I

Colorado Springs
Jan. 8-1911

Dr. G. V. Black
Chicago Ill.

Dear Doctor Black-

Since I last wrote you we have been doing some work toward outlining more clearly the grographical boundaries of the mottled enamel. We have come to use the terms "areas of susceptibility" and "immunity" in talking about this matter.

When I last wrote you we had run onto the first immune area in our vicinity, that being Eastonville which you will remember is out to the East & North about 30 miles. Not only right at this town but in other places we have seen native persons (native to Eastonville) & not over here we found mottled enamel.

This fact together with the fact that Monument, which is in the same geological formation, which we speak of as the Palmer Lake Divide, just 25 miles due west of Eastonville, showed not exactly

immunity but a very low percentage of mottling led me to an examination of the intervening area a few weeks ago.

Between these two towns the road follows along near the summit of the ridge (the Divide) but lies on the north or Platte River slope. You will remember that on one side of the slope is the Arkansas River or south slope.

We stopped at every ranch house & school house & found pretty nearly every native on the Divide, and we failed to find a trace of what we were looking for.

At the ranch of John Cummings we found two children and the mother who had been raised right there & their enamel was normal. We thought this was a good place from which to take a sample of well water for analysis, so we dipped out 3 gallons into a large bottle we had with us. We had another empty bottle which we were going to fill in case we came onto a ranch where the children had the mottled enamel, but we found no such.

I received the analysis of this water a few

days ago from Prof. Stirby's laboratory and I
write herewith a copy. —

Constituents as Determined	Parts per Million
Potassium	2.67
Sodium	4.92
Calcium	10.50
Magnesium	2.34
Iron	1.84
Alumina	4.30
Silica	36.00
Sulphuric acid (SO_4)	4.85
Chlorine	2.40
Bicarbonic acid (HCO_3)	52.86
Organic & Volatile Matter	14.90
	136.78

(over)

Compounds as they probably exist in solution in the Water	Parts per Million
Potassium Sulphate	6.94
Sodium Sulphate	2.33
Sodium Chloride	3.96
Sodium Bicarbonate	9.31
Calcium Bicarbonate	42.44
Magnesium Bicarbonate	14.09
Iron Bicarbonate	
Alumina	3.31
Silica	4.30
Organic & Volatile Matter	36.00
	14.90
	136.78

Solids by Evaporation - 97.00

Note - The solids by evaporation expressed in Grains per U.S. Gallon are 5.65

If you can get a similar analysis of the Chicago water from the City Chemist it would be of interest to put it side by side with the enclosed copy & see what the difference is.

As time goes on we shall aim to collect similar water analyses from the various areas of known susceptibility and immunity with the hope of finding something common to or differing from each, although Prof. Stirby says that he doesn't think the waters will show anything.

Just now we are delaying to find out if our city chemist can make these analyses & so save the money on our appropriation that it will cost if it has to be done in Stirby's laboratory.

Before this work was done on the Divide I dropped off the train at Castle Rock which is the principal town between here & Denver & examined the school there. I failed to find a trace of mottled enamel & the school was one having three good sized rooms full of children, most of whom were natives of that locality.

I took a sample of water, but not knowing how much was required for analyses I didn't get enough.

I find that an analysis takes about three gallons.

Since the beginning of the school year I have been doing the work in Teaching Orthodontia at the Dental School in Denver & am gradually accumulating some evidence relative to the problem around Denver. I am finding that there is more of it there than we had thought. I have seen some very typical cases grown in Denver.

Next month I am to discuss this problem before the City Dental Society in Denver & before them I shall finish writing the history of the investigation up to date & also arrange a day to examine one of the larger grade schools in Denver if I can get permission.

I am anxious to fasten the curse onto Denver's shoulders if I can so that they cannot point their fingers at Colorado Springs quite so hard.

There is no question but that the problem exists there but to determine in what proportion is the question.

So far as we can see now, our work is done as to school examinations in this immediate locality with possibly two or three exceptions which are not

pressing just now. Localizing other susceptible areas a distance from there ought to be done and much as we have tried to get away from the water idea, yet we keep coming back to it in hopes that it will show us something. At least we must be in a position to meet arguments along that line as they so frequently appear.

Ethel at least we ought to have water samples from all afflicted areas to compare side by side with a sample from an immune area.

Now as to that question of the time of appearance of the brown stain we are coming more & more to the opinion that the color does appear after eruption and probably some little time afterward.

I am seeing a few cases where there is a slight coloration present which according to the parents' testimony was not previously there and the parents are alive to the situation & are watching it closely.

I feel that it will not be long before we will be able to state pretty positively our way or the other in regard to this phase of the matter, and I feel that it is an important one.

I know that Lee of our dentistry is now at work on a

1

case that is badly disfigured cutting off five of the anterior teeth and he has promised that he will let you have some of the teeth for practicing.

Hoping that you are well I am

Very Truly

Frederick S. McKay