



THE OXFORD HILLS

CHARLES E. WATERMAN



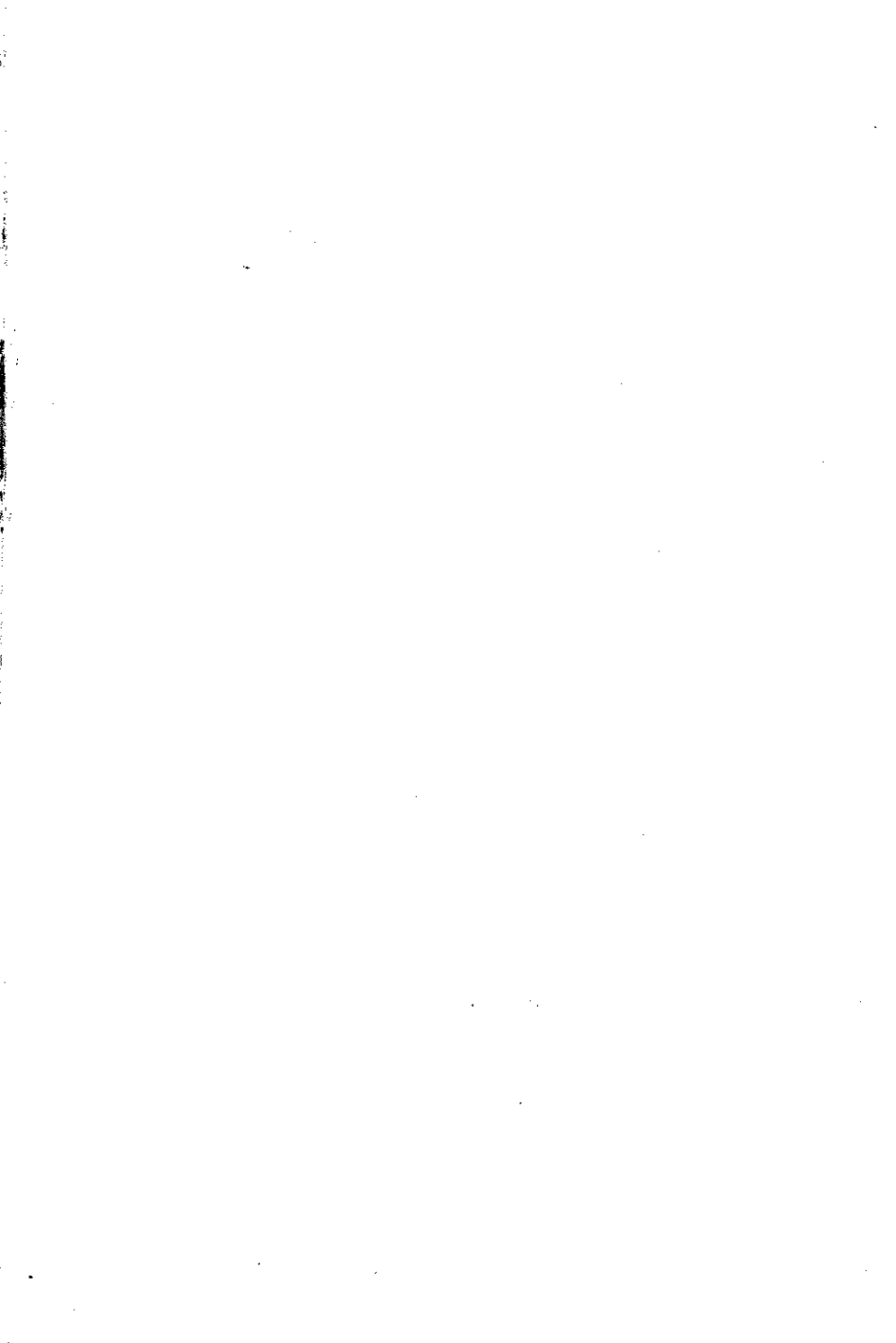
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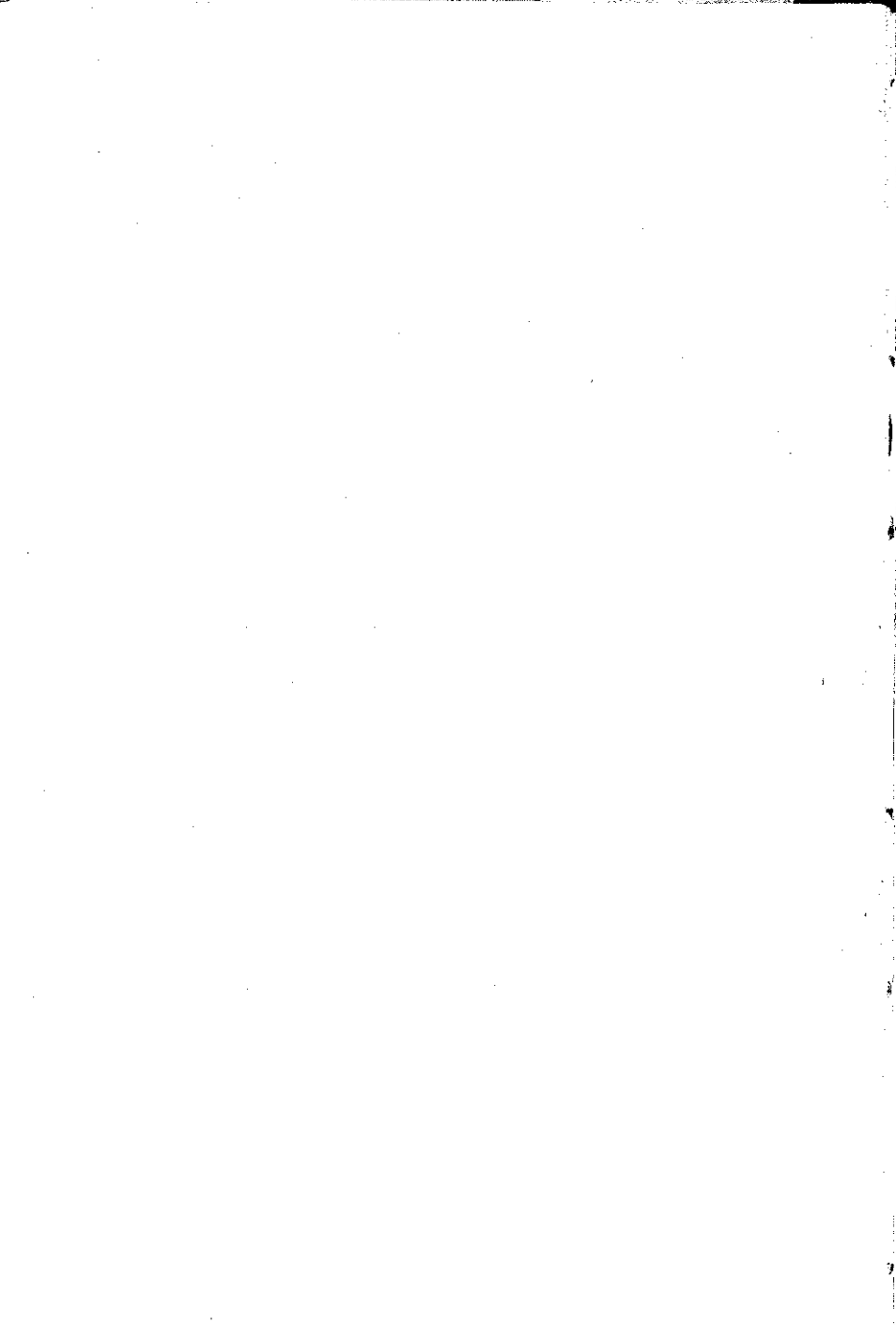
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The OXFORD HILLS

AND

OTHER PAPERS

By

CHARLES E. WATERMAN

Press of
MERRILL & WEBBER COMPANY
Auburn, Maine

Dedicated to

MY WIFE

CLARA GARLAND WATERMAN

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The Oxford Hills

A Lecture

To the east of us, to the west of us and to the north of us lies an indefinite region known as the Oxford Hills.

They are a wonderful collection—I know it because I have lived among them all my life.

The first rays of the morning sun turns a hundred quartz crowned summits into diamonds, and the last rays of that descending orb transforms the grass grown valleys between into emeralds. Through these valleys and over these hills, following the path of the prehistoric deer, ziz-zag the highways of man. On either side of these roads can be seen human habitations—cabins, cottages with an occasional colonial mansion. These dwellings, during my boyhood days, at least, were filled with people—men and women and boys and girls. They were all good people—some were good to look at; some were good to work and some were good for—nothing. The last were by no means least, however, for they served to accentuate the good points of the others.

In a cottage on one of the roads between two hills lived a woman—a young woman—Sally Week by name, who, by common consent was acknowledged to be the best person in all the region. She was good to look at, also good to work. In her

girlhood she climbed the hillsides in search of berries, and having found them, she delved among the thorny bushes upon which they hung to fill her big tin pail, tear her dress and scratch her arms. Picking berries was not altogether play, but it had its compensations, for when she approached some partially hidden spring to quench the thirst engendered by her work and the summer sun, discovered the woodland nymphs had not all departed. When older grown, entering the gates of womanhood, she cared for the evening days of her parents. She planted the garden, tended the hens, milked the cow, dried the apples and carried them to market behind old white Dobbin. Tired in body after labor and fatigued in mind from worry, she did not care to peer into springs of water to see if any nymphs remained, or in the upturned image to read the book of life engraved thereon.

By and by, her parents rested and she stood alone in the earned and inherited cottage looking out on the earned and inherited fields, with the earned and inherited reputation of the best and smartest woman in the vale.

In a cabin on a hillside at the far end of the valley lived a young man, William Day. By common consent, he stood at the head of the good-for-nothing class. He was a good fisherman, a good hunter, a good eater, a good loafer—in short a good example of the good-for-nothing class; but if you have come to the conclusion there was nothing bright about William Day you are mistaken; for

he went courting the best and smartest woman in the neighborhood.

When these young people were married; the neighbors groaned. They said a whole Week had been lost to gain one Day. They need not have troubled themselves. In due course of time there were little Days enough to make up the Week again. The neighbors need not have groaned for there was no domestic tragedy in the Day family. There never was a more harmonious couple. Sally was ready to do all the work and William was ready she should.

After the arrival of this whole week of Days, they took the center of the stage and father and mother retired into the background. The eldest child was a boy inheriting the given name and goodness of his father. He led the clan and it was interesting to see him start for school in the middle of the highway, with the other little Days on either side of him, hand in hand, their heads forming a tapering line from his to the ditches at the sides of the road.

The schoolhouse—the little red schoolhouse of our fathers—was a community center in the hills. It sat at the crossing of roads. Diagonally across the way from the schoolhouse was the church. The children of the Hills were not born in this edifice, but they were married therein and visited it every Sunday, until they died when they made their last appearance therein, and were buried in the little yard behind.

That yard contained the monumental history of the neighborhood. Beneath the rough unlettered field stones lay the pioneers; beneath the engraved slate headstones slept their children; marble slabs marked the resting place of the third generation; while those of a more modern day rested beneath polished granite. The inscriptions told the reader that Deacon Grover, now forgotten, but for this stone, was a good man and husband; that Caleb Morse was captain of "string bean" militia; and one whose life history was more elaborately written reads:

"Under these rocks,
And under these trees
Lyeth the body of Solomon Pease.
He's not under the sod,
But only his pod,
For he shelled out his soul
And went up to God."

No matter what a man's theology may be or may not be, a country church is an interesting place on Sunday. Calloused handed farmers on this day ceased their gathering into barns, put on their Sunday clothes and manners, and tiptoed into church in boots, which, like bad children, felt they must be heard by their much squeaking—tiptoed into a building that had never lost the odor of sanctity for what was gained one Sunday was shut up through a whole week of wickedness in order to make a good start on the next.

The men were followed closely by their women in black dresses, each holding a sprig of southern wood or leaf of sweet Mary in their black gloved hands. When the last team of the last farmer had arrived and he had tied his motive power in the horse shed and had joined his women kind in the vestibule, Deacon Giles walked demurely from his home across the way, which was equi-distance from the church and schoolhouse, to announce the fact by tolling the bell. From inherited tendencies and long association with the church, Deacon Giles was a good man; but his temper, which was quick, was sorely tried by his environment. He had his limitations; but was just as good a man as could be found who lived next to a schoolhouse.

He was followed by a lean mongrel dog named Bose, sober and sedate like the deacon. Bose always walked into the vestibule and watched his master manipulate the bell rope, after which, having been told often enough there was no dog hell to be afraid of and no dog heaven to hope for, he would walk into the horse shed to await the reappearance of his master.

"Boo-o-o-om, boo-o-o-o-m," tolled the bell. From the parsonage across the way came the black coated preacher, and as he walked up the pulpit stairs the last "boo-o-o-om" quivered away into silence, and from the choir-loft broke out the peal of young voices:

"The Lord is in his holy temple,"
which finished, the preacher took up the service

in the words of that ancient but familiar Hebrew psalm:

"Lord, Thou hast been our dwelling place in all generations."

Service ended, the people came forth in recess, awaiting the second session, talked of the pastor's sermon and—and how their crops grew. The boys and girls walked out of the church like animals out of the ark—always two by two—walked out into the graveyard, looked at the headstones, smelled the stray roses which tried hard to recall the fragrance of some lost soul, sat down upon a mound and forgot there were any graves there. It was spring and love time with them.

It can easily be seen that the church was not only the religious center of the community but the social center as well. It was a meeting place and the only one among the Hills. Here in the recess between services news and gossip was recited and discussed, and in obscure corner pews and among the graves of ancestors matrimonial bargains were made.

Our forefathers were religiously inclined, but every day current events could not be entirely shut out on Sunday. It was the saline quality wherewith it was salted and made fit for human nourishment. Every winter there was a revival, when some black-coated individual, from a place unknown, came to denounce the sins of the Hill people, and how many sins there were? If a man or woman yielded to the desires placed within his

body or mind by the creative power, it was a sin. No wonder the preacher was sure everyone was a sinner. Every desire of budding manhood and womanhood was denounced until it was no wonder some degenerate member of the former exclaimed, "To the pure in heart everything is rotten."

These meetings were solemn and yet they were intensely interesting and dramatic. Everyone wanted to know the secret sins of everybody else; wanted to know the mean little thoughts and acts and their domestic tragedies. The revival was a clearing house for all this. It was intended to be a cleansing house and the process was interesting.

All attended, both old and young, but for different purposes. The old went there to prepare for death and the young went to prepare for life. Perhaps both got what they went after, for a string of marriages were apt to follow a revival. The girls all attended a revival, but some of the boys stayed outside to wait for girls. Perhaps they may have felt like Thackeray on a similar occasion, of which he wrote:

"Suffer me to pace
Round the forbidden place,
Lingering a minute,
Like outcast spirits wait
And see through heaven's gate
Angels within it."

The influence of this black-coated revivalist remained until another black-coated individual

arrived. The black garb of the first may have been considered a saintly attire, but there was no question about the latter. They were the abilliments of the devil, and the individual was the envoy of his satanic majesty.

There was no question about this to an Oxford Hills farmer. It was a crow! and he was making a survey of the surrounding fields to decide where the coming corn crops were to be located and be ready for the "raising". It is surprising the influence that crow had. It entirely discounted that of the evangelist, and although his anticipations were evil, the farmers straightway prepared to keep him busy and to put their minds and lips in the need of spiritual awakening when another winter should come.

Perhaps there is no more stirring psalm than that beginning,

"I will lift up mine eyes unto the hills,"

or one which has been more redressed in hymn and anthem. David or Zarathustra, or whoever may have written it, must have lived in a hilly country—must have seen the morning sun strike their summits and transform them, and the loving glow of his departure rest upon them when the rest of the world was black with night. It is no wonder the magnificence of the lines should catch upon the imagination and the melody of them cling after the words had died. It is no wonder they are especially familiar to the people of the Oxford Hills, because they cannot lift up their eyes except

to the hills and from them comes their strength and their sentiment.

Their sides are wooded to the domes and these forests have formed a greater source of prosperity for the dwellers of this region than the tilled fields of valleys. But there is something greater in the observation of these hills than worship of the great god Mammon, for they were reared before that deity was conceived. When one looks unto these hills, he or she is looking at the oldest things in the world—not the oldest thing in North America, but in the whole round earth. The psalmist, whether he be Hebrew or Persian, never could have looked at such hills, never could have looked at the first of created soils. The psalm should have been inspired on American soil—on Oxford soil.

The oldest alphabet, the oldest assembled language, is to be found engraved upon and encased in the rocks which lie beneath our feet, and the first chapter ever recorded in these symbols are to be found in the Oxford Hills. Nations without number have lived and died since this chapter was written and their languages have died with them, but the language of these rocks have never died; but not everyone can read it.

A rock reader, then, is a man set apart from other men, and is to be respected and admired for his accomplishments, for the story he has translated is wonderful and absorbing. This story comes pretty near the Oxford Hills.

Babylonian legend embalms the story of creation in mystical language but strangely like the story unfolded by the rock-reader. The old god Jahva is credited with doing the job by the day's work. First he gathered the material—misty chaos; second he introduced chemistry and the mist liquified and covered the material and behaved as liquifaction always does. It washed over the harder material, wearing its surface and piling the worn particles wherever the harder material obstructed the natural currents of the liquid. Then dry earth appeared—according to legend at the end of the third day. That was the beginning of the Oxford Hills. Rock-readers say the first crest of earth appeared on what is now the dividing line between Vermont and Massachusetts, near the Ticonic Hills, and that as the land continued to rise it took the direction of what is now the White Mountains, so the Oxford foot-hills were a part of this rising land.

Rock-readers have given the name of this land as "Appalachia". I don't think they found the name in the rock records. It is one of those mystical things like the names of planets, of which Mark Twain wrote, he could comprehend how astronomers could ascertain the distances from the earth, but he could never understand how they found out what their names were.

Mishaps happened to the land, as to all other terrestation. The fluid element dropping into the solider material caused expansions and explosions

and piled the sharp edges toward the firmament in towering ridges. Then the glistening edges scintillated in the brightness of the sun until a night and a coldness came on congealing the moisture into a vast coating of ice, 5000 feet thick, it is estimated, covering all the existing land except, perhaps, the top of Mount Washington or some such height. That might have been 35,000 years ago.

With returning warmth this crystalline coating expanded, broke, liquified and moved, grinding the mountains peaks into domes, washing the resultant sand and silt into valleys between the hills, where the melting ice formed rivers, the current of which eddied here and there, forming bars, behind which were strewn lakes and lakelets to gleam in the new-made atmosphere, like jewels on the fingers of a handsome woman.

Then the soil covered hills and the silt filled valleys blossomed like the rose in vegetation and the vegetation grew into forests, the falling foliage causing the soil to grow deeper and deeper until it was fit for the habitation of man—wild men at first, so-called civilized men afterwards. The wild men looked up unto the hills and said deity dwelt there; that it was the altar of the firmament, the holy of holies, refrained from going there and made a chant about it. The so-called civilized man said the wild man was superstitious; nevertheless, when he looked unto the forest embowered hills, he said a god dwelt there—the great god Mammon! The god of the wild men demanded no sacrifice, but

Mammon did, and straightway the civilized man cut down the forest for a hecatomb unto that deity.

Denudation cleared fields and fields caused labor, the evil of civilization, and man had to earn his living by the sweat of his brow. Labor came even before the fields, for denudation called for labor—the labor of felling the trees and transporting the logs to market. That labor is still going on, but in a different manner. To-day there are gas-driven log-haulers; yesterday horse-flesh was the motive power; but in the days before yesterday it was the slow-plodding ox. So slow was he, that he was awakened before the morning star sunk to rest, attached to sleds and guided up the mountain-sides into the forest. The forests were cold in winter—how cold nobody knows, for thermometers were uncommon in those days, and the chill was unmeasured, but the drivers thrashed their hands and rubbed their noses and ears to keep the blood in circulation; and the oxen—the breath from their nostrils were jets of steam, like the exhaust from a locomotive's cylinders, of which these bovins were the predecessors and caught on their red-haired sides until they turned white—that sparkling whiteness that is ethereal and ghostlike, and they walked through that dark forest as ghosts. And the sleds—the Bobs—gliding after them gave a moan and a screech, like lost souls, rivaling anything Dante dreamed of in his inferno—once heard, never forgotten.

The fields made in the clearings were planted to burntland corn—vast tracts of it. Over in Hiram, that land named for King Hiram of Tyre, General Peleg Wadsworth, of Revolutionary fame, and grandfather of the sweet singer of Maine, the poet Longfellow, raised and husked one thousand bushels in a single year, and this was duplicated all over the Oxford Hillsides.

Other crops were planted and fruit trees as well. The Oxford Hills are too far north for many varieties of fruit to grow, but apples thrive. This fact became known early, and trees of this variety arrived with the first settlers. In early days, apples were apples and they were not named. Large or small, green or red, were all thrown into a bin together and labeled "naturals". The best were made into pies, but it was a pretty mean apple that could not be ground into cider, and a lot of them were ground. When sweet it was mulled beside the open fire and was a drink fit for the kings of the soil, or any kind of king, but when it grew older, the spirit of the worms that mingled with the apple juice made it grow "hard" and gave it a kick only fit for those considerably below the angles, or, maybe, Lucifer.

But as men became civilized they grew fussy; and there came a time when just apples did not satisfy the dwellers of the Oxford Hills. They themselves had been tried in hardships and force of colonization and become something finer in the crucible, so they did not believe in "naturals".

That which was natural should be amputated and that which was excellent be grafted in.

It was true that at times something almost devine crops out in an individual, be it man or plant, and something of that sort was found in a wild apple tree on the Massachusetts farm of Colonel Loamme Baldwin. So excellent was this fruit that slips were grafted into all the trees in that vicinity. Men were uneasy in those days. The forest stretching away to the north of them held many surprises and treasures and men started through them in search of adventure. Colonel Baldwin was a man of this kind, so he wandered to the Oxford Hills and became a proprietor of the towns known as Sumner and Hartford; and he carried there scions of that wonderful tree found growing on his old home farm; so that the Oxford Hills very early became producers of that large, deep red fruit, which mellowing in dark cellars became a delectable delicacy on a winter's evening, which the city dweller envies and craves, and even "Hands Across the Sea" reach out for, and in return shower the Oxford Hills with gold.

Yes, the Oxford Hills is the natural habitat of trees. When the red man climbed these hills their sides and domes were covered with them. Trees were sacred to the aborigines. They germinated, grew to maturity and old age—hundreds of years. When the white man came, he fell to his knees worshipping them, then got after the aborigines and the trees. The white man laughed as he fell them

and cleared fields. The day of the tree is past, he said, so he cleared farms—3165 of them. Then the tree rested, and resuscitated laughed, and leaping over the stone walls built to keep him out, crept over the fields and pastures until today the farms number only 1580, with 1585 dead ones. Sturdily the trees germinate and mature. Their buds burst in spring, color the landscape with vergency in summer, and with scarlet and gold in autumn, then fall to cover the works of man. To-day one can go through forests where once were fields. Can climb over stone walls where soon man will have to guess whether they were fences or lines of fortification; come to rock inclosed depressions once the temple of domestic lares and penetes, with, perhaps, a forest-smothered rose or lilac bush to remind one of the incense that once floated within it; or, an inclosure wherein sleep a dead generation. They would be a dead generation but for one thing. The Babylonians of old wrote their history on tablets of stone, or, what was the same thing, clay bricks fired. The soil covered monumental stones of these enclosures will be read with the same curiosity as those of old Mesopotamia, and will be the last glimpse of a people now rich and powerful, as the bricks of old Babylonian are today of a people long gone to their rest. These will be the days of the past.

In these days of the past, already mentioned, when glacial ice swept over hill and vale, forming inequalities behind which nestled water ponds and

around which wandered streams, was born in the Height of Land, on the northern boundary of the Oxford Hills, 2917 feet above the sleeping plain of the Atlantic Ocean, a mighty river, the Ameriscoggin, the red man called it, which is said to mean great fish place, but they made a mistake in the name. Great power place should be its name, for down, down it swept, ever down, leaping and roaring over rocks and ledges, and using its power to wear them down, down to oblivion like all things earthly, when its power is spent.

Men saw the power in that mighty stream. They measured it—85,200 horse power they said was hidden within its current. What a giant? they exclaimed. "If we could only enslave him and make him work for us! So they combined their strength and did enslave him. They cornered up his power in different places and dwelt about them, forgot their fields and built cities about them, and in them are the days of the future.

Past, present and future have and has these Oxford Hills, as does anything earthly, and as one reviews the first and dreams of the last, one is reminded what a little thing life is, whether it be pigmy or giant, and in both, it is made up of

"A little work, a little play
To keep going day by day;
A little fun to match our sorrow
And give zest to the coming morrow;
A little warmth and friendly light
To speed our going; and so good night."

Mansion and Man

A Picture

On a highway, up among the Oxford Hills, there's an old-fashioned mansion. It is not a lonesome mansion, for there are others along the road. Nearly a century and a half ago a group of young men came from old Andover in the Massachusetts Bay Colony and settled along this road—it was only a deer path then. It was a fashion at that time for the young men of Andover, when they forsook boyhood, to go out into the forest and there cut out a farm. They went mostly to Maine because that was the nearest forest not already preempted by New England materialists. These Andover young men were not entirely materialists—they were not old enough to be. They still had an eye for beauty, that was why they turned toward the Oxford Hills with glistening carbonaceous summits in the hot noon time to lure to wealth, but to the amethystine purple of the evening for remembrance of the greatest thing in the world back in the ancient town they came from. These young men built mansions, because that was the kind of house they had been born in, although the old people back in Andover did not like the value put into it. They said the young people began where the old people left off. The pioneers of old Andover, when they hacked a gash in the for-

est away back in 1633, built log cabins, and they thought it did not show proper respect to pioneers not to begin that way. But the mansion idea persisted.

The mansion indicated at the beginning of this writing was a replica of all the other mansions along the road—something that only could have been raised in the Georgian period—a large barn-like structure, with narrow windows containing small-sized panes of glass, two stories in height from the basement underpinning to the eaves on the sides, and four stories on the gable-ends from the apex of the long sloaping roof to the above written basement and underpinning, with two extra rows of windows, three in the first row and one in the last. The mansion was solid and plain in exterior, with unpainted weathering clapboards on the earlier ones, but with a coating of white lead on those of a later date. The only ornamentation attempted was about the grand entrance in the center of the side or gable-end. Hospitality is a primal virtue—all savage or pioneer people have it. It was a necessity as well as virtue, for inns have never been the first public institutions of any converted forest or prairie to the wants of civilization. So sentiment of welcome was allowed expression about the front door. Down the sides of the massive oaken portal, in the center of which was an imported brass or iron knocker, were rows of diagonally leaded glass, while above it was what was technically known as a fan—a window with

a straight base and rounded dome, maybe shrouded by a blind, the shielding slats starting from a solid half circle in the center of the base and extending in equal gradations to all parts of the dome. Above this, in many cases, was an ornamental pediment or canopy. Sometimes the canopy was in existence without the fan; but if a full social insignia was desired, both were wanted. Such the exterior of the habitation, from which the public was to gauge the importance of the owner, as at a later date it scanned the raiment of an individual for the same reason. Such is a summing up of the exterior of the mansion, unless a word or two be added concerning the chimney, rising from the center of the ridgepole—a large, square cubical of red brick. It took a whole kiln of these pieces of burned clay to build this part of the structure. These chimneys generally contained four separate flues within it, and in each abutting room on either of the stories were fireplaces. The ones on the second floor were small, while those on the first were large ones into which could be dumped whole oxloads of wood.

The outside of the mansion was for advertising purposes—the set, dignified, unhuman exterior one would expose for neighbors and travellers to judge by; but the interior, by whose big fireplaces, was exposed himself, or, maybe, the woman. In the old days, man was king, both by law and sentiment; sometimes the woman was queen both by sentiment and might; but the fact was reserved

for whispered assides in all spoken dramas of the times, so it was the man who always stood forth for inspection, even if the woman incidentally "wore the britches."

Of course there was individuality to be observed, but environment cast them all in the same outward mould. All their life was given over to the land—born of it, brought up on it, and buried in it. They worshiped it. It was the only god they knew. All their backs were bent permanently in heart worship, whatever the tongue indicated, in devotion to and in direction of the soil. And their eyes in a face brown as snuff and wrinkled as morocco leather—the peculiar, narrow, grooved foxy slant of them was gained in incessantly following the furrow. When they glanced toward the skies, they were simply looking for rain, and if they looked a second time it was to see if the rain was passing. Their passions were elemental and of the earth earthly, and yet, strange as it may seem, they neglected the known body for the unseen soul, and for that reason perhaps, beat modern men in the race for heaven by twenty years or so as disclosed by gravestones.

This picture was disclosed by the big household fires, a luxury not indicated by the severe exterior, and the only one about the place. Perhaps this would not have been here except for the proximity of the forest, and the desire for its annihilation, but it took brawn to convert the forest into fire wood, and the pioneer was not inclined to waste

brawn on immaterial things; so the prodigal waste of it must have been luxury. Perhaps the white-haired, knotty knuckled, crooked backed, materially minded old man dozing in its warmth may have been lulled to dreams, and in them beheld again in the amethystine purple of the evening sky, a promise of tomorrow's delight, as sure as any remembrance—in second youth.

The man had entered the wilderness to make a beginning in civilization, and the mansion with the cleared acres around it, was the beginning. All the other men in the near-by square miles had entered the wilderness for the same purpose, and the other mansions and cleared fields from the forest attested that they all had made the beginning that had been contemplated. They were singularly alike in personal appearance and the working of their minds, mere cyphers to augment a sum total; but the initial figure was different, is always different. It signified the beginning in all assemblies of figures and the things they numbered. Whoever begins a thing is set apart as signifying more those of the same caliber who simply fill up a record of accomplished things. Because of this, the first pioneer and the first inhabitant are set apart, even if inferior in quality to the others. He had to invade the forest to found a settlement, and he had to die to found a graveyard; and the making of each habitation was something from which to yield a record. Those who followed him were simply the cyphers to fill out the initial numeral.

Androscoggin Valley Paper-Makers

A Lecture

It is considered a great advantage to adjacent nations if there is some natural barrier between them. It is true that an invisible line can be traced, marked and maintained, but a river or mountain range adds security, for, harking back to our uncivilized ancestors the thought of war in the past has ever hovered in the dim recesses of our brains, and that calls for bulwarks. In that portion of the state of Maine where the territory of Oxford County butts against the countries of Compton and Beauce in the Province of Quebec, is a mountain range known as the Height of Land that serves as a natural demarkation between these sections of the two countries, but so far it has been an unused bulwark, and it is hoped ever will be. It has its uses in peace, however, ever has had and probably ever will have uses that transcend anything that war could bring.

Up there, 2917 feet above the level of the sea, are springs of pure water, clearer and sweeter than anything Ponce DeLeon could hope to discover in the Everglades of Florida—springs more conducive to everlasting youth or the rejuvenation of senility. Mountains rising from level lands can be compared to faces rising from human shoulders. One can tell something about a man by his shoulders, but for

a final analysis one looks at the face, smooth, if life has been serene and calm; stern, if life has been the reverse. From the face the eyes look forth smiling and bright in youth and expectancy, but dull in age and disillusionment. Tears run from them in youth just from exuberance of joy; and in old age just from the remembrance of that joy. So these springs sparkle forth in the Height of Land as of a youth, for they are still young although thousands of years have passed since they first came from the bowels of Mother Earth, and in their joy they overflow and twinkle and crinkle and circle and jump down the rock strewn sides of the Height of Land—down, down to the sea—the Atlantic Ocean—one hundred and ten miles southward in a straight course and one hundred and sixty counting in the windings. This valley tear-rill the Indians called the Ameriscoggin, Anglicised into Androscoggin and translated to mean “great fish stream.” Yankees are accused of being materialists, but the name would indicate they had nothing on the Indian. The beauty which appealed to the eye was lost in the cravings of the stomach. The Androscoggin was not the overflow of a single joyful teardrop. On the hill-sides on either side of the valley through which it flowed were other teardrops, other springs, and their overflow trickled down the hillside seams to the parent stream, ever augmenting its size until its flow developed 130,000,000,000 cubic feet at its entrance into the Kennebec. Some eighty-three

lakes with a surface of two-hundred and thirteen square miles contribute to swell the Androscoggin to its immense volume at its mouth already mentioned, and the valley watershed contributing to this size covers 2750 square miles in Maine to say nothing of 850 square miles in New Hampshire. It is a turbulent river, making an average drop of 8.35 feet to the mile, although there are miles where the waters roll smoothly and calmly at almost a level, there are others where it dashes a hundred feet over precipices.

This mighty river may have been and probably was first seen by Captain Thomas Hanson, whom the North and South Virginian Company of England sent to the Sagadahoc in 1606, or if not, certainly by Captain George Popham, Captain Raleigh Gilbert who made a settlement at the mouth of the Kennebec River in 1607 and explored the interior along that and contributory rivers during that year. This exploration was only on the lower reaches of the rivers and few records have been left concerning it.

Just how early the upper part of the Androscoggin River was explored and how much of it is unknown; but French explorers, priests and **cour-
eurs de bois** marched over the Height of Land and down the valley during the years of seventeenth century, and have continued to come ever since that day until the towns in this valley resound with the soft linguals of that race in contri-distinction to the harsher Anglo Saxon of their

neighbors. It is from this source that we are indebted for our first description of the river from the pen of the French historian Charlevoix in 1744. There is a map in this volume of the Androscoggin, a wavering, wandering black line, which rises in an unnamed lake lying in a white field, marked unexplored.

Of this description little of importance was handed down. The red inhabitation, with their habits were mentioned, of which not the least were their aquatic wanderings, for the river was a pathway to them. These wanderings were made in small, light boats—canoes—built of the white outside fiber of birch trees growing on the banks of the river, thin and light as paper. In fact these trees have been called paper trees by some of the older explorers, and even yet are sometimes spoken of as such, although the Indians called them, on account of their beauty and utility, “bride of the forest”. These trees were numerous. Their white trunks, peering through the green leaves of their own and other trees, could be seen on the sides of the hills and mountains rising from the river valley, and destined at the proper time to make millions of bobbins to catch the spiral cords twisted by the spinning jenny, and billions of spools upon which to wind the finished threads in the mills of America and England; also thousands of clothes pins with which to hang the woven fabric of the threads as they came from the washers of laundry maids. These are but few of the uses of this

close-grained wood indigenous to the Androscoggin Hills—a use red and white men of the seventeenth and eighteenth centuries could not see; but the bark in those days made the canoe to float in, and the wigwam to live in, a coffin for their last sleep, in all that part of the world; and last, but by no means least, the bark made a parchment upon which has been spread the records of that day and the sermons preached to the people. It is not too much to claim that the creating power of these hills was the first paper-maker herein.

The white birch herewith mentioned is of the *Betula* family, its scientific name, *Betula papyrifera*, perpetuating its appearance and use—paper tree. But it is not the only member of the family thriving on the bottom lands and in the hills of the Androscoggin, and each is valuable to the Section. There is the yellow birch (*Betula lutea*), a larger tree, possessing many of the characteristics of its white cousin, but its bark cannot be peeled off in such perfect strips as the white bark, and its use, therefore, is to make a roaring fire in some ancient fireplace; or its beautiful spiraling grain can be sawed, shaped and polished into furniture, of which, to use a slang phrase, “mahogany has little on it”. A close relative of this yellow-barked tree is the black birch, or cherry birch (*Betula lenta*). The bark of this tree is of a yellowish shade, almost black, and its wood, hard, heavy and strong, can also be highly polished when used for wainscotting, floors or furniture.

The oil obtained from the wood by distillation has a medicinal value and is sold under the name of wintergreen.

All families have their poor relations and the birch or *Betula* family has theirs, the gray or poverty birch. It is a small tree attaining a height of twenty feet, or in favorable locations, perhaps thirty feet, and a diameter of about four inches, with an occasional diameter of eight inches. Its dark glossy leaves flutter in the slightest breeze, like those of the poplar, and its scientific name (*Betula populifolia*), means birch the poplar leaves. This perpetual motion may recall the superstitious legend that the leaves of the poplar always waves because the cross upon which Christ was hung was made of poplar wood. Gray birch bark is close and firm and does not separate into sheets readily, like its cousin the white birch, or even in reality as readily as the yellow birch. Its life is short, like humans of the slums. It could not be otherwise, growing as it does on sandy soil. Yet it has its place in the economy of the universe, for its falling foliage prepares the soil for better growths. White pines, the monarch of the Maine hills, often follow the fertilization of the soil by gray birch. Perhaps this may be considered a digression from a discourse on paper or pulp makers, but as an excuse it can be said that gray birches have been ground into pulp right here in Oxford County.

The French *voyageurs* of this stream in their

brief notes about the red inhabitants living on its banks have indicated something about their food and the manner of obtaining it. Of course the more solid portions were furnished by the animals of the region or the fish swimming within the river, with a salad effect from vegetables, a dessert from fruit, or an added taste from the sugar maple. The dispoulation of a bumble bees nest added a taste of sweetness to the dessert.

Hunting honey, strange as it may seem, has a connection with the pulp industry of the Andros-coggin valley. Bumble bees are not the only communal insects which live therein, from which to draw lessons of creative design or form a philosophy of life. Perhaps the Abnaki warriors living therein may have taken models therefrom in their tribal life, with communal wifehood and common ownership of children, and the unwritten law of loyalty, chivalry and humanity.

Hunting for the spoonful of honey hidden in cavities near the surface by the bumble bees brought them in contact many times with their fiery cousins of these insects also living in cavities just beneath the surface. Yellow jackets have all the fierce love of home and family possessed by the Abnakis and may have been adopted by them. Wasps are not honey collectors, but subsist and rear their offsprings by warfare on other insects. They are and always have been, cruelly progressive in their warfare. Humans pat themselves on the shoulders and thought they had

reached the highest elevation of human cruelty when they employed poison gas in warfare during the World War; but wasps used it millions of years before humans thought of it. Moreover they have attained a nicety in this art not yet imitated by so called civilized humans. In securing food for their laval offsprings, they paralyze the insects caught by a scientifically delivered blow on the thorax, so that the victim lives but has not power of action, or probably the power of sense. This prevents putrification and preserves and conserves the food supply. Their neighbors, red human students adopted and readjusted this method of slaughter by poisoned arrows, but never arrived at their method of food preservation. Another thing these red aborigines never could understand or imitate, and that was their cell texture—horizontal rows of hexagonal chambers for their larvae, built of wood fiber mixed with saliva—in a word wood pulp. This was a dream and a consummation for another race of humans—an evolution in the life and use of the Androscoggin valley.

Indians copied so far as they could comprehend the insect examples set before them, but pulp making was above them. There are carpenter wasps and mason wasps living in the valley, the work of which they could copy, especially the latter. Some of their stucco mud homes, yet to be seen under the eaves of buildings, displayed artistic thought as well as utility in design, and these

ideas were transferred, apparently, to Indian pottery.

Yellow jackets, however, were not the only kind of wasps living in the Androscoggin valley, nor their homes the more noted examples of pulp industry. Their cousins, the hornets, they encased their series of several horizontal birth cells in a pulp globe, more or less oblong, with a pointed apex, hanging from trees. Such a home, from itself, could not fail to attract attention, and if it escaped otherwise, proximity was often signaled by skirmishing parties of winged police, the members black as pirates and fierce as Eastern eunuchs in defense of national communities. Modern society has created, or rather evolutionized trade unionism, but the first paper union of the Androscoggin valley was formed by wasps—the first papermakers of that depression.

Wasps, the genius, are a world-wide genera of insects, and as such may have served humanity as an example of paper-making even as far back as paper-making in old Egypt. Incidentally, it may be said, that the human papermakers of the Androscoggin Valley did not go to the hornet and be wise. That had been done by their ancestors in old England, but the example had been in the valley just the same whether they had need to take advantage of it or not; and it is still there for observation and consideration, not only in the matter of paper-making, but in that of communal life.

In early human paper-making, the fibers most

commonly used were cotton flax and kindred plants; and generally they were used second hand in that industry. These fibers were generally used first in the manufacture of cloths; and this material, after it had served the purpose of clothing and kindred other things, was beaten into pulp. Even the cerements of Egyptian mummies have been used that way. It is only in the last three-quarters of a century that trees have been used for this purpose, and since that time whole forests have been denuded that the world might have reading matter and that in abundance.

There is, and always has been, an abundance of paper material in the Androscoggin Valley besides paper trees and wasps' nests—whole forests of it.

In the earliest days forests were used exclusively for fuel and building lumber. When material was so abundant as in the Androscoggin Valley choice could and was made. Most of the building material, and all of the better parts were of white pine (*Pinus strobus*). Its softness made it easy to use and its beautiful grain finished into all kinds of paneling and moulding. When first put in it lacked the beautiful natural finish of the birch, but given time it weathered into a beautiful brown, now seen in some of the old colonial mansions, where the paneling remained unpainted. There was a demand for this material, even in early times, and it was cut and floated down the river, guided and urged by picturesque woodsmen in flannel shirts, sleeves rolled up and collars turned down

to expose plenty of brawn and brown naked skin. Behind came bateau and "wagin" boats with supplies, and when the campfires were lighted on the shore at nightfall, and the river men gathered round for sup and song, it presented a tableau unsurpassed for primitive human strength and soft wood shadows.

There is the economic rule of demand and supply—hard and unyielding as all economic rules are, and if the demand exceeds the supply then the latter diminishes to the vanishing point and that particular industry dies.

While the white pine lumber trade flourished other kinds of wood were allowed to grow undisturbed; but when it diminished the virtues of the other kinds were tried and they replaced, to a certain extent, the first chosen material. During this age rag stock had proved sufficient to provide paper upon which to print the almanacs and bibles, almost the sole library of a people not yet cultured in literary, but when the next generation began to demand that the news of the preceding day be spread upon the breakfast table along with cereals and other foods; also books to be read by the evening fires, the paper-makers began to demand other and more ample stock. They went to the wasp and grew wise—grind up logs or unwrap their fiber for use in this purpose.

On the hillsides on either side of the valley grew a large number of trees suitable for these purposes. There is the poplar family—two members (**Popu-**

lus tremuloides) and (*Populus grandidentata*) to say nothing of the balsamic variety (*Populus balsamifera*) known as Balm of Gilead. Hemlock (*Tsuga canadensis*), fir (*Abies balsamea*) and three varieties of spruce—black, red and white, (*Picea mariana*), (*Picea rubra*) and (*Picea canadensis*).

The use of wood pulp in the Androscoggin Valley began in the seventies of the last century, although paper-making began twenty years earlier. The first paper mill in the Androscoggin Valley was installed at Norway on a water power situated in the village of Norway on the outlet of Lake Pennesseewassee, the water of which moves on to swell the Androscoggin, by Messrs. Adna C. Denison and E. W. Filer. These men soon moved their plant to a larger water power in the Little Androscoggin in the village of Mechanic Falls, where it yet remains, although Mr. Filer soon retired to give place to Mr. Denison's son, Adna T. Denison, and his son-in-law, Calvin Cram. These men experimented with various materials, including oat and rye straw for use in wrapping paper. Their output was mostly newsprint and book stock, although they made a venture during the days of such things in paper collars and cuffs for men and pantellets for women. These men built, opened and operated the first mill for grinding wood pulp for paper in the Androscoggin Valley at Canton, or rather the little annex north of it at Gilbertville. They used the refuse of the lumber mills, situated at the same point, operated by the Gilbert

Brothers. This firm was also responsible for the second venture in paper-making in the Androscoggin Valley at Topsham.

The ventures of the Denisons in paper-making were not to exploit the natural pulp material of the valley. They picked up their stock wherever they could find it, and their mills might have been situated anywhere else so far as economic advantage was concerned.

The first grand endeavor to utilize the natural paper stock of the Androscoggin Valley was begun in 1892, on the completion of the Portland & Rumford Falls Railroad to Rumford Falls and the occupation of that power by the Oxford Paper Company and the International Paper Company, enlarging the little hamlet clustered about the falls in that day to the bustling city that has now taken its place, with the enlarged activities of the latter company at Chisholm and Livermore Falls.

The paper industry of the Androscoggin Valley is an interesting lesson in evolution, and this lecture is chapter one in its history. No one could have prophesied later developments in the days of Charlevoux and no one today can forecast what another century will bring forth in this industry, but the next chapter cannot fail to be interesting.

Gem Stones of the White Mountain Foot Hills

An ideal landscape needs some central point of attraction. Northern New England has such in the White Mountains—the fag end of the Appalachian System, rising from the earth like the final vertebra of some gigantic mastodon. The glistening summits can be seen over miles of billowy field and forest. More than three hundred years ago they were seen by Captain George Weymouth as he sailed along the coast that now fringes the State of Maine, at least readers have generally thought these were what he designated as the “Crystal Hills,” although in late years some critics have thought he must have meant some other and nearer hills by the easterly position of his ship on the coast. Nevertheless, the snow-white summits of the White Mountains can be seen from the sea-coast of western Maine on clear days.

These mountains have continued to be a point of attraction in the New England landscape from the days of Weymouth to the present time. Just as soon as the logging trails had been widened, bridged and turnpiked, stage coaches brought curious mountain climbers to these eminences in endeavors to rise in the world. They climbed above the clouds. They examined seismic breaks in these vast upheavals. Tragedies occurred on their rocky sides and in the canyon-like valleys between

them to continue interest. Tourists rambling about the first were caught and lost in enveloping clouds, and the place where their bleaching bones were found marked by monument or cenotaph, whereby they have shared the glory of other notables in high walks of life. Landslides into the second, leaving vast scars in the mountainside, overwhelmed humble residents in humble cabins and sent ringing down the corridors of time names that otherwise might have been forgotten.

From the central group of summits, just over the New Hampshire line, sitting like a great gray spider, radiate long ranges of foothills into the surrounding country, like the lineal threads of a web belonging to the great gray spider above. To the mere beholder, the web is a thing of beauty. In the morning sun, the quartz hilltops glisten like diamonds—or as a veritable spider's-web decorated with dewdrops; and in the evening, the grass-covered vales between are turned to emeralds in the rays of that descending orb.

Such a precious array set in the New England map is enough to entangle some poor human fly in the web and that is exactly what happened.

Away back in the autumn of 1820, two school boys broke into a thread of this web running through the town of Paris in search of the treasures the sun disclosed and found them.

The Puritan settlers of Hebron, a neighboring town, early conceived an idea that the Christian church needed more trained workers, and that a

little education might not prove a dangerous thing to those who chose to remain outside the clerical profession; so they founded an academy in 1805 for the purposes narrated and as the following paragraph from its charter will disclose:

"That there be established in the town of Hebron in the county of Cumberland an academy, for the purpose of promoting piety and virtue, and for the education of youth in such languages, and such of the liberal arts and sciences as the trustees shall order and direct."

Two boys, it was, from this institution, who broke into the spider's-web in the autumn of 1820. Their names, Elijah Hamlin and Ezekiel Holmes, are not unknown in Maine annals. Among the studies encouraged at Hebron Academy were geology and mineralogy. There was no reason why they should not have been encouraged and many reasons why they should, for Hebron itself sits upon the summit of one of these foothills, and all around are the granite ledges of which it is composed. Hunters returning from the chase in nearby forests sometimes brought crystals in their pockets which they had picked up in their tramping, and thereby excited curiosity and desire of possession among youthful students.

Most of the ledges cropping out on the sides or capping the summits were of evenly mixed granite, but here and there on their surface were pegmatitic patches, where it seemed the concrete mixing machine of the builder of these hills had gone on

a strike and dumped the component substances—quartz, feldspar, mica, and other things—in unmixed puddles to cool. Even in that early day it was known that unusual mineralogical specimens were to be found in these patches.

It was one of these patches that attracted the boys, for it was not an unknown spot. They lived in Paris and walked over the hills to the academy in Hebron, and with the curiosity of boyhood knew all the mysteries of the landscape between the towns. It was late in autumn—November. They had spent an hour or two about the ledge with hammers, but had obtained no important specimens. They paused a moment on the top of the ledge, looking toward their home and the sunset. A relative, Dr. Augustus C. Hamlin, has since related what they saw:

“It was on the last day of autumn; and the glimmering rays of the setting sun were gilding with renewed splendor the faded colors of the landscape as the students were passing over the top of one of the lowest knolls. The view of the distant mountains (which are the loftiest in New England), the intervening valleys softened with purple shadows, the patches of green grass in the meadows untouched by early frost, the variegated hues of the forest leaves left by the autumnal winds, the broad extents of russet brown of stubble-fields, contrasting vividly with the glorious hues of the sunset sky, composed a scene of exquisite loveliness. The youths, spell-bound by the entrancing

beauty of the landscape, lingered upon the hilltop until the valleys were shrouded with the shadows of commencing twilight."

After drinking in the beauties of this autumn picture, the boys started for home, running down the steep side of the ledge. In so doing, one of them caught hold of a stunted spruce growing in the scanty soil of the steep incline and uprooted it, bringing up the earth in which it grew with it. In this earth and disintegrated rock exposed by this violence were crystals, many colored, ranging in shade from white to black, but mostly green.

The boys were astonished and bewildered at their find. When they had recovered from their amazement, they hastily gathered the crystals exposed and started for home, a mile or more distant, to astonish relatives and friends with their find.

That night the ground was covered with snow in an old-fashioned New England snowstorm—a blizzard, as we later borrowed the term from our western neighbors. The wind tossed the snow in fantastic piles over the hilltop, converting projecting rock and stunted tree into marble-like monuments, and under this covering the ledge lay until the following spring.

During the winter the crystals were examined over and over again. Among them were the emerald green, ruby red and diamond white, with the varying shades between. Were they emeralds, rubies and diamonds, or something else? Were

they valuable? These were the questions asked many times.

Paris Hill was the home of educated people—the home of judges, governors, congressmen and senators—yes, and later it furnished a vice-president of the United States. These men looked at the stones and admitted they could not classify them.

It is a long distance from Paris, Maine, to Washington, D. C., and in 1820 the way was longer than it is now, at least in time if not in miles. Congressmen traveling between the two points zig-zagged here and there, by boat, coach, or on horseback, for some six weeks on the way. Enoch Lincoln, of Paris, was congressman at the time, and he promised to take some of the stones as far as New Haven and submit them to a Yale College professor for identification. This he did but lost them on the way. Some others were sent by mail, but the postal service in those days was far from swift and it was many days before the boys heard from their specimens.

Word returned from the professors was that the stones were tourmalines, semi-precious and valuable.

The word tourmaline conveyed little meaning to the boys, but the letter of intelligence was quickly followed by the professor who identified the stones. He wished to see the spot where the crystals had been found. He engaged some men, brought some blasting powder, and soon exposed several pockets

filled with crystals, and the fame of Mount Mica as a deposit began.

The mine, as it began to be called, has remained largely in the possession of the Hamlin family to the present day, and one of the owners, Dr. Augustus Hamlin, has written a treatise on the tourmaline from which this physical description of the gem-stone is taken:

"Tourmalines * * * often occur in beautifully-crystallized three-sided prisms, terminated by three principal planes, which sometimes are set on one extremity of one of the sides of the prism, and sometimes on the other. Its primitive form of crystallization is the obtuse rhomboid, having the axis parallel to the axis of the prism. The edges of these prisms are often truncated; and then the crystals from prisms of nine or twelve sides. However, it sometimes occurs massive and compact, or in parallel, divergent, radiating, and detached crystals. Its fracture is decidedly conchoidal, exhibiting internally a vitreous lustre. Its specific gravity ranges from 3 to 3.3; its refractive power is 1.66, being superior to the topaz in brilliancy. Its hardness is 7.5 and quite equal to that of the emerald."

The creation of tourmalines had been going on in God's laboratory for innumerable ages but the stones had been known only since the opening years of the eighteenth century. In early days stones were classed largely by color rather than chemical composition, so transparent white stones

were largely known as diamonds, red as rubies, blue as sapphires and green as emeralds.

The Dutch were the foremost lapidaries of that date as well as the present, and their ships brought home a miscellaneous cargo of stones from their East Indian colonies to be cut into gems and sold to the nobility of Europe. Ceylon is the mother of gems of many varieties and most of them came to Holland to be cut. Among them were tourmalines.

In cutting stones, as in other things, there is waste material. There are portions of the crystals which may be clouded and more or less opaque. Other parts may be fractured and so be impossible for gems. These useless portions were thrown away; and many of them, because of their brightness, were picked up by children, and so out of the mouths of babes and sucklings came their classification as separate stones. Playing in the hot sunshine with these bits of colored stone, they found some of them would attract straws, feathers or flakes of ash, so they became known to the children and adults as well, as *aschentreckers*, or ash-drawers. This property created interest in the stones and inquiries about them in the land of their habitat. Hence the name *tourmaline* from the Cigalese word *turmali*.

This property may have caused the Abbe Fonvielle to exclaim:

"These jewels which have the privilege of attracting our gaze, and of fixing our eyes upon

them by an unaccountable species of magnetism, appear also to incite the secret affinities of lightning."

As to the chemical composition of the tourmaline, perhaps one had better quote from Ruskin in his *Ethics of the Dust*. There it is told not in dry scientific terms but in Ruskinesque:

"A little bit of everything; there's always flint and clay and magnesia in it; and the black is iron according to its fancy; and there is boracic acid, if you know what that is, and if you don't, I cannot tell you today, and it doesn't signify; and there is potash and soda; and on the whole, the chemistry of it is more like a medieval doctor's prescription than the making of a respectable mineral."

Another property of the tourmaline is its power to polarize rays of light. Maine tourmalines do not possess this power to the same extent as stones obtained from other countries, especially those from Brazil or the Tyrols. A polariscope made from slides of dark green stone from the first country and brown from the latter makes one of the best instruments. By the aid of the polariscope, which is often called "tourmaline tongs," experts are able to detect the character of stones without recourse to ascertaining their specific gravity, or electrical properties. In this manner, rubies can be instantly told from spinel, or zircon from garnet.

In passing, it may be interesting to note that many tourmalines crystals are of different colors along their length. That is, one end may be green

and the other red, both colors gradually melting into each other; or there may be a band of white in the crystal. These colors may run longitudinally, that is, the center may be white overlaid by layers of pink, red or green. These, of course, are interesting largely as specimens.

The various colored crystals of tourmalines have names of their own. The red variety is known as rubellite, siberite, or daourite; the blue as indicolite; the white as achroite; and the black as aphrizite or schorl; yet they are all grouped under the name tourmaline.

The crystals vary in size from needlelike proportions to large size. The largest one yet found at Mount Mica was fifteen inches high, with a maximum width of seven inches, and weighed thirty-one and one-half pounds. The largest flawless gem cut from a Mount Mica tourmaline weighed $69\frac{1}{2}$ carats; and the largest piece of flawless transparent tourmaline (owned by Loren B. Merrill, for many years operator of the mine) weighed 411 carats uncut. It formed the top of a crystal eight inches long by one in diameter.

Tourmalines are found in pockets, varying in size from a quart basin to caverns large enough for a man to stand upright in. Up to the present time some more than four hundred have been opened at Mount Mica. Many of the pockets contained no crystals of value. The description of the pockets made by Dr. A. C. Hamlin is generally correct, although all of the pockets do not con-

form to his description in every particular:

"The cavity generally is roofed with albite, whilst the sides are composed of limped or smoky quartz mixed with lepidolite, crystals of tin (cassiterite), spodumene, amblygonite, and other rare materials."

Mount Mica is a wonderful mineral deposit outside of tourmalines. Nearly thirty varieties have been found there. Among them are amblygonite, apatite, cassiterite, columbite, arsenopyrite, triphylite, zircon, kaolin, autunite, brookite, childrenite, damourite, halloysite, lollingite, petalite, pyrite, sphalerite, yttrocerite and cookite.

Most of these occur only in small quantities, amblygonite being the only mineral found in abundance.

Spodumene occurs in flat crystals, usually associated with lepidolite. This is a gem mineral of several colors—pink, green and yellow, but these colors are rare as is suggested by the name from the Greek *spodios*, meaning ash-colored. A white spodumene crystal was mined at Mount Mica seven inches long and four thick.

Apatite occurs in irregular green masses, some of which will weigh several pounds.

Since the Hamlin boys discovered this deposit it has been worked at periods by several parties, among them Prof. Webster, of Yale College; Prof. Shepherd, of Amherst College; Samuel R. Carter, of Paris; Dr. A. C. Hamlin, of Bangor; Loren B. Merrill and Kimball C. Stone, of Paris.

North of Mount Mica, on what is known as

Crocker Hill, is a mine that has been worked for graphite and molybdenite, that wonderful mineral for hardening steel. Garnets have been found here quite abundantly. Molybdenite is also found at Catherine Hill in Hancock County.

Mount Mica, however, is not a solitary place in the universe or the State of Maine where these stones can be found. Rev. Luther Hill, an itinerant lecturer, who was not only interested in phrenological bumps on the human head but on the humps of Mother Earth, lectured on Paris Hill. He had heard of Mount Mica and visited the place. He observed the rocks more closely, perhaps, than any man who had preceded him, so as he walked over the hills toward Hebron, he eyed stone by the roadside. By and by he observed junks of violet lepidolite, weathered to a dusky brown, which some farmer, with more industry than observation or imagination had piled into a stone wall to inclose unruly bovines. This variety of stone Hill had observed around Mount Mica, and, putting two and two together, as the saying is, came to the conclusion that this was a likely place to hunt for tourmalines. Hill was a wanderer. Time appeared to have little value to him. Like Walt Whitman,—

“Afoot and light-hearted I take to the open road,
Healthy, free, the world before me,
The long brown path before me, leading wherever
I choose,

Henceforth I ask not good-fortune—I am good-fortune;

Henceforth I whimper no more, postpone no more,
need nothing,

Strong and content, I travel the open road.”

So he climbed the stone wall and examined the hillside. As he had concluded, lepidolite was an associate mineral with the tourmaline, and as a result of his search, broke into a pocket of ruby red and rose pink crystals, discovering a deposit not yet exhausted, and known as Mount Rubellite, because of the red crystals.

Mount Rubellite is about two miles northeast of Hebron village. It has been worked by Dr. A. C. Hamlin, of Bangor, and Loren B. Merrill, of Paris, for minerals. The gems obtained are similar to those found at Mount Mica. Other minerals obtained here are amblygonite, apatite, arsenopyrite, beryl, clevelandite, childrenite, cookite, damourite, halloysite, herderite, pollucite, and vesuvianite. Several other deposits have been found and opened in the near vicinity.

Continuing his leisurely way from schoolhouse to schoolhouse to astonish a populace too much interested in the necessity of taming the wilderness and wringing a living therefrom to think much about such a seemingly useless thing as their own heads, he reached a little hamlet known, after the manner of the people of Maine a century ago, as Minot Corner. In this place, on the mantel in

the home of the family with whom he tarried a few hours, lay a piece of transparent green stone. Hill picked it up and examined it. It was a tourmaline. He inquired where it came from and was informed a child in the family had found it on a neighboring eminence. Again the leisure born of wanderlust tempted Hill to stop and examine the hilltop from whence the crystal had come. The result of his examination was the discovery of another deposit known to the present generation as Mount Apatite because of numerous specimens of that mineral found there. Thus in a few days, Rev. Mr. Hill, a lover of Nature, who cared little for wealth, and who, with these discoveries, disappears, at least from the story of the tourmaline, discovered two noted laboratories of God within this strand of the spider's-web. This was in 1862.

This deposit is situated on a low eminence about six miles west of Auburn, just off a main traveled road to Mechanic Falls. After its discovery by Rev. Mr. Hill, it remained unworked for a number of years. In 1883, N. H. Perry, of South Paris, worked the mine and found some 1500 tourmalines. Thomas F. Lamb, of Portland, and Loren B. Merrill, of Paris, also worked it. They found quite a number of tourmalines and quite a quantity of smoky quartz.

Of late years the deposit has been worked by the Maine Feldspar Company for feldspar.

The pegmatitic patches crop out all about the low hills in the near vicinity, which has led to the

opening of several quarries close by for feldspar and, incidentally, gems. John S. Towne, of Brunswick, and President DeWitt Hyde, of Bowdoin College, opened a mine nearby for gems, for which they were well rewarded; also P. P. Pulsifer and Professor W. R. Wade opened the ledge near the Towne mine. In addition to the tourmalines and associated minerals found in the other mines there were found in Mr. Pulsifer's pit a number of beautiful crystals of purple apatite. The mineral appears in other colors—light blue, yellow, rose and green. The crystals are nearly always in the shape of an hexagonal prism, and resemble the tourmaline to the extent of being mistaken for it at times. Its composition is phosphate of lime, with a small percentage of fluorine or chlorine. Its specific gravity is 3.17 to 3.23. It is used to a limited extent for gems but will not endure much wear because of the softness of the stone, which is only four in the scale of hardness.

Deep red garnets, mostly opaque, are found in the Mount Apatite mines; also in the mines around Topsham. Not many of them are fit for cutting. It is a common mistake to think of garnets as red, for there are other colors. Black is common in Maine, also brown, rose and green. The chemical composition of the garnet is silicon, and to this may be added calcium magnesium. Garnets crystallize in several forms, mostly twelve-sided known as dodecahedrons, or twenty-four sided (trapezohedrons), or even thirty-six sided. A garnet may

inclose other minerals. Some from East Waterford have an interior of calcite. Perhaps because they may form around other substances gives them their names from the Latin granatus, which means like a grain.

Mount Apatite lies on the eastern bank of the Little Androscoggin River, and just across that stream on the Poland side crops out a pegmatitic knoll which has been worked by its late owner, Augustus R. Berry, for feldspar and tourmalines. In the summer of 1910 is recorded the largest find of tourmalines yet made in Maine, amounting to 13,000 carats. This find was made by Frank L. Harvey, who had leased the Berry mine.

The discoveries of the Hamlin boys in Paris stirred professional mineralogists. Professor Parker Cleveland, of Bowdoin College, thought he would examine the foothills near Brunswick. This examination resulted in the excavation of some remarkable beryls, some of a golden yellow, others emerald green.

So remarkable did he consider the latter find, that he heralded them as equal to the Peruvian emeralds of old, or those of oriental origin. This assertion rests on tradition only, for not one of these stones is known to exist today.

The beryl is a companion stone to the tourmaline throughout western Maine, and in many respects is as wonderful, and perhaps better known; at any rate it is known farther back in

history. There is the notable mention in the Song of Solomon,—

“O daughters of Jerusalem,
This is my beloved and this is my friend,
His hands are as gold rings set with beryl.”

The emerald green variety, known, prized and mentioned by Hebrews, Egyptians, Romans, Incas and Aztecs, is the true emerald. The latter used emeralds profusely as adornment for votive offerings, and it was the fame of these gems, with their artistic lapidary work, that largely inflamed the passions of Cortez and Pizarro to invade and subdue these Indian kingdoms. After these invasions huge chests of gems, mostly emeralds, were sent to Spain, some of them cut in the form of fishes, bells and roses. These wonderful cuttings have brought doubt in the minds of modern mineralogists, of the stones being true emeralds, because they are generally too brittle to cut in these forms.

It might be mentioned here that the name Emerald Isle, as applied to Ireland, is generally supposed to be derived from the green appearance of its shores; but there is a tradition which asserts that it was named from a ring which was set with a large emerald (*optimo smaragdo*), which Pope Adrian sent to King Henry II, as the instrument of his investiture with the dominion of Ireland.

The name beryl is derived from the Persian *belur*, which the Romans changed to *beryllus*.

Beryl of the emerald hue is yet to be found in

the Maine mineral belt, unless Professor Cleveland was as fortunate as tradition paints him, and excepting one small crystal found in the town of Newry and too badly fractured to be of value, but their six-sided prisms, with flat plane terminations are common enough, and in some places are of great size. One was found in what was once the town of Grafton, now a part of the great unincorporated forest of northern Maine, that weighed two and one-half tons. Another from the same locality was four feet and three inches long and weighed two thousand nine hundred pounds.

They are a silicate of aluminum, the percentage of a normal beryl being 67 per cent. silica, 19 per cent. alumina and 14 per cent. glucina.

The specific gravity of the beryl is from 2.63 to 2.80.

If the emerald is not represented in Maine other varieties are found quite frequently. The aquamarine (light blue, sky-blue or light green) is found in Stoneham, Lovell, Bethel, Greenwood, Albany, Newry, Paris and Buckfield. Beautiful transparent golden yellow beryls have been found in Stoneham, Albany and Peru; also the colorless, bluish-white, pinkish-white variety, known as Caesium beryl because it contains a small percentage of oxide of caesium, has been found in Hebron, Paris, Buckfield and Poland. When cut it shows great brilliancy, and as a night stone has been considered by some to surpass the diamond.

In passing it might be well to say the two finest

aquamarines from Maine were found near Sugar Hill in the western part of Stoneham. They are described by George F. Kunz in his *Gems and Precious Stones*:—

“These were found in 1881, several miles apart and several miles from the topaz region, by farmers who were traversing pastures in the township. The first was found in two pieces, as if it had been roughly used, and broken, and discarded as worthless, or else broken in taken from the rock and then rejected, its value not being known. This crystal measured four and two-fifths inches long and two and one-tenth wide. * * * The color was rich sea green viewed in the direction of the longer axis of the prism, and sea blue of a very deep tint through the side of the crystal. In color and material this is the finest specimen that has been found in any North American locality, and the crystals, unbroken, would equal the finest foreign crystals known. It furnished the finest aquamarine ever found in the United States, measuring one and two-fifths by one and two-fifths inches. It was cut as a brilliant and weighs $133\frac{3}{4}$ carats. Its color is bluish green, and, with the exception of a few hair-like internal striations, is perfect. In addition to this remarkable gem, the same crystal furnished over 300 carats of fine stones.

The other crystal is doubly terminated, being one and three-fifths inches long and three-fifths inch in diameter. Half of it is transparent, with

a faint green color; the remainder is of a milky green and only translucent."

In the spring of 1929, there was found on the farm of J. W. Cummings, in Albany, in a feldspar mine operated by Harry E. Bumpus of Auburn, four of the largest beryl crystals in the world. They were of a soft green color eighteen feet long by forty-two inches in diameter, set in a matrix of cream colored feldspar and pure white quartz. Later in the season seventeen more large crystals were found. In the spring of 1930 a crystal twenty feet long and six feet in diameter was found in this mine.

The feldspar of this mine is handled by A. C. Perham, of Paris, who has mines in Paris, Hebron, Buckfield and Minot, with a grinding mill at West Paris, in the interest of United Feldspar Company. The gem output is handled by Stanley I. Perham, who is trying to get these gigantic crystals preserved as they are.

Great interest is attached to the common blue beryl, as attempts are being made to extract beryllium—a silver white metal, lighter than aluminum, but much stronger,—for use in aeroplane engines.

These finds stirred the imagination, not only of mineralogists and lovers of Nature, but of literary men as well. Nathaniel Hawthorne, coming to college from the nearby town of Raymond, a short time after the discoveries at Paris and Brunswick, saw some of the stones in the Bowdoin cabinet and heard the stories of their discovery and traditions

of precious stones floating about the neighborhood, and in his mind germinated the story of The Great Carbuncle, gracing his collection of short stories known as Twice-Told Tales.

It might be said that James Sullivan, in his History of the District of Maine, published before the days of statehood, mentioned traditions prevalent concerning the occurrence of semi-precious stones in the vicinity of the White Mountains.

So far the story of the tourmaline and kindred gems relates to accidental discovery or effort of naturalists, professional or otherwise, without hope of financial reward; but there were occasional excursions into the realm of commercial mining, mostly ending in failure or comedy.

Mark Pottle, a farmer living on the hills of Minot, observed splotches of schorl, or black tourmaline, cropping out in the ledges of his pasture. His father and grandfather had observed these splotches before him, but they carried no suggestion to their minds. About this time (1870), coal had been introduced into the neighboring village of Mechanic Falls as fuel, and these black splotches in the ledges of his pasture suggested a semblance of that fuel and a vision of gold by mining, so he began operations; but his hopes turned to naught, as a nearby predecessor's had turned during the Californian gold fever of twenty years before, who thought he had discovered that auriferous metal in iron pyrites. Mr. Pottle's coal would not burn, but the expert he employed

to tell him what the trouble with it was made prophecy which in after years came true. As he observed the piles of white or near white waste, he observed:—

“You have some good feldspar which may be worth something sometime.”

In the town of Albany interesting discoveries had been made. In the ice caves of that town large and transparent quartz crystals had been found. These were in single crystals or in groups, most desirable for cabinet specimens.

Quartz is the best known of minerals.

Why should it not be when it is remembered as the most abundant of all minerals and one of the principal constituents of granite! In its natural state it is generally found in large uncrystallized masses; but its six-sided prism crystals, terminating in a pyramid of the same number of faces is the best known crystallized form of mineral. These crystals are likely to be found in any part of western Maine.

Quartz is known and prized all over the world, more so, perhaps, in the past than the present. Although comparatively soft, it has been and is used for jewelry. As rock crystal it has been cut into globes, vases, and goblets, and these have been highly valued, a thousand dollars being a not uncommon price for a goblet. The ancients considered it petrified ice, and gave it the name from which we get our word crystal. This superstition lived up to nearly two hundred years ago.

It is an oxide of silicon in its chemical composition, with a specific gravity of 2.65.

While quartz is usually colorless, some of it is rose color, notably in Paris, some black, or as it is generally called, smoky quartz, found especially in the vicinity of Mount Apatite, which would have delighted the heart of a Scotch woman, who would have called it a cairngorm; and some of it royal purple—an amethyst, which no one would pass by. Captain George R. Howe, of Norway, found some wonderful crystals of amethyst on the slopes of Pleasant Mountain in Denmark. By daylight these crystals are royal purple and by lamplight were red.

George P. Merrill, a native of Auburn, who was, during his lifetime, curator of geology in the National Museum at Washington, D. C., found a fine piece of rose quartz in the town of Paris, which he sent to China to have carved. The finished figure, eight inches high, represents the Chinese Goddess, Hsi Wang Mu, Queen Mother of West, and now reposes in the rooms of the Boston Society of Natural History.

There are other minerals and gems which are forms of quartz, but are not generally so known—chalcedony, carnelian, sard, chrysoprase, blood-stone, agate, onyx, sardonyx and jasper.

The sardonyx is the only stone in this list mentioned in Revelations as forming the foundation of the Holy City. It might be added, that it is to this day employed in Persia as a cure for epilepsy.

These forms are not found in Maine to any great extent, unless it is the agate and jasper, where it is as a reddish hue. The Indians were fond of this stone for its hardness and color. It is referred to by Longfellow in *Hiawatha*:

“At the doorway of his wigwam
Sat the ancient Arrow-maker
In the land of the *Dacothas*,
Making arrow-heads of jasper,
Arrow-heads of *chalcedony*.”

Jasper is one of the stones worn in the ephod of the high priest, as described in the book of Exodus, and as forming one of the doors of the Holy City in the book of Revelations. Superstition in regard to jasper made it a charm against spider and scorpion bites; also some people believe it an amulet against drowning.

Flint is also a form of quartz. Quite quantities of it found at Kineo, Moosehead Lake, were quarried by the Indians for arrow-heads. According to tradition quite a commerce was developed by the Indians of Maine with those living farther west in this stone.

Quartz has a commercial value also. It is made into glass and ground up as an abrasive.

Gem-stones are old. As far back as one finds history, mention is made of them. They delighted the eye of the Chaldaean, the Egyptian, the Phoenician and the Greek. Their values have excited the cupidity of misers from the present back to the

dawn of time. When one reads of the jewels in the breastplates of the old Israelitish high priest, it is easy to believe the old saw, "There is nothing new under the sun,"—at least, nothing new in gems; and yet new forms have been occasionally found in recent times.

In the summer of 1888 three men interested in mineralogy, Sumner Andrews, of Lawrence, Mass., and Charles G. Andrews and Loren B. Merrill, both of Paris, were toiling up the side of McKean Mountain in Stoneham. They were hunting for beryls. In an old glacier drift they came across some broken crystals of white stones. At first they accepted them for beryls, but there was something about their physical appearance which puzzled them. They were characteristics of topaz.

They sent specimens to Professors Edward S. Dana and Horace L. Wells, of Yale College, who upon examination pronounced it a mineral new to them and named it beryllonite.

During all this stage, gem hunting in the State of Maine was an avocation. Those who pursued it did so because of love for it. There was a fascination in hunting for and finding these stones. Most of them remained in the cabinets of museums, colleges and collectors. It is also true, many found their way to the lapidary and were set in some form of jewelry to adorn the person of some gem lover. In the days of Hannibal Hamlin's political life, a necklace of these gems adorned the neck of Mrs. Hamlin when attending social func-

tions in Washington. It was noted at the capitol as the only necklace of native gems in the country. There is a tradition that one or more Maine tourmalines found their way into a Hapsburg coronet, and this was thought a great distinction; but the Hapsburgs are gone—gone in disgrace, so perhaps the distinction is gone also. The crowns of this family are now considered the property of the state, and as such offered to the highest bidder, which brings one to consider the wanderings of gems, which may take place somewhat as follows:

“First to the noble,
Then to the thief,
Then to the pawnbroker,
Then to the roue,
Then to the painted lady,
Then to the sea.”

Its wanderings are unsettled, so is its possession. With difficulty, can it be placed as an asset or liability. This is so even with its mining. Uncertainty marks the course of its excavation. Tons of waste material disclose the ledge being exploited, or did, not so many years ago, also disclose the fact that expense of removal may counterbalance the value of gems obtained. Gem-stones are found in certain strata of rock as laid down in the formation of the earth; and these strata have been subjected to all the accidents which have come to Mother Earth. They come to the surface in one place and then plunge at a fearful angle, into sub-

terranean darkness. The "dip" may prohibit pursuit. This accounts for the long period of inactivity of mines in the past. It took a man of means and anticipation to reopen a gem mine, and both were liable to dissipate as the mining progressed.

It is true there was some revenue in the waste heap. About everything in the mineral line could be found in it—wonderful specimens, sometimes, so college professors flocked about it as flies about a molasses hogshead. Revenue from cabinet specimens, however, could not offset expense of mining. It was transitory—an unknown quantity. What was needed was commercial solidarity. It came. When our country was young, it depended on England, Holland, France and Germany for table wares, but by and by the Yankee queried:

"Why not have American wares?"

Echo answered, "Why not?" and the Yankee followed the echo.

With the establishment of potteries, there came a demand for feldspar. If it was mixed with quartz, it was not a disadvantage. So the various forms of feldspar, albite, clevelandite, graphic granite, and other combinations, were all reduced to powder and mixed and turned into ceramic beauty, fired and now adorn many tables. Result, feldspar mining is an industry with gem hunting a side issue. The two go together. Perhaps commercial mining may lack something of the romance and the gamble of mining for gems, but it has gained

something of scientific interest because of the many varieties of feldspar and their artistic form.

Feldspars are compounds of alumina and silica, with bases of potash, soda and lime. Sometimes barium is present. They fall into two groups, potash-soda and lime-soda feldspar. Both varieties may be found in the same ledge. The potash-soda groups are divided roughly into two varieties—orthoclase and microcline—although for commercial purposes both are considered identical. Their composition is silica 64.7 per cent., alumina 16.9 per cent., potash 19.9 per cent. Soda may replace the potash to a greater or similar extent in these feldspars, in which cases the feldspar is called anorthoclase. The lime-soda feldspars, known as plagioclases, are mixed in the same deposits with the potash varieties. There are particular forms of feldspars known as albite, clevelandite, etc., in the mines, but are more matter of curiosity than anything else. The feldspar may be found in crystals, but they are generally so small as to pass unnoticed. They can best be traced by their cleavage, which can be easily seen on their bright, flat surfaces. It is because of the flat, bright surfaces that the word spar is applied to them. Feldspar is simply field spar united. According to English custom the spelling is felspar.

The color of feldspar ranges from pure white to nearly black, according to its mixture with other minerals. Of course the white is desired in the making of pottery. In the Maine mines, the pre-

valence of iron bearing minerals, as black mica, hornblende, garnet and black tourmaline, has to be guarded against by strict grading. Pottery, however, is not the only use to which feldspar is put. It is used for enamel, as a binder in carborundum and emery wheels, also as fertilizer and a feed for poultry.

Last, but by no means least, some of the purer feldspars are used in the manufacture of false teeth; so a native of Maine may carry around a little of his native sod, or rather his native rock, in his mouth without suspecting it, as he may carry on his finger a polished crystal from his native hills and exhibit with pride; nevertheless, what he wears in his mouth will be more useful, and, if well brushed, not unseemly.

There are four or more mills in western Maine for grinding feldspar. The best of the ground product goes to the pottery districts around East Liverpool, Ohio, and Trenton, New Jersey. The poorer qualities are shipped to manufacturers of abrasives, fertilizers and poultry feeds.

There is another use to which feldspar is put and that is the production of magnesium. There is a plant for this product at Rumford.

There are more quarries of feldspar in Maine than of any other stone. They extend over five counties — Oxford, Androscoggin, Cumberland, Sagadahoc, and Hancock. They are numerous around the towns of Topsham and Georgetown.

Feldspar has so far been considered as strictly

a commercial commodity, but in some forms it is ornamental, and in at least one form it is considered a gem. The two forms considered ornamental are the varieties known as amazonstone and labradorite. Amazonstone is a green variety found largely in South America; hence the name from the mighty river of that continent. This stone is found in limited quantities in Paris and at Mount Desert. It appears in crystal form and is always opaque.

Labradorite is so named because it is numerous on the coast of Labrador. It was first found there by a Moravian missionary named Wolfe on the mainland near Nain, and on the adjacent island of Saint Paul. He brought specimens to Europe in 1775. It exhibits a play of yellow, purple, green and other colors. Its composition is silica 53.7 per cent., alumina 29.6 per cent., lime 11.8 per cent. and soda 4.8 per cent. Labradorite is found in limited quantities in some places in western Maine. The play of colors is rarely seen except on a polished surface, and then only to advantage at a particular angle. Ralph Waldo Emerson has aptly described it in his essay on Experience:—

“A man is like a bit of Labrador spar which has no luster as you turn it in your hand, until you come to a particular angle; then it shows deep and beautiful colors.”

The gem product from feldspar is the moonstone, which gives a play of colors something like an opal. In fact, moonstones from Ceylon, where

most of them come from, are sometimes called Ceylon opals, although they are not opals. These stones are rarely found in Maine. Another variety of moonstone is known as sunstone because it reflects a spangled yellow light, where the moonstone reflects a pale blue light.

Perhaps at this point it would not be amiss to speak of mica, a component part of granite, and found in mass form in most pegmatites. Mica is a group name covering a number of different forms. White mica is known as muscovite, brown mica as biotite, amber tinted mica as phlogopite, and the violet and pink forms as lepidolite.

Muscovite is the variety which occurs mostly in western Maine. It is a hydrous silicate of alumina and potash. It is soft, usually soft enough to scratch with the finger nail. Its color is silvery white or light yellow. Its most striking physical characteristic is its perfect basal cleavage. It can be split into tough flexible sheets, whose thickness is less than a thousandth part of an inch. The sheets are found packed closely together, causing them to resemble paper pads or books. The word "book" is frequently applied to mica crystals as a descriptive term. These sheets of mica are used as windows for stoves, for electrical insulation, for paint and lubricating purposes.

The fancy member of the family is lepidolite. The pink mass of this mineral cannot fail to attract attention wherever seen. It is almost always mixed with other minerals which give the mass

cohesiveness enough to admit of carving into paper weights, vases, etc. It contains some four or five per cent. of lithium and has been used to some extent as a source of lithium salts. It is found in large masses, one at Mount Mica having been estimated at ten tons. Junks eight and ten inches square are common. Very lately lithium, a metal that floats on water, silver in color, softer than lead, one-half the weight of water, a metal that can be readily used as an alloy with other metals, has been extracted from these minerals. It is valuable for air-plane construction, and when used as an alloy in bell metal gives the bell a more silvery tone.

The first seventy-five years of gem mining in Maine was carried on by private initiative entirely. The first mining came about by accident, the second because of scientific interest and the third because of commercial profit. The accident attracted attention, else the second phase would never have been undertaken; but it was the third which turned many eyes toward these foothills diverging from the White Mountains. The first and second endeavors were sporadic, just little openings in ledges where there appeared indications of mineral riches. Most of the crystals obtained remained in cabinets as specimens. When, however, a commercial profit appeared in sight, it became desirable to know something about the locality in which these stones were obtained, and ascertain, if possible, if there were

any natural laws governing their distribution and what they might be. To this end a survey of the region was made during the summer of 1906 by Edwin S. Bastin under the general supervision of George Otis Smith, of the United States Geological Survey. Mr. Bastin was assisted by Professor Leslie A. Lee, of Bowdoin College, who was state geologist at the time, and the expense was shared by the Survey Commission of Maine and the United States Geological Survey. Most of the mines operated commercially were visited and the intervening country between. As a result, a map was prepared, buff in its general color scheme, with darker shaded areas to indicate the localities of commercial rocks and gems.

All of these were found in the pegmatitic patches already mentioned, and their inquiries naturally turned to them, their extent, cause and history. The pegmatites are composed of the mineral constituents of granite, differing principally in coarseness. Here are found feldspar, quartz or mica in large masses and among them are found gemstones. Pegmatites occur throughout the Appalachian Mountain System, from Alabama to Maine, and that is what makes the spider-web foothills of the White Mountains so interesting. These foothills extend into Maine, New Hampshire, Massachusetts and Connecticut, but nowhere are they richer than in Maine. The geologic relations of the pegmatites show them to be distinctly intrusive into surrounding rocks. They intrude into

both sedimentary and igneous rocks. Both present a disposition toward foliation, the latter in its molten state flowing over what was then the surface of this planet.

The question becomes interesting when this took place. It is probable, inasmuch as the pegmatites are of the same constituency as the surrounding rocks, that this intrusion took place at the formation of the rocks and within a single period of geologic time. Scientists have come to the conclusion that this formation took place in the late Silurian or in the Devonian age.

Maine pegmatites occur in Cumberland, Sagadahoc, Lincoln, Androscoggin, Oxford, Franklin, Kennebec, Waldo, Knox, Hancock and Washington Counties, but they are not worked commercially except in the first five.

The chemical composition of the pegmatites is essentially that of granite, the light colored constituents being soda and potash—that is the feldspars, quartz, and muscovite; and the dark constituents being biotite and schorl. Over fifty associate minerals are found in Maine pegmatites. A list follows:

Albite, allanite, amblygonite, apatite, arsenopyrite, autunite, betrandite, beryl, biotite, beryllonite, calcite, cassiterite, childrenite, chrysoberyl, clevelandite, columbite, cookite, damourite, emerald, feldspar, fluorite, garnet, graphite, gummite, halloysite, hamlinite, hebronite, herderite, kaolinite, lepidolite, lollingite, magnetite, microcline, mica,

molybdenite, muscovite, montmorillonite, orthoclase, phenacite, plumbago, pollucite, pyrite, phrhotite, quartz, rhodochrosite, schorl, spinel, spodumene, tianite, topaz, triplite, tourmaline, triphylite, vesuvianite, yttrocerite and zircon.

In recent years the General Electric Company has been mining in Buckfield for polucite—a mineral so rare that it is known to exist in only two other parts of the world. It is a non-metallic mineral used in electrical work.

When the deposit has an increase of silicon the pegmatites become more quartzose; when there is an increase of sodium and lithia, the pegmatites become rich in albite, clevelandite, lepidolite, spodumene, tourmaline and amblygonite; when there is an increase of fluorine, the pegmatites bear apatite, topaz, fluorite and hercynite.

The sodium and lithium phase of pegmatites occurs in western Androscoggin County, and in the central and eastern parts of Oxford County, practically within a radius of thirty miles of Mount Mica. The fluorine phase of pegmatite is confined almost exclusively to the western part of Oxford County.

The fluorine phase suggests the topaz locality in Stowe and Stoneham, which occurs in this kind of pegmatite, or at least in western Maine.

One generally thinks of topaz as a yellow stone, but this is as false as the colors associated with other minerals. Topaz may be greenish, bluish, reddish or colorless. Its chemical composition is

a silicate of alumina, containing hydroxyl and fluorine. It is hard, there being only three stones harder—diamond, corundum (ruby and sapphire), and chrysoberyl. It is a remarkably heavy stone, being three and one-half times as heavy as water.

It will thus be seen that topaz makes an admirable gem. Some of the crystals are very large. One given Pope Leo on the occasion of his silver jubilee in 1902 weighed nearly four pounds. There was a stone in the crown of Portugal, when that country was a kingdom, at one time supposed to be a diamond, but probably a topaz, which weighed 1680 carats. There is a peculiarity that yellow topaz can be changed to rose color when heated.

As a stone, it has been known from ancient times, although there is reason to believe the ancients got topaz mixed at times with chrysolite. It is mentioned in the Bible as one of the stones in the ephod of the high priest of Israel, also as forming one of the gates of the Holy City. It was also one of the gems worn by the King of Tyre.

The crystals of topaz belong to the orthorhombic system. As has already been stated they are very large. One found in Siberia weighed twenty-four pounds.

The name is derived from Topazios (Greek) an island in the Red Sea. It is found in Japan, Russia and Brazil, as well as in the United States. The colorless topaz in Brazil is known as pingos d'agua (drops of water).

In the United States, topaz is found in Utah,

Colorado, Connecticut, New Hampshire and Maine.

The locality in Maine where it is chiefly found is on the summit of Harndon Hill in the town of Stoneham. This mine was opened by Nathan H. Perry, of South Paris, in 1882.

Associated with rocks of this nature, one sometimes comes across crystals of fluorite, or fluorspar, in cubelike formation. They are mostly of a purple tint, although there are other colors. It is a brilliant stone, but so soft it cannot be used for gems. Fluorite is a fluoride of calcium, having a composition of fluorine 48.9 and calcium 51.1. Its specific gravity is from 3 to 3.25.

There occur occasionally in the gem localities unexpected minerals. One of these is calcite. This mineral is found in Waterford as a center of garnets, but it is chiefly found in the vicinity of Boothbay Harbor. When crystallized it is very brilliant, but like fluorite is also very brittle. In the vicinity of Boothbay, the underlying rocks are much mixed sedimentary with igneous, and both have intrusions of pegmatites, and it is in these intrusions that calcite occurs.

In chemical composition it is a carbonate of lime and carbonic acid. It is rhombohedral in its crystallization.

Among so many noted minerals found in western Maine, it could not be considered strange if there were some unknown in other places. There is one forming minute rhombohedral crystals, generally attached to other minerals, found in Stone-

ham, and named hamlinite, after Dr. A. C. Hamlin, of Bangor, who for many years was deeply interested in Maine minerals.

There is also a kind of amblygonite found at Mount Rubellite, which is known as hebronite, after the town in which it was found. There is also a blue colored spodumene, found in Andover, named kunzite, after George F. Kunz, the New York mineralogist, who was greatly interested in Maine minerals for many years.

So far most gem deposits have been found in a single range of the White Mountain foothills and entirely within the State of Maine, beginning in the towns of Stowe and Stoneham and continuing in a circuitous line through the towns of Albany, Greenwood, Woodstock, Norway, Paris, Buckfield, Andover, Rumford, Peru, Hebron, Minot, Poland, Auburn, Lisbon, Topsham, Brunswick, Freeport, Georgetown and Phipps. Gem-stones, especially tourmalines, are found in most openings that have been made in pegmatites occurring in this range of foothills.

While the diamond, ruby and sapphire are missing in this collection, and, therefore the state must be content in the production of what are called semi-precious stones, nevertheless, a study of the locality and its products is interesting, and as a matter of business cannot wholly be ignored. There are, at least, four lapidary establishments within the territory, which are trying to place the cutting and selling of stones on a commercial basis.

In the excavation of gems found largely in dis-integrated rock, one is forced to believe one is uncovering the works of Nature in by-gone ages, and the fancy is stirred as to the conditions which then prevailed to produce them, and whether those conditions are yet extant, and whether gems are being produced today. There are some reasons to believe that diamonds are being produced today, and if so perhaps other stones may be also. The reproduction of several varieties of mineral in the slag of furnaces seems to offer corroborative evidence that natural forces might still be at work. Opals are said to be forming in the decomposing cement of Roman ruins near the hot springs of Polombieres.

These things lead to interesting and harmless speculation. Gems, in themselves, are so beautiful as to be enticing, whether one buys them from a dealer or hunts for them in the bowels of the earth, and as a diversion are harmless. They are educational, and the writer can think of no more fitting ending for this narration than the words of that monk-physician, Rabalais:—

“Now in the matter of the knowledge of the works of Nature, I would have thee give thyself curiously; so that there be no sea, river, nor fountain of which thou dost not know the fishes; all the fowls of the air; all the metals that are hid within the bowels of the earth; together with the precious stones that are to be seen in the east and south of the world. Let nothing of all these be unknown to thee.”

Andrew Craigie

Every age and every country hath its field of adventure, ever pursued by the young and restless. In good old Massachusetts Bay Colony it was land during the eighteenth century. The colony had plenty of that material, especially lying in the District of Maine, now the State of Maine, which the government desired to settle. If a man sought riches or distinction, land was the medium through which either was to be gained and a grant of some of this land was ever to be desired. It could be had in large quantities for small sums—as low as twelve cents per acre, so a small amount of money could go a long way. The state also paid its bills in land, for it was rich in that commodity but poor in cash. Soldiers who took part in the wars fought were paid in this way, and persons who contracted to perform some public service were also paid with this commodity; and this way it happened that many notables held grants and became the founders of towns from the cutting up and the selling of their holdings which constituted the advantage and the profit of these grants.

There is a romance about the founding of almost every town in the State of Maine, which cannot fail to interest natives. I was born in Oxford and its history is certainly interesting to me. It was originally granted to Alexander Shepard, a civil

engineer of Newton, Massachusetts, for making a map of the then District of Maine. This grant was made March 7, 1779, and confirmed June 24, 1779. The original grant conveyed the land now contained in the towns of Hebron and Oxford and was originally known as the Plantation of Shepardsfield in honor of the grantee. This plantation was incorporated as a town March 6, 1792, and named Hebron.

Mr. Shepard began the settlement of his grant immediately upon obtaining it, on the eastern side of what is now known as Hebron. In fact nearly all his settlements were on the eastern side and in what is now Hebron.

The sale of land on the western side in bulk was reserved until January 5, 1794, when General Andrew Craigie, of Cambridge, Massachusetts, purchased a number of lots on that side amounting to 13,860 acres. This was not all the land owned by Craigie as he had bought small holdings before. For this purchase he paid 2000 pounds.

Because of this purchase and the influence of General Craigie and his heirs, the town of Hebron was ultimately divided (February 27, 1829), and that part containing the Craigie purchase set off and became the town of Oxford; also, because of his estate in Oxford he became at least *de facto* proprietor of the town. He had big dreams about its future, and made an effort to have the dreams come true, which makes him an interesting figure to all the people who are natives or who have ever

lived in the town; so that everything that ever happened to him, or he ever did, is interesting to them; and he was an active, energetic figure in his day and generation, and many things did happen to him.

General Craigie was a native of Boston, having been born in that city June 6, 1744, the son of Captain Andrew and Elizabeth Craigie. Very little has come down to us of his boyhood days or those of his young manhood. It is supposed that he learned the drug or apothecary business, as it was known in those days. That did not mean as much in those days as at present, but it probably did mean a little knowledge of chemistry or pharmacy. The chief reason for this belief was because July 4, 1774, when he was 31 years of age, he was appointed by the Third Provincial Congress, in session at Watertown, a medicinal commissary and apothecary for the Massachusetts colonial army. This was his first public appearance. It might be interesting to note that his compensation for this service was five pounds a month. Craigie was mentioned at this time by the title of "doctor", but as his name does not appear in the list of members of the Massachusetts Medical Society, it is presumed he gained the title by his connection with pharmacy. Apothecaries in those days practiced medicine on the side, as there was no law against it.

The Revolution coming into full swing, Congress made provisions for organizing a provincial

army, including a medical department, and Craigie was placed at the head of this department with rank of Apothecary General, January 1, 1777. He served with credit in this capacity until honorably discharged November 3, 1783, most of the time in Philadelphia. Not only had he gained distinction by his connection with the Revolutionary army, but wealth as well. At the close of the war he became an original member of the memorial organization of the New York Society of the Cincinnati, and of the Massachusetts Society by right of residence.

At the close of the Revolution, Craigie returned to Boston and began speculation in land. He, with others, bought quite large areas in Cambridge and began to develop it. Quite a portion of this land was in what is now known as Cambridgeport. Among other things the syndicate erected a toll bridge between Lechmere Point and Boston. This was known as the Craigie Bridge. They began the construction of streets, Cambridge Street being a specialty. There was also a street named after himself and still known as Craigie Street.

General Craigie took part in the social and religious life of the community. He was a member of Christ (Episcopal) Church, Cambridge, and elected one of the wardens in 1797. He was a Mason and is mentioned among others as attending the Grand Lodge at the Feast of St. John, December 27, 1778.

On March 5, 1791, he purchased the Vassel

house on Brattle Street, Cambridge. This was a noted house from the time of its construction to the day of its purchase by Craigie, and from the day of Craigie's death to the present time.

This house was built in 1759, as attested by a plate inserted in the chimney, by Colonel John Vassel. This was not the only house erected on Brattle Street by this man. There were seven of them owned by him, afterwards called "Tory Row", because the colonel was a Tory, as well as the occupants of his houses, all of whom were relatives. It is said he had an aunt in each house. In the opening days of the Revolution they were driven out of these houses because of their political views. The colonel fled to England. The Vassel house was taken over by the Massachusetts Committee of Safety. It was given over to Colonel John Glover, afterwards general, commanding the then famous regiment of Marblehead marines. It became the official residence of General George Washington on taking command of the army at Cambridge July 3, 1775. During his occupancy many famous men of the Revolution were guests there, including General Israel Putnam, General Nathaniel Greene, General Henry Lee and Benjamin Franklin. Mrs. Washington visited the general while quartered there. He quit the house April 3, 1776.

It is a fine specimen of colonial architecture, and very attractive in many ways. In 1781, it was bought from the commonwealth by Nathaniel

Tracy of Newburyport, and it was from him that it was bought by General Craigie in 1792. During the Tracy ownership a Thomas Russell lived in the house.

Craigie thought a great deal of the house. He admired it both inside and outside. The north-eastern room he filled with columns and made into an elaborate banquet hall, for he wished and did entertain extensively and lavishly. The grounds were laid out in fine style, with an ornamental flower garden, which was noted in the community, with greenhouses, whereby some of his neighbors said he tried to "thwart Providence" by raising flowers in winter.

From what has come down to us, one can scarcely believe General Craigie to be a great admirer of the female sex. He was not married until he was 53 years old, and not then because of a grand passion, but because he wanted some graceful woman to preside over the beautiful home he had bought and to which he was strongly attached, as at one time he called it "his paradise".

A story has come down to us that at a brilliant party given by the general, he was rallied on still being a bachelor, he laughed and pointed to two young ladies, both reigning belles, saying "either of those would command my devotion, but unfortunately they are both engaged." These remarks were carried to the young ladies in question, and it is said both of them broke off their engagement. One of them, Miss Nancy Shaw, daughter of Rev.

Bezaleel Shaw, of Nantucket, became the future Mrs. Craigie, at the age of 22 years.

The Craigies furnished the house elegantly and kept up "a princely establishment", according to Josiah Quincy, entertaining all the elite of Boston and such foreigners as visited the city including the Duke of Kent, father of Queen Victoria, who was in Boston during the winter of 1794-5, and Talleyrand. The latter and Mrs. Craigie became very friendly. He learned that lady French and together they read Voltaire, so that the lady became unsettled in her religion, and was called unorthodox by her friends.

But neither of the Craigies were happy in their married life. The difference in their ages may be accountable in some degree, but it was loveless. Mrs. Craigie could not forget her old lover, a young southern man named Habersham, so it is said, and kept up a correspondence with him. These letters she hid in the garret where they were found by her husband, who made such a time that he and his wife ceased to speak together and after that their intercourse was carried on through servants. It may be interesting to state that it seems the general had an amour. They corresponded and the lady's letters the general hid in the cellar wall. They were found by the Longfellowes when they came into possession of the house in 1843.

After twenty-five years of unhappy wedded life Andrew Craigie died of apoplexy, September 19, 1819, and Mrs. Craigie was left in possession of the

house, "Craigie Castle" as it was sometimes called; but the estate had been badly tied up by her husband, probably for the purpose of making trouble for her. To obtain ready cash she let rooms to Harvard College students and professors. In this manner many such men as Henry W. Longfellow, Edward Everett, Jared Sparks, and it is said young Habersham, and many others lived in the house. She still kept up a splendid establishment within and without. Her gardens were still the talk of the city, and once when the Longfellows entertained Colonel Thomas Wentworth Higginson, a guest and native of the city, read the following poem relative to the house and Mrs. Craigie, which was printed in the Cambridge Chronicle:

Dame Craigie

In childish Cambridge days now long ago,
When pacing schoolward in the morning hours,
I passed the stately homes of Tory Row,
And paused to see Dame Craigie tend her
flowers.

Framed in elm-tree boughs before her door,
The old escutcheon of our town was seen,—
Canker-worms pendent, yellowing leaves in or,
Schoolboy regardant, on a field grass-green.

Dame Craigie, with Spinoza in her hand,
Was once heard murmuring to the insect crew,

"I will not harm you, little restless band!

For what are mortal men but worms like you?"*

The trees are gone, Dame Craigie too is gone,

Her tongue long silent, and her turban furled;

Yet 'neath her roof thought's silkworms still spun
on,

Whose sumptuous fabric clothed a barren world.

Mrs. Craigie died May 1, 1841, aged 69 years. After her death the house was sold to Joseph Emerson Worcester, of dictionary fame. During the Worcester occupancy, Longfellow lived in a part of the house, and finally bought it, becoming its owner in 1843. He first came into the house in 1837. He died there in 1882. After his death his daughter, Mrs. Edith Dunn, wife of Richard Henry Dana, occupied the parental house. At her death the house was left in trust as a memorial of Washington and Longfellow.

General Craigie bought his Hebron land in 1794, during the height of his land speculation. He apparently had great expectations from it. Soon after his purchase he appointed William Clark Whitney, of Worcester, Mass., his agent and he moved to the Craigie purchase and took up a lot there, which has been occupied by him, his son, George Pierce Whitney, and his grandson, George Pierce Whitney, Jr. Mr. Whitney's idea was that

* Dame Craigie would allow no animal, bird or insect life destroyed in her garden. Once when canker worms threatened to eat up all vegetation, her gardener wished to take means to kill the worms but she refused saying, "Humans were only brothers of the worms".

the Hebron purchase was best adapted to agriculture and he proceeded to settle the lots in the vicinity of the one he had taken up with people from Massachusetts who wished to take up land in a wilderness; but when General Craigie surveyed his purchase and saw the potential water power at the foot of Lake Thompson, he thought manufacturing had an equal chance with agriculture and he determined to unite the two.

He reserved for his own use a large section of land on the western bank of the Little Androscoggin River and running up onto Allen Hill as an experimental farm. He erected buildings on the Allen Hill side of the farm. These buildings overlooked Lake Thompson and a large stretch of country. He considered his estate as specially adapted to raising wheat and sheep and he determined to manufacture these commodities into finished products as well as produce the raw materials. Because of this dream he dammed the outlet of the lake and built buildings for grinding the grain into flour and for carding, spinning and weaving the wool into cloth, beside wood working mills. He dreamed of a city at the outlet of the lake which should bear his name. The embryo settlement was known as Craigie's Mills, but when the post-office which had been established for the town in the East Oxford hills had been moved to the "Mills," the village took the name of the office—"Oxford"—so that part of his dream dissolved into the stuff of which dreams are made, and, by the

irony of fate the only thing in town bearing his name is a cemetery which his heirs had given land to the town for, together with a building designed for a free church and a town hall.

The raising of wheat did not materialize, but the manufacture of woolens has continued to the present day as the principal industry of Oxford, although the raw material has ceased to be raised in the country nearby.

During the lifetime of General Craigie, people in Hebron and nearby towns established an academy (Hebron Academy) and the general took an interest in it and gave land toward its endowment. His agent, William Clark Whitney, became one of its trustees, and in this position he was succeeded by his son, George P. Whitney, holding it until his death. General Craigie must have been interested in education, for he was a trustee of Harvard College. In 1807, he donated land to enlarge the Harvard College Botanical Garden. The town of Oxford was honored in its early days with three trustees of Harvard College among its landed gentry. Samuel and John Phillips of Cambridge, the first founder of Phillips Academy at Andover, Mass., and the second founder of Phillips Academy at Exeter, New Hampshire, had purchased 2000 acres of land near the shore of Lake Thompson, a section known as Phillips Gore, and which they sold to John Greeley, of Falmouth, and this latter gentleman's cognomen has remained as the name of a brook and a hill, while that of Phillips has

departed into the mustiness of ancient records.

In 1798, General Craigie conveyed his Hebron lands to his brother-in-law, Bossenger Foster, the consideration named being \$19,500, but this transaction is considered a matter of convenience, as the estate continued under the same management during the lifetime of the general and even under the division among his heirs.

This Bossenger Foster, of Cambridge, who married Craigie's sister Mary, was a man of leisure and died of gout, April 23, 1805. This couple had eight children:—Bossenger, a lawyer, died unmarried January 17, 1816, aged 48 years.

Elizabeth, married Judge Samuel Haven, of Dedham.

Andrew, physician, married Mary Conant, died in 1831.

John died unmarried in 1836.

Thomas, physician, died unmarried in 1831, aged 46 years.

James, lawyer, register of probate, died unmarried in 1817.

George, lawyer, died unmarried in 1817, aged 27 years.

Mary, died in 1811, aged 16 years.

Of this family, Bossenger, Andrew, John, Thomas and James were graduates of Harvard College, while George graduated at Boston University.

Among the heirs of Andrew Craigie were mentioned beside his widow, Elizabeth, Andrew, John and Thomas Foster, living children of Bossenger Foster, and Samuel Haven; and these persons had the settlement of the estate in Oxford.

At an adjourned meeting of the town of Oxford, held May 4, 1829, the Craigie heirs offered to donate some four acres of land for a common and burying ground and to build thereon a town house not to exceed \$1200, in cost and this offer was accepted. The proposed building was erected and yet stands at Welchville. This proposition was signed by Samuel Haven, Andrew, Thomas and John Foster.

The affairs of the Craigies in Oxford were brought to a close in November, 1832, when the remaining lots in their possession, about 6000 acres, were sold to Jacob D. Brown, of Oxford, for about \$20,00.



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