

ing ink was evident, but the typewritten copies were very different. In one letter book not a single typewritten letter was legible. Every page was an indistinct blur of blue and purple. In the other book a different ribbon had for the most part been used, and every letter written with that was clear and distinct; while on the pages of the same book where other ribbons had been used not a single word or even letter could be picked out of the confused blur of colour.

"The durability of typewriting has been made the subject of much scientific research; for its importance is great. In the departments at Ottawa very little attention is paid to the matter. Every person who runs a machine is allowed to use the ink which suits his or her fancy, and will insist on having it, and reports to his chief that no other ribbon will work on that machine. The chiefs have never thought about the matter, and to save trouble and argument the copyists are generally allowed to have their own way, although as a matter of fact ribbons of any established manufacture can be used on any machine in the service. The notion that special ribbons are necessary for the machines of special makers has no foundation.

"There are three classes of ribbons in use—the black or record ribbons which will not copy, the so-called 'permanent copying ribbons,' and the general mass of ribbons of red, green, violet and blue, which are all copyable. The first class—'black record' ribbons—have carbon for their base and are all permanent. Ink of this composition is for the most part used on carbon copying papers and, if the paper of the copy be of the proper

texture, the resulting copies are indelible. The second class contains a number of ribbons which produce permanent writing and some which do not. The third class should be rejected without hesitation for everything but the most unimportant purposes. They may be easy to work, and many other plausible reasons may be put forward on their behalf, but they are all fugitive.

"Experiments made at the Printing Bureau, however, show that, while the letters written by ribbons of the second class may be permanent, it does not follow that copies made from them are always permanent. This would appear to be caused by the fact that, even in the 'permanent' or 'indelible' ribbons, the copyable ingredient of the ink smeared on the ribbon is often made of an aniline colour. The indelible or permanent ingredient may not be transferred by the slight dampness of the leaf of the copying book. While, therefore, these permanent ribbons are satisfactory for originals, there seems yet to be something wanted to prevent copies taken from them from fading. The instance above cited of the two letter books which passed through the fire shows that a typewriter ink may be found which will copy and still resist another wetting, but no experiments were made to prove whether the same ink will resist exposure to light.

"While, therefore, the enormous advantages of the typewriting machine will extend its employment more and more over the whole field of office work, it should be borne in mind that it has its own special limitations and that great care should be taken as to the ribbons made use of.