

## PART FOURTH.

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### SOILS AND AGRICULTURAL FEATURES.

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1383. This is a brief part of the Report, and, like the one just ended, is to a great extent, an annotated index. In the Second Part, I have noticed generally, the soils and agricultural features presented by each formation within the area, or the areas of its outcrop. It is proposed here, to group these soils and their areas, and to bring together the scattered notices.

Much remains to be done, before the subject of the soils of Tennessee, their kinds, the excellencies and deficiencies of each, to what best adapted, the special treatment each requires, and what they, in general, need, to bring them up to a maximum fertility, can be presented in a full and satisfactory way. What follows is nothing more than a contribution to such a presentation. It is in good part, an outline of a classification of the soils, or of the areas containing them, from a geological point of view.

1384. At the last is added a supplementary chapter, on climate, consisting mainly of tables prepared by Prof. W. Y. Stewart, of Glenwood, near Clarksville, from his own observations. The State is greatly indebted to this learned, accurate and indefatigable observer. Prof. S. has kept a full and unbroken record of the weather, for the last twenty years. These tables are supplementary to the article on the climate of the State, in chapter I, which was written before the war.\*

\*The following note from Prof. Stewart, bearing on periodic oscillations in the annual quantities of rain falling, will be found interesting. It is introduced here as a matter of convenience. "In looking over my records, I think I can trace an ascending line (in the tables of precipitation,) in the advancing years; very much zigzagged by the oscillations from year to year, but still *generally* ascending. Taking the year 1851, as the minimum, there is a general increase in the annual quantities of rain which culminates in a maximum in 1865. The tables give, it is true, a double curve, but the general mean line is unmistakable. It would appear, therefore, that the period of these observations covers a little more than half a curve of oscillation, (15 years,) and that a whole oscillation, from maximum to maximum, would require thirty years. The tables appear to show that for 1866 and 1867, the curve makes a start towards another maximum. Whether this will be realized or not, will remain to be determined by future observations. As it seems almost certain, that, in other meteorological phenomena, there are such periodical oscillations, it would be highly interesting to determine whether this is the case with the aqueous meteors."—W. M. S.

## CHAPTER XVIII.

## SOILS AND AGRICULTURAL FEATURES: CLIMATIC TABLES.

1385. Of all the interests in any way growing out of the natural resources of the State, the agricultural are by far the most important. We have, it is true, mines of iron and copper, beds of coal, quarries of superior marble, and many other resources of the kind, all in the aggregate, constituting a source of wealth of which we may justly be proud. Yet these, compared with our soils, contribute little to the productive capital of the State, and comparatively as little to the thrift of the people. The soils are everywhere. Every man has an interest in them, and they are not less universal in their distribution than they are essential to the prosperity and happiness of all.

1386. It has been stated in § 23, that *variety* in natural features is a characteristic of Tennessee. This holds good in the soils as well as in the rocks, topography and climate of the State. It holds good, also, in agricultural character, for this depends upon the soil, the topography, and the climate, and varies with them.

1387. The climate controls the soil, to a considerable extent, and says what shall spring from it and thrive, and what shall not. It permits cotton in the southwestern part of the State, and forbids it in the northeastern. In certain regions it prematurely opens flower buds, and exposes tender germs to late killing frosts, while in others, the buds are not forced, and escape the frosts. A knowledge of the general character, as well as of the whims of the climate, is desirable, in order that we may control our work accordingly. For that reason, such facts bearing upon the climate of the State, as were accessible, have been incorporated in this Report.

1388. In the latter part of paragraph 315, (which see,) it is stated, that the soils are derived from the rocks which underlie them, and that to these rocks, for the most part, they owe their characteristics. This is true, and hence it follows,

that a geological map is a map of the soils. The only practicable way to map the soils, is to map the formations beneath them. The geological map which goes with this Report, is an agricultural one in so far as the boundaries and areas of the several classes of soils are concerned. Anyone desiring information as to where are limestone soils, sandstone and shale soils, can generally find it by *studying* this map and the text which goes with it.

1389. The map presents to the eye the several great agricultural districts of the State, exhibits their relative importance as to the areas they occupy, and brings them prominently before us for consideration and discussion. A larger map, going still more into detail, would be proportionally more useful, but this is highly suggestive, and in connection with the text, can be used to good purpose. See, for example, what it teaches with reference to the Central Basin and the Cumberland Table-land.

1390. Below, the principal classes of soils are given, with more or less of detail. The notices of these are mostly in the paragraphs given, and to these the reader is expected to refer.

The alluvial soils are not included here. (See § 1164.)

#### (1.) CALCAREOUS SOILS.

1391. The soils coming from the disintegration of limestone, dolomites and calcareous shales, are the best in the State. These present many varieties, depending upon the impurities contained in the rock. Sandy, argillaceous, fossiliferous, limestones, like those of the Nashville Formation, yield, perhaps, the very best soils we have. Clayey limestones and dolomites give a strong and excellent soil, especially if the latter contain fine gravelly chert in due proportion. Calcareous sandy shales are often overlaid by rich arable land.

1392. The areas on the Map colored blue, (formations 3 and 4;) light pink, (form. 2*c*;) red, (form. 5*d*;) and the areas 6, the upper part, (Lithostrotion Bed,) of 8*a*, and of 8*b*, are underlaid by calcareous rocks, and are the most desirable agricultural regions of Middle and East Tennessee.

1393. With reference to the *Central Basin*, see §§ 227-249; also, §§ 694 to 697.

As to the Valley of East Tennessee, §§ 90-168; also, §§ 658 to 660, §§ 527 to 534, and §§ 572 to 576.

As fo the Western Valley, §§ 250-271; also, §§ 827 and 870.  
See in addition, § 217 and §§ 890 to 893.

Also, as to the slopes of the Table-land, § 935.

(2.) SOILS OF WEST TENNESSEE.

1394. These are, in general, underlaid by unconsolidated strata of sands and clays. See § 1081.

In reference to the topography of West Tennessee, see 272-294.

The soils of the different formations are spoken of in §§ 1116, 1142, 287 and 288.

(3.) SOIL OF THE CUMBERLAND TABLE-LAND.

1395. The area of the Cumberland Table-land is presented prominently on the Map. The topography and climatic features of this region are given in §§ 169 to 205.

This is a large portion of the State, and deserves more study than there has been time to give to it. The general character of its soils are spoken of in §§ 1075 to 1077; and I wish it to be understood that I do not represent them as by any means equal to our limestone soils, or to those of West Tennessee. Nevertheless, there are many reasons why a home on this Table-land is very desirable. With good management, its lands may be made very productive.

1396. The following communication will be read with interest. It is from the pen of an accomplished gentlemen and farmer, who has resided on the Table-land for many years, and whose name has already appeared in our pages. (§ 198.)

"So much has been written about the Table-land of Tennessee, by interested parties, that anyone stating the plain truth will be said by them to be an enemy to the progress of the State. Such persons have, in my opinion, been a real drawback upon the prosperity and settlement of the Table-land. It is true of a country, as Washington Irving has said of a man: 'The public will forgive a man any thing sooner than being overpraised.' So of a country, if it be praised for that to which it is not entitled, emigrants on being disappointed, will not give credit for its real merits.

But many things belonging to the Table-lands of this State can scarcely be overpraised. The water, the climate and the health, have not been fully valued in the estimate of this part of our State. On the great plateau of Tennessee the soft, limpid, purity of the water is admired by all observing travelers. The climate, equally exempt from the frigid rigor of the North and the debilitating heat of the South, is no where excelled for the comfort

a population. Here may be enjoyed the clearness and brightness of an Italian atmosphere, without the baleful influence of the Maremma marsh, or the debilitating effects of the African sirocco. Here Hygeia's reign is undisputed. Neither cholera, consumption, nor fever, ever pretend to dispute her salutary sway. Emigrants from the frozen shores of the St. Lawrence, or from the fenny bogs of the Carolinas here meet the invigorating breeze; and if health is to be found upon earth, they may hope for it here.

The extent of the Cumberland Table-land within this State, makes it important that its value in an agricultural point of view should be well understood. Reaching across the State from north to south, it is, on the road from Kingston to Sparta, at least forty miles wide from east to west. Most of this large surface is beautifully level, and generally well covered with timber, consisting of various kinds of oak, chestnut and hickory, with other kinds along streams. The soil is a sandy loam, easy of culture, and though not so fertile as other portions of the State, may be made by the application of lime, which is within reach, and proper tillage, very productive at moderate expense.

The Table-land is the genial and appropriate home for all the delicious fruits of a temperate climate. The apple, when raised here, will keep longer than when raised upon a lower level in the same latitude. The same facts are observed here which have been demonstrated elsewhere, that all Alpine productions are superior for their kind. Though the soil will not produce so many bushels of wheat per acre, yet the bushel is heavier than that raised upon richer land. So of other cerealia and the grasses.

At no distant day, these highlands will be much prized, not only for the production of all kinds of fruits, but for the production of stock. For seven or eight months in the year cattle here require no expense from the owner, except salting. Sheep are as healthy as the deer which roam over the forests; no rot or foot-rot ever attacks them; old age appears to be the only malady the flock-master need fear. The natural productions of the soil furnish a copious pasturage for two thirds of the year, and improved meadows of bluegrass, red top, or other perennial grasses, would supply the balance. Here swine live from year to year, and increase without care, upon the natural range. Here the sportsman may find the wild boar as fierce and with tusks as long as any that ever honored the chase in the Hercynian forest."

1397. Mr. J. W. Dodge, who formerly resided in Cumberland County on the Table-land, and who made himself and the mountain famous, by raising and bringing to market, superb apples, related the following circumstance to me: "While I was at the Hermitage, painting Gen. Jackson's picture, the old General one day said to me, in his emphatic way, Mr. Dodge, I have traveled over the Table of the Cumberland Mountain, frequently, and it is my opinion that it is destined to become the garden spot of the Union."

#### (4.) SOILS OF THE UNAKA MOUNTAINS.

1398. The topographical and climatic features of the Unaka Ranges have been considered in §§ 40 to 89, and their agricultural features in §§ 416 to 420, 477, 478 and 496.

It is as pasture, or range ground, that these mountain areas are at present interesting. A rich spot here and there, may be found in cultivation. At these, heavy crops of wheat and other cereals are sometimes raised. I recollect of seeing, at one point near the "Cold Spring," (see p. 32,) buckwheat high enough to completely hide a man riding through it on horseback. The soil and position of these rich spots appear to be well adapted to the raising of Irish potatoes.

(5.) SOILS OF THE BARRENS AROUND THE CENTRAL BASIN.

1399. These have a siliceous basis, and may be compared with those of the Table-land. See §§ 208, 216 and 890.