that we must look to the circulation to help us out in our prophylaxis. "After a cold is once contracted, however," he says, "open the flood gates of elimination and equalize the circulation. A good physic or a Turkish bath may restore conditions."

The American Chameleon.

The American chameleon, a small lizard (Anolis carolinensis), inhabits various parts of the Southern United States. The little animal has the remarkable habit of quickly and completely changing its colors, varying from brown to yellow or pale green. Its food consists of insects. The little animal is perfectly harmless to higher forms of life, is often kept as a pet, and has been worn attached to a chain as an ornament.

The toes are provided with adhesive pads, which enable the lizard to run upon smooth vertical substances.—St. Nicholas.

Mink Climbed Tree.

A mink when put to it climbed a tree, as was clearly demonstrated by Leo Duchesneau, at Keene, N. H. He chased the animal some distance, and at last the sly fellow took refuge in an elm. The boy secured the treasure with the aid of his rifle.

AT THE TOMB OF WALT WHITMAN.

The "Good Gray Poet" is buried in a picturesque cemetery just outside of Camden, N. J., the city where he passed the last years of his life.

EDUCATIONAL ADVANCEMENT.

The development in educational methods in the last year, while it has exhibited little of the sensational or spectacular, has been steady and definite. On the other hand, the general advance in methods and ideals, though almost unnoticed except by those immediately interested, has been strong and constant. Old ideas have been more fully worked out, and at least one new purpose, which until recently was merely an unconscious trend, has become, with educational leaders, a conscious aim.

The principal educational development in this year, as in several years past, has been along the line of "education for efficiency," and among the broader educators "education for efficient service." The difference between the two, to the teacher, is largely one of ideal rather than of method, and to the pupil, of purpose than of training, so that practically those who worked largely for the training of the individual machine and those who worked for the development of a stronger social factor have found their immediate aims identical. It is in developing the ideal of efficiency, in all its ramifications, that almost all the noticeable changes have been made or planned in the methods of both higher and lower schools. The changes have, perhaps, been on a more general line in colleges and universities, and have been concerned more largely with details in elementary schools.

The development toward "education for efficiency" in the higher schools has been twofold. The most conscious movement, the one most discussed and most intelligently acted upon, has been that toward closer contact between students and teachers. The other, which is as yet almost unrecognized by casual observers, but is felt and understood by those of the widest experience and deepest insight, has been toward what might be called, to employ a mechanical term, a "standardizing" of methods.

New York City has accomplished more in the last twelve years in enlarging the scope of its university education than any city in the world. In that time it has been rebuilding three great institutions of higher learning, whose combined number of students aggregates 10,458 men and women, and whose total wealth is estimated at $50,000,000.

MORRIS HIGH SCHOOL.
One of the Modern Type of Public School Buildings in New York City.

New York's First Public School.

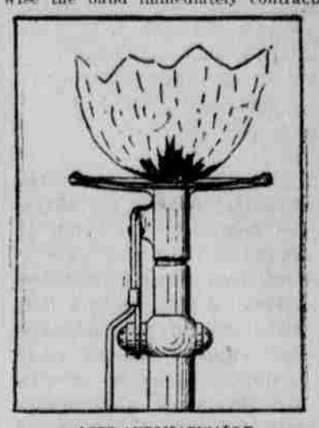
SAFETY STOP ON GAS BURNER.

A safety attachment for gas burners is the recent invention of a New Jersey man. Instead of employing a stop-cock the attachment regulates the flow of gas, and as long as the gas is burning remains in that position, but should there be any carelessness in turning off the gas the attachment does so automatically.

Whether the gas is purposely extinguished or extinguished by accident, due to a high wind or when blown out by an ignorant person, the attachment acts by gravity to close the plug. The attachment is pivoted to one end of the stop-cock, and consists of an arm which extends parallel with the burner, and controlled by a lever.

At the top of the arm is the portion which engages with the burner, being made in the shape of a ring connected to two horizontal bands. When the gas is turned off and the attachment in its normal position it is at right angles to the burner. When the lever is operated to turn on the gas the attachment closes up until the top engages with the tip of the burner.

As long as the gas is burning the ring and bar at the top are caused to expand, but should the gas become extinguished by a gust of wind or otherwise the band immediately contracts



ACTS AUTOMATICALLY.

and assumes a position which forces the attachment by its own weight and gravity to quickly fall to its normal position and shut off the gas.

NOVELTY IN ELEVATED ROADS.

Several of the larger cities in the United States are in need of an elevated railway to accommodate the heavy railway traffic in the more densely populated sections which the surface lines are unable to handle. Because of the unsightliness of elevated railways at present in use, their further use has been discontinued in favor of the underground road.

An Ohio engineer has invented an elevated railway built on entirely new ideas. This structure is made of a series of individual posts, firmly set in the ground and imbedded in cement to make them permanently rigid. These posts are formed of a number of tubular sections united at the joints by collars, the latter made with sockets which receive the supporting braces. Upper and lower tracks are supported by these braces, the whole being further braced and supported by a span mechanism. All of the braces, arms and other parts are made of tubes or pipes. The rails are carried on the outer extremities of the horizontal crossarms, and are arranged in parallel pairs one above the other, so that an upper and a lower rail constitute a track for a car. All the central posts are equipped with lateral arms for one or more lines of cars at each side. It is claimed that by this construction it is possible to build an elevated structure which will stand perfectly rigid and which needs no special provision for expansion or contraction in its framework and track and has tight joints in all temperatures.

ELEVATED ROAD AND CAR.

Furthermore, it occupies the minimum of surface room possible in an elevated road, and, being tubular throughout, obscures light less and is less objectionable to the eye than any other now in use. Any speed can be attained with perfect safety.

The port of Melbourne, Australia, is in such bad condition that it will cost $230,000 to put it in shape.

There are 1,840,280 more men than women in the United States.