If possible, no two were to be alike. It is obvious that, by the use of one block and the two or three varied inks which were then common, our resources and contrasts were soon exhausted, and the order went forth that if we could not improve we must fall back to the old black and white. The order was too remunerative to be given up without a struggle. We resolved to make our own inks, and, as we had phials of the beautiful dust colors, we tried, and found our resources largely increased. A little of the powdered blue verditer fell in the centre of a card which had just been pulled with orange size, for bronzing; and we could have cried *Eureka*, like Archimides of old, for there was the brilliant blue of Mr. Frenchman. We had, by accident, found out one of the laws of simultaneous contrast; and partly by dusting, partly by using metal, and partly by printing one color upon another, we produced such a succession of changes of color as to excite the envy of ink makers and printers generally. An artist-friend said the cards, when displayed, were like a sparkling melody. Our greens intensified our reds; our violets purified our yellow. In succession of tints, tones, and varied hues, these cards have hardly been surpassed. The aniline colors were not then in existence, and we had no magenta ink. We had to use carmine, lakes, cobalt, and other expensive colors. Colors changed, too, by contrast. The exquisite brightness of one tint became dull when opposed to a different surrounding. We soon found that there is not only a simultaneous contrast of color, but also a simultaneous contrast of tone, for we found light tones appear lighter and dark ones became more intense. Thus, Mr. Green, when he used red and white, added a line or two of green to intensify his red. Mr. Yellowtint found that his straw-tinted paper took away the brilliancy of his red ink. Thus red tends to color the paper around it with green; green, red; orange, blue; blue, orange; greenish-yellow, violet; violet, greenish-yellow; indigo, orange-yellow; orange-yellow, indigo. With a few pieces of colored surface paper these facts are easily demonstrable. Respecting the effect when printed on white paper, we should remember that orange will make the blue deeper, and *vice versa*; red, green; and so on through the list. White heightens the tone of all colors to which it is contiguous.

When black letters appear on a colored surface-ground, they no longer have that intense hue they have when printed on white paper. On blue they are a failure; on orange (red lead) they are telling and brilliant, and assume a greenish bronze; on violet they are rich, in a greenish-yellow tone; but the old yellow paper and black letters give us nothing but a poverty-stricken appearance, for the majority of yellows are weakened by black, which is thus rendered more intense. It should be remembered that—

1. Black Ink upon Red appears dark green.
2. Black Ink upon Orange, Bluish-black.
3. Black Ink upon Yellow is Black, with a slight tinge of Violet.
4. Black Ink upon Blue is Orange-grey.
5. Black Ink upon Green appears Reddish-gray.
6. Black Ink upon Violet appears Greenish-yellow-grey.

In this chapter on the Theory of Color-Printing positive and simple results only are given. They may be all verified by means of strips of tinted paper to represent lines, or by placing one piece of colored paper upon another. It should not be forgotten that one man in every ten has a defective eye for color, and that one in every fifty-five is either color-blind or is incapable of telling green from red. The existence of this defect is an insuperable bar to the success of a color-printer, as there is no known remedy for it. A highly-organized eye for color derives great enjoyment from a well-arranged and well-balanced harmony of coloring. Perhaps the highly-organized individuals exist in the same proportion as the color-blind; but the great mass of the people enjoy harmony of color in the same manner as they enjoy harmony of sound.

Our "Boss" and His Apprentices.

Now, boys, just read the following extract over carefully and thoughtfully, and tell us what you think of it. Our opinion is that there is a mine of gold in what is laid down in this little paragraph, provided the advice and hints given therein are followed. What's the use of taking the trouble to learn a trade if you are only going to be a botch. Determine to be a good workman; it is just as easy, and easier, too, after the start, as it is to be a "blacksmith." Never slight your work. Deserve success, and it will be sure to come. Rest assured, as you prove worthy, so will your success be. And after you have achieved success in a mechanical point, don't forget or neglect to put into practice as soon as possible the concluding three hints—they are the crowing glories of a well-served apprenticeship:—

"Our 'boss' tells us a great many things, and, for the sake of our fellow-apprentices, we here recount some of them:—He says that one reason why country printers find it difficult to obtain situations in the city offices is, because they don't learn the trade properly. He warns us to do our spacing evenly, and to justify each line sufficiently tight to stand of itself in the stick; to divide our words correctly, either on 'sound' or on the 'vowels,' but that we must not run over the 'ed' in such words as 'stocked,' 'cried,' and 'moored;' that we must not put two thin spaces where a thick one or an en quadrat would answer; that a 'j' and an 'f' should have a little more space before and after them than other letters, because the lower part of the one and the upper part of the other project over; that a five-em space must be placed after the inverted commas which begin a quotation, and before the apostrophes at the conclusion of it, unless the last word of the quotation is followed by a comma or period; that a thin space must be placed before a colon, semi-colon, interrogation, and exclamation mark, and after them when they are followed by apostrophes; that in distributing we must put the type in the proper boxes, and keep it off the floor; that particular care must be exercised in the distribution of the italic, display, and job type; that we must pick up all the type we drop on the floor at the time we let them fall, and that if we make any 'pi' we must distribute it at once and not stow it away; that spaces in a blanked line must be next to the type and not at the end of the line; that we must not make our quadrat box a 'pi' receptacle; that printing-office secrets must never be disclosed; that all the nooks and corners of the office must be swept out clean every morning, that we must avoid all that is evil and cling to the good; that we must be tidy and neat in our dress, polite and agreeable, truthful and honest. Then, as an important piece of advice, he says, when we get our trade, we must join the Printers' Union, get married to a sensible girl, and make all our boys first-class printers. These are some of the things our 'boss' tells us, and we are going to try and follow his advice."