New Chrome Yellows.

THE compounds of chromium with lead have been successively treated in former numbers, (pages 11, 52, 80, 139, and 334,) in which are described all the varieties from yellow orange to red. There are, however, some other compounds of chromium with zinc and baryta which give peculiar shades of color, and, thus far, seem to be but little known. They will undoubtedly come into use as soon as they are known and appreciated.

CHROME BARYTA, OR BARIUM YELLOW.—This is a very beautiful pale sulphur yellow paint. It is made from a solution of chloride of barium, which is first made slightly alkaline with caustic soda, till it is at the point of giving a precipitate. Then a solution of neutral yellow chromate of potash is added as long as a precipitate is formed. This precipitate is then carefully washed and dried. It has the advantage over lead yellows that it is not acted upon by sulphurous vapors, which will blacken lead compounds.

ZINC YELLOW OR CHROME ZINC is another very important color. It possesses a peculiar pale tone, not found in the chrome compounds of lead, and has recently been introduced as a paint. It is best made from a solution of sulphate of zinc, which may be obtained very pure, and is very cheap, being a waste product of all ordinary galvanic batteries in telegraph offices, electroplating establishments, etc. The zinc yellow is a basic compound of oxide of zinc and chromic acid; the neutral and the acid compound is soluble in water, and thus can give no precipitate. For this reason a solution of red bichromate of potash gives no precipitate in a solution of sulphate of zinc; while by the combination of constituents only a soluble bichromate of zinc can be formed. Neutral chromate of potash, or bichromate mixed with sufficient caustic soda, gives a beautiful yellow precipitate; but at the same time a red solution is formed, containing the soluble bichromate of zinc; and by further addition of chromate of potash no further precipitate is formed, as the zinc is retained in the solution, so that, in this way, neither all the zinc nor all the chromate can be utilized. If, however, before the precipitation, the neutral chromate of potash is mixed with so much caustic lye that the amount of alkali is double that of the neutral salt, then a yellow precipitate will be formed with the solution of sulphate of zinc, and all the zinc may be precipitated. On these facts the following method is founded.

A quantity of sulphate of zinc is dissolved in water, and, if necessary, purified by settling and decantation. A smaller quantity of chromate or bichromate of potash is also dissolved. About ten test-tubes

are now each half filled with the zinc solution and placed in line. To the chromate solution caustic alkali is added, till a drop of it produces a precipitate in the first test-tube; and at the same time it is observed if a further addition of the mixture to this test-tube produces a red color, which would indicate the formation of red bichromate of zinc; if this be the case, a further portion of caustic solution is added to the chromate of potash, and the mixture tried in the second test-tube. If now again a red solution appears at the same time with the yellow precipitate, a new portion of caustic lye is added, and this is repeated till the yellow precipitate is formed, without a simultaneous red coloring of the supernatant liquid, which must appear either colorless or light yellow, like a solution of neutral chromate of potash. As soon as this occurs, the contents of the test-tubes are poured into the original sulphate of zinc solution, and then the mixture of chromate of potash and caustic lye is added, as long as a precipitate takes place. The precipitate is afterward washed and dried, and forms a pale yellow, in color between Naples yellow and the palest yellow chrome lead.