

Many readers have asked for technical details on printing processes and terms mentioned in TPA. I always hesitated to answer these requests within the pages of this magazine, as my command of English is too limited for detailed (technical) explanations.

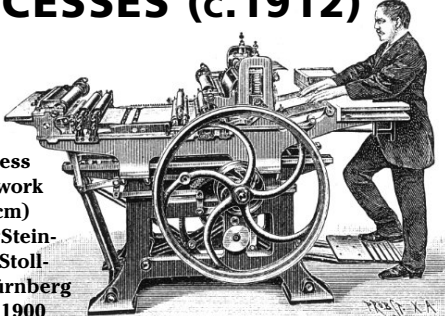
Now I think I have found a good solution for this "problem". An old article which not only explains all "modern printing processes" used before 1912, but which provides also some interesting historical information and, of course the personal/actual opinions and trends of the British authors of that time.

Letters received in the meantime referring to Colour Printing part 1 + 2 in previous TPA issues, show that I am on the right way.

COLOUR PRINTING

THE VARIOUS MODERN PROCESSES (c.1912)

"NORIS"
platen press
for litho work
(37 x 53 cm)
Built by "Stein-
messe & Stoll-
berg", Nürnberg
Advert c. 1900



Harry Potterton kindly supplied a original copy of "THE TIMES" (No. 40,000 - Printing Number) from Tuesday, Sept. 10, 1912.

I am going to reprint most of this comprehensive article. Unfortunately the names of the authors are not mentioned. Some (company/artist/publication) names the writers refer to are unknown to me. But I strongly believe that this article will answer many questions, puts some light on the economic/technical situation in the (art) printing business of that time and has also some entertaining aspects (from today's view).

For illustration I have chosen some cards / printing trade adverts from my collection.

Con't from TPA 15: < Part 3 >

Printing Methods con't.

SPEED AND OUTPUT.

The writer does not support the principle of printing mammoth sheets of three and four colour process blocks, especially if work of good quality is demanded. There are often occasions when it is more economical and expedient to produce process colour work in small sheets or by the single plate on large platen presses specially built for this class of work. These combine many of the qualities which must be found in the cylinder press, on which best colour work is printed. Many of the best platen presses are of German manufacture, and have been chosen and used by the writer, after an experience dating back to the first experimental stages of printing process colour blocks. Among the most suitable platen presses may be mentioned "THE VICTORIA" and "THE PHOENIX", both of German manufacture, and the "COLTS ARMOURY" press, which is of American origin and make.

Speed and output are not synonymous terms in three and four colour work - if we accept the very cheap class which does more than anything else to hinder the advance of the process in universal favour. Indeed, such is the care necessary to ensure exactitude that "more haste, less speed" is a motto which should generally be adopted in connexion with this process.

Generally it may be said that each machine, whether cylinder or platen, should be driven by direct motor, so that uniform speed, which is essential to perfect rolling and register, may be maintained. The direct motor is also more economical.

ARRANGEMENT OF THE PRESSROOM.

In works of considerable size it is advisable to separate the presses engaged on colour work from those used for general printing. Heavy presses should always, if at all possible, be placed on the ground or basement floor. In addition to extending the life of the press, by giving it a firm base, it may be run at a greater speed with equally good results. This is desirable in the case of all printed work, but for colour process it is essential that the base be without any "give", so that

smoothness of running and consequent absence of vibrations can be depended on and exactitude of register ensured.

Light is one of the first considerations of the machine room, and the presses to be used for colour should be given preferential treatment, a north light, if possible, being secured. The delicate gradations of the yellow plate, which exercise such a powerful influence on the finished picture, alone demand the the greatest possible assistance from lighting. It is a mistake of the greatest magnitude to consider, as some printers seem to do, that a little less or a little more yellow will not matter in three-colour work.

In the winter months, and during overtime, when natural light fails, electric arc lamps (preferably using the enclosed system) should be provided, giving pure light, in order that the machineman may be able to maintain evenness of colour during the run. Gas light and incandescent electric light destroy the colour values, especially the yellow. The pressroom must be dry and well ventilated. The heating apparatus of the room is also a most important consideration, and temperature of as nearly as possible 63deg. Fahr. must be maintained day and night. It is not sufficient to keep only the paper dry; presses, formes, rollers and inks should be kept as far as possible at an even temperature. Space is one of the first considerations, as the less handling printed work of this character receives the better.

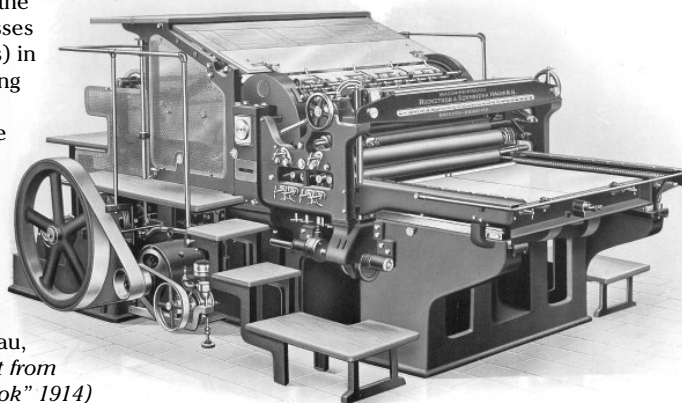
MACHINEMEN.

A machineman with a good eye for colour should be carefully chosen for the charge of a press producing colour work, as something more than careful making ready of the plate and exactitude of register is required. It is not enough to secure these two important points in printing; the third - even, regular colour - is absolutely necessary. The machineman should, as far as possible, be engaged continually on colour work. This is in the highest degree desirable. Use becomes second nature; and experience demonstrates that better results and a larger output are obtained than when work is not selected and colour is alternated with other classes of printed work.

In these days of specializing the machineman engaged in producing colour work will materially add to his usefulness by making part of his recreation the study of the works of old and modern painters admired for the technique and colour values they possess, and all artistic work embodying grace and form and excellence of colouring. Needless to say, the best process engraver's work will be rendered useless unless it is intelligently and sympathetically treated by the man in charge of the printing press. We know of more than one machineman who has gone to one of the London Galleries in his dinner hour to compare his printed proof with the original painting.

(con't next page)

The 'flagship' of the "VICTORIA" presses (not platen press) in 1913. Max. printing size 80 x 120 cm and plenty of fine little extras to make printer's life easier. "VICTORIA" presses were built by "Rockstroh & Schneider" from Dresden-Heidenau, Germany (Advert from "Klimsch Yearbook" 1914)



PAPER AND INK.

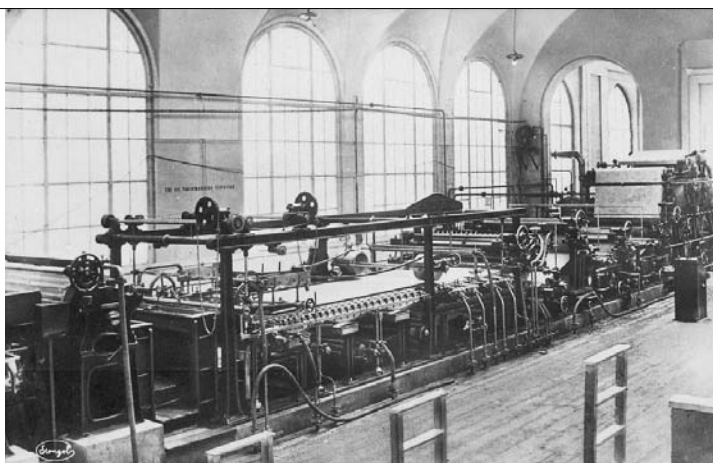
The paper usually employed for the printing of three and four colour process illustrations is termed "art" or chromo paper. This is made by applying a mixture of clay and glue to ordinary paper, which is termed the body paper, and is a compound of varying proportions of wood pulp, esparto grass, and other ingredients made in the ordinary way in reels. It is then covered with the coating, which has been ground exceedingly fine and mixed to a milk-like consistency, brushes being used to work out all small particles and provide against any unevenness of coating. The paper is then automatically carried to the drying room, calendered to the required surface or finish, and cut to size. Its quality and suitability for colour work depend not only on the kind of body paper and clay used and the care exercised in coating, but also and particularly on the thorough maturing of the body paper before being coated. Proper care and time must be given to the work of drying and calendering before cutting and despatching to the printer.

Objections have been made by some critics to the use of this paper, on account of its glassy and "unsympathetic" nature, and the statement has been made "that it is now well understood that many of the beautiful and luxurious editions and periodicals published within the last few years, at an immense expenditure of time and work, will last but a short time. And it is most especially unfortunate that artistic inspiration which has expressed itself in the illustrations and composition and printing of such works will not become a heritage of future generations". The consideration of these objections is a matter of concern alike to the papermaker, engraver, and printer. They are in some measure, especially as regards work of lasting value and interest, being met. The greatest concern to the printer is the susceptibility of the clay-coated paper to atmospheric conditions.

PRINTING INK.

This is a most important item and problem in the printing of three and four colour process illustration. In most cases the three natural or primary colours – blue, red and yellow – are used. These are generally purchased ready for use from the printing ink manufacturer, although it often happens that printers find that modifications of these colours must be made to "suit" the nature of the repro-

Big machines like this one were used in paper mills to make paper. Exhibited at the "Jahreschau Deutsche Arbeit, Dresden 1927, "Das Papier". Official card no. 32. Photo card produced by "Stengel & Co", Dresden.



duced subject. Few printers, for instance, would be unwise enough to attempt to use the three primaries alone in the reproduction of a strong *Morland* or a *Gainsborough* landscape.

Printing inks being a combination mainly of pigments and varnishes ground together in certain proportions, the better and more suitable the materials used, and the more perfectly mixed and ground, the cleaner and more brilliant the printed result. The better the quality also, the greater amount of pigments to the pound, whilst the greater fineness of grinding gives a larger covering area, cleaner working, and therefore a greater output, as there is less necessity to stop and wash the forme.

Unless when three and four colour work is produced simultaneously – i.e., when the three colours are superimposed on each other by the medium of three presses linked together, or one or other of the little used multi-coloured presses, the order of printing is first, yellow; secondly, red; and thirdly, blue.

COLOURED INKS.

The colours must be slightly more transparent than those in general use by lithographic printers, in order that by their combination and part assimilation all the various tones and shades of the original picture may be gained. The yellow ink should, as the foundation colour, be of sufficient "tackiness" to adhere firmly to the surface of the printed sheet, but should on no account be stiff enough to loosen or detach parts of the face of the paper. The red ink, which, if possible, should be

printed at not longer than a day's interval, should adhere to the yellow, leaving a skin perfect and smooth without any roughness whatever, in order that a sharp impression may be obtained by the subsequent printing. The blue ink, which is used to complete the picture, should follow after a similar interval, and should be equally "sympathetic" to the other two colours, and, whilst adhering perfectly, be of such a consistency and of such body and transparency as not only to allow the two previously printed inks to play their part in the colour scheme, but also to combine the three printings in a perfect picture.

When a fourth block or printing is used it is generally printed after the yellow, and so becomes the second working. It is usually in black, but may be varied into a black broken with a little white, green, or other colour, according to the nature of the subject.

In every case, in order to secure clean, sharp impressions, it is desirable that the inks be of such quality and consistency and have such "sympathy" with the paper being used, that the forme is practically cleaned of all ink deposited on the plates by the rollers after each impression.

ROLLERS

The rollers for colour work should be fairly firm, have a good face, and not too much "tack", or they will not transfer the ink properly to the plates. A set of rollers should be kept for colour work only, in addition to a spare set in case of accidents. These should be kept in dry place, as one of the chief ingredients in a roller is glue, which is readily



> "Maschinenfabrik zum Bruderhaus", Reutlingen (Germany) not only built all needed machinery for the paper making industry, but had its old paper mill and furniture factory. Illustrated is a giant calender used to give paper a smooth surface etc.

< "Beit & Co.", Hamburg, was one of the many factories supplying the graphic trade with special printing inks for all the different printing processes. I chose this advert as it looks different from the many traditional designs. (from DBSD, Oct. 1907 issue)

Dr. Weitzel & Co. SPEZIALITÄT: ○
Sämtliche Maschinen für die Papierfabrikation

Papiermaschinen, Kalander, Quer- und Diagonal-Schneidmaschinen, Schneidmaschinen für Wasserzeichen-Papiere, Holländer, Walzenschleifmaschinen, Umroll- und Feuchtmaschinen etc. etc.

affected by climatic changes. All rollers should be free from cuts or bruises of any description, and the best roller should be put next the cylinder in every instance. when a roller is in proper condition it should pick up the stiffest ink without difficulty and transfer it in its fullest intensity to the forme. The stiffer the ink the harder the rollers must be. New or "green" rollers should never be used, as not only does the ink lose its brilliancy, but the impression will be lacking in sharpness. When the work does not extend the full width of the machine, a little oil should be run up at the ends, so as to prevent the ink getting hard and causing the roller to break away.

GENERAL APPLICATIONS.

– BOOK, MAGAZINE, AND ART ILLUSTRATION.

Ten years ago comparatively few printing offices in Great Britain had printed a set of three-colour process blocks. To-day the bookstall at any London or provincial railway terminus amply demonstrates the tremendous change effected by the three and four colour process. Although much of the ground formerly occupied by other reproductive processes has been covered by this method, it must be maintained that the larger portion of the field which it is successfully occupying to-day has been entirely self-created, and but for it would be as barren to-day as it was 12 or 14 years ago.

The perfecting of this process had no immediate influence on book illustrations. Although publishers had quickly and unanimously embraced the means of illustrating their books by the speedy and economical half-tone method, they showed a general unwillingness to believe that the rendering of faithful colour reproductions was possible by an enlargement or extension of the same process. The first book of any importance to be illustrated throughout the three-colour process was "War Impressions", published in 1901 by Messrs. Adam and Charles Black, of Soho-square, W. The plates were engraved by the Hentschel Colourtype Process, and printed on "MIEHLE" two-revolution presses by George W. Jones. This work was quickly followed by the publications of "Japan", "Happy England", and other works by the same firm, and was the first of the series of books published by Messrs. A. and C. Black and of similar works issued by many of the principal publishing houses of Great Britain. So powerful has been



Large Press Room, Bureau of Printing & Engraving, U.S. Treasury, Washington, D.C. publ. by "A. C. Bosselman & Co." from New York. Printed in Germany. Publ./printer no. 9655. Not p/u pre-1910. Have same view (of later date) printed in U.S. Publ. "B.S. Reynolds Co., Washington, D.C." Imprint reads: "Large Press Room where all United States paper money is printed. There are 700 employees at work in the room at one time. Only hand presses are used in the making of United States Currency".

the influence of the three-colour process in this department of literature, that there is scarcely a country in the world, a county in England, or a district associated with a well-known name, which has not been illustrated in this way.

Not the least of the many influences on book illustration by colour is that being exercised in juvenile literature. The cheapness of the method, and the readiness of the duplication of the plates, or the cutting down to size, has enabled the publishers to issue works at the modest price of 1s. or 1s. 6d., containing, in addition to the usual letterpress, a number of coloured plates from pictures of well-known living painters, from coloured or natural photographs, and from natural history subjects.

NEWSPAPER AND MAGAZINE ILLUSTRATION.

The three-colour process was even longer in making its influence felt in the field of periodical journalism in this country. The topical character of the most important of our weekly publications, and the immense circulations, must largely be regarded as the cause of their delay. Cost of colour over ordinary half-tone

has doubtless been partly responsible. Colour was seldom employed in the illustrations, except in the special numbers, and then recourse was usually had to lithographic or ordinary zincographic methods.

With improved facilities the three-colour process, except generally in the cases of larger plates, is now commonly used for the colour illustrations of the principal illustrated newspapers, journals, periodicals, and magazines, and for some time past, at various seasons of the year, the illustrated papers have contained a large number of three-colour illustrations, while the "Illustrated London News", the "Sketch", the "Graphic", and other weekly papers often have supplements in which this method is used. Such is the speed at which plates can now be made and duplicated by electrotyping or by special stereo processes, that it is possible to make the photoengraved colour plates and print large editions in colour in little more than a couple of weeks – not more than the time originally employed in the old wood-engraving days for a number of engravers to produce one large wood-engraving, from which to print in black only of the same size as these supplements.



The "Imperial Fine Art Corporation, Ltd.", London, distributed big numbers of these reply cards offering free illustrated catalogues. From??

INFLUENCE OF ART ILLUSTRATIONS.

In the reproduction of art the process has become an educational force. By its means faithful reproductions as to drawing and colour, tone, "feeling", and all that is in a picture – as distinct from a black-and-white, a monochrome or photographic reproduction, or a colour rendering of a draughtsman or colourist, more or less unskilled – is faithfully reproduced, and can be brought within the means of the poorest.

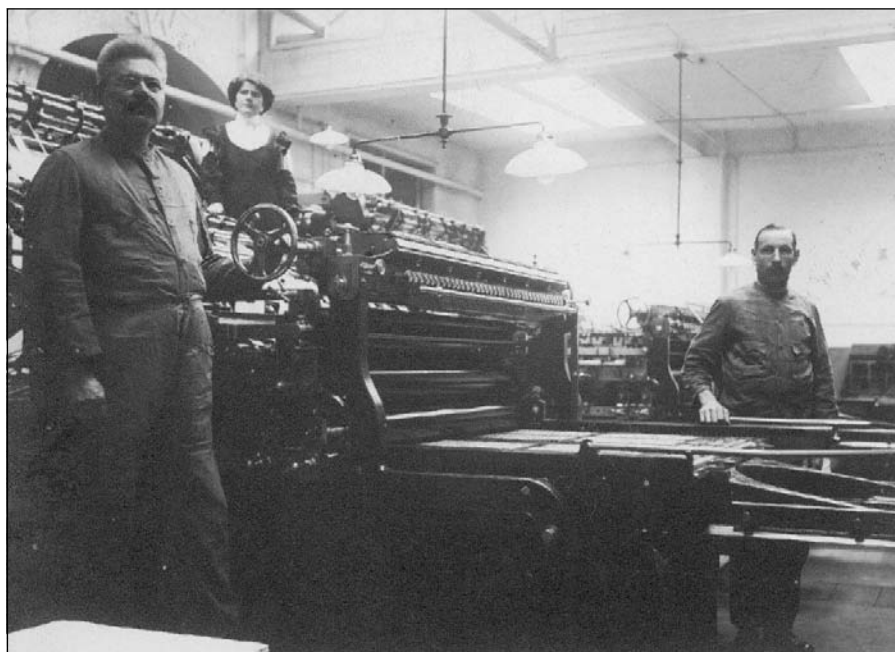
Everything that the camera can bring to light, and every shade or tone of the picture thus made, can be perfectly reproduced by this process in the printed proof. The marks of time, the mellowness of age, the signs of knowledge, large and small, of the artist of varnishes and colours, are alike faithfully rendered, and given skilful use of the means employed, and reverent handling of the subject, the blemishes and faults, as well as the evidences of the skill of the artist, are alike truthfully depicted. If the result is not sometimes all it should be, the fault is not with the process, but with the means employed in securing the result. Discrimination and skill are absolutely necessary. Theory and practice are not sufficient. Where love has been bestowed on the original, love will be required in its reproduction. If sometimes one's heart aches at the photo-engraved and printed caricature of a masterpiece, it is usually because a hand unskilled or unsympathetic has been busy, and has tried to improve on the original.

In addition to the work of the camera, some humouring of the subject will often be found necessary in order to obtain a good result. This is especially true in relation to the reproduction of art works. To attempt to reproduce by three colours alone – the usual yellow, red, and blue inks – a full coloured "juicy" oil painting by *George Morland* would be to seek failure; whilst the transparency and delicate colouring of a *Birket Foster* drawing will be more faithfully rendered by the three-colour than by the four-colour process. Certainly in the production of a work of this kind skill and thought, and something of the artist's feeling, are needed on the part of the printer as well as on that of the photo-engraver.

CHROMO-LITHOGRAPHY.

In the palmy days of chrome-lithography, J.M.W. Turner found time to put the finishing touches to the more important of the stones from which his reproduced works were to be printed. The same is true of many of his '*confrères*' whose genius is held in lasting remembrance. If this was necessary when the art of *Senefelder* reached its height in this country, how very essential it is now that there should be sympathetic handling of reproductions of high art both in the studio and in the press-room.

It has been urged against the process that the use of what in the trade is termed "art" paper, or chromo-paper – i.e., paper having a clay surface – for printing, and the effect of the dots which form the printing surface, are fatal to perfect artistic effect. Both contentions may be safely granted. But except in the cases of quite cheap work – which would not come under the designation of art production – the result caused by the use of the dots



Real photo card, more of amateur snap-shot character, showing printer or pressman with his team and their large format letterpress. A second press can be seen in background. As so often photo cards do not bear any information at all. Divided back and I remember that I paid US \$8 for this nice one long ago. Could be from the U.S. as well as Europe; c. 1912.

may for all practical purposes be got rid of by suitable graining of the paper after printing. And here it may also be maintained that many of the patterns used in graining process work impair rather than enhance the beauty of the printed work. Coated papers as generally used to give a sharp, clean impression, but in work of high-class character they may be dispensed with. Several manufacturers have perfected an all-linen paper which, while not so easy to print upon, gives for reproductions of fine paintings and for the highest class of work results superior in many respects to those obtained by the use of art paper.

Amongst the many paintings which have been reproduced by the letterpress colour process, perhaps the finest are comprised in a well-known series of Great Masters, most of which are as large as 20in. by 15½in. The series comprises examples by *Rembrandt*, *Van Dyck*, *Frans Hals*, *Botticelli*, *da Vinci*, *Holbein*, *Velasquez*, *Reynolds*, *Morland*, *Romney*, *Gainsborough*, *Greuze*, *Turner*, and nearly every English and foreign master.

In lighter, ephemeral art, also, the process has been singularly successful, and in some branches its adoption has been almost universal. This is especially true in respect to **picture postcards**. Although it is a matter of dispute as to which country produced the first pictorial postcard, it is unquestionably the fact that the first artistic picture postcards were produced in Great Britain, and for some time English postcard publishers sent considerable quantities to various European countries, notwithstanding the heavy tariffs. The Germans – a great postcard consuming nation – were not slow to appreciate the British-made article, and soon made production in England by this most suitable and economical process almost impossible to the British engraver and printer.

COMMERCIAL PRINTING AND ADVERTISING.

A process capable of meeting the demands of discriminating art lovers, dealers, and publishers must of necessity be a powerful instrument in the hands of commercial men. A method that can be used to reproduce faithfully an Eastern carpet of priceless value is naturally a weapon to be used by the 20th century carpet manufacturer or vendor. The process which has been employed to represent with such fascinating effect the most exquisitely-coloured examples of the ceramic artists of the Ming, Kang-He, Jien Lung, and other periods of Chinese porcelain. is eagerly seized upon to illustrate the wares of the porcelain manufacturer of to-day. The use of this method in the preparation of lists and catalogues for business firms can readily be apprehended. Every kind of article can be reproduced in colour instead of in black-and-white, as formerly, and the process is, of course, equally suitable for representing such diverse objects as jewels, motor-cars, and dresses. A catalogue of a manufacturing confectioner lies before the writer at the moment. It contains reproductions of many pages of sweets, chocolates, plain and otherwise, cakes and confections of various kinds, all reproduced by this process so faithfully as to appear as if one had but to take them from the printed page.

To multiply instances would be but to repeat the story of the all-embracing usefulness of this interesting process for commercial houses. The field of advertising is also being covered, if less quickly, yet steadily and surely, by the process. Large show-card, label, and poster work in increasing volume attests to the wonderful adaptability of the method and its ramifications. —

Next issue: The multi-colour process, a French invention; copperplate printing and lithography, engraving etc.