TERRACE CANYONS AND CLIFFS.

In Powell's "Exploration of the Colorado River of the West," occurs the following description of the Terrace canyons which are cut through three great inclined plateaus: "Conceive of three great geographic terraces, many hundred feet high, and many miles in width, forming a great stairway from the *Toom-pin Wunear Tu-weap*, below, to the the valley of the Uinta, above. The lower step of this stairway, the Orange cliffs, is more than 1,200 feet high, and the step itself is two or three score miles in width. The second step, the Book cliffs, is 2,000 or more feet high, and a score of miles in width. The third or upper step, is more than 2,000 feet high. Passing along this step, for two or three score miles, we reach the valley of the Uinta, but this valley is not 5,000 or 6,000 feet higher than the *Toom-pin Wunear Tu-weap*, for the stairway is tipped backward.

"Climb the Orange cliffs 1,200 feet high, and go north to the foot of the Book cliffs, and you have gradually descended so that at the foot of the Book cliffs you are not more than 100 feet above the foot of the Orange cliffs. In like manner the foot of the Brown cliffs is but 200 feet higher than the foot of the Book cliffs, and the valley of the Uinta is not quite 300 feet higher than the Brown cliffs.

"To go by land from the valley of the White River to the *Toom-pin Wunear Tu-weap*, you must gradually, almost imperceptibly climb as you pass to the south, for 40 or 50 miles, until you attain an altitude of 2,500 or 3,000 feet above the starting point. Then you descend from the first terrace, by an abrupt step, to a lower one. Still continuing to the south you gradually climb again, until you attain an altitude of more than 1,000 feet, when you arrive at the brink of another cliff, and descend abruptly to the top of the lowest terrace. Still extending your travels in the same direction, you climb gradually for a third time, until you reach the brink of the third line of cliffs, or the edge of the escarpment of the lower terrace, and here you descend by another sudden step to the plane of the river, the upper terrace through the Canyon of Desolation, the middle terrace through Gray canyon, and the third through Labyrinth canyon.

"The bird's-eye view, shown on this page, is intended to show these topographic features. The escarpment below, in the foreground, represents the Orange cliffs, at the foot of Labyrinth canyon; the second escarpment, the Book cliffs, at the foot of Gray canyon; the third, away in the distance, the Brown cliffs, at the foot of the Canyon of Desolation. It will be seen that the three tables incline to the north, and are abruptly terminated by cliffs on the south. For want of space the whole view is shortened. In the three canyons there are three distinct series of beds, belonging to three distinct geological periods. In the Canyon of Desolation we have tertiary sandstones; in Gray canyon, cretaceous sandstones, shale and limestone; between the head of Labyrinth canyon and the foot of Gray canyon, rocks of cretaceous and jurassic age are found, but they are soft, and have not withstood the action of water so as to form a canyon. These formations differ not only in geological age, but also in structure and color."

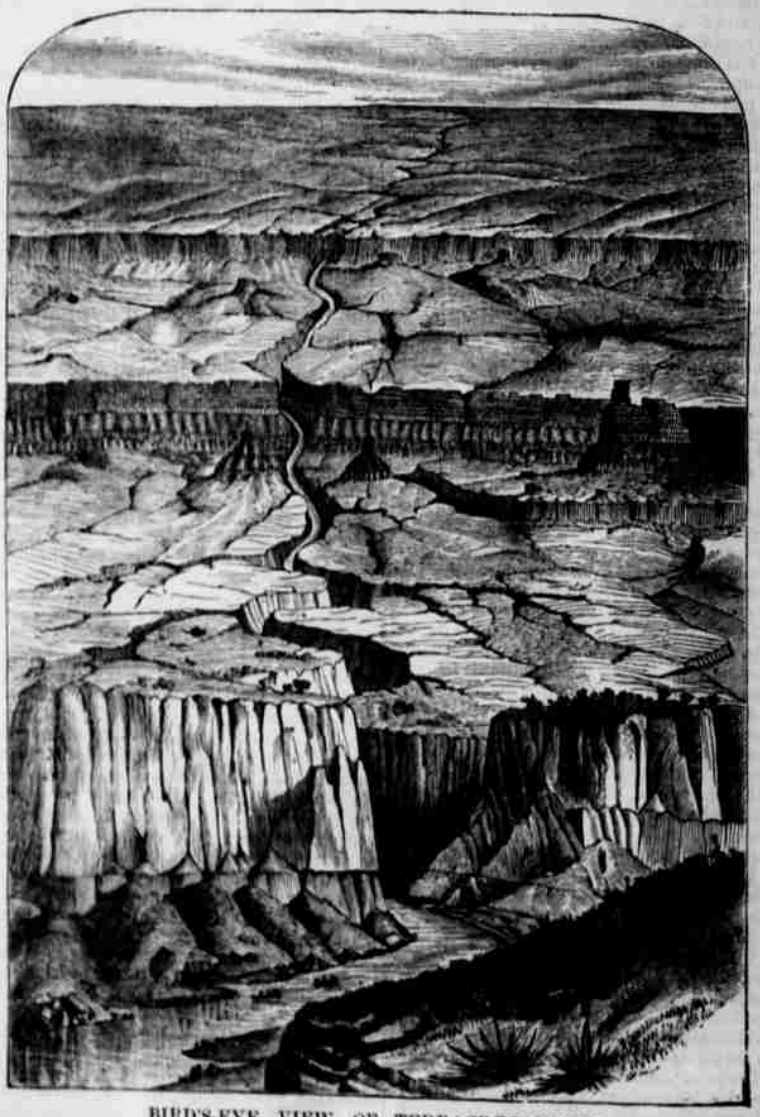
Mr. Powell has a technical description of these terraces, with their geological peculiarities, somewhat in detail. Deductions are drawn from their formation also by Prof. Le Conte in his recent work on Geology, published by Appleton & Co., of New York, in either of which works the reader who is interested may find further details.

STRAW DYNAMITE.

By submitting straw to a boiling operation for 15 or 18 hours in an alkaline solution (salts of soda or of potash) at a temperature of 2° to 3° Baume, the straw is then easily disintegrated, and the fatty or other soluble matters which it contains are dissolved and carried off by the water, when the latter is withdrawn. The fibers are then triturated, and a perfect washing effected at the same time by means of either a cylinder stuff engine, similar to those used in paper mills, or by means of revolving millstones. During the trituration a current of water should constantly wash the fibers.

It is essential that this pulp does not retain any alkaline reaction, which is ensured by adding sulphuric acid or hydro-chloride acid in sufficient quantity that the washing water has a slightly acid reaction. The fibers thus triturated and prepared are, after having been perfectly dried, ready to undergo the reactions which render them explosive. To facilitate the manipulations, the pulp is treated by the paper machine, and should produce a sheet weighing about 300 grammes to the square meter. The thickness may be varied at will. The sheet thus formed is cut into fragments three or four millimeters square, immersed in nitro-sulphuric acid, and well washed. To transform the materials into nitro-cellulose more economically, the fragments may be immersed in a compound of nitrate of soda or of potash and concentrated sulphuric acid, the result being the same.

A nitro-cellulose of straw is, according to Mr. A. Lanfrey, of Chartres, France, thus obtained of a very energetic explosive property, and at the same time of great stability, qualities which the nitro-cellulose of cotton does not possess. The absolute stability of this nitro-cellulose, of such importance to explosive bodies, is thus explained. The fibers of the straw are formed of cellulose containing in the state of combination a considerable quantity of silica in the form of silicates. This silica acts in straw nitro-cellulose in the same way as in dynamite, fixing the nitro-glycerine, and giving a stability to this substance, which it does not possess when it is alone. For this reason he prefers oat straws, which contain more silica than the other straws, although they also give good products. The fragments of straw nitro-cellulose thus neutralized and retaining a slight alkaline reaction, are put, after having been drained, into a nitric solution containing dextrin, and if required powdered charcoal in a state of suspension. These solutions vary with the uses to which the explosive is intended to be put.



BIRD'S-EYE VIEW OF TERRACE CANYONS.

The following conversation actually occurred at the recent Loan exhibition at Albany: Young lady (earnestly looking at a picture across the alcove)—"I wonder if these are Landseer's." Young man (who happened to be near)—"I thought they were dogs." Y. L. (repressing a smile)—"Yes, but are they Landseer's?" Y. M. (blushing, and suspecting a breed of dogs unknown to him)—"I thought they were pointers."