MEMOIR OF
LOUDON COUNTY
VIRGINIA

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TO ACCOMPANY

The Map of Loudon County,

BY

YARDLEY TAYLOR, Surveyor.

THOMAS REYNOLDS, PUBLISHER,
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ROBERT PEARSALL SMITH,
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MEMOIR OF LOUDON COUNTY.

In presenting to the Citizens of Louden, the first map ever published of their County, it may not be deemed improper to give somewhat in detail, the means employed in its compilation. There being no Map of the County, from which materials could be used in constructing a new one, it was obviously necessary to make a survey of the whole county, before a correct map could be drawn. With these facts before him, the compiler determined to make a personal survey of all the leading roads in the county. Accordingly a viameter was attached to his buggy, and in this way with his surveyor's compass, he took the courses and distances of all the principal roads of the county, as well as of many of less note. This enabled him to plot and lay down these roads accurately, and thus to locate the different towns and other places, in their proper position. While thus engaged the position of houses, courses of streams, &c., were noted, so as to secure a degree of general correctness throughout the whole. It is not assumed that the map is free from error, as this would hardly be attainable, yet it is believed that no important ones exist. That there may be mistakes in inserting the names of persons, as proprietors of land, as well as in locating the position of houses, is probable, as these facts in some instances were obtained from other persons, who may have failed to distinguish between the owners and the occupiers of the land.

It might be supposed that from the undulating surface of the county, and the inequalities of the roads, such measurement would give an area to the county greater than what actually exists. The roads from Leesburg in three directions, are of very

moderate grades, and the measurement on them would differ very little from a horizontal measurement, while the turnpike to Snicker's Gap is more hilly; but even there, when we know the proportionate distance of the grades of elevation, we can make the proper correction. This correction was applied wherever it seemed necessary, and the position of particular points thus ascertained, and then the spaces between those points were filled up by subsequent surveys.

The County of Loudon lies between the latitudes of 38° 52½″ and 39° 21″ north latitude, making 28½″ of latitude or 33 statute miles, and between 20″ and 53½″ of longitude west from Washington, being 33½″ of longitude, or very near 35 statute miles.

The longest line across the county is from the lower end of Lowe's Island, on the Potomac River, at the old mouth of Sugarland Run, to the top of the Blue Ridge at Ashby's Gap, being 35 miles; and from the corner of Jefferson County, at the margin of the Potomac River below Harper's Ferry, to the corner of Fairfax County on the Bull Run within half a mile of Sudley Springs in Prince William County, is 34 miles. The Potomac River separates this county from Frederick and Montgomery Counties, Maryland, and that State, claiming the whole of the river, exercises jurisdiction over the islands as well as the river. What is called Lowe's Island, at the mouth of Sugarland Run, was formerly an island, and made so by that run separating, and part of it passing into the river by the present channel, while a part of it entered the river by what is now called the old channel. This old channel is now partially filled up, and only receives the waters of Sugarland Run in times of freshets. Occasionally when there is high water in the river, the waters pass up the present channel of the run to the old channel, and then follow that to the river again. This old channel enters the river immediately west of the primordial range of rocks, that impinge so closely upon the river from here to Georgetown, forming as they do that series of falls, known as Seneca Falls, the Great, and the Little Falls, making altogether a fall of 188 feet in less than 20 miles. The mouth of this old channel is the commencement of the line that separates Loudon from Fairfax County, and runs directly across the country, to a point on the Bull Run branch of Occo-

quan River, about three-eighths of a mile above Sudley Springs in Prince William County. The Bull Run then forms the boundary between this and Prince William County, to its highest spring head in the Bull Run Mountain, just below the Cool Spring Gap; the line then extends to the summit of the mountain, where the Counties of Prince William and Fauquier corner. From the summit of this mountain, a direct line to a double-bodied poplar tree on the Blue Ridge at Ashby's Gap, is the dividing line between this and Fauquier Counties. The summit of the Blue Ridge is then the dividing line between this county on the east, and Clarke and Jefferson Counties on the west, until it reaches the river below Harper's Ferry; thus making an outline of 109 miles, viz., 37 miles on the Potomac, 19 with Fairfax, 10 with Prince William, 17 with Fauquier, and 26 miles with Clarke and Jefferson. Its area is 525 square miles. Two-fifths of this area lying east of the Catoctin mountain, is included in the upper secondary formation of rocks, as described by Professor Rodgers, in his report to the Legislature of Virginia. The other three-fifths, including the Catoctin mountain, belong to the primordial range of rocks, that constitute so prominent a geological feature east of the Alleghany Mountains.

This county was a part of that large tract of country granted by the king of England to Lord Fairfax, including all the land between the Rappahannoc and Potomac Rivers to their sources, and since called the "Northern neck of Virginia." The first permanent settlement of this county began about 1730, and it was then a part of Prince William County. In 1742, Prince William County was divided, by a line drawn from the Potomac River at the mouth of Occoquan River, up that stream, and up the Bull Run branch thereof to its highest spring head, thence directly to the top of the Bull Run mountain, and then by a direct line to the thoroughfare in the Blue Ridge known as Ashby's Gap. That part lying north of this line was called Fairfax County, in honour of the proprietor. In 1757, Fairfax County was divided, and the stream called Difficult Run was made the boundary, as far as its highest spring head, and then a direct line to the line of Prince William County. This line was afterwards changed, and the present line between this county and

Fairfax was substituted. All west of this line was called Loudon County, in honour of Lord Loudon, a Scotch nobleman, who about this time, held the office of Commander-in-chief of the military forces in the colonies. The early colonists of Virginia appear to have been a very loyal people, as they named their counties, towns, public places, streets, &c., after the names of the nobility and gentry of the mother country. The same disposition is still manifested, with this difference, the names of eminent citizens of our own country are now substituted in place of the others.

The eastern parts of the county were originally settled by Virginians, who held large tracts of land, and pursued to some extent, that exhausting system of cultivation so common in eastern Virginia, by which the lands became impoverished, and were then thrown out of cultivation. Large tracts are still in that condition, though many of the present proprietors are turning their attention to the improvement of the soil, and are being amply rewarded. The value of land here is much lower than in other parts of the county.

The north-western parts of the county were originally settled by Germans, principally from Pennsylvania, and many of their descendants still remain. Here the farms are generally small, and well cultivated, and land rates high. This class of population seldom goes to much expense in building houses, and a stranger in passing through the county, cannot but observe the difference in this particular in different parts of the county. Many old log houses that are barely tolerable, are in use by persons abundantly able to build better ones. While economy and a desire for a competency, may prompt us to suffer inconvenience for the want of better buildings, we ought not to allow this to go too far, and exclude the really useful. Were more attention paid to improvement in this particular, combined with something of the ornamental around them, advantages might be gained that could hardly be estimated. Who can look upon his own efforts to combine the really useful with the ornamental, so abundantly manifest in the works of nature, without feeling a sense of gratitude to the Giver of all good, for the many blessings so lavishly bestowed upon us.

The central portion of the county was originally settled by emigrants from Pennsylvania, and the then neighbouring colonies, among whom were many members of the Society of Friends. Here the farms are of moderate size, and chiefly cultivated by free labour. Good buildings are more common than in any other part of the county, and land rates higher than elsewhere.

In the southern parts of the county, the farms are larger and generally cultivated by slave labour. The style of building here is not so uniform as in the central parts of the county, neither does the price of land rate so high. These differences, so conspicuous in this county, are the result of different principles carried out into practice. And well would it be if mankind would but trace effects to their causes, and profit by the experience of the past.

The most conspicuous feature in the topography of this county, is its ranges of mountains. The Blue Ridge bordering the county on the west, rises to an elevation of from 300 to 700 feet above its base, or from 1000 to 1400 feet above tide water. The Short Hills rise at the Potomac River, and extend parallel to the Blue Ridge, about 12 miles into the county, at a distance of near 4 miles from summit to summit. This range is broken, about miles from its southern termination, by a branch of Catoctin Creek that flows through it. Its elevation is about equal to that of the Blue Ridge. The Catoctin Mountain also rises at the Potomac River, and after passing nearly through the county, drops off in the neighbourhood of Aldie. Immediately south of Aldie, and in a line of the eastern base of the Catoctin, the Bull Run Mountain commences, and with a higher summit, passes into Fauquier County. These mountain ranges are branches of the Blue Ridge range, which, taken as a whole, presents a bold feature in the topography of the States bordering the Atlantic. The general slope of the county is to the north-east, and all its waters flow into the Potomac in that direction, except a small portion that drain into Bull Run.

That part of the county lying between the Blue Ridge and the Catoctin Mountain, varies from undulating to hilly. Near the base of the ridge it sometimes approaches to level, while further eastward, where the increased volume of the water-courses have

worn themselves into deeper channels, it is very hilly. The Catoctin Mountain, where it spreads out as it does west of Leesburg, and further south, presents many summits of from 2 to 300 feet above the adjacent country, with deep valleys between them, thus giving to that part a varied and broken character. The eastern part of the county is generally level with but little of it approaching to hilly. The rocks met with here are sandstone, red shale, conglomerate limestone, known as Potomac marble, and trappe rock. The latter is considered an intrusive rock, and has no dip, while the former dip to the west at a low angle.

An opinion respecting the origin of these rocks (except the trappe rocks), may here be hazarded. The primordial range of rocks in Fairfax County east of the Loudon line, rise much higher than the surface of this formation, as is evident from the precipitous range of hills bordering the Potomac River below this county. Were these hills again united, as they no doubt once were, a lake would be formed covering this entire formation, and extending north and south along the base of the Catoctin Mountain, beyond this county. Such a lake would be the recipient of all the pebbles, rocks and earthy matters, brought down from the mountains and valleys above, by the waters of the Potomac River. These matters thus discharged into this lake, would, from their specific gravity, be deposited in different places according to circumstances. Thus the heavier pebbles of limestone would be likely to be left nearer the base of the mountain, than the sand or clay that now forms the sandstone and shale of this region. This is precisely the case at present. The conglomerate rock extending about 25 miles along the base of the mountain, about equi-distant on both sides of the river, and not more than 4 miles wide. The pebbles are sometimes embedded in the shale, and then immediately above, the conglomerate rock it is quite free from shale. A few pebbles of quartz and of other rocks are met with in the conglomerate, but they principally are of limestone origin; and are now cemented together as by a limestone paste. They have been fractured or broken through in places, and the fracture again filled up with carbonate of lime. This rock was used for the pillars in the Capitol at Washington, and

may be seen in the Representatives Hall and Senate Chamber. Some of the farmers in its vicinity have burned this rock into lime, and applied it in improving their lands. It is said to contain nothing that is injurious to the soil, and is believed to have been applied with benefit. The sandstone is principally found in this valley, or supposed bed of the ancient lake, near its eastern border, while the shale is spread over the whole surface. On the summits of some of the hills of this valley are rounded pebbles of quartz, sandstone, and other primordial rocks, evidently brought down from the upper branches of the Potomac, where such rocks are in place. These being brought down later would necessarily be deposited above the rest, as we do not find them embedded in the shale.

Heavy dykes of trappe rock extend across this part of the county, from near the mouth of Goose Creek, to the Prince William line. These being intrusive rocks, have in some places displaced the shale and risen above it, while in other places a thin coat of shale remains above the trappean matter, but much altered and changed in character. At the eastern abutment of the Broad Run bridge, on the Leesburg turnpike road, a large mass of trappe rock presents itself boldly above the shale; while a little further east, the shale is changed to a black or blackish brown colour; and at the foot of the next hill still further, the red shale appears unchanged. On many of these dykes the summits are covered with a whitish or yellowish compact shale, highly indurated and changed into a rock very difficult to decompose. Hence the soil here is very sterile, and there seems to be no way to improve it. In many places it is but a few inches in thickness, and the rock below, being compact, prevents the water from penetrating much below the surface, thus causing an excess of water in rainy weather, and a scarcity of it in fair weather. The red shale does not appear to decompose readily, as it is found a short distance beneath the surface, and the strata dipping at a low angle, prevents the water from freely descending into this kind of soil. Hence springs here are scarce, and the operations of the farmers are obstructed, by the water being kept too much on the surface. Water power for machinery is here but little used, the streams failing very much in summer.

Iron ore is found in this formation. A large bed of compact red oxide of iron, lies at the eastern base of the Catoctin mountain, near the Potomac River. A furnace was erected here many years ago, by Samuel Clapham, sen. It continued in operation until all the fuel at command was consumed, and then went out of blast. A mill was also erected here about the same time, driven by water power from the Catoctin Creek, which empties into the river immediately above the mountain; to obtain which, a tunnel was cut through a spur of the mountain which projected into a bend of the creek. This tunnel was about 500 feet long, and 60 feet beneath the summit of the hill, and was cut principally through solid rock; and at that day was considered a great work. A furnace has been erected here a few years ago, and has been in blast part of the time since with varied success. A good deal of iron ore has been taken from here, to supply furnaces at a distance; and from the facilities now likely to be had, by the erection of a bridge across the Potomac, at the Point of Rocks, and the ready access thus given to the rail road, this will probably be a considerable business. A bed of micaceous iron ore is met with on Goose Creek, below the Leesburg Turnpike road. This ore is magnetic and believed to be very rich. Copper ore is associated with this ore, and a copper mine has been opened here that promises to be valuable, and is now actively worked. Similar indications are met with in several places further south; and it is likely that attempts will be made to open copper mines in other places. Further up Goose Creek, on the east side, between Cochran's and Gulick's mills, a bed of sandy magnetic oxide of iron is met with. The trappe rocks in this vicinity are filled with small grains of this sandy oxide, and when they become decomposed and washed down by the rain, this sandy oxide being heavy, is deposited by itself, and on examination proves to be the black sand of the counting-house. Chromate of iron is said to be met with on Broad Run.

All that part of the county lying west of the eastern base of the Catoctin mountain, is of the primordial formation of rocks, and includes nearly all those members of the geological column from the granite up. No well marked specimens of that rock are to be met with. On the eastern flank of the Catoctin, rests

a thin belt of mica slate. This rock is composed of quartz and mica in varying proportions, and this belt, on reaching the Bull Run mountain, there expands itself, and forms the whole base of that mountain; and where the mica predominates, as it does there, it sometimes forms excellent flagging stones. Where the quartz predominates, as it does west of Leesburg, it then passes into quartz rock. This rock, on decomposition, forms a light soil well adapted to the growth of the chesnut tree. This belt sometimes rises into a narrow ridge higher than the adjacent parts of the mountain, and is denominated the Hog Back mountain, in contradistinction from other parts. The remainder of the mountain is composed entirely of chlorite slate and epidote, with small veins of quartz interspersed through them. The slate being in excess, and being more readily decomposed, forms most of the soil of this region, while the epidote lies more undecomposed on the surface, and makes much the larger part of the gravel and rocks there. All the primordial rocks in this county, dip to the east at a high angle, sometimes nearly vertical. Immediately at the western base of the Catoctin mountain, a range of magnesian or talcose slates occur traversing its whole length. This feature is general, as every variety of rock extends parallel with the mountains. In this range a vein of magnesian limestone is met with, and is exposed in several places. It however is narrow, in some places only a few feet in thickness, and being difficult to obtain is not much sought after for burning. A number of kilns were formerly in use, and having used up the surface rock have ceased operations.

In the valley between the Catoctin mountain and Blue Ridge a great variety and combination of rocks occur. Along the eastern side of the valley, gneiss is frequently met with on the surface, and where the larger streams have worn deep valleys, it is sometimes exposed in high and precipitous cliffs. This is more particularly the case along Goose Creek and Beaver Dam. Associated with it, however, is clay slate, not so much in rock as in soil, for it being more readily decomposed is seldom found on the surface, except as soil. These two varieties are often met with side by side in thin layers, and their combination at the surface forms a peculiarly favourable soil for agricultural purposes.

The gneiss from the quartz it contains makes a sandy soil, while the clay slate gives it tenacity. This happy combination is a prevailing feature of this entire valley, and renders it one of the best farming sections in Virginia. Another rock that is a valuable acquisition, is horneblende. This kind when first taken from the ground, is always covered as with a coat of rust. This is doubtless the fact, for the oxydasion of the iron it contains gives it that appearance, and colors the soil a reddish hue in its immediate vicinity. Wherever this rock abounds, the soil is durable and the crops are usually heavy. It is sometimes met with having a fine grain, and so very hard as to be almost brittle, though generally very difficult to break, and when broken strongly resembling cast iron, and will sometimes ring, on being struck, almost as clearly. It was used very much formerly for making journals to run mill-gudgeons upon. When found on the surface, it is usually of a rounded form, owing to the oxygen of the air, acting more freely in its decomposition on the angles than it does on a plane surface.

Much of the rock, however, of this valley, seems to partake of the nature of both horneblende and gneiss, and may be termed a horneblende gneiss rock. Beds of magnesian or talcose slate are frequently met with, sometimes containing chrystals of sulphuret of iron. At the base of the Black Oak Ridge, a bed of magnesian limestone is found, where it is burned into lime. The rock, however, lies deep, and difficult to obtain. It contains about 40 per cent. of magnesia, and makes an excellent cement for walls, but does not seem to answer for agricultural purposes. The Black Oak Ridge is composed of chlorite slate and epidote. Trappe rock occurs in the neighborhood of Lovettsville. A few miles north of Middleburg, is a bed of white sandstone rock, of a fine grain, and of a quality suitable for making whetstones for shoemakers and mowers' use. This rock is partly found in lamina, of a few inches in thickness, admirably suited to the purposes of its manufacture. At Francis' mill, on Goose Creek, machinery has been erected for dressing these stones into proper shape, by water power; and many tons are here dressed and transported to the eastern cities.

The Blue Ridge is made up of two distinct rock formations.

The southern part is composed entirely of chlorite slate and epidote, with small veins of quartz throughout. This is common, however, to the primordial formation of this county. The northern portion is almost entirely made up of a whitish colored, compact, coarse sandstone. The Short Hills are of the same kind of rock. In the Blue Ridge these two formations lie against each other in a wedge-shaped form, with reversed ends. At the Potomac River, below Harper's Ferry, at the eastern base of the ridge, a small belt of chlorite slate is seen resting against the mountain, while the rest of it is composed wholly of compact sandstone. This continues to be the case for several miles—the sandstone forming the summit, and is seen rolled down to the base of the ridge, until within about three miles of Snicker's Gap. The sandstone then ceases to form the summit, and is seen no more on the eastern side of the ridge. It then begins to form separate summits, as if striving for the preeminence, but is broken by streams of water, that rise between those summits, into bold and precipitous fronts, and presenting some peculiarly wild and rugged scenery. These two summits deviate still more from each other, until the sandstone range entirely leaves the main ridge, and separates into a detached range of hills. The axis of elevation of these two ranges of rock appears to have differed a little in a magnetic direction, as they entirely separate as they proceed south.

We are here presented with strong evidence of the upheaval theory of geologists. At the base of the Blue Ridge, next to the Potomac River, there appears to be two centres of elevation, above both of which the strata of rock forms part of a circle, as if bent by a force from beneath. In each of these centres the sandstone appears as if shattered and rent, and these rents filled up with quartz, presenting a variegated appearance. This variegated rock is extremely compact, as if formed under tremendous pressure, and may be traced across the river by the rocks in place in its bed. Where the upheaving force appears to have been sufficient to have raised this rock to the surface, it presents itself on the summit of the mountain. The Short Hills present instances of this—where this rock rises in towering peaks above the forest trees, with which the mountain is clothed. This sand

stone rock makes an excellent building stone, and is much sought after for that purpose, and is of different degrees of hardness, some of it being soft and friable. Millstones have been made of it, but the quality was not good, being too close grained.

The course of the Blue Ridge here is about S. 20° W. That of the other mountains is a little more easterly, making the valley rather wider on the Fauquier line than along the Potomac River. The course of the ridge varies but little, until it approaches the place called the Trap, where it appears to terminate and forms a cove, where the Jeffries branch of Pantherskin takes its rise. This cove is formed apparently by another summit of the ridge, which rises and resting on the western flank of the former summit, continues its course further. A somewhat similar appearance again presents itself before reaching Paris, in Fauquier County, where the ridge again seems to terminate. A spur, however, that rises out of the western base of the ridge, continues its course, and soon attains its usual elevation. Over this spur the Ashby's Gap turnpike road passes, and on its summit stands the double-bodied poplar tree, as the corner to the counties of Loudon and Fauquier, and in a line of Clarke County.

These geological details, it is hoped, will not be deemed inappropriate, inasmuch as the study of Geology in connection with agriculture, now engages the earnest attention of the scientific agriculturist. Since soils are formed from the decomposition of rocks, a knowledge of the component parts of those rocks, would seem to be a pretty sure indication of the component principles in the soil. Where the soil is formed from the decomposition of the rocks in place, as it is in the primordial formation of this county, this knowledge is to be obtained the more readily, than where the soil has been transported from a distance, as is often the case in secondary formations. This transportation has been often attended with a sifting process, and from ingredients that would in combination form a good soil, may, by being separated, form an unproductive one. Thus we often see in one section of country a soil too sandy, and in another too much clay, and neither as productive as they would be, if they were mixed in due proportions. But here where no such sifting process has

been carried on, a valuable mixture of sand and clay is met with, and the soil partakes of the character of the rock beneath. Thus the decomposition of gneiss will form a soil more or less sandy, while that from clay slate, chlorite slate, and such rocks, will be more tenacious, and contain a larger proportion of clay. Frequently these different rocks are here met with in thin strata, and their decomposition at the surface produces a due mixture, having sand enough to allow the water to freely percolate through it into the bowels of the hills beneath, and tenacity enough for agricultural purposes, and forming a soil remarkable for resisting drougth. This valuable property is very conspicuously manifested in dry seasons, our crops suffering far less at such times, than they do in some neighbouring counties, even where the land is stronger than here.

The soil of the Catoctin Mountain and Blue Ridge, where chlorite slate and epidote prevail, is a reddish clay with but little sand. The colour is given to it by the oxydasion of the iron in those rock. The composition of Epidote as given in Comstock's Mineralogy, is silex 43.0, alumina 21.0, lime 14.0, oxide of iron 16.5, oxide of manganese 0.25. Chlorite slate, silex 26.0, magnesia 8.0, alumina 18.5, oxide of iron 43.0, muriate of soda and potash 2.0, water 2.0. These ingredients would seem to indicate a productive soil, as it in reality is.

In the valley between the Catoctin Mountain and the Blue Ridge the soil is formed from gneiss, clay slate, horneblende, and their combinations, interspersed with quartz. Gneiss is composed of quartz, feldspar, and mica. The composition of feldspar is, silex 62.0, alumina 17.0, potash 13.0, lime 3.0, oxide of iron 1.0. Of mica, silex 48.0, alumina 34.25, potash 8.75, oxide of iron 4.5, oxide of manganese 0.5, water 1.25. Clay slate, silex 48.0, alumina 25.5, magnesia 1.6, oxide of iron 11.3, of manganese 0.5, potash 4.7, carbon 0.3, water 7.6. Horneblende, silex 47.21, alumina 13.94, lime 12.73, magnesia 21.86, oxide of iron 2.28, oxide of manganese 0.57, fluoric acid 0.90, water 0.44.

From an examination of these ingredients, and a comparison with the analysis of what are termed good grain growing soils, we might reasonably conclude that their decomposition would form a good soil. That such is the fact the census tables abun-

dantly prove. It has been asserted that the proportions of the ingredients in a good soil are not material, so that all that are necessary are there. Lime and potash would seem to be in fair proportions; but since rocks differ in their combinations, a more minute analysis of our soils, appears to be necessary to ascertain whether sulphuric and phosphoric acids are present in sufficient quantity, to render their further application unnecessary. That the former is rather deficient, may be inferred from the fact, that sulphate of lime, or plaster, has had a very beneficial effect on its application; and it may be that phosphate of lime might, on application, prove to be a desirable amendment. As some of our farmers in using plaster, can see but little effect apparently upon their crops, they have been ready to conclude that it had ceased to be of any benefit; while the true state of the case may be, that its use heretofore has supplied the soil with a sufficient quantity to last for some time to come; yet if we were to cease using it for a few years, we might then see a very marked effect on its application again, and thus prove the necessity of its continued use.

In Seneca County, New York, as appears by the "New York State Agricultural Society's Transactions for 1850," good wheat soils have been analysed that contained less than one-half of one per cent. of lime. So small a proportion as this has been considered too little to grow wheat to advantage. It was probably under this impression that Professor Johnson, on his return to England, not long since asserted, "that they would soon cease to grow wheat in western New York." But J. Delafield, who made an agricultural survey of Seneca County, in an able article, proved that there was there a sufficiency of lime, for the production of wheat for some time to come. He, however, recommended to the farmers of that county a moderate use of the article, and suggested a reason why a less proportion of lime in the soil, would answer equally well in this country with a larger one in Great Britain. One principal object in the application of lime, is to hasten the decomposition of organic matter, and in the cool and moist climate of that country in doing this, it would materially aid in increasing the warmth of the soil, and thus hasten the perfection of the grain. But in the hot climate

of this country, that aid was not so necessary, as the heat alone is sufficient here to forward decomposition, and to ripen the grain. The quantity of lime taken off by a crop of wheat is not large, amounting only to about 2¾ per cent. of the ash of the grain, and 6¾ per cent. of that of the straw.

The subject of the analysis of soils and of crops is an interesting one, and should claim the attention of our agricultural societies. Much good might result from a well conducted agricultural survey of this county. We have a great variety of soils, and almost all grades from river alluvion, to an unproductive clay, except very sandy. It sometimes happens that the sterility of a soil depends on the absence of some important ingredient, that might be added without much cost. If one such be absent though all others be present, the crop cannot be perfected. Again, some obnoxious ingredient may be present in the soil, that may render every effort at improvement abortive, when, if we knew its composition, we might possibly apply some corrective, that would not only neutralize its effects, but might make it positively beneficial.

In the eastern part of the county and north of Leesburg, the conglomerate limestone or brecciated marble is found, associated with red shale. This rock extends along the base of the Catoctin Mountain, about half across the county. Here the soil is generally good. Limestone springs abound, and one called the Big Spring, affords water sufficient to manufacture 40 or 50 barrels of flour daily. Trappe rocks occur in many places, particularly along Goose Creek, sometimes covering large surfaces, at other times partially covered up with indurated shale. Where this rock spreads over large surfaces nearly level, the soil is a dark brown coloured clay, very retentive of moisture, and better adapted to grass than grain; the latter being liable to be winter-killed. A deficiency of lime probably occurs here, and there may be some obnoxious ingredient present. Minute grains of iron sand are generally interspersed through this rock, and as it is not acted upon by atmospheric influences, its combination may contain some acid prejudicial to vegetation. Where this rock is thrown into more irregular elevations, and is apparently more broken up, the soil is better. Sometimes it is covered up with a

layer of indurated shale, formed no doubt from the red shale of this region, and hardened by the heat of the intruding trappe. This indurated shale appears to be operated upon by atmospheric influences in a very small degree, and decomposes very slowly, forming a very thin soil above the rock. Such soils are of but little value; and this condition will probably forever prove a bar to their successful improvement. Where the red shale is met with alone, there is more hope of improvement, though here from the low angle of the strata, and the greater difficulty the water meets with in its descent in the soil, the opposite effects of wet and dry weather, are much more visible than in the primordial formation. A still better soil is met with where the shale passes into sandstone. This part of the county being generally level good spring water is rare, and in dry seasons there is sometimes a difficulty in obtaining a supply for stock, and for domestic purposes. East of the valley of Goose Creek and Little River there are very few mills of any kind, and none for the manufacture of flour in operation.

The trees and shrubs found in this county are, four varieties of the White Oak, viz., the common White Oak, Swamp White Oak, Box Oak, and the Chesnut-leaved White Oak, the latter, however, is only met with on the margin of the Potomac River; Black Oak, Spanish Oak, Red Oak, Chesnut Oak, Peach or Willow Oak, Pin Oak; and in the eastern part of the county Black Jack and Dwarf Oak, Hickory, Black and White Walnut, Poplar, Chesnut, Locust, Sycamore, Wild Cherry, Red Flowering Maple, Gum, Sassafras, Persimon, Dogwood, Red and Slippery Elm, Black Mulberry, and occasionally we met with the Aspin, Beech, Birch, Linn, Honey Locust, Sugar Maple, White Mulberry, Sugar-nut Tree, Yellow Pine, White Pine, Hemlock, and Red Cedar; and of smaller trees and shrubs, the White Thorn, Maple-leaved or Virginia Thorn, Hawthorn, Wild May Cherry, Water Beech, Fringe Tree, Red Bud, Black Alder, common Alder, Sumach, Elder, Laurel, Witch Hazle, Hazlenut, Papaw, Chincopin, Burning Bush, Nine Bark, Button Bush, Honeysuckle, several varieties of Whortleberry, Wild Gooseberry, and of brambles, the Green Brier, High Blackberry, Dewberry, and Raspberry Briers; of vines and creepers, the Fox Grape, three varieties; Pigeon or Raccoon

Grape, Chicken Grape, a wild Bitter Grape, Sarsaparilla, Yellow Parilla, Poison Vine or Poison Oak, Clematis, Trumpet-Flower, Wild Potatoe Vine; of medicinal herbs, the Rattlesnake Root, Seneca Snakeroot, several varieties of Mint, Liverwort, Redroot, May Apple, Butterfly Weed, Milk Weed, Thoroughstem, Trumpet Weed, Indian Physic, Lobelia Inflata, and Cardinalis, Golden Rod, Skunk Cabbage, Frost Weed, Hoarhound, and Catnip; of plants injurious to the farmer, the first place must be assigned to the Wild Garlic, Tribby Weed, and Dog Fennel, (two varieties of the Daisy), Oxeye Daisy, Johnswort, Blue Thistle, common Thistle, Pigeon Weed, Burdock, broad and narrow leaved Dock, Poke Weed, Clott Bur, Three Thorned Bur, supposed to have been introduced from Spain by the Merino Sheep, James-town Weed, Sorrel, and in favourable seasons we have a heavy growth of Lambs Quarter and Ragweed.

Of introduced grasses we have Red Clover, Timothy, Herds Grass, and Orchard Grass. Lucerne has been introduced but is little used. Of native grasses the White Clover, Spear Grass, and Blue Grass, several varieties of Swamp or Marsh Grass are met with in some situations, but they disappear with proper drainage and tillage. Of summer or annual grass there is the Fox Tail and Crab Grass, the former worth but little for pasture except when young, but stock are very fond of the latter while it lasts. The greatest objection to them however lies in the difficulty the farmer has in keeping his corn crop clear of them, during wet weather in summer. Of our indigenous wild flowers we have considerable variety, some of whom are worthy the attention of the florist, but as they flourish only when they have undisturbed possession of the soil, some of them may soon disappear in consequence of the land being more and more brought under cultivation.

Of cultivated fruits we have the Apple, Pear, Plum, Cherry, Apricot, Nectarine, Grape, Strawberry, Raspberry, &c. The Plum and Nectarine is injured so much by the curculio that good crops are seldom obtained. It is probable, however, that they would succeed well in some of the eastern parts of the county, where a clay soil predominates, as a good Plum region is always met with in such soils. The Apricot, by its early blooming, is

liable to be injured by spring frosts in our variable climate. The Cherry, being a hardy tree, succeeds well here. The Apple tree will grow well, with proper care, almost any where if the soil is not too wet. But a crop of fruit is more certain where an elevated situation and northern exposure can be had, such places being less liable to the extreme variations of temperature that low ones are subject to. A great desideratum here is good winter fruit, many varieties now used as such, ripening too early to keep long. This is doubtless owing, in part, to our planting varieties that orignally came from the north. There the summers are shorter and the fruit ripens at the commencement of cold weather. Here the same fruit requiring the same amount of heat to perfect it, receives that amount earlier in the season, and becomes ripe before cold weather commences, and when once a fruit is ripe decomposition is ready to take place unless the temperature is so low as to retard it. This we cannot usually obtain in this variable climate, mild weather often extending into the first winter months. Probably the best remedy for this would be, to seek for varieties of winter fruit from more southern latitudes, where they require a longer season to ripen. The little attention that has been publicly given to fruit culture in the south formerly, would seem discouraging to any such attempt; but from the interest now beginning to be felt there, we may confidently expect to receive much benefit from that quarter. Individual exertion will be required by amateur cultivators and nurserymen it is true, but in this progressive age this may only urge to still greater. There are, doubtless, good varieties of fruit to be met with in many places, where their qualities are not known beyond their immediate vicinity, and this we might suppose would be the case much more, where seedling trees were numerous than where dependence had been principally on grafted fruit.

The Pear has been but little attended to in this county, the slow growth of the tree when young, and the liability to blight, has caused inattention to that delicious fruit. We often meet with old and apparently healthy Pear trees, that would seem to indicate a favourable soil, and there would seem to be no good reason to doubt, but that with proper attention in procuring varieties and selecting proper situations, we might enjoy the

luxury of this excellent fruit to an extent now little thought of.

Peach trees generally succeed well here, though in some neighbourhoods complaints are made that they do not grow so well as formerly. That the Peach tree has become diseased in many places is evident, yet there is but little doubt, that with proper care and attention, their destruction may not only be prevented but a healthy growth be obtained. A disease called the "Yellows" has prevailed to a great extent further north, and is beginning to appear here. Where proper care and suitable remedies have been applied there, this disease has been exterminated, and it would be wisdom in us to apply those remedies now in the beginning of the disease here. The disease shows itself by the yellow appearance of the leaves and small wiry shoots with diminutive yellow leaves, springing from the larger branches of the tree, and by the premature ripening of the fruit with red or purplish spots or blotches on its surface. These are certain symptoms of the yellows, and when they once appear there seems to be no remedy, the tree will certainly die. This disease is not caused by the worm at the root, though this may be present, it only causes a sickly appearance of the tree without the other symptoms. There is a difference of opinion among horticulturists as to the cause of the disease; some have supposed it to be a contagious one, brought on by overbearing and an exhausted soil; this having an enfeebling effect, and being continued by planting the seeds of such for successive generations, thereby becoming a constitutional taint, until the life time of the tree has been shortened to a few years. Others have asserted that it was produced by a very minute insect harbouring under the bark in the young wood, thereby poisoning the circulation and obstructing it, compelling the tree to put forth its growth on the larger branches instead of freely extending it to the extremities. But let the cause be what it may, the remedy is the same in both cases, and that is, to cut up, burn and destroy, root and branch, every infected tree. If it is contagious we stop the contagion, if it is produced by insects we thus destroy them and by so doing prevent the spreading of the disease. There is ample proof that the disease will spread from tree to tree, and if one tree of an orchard becomes affected

others are sure to be so, unless pains are taken to prevent it. In other places where this disease has appeared, and the remedy here indicated has been faithfully applied, the disease has been exterminated and a healthy race of trees substituted.

A disease affecting the Morello Cherry tree is beginning to make its appearance in this county. This shows itself by a black warty excrescence or enlargement of the smaller twigs and branches. It is the work of an insect, caused by its depositing its egg in the branch, and the larva feeding on the juices of the tree and obstructing their circulation, causing the twig to enlarge, and, finally, when all the branches become affected the tree dies. The surest remedy for this is to examine carefully when the insect is in the larva state, probably about the first of sixth month (June,) and then cut off and burn every infected twig and branch. Should the tree be generally affected it might be best to commit the whole of it to the flames. By all pursuing faithfully this course, we might save this valuable Cherry tree from destruction amongst us. This tree has been destroyed almost totally, in many counties of Pennsylvania north of us, and the disease is just beginning to make its appearance south of the Potomac River. Now is the time to arrest its progress, in the commencement, for if this opportunity be neglected we may lament the effect when it is too late to remedy the evil.

Tradition informs us, that at the time of the first permanent settlement of this country, the timber was far inferior in size and quality to what it is at present. Indeed it has been asserted that in clearing ten acres of land there could hardly be obtained from it sufficient material to enclose it. The cause was believed to be, that previous to the first permanent settlement being made, the hunters who resided or visited here, were in the practice of setting fire to the forests in order to secure their game the more readily. This destroyed the growth of timber, and when this practice was prevented a vigorous young growth sprang up rapidly. Hence, while we have here a remarkable thrifty growth of timber and excellent material for the wheelwright and plough maker, we have but few large trees.

In agricultural wealth, and in amount of taxation, this county stands foremost in the State, though its area is not above an

average, while that of many others is larger. The following exhibit has been compiled from the census tables and other documents:

Area of the county,			Square miles, 525
Population in 1850; Free white,	15,066		
" " " coloured,	1,373		
" " " slaves,	5,641		
		total,	22,080
Assessed value of real estate,			Dollars, 9,100,221.00
Tax on real estate,	16,380.40		
" personal estate, salaries, &c.,	8,030.57		
" merchants' licenses,	3,942,79		
			Dollars, 28,353.76
Acres of lands in farms, improved,	208,454		
" " " unimproved,	86,221		
Acres of lands in town and other lots, and waste lands thrown out of cultivation,	41,325		
		total,	Acres, 336,000
Cash value of farms,			Dollars, 8,349,371.00
Value of farming implements and machinery,			195,794.00
Number of horses,	6,727		
Asses and mules,	52		
		total,	6,779
Number of milk cows,	5,958		
" work oxen,	425		
" other cattle,	16,005		
		total,	22,388
Number of sheep,			20,727
" swine,			25 967
Value of live stock,			Dollars, 937,592
Bushels of wheat,			563,930
" rye,			8,633
" corn,			749,428
" oats,			117,055
" buckwheat,			3,751
" barley,			75
" Irish potatoes,			21,735
" sweet potatoes,			115
" peas and beans,			920
" clover seed,			338
" other grass seed,			182
Butter,			Pounds, 422,021
Cheese,			12,120
Wool,			60,228
Hay,			Tons, 11,990
Value of household manufacture,			Dollars, 4,171
" slaughtered animals,			165,259
" orchards,			11,458

In value of real estate, in revenue, in live stock, and in slaughtered animals, Loudon stands first in the State; in number of

bushels of wheat, of corn, and in farming implements and machinery second, and in value of orchards she stands as third. This pre-eminence is in part owing to the strength and durability of the soil, but principally to a different system of farming early introduced. Very little tobacco was ever cultivated except in the eastern part, and that exhausting process so detrimental to other portions of the State was not generally carried on here.

About the time that crops began to fail, from an exhaustion of the soil, the use of plaster and clover was introduced. These proving beneficial, were generally resorted to, and have been applied ever since. This, with a judicious system of rotation of crops and grazing, has been the source of the agricultural prosperity of the county; and no doubt may be continued, to gradually improve our soil, and increase its products to an extent much beyond what is now realized.

From the census table, it will be perceived, that every acre of improved land produces, on an average, nearly 7 bushels of the various kinds of grain cultivated here; and every field of 32 acres, yields 220 bushels of grain, besides pasturing and producing fodder for 1 horse, 1 cow, 2½ other cattle, 3 sheep and 4 hogs annually. There are, probably, at least 10,000 head of beef cattle bought, grazed and sold, every year in this county. The yield of butter per cow, would seem to be about 70 pounds a year. This is under the average yield, in places where the dairy business is largely practised; and may be accounted for, by the farmers here, being largely engaged in grazing cattle for market, instead of turning their attention to the products of the dairy. They provide the best of pasture for their beef cattle, while the milk cows are viewed as if of but secondary importance.

In comparing the census tables of 1840, with those of 1850, it would seem that the agricultural productions of the county were decreasing in amount. This is far from being the case, and may be accounted for, from the fact, that the crop of 1839, from which the census tables were calculated for 1840, was, at least, 10 per cent above an average; while that of 1849, was barely an average. This correction being made, the two great staples, of wheat and corn, would then appear to gradually increase, as

they no doubt do. The probability of an abundant supply of Coal, for fuel, has induced the belief, that it is not necessary to retain so large a portion of timber land, for fuel and fencing, as was formerly supposed. Hence, a good deal of new land is brought under cultivation every year; and, no doubt, will continue to be the case for some years to come. The abundance of stone for fencing, in some places, and a resort to hedging, or using other substitutes, will satisfy land-holders, generally, that it is not good economy to keep so large an amount of capital invested in timber lands; while the profits, arising from such lands, when brought under cultivation, would more than supply such need. This, of itself, will increase the products of the county, without making any allowance for more productive farming. By the use of Guano, and other amendments in agriculture, since 1849, it is believed, that the product of wheat has largely increased since that date; and the opinion has been expressed, by well informed persons, that had the estimate of the product of that grain been made, from the crop of last year throughout the Union, that Virginia would, in all probability, have been at the head of the list.

The citizens of this county have not been unmindful of the value of Internal Improvements; and they early commenced the making of Turnpike roads. These roads, generally, benefitted the farming interest, though, they seldom yielded dividends on the stock, except, when first made; and none of late years, since the Canal, bordering the county, has been finished. The history of this county affords a prominent example of the value of such improvements. Many of us can remember when it was usual to pay a dollar, for tranporting a barrel of flour to market. When the Little River turnpike was finished, and the Leesburg turnpike was begun, the price was reduced to 75 cents. This continued to be the price, until the canal was put in operation; and now, from the centre of the county, flour can be delivered in Alexandria for 45 cents per barrel, and from the margin of the Potomac river, for much less. This reduction in cost, is a direct benefit to the farming interest, and is a strong argument in favor of a further reduction, by the Rail-road now projected. Should such a road pass through the centre of the county, the cost of

transporting our products to market, may be reduced nearly one half; besides having the advantage of certainty, at all times. Such an improvement would be of great advantage to the agricultural interest; and could the expense of construction be divided among the land-holders, the burden might be readily borne; but, unfortunately, here, as elsewhere, there are some individuals who do not feel sufficient interest to induce them to do their share, though all wish to see the improvement effected.

One very prominent advantage that most of this county possesses, above many others, is its abundant supply of the purest spring water. The porosity of the soil being sufficient to allow the water to pass freely into the earth, and the slaty character of the rocks, favoring its descent into the bowels of the hills, it finds its way to the surface, at their base, in numerous small springs. The soil being of a silicious character, the spring water is of the purest kind. Limestone springs are met with in particular sections; and those containing Iron are sometimes found. Mineral springs exist in a few places, that are believed to contain valuable medicinal properties. One of these, belonging to Bathsheba Silcott, has been analysed, and is beginning to attain some celebrity in the cure of chronic diseases. The following report, of the analyses of this water, by Dr. David Stewart, of Baltimore, exhibits its medicinal properties:

"The re-action is slightly acid.

Specific gravity, - - - - -	1000.2
Gaseous contents, carbonic acid	
Solid contents of one gallon, - - - .	11.665 gr.

This saline matter is composed of Potash existing, in part, as Bicarbonate of Potash; Soda, as Bicarbonate of Soda; Chlorine, as Chloride of Potassium and Chloride of Sodium; Lythia, Phosphoric acid existing as Biphosphate of lime; Iron, existing as carbonate of Protoxide of iron; Silicic acid, Bicarbonate of Magnesia, Bicarbonate of lime. .100 parts of this saline matter (estimated partly by qualitative analysis) contains:

Biphosphate and Bicarbonate of lime and magnesia, - -	45.78
Carbonate of iron, - - - - - - -	3.60
Bicarbonate of Soda and Potash with Chlorides of Potassium, and Sodium and Lythia,	43.82
Silicic acid, - - - - - - - -	6.80
	100.00"

At the western base of the Catoctin mountain, immediately

below Mt. Gilead, are several springs issuing from the base of a rock, that doubtless contain considerable of mineral ingredients. This water has not yet been analysed, but as a Magnesian slate-rock exists in the mountain above, it probably contains a portion of that mineral. They are on the lands of Dr. Isaac Eaton.

The following exhibit of the elevation of places above tide-water, shows the hilly character of this county.

		Feet.
Potomac river at Seneca Dam,	above tide-water,	188
do Point of Rocks, - -	" " -	200
do Harper's Ferry, - -	" " -	246
Castleman's Ferry, Shenandoah river, Clarke County,	-	365
Snicker's Gap, Blue Ridge, - -	" " -	1085
Carter's Mill, Goose Creek, -	" " -	270
Goose Creek, at Snicker's Gap-road Bridge,	" " -	290
Little river, near Aldie, - -	" " -	299
Nathan Walker's Mill-race, Waterford,	" " -	360
Hamilton Post Office, - -	" " -	521
Purcelville do do, - -	" " -	546
Harmon Gregg's Mill-race, - -	" " -	346
Neersville Post Office, between the hills,	" " -	626
Snickersville, . - -	" " -	730
Middleburg, about - -	" " -	480
Mt. Gilead, do, - - -	" " -	600
Hillsborough, do, - -	" " -	550
A. H. Clarke's, Leesburg and Snicker's Gap Turnpike, about,	-	634
Leesburg, about, - - -	" " -	337
That part of the county lying East of the Catoctin mountain varies from - - -	" "	200 to 350
Base of Blue Ridge, east side, about	" " -	730
Highest Point of Blue ridge, do -	" " -	1400
Short hills do do do -	" " -	1000
The Catoctin Mountain varies, from	" " -	350 to 700
From the Catoctin mountain to Blue Ridge varies, from	-	350 to 730

From this table, it will be perceived, at a glance, that a county so diversified in elevation, must give considerable fall to its water courses. Hence, water power is abundant, and many sites are occupied. Seventy-seven water powers are now in use, principally as Merchant, Grist and Saw-mills. Formerly, when the wheat grown in this county was generally manufactured into Flour, before being taken to market, much more activity was manifested in its manufacture than at present. Farmers, now, believe it to be more to their interest to sell their wheat; consequently, much of it is taken to distant places to be ground. Saw-mills are quite common, but are altogether used in sawing

umber for their immediate vicinity, as there are no forests sufficiently large to justify the preparation of lumber for other markets. The manufacture of Woollen fabrics have been carried on to some extent, and superior articles has been produced, that have sustained a high character in distant markets. There is one manufacture, however, which has been carried on to some extent, and preparations are making to increase it, that is to be deeply regretted. The distillation of grain and the production of Spirituous Liquors, is the cause of so much vice and misery to the human family, that for a person to engage in its production and sale, would seem to be at variance with every just principle that should bind man to his fellow man. If I place before my neighbor an article that I have good reason to know he will use to his own injury, and perhaps destruction, and the distress of his family, am I acting towards him as a brother; and am I not in a degree, at least, chargeable with his criminality? His appetite is depraved, and I knowing this, will place a temptation before him, regardless of the consequence, and for what? why, for the love of money! We feel the deepest horror of the man who will rob his fellow man and murder him; yet, how much better in principle is he, who will furnish his neighbor with the instrument of his own destruction and the ruin of his family, and that too, for gain? If we look into the statistics of crimes and their causes, we shall find that a very, very large proportion of these are caused by intoxicating drinks. Can we be innocent and clear of participating in this amount of guilt, while we convert the staff of life, designed by Infinite Goodness, for the sustenance and support of his rational creature, man, into the instrument of his debasement and destruction?

The number of houses for public worship, for the different religious societies are, German reformed 1, Presbyterian 2, Lutheran 2, Episcopalian 3, Society of Friends 4, Baptist 6, Methodist 15: there are 4 houses termed Free, not belonging to any particular society. Of this number, 10 are East of the Catoctin mountain. This section has been rather remiss in providing houses for public worship; but, from present appearances, a better feeling is beginning to be manifested. Some have lately been built, and others will probably soon be erected. Religion and

morality are nearly connected, and when one gains the ascendency in a neighborhood, the other will be near by. True religion, by bringing man to feel for his fellow man, and care for his temporal, as well as his spiritual well-being, is calculated to promote the happiness of all. Goodness is of a diffusive character; we cannot enjoy it alone; it will manifest itself to others, and thus encourage them to do likewise.

The citizens of this county have not been unmindful of the advantages of education. A handsome Academy has been erected in Leesburg, and the services of able teachers have been secured from time to time. Good boarding schools, in different parts of the county have been supported, and in many neighborhoods, good day schools are kept up throughout the year; yet it must be confessed that, in too many places, an indifference is manifested, not very creditable to those concerned. The importance of good day schools is not sufficiently appreciated by all. It is to them that we must look, to furnish the elements of education to the masses. The rich can obtain education for their children, but the poor should have it provided for them. Our State is providing funds for educating the children of the indigent, but, from the imperfection of the school system, now in use, this fund cannot be properly applied. In many parts of the county, school houses are not within the reach of all, and as those interested with the distribution of this fund, have no control in the selection of teachers, or the management of the schools, its advantages are but partially felt. Could a good system of public schools be adopted, that would bring its advantages within the reach of all, great good might be had from the funds now at the disposal of the School Commissioners. This might be done with but little or no additional cost to those now supporting the present schools; but, should the funds be raised by a tax on property, there are some, now exempt, that would then have to furnish their part. This would, doubtless, cause dissatisfaction; but upon what more just principle could such a fund be raised? The security of property rests upon the intelligence and virtue of the people; and should not property be the instrument of its own security? History furnishes appalling proofs of the insecurity of property, where the intelligence of the mass had not been cared for;

and as like causes must produce like effects, its warning voice should be heeded.

A section of country situated as this is, with elevated ranges of mountains at no great distance to the north and west, and the Atlantic Ocean sufficiently near to the south and east to influence its temperature, and possessing itself a range of altitude of 1,000 feet, might be supposed to present striking instances of atmospheric changes. The winds here from between the north and west, coming as they do, over elevated mountains, are always cool and bracing, and however cloudy the weather may have been they are sure to bring fair weather, if continued. In winter they are sometimes severely cold. Those from the south and east, when continued for sometime, coming from the Gulf of Mexico and the Atlantic Ocean, are always loaded with moisture and as a consequence produce rain. The atmosphere over these waters being always temperate, these winds sometimes produce great changes of temperature here. A southerly wind after a cold one from the north-west, before it has had time to raise the temperature much, is exceedingly unpleasant being cold and moist. The north-east winds are almost always accompanied with rain or snow, and our long-continued storms are usually from that quarter. These storms are believed to have their origin and to commence in the south-west. The air in those regions being often loaded with moisture, and its rarefaction causing it to rise and form clouds in the upper regions of the atmosphere, and these clouds being driven to the north-east, a current of colder air must pass along the surface of the earth to supply its place. Thus presenting the phenomena of two currents of air passing in opposite directions, and accounting for the fact of our north-east storms always commencing at the south-west.

Changes of temperature sometimes occur here that cannot be produced by the prevalence or change of winds. They take place during a calm, and must be accounted for upon other principles, and are greatest when the ground is covered with snow, and the radiation of heat from the earth thus prevented. The cause appears to be, that in a still atmosphere the heat, or what warmth may be in the air, gradually rises until it reaches

a region of the same density leaving the colder air in the lowest places. This will account for the fact often observed, that frost is always found the latest in the spring and earliest in the autumn in low valleys on a still morning, while if the wind blew during the night no frost would be visible. It also explains the well known fact, that in high or mountainous situations, fruit is seldom or never killed after being in bloom. Here the average temperature may be lower while the extremes are less, and it is the extremes that injure fruit.

A remarkable instance in confirmation of this theory occurred in the winter of 1834 and 5. A few days before new-year's day, snow fell to near the depth of 18 inches and cleared off without wind, and the snow softened a little by the action of the sun. It continued still and without wind, for at least a week, and kept gradually getting colder until on the morning of the 5th the thermometer fell to 20° below zero in many places. At Waterford and along the base of the Catoctin Mountain, this degree of cold was indicated, while at Mount Gilead, about 250 feet higher altitude, the thermometer stood at zero. About a month afterwards the thermometers were again below zero but the weather then being very windy they all indicated the same temperature. That winter the rivers were three times frozen up and navigation entirely interrupted, and the Chesapeake Bay was three times frozen over as low down as Annapolis, and once even to the Capes of Virginia, which had not occurred, it is said, for 40 years before.