new mode of manufacturing colours, at a cost so insignificant as to ensure a ready and inexhaustible market. These are features of exciting interest; and, if fully realised as promised, must undoubtedly be attended with important consequences, by revolutionizing the world of light and of colour.

Mr. Watson freely acknowledges what is due to other electricians. He admits that Professor Daniel's galvanic battery is distinguished for producing a continuous light; but from the expense of maintaining the action it could never be profitably applied to common uses, and was, therefore, a costly ornament, not a marketable commodity. This great distinction is, of course, fatal to its utility for the purposes of every day life. Strongly influenced by this impression, Mr. Watson turned his whole attention to the finding of means of producing this light at a small cost. We are informed that he has fully succeeded in his object; that he can produce and maintain this splendid light continuously for any required length of time, not only without cost, but actually at a profit, by the aid of a chemical transformation of the elements used in the working of the battery. These elements have hitherto consisted almost entirely of the common mineral acids, zinc and copper: occasionally iron, lead, and tin were used, but sparingly, and without any important acknowledged results. Mr. Watson's new agents, or electrolytes, are only five in number, and from these he produces no less than 100 valuable paints or pigments, of a superior quality and character, surpassing in marketable value the articles from which they are produced, and by which the light also is fed. It is, in fact, maintained that not only is the light thus created without cost, but absolutely at a profit, by the additional convertible value of the elements transformed by the chemical process. The mode also of producing these colours is asserted to be not by any subsequent mixture of the elements, but results from the actual development of the electricity in the battery, the materials employed also aiding in the galvanic effect by giving constancy, from the want of which united recommendations as Mr. Watson observes, the best form of batteries at present in use are absolutely worthless for a practical purpose such as lighting.

The nature of the action thus produced, and the mode of the process observed, is then touched on. We were also informed that the Maynooth battery is the great favorite with electrical experimentors, and that all the successful exhibitions of the electrical light have been made with this battery. Without changing its form, Mr. Watson has endeavoured to supply its deficiencies, and render economical its working.

He says: "Prussiate of potash, or, as it is known to chemists, ferro-cyanide of potassium, gives with the salts of iron a most splendid blue pigment.—Prussian blue; which, when pure, is of the greatest possible value. In the Maynooth battery we employ the prussiate of potash thus: to the iron cell we add prussiate of potash, and to the zinc cell also the same salt, although we restrict the quantity greatly, for reasons which need not be described here, but which to those having any acquaintance with the nature of galvanic arrangements will be at once apparent. Our products are Prussian blue, of a quality and colour equal, or as we have been disinterestedly informed by those dealin the article, far superior to any in the market. Our other product is a peculiar blue pigment, of a colour resembling, and from specimens which may be seen at our manufactory at Wandsworth, closely vying with the artificial ultramarines. This pigment, from its chemical constitution, as proved by our analyses, we have termed the ferro-prussiate of zinc. The insoluble nature of these pigments, and their consequent removal from the galvanic circuit by precipitation, gives to the Maynooth battery a greater constancy, as we have before described, than there remains to it in its normal state. In addition to rendering profitable the working of the battery, the prussiate of potash has a distinct galvanic action, in the manner before described.

"The discoverer of the Maynooth battery is also the inventor of another form of battery, of which we also have availed ourselves for making colours. This form consists of platinised lead and zinc, arranged precisely in the manner of a Smee's battery, and is similarly excited by nitro-sulphuric acid. In this battery our pigments are chrome yellows, produced by adding the bichromate of potash precisely in the same manner as with the prussiate of potash. The depth and tint of the pigments, which with chromes constitute their value in the market, we vary with the proportion of the salt added. As regards the galvanic effects of the bi-chromate of potash, it is precisely the same as with the prussiate of potash.

"The power of the two forms of battery just described, and their applicability to the purposes of electrical illumination, from their constancy and intensity, will be best appreciated when it is stated that a platinised lead battery is about fifteen times as powerful as a common Wollaston battery of the same size. A cast-iron battery is a little less powerful than the platinised lead one, but it is cheaper in its first erection, since the iron plates do not require to be platinised. Three platinised lead batteries excited by a solution of nitre and sulphuric acid, or three cast-iron batteries excited by nitric and sulphuric acid, will afford the most brilliant light, equal, at least, to 300 wax candles, whilst it requires 160 cells of Daniel's constant battery, or 250 of the ordinary Wollaston battery, to effect the same object. Three of the lead or iron batteries will occupy just one-sixth the space occupied by Daniel's arrangement, and one-twelfth of what is occupied by Wollaston's.

"The expense of constructing a platinised lead or iron battery is far less than any of the other forms of battery in use. For instance, a platinised lead or a plate of cast iron, of an efficient size, may be had for 1s., whilst a platina plate of the same dimensions will cost nearly £3. Moreover, a platinised lead or cast-iron battery, without any of the means by which we have effected an economy, may be worked for one hour with a resultant of the same power for one-tenth part of the expense of working a Grove's battery for the same time.

"In addition to the cast iron and platinised lead batteries, we employ a third form, which is identical in arrangement with the old form of Wollaston battery, but free from the defects of that instrument. The sulphate of zinc, which usually attaches itself in the form of metallic zinc to the copper-plate in Wollaston's arrangement, after the battery has been in action a short time, we find is carried down as a splendid blue pigment, much resembling the better description of "smalts," by adding prussiate of potash; hence the constancy of the battery is maintained so long as any fresh acid remains in the cells.

"It will be easy to perceive that if prussiate of potash gives with iron a blue colour, and chromate of potash with zinc a yellow, that if these salts be added in a battery of iron and zinc—the prussiate to the iron and the chromate to the zinc, the resulting products having access to each other through a diaphragm—the colour produced will be a green, of a depth of tint dependent on the quantity of the two normal colours forming the compound. In like manner, by adding prussiate of potash to the lead battery, a white pigment is produced of great body, and perfectly free from the fault of blackening by exposure to sulphuretted hydrogen, the zinc seeming to act as a protective agent. If chromate of potash alone be added to the iron battery, a deep brown colour is produced. Lastly, if lime be added, with chromate of potash, to the lead battery, a red pigment is produced, of great brilliancy and body.