more, near the Barehill's Copper Mine, and again near Scott's Mills, about eighteen miles north, north-west from Baltimore. The only important localities in Maryland are in the metalliferous range in north-western edge of the mica-slates (formation No. 5) in which it is usually associated with the chlorite slate noticed in chapter III. It occurs massive as well as in octahedral crystals and grains. An Iron Furnace at Sykesville, in Carroll county, is in part supplied by ore which is mined in that vicinity.

It is also obtained in Baltimore county, near the Northern Central Railroad, about twenty-four miles from Baltimore, and is used at the Ashland Furnaces, near Cockeysville. Near Dear Creek, in Harford county, a variety was mined and used at the Harford Furnace near Bush. It contained 18 per cent. of oxide of titanium.

5. *Carbonate of Iron.*

In chapter III some notice was taken of what I have provisionally termed *Iron Ore Clays*, a portion of the cretaceous formation. They are numbered 22 in the table, and their position is shown to be included within the north-western portions of formation 21.

There are some very interesting geological considerations connected with these clays which were alluded to briefly in chapter III and will be duly attended to in a subsequent report.

The iron ore in these clays attracted attention at an early period in our history and has always been celebrated for the excellence of its iron.

The ore occurs usually in flattened nodules weighing from 100 lbs. downwards. In some localities there are irregular shaped masses of considerable size. It has a close, compact structure and a grayish dun color which has caused the name of *hone ore* to be applied to it.

It contains from 33 to 40 per cent. of metal *combined* with oxygen and carbonic acid, and more or less mixed with earthy matters and small proportions of manganese.

The Pig Iron produced from this ore, when smelted with charcoal, has always maintained a high reputation, and when made into bars it is especially esteemed for all purposes wherein strength and toughness is required. The high price of wood has induced many iron masters to smelt this this ore by means of Anthracite Coal, by which excellent foundry iron is produced.

There are a number of furnaces existing along this range which extends from near Elkton, through Baltimore to the vicinity of Washington. Several of these are in operation, but most of them are "out of blast" owing to the depressed condition of the trade in this country at this time.

Westward of the ores in this group of clays, we do not again meet with Carbonate of Iron until we reach the shales numbered 14*a* in this table. The first range of these (in the lower part of which we may expect the ore) is between Licking and Tonaloway Creeks. I believe, however, they have not yet been discovered therein. Out-crops of ore appear in these shales in Sideling Hill and Town Hill. These will doubtless prove to be the carbonate if they be penetrated beyond the reach of the oxydating effects of the air, which changes the carbonate into an ore analagous to hematite.

Near the mouth of Town Creek a thick stratum of an ore of this kind exists, which, from its proximity to the canal and railroad as well as to the coal region, cannot fail to be made available upon the revival of the iron trade.

As we find in Pennsylvania in the umbral shales, 18*b*, an important bed of Carbonate of Iron we may expect it in corresponding geological positions in Maryland. On Dunkard's Creek, near Uniontown, Fayette county, Pa., it occurs in a continous stratum varying from one to three feet thick. Its position is a little above the limestone, as shown in the map, whose extensive outcrops in Alleghany county were described in chapter III. It may be confidently expected that further explorations in bringing this ore to light will materially add to our facilities for *cheaply* manufacturing iron.

It is used at Union Furnace, on Dunbar's Creek, and I was informed by the proprietor that one ton of iron is produced from two-and-a-half tons of roasted