Shapard--Geology and medicine; or rather the influence of geolo...
Original Communications.

GEOLOGY AND MEDICINE;
OR, RATHER THE "INFLUENCE" OF GEOLOGY ON THE PHYSICAL
DEVELOPMENT OF MAN, AND IN THE PRODUCTION
OF HIS DISEASES.

BY

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It is not my intention to say much in this paper about Geology, but that it influences Medicine has long engaged my attention to about this extent:

Some twenty years ago, or more, a copy of the report of the then State Geologist, Professor Safford, I believe, on the Geology of the State, fell into my hands, and I was very much interested in his geological divisions of the State, and particularly of the three divisions lying nearest to me, and I have ever since been disposed to observe the differences in the diseases in these three divisions, and am now tempted to place my observations before my professional brethren.

First then, I will give, in few words, a short resume of Professor Safford's divisions referred to, from memory, as I have not the work before me.

The divisions are the Great Basin of Middle Tennessee—its Highland Rim and the Cumberland Table-land. The Basin is composed of some
nine or ten of the best counties in the State. Its center is at or near Murfreesboro. Leaving that place and travelling in any direction, from fifty to one hundred miles, you will ascend an elevation of several hundred feet, and find yourself on the Highland Rim, which, on this side, extends from thirty to forty miles to the foot of what, I believe, he calls a steep escarpment, of about a thousand feet in altitude, on ascending which you will find yourself on the Cumberland Table-land, commonly known as the Cumberland Mountains, but which is a vast plain, varying in width from a few miles to twenty-five or thirty, and in length extending across the State. The term plain, above, may not be very appropriate, not so much so as table-land, nevertheless it may assist some persons at a distance in forming a right conception of what the top of the mountain is, many of whom suppose it to be a peak or ridge.

Now, I will only say of the geological formation of these divisions, that the Basin is lime-stone, the Rim partially so, the Table-land not at all so, but, on the contrary, is capped over with sand-stone.

The Basin abounds in lime in its soil and water, and it possesses all the elements necessary to physical development. Its flora is luxuriant—its grasses and cereals are unsurpassed by any on the Continent. Consequently its fauna is on the same level of physical perfection—the largest of hogs, cows and horses, and as well developed, and as physically perfect men and women, as can be found in the world.

The Rim ought to be sub-divided into the barrens, an almost sterile region lying nearest to the Basin, and the clay lands lying near the escarpment, or foot of the mountains, which are quite productive, and an exceedingly beautiful and pleasant country to live in, but as a whole the Rim is defective in lime, and the conditions of life are not so favorable as in the Basin. Its flora is not so luxuriant as in the latter division, fewer grasses, and cereals less abundant, with a corresponding fauna, smaller hogs, cows and horses, and after long observation, I am thoroughly of the opinion that the Rim produces smaller men and women than does the Basin. I have no doubt this last statement will be received with incredulity by many persons, nevertheless, I am convinced of its truth, and therefore write it down. If the population of the Rim could be kept separate from that of the Basin for one or two generations, the truth of my proposition would be apparent. But as it is, the population of the Basin is constantly, so to speak, boiling over and on to the Rim, and occasionally even on to the Table-land. And there are also constant accessions from other lime-stone countries.

The Table-land is entirely without lime. The water is clear and sparkling, and as pure as if just distilled from the clouds of heaven. And yet, the conditions of life there are much more unfavorable than on the Rim.
even. The flora is less luxuriant, the trees smaller, fewer grasses, and those coarser and less nutrient, almost no cereals, hogs, cows and horses smaller, men and women less well developed, and all, men, women and children, have the appearance of having had defective nourishment, and many of them look more or less anaemic. I have long looked, in vain, for the hardy mountaineer of romance. I grant that there may be many robust and hardy men on the various mountains of the world, but I venture that such men always grew up in the valleys below, where subsistence was plenty, and that after they had received their development, they were forced up the mountain, as the less thrifty of the Basin people, in the struggle for wealth and position, are shunted up the Rim and on to the Table-land to-day. I know that such is not the commonly received theory, but yet I believe it to be true. I remember that, a year or two ago, the Hon. Mr. Gladstone, of England, wrote an article for one of the monthlies on Monte Negro—Black Mountain—in which he extolled the Monte Negrians as the possessors of all the physical qualities and manly virtues that belong to the most heroic races. Without detracting from the good qualities of the Monte Negrians, and also without much knowledge of the topography of Monte Negro, I venture that it is not like our Table-land, a vast mountain plain, but that it is a mountain country, interspersed with valleys and low-lands, where subsistence can be raised, although their city is set on a hill.

Even the Scottish poets have sung of the superiority of the Low-lander over the High-lander. And in this connection I will mention that, during the Crimean war, I saw the statement in some of the papers—a French medical journal—that the conscripts brought from a certain department of France to the city, were rejected by the recruiting officers as unfit for military service on account of their defective physical organization, which was attributed to the fact that the geological formation of that department was slate. And still, in the same connection, it is well known that the Shetland pony, the smallest of the equine family, comes from a country where the formation is shale, and where only a little stunted grass is found for his subsistence.

My conclusion is, that no population on the Table-land, depending for subsistence alone upon the products of that division, will ever attain as high a physical development as the population of either the Rim or Basin. Of course this does not apply to such places as Sewanee and Tracy City, which, with their splendid hygienic conditions, are connected by rail with the Basin and other lime-stone regions, whence they can draw all their needed supplies, of the best quality, rich in all the elements necessary for physical perfection. And yet a little lime would not hurt even them.

Now for the diseases of these geological divisions. First of all, the
diseases known as malarial are far more prevalent and more severe in the Basin than on the Rim, in which they are quite common and not wanting in gravity. On the Table-land they are almost, if not entirely, unknown, at least as originating there.

Cholera, of course I allude to what is known as Asiatic cholera, is of frequent occurrence in the Basin as an epidemic, while it is almost unknown on the Rim, and never known on the Table-land. On the Rim, at the time of the tunnelling of the mountain for the Nashville and Chattanooga Railroad, near thirty years ago, which work was through the lime-stone base of the mountain, there was quite a number of operatives, principally Irish, at the approach of the tunnel, who lived without regard to the laws of hygiene, and the cholera being epidemic in the Basin, also attacked this settlement.

Dysentery sometimes appears very much as an epidemic in the Basin, while here on the Rim it will be observed only sporadically, and in a milder form than in the former division. On the Table-land it is not of frequent occurrence.

Diphtheria, of late the scourge of the Basin, is unknown on the Rim, at least such is my observation. True, I occasionally hear of cases reported as occurring in the country in the practice of other physicians. The physicians of our county are intelligent and educated gentlemen, and if they report cases of the disease in their practice, of course it is true. But I have been practicing physic in this county nearly thirty years, and in that time have seen a good deal of the diseases of the county, and I declare, most emphatically, that I never saw a case of diphtheria in the county. And Dr. Murrell, of this place, who has probably seen more of the diseases of the county than any other physician who ever lived in the county, coincides with me on the subject. Neither have I ever seen a case of membranous croup in the county.

Typhoid fever is very common in the Basin and on the Rim. And I am sure that I have seen the disease in as grave a form on the latter as in the former division. It may be unfrequent on the Table-land, but when it does occur there, it presents the same characteristics as in the other divisions.

The exanthemata are the same in all the divisions so far as I have been able to observe. And so are the phlegmasia.

It has been claimed, of late years, that the Table-land is more favorable to consumptives than either of the other divisions. It may be so. I am sure they fare badly on the Rim. In fact, while our Rim has a most delightful summer climate, we are on the cold side of the mountain, and our winters are rather severe.

Finally, is it not obvious that, while man and the domestic animals, and
also the vegetables, on which they chiefly subsist, thrive best where certain geological formations predominate, there are certain diseases that thrive best there also? And does not the theory that certain diseases are caused by the "lower organisms" accord with the above facts? May not they find their pabulum in certain formations just as do the "higher organisms?" On what other theory can the paradox be explained that the Basin, in which physical perfection is attained, is the most unhealthy of the divisions, while the Table-land, which is the most healthy of the divisions, is the one in which physical development is the most imperfect?

I expect the opinions advocated in this paper to be controverted by two classes of people. First, those who have not studied the subject and know nothing about it. Second, those who imagine that their interests require the refutation of those opinions. But truth ought to, and will, prevail.

It may not be amiss for me to say here that I grew up in the Basin, practiced my profession there a few years, but that the most of my professional life has been on the Rim, near enough to the Table-land to have frequent calls there. And while I have seen a good deal of all three of the divisions, which are the subject of this paper, yet I do not claim to have seen the whole of any one of them, and have only written about what I have seen.

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Clinical Reports.

CLINICAL OBSERVATIONS.

BY

Dr. M. Reich, of Tiflis, Asiatic Russia, translated from the German.
(Zehender's Monatsblatter).

BY

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A Stroke of Lightning; the Skin Burned from the Left Ear to the Abdomen;
Rupture of the Choroid of the Left Eye; Retinitis; Amotio Retinae.

"It is hard to judge of the causes of the loss of vision or amblyopia, which here and there have been noticed from a stroke of lightning." These words of Leber, found in his significative and instructive mono-