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A MONTHLY SURVEY OF THE GRAPHIC ARTS INDUSTRIES

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A MONTHLY SURVEY OF THE GRAPHIC ARTS INDUSTRIES

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In this issue....

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EDITORIAL

ALL EYES ON IPEX

The world's eyes are on the Tenth International Printing and Allied Machinery Exhibition, held in Olympia, London during July 1955. Printers, Printers' Providers, Paper-makers, Printing ink Manufacturers and others associated with this important industry have crossed seas, flown the skies and travelled across whole continents to witness this remarkable assemblage of the best in Printing industry. Among these are many of our countrymen.

BUSINESS OR PLEASURE

What makes IPEX stand out from other similar exhibitions? Is IPEX merely of business interest? Will it be correct merely to call IPEX a pleasurable sight? Yes, it was the most pleasant sight to see, as the aesthetic angle was not ignored, the artistic side was not neglected and beauty was conspicuously enthroned, everywhere in and around IPEX. It is true that IPEX was arranged by businessmen for businessmen to increase the volume of business, to introduce new products and machinery. But this was not all. The vital point in holding the exhibition lies somewhere else.

AN EDUCATION BY ITSELF

This International Exhibition is more than a business event, much more than a pleasing eyeful of machinery: IPEX is by far the best educative piece of organised effort in any country. It is the greatest medium of international intercourse of our time. IPEX is *the* major event in Industrial History of this century. True, a considerable volume of business was transacted or projected during the fortnight the exhibition was open. But, a greater number came in to know more about this industry and went out fully satisfied of having known many, if not all, about the latest in the various branches of the printing art.

In India, few exhibitions of the size of IPEX could be held for obvious reasons; our backwardness in industrialisation in general and Heavy Industries in particular, our inadequate and shy capital, our cheap labour which is a great obstacle to advancement of industry, our emphasis on agriculture rather than on industry—all make India an Infant before the Giants of the West who have trod the path of industry for over a century now. A couple of exhibitions were held in India, relating to the Printing Industry. It will be idle to compare them with IPEX. However, it is a fact that we have made a beginning in conducting Printing Exhibitions. The people in the industry have tasted the benefits that accrue from such exhibitions. It can safely be said that our two Exhibitions, one at Calcutta and the second at Madras have been unqualified successes, considering the state of Indian economy in general and that of the Industry in particular.

LESSONS FOR INDIA

What can the Indian Printers learn from the IPEX? In other words how is IPEX an object lesson to the Indian Printing Industrialists and others interested in the trade? How can our exhibitions of the future be improved? What are our shortcomings in the way of planning, organizing and manning the Printing Exhibitions? These and other questions need frank answers.

PROSPECTS FOR PRINTING

The pattern of all Industries have changed in recent years. Printing Industry is no exception to this change which is enveloping every phase and

facet of industry. Speed has become common in all branches and all improvements are towards increasing the speed of production or cutting production time and increasing output. Teletypesetting, photo-composing and similar innovations may hereafter become increasingly common although, in a country like ours it will take a considerable time to usurp the place of traditional ways of composing. In spite of increasing number of mechanical composing machines, India has a large army of Hand Compositors and perhaps will continue to have for a long time to come. Electronic engraving, magnesium etching and other new processes of pictorial reproduction will also have a great future. All the above have made the newspaper industry more up to date and have given it a great impetus. Indeed, most of the inventions were originated or motivated or at least sponsored by Newspaper concerns.

The Packaging Industry is new to India, but nevertheless has made a deep impression on India as witness the visit of the Patra chief to Bangalore to device and advise on the Food Packaging methods. The speeds at which paper can be converted into bags, envelopes and containers are fantastic. In Book-binding too, much advance has been made. Threadless binding by means of thermo-plastic adhesives has made binding cheaper and quicker although not more secure. The role of Electronics in registering on fast running machines and auto guillotines and blockmaking is becoming increasingly greater. Three-knife trimmers, a one-time novelty, have come to stay. Automatic presses have increased in numbers and varieties and at much reduced costs.

The Competition between Lithography and Letterpress is keener than ever and due to this both are progressing faster. Photogravure is gradually coming to the forefront for illustrated works and magazines. We hope more Indian Printers will take to this superb process which is second to none for certain kinds of reproduction. Silk-screen Printing has almost monopolised cover printing for books and posters and they are exclusive in using for the first time fluorescent inks or luminous inks.

IPEX has coincided with one of the most progressive periods in Printing History after 1904 when mechanical composition and rotary printing revolutionised the printing industry. India has much to learn from this. Our Printers should not under-estimate the importance of planning. A well-planned thing, be it an exhibition, a press or printed product goes a great way towards perfection. Precision-mindedness should be inculcated in our printers. Guessing should have no place and intuition given the short shrift. Modern methods should be introduced wherever possible. Educating the Printer and the Print-buying public is essential. This should be taken up by the Machinery manufacturers and dealers of printers' materials.

We hope that the next Printing Exhibition, probably at Allahabad, will be the best that India has seen in every respect. That it will be well planned in advance and will get the co-operation of the whole industry. We also hope that everyone connected with the Industry and the public at large, the State, Provincial and Central will realise the importance of Exhibitions for the Graphic Arts and encourage the organisers and help them in every way to make it a success.

Those who have journeyed to Olympia would have lasting impressions of this outstanding event. Others who could not undertake the pilgrimage for many reasons, would find in this Special IPEX number all that was important there. Both, those that were at IPEX and those that were not, will surely derive much pleasure and benefit from our Review and special contributions on the highlights of IPEX for along with the pictures the PRINTINDIA special constitutes the next big thing to IPEX!

Impressions of IPEX

By

SRI S. BHANDARI, Mg. Director, Indo-European Machinery Co. Ltd.

The author, who recently returned to India after visiting the IPEX, gives in this brief article his impressions of the international exhibition

The recently concluded Fair at London was an important event for the Graphic Arts Industries throughout the world. Since DRUPA held last year, important changes have taken place both in design and technique, in the manufacture of machinery for printing and general standards are higher today than last year.

Although the Fair was smaller in size compared with Drupa, it was better organised. The distances between the various halls were cut out completely so that the visitor had much less fatigue in visiting various stalls of interest.

The Electronic Photo Engraver which is really a revolution in the field of Graphic Arts showed great progress. Fair-child brought out a new Scan-a-Sizer which could enlarge and reduce the image electronically. This has really fulfilled the long felt need of the printer, and has made the application of electronics more useful.

The photosetter seems to have progressed well. Intertype, Linotype and Monotype, each had a unit on display. But it was the general opinion that Intertype is well ahead and has the largest number of machines already working on commercial basis. Substantial progress has yet to be achieved, in order to make it cheaper and faster and this may be done in course of time.

Among Offset machines, Roland brought out a new demy size (18" x 24") working upto a speed of 8000 per hour on various stocks of paper. The inking mechanism was unique in eliminating all delays in make ready The machine was of very robust construction and yet simple in operation. It attracted

Sri Bhandari with Mr. Fischvoigt at London

the attention of big and small printers equally.

The Dow Etching machine was another good achievement to assist the professional photo-engravers. It will greatly help to improve quality and cut delays. The machine is yet very expensive but with larger use, it can certainly be within the reach of average shop. The primary metal used in this process is more convenient to handle being very light and it is claimed that it stands longer runs. The vacuum counter is a good addition in the field of graphic arts for certain classes of work and will have a very useful application in the security printing field.

The Polygraph group of factories had a large display. A full range of book-binding machinery from the original Brehmer of Leipzig was exhibited. With the expansion of education in India, the demand for books is fast increasing and *collating* the formes to put them together in the shape of a complete book is always a problem which every practical printer is faced with. With the increase in quantity, standard of quality, the mechanisation of binding is a necessity and Brehmer answers this problem at every point. They had on display a variety of book-sewing machines, folding machines, feeder stitchers, combined collecting and stitching machines as well as book cover pasting machines etc. Among other important Polygraph additions, was a new larger sized Victoria Front machine. The largest size now introduced prints a full double demy sheet and has all the latest devices in it, including the roller washing device.

A full range of Polygraph Mercedes was on display in all the three sizes, the Demy folio, the Crown, and the Demy. The Polygraph Mercedes is an economic machine for medium size printers. This cylinder machine has a very solid impressional strength which can never be achieved on an automatic platen. Adjustments and operation are easy.

Cerutti the most progressive Italian firm had on display a new photogravure Polar magazine press. It has many novel features apart from simple and robust construction.

The German Typofot Photo Composing machine manufactured by Hoh & Hahne of Offenbch/Main Western Germany was also demonstrated by their British Agents. It is a good Photo Composer specially suited to type reproduction work as is required for maps, charts etc. It reduces and enlarges in a good range.

Flexographic printing seems to be coming up fast. A number of British and German Flexographic Printing Presses was shown, among them beirg Victory Kidder Flexographic Press which prints from rubber with Pigmented inks at close register upto a speed of 1000 ft. per minute. Any number of units could be provided with re-reeling or sheet delivery devices.

The Zenith Flexographic Printer of Gattemann and Hollmann equipped with length slitting device and friction rewind for cellulose film and metal foil, and instantaneous throw off, reverse Printing device, for two colour *recto and verso* Printing and corner *roll rewind with two carrier rolls*. Speeds are upto 12000 impressions per hour. The machine is available in various sizes.

The little master platen of Gerhard Busch, of Hamburg was a special export model and a greatly simplified machine with a Printing area of about 9½ x 14½" and runs at a speed of 3800 per hour. The platen has a central pressure lubrication.

Composing Room equipment had attracted great attention of printers lately. The neat looking racks, cases etc., are made by a number of firms. Stephenson Blake and Hawthorne Baker demonstrated a large range of their equipments.

The Arnold Space band cleaner by Stephenson Blake is a small machine in which two rotating brushes remove dirt from space band and thus cleans them for trouble free operation. The new proof press by S.B with moving assembly and bar drew particular attention of the Printers for accurate and neat proofing.

Messrs Crosfield demonstrated a Photo Electric colour register control for Rotary Machines. This device is particularly useful while printing on elastic transparent or opaque materials.

The demonstration by British Army and Air Force on wheels attracted great attention of the visitors. Field Printing Plant was mounted on two trailers one containing the Printing Section and other used as a dark room.

There was no paper section but a few paper firms had their stalls and a few printers too did participate in order to show the quality of printing and binding achieved in Britain.

In all 340 Exhibitors covering an area of 340,000 sq feet took part in the exhibition.

In general the Fair was well attended and visitors from all over the world came to see the advancement in the graphic field. The next Fair in the chain will be held in 1956 at Paris.

Oxidization of Litho Metal Plates

By

SRI BIMAL C. DATTA, B.A., Dip.-Tech. (Leeds), F.R.G.S. (Lond.), A.P.S.A. (Phil.), A.R.P.S. (Lond.)

In this brief but illuminating article Sri Datta, an accepted authority on Lithography, analyses the causes of plate corrosion and suggests solutions for the various storage problems of lithographic plates. Anodised Aluminium plates which are the latest in lithographic printing surfaces are also discussed here

Every Lithographer knows that the 'Reprint' cases always give him the best return of his investment of money as well as craftsmanship. These 'Reprints' are only paying when the 'standing plate' is used for machine runs. As such it is obvious that every one of us tries to keep the 'standing plates' in printable condition as far as possible. The greatest obstacle, we are to overcome for the use of 'standing plates' is the oxidization of plates when stored.

OXIDIZATION

The oxidization of plates relates not merely to fresh-grained plates but to used plates which are even properly gummed up and stored.

The most common type of oxidization is due to carelessness either on the part of the plate-maker or press-man. One or the other or possibly both, fail to 'gum up' thoroughly. Another possible cause is the plate grainer's failure to dry the plate rapidly enough after graining. Although oxidization is a slow process, storage, particularly under damp conditions, can accumulate it, and despite the presence of gum of phosphate films, corrosion can still proceed on a diminished scale.

The oxidized spots are the result of oxygen reacting with the metal in the presence of moisture, the resulting products being zinc oxide in the case of zinc plate and aluminium oxide in the case of aluminium plates, when both products attract greasy substances when wet with water. Oxidization of zinc is more pronounced, but the action is not so detrimental as with aluminium plates, where serious 'pitting' occurs.

The purpose of the dry gum film is to prevent oxygen from reaching the plate, so the damp plate must not be exposed to the air for any length of time until it has been properly 'gummed up'. The finer the grain and lighter the moisture film, the more careful the craftsman must be if oxidization is to be avoided. But with anodised plate, the oxidization trouble is completely eliminated. Many establishments have tried with anodised aluminium plates sent by Alagraphy Ltd., and have found them to be quite satisfactory for use with all the processes of image formation in lithography. The plate is anodised in an electrically charged bath by the sulphuric method after it has been finely grained. Besides its non-oxidizing properties, it can stand well over 3,00,000 runs, and thus has become a healthy competitor to bimetallic plates. The plate is 'prepped' and coated as usual, but the manufacturers advise that a thicker coating solution be used, which means a slight increase in exposure time also. All operations to obtain the image are as usual, but neither plate etch is used at any time nor is gumming up necessary. It is better to leave the plate after gumming up for further use.

STORAGE

In order that any original plate, or used machine plate may be again brought into use at a minute's notice for the purpose of re-transferring or printing, it is advisable to classify and number plates consecutively, subsequently storing them in methodical order. A series of wood racks should be erected. When the plate is first placed in the racks, it may be enclosed in a dry, hard, non-absorbent paper.

There are two methods for treating the plates before storing them. One is to wash the work out over the dry gum with Phirmold tincture, than to wash the gum off and re-gum thinly, or leave the thin film of Phirmold over the gum until the plate is again required. It is also a good practice to apply a smooth coating of good asphaltum washout solution to both back and front. Besides oxidization, it also prevents any possible chemical reaction taking place when sheets of clean tissue paper are placed between the plates when hung up than when stored flat in piles. The essential pre-requisites of a storage room are air-conditioning and maintaining a low relative humidity.

Review of IPEX

By

OUR CORRESPONDENT

What makes the IPEX the outstanding event in Printing History for two decades is brought out in this review by our London correspondent. The essential features of this mammoth exhibition coupled with the elaborate organizational details are found in this interesting dispatch

The Tenth International Printing Machinery and Allied Machinery and Allied Trades Exhibition (IPEX) was held in London from the 5th to the 16th July inclusive, and undoubtedly constituted the greatest display of printing machinery and allied products ever to be held in the British Commonwealth. More than 300 exhibitors (including about 40 from overseas) were represented, besides the printing and machinery manufacturers and agents of Great Britain, as well as firms from the United States, France, Holland, Switzerland, Italy and Germany. At the opening ceremony, Mr. John O. Crabtree, Chairman of the Organizing Committee, stated that although it was almost impossible to give an accurate estimate, the value of the machinery and other exhibits was probably over £5,000,000.

FIRST IN 19 YEARS

Organized by the Association of British Manufacturers of Printing Machinery, in co-operation with F. W. Bridges & Sons Ltd., the 1955 IPEX was the first specialized exhibition devoted exclusively to printing machinery, equipment and materials in Britain for nineteen years, and preparations have been in hand for nearly three years. The whole of London's Olympia building

"Welcome, Printers of the World!" Hamish A. Maclehose, President of the Exhibition & President B. F. M. P. addressing visitors to the IPEX

was occupied, using the three halls and their galleries, all under one roof, and providing a total area of 430,000 sq. ft.

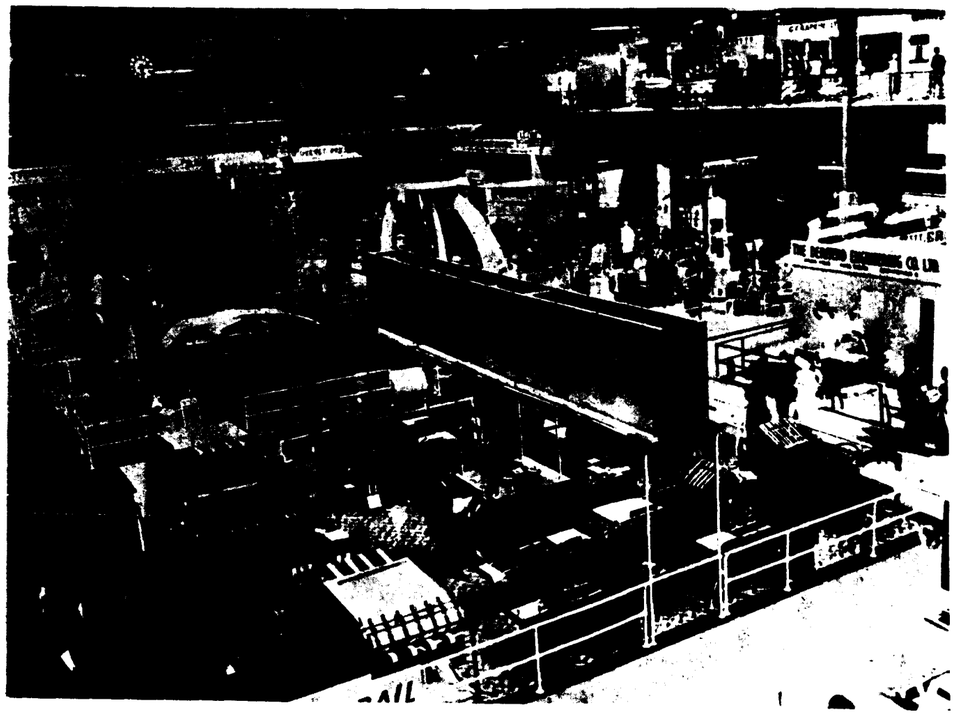
The highest tribute must be paid to the organizers for the excellent arrangements throughout, and particularly as regards the comfort and convenience of foreign visitors, of which there were a great number from the United States, Canada, India, South Africa, Australia, New Zealand, and the Continent of Europe. Special arrangements were made for interpreters, both at Olympia and at Earl's Court Station where announcements regarding London Transport trains to and from the exhibition were made in four languages. The official catalogue was printed in five languages, English, French, German, Italian and Spanish, and great trouble was taken to ensure accuracy in the four languages, the lists of exhibits having been checked in each of the different countries.

Inside Olympia were the offices of travel agencies, air companies, hotel and theatre booking agencies, banks, and other facilities, including a radio, taxicab office which kept 50 taxis on call. The Press was also extremely well catered for under the direction of the Public Relations Officer Mr. Hereward Phillips, with a special Press Room which remained open throughout the duration of the Exhibition, and facilities for telephoning and writing.

AMAZING ADVANCES IN TECHNIQUE

Since the last International Printing Exhibition held in London (1936) amazing changes in technique have taken place. Many processes taken for granted to-day were then only in their infancy, and modern methods such as photo-composition, automatic engraving and electronic register control were not even thought of.

Electronics made a great display, emphasising the fact that electronic engineering is making vital contributions to printing practice. New applications of electronic principles to control gears, precision engineering, slitting, re-reeling and box-making were prominent attractions.



A General View of the stalls at IPEX

In the view of many experts electronic engraving is probably one of the most important of recent developments and is likely to have far-reaching results. In this way, a plate can be produced in a matter of minutes, and such a plate will stand up to runs of a quarter-of-a-million and can be used on flat bed or rotary presses. For newspaper production the process has great attractions. When minutes count in getting out editions, the substantial amount of time saved between receiving the photograph and the production of the block is a vital factor. There are indications that it will not be long before this process is adapted for use in gravure and photography.

The makes on view were the Scan-a-Graver (J.F. Crosfield Ltd), the German Klischograph (Rudolf Hell), the Swiss Elgrama (Aga Standard), and the French Luxographe (Mincel et Cie).

Early models were able to make plates only of the size of the original (65-120 screens), but manufacturers have now designed a model which can enlarge the photograph four-and-a half times, or reduce by the same proportion.

Photo-typesetting is another field in which enormous advances have been made, and for the first time a full range of commercially-available photo-composing machines was on view as working exhibits, enabling litho and gravure printers to examine and compare the results obtained. In these machines, shown by Intertype Limited, Linotype and Machinery Ltd., and Gordon & Gotch Ltd., the setting of type characters is carried out in one operation direct on the sensitized paper or film, by optical or electronic means. The ink "spread" of letterpress impression is eliminated, and the resulting type reproduction is cleaner and thinner so that new type faces are being designed to meet the new technique. Photo composing and photo-mechanical equipment, including remarkable cameras, with gigantic enlargers operated mechanically, were also found on several stands, including step-and-repeat machines (Pictorial Machinery Co.).

Great advances have been made in the design and operation of guillotines, and here again many interesting exhibits were to be seen, both British and foreign. The one shown by Furnival & Co. is believed to be the first guillotine to employ electronics, the operation being fully automatic.

WORLD'S LARGEST PRINTING WORKS

The tradition of the exhibition is that wherever possible the machines should be running, which made it possible to see the latest developments in actual operation. During the ten days it was open, Olympia might be described as the world's largest printing works, and every night a fleet of lorries delivered paper to the exhibitors' stands and removed the day's accumulation of print.

Many exhibitors demonstrated improved ways of catering for the demands for colour in print, which is rapidly becoming more and more dominant in newspapers, although not to the same extent of course as in the magazine field, and still further developments in 4-colour photolithography are expected in the near future.

A number of unusual features were introduced, including the printing by soldiers of two-colour war maps for use in the field, at the rate of 5,000 an hour.

TECHNICAL EDUCATION

An educational feature, entitled "Training for Tomorrow", which was both interesting and instructive, attracted much attention, and is a novel idea that might be copied with advantage in other types of Exhibition.

Specimens of rare books, models, and illustrations of the history and development of the craft of printing, with emphasis upon training, were featured in this exhibit. It is particularly appropriate that this should be included in IPEX-1955, for the great advances in machines and methods will require increased knowledge on the part of their operators.

The feature represented the work of a committee from the Joint Industrial Council of the Printing and Allied Trades of Britain and Ireland, the Association of Teachers of Printing and others.

The story was told of the background, new developments, and aims of education for the British printing and allied trades, and emphasis was laid on the many factors affecting printing education in different sections of the crafts. A number of foreign printing schools sent specimens of students' work.

The feature was divided into two parts, in the first of which four sections were devoted to the history of the craft, the history and development of printing education, the work of printing schools to-day, and future trends. In the second part was a collection of work from some of the important foreign printing schools, together with an international collection of posters.

Printing of Books

By

"TRAINED COMP."

It is easy to become a Book Printer, but difficult to remain one. Let your printed work be your ambassador to make the publisher interested in your press. If he finds your work attractive, he will become your patron. Trained Comp., who has already reviewed Indian Newspaper Typography and Magazine Production, now gives the essentials of Book Printing, in his usual lucid, simple and straightforward style

Like all specialised crafts, Bookcraft is one. Some have described it as a craft, a trade and an art—all at once. The making of books involves two distinct processes. The first is design and the second is the execution of the design, *i.e.*, production. However good a design may be, if it is not properly reproduced, it fails to achieve its purpose. On the other hand the best production standards will fail to impress the reading public, when the design is not good.

To study designing books we have to classify books into certain natural groups. Books may be divided into Children's Books, Text Books, Novels and Fiction. This is according to the usage of the book or for whom the book is intended. Another way is to group according to price levels. The cheap editions, the publishers' classics, the reference books and the editions *de luxe* (commemoration volumes,etc.). The design depends upon the following factors : 1. The class of publication. 2. For whom is it intended? 3. Price level 4. The subject-matter of the book. Books may also be classified according to their subject matter or the branch of knowledge they belong to :- 1. Ecclesiastical, Biblical, Religious, Mythological 2. Scientific, Statistical, Geographical, Medical 3. Classical, Biographical, Political 4. Light Fiction 5. Handbooks, Pocket-books, Prayer-books, Guides. 6. Works on Art, Sculpture Paintings, Drawings, Dance, Drama, Music and other Fine Arts.

SIZES OF BOOKS

In planning or designing a Book, the first consideration is the size of the page. The size depends upon the class of book. The largest size is the folio adopted by the official publications, Census Reports, Statistics, Tables, Illustrated works, Atlases, etc. Foolscap Folio is favourite as it conforms to the official note paper used in State and Central Government offices. The Quarto can be used for the same class of work as the Folio. In addition, it is commonly used for artistic publications requiring a larger format due to illustrations, etc. Children's illustrated books adopt the quarto as their size. Books on Building or other design, plans, maps, drawing etc., go in for quarto. Reference books like the encyclopaedia, larger dictionaries use quarto with advantage as this allows column work as well as reduces bulk. The Octavo is by far the most popular size for book production. It is handy, symmetrical, and not a square like the quarto or unwieldy as the folio. Further the bulk need not be limited as in the case of folio and quarto as the latter are cumbersome and almost unportable beyond a certain bulk. Among octavos, Crown is the most widely used size; novels, other fiction, cheap editions, some of the text books, annotations are all Crown 8vos. The next popular size is Demy Octavo which allows a little more number of lines per page and a slightly wider type line for a small addition in cost. College text books, Biographies, History are all Demy 8vos. This has got the appropriate proportion of the the sides and has a neat appearance. Royal octavo is preferred by some publishers for Books of Travel, official publications, etc. This allows larger size of type to be used with wider margins, leading, side notes, etc., but has a pronouncedly rectangular appearance. Foolscap 8vo is adopted for pocket-books, and sizes smaller than 8vo are suitable for handbooks, prayer-books, pocket guides, small dictionaries, diaries, calendars, etc. Sometimes special non-standard sizes of paper are used by certain publishers for their books. This has to be specially made by the Mills and means extra cost. For example Messrs. George Ullen & Unwin Ltd use for their publications $32 \times 42\frac{1}{2}$ in., which is slightly larger than quad crown but smaller than quad Demy. This paper called large crown is considered to be attractive in size.

PROPORTION OF TYPE AREA TO PAGE SIZE

Having decided on the size of paper and its subdivision to be used, it is necessary to decide how much margin and how much matter should go in a page. This is called

proportion of type to paper. Several proportions are in use such as two-third matter and one-third margin, 3 5 matter to 2 5 margin. The proportion depends upon economic as well artistic or aesthetic considerations. Type area means the width of the type line and the depth of the type matter on a page. Each Press has its own type area for each size of book-work. For example, 20emsx36ems for Crown, 22 emsx40 ems for Demy and 26 ems×48 ems for Royal 8vo is commonly adopted in the south. The depth of the page includes the head line and page number.

The amount of margins around the type matter is alse allotted according to a certain ratio. The top margin called the head is generally less than the bottom margin called the tail. The back margin is likewise narrower than the fore-edge. The general rule is 3/5 for tails and fore-edges and 2/5 for the heads and backs. Another ratio is 1 for back, 2 for head, 3 fore-edge and 4 for tail, a practical method of ascertaining suitable margins is to take a proof of the page trim it flush and position it on the folded sheet of the paper on which the work is to be printed. After positioning it is pasted and the various margins measured and adopted throughout. In allocating margins the amount of lead used between type lines and size of type are taken into account. Wide margins are adopted for *de luxe* editions, books on art and allied subjects etc. Narrow margins are necessary for cheap works.

CHOICE OF TYPE

A wide variety of book faces are available to choose from. Book faces are noted for their absence of individuality in form, colour and design, their readability and clarity as opposed to the peculiarities of jobbing faces. They are subdued in tone and combine well in a mass. They don't attract the eye of the reader and divert his attention from the subject. In short they are functional or utilitarian in design, performing their part well as a vehicle of conveying knowledge. Notable

General E. Bois, organiser of the IPEX welcoming Sri G. U. Mehta (Vice-president of the All India Federation of Master Printers) and other Indian vistors

bookfaces are Baskerville, Fournier, Garamond, Centaur, Bodoni Book, Monotype Bembo, Poliphilus, Old Style, and Modern are other popular type faces used for book work.

ESTIENNE AND PILGRIM

Henri and Robert Estienne were two distinguished Printers of France of the early 16th Century. Linotype Estienne Old Face is named in compliment to these French Printers. This is a beautiful face for bookwork. Based on the cutting of French Romans, it has delicately formed characters. The ascenders and descenders are graceful and render the face extremely legible, making a fine texture for a book page. The new Linotype book face called Pilgrim is of particular interest and value to book printers and publishers. Eric Gill, one of the greatest type designers of our time had contributed to the world's typographic resources. His natural preference for the pure forms of the incised letter has added a new quality to contemporary typography. Pilgrim is a recutting of the late Eric Gill's roman. Some Linotype faces accounted for the setting of the Fifty Books selected in 1954 Book Contest. These are the Caledonia, Baskerville , Granjon, Janson and Caslon Old Face.

TYPE SIZES

The size commonly used for book work is eleven point. Occasionally ten, twelve, nine or even eight point are also used depending upon the nature of the book. Children's books require sizes larger than 12 pt., and reference works need sizes smaller than 8 point. But it can safely be said that no book is printed in smaller or larger sizes than the above limits

When the paper size, page size, proportion of margins, type face and type size are decided upon, the work of the designer is almost complete except for a few details. The Title page, Initials etc. which involve certain amount of Artwork will be mentioned in their respective places.

PRODUCTION

When a book has been designed and approved by the publisher production should begin. A specimen or Dummy is prepared with one forme of printed pages and the rest blank. The paper, type, leading, margins, stitching and binding should be of the same specification as for the finished work. This will serve as a guide in producing the book.

PARTS OF A BOOK

A book naturally contains three distinct parts: The Text is the principal part of a book dealing with the subject proper. The part which precedes the text is called

the Preliminary matter or Prelims. The Preliminary matter consists of the following and it is necessary that this order should be preserved, generally speaking :—(a) Half Title (b) Frontispiece (c) Title (d) History of the Book or Copyright details and Printer's imprint (e) Dedication, (f) Preface (g) Contents (h) List of Illustrations (i) Introduction. The final part of the book which follows the text is called the Supplementary matter and includes Appendix, Bibliography, Glossary, Index and Acknowledgment.

It is not obligatory to have all parts detailed above for every book. All the principal parts usually begins a right hand page. On opening a book the first sheet one comes across is the end sheet. This is a blank sheet which binds the cover of the book with the inner sections and also protects them. End sheets are found at either ends of the book. Specially designed and printed end sheets are sometimes used. These may take the form of maps, hand lettered sayings or other matter associated with the subject of the book. After the end sheet comes the Half-Title or the Bastard Title. The name of the work alone is printed at the top of the page in a size smaller than the one used for the main title. Same type face is used.

The Frontispiece is a left hand page carrying an illustration, diagram, map or drawing. This faces the main title of the book. The type chosen for the caption of the illustration should harmonise with the nature of the picture and should be used for captions of illustrations found in other parts of the book.

THE TITLE PAGE

The modern title page is simple and yet attractive in design and has come far from the original Colophon, which was title and imprint, printed in the title as well as at the end of the book. For all standard works the centred style is adopted. In this each line is centred. Occasionally staggered and grouped styles are also adopted. The American Publishers have introduced quite a number of new title page designs which are remarkable at least for their departure from the beaten track. While the British designs suffer from the chains of tradition and the fear for ultra modern, the American title pages are a new experiment, sometimes successful, at other times unconvincing. But the latter are definitely progressive.

The Title page has three distinct groupings, the first formed by the name of the work and any explanatory wordings. The second is the name of the author, with his qualifications following. The third is the name of the publisher, generally bolder or larger than the name of the author, but smaller than the name of the work. The size of type used for title pages depend upon the number of words forming the title and the width of the type page. Sizes larger than 24 point are seldom used and sizes smaller than 14 pt. would be too insignificant. The author's name may be set in 12 pt. or smaller with his designations in italic or small caps a size or two smaller in inverted pyramid or square indention. The publisher's name and address is one size larger than that of the author.

The back of the title may be utilized in a number of ways. A simple imprint "Printed in India" may be all one book may contain while another may include copyright details, first published in what year etc. Of late it is the fashion to include the name of the type face also on this page as "Set in 10 pt. Baskerville." The whole of this page is set in very small type say 8 or 6 pt. or even smaller.

The precise definition of the part of the book known as Dedication is rather difficult. It is an inscription to a person whom the author wishes to honour. When the writer of a book wishes to consecrate the work to friend, relative, master or anyone living or dead, the book is said to be dedicated to that person. This information or announcement is contained in the part known as Dedication. Sometimes it takes the shape of a letter when it is printed in the same size and face as the text or in italic lower case. The conventional style of a dedication is to set in what is known as Monumental Style of Indention. The name comes from the practice of inscribing on tombs and monuments centering each line without allowing the matter to form any geometrical pattern, such as square, pyramid, diamond etc. Small capitals are used except for the name of the person which should be in Capitals or a size larger. The words "Dedicated to" may also be set in black, text or Old English type.

The preface is called by a variety of names such as Prefatory Note, Foreword, etc. The purpose of this part is to afford an opportunity to the author or publisher to explain how and why the book has come out and for whom the book is intended. This should not be confused with the Introduction. Preface is set in the same size of type as the text with the heading as for Chapter or Contents heading. Too small a preface may be set in a size larger or extra leaded. Similarly when someone other than the author writes the Preface, it may be set in italics, or in larger size or extra leaded.

EDITION AND IMPRESSION

At this stage it is necessary to clarify what an edition means as distinct from other similar expressions. Any book produced in a particular style on a particular paper in a particular size is called an edition. The same book may have a cheap edition, a publisher's edition and a *de luxe* edition. Each edition has some additions or alterations or change from the previous one. Some books like history are brought up to date in later editions. Each edition has a new preface. The number of copies that are printed at one time constitute an impression or printing. When these are sold out a second impression is ordered. Thus an edition may have a number of impressions. No change is made from one impression to another. Therefore "impression" means reprints without alterations of any kind while "edition" means revisions, additions or change of format.

Usually the preface to the latest edition is printed first with the others following in numerical order from the first to the last but one.

Contents contain the division of the book into chapters with their chapter numbers and chapter heads. The page number at which each chapter begins is also given against each chapter. Contents offers some scope for original arrangement of the chapter numbers, chapter heads and page numbers. The time honoured way is to put them in three different columns. Type used is same size as text in even small caps. When contents includes sub-headings of chapters or synopsis or summary of the subject of the chapter, the Chapter number is centred at the top with the synopsis run on at the bottom.

The list of illustrations follows the contents and is set in a type and style similar to the contents. Some printers use italics of the same size as used for the text.

SUPPLEMENTAL MATTER

The part that follows the text consists of the Appendix, the Index etc. As its name implies all additional information to that found in the text are given here. Generally set in a size or two smaller than the text, the Appendix comprises of statements, specimen forms, large extracts from other works that cannot conveniently be printed along with the text, notes, etc.

The Index is a very useful part of the book and is essential for all books except perhaps works of fiction, drama or poetry. Unlike the contents where the subject matter is arranged in the order found in the book from page one to the last, index is alphabetical and enables quick reference of any subject dealt with in the book. While the contents gives only chapter heads and sometimes subheads, index has every item worth referring to. Set in small type, two columns, the index forms the last part of the book.

Glossary is a list of technical terms with their meanings. This is arranged in dictionary style and is found especially in technical and books of travel.

Bibliography contains details of books of reference, their authors, publishers, price, etc. For a wider study on the subject the reader can turn to these books. When a work is compiled from various works, these are also included in the Bibliography.

THE TEXT

Just as a country is divided into states, districts, taluks, firkas and villages, for ease in identification and administration, so is a book divided into parts, Chapters, Paragraphs, consisting of sentences, lines, words and letters. As printers we are interested in the arrangement of every type, every space, every line. Some books are divided into parts each part having its own sub-title, similar to Half title of the book. Chapters generally begin a new right hand page. The first line of the chapter is not set in alignment with the top lines of other pages, but a little below. This lowering down at the chapter beginning is called page sinking or page drop. The chapter number and chapter head are centred at the top. An agreeable display type, italic or bold is used for these.

It is common to begin the first letter of the first word of the chapter with an initial. The Initial letter is a letter of large size. It may be plain or ornamental and can be printed in a colour different from the text. Some letters like A, L, etc. may be morticed to bring the next letters of the word closer. Chapter beginnings may be decorated with a head piece and endings with a tail piece. These are ornamental blocks and their design ought to be in harmony with the type faces used, the initials and the subject of the book. The head piece is as wide as the page but the tail piece is a small ornament centred to the full width. French dashes and bulge rules may also be used in place of tail pieces.

HEADS

Other than the chapter heads, there are various other headings used in book work. Page heads

are those found at the top or bottom of every page with or without the page number. These may be set in a wide variety of ways. The name of the book alone is centred at the top or bottom of all the pages. This is the simplest way. Name of book on even pages and chapter head on odd pages is another style. Chapter head on even pages and page head on odd pages is a third. Small capitals same size as used for text, italic lower case, or italic caps one size smaller may be used. Folio alone may be centred at top or bottom when page heads or running heads are omitted.

Paragraph headings are set in italic or bold and run on with the matter or centred on top of para. Side heads at the outer margins may be set in small capitals or small bold lower case letters. A few lines of the para may be indented to form a blank space in which the head may be inserted. This is known as the cut in head or let in head.

NOTES

Frequently it is found necessary to give explanations to matter appearing in text. These are called notes. When only a word or two form the notes, it may be printed as side note or shoulder note in the margin, or cut in note. A lengthy note is printed at the foot of the page as a foot note with a dividing rule after the last line of the text. Foot-notes are linked with the respective subject matter by means of the reference marks, in order to avoid confusing the note of one with that of another. When notes are numerous to be included on the same page they are collected together with a running number and printed after the text as appendix. Notes are set in 6 or 8 pt.

MAKING UP

Considerable care is called for in making up book work to avoid wrong continuations, wrong foot note references, page numbers, para numbers and chapter numbers. Uniformity in indention, spelling, leading, type used for captions, heads, notes etc., is essential in book work. All rules of word division, punctuation, spacing, uses of figures, contractions etc. are to be strictly followed. To avoid wrong continuations the first word of the next page is printed as the last line of the preceding page. This is called "catch-word" and used in legal books. Figures indicating number of the line on the page at intervals of five or ten are printed at the outer margins in legal works, poetry, drama etc. These are called "runners".

The imposition of pages depends upon various things such as the size of the machine available, the size of paper available, the quantity of type available, the number of copies to be printed, whether to be folded by hand or machine, how many pages the work comprises etc.

Work and turn and work and back are the two usual type of impositions and each has its merits and disadvantages. For thick stock, half sheet work or work and turn is chosen to avoid too many folds. Similarly to ensure quicker return of type for distribution half sheet is preferred. The binder however will prefer full sheet to half sheet, for in the latter the number of sections is doubled. Consequently more gathering, collating, sewing is involved and the back will be swollen. From the machine-man's point of view full sheet is preferable as it allows time for backing after printing one side of the sheet. Special imposition is necessary to suit folding machines.

PAPER

Books are printed in all qualities and weights of paper from thin newsprint to hi-bulk antiques or offset cartridge. The majority of Indian Books are printed on ordinary white printing. But in other countries more antique paper is used than any other. Antique or featherweight is the answer to those who measure books in terms of bulk. It gives an illusion of plenty of pages. For those who want their money worth in weight, fine art paper is the solution. The disadvantages of Art or coated stock are not obvious to many. In addition to its weight which increases the freight and makes the book a dangerous weapon, it gives working difficulties such as plucking, takes longer time to dry, difficult to make ready, creases on folding, gives too much gloss and makes reading difficult especially in artificial light, the mineral matter used for coating changes its colour. Its only advantage is the smooth surface for printing halftone blocks of fine screen.

Antique is not without its demerits: A firm well-rolled paper is capable of being bound more securely, will have a greater span of life and will not give difficulties during print. The fluff of featherweight chokes the type, covers the machine, the inkers, affecting the quality of printing and production due to

frequent stoppages for cleaning fluff. The satin surface antique combines the advantages of the art and the antique without much of their defects.

Hand-made or mould-made paper is used for special editions. Specially water-marked paper is also used by some publishers. Paper should be chosen bearing in mind the binding operations for which it should be fit. The direction of the paper is also important while printing and binding.

BINDING

Publishers' Binding is generally either paper covers or cloth cover. A small percentage is covered in leather either completely or partly. A binder may make or mar the reputation of the publisher or printer. Careful trimming and binding is called for. Book-cloths are available grained like silk, crocodile or other skins, but a good cloth is preferable to simulated ones. Generally cases are made separately and fitted to the inner sections later. Nowadays we have machines for every operation of binding from folding to finishing. A good lettering on the cover improves the appearance of the book. Good ink is preferable to imitation gold or silver.

A city editor remarked once that when one opens a book made in India, the back cracks and out pops a loose section. Then the Errata greet him! Surely these are not compliments to our technique or industry. Slipshod stitching, wrong gathering, or missing an entire section, a close trim at the bottom or top, books that wouldn't open are quite common in our country.

DUST COVERS

Jackets or outer covers afford protection to the book and hence are called dust-covers. Attractively illustrated jackets have much advertisement value as they improve the appearance. Offset and silk screen processes have increasingly been devoted to book cover printing as they are specially suited to such work.

GENERAL

There is a great responsibility on the part of the printer of books. He should print it without any mistakes. Even though he can pass the blame on to the author or publisher, the reputation of a press is judged from the accuracy and appearnce of the book bearing his imprint. The printer is always on trial and the verdict of the public is based on the book. Book is of permanent value unlike the newspaper or magazine and hence all the care that can be bestowed should be bestowed. An errata or list of errors is a self condemnation of careless printing and no good press should print errata as a part of the book. The printer is as much responsible for printing objectionable matter as the author or publisher is. It is therefore incumbent on the printer to satisfy himself beforehand that there is nothing objectionable in the book he is going to print. Further Copyright Act should not be infringed.

Many publishers in India have their own presses. After the war there is a boom in the publishing trade and mushroom firms have sprung overnight to the dismay of well-established firms. In the south the summer is the publishing season and quick canvassing is done. Due to lack of up to date machinery and old fashioned methods of production, books in India still cost more and are printed badly and bound insecurely. The translation from English to regional languages will also cut deep into the book producing industry. Foreign publishers like Longmans Green, Oxford University, Macmillan, etc. were originally sending stereoplates or mats to India for printing in our presses. Now even the plates are cast in India. The state Govts. have also joined the competition in Book Printing. The Andhra Govt. propose to publish their own text books and Madras Govt. is publishing some books for schools. There was a time when all books were printed outside India for our readers. When economic emancipation is brought out by industrial expansion, India too can expect other countries to get work printed here at a lesser price with a better quality.

Contribution to Progress of Printing by Czechoslovakia

The inventor of Lithography, Alois Senefelder was born in Prague in 1771. But his discovery was made in Germany. Jacob Husnik, the inventor of Collotype was born in Bohemia and was a pupil in Prague Academy of Art and made his discovery in 1868. The pioneer of machine photogravure, Karel Klic was born in Bohemia and studied at Prague Academy of Art. In 1890 he brought out the practical use of photo-mechanical intaglio printing and participated in 1895 for the establishment of the first rotary photogravure press known then as "Rembrandt Intaglio Printing."

From Our London Correspondent

E. & D. BROWNLIE

A very interesting article entitled "The Typographer of Kings", by Edward Harwood, published in "The Sales and Wants Advertiser", reviews the life of the famous Giambattista Bodoni (1740—1813).

Both Bodoni's father and grandfather were printers, and his own first experience in the trade was in his father's office at Saluzzo in Piedmont. When he was 18 he went to Rome where he took an apprenticeship under Ruggeri at the "Stamperia di Propaganda", the main work of this institution being the production of foreign types for the printing of the Bible in various languages.

It was here that Bodoni's interest was aroused in the art of type cutting, and his later specimen books show that his interest in these foreign types was maintained throughout his life. 18 years later he decided to leave Rome and set out for London, but on the way his health broke down and he never got nearer to London than Saluzzo.

In 1768 he received an invitation from Ferdinand, Duke of Parma, to take charge of the new private press of this Bourbon Prince, and the remainder of his life was spent at Parma, during which time his direction made this press the most famous in all Europe. For a time his services appear to have been rather poorly paid, but when his reputation was established his position greatly improved. About 1791 the concession was given to him of allowing him to operate a private press of his own, on which he could print for whom he pleased. His imprint at this period was "Nel Royal Palazzo" or "In Aedibus Palatinis".

Bodoni certainly did not lack success or credit during his life-time, for the City of Parma struck a medal in his honour, he was complimented by the Pope on his work, the King of Spain granted him the title of Royal Printer to the House of Spain, and perhaps the most realistic tribute of all came from Napoleon who granted him a pension. Bodoni died in 1813 after 73 years of close participation in the field of printing. His burial was attended with honours approaching those accorded to royalty, and his most lasting monument is undoubtedly to be found in practically all typefounders' specimen books.

He appears to have concentrated his efforts on two main classes of book production, firstly sumptuously produced volumes for ceremonial occasions at the Court of Parma, and secondly various editions of the classics of many countries comprising editions in Latin, French, Greek German and English. Included in the English books were Horace Walpole's "The Castle of Otranto", Gray's poems and Thomson's Seasons. Despite his productive efforts in the literature of books it cannot be conceded that he was a scholar in the true sense of the term, and in fact the only criticism that has ever been levelled against him was the poor editorial work he performed in these editions of the classics. Horace Walpole complained of many faults in the edition of "The Castle of Otranto", and it has been said that Bodoni's own letters were full of grammatical errors and mistakes in orthography.

His printing can be defined in two main parts, in the first, which extended to about 1790, he was greatly influenced by French typographers, and is known to have used or copied French types and typographical decorations and made use of the engraved book illustrations so typical of the 18th century. During this period it can be seen that his types are old style with a later increasing tendency towards modern face.

During what may be termed his second period he began to discard all forms of generally accepted type decoration. He started using his own classical types and followed the example of Baskerville by the use of wide margins, generous leading, and in general increasing the proportion of white in his pages.

Stanley Morison in his "Type Design of the Past and Future" says of Bodoni :—"It must be pointed out that though Giambattista Bodoni was an innovator he did not, as generally assumed, create the modern serif. In fact, this same thin flat serif was foreshadowed two hundred and fifty years before Bodoni was born, namely in manuscripts of the 16th century. When Bodoni commenced to print, he used Fournier's letters and ornaments. Later he made copies of his own, and later still cut some fresh varieties in which the contrast between the thicks and thins was accentuated. It cannot be denied that there is much that is admirable in Bodoni's careful presswork and sense of style in typography. The name of

Bodoni was in everyone's mouth and disciples of course rapidly sprang up all over Italy".

Surely the major credit due to Bodoni is that he visualised this adapted letter form, and thus broke away from the traditional designs of the period. There is no denying that he was the one to firmly forge this undisputed precursor of the modern letter.

When in control at Parma he ordered types from Fournier, and his first specimen book, the "Fregie Maluscoli" of 1771 can be taken as a great compliment to Fournier, as this book is in every respect derived from him. The title is almost an exact copy of that of Fournier's "Manuel Typographique", the ornaments being his and the types definitely of his style.

One of Bodoni's early examples of book production, "Le Feste'd Apollo" printed in 1769, was issued on the marriage of Duke Ferdinand. It is a volume on a magnificent scale, but in the manner of the 18th century, being printed with old style types and illustrated with numerous copperplate engravings.

The great turning point of his career as a typographer, and the period which has been our inheritance of the modern letter form occurred in 1791. In that year he brought out the folio "Horace." In this volume all the ornamentation has been dispensed with, the whole design of the book rests on pure typography, the overall design being enhanced with large margins coupled with ample leading, the type chosen is of modern face.

On the Continent at this time typography was at a low ebb. In what we can call his second period Bodoni grasped new idea of the intrinsic beauty of printing as a medium of art in itself. He said "I feel that there should be a contrast as between light and shade which comes naturally from any writing done with a well-cut pen".

In order to achieve this he made his thin strokes thinner and the thick strokes thicker than had ever been done before. In this way he developed the coldly classical Bodoni letter for which his name is famous. In his decision to let more light into his pages and to discard contemporary book decoration there seems to be every reason to believe that he was influenced to some extent by the work of Baskerville. There was indeed quite a lot in common between them, they both subscribed to the view that simple and severe design was the true basic element of beauty in typography.

In his capacity as a type designer Bodoni issued several really magnificent specimen books; these show his stupendous industry as a type founder, and in some of the prefaces he tells of the principles on which he worked. Apart from the specimen in Fournier's style already mentioned, there were several others, and perhaps the most famous of all was his Manuele Tipograficio, which he was preparing at the time of his death. In this 2-volume book there is a lengthy preface in which he states his case for the large book, his reasons for deciding to dispense with decoration, and his conclusions regarding the essential elements of a good type. He presents four main points—regularity, neatness, charm and good taste.

From these types were evolved the Bodoni types as known to-day, but it is a matter of opinion whether any of these so-called modern Bodoni types can approach the beauty of design of Bodoni's own original cuttings. In the opinion of some experts the nearest approach to the originals is the letter produced by the Bauer Type Foundry in Europe. It was Bodoni's own conviction that he had vastly improved on the designs of the earlier cutters, and although many of the famous foundries of our own generation have reverted to those earlier models, it cannot be denied that the present Bodoni types based on the original faces cut by this Italian master find many admirers among discerning typophiles, indeed among all those who are looking for a "modern," interpretation in any typeset matter.

In fact, although Bodoni's design was produced nearly 150 years ago it has found an increasing vogue in modern advertising practice. The clean, sharp-cut decisive lines of this type, with its air of sophistication and mathematical precision gives just the quality which is so often required when presenting the urgency of an advertising message in the modern idiom.

It has been said of Bodoni that he was "The typographer of kings and the king of typographers". It seems unlikely that in his lifetime when the world moved at a much more leisurely pace, he could have envisaged his handiwork being used to such an extent in this atomic and electronic age. He was indeed a king among typographers, he still holds sway among the modern marvels of our increasingly complex life.

Around IPEX Stands

Have you missed the IPEX! No, you haven't. Printindia takes you into all the stalls and stands at Olympia. Here is IPEX come to life again for our readers

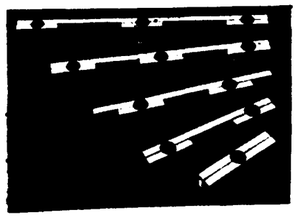
C. F. MOORE & SONS LTD. (LONDON)

Had an interesting display of their "Cefmor" unit system steel composing room equipment, which incorporated a number of new and modern designs, colours and finishes. The "Cefmor" power mitring machine, has several improvements, including particularly a swarf collector and micro stop, which locates down to a point. Demonstrations were frequently given of the single action clamp for rule upto 30 pt. body.

The "Cefmor" saw trimmer on view included a bench model and here again demonstrations were given of the various patented attachments.

HAWTHORN BAKER LIMITED (DUNSTABLE, BEDS)

This firm had a comprehensive display of their "Cornerstone" products, including furniture, mechanical quoins, and honeycomb base. The latter is now produced in Elektron, a new and extremely light metal, giving a base that is less than two-thirds the weight of its Duralumin counterpart. It is self-aligning and completely interchangeable and is chromated to protect it from corrosion. The holes are so designed that there are no blind spots, and faster printing and greater profits are ensured by its use. Plates are fastened in position by hooks which have a twenty point movement, the hook being made of duralumin, with hardened tool steel moving parts which press forward and downward on to the plate. The special quoinless chase is made of duralumin, to the same height as the base, and this can be drilled to take extra hooks give a greatly increased printing and area.



Corner stone Mechanical Quoins

Cornerstone Elektron Honeycomb base

The mechanical quoins are manufactured from super-strength duralumin and anodised to positively prevent corrosion, and the proven screw and wedge principle gives an opening of almost one and a half ems. "Cornerstone" furniture is made by machining a precise material, extruded duralumin, to an extremely high degree or accuracy, here again anodising being employed to prevent corrosion.

Typical examples of the German equipment were a type height and line body gauge, which measures the type height and body height of slugs and checks for taper on both height and body. One of the main refinements is an aperture made especially for holding single type for checking the height of these also, and it is stated that the cost is very much lower than anything of this type that has been available before.

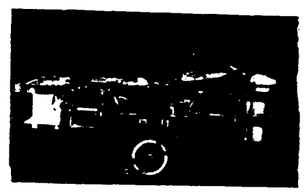
SOLDANS LIMITED (LONDON)

It has been recently announced that, as from June 1st 1955, the manufacture and sale of all Vandercook equipment outside the U. S. A. and Canada has been transferred to the Miller Printing Machinery Company, who are now going to build their well-known TW 21" x 28" 2-colour letterpress machine in Britain.

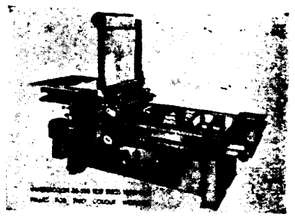
The sole distributors in the United kingdom for the new Miller Vandercook combination are Soldans Ltd., and the joint Miller-Vandercook-Soldans exhibits presented both to British and overseas visitors a wide range of equipment.

There were two of the 21 x 28" presses on view, and two noticeable features were the small floor space occupied and the accessibility of the machine, both feeder and pile delivery swinging away from the bed.

Among the Vandercook exhibits was a completely new model, the Superfour, with an entirely new method of ink feed, and another



Miller Two-colour Press

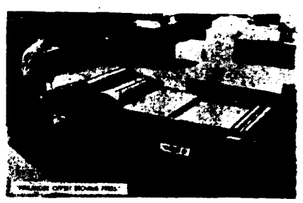


Vandercook Test Press

interesting exhibit was the 32-28E power proof press with variable speed drive, enabling two different colours to be worked side by side during one printing cycle. This press was one of two ordered by the Sun Engraving Co. and shown by their permission. There was also a new power-driven model of the Vandercook 219, which produces 500 pulls per hour, a 219 with adjustable bed, along with a complete range of pre-press equipment.

Another new Soldan machine launched at the Exhibition was the proofmaster No. 20, a precision proving press in the much needed size of 20" x 30". Printers have long wanted a precision hand or power-operated proof press in this size, and the new machine follows the general design of the smaller Proofmaster.

In the mechanical handling field, Soldans exhibited in conjunction with Fisher & Ludlow Ltd., a range of conveying systems designed specially for the printer, including Flowline belt conveyors, Flowlink overhead chain conveyors, and the



Mailander Offset Proof Press

Carousal a conveyor system specially designed for collating.

In conjunction with J. G. Mailander, they exhibited one of their fully automatic offset proving presses, and Pivano showed a large-size 3-knife trimmer with fully automatic pedal feed, along with a new 20" cutter.

Pivano Three-Knife Trimmer

NEDERLANDSCHE SNELPERSENFABRIEK MERCEDES (AMSTERDAM, HOLLAND)

Showed an interesting range of their well-known products, particularly the Mercedes automatic stop cylinder printing press, which takes paper from 7⅜"x5⅞" upto 15¾"x 22½/62", and the Mercedo platen press with fully automatic feed and suction delivery attachment which operates independently from a motordriven rotary vacuum-pump. This separate drive ensures that the machine has a maximum of suction and compressed air at every speed, even when the machine itself is not running, such as during make-ready. A special device ensures that only one sheet is fed at a time, and if hand-feeding is used, the attachment can be removed temporarily.

Also on view was the new Mercli block mounting machine, which has only recently been placed on the market, and has been designed for the accurate mounting, squaring and registering of single or multi-colour plates. After the necessary impressions have been taken on a proofing press the plates, either half-tone or line, are placed, unpasted, on lead or iron mounts and made ready with interlay. It is stated that perfect register and excellent impressions are obtained, and another advantage is that in the event of a reprint, all preparatory work, such as the taking of impressions, fitting and punching of proofs, is eliminated, since the perforated proofs can be kept for re-use if necessary.

HOLMES & CO. (PRINTERS' ENGINEERS) LTD. (LONDON)

Showed three of their British vertical letterpress machines, sheet size 21"x14", on one of which demonstrations were given from time to time of printing colour work. These machines are the latest Model 55 type, with several new improvements, including drop-back ink fountain; outside control for feeder pile height; and automatic back sheet jogger.

FRANK F. PERSHKE LTD. (LONDON)

Showed four models, that is the Glockner automatic cylinder press, with and without high-pile delivery: the Vicobold C hand-fed platen press, and the Autovicobold and Autovic A2 automatic platen presses.

The British Glockner, in production since 1951, is a compact and fast cylinder press for paper sizes

upto 38x56 cm., and very high speeds are obtained. The design is basically simple and the construction exceptionally strong and reliable. All the castings are of Meehanite, and all surfaces in contact with either the forme or rollers are precision ground. Cylinder and drive bearings are individually scraped by hand.

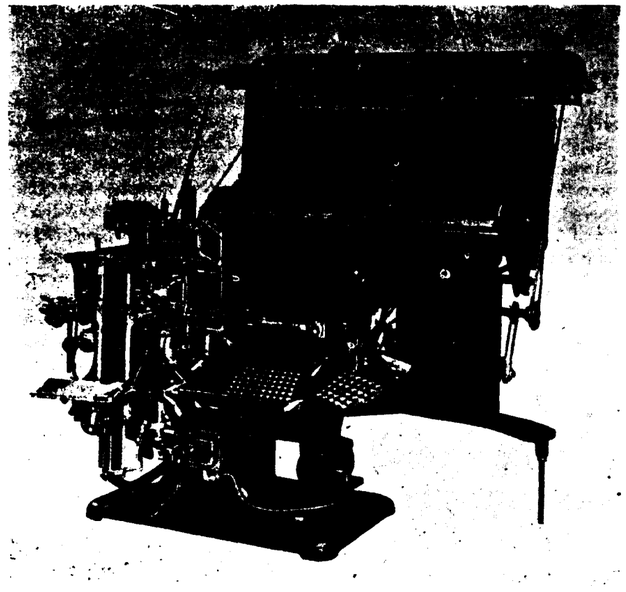
The Vicobold C is a hand-fed platen press equipped with cylindrical inking gear and a parallel platen approach, taking paper or board up to 26x35 cm. and being suitable for good quality colour work.

INTERTYPE LIMITED (SLOUGH, BUCKS)

Photo-composition, high speed setting, display, and other matters of interest in modern composing methods characterised the stands of Intertype Limited.

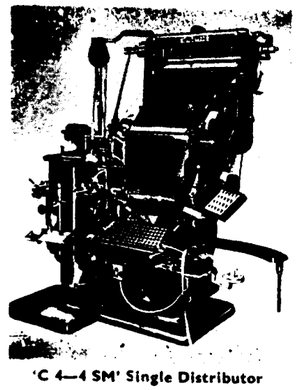
Of particular interest was a high-speed Intertype equipped with Teletypesetter for the rapid production of text composition for newspaper, book, magazine and other straight matter, the machine being capable of production in excess of 22,000 ens per hour. Equally interesting was the Model 'C4-4SM' single distributor machine, which permits composition direct from the keyboard of straight matter, text and display typesetting, from the smallest sizes up to 36 pt. This is an ideal machine for the general printer who wishes to cope with the type composition of small leaflets, magazines, brochures, and the run-of-the-shop general jobbing work. On similar lines is Model "F-4" double distributor mixer for the rapid composition of all classes of text composition upto and including 10-alphabet work all direct from the keyboard.

The Intertype Fotosetter photo-composing machine is designed for the direct keyboard production of



High speed Intertype with Teletypesetter

justified photo-composition from 4 pt. to 36 pt. on film or photographic paper. The film products of this machine are suitable for all photo-mechanical printing processes such as offset, lithography, gravure, engraved stationery and also for letterpress (magnesium plates and line engraving).



'C 4—4 SM' Single Distributor

For the composition of type matter in newspaper, periodical and jobbing offices, interesting is the Model "G4-4SM" text and display machine. On this one machine, which is useful and economic for single and double column composition and advertising work, a type range from the smallest text sizes upto 36 pt., including upper and lower case, figs. and points, is available for immediate use.

THE HEIDENAU AUTOMATIC CYLINDER PRESS VICTORIA FRONT DF

The Heidenau Automatic Cylinder Press Victoria Front DF is built by the VEB Druckmaschinenwerk Victoriain Heidenau, Saxony. Founded in 1887 the works soon attained world fame for its platen, embossing, and high-speed presses. The machines, which hold a leading position in the printing industry of the world,

are noted for their impressional strength, excellent inking and simple operation.

The finest printing can be executed with this machine. Its perfect sheet travelling guide and the adjustable front and side-lay marks guarantee absolute perfect register. Impressional strength can be set as required by a hand operated lever. Special suckers allow a smooth running print of thin and exceptionally thick cardboard.

This ink duct can be turned aside and quickly and easily cleaned. In order to reduce the stillstand period the machine is equipped with a roller washing device ensuring a perfect and speedy cleaning under a minimum consumption of washing agent. This is a great help as cleaning was always a time wasting and dirty process.

Monophoto at work

MONOTYPE CORPORATION LTD. (LONDON)

The outstanding exhibit was the new "Monophoto" equipment, shown for the first time at a public exhibition in Britain. It is only comparatively recently that this machine emerged from the experimental stage, and details have already been given in these columns (May 1954). It will be remembered that the "Monophoto" is a close paraphrase, in photographic terms, of the Monotype composition caster and will fit into the existing industrial pattern of the printing world. Any existing Monotype keyboard can be used, with only a very minor adjustment, for producing an almost identical ribbon for automatic composition on films.

KOENIG AND BAUER A. G. (WUERZBURG, GERMANY) 16-A LETTERPRESS

On the neighbouring Stand, both firms being represented in Britain (by K. S. Paul Ltd. of London), showed their most progressive letterpress machine, a sheet fed Rotary Pax, running at 6,000 revs. and taking sheets upto 35"×50". This machine, in view for the first time in England, is capable of printing all papers, including bible paper and high class colour work, is already at work in some of the leading printing establishments in Switzerland, Germany and France.

Another machine was the latest model double-crown stop cylinder press, REX III, with a very powerful inking unit, and accelerated bed return motion, which allows a production speed of 3600 sheets per hour whilst at the same time keeping the actual printing speed comparatively low. An automatic washing device is also provided.

DR. ING. RUDOLF HELL (KIEL, GERMANY)

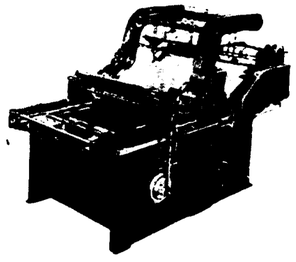
Showed the standard halftone block-engraving machine "Clichograph", which has, since its introduction in Britain, been installed in over 30 newspaper houses. The blocks produced on this machine by mechanical means can be used for moulding as well as for direct printing and can now be produced upto 120 screen.

In addition to the normal halftone machine, and shown for the first time in England, was the new line engraving machine for producing line blocks for direct printing and for moulding. The machine is of particular interest to newspapers and aniline printers (the latter making rubber stereos from Clichograph metal blocks). In addition, a Colour Clichograph was on view which produces three or four colour blocks from one original. The blocks are automatically corrected on the machine and the production of a set of four colour blocks can be effected in under one hour.

Dr. Hell's own demonstrators demonstrated and explained the machines to people interested in them.

DAWSON, PAYNE & ELLIOTT LTD. (OTLEY, YORKS).

Showed for the first time at IPEX their new B. 17 Standard Wharfedale letterpress machine, which prints a maximum sheet of 25"x20" and can be fitted with an "Otley"



DPE Jobber

built universal feeder or H.T.B. feeder as an alternative. It has a pile delivery as standard equipment and has the advantage of taking up very little room, with a maximum speed of about 4,000 sheets per hour. Many new features have been incorporated to make for quick make-ready and accessibility.

Similar to the B.17, also new, is the B.20 Standard Wharfedale letterpress machine, with a sheet size of 40"x25" and a running speed of about 3,000 sheets per hour. These two machines are stated to represent the very latest developments in flat bed stop cylinder letterpress printing machines.

Of interest to newspaper printers was the Cossar flat bed newspaper

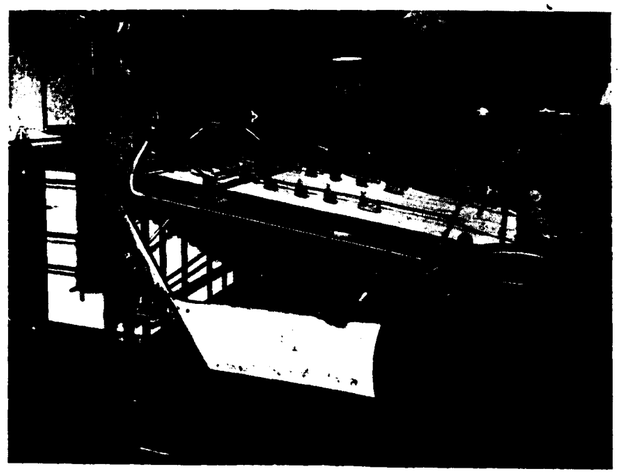
DPE High Speed Stop Cylinder

press, being a web press which prints direct from flat formes and is particularly suitable for printing dailies or weeklies upto a publication of about 25,000. Several models are available, including machines to print 4, 8, 16, 24 and 32 page papers at one operation, or 16, 24 and 32 pages at two operations. This last feature is only to be found on the Cossar press and is extremely useful for weekly publications.

AUTOFEEDS LONDON LIMITED (LONDON).

The chief item on this Stand was an entirely new non-stop loading automatic suction feed. This is a front separation feed intended to cope with material which stacks very unevenly in addition to normal materials. As its name indicates, it can be re-loaded continuously while feeding at full speed. It can feed a great variety of materials from card perforated near one end to double flap tuck-in envelopes, and newspaper wrappers with tear-off strips.

Also on view was the D type back separation automatic suction feed, designed principally to handle sheets from Double Crown to Double Medium, and a wide range of fittings is available to make the feeder suitable for attaching to a large variety of the machines used in the paper converting trades, which are at present being hand fed. It also has the advantage that it can often be attached to feed straight into the rollers of a machine and so the feeder merely takes the place of the hand feed table, occupying very little more space. There is only one basic adjustment for size, namely to move the bridge carrying the suckers forward or backward so that the lifting suckers are near the back of the sheet. The bridge is then clamped by one wing screw, while there



Model D Feeding M. A. N. Two Revolution Press

are also some spring loaded front guides to position either side of the pile. No sideways adjustment of the suckers is required, and no adjustment is necessary for the suction.

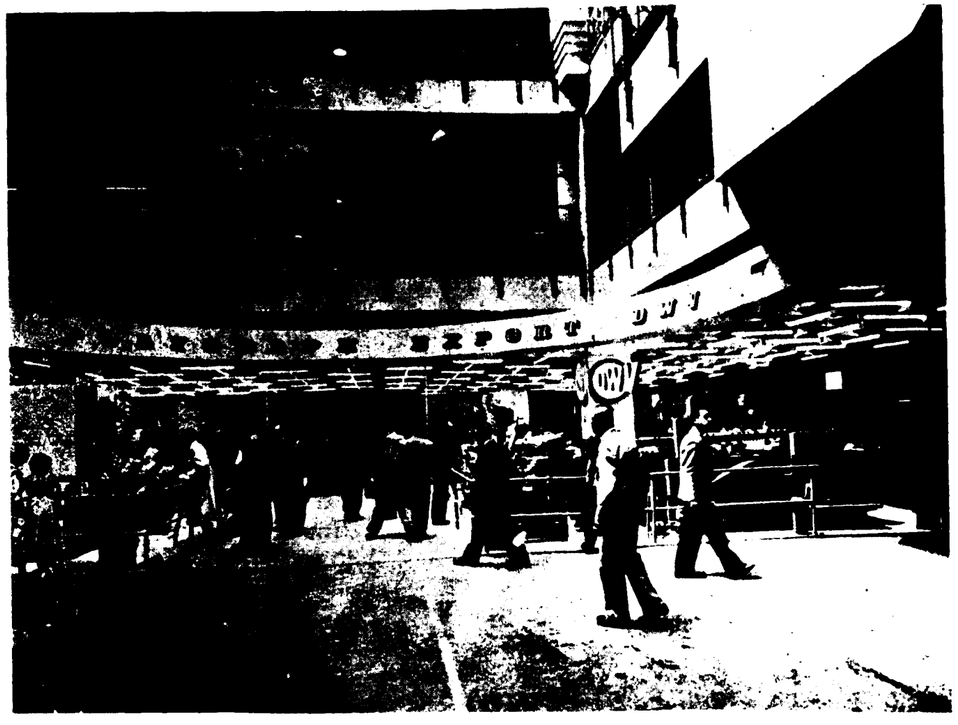
INDO EUROPEAN MACHINERY CO., LTD. HIGH-EFFICIENCY AUTOMATIC CYLINDER PRESSES

The "Polygraph M 1" automatic press for a sheet size of upto 400x 560 mm. has been supplied to customers in Germany and abroad in lots of several thousands. The machine has worked to the complete satisfaction of buyers. Its principal advantages are its heavy construction, slurfree delivery, accurate register, plain operation, and above all, its high economy of operation. It is particularly suitable for high quality work and economical handling of large issues and has in thousands of cases established an excellent reputation.

For all printing work, especially finest job printing work and exacting single and multi-colour cut-work printing it is of never-failing reliability.

The construction of the automatic cylinder press, which is in accordance with principles of most up-to-date series manufacture, guarantees absolute precision of such parts as are determinative for the production of flawless impressions, above all of the impression cylinder, the type bed with its guides, and the inking unit.

Since 1951 this special work has also been constructing the M 2 automatic cylinder press which is designed on the same lines as the M 1 machine. The size of sheet being considerably larger (500x650 mm.), it combines the advantages of an automatic printing machine with those of a modern stop cylinder machine working without tapes and rollers for the sheet guide and with absolutely slurfree delivery. Model M 2 is suitable for all kinds of job printing work, blank work, newsprint, book printing, and single and multi-colour cut-work printing handling florpost, art paper and heavy cardboard upto a size of 500x650 mm.



DWV steals the Show. Visitors throng at the Polygraph Export stand

The M O automatic cylinder press for a size of sheet upto 340x 450 mm. is an economic small automatic printing machine for all works; this model has been further improved in the course of the last few years. It incorporates all advantages of the M 1 and M 2 automatic presses, but in contrast to the above mentioned automatic stop cylinder machine it is designed on the swing system with top feed. The throw off impression can also be actuated any time while the machine is running. No readjustments have to be made when the size is changed. A sliding lay mark assures accurate register. All moving parts are guarded to prevent accidents. Heavy construction, substantial reinforcing ribs of the carriage races, slurfree delivery and easy operation are the special features of this automatic machine. Its maximum output is 5000 impressions per hour.

SHEET-FED ROTARY LETTERPRESS FOR SINGLE FACE PRINTING

The world famous "Victoria" printing machine works in Heidenau near Dresden have presented a novelty with its high-speed sheet-fed letterpress rotary printing machine for single face printing, type BR II SW, with a paper size of 92 × 127 cm.

This machine was developed from the sheet-fed rotary letterpress for single face printing, type BR I with a capacity of 6000 impressions per hour.

The stillstand during the change over process has been considerably reduced by a newly developed make-ready machine. While one of the four plate cylinders supplied to each machine is running the others can be prepared for the next job. A special double trolly enables a speedy changing and transport of the plate and printing cylinders without further tools.

The machine is divided into three sections, the feeder, the printing unit and the delivery, thus ensuring easy access to all parts.

The make-ready machine, together with the interchangeable plate cylinders allow the following operations to be done outside the printing press.

The locking of plates
The make-ready of plates
The proofing of sheets
The pre-registering of plates

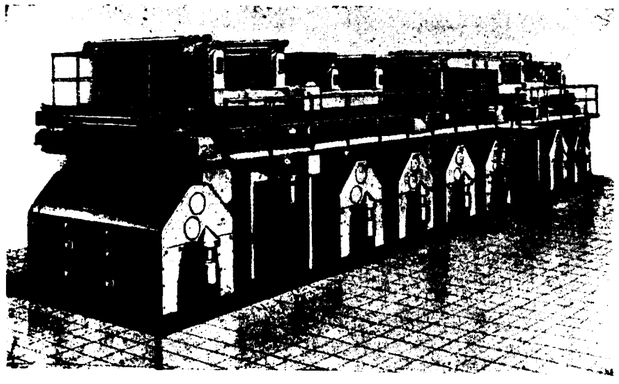
Plate changing takes about 10 minutes. A double trolly is supplied for a quick and easy to and fro transport of the plate cylinders without further tools, thus reducing the stillstand by approximately 80%.

R. HOE & CRABTREE LTD. AND R. W. CRABTREE & SONS LTD. (LONDON)

One of the most interesting exhibits on the Stand of these associated firms was the latest design of Hoe Crabtree super-colour rotary newspaper press, which is a 4-page wide printing press unit with solid steel type and impression cylinders mounted in special roller bearings having a very close tolerance. The type cylinders are fitted with a rapid plate locking mechanism which locks and unlocks the stereo type plates by the pull of a lever. The inking arrangement incorporates the well-known ink pump system with the new style triple drum distribution and two large forme rollers, and the double former folder has a transverse collecting mechanism for delivering two section papers from a single delivery. The magazine reelstand and paster is electrically controlled and virtually automatic in operation. Two push buttons- one to start the pasting cycle and the second to make the actual paste is all that is involved. The control of the paster is entirely in the hands of the operator, who is best able to judge the moment for making the paste. This unit was running from time to time during the Exhibition with paper although actual printing was not carried out.

STEREO

Also shown by Hoe Crabtree was their latest hydraulic matrix moulding press with electrically heated



Part of 10-unit super-colour Rotary

platen and automatic suction device. This machine has automatic temperature and pressure controls and is capable of exerting a maximum pressure of 750 tons on the newspaper forme, well within the requirements of any newspaper stereotype room.

OFFSET 27-A

Most important of the R. W. Crabtree offset presses on view was the Mark 8, 2-colour press with a maximum sheet size of 48½" x 36½". This is particularly interesting because it is fitted with the very latest Elless dual action automatic and continuous loading paper feeder, and also embodies newly-designed inking units and new design of damping units with motorised control. Another item was the Tandem two unit metal decorating offset press with full automatic and continuous sheet tin feeder. One of the chief features of this press is the continuous chain dog in feed which allows the sheet to pass through both units on an almost straight line, the sheet being registered in the units both at the frontedge and the side edge while travelling to the unit. The specialised form of electrical drive is coupled as one assembly for main drive purposes, but by the simple operation of the clutch can be divided to permit independent running of the two printing units for make-ready purposes etc., the units being specially guarded with an electrical interlocking switch providing the maximum degree of safety for the operator.

Another offset exhibit was the press specially developed for the Ministry of Supply for mobile printing vehicles. This is a 2-colour press, the outstanding feature being that it can be contained in a printing vehicle and occupies no more space than the previous single colour press and yet takes a maximum sheet size of 21½" x 31½" and prints in two colours. The press, in the vehicle, was on show at the Ministry of Supply Stand in the Empire Hall during the whole of the Exhibition and was operated by troops.

Grand show at Grand Hall. Hoe & Crabtree Stall at IPEX

J. F. CROSFIELD LTD. (LONDON)

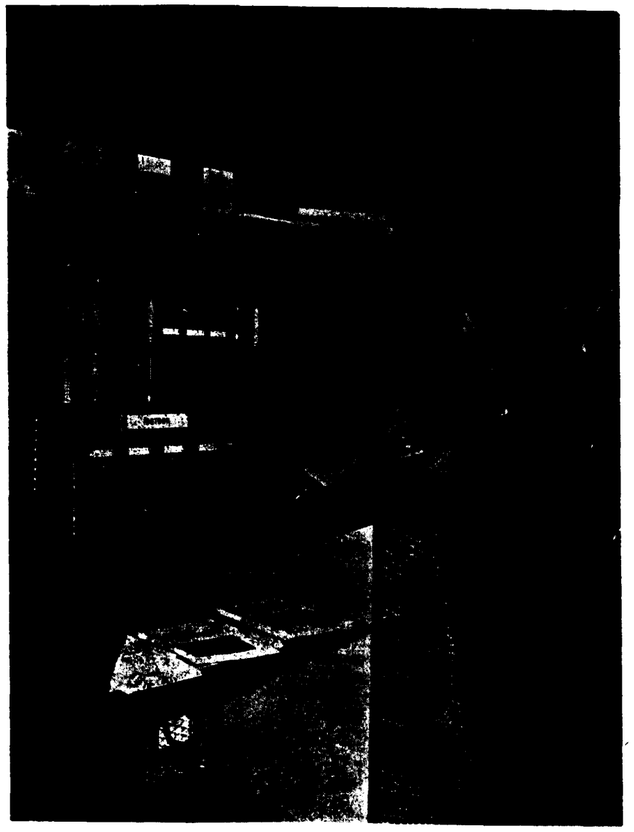
Showed equipment manufactured by themselves as well as foreign equipment distributed by them in Britain.

Undoubtedly the highlight of this extensive display was the Fairchild (New York) "Scan-A-Sizer", which is a completely new machine, the name having been selected because of its ability to enlarge and reduce while the engraving is made. Operation is similar to that of the now well-known "Scan-A-Graver" but with the additional advantages that it can reduce or enlarge the reproduction upto 4 1/2 times, the maximum block size being 13½" x 16½", while there can be produced on the one machine either 85 or 120-line screen engravings. The copy is placed on a flat drawer-like projection and it is scanned by an optical system housed in the head up near the top of the left hand end of the machine. This copy table will accept originals upto 18" x 22½" and the copy may be mounted on a board material upto ½" in thickness. Scanning is done by a pivoting mirror which scans back and forth from side to side of the copy table. As the scanning is being done from side to side, the copy table recedes into the machine, in this way the scanning being completed.

One of the interesting features of the enlarging and reducing mechanism is that it can be adjusted to act more in one direction than the other, thereby producing a controlled distortional scaling. This enables operators to fill more easily a a desired space in a given page layout or it may be possible to make photographs of narrow rooms to appear more spacious. The prototype model, as stated, produces either 85 screen or 120 screen engravings, but by the time the machine is in general production additional selections of screen sizes will be available.

Entirely new also was the Idotron Colour Density Monitor, which is the latest piece of equipment in the line of electronic controls developed for the Graphic Arts industries by Crosfields. It will be suitable for use on rotary presses and equally valuable for gravure, letterpress or offset, and it is claimed that for the first time the machine will put a really reliable control in the hands of the printer enabling him to obtain uniform ink density throughout the run. At this stage only preliminary information can be made available, but a full technical description and illustration is expected to be passed to the Trade shortly.

Amongst the other items manufactured by Crosfields was the Autotron M. K. IV colour circumferential and side register control for rotary printing presses. Although the Autotron photoelectric circumferential control has been installed on almost 300 presses throughout the world, the combined register control equipment incorporating length and side regis-



Idotron Electronic machine with density control

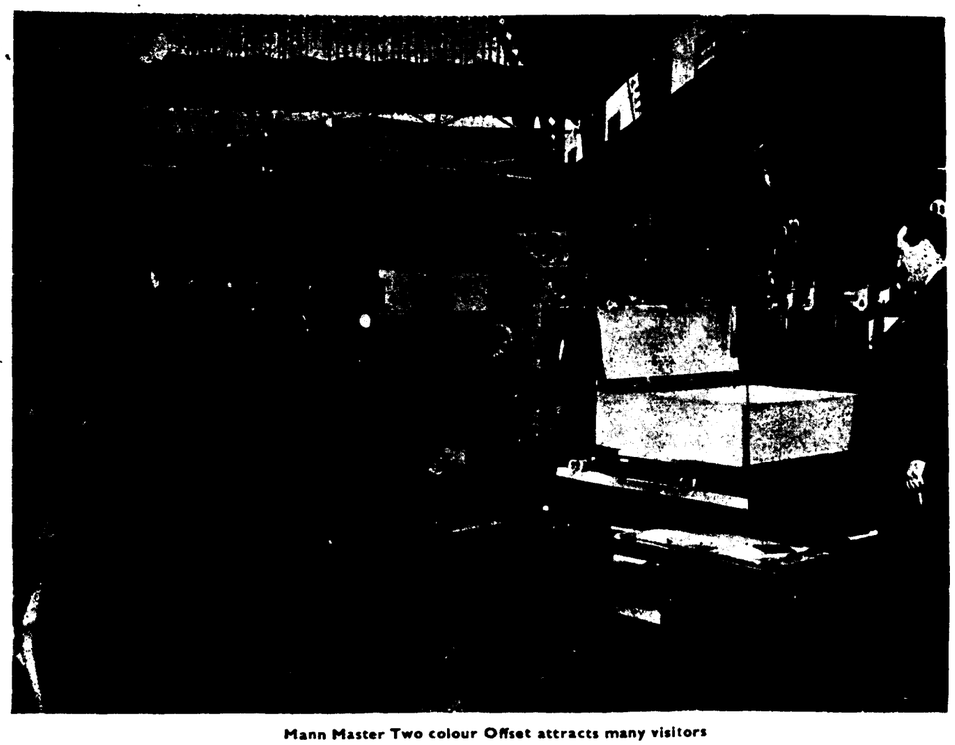
ter control in one equipment, is comparatively new and not generally known in printing circles. For the purpose, the equipment at IPEX was properly installed with auxiliary test equipment, including a television screen to demonstrate the impulses received from the various parts of the equipment, to simulate the movements of the press. The speed of control has been further increased by means of a new circuit which pulls into register approximately three times as quickly as before, without hunting, while the accuracy of control has also been increased, to the figure of 0.0005." Further, the width of the live zone in which the register markes are scanned can be adjusted to suit the particular job being printed.

Additional foreign equipment shown on this Stand included the "Lilliput" hydraulic 20-ton moulding press made by Mincel of Paris, which produces ordinary stereotype mats or thermo-setting mats for easy production of any rubber or plastic plate. The "Multinex" manufactured by Misomex of Stockholm, is claimed to be the only fully automatic dark room step and repeat machine. This machine was exhibited for the first time in Britain at the recent Packaging Exhibition, and has since been successfully installed at a number" of British plants.

GEORGE MANN & Co. LTD. (LONDON)

The firm of George Mann & Co. (a member of the Vickers Group of Companies), originated in 1878, is to-day the largest producer of offset printing machines in the world. Included in their productions (evolved in 1910) has been the first successful rotary offset machine to print two colours in one operation, the machine also being capable of perfecting (printing on both sides of the sheet).

Their Stand at IPEX had many interesting models, including three examples of the latest Mann Junior Master press, with maximum printing surfaces of 24" x 18½", 32" x 21½" and 35½" x 22½". Many new features are incorporated, notable among which are a fully cam controlled swing arm mechanism and suction roller on the delivery, with an independent vacuum pump enabling sheets of a wider range of weights and thicknesses to be fed and delivered at higher speeds, up to 7,500 impressions per hour. Another refinement is a built-in "wash-up" device brought into action with a hand lever, by which roller cleaning is simplified. The ink duct is retractable in a quick movement and, after a thorough clean-up the duct can be moved back into position without disturbing the ink flow setting screws under the duct blade.



Mann Master Two colour Offset attracts many visitors

The Mann Sheet Fed Perfecting Lithographic Offset Press has been specifically designed for simultaneous printing on both sides of the sheet, and is suitable for all types of work requiring one colour on each side of the sheet. Typical applications are the production of books, music, catalogues and similar work. On this class of work the advantages by comparison with a single-colour press are two-fold, since not only is production time confined to a single printing, but the handling between first and second printings is eliminated. By comparison with the letterpress process the advantages are even greater, since the thin offset printing plate is lower in initial cost and more easily stored than the counterpart letterpress, forme-makeready time is faster and operating speeds substantially higher. Fidelity of reproduction is guaranteed upto a speed of 5,000 sheets per hour consistent with the type of paper and the nature of the work to be executed, and the press and feeder will successfully handle stock ranging from the thinnest Bible paper (20 gramme) to 0.035" cardboard (600 gramme). The maximum sheet size is 53½" x 38", giving a maximum printing area of 53" x 37".

Of interest to the metal box industry is the Mann Metal Decorating Press, which achieves high speed fine quality printing with full range of tones and "spot on" register. The press will print all types of metal plates, the material having a straight through run from the automatic feeder to the stoving oven. In addition the automatic equipment and well-placed controls reduce anxiety in the operator and ensure increased production. Fidelity of reproduction is assured at variable speed upto 5,500 impressions per hour, and there is no fear of under-strength printing whether for heavy solids or half-tone screen work. Maximum printing area is 24½" x 36", and an important part of the equipment is an efficient series of mechanical and electrical detector stations which safeguard the press against damage from sheets which are abnormal in shape, size and thickness, or which are out of time.

Another exhibit is the "Multineg" machine, designed in two models

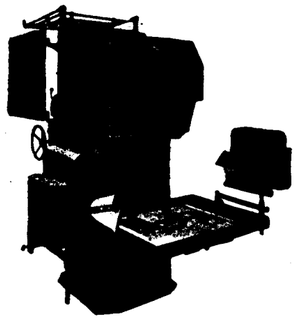
for the purpose of making step-and-repeat nagatives or positives into photographic material, either films or glass plates, up to a maximum of 30" x 24". Negatives or positives are produced by contact and this is a special feature of the machine, as reproduction of highlight and shadow dots does not suffer from the loss of tone liable to occur in projection types of machine.

SIDNEY R. LITTLEJOHN & Co LTD. (LONDON)

Showed and demonstrated a range of equipment of direct interest to the photolitho, photoengravers and photogravure section of the Graphic Arts industry.

This included their Type 112-24" x 24" darkroom camera, completely equipped for masking and colour work. This particular model embodies the firm's latest ideas on the finer points of camera design, such as adjustable 3-point lays, rotary filter control and other features.

The Type 122-20" x 20" darkroom camera is specially designed for black and white work, and was shown equipped with straight line image reverser, mercury lighting and a cabinet film dispenser. The purpose of this camera is to provide the photoengraver with an inexpensive darkroom camera on which can be handled both wet and dry plates



Littlejohn Auto Vertical Darkroom camera

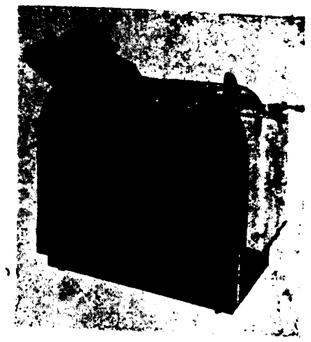
and film and strip film, while it is fully scaled for focus, thus ensuring maximum production.

The Type 24–20" x 20" vertical camera was mounted in a dummy darkroom, complete with a temperature controlled sink unit, and fitted with vacuum backs, transparency attachment, cold cathode unit.

Other exhibits on this Stand included a litho coating machine with bulit-in lighting to the lid and water spray arms; a 54" x 43" frame with attachments such as hand lamps for positioning of negatives and positives; a Densitometer unit, proofing presses for photoengravers; the Hadego Phototypesetting machine, and an entirely new design of bevelling machine which is completely power driven, and is stated to offer greater bevelling facilities for bevelling squared-up images within the areas of a single plate.

ADDRESSOGRAPH-MULTIGRAPH LTD., (HEMEL HEMPSTEAD, HERTS)

A big attraction on this Stand was the "Multilith" Tandem Model 1275 Duplicator, which is of interest to all printers contemplating the installation of small offset machines for medium run work. Two colours can be run concurrently—two colours on one side of the sheet, a different colour on each side of the sheet, or, the same colour on both sides. All types of paper and metal, direct image and photographically prepared Multilith duplicating masters can be used on this model giving copies that are clean, sharp and permanent. Copy may be placed on Direct Image Masters with typewriter, pen, pencil, ball point pen, tabulating machines, "Addressograph" machines or any automatic or manual writing machine. An operating speed of 12,000 impressions (6,000) sheets an hour



Multilith Duplicator

makes this an ideal machine for handling medium runs of two-colour litho-offset work.

INDO-EUROPEAN MACHINERY CO., LTD.

THE FULLY AUTOMATIC FOLDING MACHINE 433 RSA

Among the many innovations displayed was the fully automatic folding machine 433 RSA. It differs from the other types by the fact that it is designed for four folds in cross fold of German and International Standard sizes. In spite of this the machine has not more folding units *i. e.* folding rollers, and knives than an ordinary machine adjusted for four folds. This new machine has a maximum folding size of 80 x 112 cm.

Particularly noteworthy improvements on this machine are the adjustable sheet conveyors and sheet damper bars which can be adjusted according to the working size, the omission of the conveyor stretching weights, and the installation of a sheet guiding device. This device operates in that moment when the sheet approaches the stop rail with controlled pressure reduction. According to the necessity the sheet guiding device can be installed at the front or at the back of the sheet to be folded. Through the diagonal controlled feed the device is automatically

shifted by each change to a new size so that it guides the sheets at the same place as the drawing guide of a printing press.

The machine can be equipped as required with a fully automatic suction feeding device or with a rotary sheet guide.

It is worth while stressing that the folding units are installed in a horizontal position next to each other which enables better operation facilities and easy access for cleaning.

A TECHNICAL PROGRESS IN BOOKBINDING

Hinging is a term used in bookbinding in which the cover is pressed down whereby a valley is formed along the back of the book giving a hinge to the cover. For this process machines were used with heated metal edged boards which are of some disadvantage.

The VEB Buchbindereimaschinenwerk Leipzig has built a new book hinger finishing machine which is a considerable improvement over the older types.

Instead of the heated metal edged boards the book hinger finishing machine is equipped with seven pairs of electrically heated hinging rollers. The books are conveyed from right to left on a belt between the rollers which form a valley on both sides of the book at the same time.

The books are placed on the conveyor against a guide block of the machine table. A belt running along the back of the book ensures it a straight passage into the first pair of hinging rollers. The book is then conveyed and guided by the following rollers.

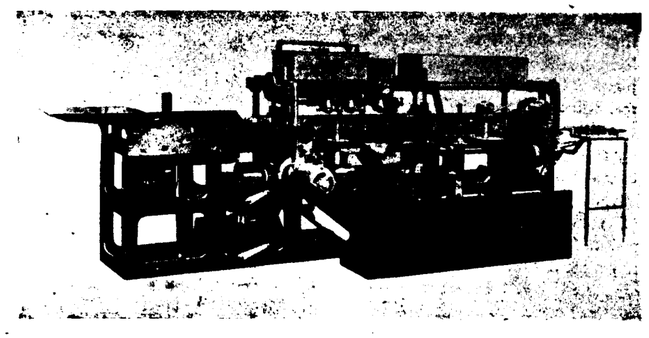
With a speed of 0.3 m. per second 3500 books of medium size can be hinged in finest quality per hour. This means a four fold increase in comparison to the former capacity of other machines with only 800 books per hour.

BOOK MACHINERY CO. LTD., LONDON.

Shown for the first time at IPEX is a new high-speed bookbinding machine, the Flexiback Thermoplastic Binder. This machine, stated to be unique in the field of bookbinding, is specially designed for binding without sewing, using solely polyvinyl cold emulsion synthetic adhesive. Two models are available, "Model E" for edition binding, and "Model S" for stationery manufacturers.

Edition binding from folded and collated sections to completely lined books is completed in one operation. Production includes books for (a) rounding and backing and casing in; (b) flat back pocket novels; (c) telephone directories, railway timetables etc. The saving in time and cost is claimed to be considerable, since the binder obviates the following formerly separate processes–sewing, bookback gluing, starring out, book lining, as well as for certain types of work, nipping and endpapering, including all intermediate handlings. Speed–upwards of 40 books per minute according to size and style of books to be processed.

The "Model S" machine for stationery manufacturers produces board stiffened account and exercise books, and sales duplicate or bill books, in one operation with great speed and economy, at the same time greatly enhancing the quality. Wire-stabbing of sales duplicate books does not permit the book to open flat, causing great inconvenience to the user. Thermoplastic binding has overcome this difficulty, whlist also saving the area of paper normally required to hold the wire stitches, as the perforation of the sheets need not be more than 1/4" from the spine edge of the book. The total saving in paper costs alone is a big feature for the stationery manufacturer. The machine is so versatile that, in addition to binding without sewing, all classes of sewn work may also be lined in one operation should the binder be concerned with dual style binding demands. Further, the machine is suitable for short as well as extremely long runs in view of the quick changeover possible on various styles and sizes of books to be produced, and the binding remains permanently flexible and durable. Another feature is resistance to insect-attack, an important point for tropical climates.



Flexiback Thermo-plastic Binder

THE RAPID BOOKLET STITCHING MACHINE TYPE No. 321

This machine is a simplified design operating with the so called plain stitch. It is fitted with three stationary needle adjustments which, however, can be regulated according to the stitching length. It works with a speed of upto 110 stitches per minute.

Sheet delivery is semi-automatic *i. e.* the sheet belonging to a booklet are placed on a delivery chain outside the stitching device and are mechanically forwarded to the stitching saddle where they are neatly piled before the real stitching process begins.

The high speed booklet stitching machine, type No. 321 represents the first step towards modern book production in which the back lining, formerly fastened to the book by a thread book sewing machine, is glued onto the back of the book by a so-called lining-up machine.

The stitcher is fitted for a maximum size of 20x26 cm.

INDO-EUROPEAN MACHINERY CO., LTD.

AN INTERESTING LID-BOX CONTINUOUS-PRODUCTION PLANT

Until the early twenties the cigarette industry used mostly folding boxes for packing cigarettes. It was soon recognized, however, that this kind of packing was in the long run insufficient. In the first place it lacked the necessary resistance to repeated handling. For this reason the cigarette industry changed over to hinged lid type boxes which not only had the advantage that the boxes were now of greater stability but also of pleasant appearance thus constituting a much more suitable medium for advertising. In the beginning lid boxes were manually produced with the help of some auxilliary machines so that output was limited.

The packing industry kept pace with the increasing demand for lid boxes and in a relatively short time it had designed fully automatic machines of high capacity.

A leading plant contributing to this success is the *Veb Kartonagenmaschinenwerk kama*, Dresden.

This plant has become famous throughout the world for its complete installations for the manufacture of hinged lid type boxes. Visitors to the 1955 Leipzig Spring Fair were able to see such a plant displayed in the "*Bugra-Haus*".

The lid box continuous production plant consists of four individual machines inter-connected by conveyor belts, with the advantage that temporary breakdown of one machine will not stop production. In such a case the failing machine unit is supplied by hand with box parts taken from stock. Delivery is made possible either for the manufacture of lid boxes with drawn lid and slit box part or with both lid and box part drawn.

SQUARED PAPER—A PRECONDITION FOR QUALITY PRINTING

The hydraulic high-speed square trimmer, type A 150 Mf centred great attention among the many experts at the Leipzig Spring Fair in the "*Bugra-Haus*".

This machine built by the VEB Buchbindereimaschinenwerk in Leipzig is unsurpassed in quality and construction. This plant can look back on a tradition of over one hundred years. Since the construction of its first cutting machines, cardboard shears, embossing, smoothing and gilding presses as well as other mechanical equipment it has helped to change handicraft bookbinding into a mechanized large scale production.

THE PERFECTA HIGH-SPEED THREE KNIFE TRIMMER

The high-speed three knife trimmer type ADN of the VEB Papierverar beitungsmaschinen werk Perfecta in Bautzen centred great interest among the many experts in the "*Bugra-Haus*" of the Leipzig Spring Fair. Several efforts have been made to copy the Perfecta machines but without success as the Perfecta machines from Bautzen hold a leading position in the world today. The works can look back upon decades of experience which accounts for their high technical standard.

The Perfecta high-speed three knife trimmer is distinguished for its completely encased attractive design, high efficiency, great working safety and simple operation.

A NEW HIGH-SPEED GUILLOTINE WITH MANY ADVANTAGES

In decades of research work closely combined with practice the VEB Buchbindereimachinenwerk Leipzig was able to build the high speed guillotine type A 112 Ht which is now in serial production after it had been rigidly tested.

The machine is sturdily built and its modern closed casing, enabling easy cleaning of the machine, give it a pleasant appearance. No moving part is seen while under operation except for the knife, knife-holder and the clamp which holds the pile during the cutting process.

The entire mechanism has been built into the interior of the machine including the fly wheel which is flanged to an electro motor.

AUTOMATIC THREE KNIFE GUILLOTINE, TYPE A 50 A

This machine is built by the VEB Buchbindereimachinenwerk, Leipzig. This work, which can look back on an experience of over 100 years, has played an important role in the mechanizing of bookbinding through its cardboard shears, embossing, gilding and colour printing presses and other machinery.

The automatic three knife guillotine, type A 50 A is sturdily built and is suited for heavy duty work in the cutting of books, booklets, periodicals and paper piles. All working processes from feeding to removing trimmed work are completely automatic. Each pile runs successively through the continuously operating machine. Feeding and removing the trimmed work are the only manual operations necessary to keep the machine going.

This machine has a very high capacity. 12 to 15 piles can be cut per minute *i. e.*, if 1 pile consists of 50 booklets, the machine will cut 240,000 to 300,000 in 7 hours continuous operation.

THE PLATEN PRESS ODIN MODEL TP III

The odin platen press is the universal machine for all factories producing paper goods and cardboard boxes, as well as for punching work. It is especially adapted to the production of folding boxes, toys, stencils, placards, letters for signboards, pasteboard, and wood, as well as for all kinds of sealings, parts of motorcar bodies, and radio bases and cabinets. Its economy lies in the combination of the several working processes into one, such as stamping, etching, scratching, and embossing.

BEASLEY, FRENCH & CO. LTD (BRISTOL).

Who specialise in bag-making machines, envelope machines, rotary wrapper units, sheeting machines and multi-colour aniline printers,

Beasely French Bagmaker

showed Models No. 1 and 4 from their Rotacut Flat and Satchel Bag machines and their "Befanco" letterpress wrapper machine, which has already been described in '*Printindia*'.

BRITISH BREHMER LIMITED (LONDON)

Showed wire stitchers, book sewing machines, staple presses, and similar equipment from their well-known range.

Typical was the "Rapid" No. 103 wire stitcher for pads, pamphlets, magazines, duplicate books etc. This uses round or narrow flat wires without changing any wirehead darts and operates up to 1" thickness on the hardest paper. A unique mechanism of hand wheel adjustment enables the stitcher to be instantly and accurately reset to a different thickness of work without the use of any tools. A transparent safety finger guard is fitted.

FELIX BOTTCHER (KOLN-BRAUNSFELD, GERMANY).

The principal item in the display by this well-known German firm were the F. B. Synthetic Rubber Rollers, which are manufactured both in Germany and England. The rollers are available in grades specially developed for letterpress machines, including rotary presses, offset-litho and litho machines, including those for tinplate printing and the Flexigraphic and photogravure processes. The main advantage is that the softness and resiliency of gelatine composition has been obtained, while still providing the qualities of stability, both chemical and physical, which synthetic rubber alone can supply.

Other items included composition rollers, manufactured in England, and Artex plastic rollers, manufactured in Germany which are stated to be a great improvement on composition rollers, although similar in appearance and method of manufacture. F. B. cleaning materials for printers' rollers were also shown.

GEORGE VOKES (ENGINEERING DIVISION) LIMITED (LONDON).

Exhibited in working operation the 'Vokes' 4 x 2" diepress coupled with one of their diestamping type Infra-Red driers, while another working model was the W 3 drier on which is fitted a 24" strip gumming machine of an improved type.

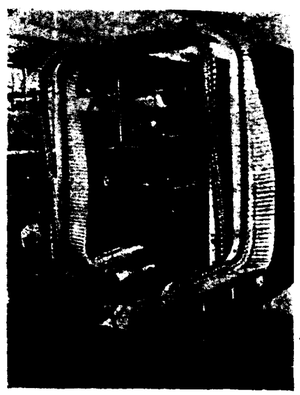
Representative of the firm's wide range of sizes in driers for silkscreen work was an X6/36 model, which accommodates work upto 36" wide at speeds up to 1,250 feet per hour. Interesting also was the X3/18 type

drier, which is a model recently introduced as a most handy size of machine for drying small show-cards, gummed work etc., and has a conveyor belt 18" in width, driven, as is the case with all their driers, from a variable speed motor providing a wide range of variation.

DAVERIO & CIE S. A. ZURICH (ZURICH, SWITZERLAND)

Invented by this well-known Swiss firm, and exhibited for the first time in public at IPEX, was the Daverio Newsveyor. This has been specially designed for easy conveying of printed newspapers from the actual printing press to the publishing department without risk of smearing. The device operates without wires, tapes or strings, the newspapers or other periodicals, of any number of pages, being gripped only on the unprinted margin space. The special arrangement of the grippers prevents any displacement or creasing of the papers.

An important feature is the quiet and smooth running of the conveyor, which allows of passing through silent parts of any buildings, such as offices, without disturbance. The standardized components of the equipment are constructed of high-class materials and made to exact limits, giving long life, safety in operation, and negligible maintenance costs.



Deverio Newsveyor

SOAG MACHINERY COMPANY (LONDON)

It is difficult to summarise this exhibt, which took the form of a combined stand, occupying 6,500 sq. ft. of floor space, where Soag Machinery, in addition to their own manufactured machines showed in company with 16 co-exhibitors hailing from the Continents of Europe and America, machinery representative of the printing, paper converting, paper bag making, carton container, and similar industries.

The Soag display included four "Printomatic" automatic stop cylinder letterpress machines, which are now fitted with a chain gripper delivery mechanism which positively controls the sheet to the point of delivery, printed side up. There is also a greatly improved ink feed machanism enabling the ink feed lever to be set to any of 17 positions on the scale, this assists the rolling efficiency as ink is applied in a thinner form, ensuring greater evenness of distribution. A maximum sheet size of 15" x 22" is taken and speeds up to 4,500 I. P. H. can be obtained.

CUTTING 44

Particularly interesting was the new Soag 52" Guillotine with electronic Auto Spacer Bar equipment for repeat cutting of predetermined steps of varying sizes. This is stated to be the first time that a machine has been available, designed and manufactured in England, using electronics for the control of the movement of the back fence. The machine is fitted with an absolutely silent totally enclosed worm gear drive, which is operated through an electro magnetic clutch: When the spacer bar has been set the machine will continue to cut along the whole length of the pile without stopping and with the single starting of the operating buttons, enabling work to be cut at high speed with utmost accuracy.

PROCESS

The Soag "Registerscope" models included the well-known "Senior" and the latest addition to this range, the "Junior", which works on the same principle as the larger machine except that instead of being fitted with a single moveable scanning head, it is equipped with two fixed position scanning units and the forme being registered can be viewed in relation to the masterprint at each end of the imposing surface. The latter is fitted with a removable dividing bar, so that either one forme 23" x 33" or two separate formes 15" x 23" can be registered.

Gartemann & Hollman g. m. b. h. (Bielefeld, W. Germany) showed their "Zenith" rotary aniline printing press in a working width of 33¾" for 4-colour printing using either normal water or spirit based inks or pigmented inks. The machine will print all types of paper and cellulose film, and has adequate drying facilities both between the inking units and after, in the overhead bridge. Sheeters can be supplied for coupling to the printing press or to work as independent units.

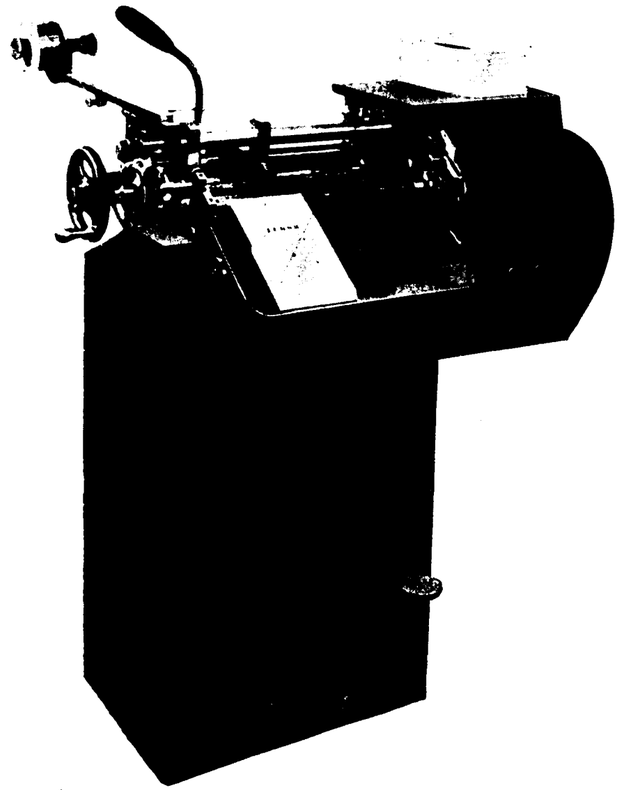
American products were represented by the Hudson-Sharp Machine Co. of Green Bay (Wisconsin), who showed a range of paper converting machines, including high production napkin folders, printing, folding and creasing machines for tablecloths, wrapping papers etc., the Universal Corrugated Box Machinery Corporation of New Jersey with the latest model of the Universal semi-automatic open throat taping machine and their 6-bar heavy duty slitter scorer; and H. G. Weber & Co. Inc. of Kiel (Wisconsin) with the latest models of their paper bag making machines.

LOTZ ABBOTT & CO. LTD (LONDON)

What is believed to be the first dry-offset envelope printing machine and certainly the first to be shown in Britain, was exhibited by the above firms who are agents for the manufacturers, Ernst Pott Maschinenfabric, of Wuppertal-Barmen (Germany).

The principle is based on the use of deep-etched zinc plates, 0.04" thick, the image being transferred to a rubber-covered blanket roller and then to the paper. Adjustment of the rollers is simple, and the blanket roller and forme cylinder can be lifted out of action by operation of a single lever.

The machine is stated to handle all types of paper, from airmail to thin card, either as sheets shaped blanks or finished envelopes, from 4"x5" upto 20"x23". Feeding is from the bottom of the pile, enabling the machine to be operated during operation, and sheets are held securely to the cylinder by suction, the delivery table sinking automatically. The capacity is from 6,000—15,000 per hour, according to the size of blank being printed, and the inking system has a spring blade with fine adjustment screws and is adjustable. The rollerwashing equipment is an integral part of the machine.



Spiral Bookbinding Machine

SPICERS LTD. (LONDON)

Showed a new rotary pocket-envelope machine and a spiral bookbinding machine. In the former, the RP Mark 111 model, envelope blanks are fed into the machine from the bottom of the pile, automatically making the feed continuous. Accurate folding is ensured by a special registering device and all flaps are scored before folding to produce a sharp and even fold. Suction at the folding stations has replaced the old fashioned folding blades. A new design of drying chain is fitted with also a new design of chain link which

Spicers' Rotary Pocket Envelope Machine III

dispenses with cumbersome rails and guide bars.

COMPOSING MACHINES & COMPOSING ROOM EQUIPMENT

Composing machines and composing room equipment generaly showed great progress.

Prominent was the Italtype composing machine, exhibited for the first time in Britain, and manufactured by Italtype of SPA of Milan. This is similar in design and operation to the usual types of slug-casting keyboard machines, but with minor variations. It is stated to be very quiet in operation due to the elimination of belting and the use of fibre gears and direct-coupling. A swinging front gives accessibility to keyrods and other parts, and there is included an electrically-operated magazine changing mechanism with independent motor. The standard metal pot is equipped with two main elements plus a reserve unit which is automatically brought into operation in the event of failure of either of the main elements, and a built-in thermostat regulates metal temperatures between 265 and 295°C. Matrices made for other line-composing machines are stated to be suitable for use on the Italtype.

Santype Ltd., of Salisbury have introduced the "Multifont" Type-tray system, which is an adaptation of the Rob-Roy system invented in America, and now developed for use in Britain by the Pitman Press of Bath. The system is made up of plastic boxes, made in a variety of colours. These are set out in a specially designed steel tray containing 108 boxes per tray, providing the equivalent of over four alphabets. Boxes of a colour contrasting with the main colour in use in the tray concerned are used for the first letter in each alphabet and for every fifth row as a guide to the eye. Type is laid into each box on the caster, all one way leaving a space at the top of the box to allow the compositor to pick up the characters, and an adhesive label can be fixed above the finger-space designating the character. Due to the type being laid one way the box contains more characters than it otherwise would and they do not slip from one box to the next. Cases can be laid for special purposes by assembling suitable boxes and can be adapted to a change of job by removing boxes containing characters not wanted on the job in hand and substituting those which are, such as accented characters, fractions, signs, etc.

LINOTYPE & MACHINERY LTD. (LONDON) AND MERGENTHALER LINOTYPE CO. (N. YORK)

Displayed a comprehensive range of the well-known Linotype machines, including "Model 53", "TTS Fleet 54", "Model 48", "Model 48 S M." equipped for both Arabic and Roman composition with the full range of double-letter Arabic founts, including the new 18-point; the double distributor "Model 50", which showed all the advantages of mixed composition for book and periodical work; and the Super Range SM" for large display setting at keyboard speeds.

The latest Linotype improvement, which at the moment is only fitted on the Model 48, although it is expected it will be extended to other models in the near future, allows the operator to swing out not only the optic aid front but also the whole of the assembler front. This exposes the keyboard rod frame and striker mechanism, so that the former can then be removed in one piece. In this way it is possible to remove and replace a keyboard rod and have the machine running again in a matter of a minute or two, and the assembler arrangement on the inside of the assembler front is also available for inspection, and the opportunity has been taken to enlarge the driving pulley, thus eliminating all belt slip.

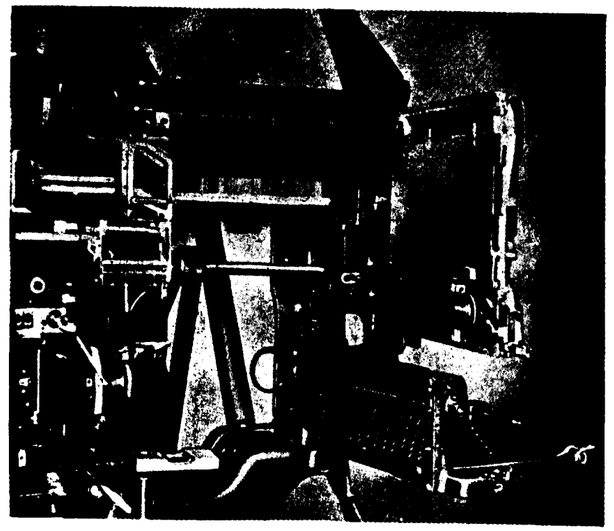
The Mergenthaler Linotype Co. sent the pilot model of the Linofilm, which aroused world-wide interest when shown in New York last year. This is a 2-unit machine, the keyboard unit perforating tape and the photographic unit producing type on film, either right-reading or negative. As the keyboard can be operated entirely independently, even at great distances away, it can be utilized at maximum efficiency. Tape can easily be stored for future photography. The revolutionary optical system of the Linofilm is absolutely stationary, insuring freedom from slur and smudge and from any inherent speed limitations. Through this system, the master characters which are projected upon the film remain utterly motionless at all times.

The American Company also displayed for the first time in Britain their famous Model 31 Blue Streak Linotype, designed for handling the great majority of text and display matter for newspapers, books, periodicals and commercial work. Also on view were the Comet Linotype with Teletypesetter, the Model 36 Rangemaster Linotype and the new Hydraquadder, which is stated to combine all the advantages to be obtained by using the true hydraulic principle of "fluid-in-motion". Wherever composition requirements call for white space with lines set flush left, centred, or flush right, the Hydraquadder effects savings by enabling the operator to set quadded and centred matter at speeds faster than the simplest straight matter.

Another new Linotype & Machinery production is the new L & M rollback feeder and chain delivery press. The chief points are a continuous pile feeder, which rolls back from the machine itself, thus allowing the operator easy access to the bed of the machine, which is now automatically lit with strip lighting when the feeder is retracted, an improved system of back separation incorporating a special time-saving maintenance feature; a choice of single sheet or stream feeding at the touch of a lever with an ingenious arrangement that enables the sheets to be wound back on to the pile in the event of a stoppage caused by a damaged sheet when stream feeding. Pre-register stops, swinging grippers, and a chain delivery maintain a positive control on every sheet from the moment it leaves the feed board until it arrives on the delivery pile. The latter is also designed so that the stack boards can be changed and the pile trucked out while the machine is running.

MIEHLE PRINTING PRESS AND MFG. CO. LTD. (LONDON)

Showed four Vertical Presses and a No. 29 Letterpress. The most



Linotype Model 48 showing the new swinging front

sting of the Verticals was a ......l running at 5000 per hour and registering and mounted on springs. A new inking system has been included, and automatic lubrication, oiling twenty-one bearings, has also been incorporated.

HEIDELBERG AT IPEX

The Tenth International Printing Machinery and Allied Trades Exhibition was another epoch in the history of Heidelberg as it was in the history of many other well-known printing machinery manufacturers.

Printers who attended 1954 international exhibition at Dusseldorf and witnessed Heidelberg "exhibition hall" with 30 machines in full operation, discovered at the Heidelberg Stand in London a total of 10 machines, also demonstrating production of a wide range of jobs.

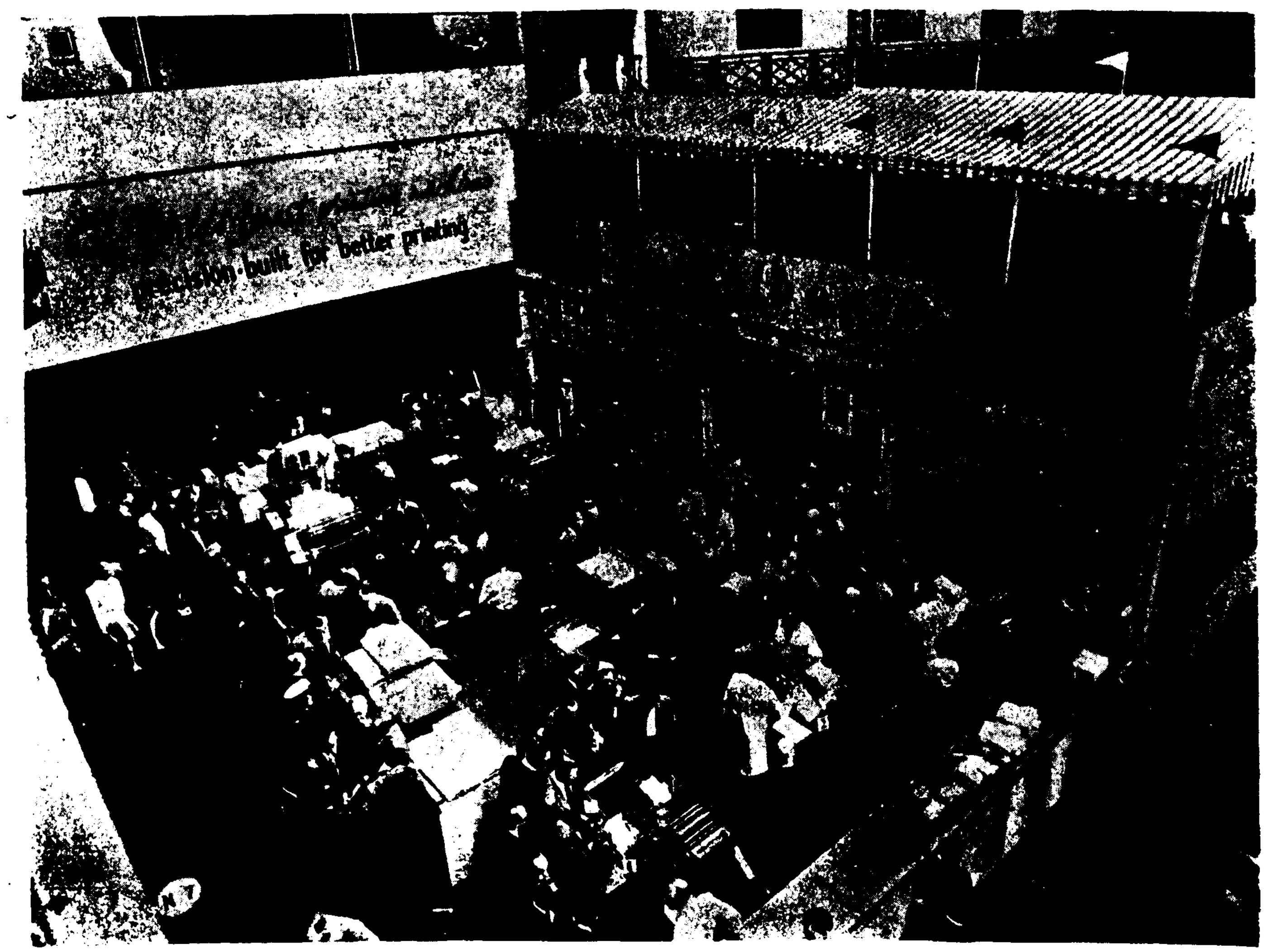
The Heidelberg Stand at IPEX sometimes appeared as a full assembly of the United Nations. About 20 representatives from the main Heidelberg international agencies were present.

Visitors form all over the world thronged in the Heidelberg Stand to watch the machines producing multi-colour printing, die-cutting, embossing and ordinary job work. As printing aids, the most up-to-date methods and materials were utilised.

According to the latest sales report, the British agents (not including the other 20 who were present) booked such a large number of orders during the fair that the delivery time is now more than two years. Heidelbergs are expecting another steady stream of post-exhibition orders from their printer-friends.

H. O. STRONG & SONS LTD. (BRISTOL)

Showed a completely new Autotronic die press with automatic table motion. The chief feature is an automatic safety relay using an electric "eye" so that while the die passes the photo electric cell and actuates head cycle, the head will not travel if there is any interference in the light path. The head will instantly stop down motion if the



The Heidelberg Stand at IPEX. All the Heidelbergs were doing production work

operator's hands are under head and interrupting the light beam.

The operator sets the die on the paper, pushes the "start" button, the die trips the electric eye and the table continues travel to a preset distance (usually head centre). While the table travel is always uniform after die has passed the electric "eye", except for first and last cuts, the total travel from die set varies according to table return which is also pre-set for operator ease in setting die. When the table is in position for cut, the electric relays bring the head down, complete the cut and return head to top of stroke. Completing the cut starts table return and die moves proper distance so that it stops in front of operator. The central control station gives independent and combined head and table motion. It can be set for a complete cycle, continuous run or jogging, and setting up the machine for operation is easily done from the control station position.

WITTON-JAMES LTD. (LONDON)

In addition to the standard automatic "Electrotab" autopaster, showed a new device, the "Roboreel", which has been developed jointly by Beaverbrook Newspapers Ltd. and Witton-James. This, when fitted to the Autopaster, makes the operation of pasting completely automatic. The equipment can be installed on new or existing Autopasters. Each Roboreel consists primarily of four small tachometers and a rack-mounting electonic control chassis. One tachometer is associated with each reel and one is driven from the press shaft.

CASLON MACHINERY LTD. (LONDON)

An entirely new production by this firm is the "Casnor" raised printing machine, which is stated to give excellent results from type, line blocks or stereos, and is extremely simple to operate. The machine is driven by a ¼ H.P. motor and is fitted with speed regulation. The heater head, asbestos lined, carries three heating elements, with switch control, enabling either one, two or three to be used. Any

The Heidelberg Stand showing the 10 machines at work and also the personnel attending interested clients

normal stock from thin paper to heavy cardboard can be processed.

SMYTH-HORNE LTD. (LONDON)

Showed the Macey Collator, on view for the first time in Britain, produced by the Harris-Seybold Company of Ohio.

This machine is designed to be run efficiently by one semi-skilled operator, and is stated to take less than 15 minutes to stack paper on all eight stations of an empty machine, make the few minor adjustments, and begin gathering collated sets. Each station holds a pile about 11½" high, equivalent to about 3,000 sheets of letter-head weight paper, enough for an hour's run at normal operating speed. Using eight stations, the production is 24,000 sheets per hour.

An automatic detector checks each collated set for thickness, any variation stopping the machine instantly, and indicator lights show if too few or too many sheets caused the stoppage. The important feature is positive control of each sheet. An air blast (instantly adjustable for different weights of paper) separates the top sheet from the rest of the pile. It is then firmly grasped by a pair of rubber suction cups which carry it to the conveyor tray. This method prevents the misfeeds or overfeeds usually experienced with friction-feeding collating devices, and the machine is suitable for advertising pieces, book signatures, business forms, catalogs, direct-mail material, duplicated speeches, games, instruction manuals, multiple form letters, news releases, price lists and sales books.

VICKERS ARMSTRONGS (ENGINEERS) LTD. (LONDON)

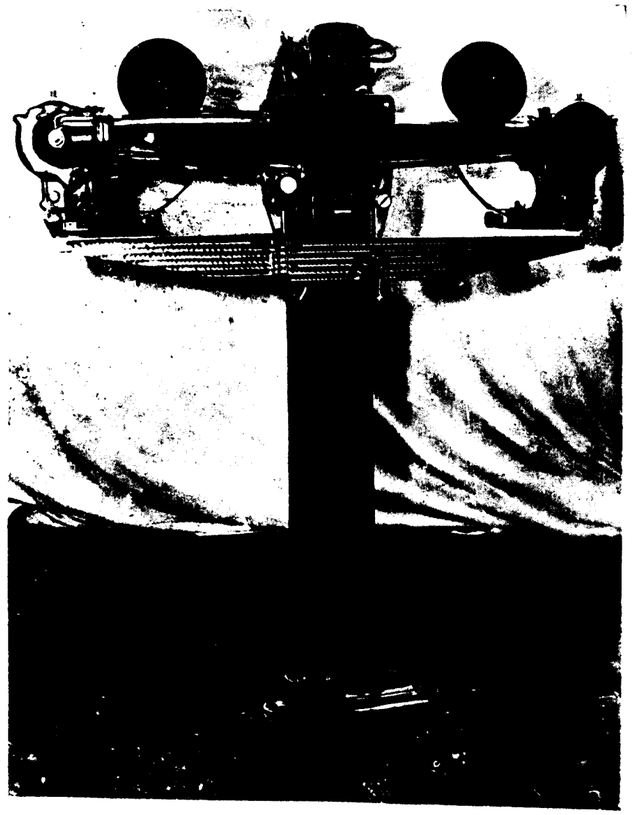
Displayed a comprehensive range of cardboard box, shipping container and wire stitching machinery, which has been developed and sold all over the world for the last thirty years.

The Tandem-head wire stitcher is particularly interesting because it is actually two machines on one pedestal operated by only one electric motor with a consequent saving in floor space and electric power. The heads can be operated independently so that the two operators can produce work on two separate jobs.

The second new wire stitching machine is the New ½" stitcher which, incorporating many new design features, will stitch the thicker double-double corrugated board.

LEATHLEY PUBLICATIONS LTD. & KOCH PROCESSES LTD. (LONDON)

Most interest attached, to the new "Collobloc" letterpress halftone process, which in comparison with orthodox engraving techniques has a number of important characteristics. Etching and metal printing surfaces are both eliminated, and production time is considerably reduced, without loss of depth or tonal



Tandem Head Stitcher of Vickers Armstrong

Vickers Angle Stitcher

quality. A built in interlay provides an automatic makeready, with consequent machine time saving, and ink consumption is stated to be reduced by about 20%, while Collobloc engravings can be successfully duplicated as stereos or electros.

AGA STANDARD LTD. (LONDON)

Showed for the first time in Britain, as agents for Elgrama AG of Zurich, the Elgrama electronic engraving machine, described as a universal engraver which provides, from one machine, halftones in a variety of screens, colour halftones, line and combination line and tone. The screen equivalent range is between 45-200 lines per inch, with ten standard rulings, and screen changes can be made during the course of engraving. Additional controls enable contrasts to be increased, highlights to be brightened, or solids to be reduced in strength, and complete areas of the original can be removed during scanning.

J. MINCEL ET CIE (PARIS)

Exhibited for the first time in Britain the Luxographe electronic halftone engraving, which was shown at the Paris Salon Exhibition last year. The machine uses a heated tungsten needle which cuts at varying depths under the control of impulses deriving from a photoelectric scanning head. An oscilloscope in the control turret enables image screen and engraver signals and a modulation ratio to be checked, and for viewing progress there is included a binocular lens. Screen equivalents between 55-200 lines per inch are available, and it is stated the average rate of engraving is approximately 1" in 2¼ minutes.

PICTORIAL MACHINERY LTD. (CRAWLEY, SUSSEX)

Had a colourful display, including cameras with gigantic enlargers operated mechanically and "Lithotex" models of various types, already well-known as regards general detail.

A new model was the "Lithotex" step and repeat negative or positive making machine, which produces efficiently a multiple unit which can be directly printed down or further repeated on the "Printex" or "Cadet" machines, thereby keeping these fully engaged on offset machine-plate production.

The "Minor" is designed to operate under dark room conditions, and a unique feature is that having been set up and registered in daylight, the step and repeat operations are quickly and easily made without any further registration or dial adjustment. The system of stepping is extremely accurate and simple in operation. The step in each direction is initially set to micrometer dials, and this step can be repeated for the required number of images in each direction.

J. J. HUBER LTD. (LONDON)

The principal exhibit was the new Hubex Minilith processor Unit, which is a compact and versatile piece of equipment providing facilities for the average small offset user to prepare his own line and halftone negatives upto 20"x16" and, on the same equipment, aluminium and zinc plates. The base of the unit comprises conveniently placed storage space enclosed by sliding doors. Mounted on steel runners, the camera unit consists of a fixed body and movable lens panel and copyboard. A conventional focussing screen is fitted, hinged to permit ease of operation, and a roll-shutter dark slide. The camera unit is fitted with screen gear for the use of original engraved screens for the preparation of half-tone negatives. High intensity mercury vapour lamps are employed, the lamps being mounted on rigid adjustable arms, allowing for even and complete coverage. The power vacuum copy-holder is also used, in conjunction with the lighting unit, for the preparation of metal plates, while a device is fitted which enables the cylinder to be used, if desired, as a transparency holder the lighting unit being easily swung completely round.

THE WORLD'S MOST POPULAR PRINTING PRESS

Heidelberg/Baden, Western Germany, is synonymous with learning and is known throughout the world for its university. It is fitting that to printers everywhere it is also known as the "home of the famous Heidelberg presses".

With the adoption of the name Heidelberg for these machines about 25 years ago, the union of learning with the dissemination of knowledge was complete. In consequence, it has never been necessary to translate the name Heidelberg. With the introduction of this machine to the printing trade, its potentialities for jobbing work as well as high-class printing were quickly realised by printers everywhere.

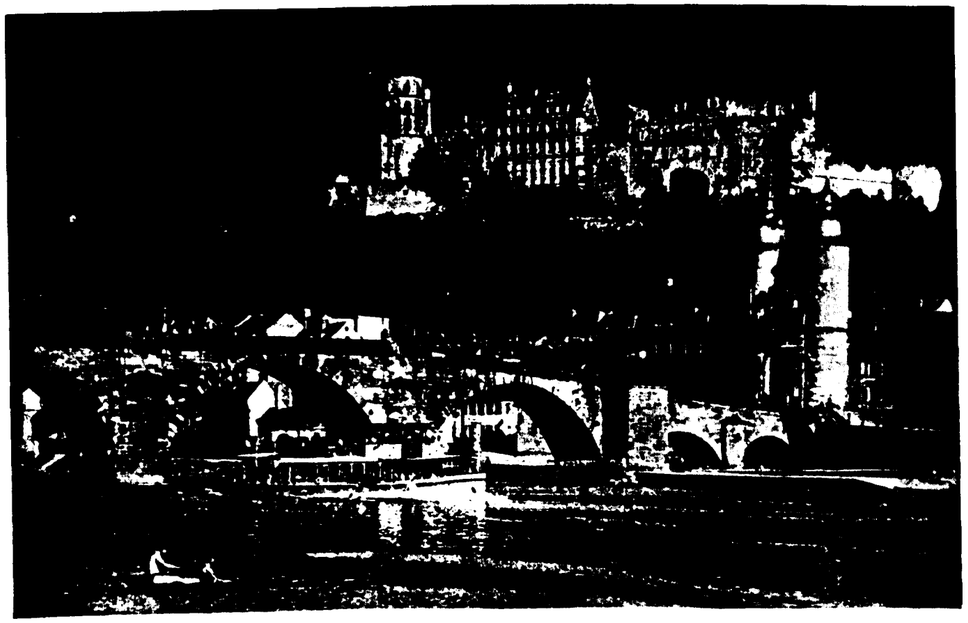
With increased sales came the demand for better and faster production methods. As new machine tools were produced, these were adopted for the manufacture of Heidelberg platen printing presses. Tremendous strides were being made in the processing of metals and in metallurgy in general; improved materials became available. With these tools and raw materials better design for strength and beauty became possible. Special and single-purpose tools were used to machine parts to accuracies formerly thought impossible. Tolerances were reduced until today printing surfaces are accurate to .0003937".

Gear-cutting machinery machined racks and gears to run to the above accuracy with an involute accuracy of .0001181". In any language, these limits mean precision of the highest order.

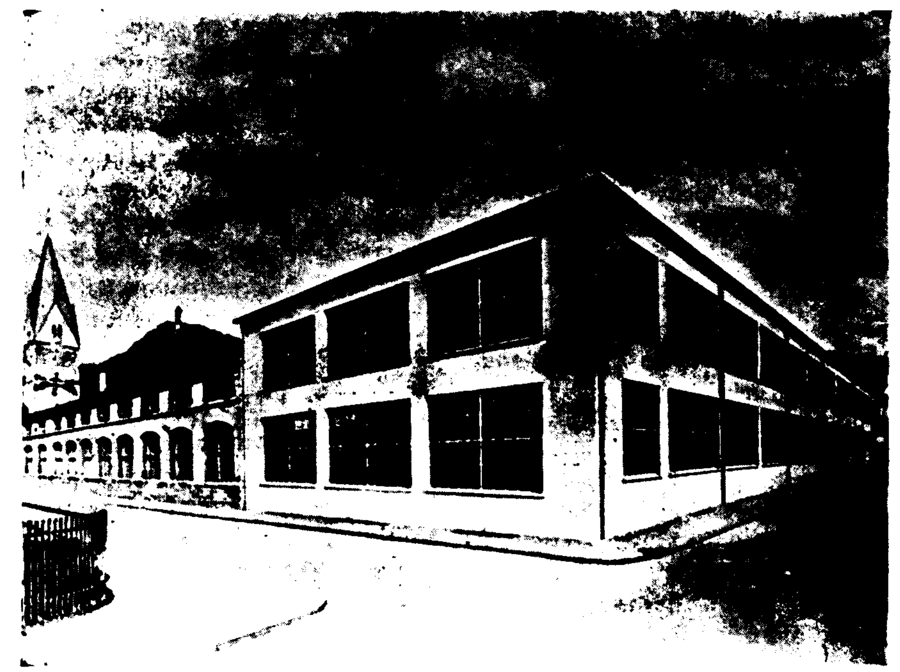
CONVEYOR BELT PRODUCTION

To obtain interchangeability, a highly prized attribute, processing of parts was done in jigs, a method not previously known. With the introduction of Henry Ford's conveyor belt system, manufacture reached the highest peak of perfection and the Hidelberg printing works became the only printing machinery factory to use the automatic conveyor belt system. Such a system was possible only when the demand for a production machine made this installation an economic proposition.

With a small machine so highly successful in its field, printers demanded a larger machine to print bigger sheets. A machine of bigger dimensions but using the same principles was developed side by



A View of Heidelberg



The outside front view of the Heidelberg Factory in Geislingen

side with the smaller machine many parts and accessories being the same. In addition to the 10 x 15″ Original Heidelberg platen press, the Heidelberg firm also manufactures the "big brother", the 12 x 18″ platen press.

About 20 years ago, the Heidelberg organisation decided to build a new cylinder machine. Whereas a platen operates extremely well as a small machine, squeezing as it does the paper on the type with a scissor action, its utilisation in large machines is impracticable. With the entire sheet being pressed upon the type over its whole area, tremendous impressional strength is required. On the smaller platens the "squeeze" is 40 tons, while on the bigger machine it rises to 60 tons.

In a cylinder machine, the paper is wrapped around the cylinder and rolled over the type. In actual fact the cylinder only revolves, it being the type-bed that oscillates. As can readily be seen, only a narrow strip is in contact with the type to any one time so that impression strength is not so heavy.

In the new design of the Heidelberg Cylinder, emphasis was to be given to its ability to keep down "production costs", the "bogey" cost of the printing trade. In the printing of high-class work, and to a lesser degree in ordinary run-of-the-mill jobs, makeready can be costly in time and lost production. Many manufacturers were making cylinder presses of high quality, but Heidelberg felt that this main feature was not receiving the attention it warranted. They designed a machine but world conditions were such that large-scale production was prevented. It was not until some years after the war that development work was again continued.

POST-WAR DEMAND

The post-war demand for the small platens was so great that all factory facilities were being fully used. With new premises and new plant facilities, manufacture of the improved cylinder was commenced, and the first machines left the factory early in 1950. Such was the success of this design that the fullest possible production was soon inadequate.

It was decided to build a new factory separate from the existing one and incorporating every latest idea and method. So great has been the demand for these machines

Assembly line of Heidelberg Platen Presses

that already this new factory has a backlog of orders.

Just what are the attributes of the Original Heidelberg Cylinder that make management and operators alike so enthusiastic? The man in control will tell you he gets better production for the day, the work produced is of a higher class and wastage through spoils etc. is reduced. From an aesthetic point of view, he derives satisfaction from the beauty of design and is pleased to show customers and friends his new plant.

The operator, a man traditionally hard to please, looks for production utility and is more than satisfied. The machine is a pleasure to work. Make-ready is easy as the large cylinder is accessible for easy packing.

The diameter of the cylinder is 21" and with its bearings it weighs nearly one ton. It is fitted with large journals, both forming part of the continuous shaft through the cylinder. Thus, deflection of the journals under the great impressional strength required in printing a large heavy forme is impossible, so eliminating another source of wasted time in making allowance for a fault common to many less robust machines.

Inking is of high quality and easily controlled and adjusted. With the automatic washing-up device of the ink rollers, the operator can change from one colour to another with minimum effort and time, as the rollers always remain in the machine.

Paper transport through the machine is by mechanical means and is thus under positive control. Feed and delivery are from the same end and can be kept under constant supervision. The printed sheet is also lighted by a daylight Neon tube lamp, enabling any fault to be quickly detected.

The type matter is also well lighted and in a conveniently low position obviating heavy high lifts. Accessibility to the whole machine is excellent, and so mechanically sound is the design that despite a heavy oscillating bed the machine need not be bolted down.

A Heidelberg "future" feature is the one-control lever for all operations. The motor is started, the paper feed begun, and the inking and impression brought on consecutively in one continuous swing of this control.

It is amazing to hear that more than 65,000 Heidelbergs have been sold throughout the world. As a matter of fact, five out of ten printers throughout the world own Heidelbergs, and it is justifiable to say "if you don't own a Heidelberg you are competing against one".

HARRILD & SONS LTD. (LONDON)

The chief attraction amongst the many interesting exhibits on this Stand was the new "Ultra-Speedy" proofing press, which is at present being built to deal with work up to and including quad medium. It will print from maximum formes employed on corresponding standard 2-revolution presses. The base casting on which the table and forme are carried weighs 1½ tons and is reinforced by 56 powerfully ribbed strengthening pockets. The machine can be employed both as a "run-and-stop" press for single sheet testing and as a continuously running press for short-run production. The inking train does not stand still when the press is at the feeding position because the new power drum keeps the whole system on the move. This ensures that freshly macerated and distributed colour is applied to the forme immediately before printing and that the rollers cannot stand still in contact with one another and thus have no chance to build up lines or stripes on their surfaces. A large steel waver at the core of the inking system reciprocates to and fro ten times during the actual cycle of the press. The power-driven drum now takes the place of the inconvenient ink slab and leaves the end of the press completely free and open for sliding the forme on to the bed.

H. T. B. LTD. (LONDON).

Have introduced a new Series IX H. T. B. stream feeder with cantilever type frames, incorporating continuous loading as a standard feature. The front unit provides front lays with built-in front-lay detectors, side-lays and mechanical slow-down. The Model "F" has been specially designed for fast running offset presses of British and Continental manufacture, the speed range for a Quad Demy Size being up to 7,500. The feeder is very versatile and will handle paper or card with the minimum trouble, and auxiliary mechanism can be supplied for preloading piles outside feeder if required.

BUHLER BROTHERS (UZWIL, SWITZERLAND)

Showed the Buhler Duplex flatbed rotary press, which prints continuously on a roll of paper without any layers on, cuts the sheets automatically, folds and counts them, and turns out an 8-page newspaper ready for issue. The capacity is 5,000-6,000 per hour, thus making it suitable for daily circulations up to 12,000 copies or weekly circulations up to 100,000. Two identical presses can be set up in tandem, including cutting and folding equipment, for 16-page newspapers.

The main feature is the reciprocating movement of the cylinders, and there is an impression each time the cylinder passes across the formes.

From the Editor's Pocket-Book

DURABILITY OF DUPLICATE PLATES

The printer should be in a position to assess correctly the extent to which a duplicate will last. The life of a stereo or electro depends upon the condition of the press, the kind of makeready, the paper surface, the ink and the kind of mounts used. However, a general indication as to the length of run a duplicate could withstand under normal conditions will be very useful.

Stereotypes ordinary will last about	75,000 impressions
Nickel faced Stereos will last about	75,000 to 100,000
Electros copper shell (type matter)	100,000 to 150,000
do halftone will last about	100,000 to 125,000
do nickel faced	125,000 to 150,000
Electros, nickel shell (type matter)	175,000 to 200,000
do (halftone)	150,000 to 175,000

A local press printed direct from type more than 50,000 copies of a fortnightly magazine and continued to use the same type after distribution for over a year.

HALFTONE SCREENS TO SUIT QUALITY OF PAPER

Don't decide on the screen of your halftones before you are sure of the quality of paper for your job. After deciding on the paper choose the right screen. Here are some data to help in deciding the screen for the various grades of paper :-

Poster paper and rough newsprint require between 65 and 80 screen. Better grades of newsprint and machine finished need 80 or 100. Super calendered paper and Imitation Art need 100 screen. Good Imitation Art or Cheap real Art needs 120 screen. A high grade Superfine Coated stock requires not less than 133. Rarely if ever 150 or over is used for printing complicated detail (for example scientific illustrations) on specially coated stock.

HOW MUCH OF TRIMMING

What is the amount of trim to be allowed on each book or magazine job? One-eighth of an inch trim can be allowed at head, tail and foredge for ordinary work while better quality work needs more than one eighth inch at the tail. Narrow margin may be trimmed one-sixteenth while flush-cut work may be trimmed just enough to bleed off the pages. Overtrimming of a work will ruin the appearance and careless trimming will throw the pages out of square. If the trimmed dimension of a book is the exact subdivision of standard size of paper, a paper next bigger in size should be chosen for printing and trimmed to the desired size. Magazines have sometimes more than a quarter of an inch trim especially at the foredge and tail. The amount of trim should be decided taking the area of type matter and the margins available into consideration.

WHAT IS BUMPING

A *Printindia* reader has asked the definition of "Bumping." This is a pre-makeready term. It is a method of special underlaying of halftones giving a varying height-to-paper to different parts of plate, ranging from the highest part for the solids to the lowest for the highlights. Bumping is based on the principle that solids require more pressure and it is confined to newspaper and magazine work printed from stereos or electros.

(Continued on page 56)

Inauguration of The Southern Regional School of Printing

The birth of the Madras Regional School of Printing is of great significance to all interested in our industry. As the first and foremost of the 3 Regional Schools, Madras will march forward towards becoming the central school for the whole of India

The Southern Regional School of Printing was inaugurated by the Hon. Minister for Industries and Agriculture, Sri M. Bhaktavatsalam at 5-30 p.m., on Monday the 8th August 1955. There was a distinguished gathering of City Printers and officials including Sri T. K. Palaniappan, Director.

After welcoming of the guests by Sri S. Aruldoss, Addl. Director, Sri V.M. Philip, President, Madras Printers' & Lithographers' Association spoke: —

I consider this as a great occasion for the growth of the printing industry, because nothing is so important as the training of craftsmen. Today, the Southern Regional School of Printing is formally being inaugurated. As the previous speaker has stated, a few years back the Govt. of India appointed a specialists committee consisting of officials and non-officials to go into the question of training technicians for the trade at various levels. The recommendations of the committee included among other things the establishment of Regional Schools of Printing. Today, we see the partial fulfilment of the Specialists Committee's recommendation.

It is but fitting that the Regional School for the Southern Region is to be located at Madras and the Printing Section of the Central Polytechnic is to be developed into the Regional School which is being inaugurated by the Hon'ble Minister today. This Printing Section of the Central Polytechnic is over a quarter of a century old and I recall with pride my sending apprentices from the Diocesan Press as early as 1930 to this school. I can assure those present here that it will be difficult to find in India any other institution with such a background and with such experienced staff and equipment.

But I am afraid there is one difficulty as regards adequate accommodation. Considering the diversity of the Printing Courses, their number and comprehensive nature, it will not be possible to house the Regional School in the Central Polytechnic compound. A good deal of space is required for arranging the equipment required for the practical training in each section. I am, however, happy to note that the Govt. of India and the Govt. of Madras have already earmarked a liberal sum for construction of a well planned structure. I am sure that soon *the Regional School will be shifted to an independent block of buildings specially planned to meet the needs of its multifarious courses, in a commodious site where it would have ample scope for expansion and development.* The provision of a hostel is a long felt need. Some suitable site should be selected as is done by the Calcutta Regional School of Printing, or the M I T or other colleges in our neighbourhood. I am sorry to note that plans for locating the building of the Regional School of Printing within the already crammed Polytechnic compound has been under consideration. I have every hope that the authorities will, after consultation with experts, decide on building an independent block in a suitable site. In this connection it is worthwhile examining the plans prepared by the specialists committee in Graphic Art & Allied Technology.

I wish to draw your attention to another matter. I find that only part time courses are proposed for the present Regional School. In the interests of pupils from outstations, it is essential that full time courses should be started soon. Further many who are eager to take up a particular branch of the training will be prevented from doing so due to want of apprenticeship. I therefore hope that the Govt. will soon give this matter its serious consideration.

Before concluding, I wish to add that the help and co-operation of printers and others in the profession is always there for the authorities, staff and students in securing apprenticeships etc. As the President of the Madras Printers' & Lithographers' Association and as the Member of the Board of Visitors representing the printing trade, and also in the capacity of an Examiner for Technological Board Examinations for a number of years, I wish to tell all present here that I have found the staff and the methods of training imparted here are of the highest order.

I also wish to express on behalf of the trade and on my behalf our gratitude to the East Asiatic

Company Ltd., for their noble gesture by presenting a very valuable machine for a good cause and hope that before long other manufacturers and dealers of machinery will follow this noble example by coming forward with similar generous gifts to our Regional School.

I conclude with the sincere wish that the Regional School which is born today will grow from strength to strength and train not only young men of this region but of the whole of India. I wish that its standard will be kept so high as to make it the Central School for the whole of India which is contemplated in the scheme. *I once more reiterate the necessity for housing this Regional School in a spacious site so as to provide a hostel also*, especially for students from other states. On behalf of the printing trade and on behalf of the Madras Printers' & Lithographers' Association I extend a hearty welcome to the first batch of students.

Sri S. VISWANATHAN'S SPEECH

Sri S. Viswanathan, President, All-India Federation of Master Printers wanted the authorities to take the co-operation of the printing trade, which was at their disposal, in drawing up the syllabus and in the matter of giving practical training. He also suggested the conducting of a short training course in summer for the benefit of the employers in the industry.

He regretted that in Madras, the Govt. Press was seeking to compete with private presses by printing books and other publications instead of restricting itself to the printing of Gazettes and confidential matter. This was not good. He suggested for the purchase of more machinery and equipment for teaching the students as for instance with one Linotype which the School was now having they could not possibly teach 20 students. This applied to every branch of printing, he said. He also suggested specialised foreign training to be given to the existing members of staff of the Printing School.

Pleading for the inclusion in the II Five Year Plan of a Factory for the manufacture of Printing Machinery in the South, Sri Viswanathan said, " When India can manufacture Automobiles, Locomotives and Aircraft, she could also manufacture Printing machinery."

Mr. O. Christenson, Manager of the East Asiatic Co., Ltd., presenting an Original Heidelberg Automatic Platen machine to the new Regional School said, that there had been good progress in the Printing Presses in India since Independence and the standard has gone up. As in many other fields Madras stood first in Printing also.

MINISTER'S SPEECH

Inaugurating the school and switching on the Original Heidelberg, the Hon. Minister for Industries and Agriculture, Sri M. Bhaktavatsalam said that they were indeed obliged to the Government of India for enabling them to start the institution. He pointed out how the great invention of Printing had spared no pains to spread knowledge among the people and added that people nowadays have developed a taste for reading books. One could therefore easily realise the great future of the industry in our country. They had every reason to look forward to the invention of up to date machinery which would enable hundreds of lakhs of copies for the day to day consumption of the public. Therefore it was most appropriate that it had been possible for them to start the school for imparting up to date lessons in the Art of Printing.

Expressing his appreciation of the fine gesture of the East Asiatic Co., Ltd., by presenting the machine to the institution, he said that the institution would develop into a premier one in the South East Asia. He was glad to tell that Industries Department of the Govt. of Madras was vitally interested in starting a factory for the manufacture of Printing Machinery in the course of II Five Year Plan. He hoped that sufficient enterprise would be forthcoming for the same. He offered his felicitations to the new students and hoped that the institution would grow from strength to strength.

BACK HOME: Sri C. Masilamony, Monotype Representative, Madras was specially flown to London to help in the Monotype Stall at IPEX. Having gone through the historic duration of the international exhibition, he has returned to India with up to the minute developments in the Graphic Arts. He hopes to apply what all he has witnessed at Olympia with renewed zeal and redoubled enthusiasm for the uplift of Indian Printing. *Printindia* welcomes the veteran representative back home on behalf of its numerous readers.

news and views

NEWSPRINT FACTORIES

The States of Punjab and Himachal Pradesh have submitted proposals to the Planning Commission for the establishment of newsprint factories in their territories during the second plan.

The Punjab Government's proposal envisages the establishment of a newsprint plant in the public sector for the production of 50 tons of newsprint daily initially and that of Himachal Pradesh for 100 tons daily.

* * *

ANDHRA PAPER MILLS

The Andhra Paper Mills at Rajahmundry has sustained a loss of Rs. 82,523-9-1 during 1953-54 and that proposals to reduce cost of production on the one hand and to stimulate sale of paper on the other are under consideration. It is proposed to expand the daily production capacity of the mills to 20 tons to make it an economic unit. Government have already sanctioned a sum of Rs. 16.30 lakhs for purchase of additional machinery to improve the quality of the paper manufactured in the mills. The loss incurred by the mills is due to closure of the mills from July 1953 to September 1953 on account of heavy floods in the Godavari, the payment during 1953-54 of bonus to workers for 1950-51 and 1951-52 amounting to Rs. 21,299-5-0, accumulation of stocks and sale of paper to the Government Press at less than the cost price as there was not much demand from the public.

* * *

BOOKS FOR THE MILLIONS

The setting up of a Trust to produce at low cost books of established worth will be widely welcomed. The South Indian scheme, which has the approval of the Vice-Chancellors of five universities, is meant both to create and satisfy demand for good books by providing ample, regular supply at attractive prices. More work for the printing presses is in prospect, and readers may look soon for the best books. Like the big English University Presses, the Trust may provide assistance to those handling the classics. Hitherto books in India have been expensive in comparison with countries where reprints by the million have created and maintained a taste for good reading. The post-war trend in the publishing trade abroad induces high hopes of similar changes here.

* * *

GOVERNMENT AWARDS FOR GOOD PRINTING

The Ministry of Information and Broadcasting, Govt. of India states that Annual Awards for the best jobs turned out during each year will be granted as a measure of state recognition of the high standards reached by Indian Printing industry, in recent years. The competition for 1955 will consist of selections from Best Children's books, Best Illustrated books, Best book without illustrations, Best Indian Language Book (Hindi and Regional Languages) and the Best book produced with Indian-made paper. There are also competitions for publicity material such as folders, posters, calendars, magazines, newspapers, etc. Entries for the competition should reach the Ministry of Information & Publicity, New Delhi by 15th September 1955. A Board of judges official and non-official will select the best and an exhibition of the best entries will be held during October 1955 in New Delhi. Further details may be had from the Advertising Branch of the Ministry.

* * *

PARTY FOR HYDERABAD PRINTERS

To meet the Managing Committee of the Hyderabad State Printers' Association, Sri C. G. Raman, Manager of Linotype & Machinery, Bombay, gave a grand Dinner Party on Friday, the 9th July 1955 at 8 p.m. at the Neo Mysore Cafe, Hyderabad. The party was well attended by distinguished people from the trade.

* * *

FIVE CRORE TONS PER ANNUM

According to a FAO (Food and Agriculture Organization of the United Nations organization) report, the world today uses about 50,000,000 metric tons of paper and paper products every year. The consumption has quadrupled in the last 40 years. About 86 per cent of this colossal quantity of paper is being used

only by 23 per cent of world's people—those of Europe, North America, Australia and New Zealand. In these countries more than 150 lbs. of paper per head is used every year. The people in the rest of the world use about 51 lbs. per head per year.

U. S. CONSUMPTION

The total estimated newsprint consumption in the United States for the month of January 1955 was 504,632 tons compared with 477,707 tons for the same month a year ago.

INDIAN PRODUCTION

In 1954, India produced 155,328 tons of paper as against 139,704 tons in 1953, and 108, 912 in 1950. But for strikes during the year, which hampered production, the target of 170,000 could have easily been reached by Indian mills.

There is no indication of the price per pound of paper falling in the near future, thanks to the cancellation by Govt. of the concessional freight rates on bamboo, increased cost of bamboo which forms the raw material in the main, and raising of forest royalties, higher coal freights and poor quality coal compelled to be used in the Mills. Labour costs and paper freight rates have also been recently increased. The new 10 per cent excise duty is the last straw although some concessions in its application were later announced by our Finance Minister.

As regards raw material, India has got plentiful supply of Bamboo in addition to sabai grass and reeds. Naturally this country produces some of the best Bamboo papers in the world. While the timber forests of the world are diminishing due to over-exploitation, India continues to grow plenty of Bamboo which places her in a strong position as regards raw material.

From the Editor's Pocket-Book

(Continued from page 51)

HOW LONG TO MAKEREADY?

I have seen a reputable firm in the city asking the machineman to take as much time to makeready a job as he pleases. He was particular about the results rather than the time factor. Thus it was not unusual for an invitation card to take a greater part of the day and a tri-colour the greater part of a week to be made ready. But it is a fact that this firm produces very good quality of work. The maximum time required for makeready for each type of work is given below for general guidance:—

Platen machine forme of type matter requires not less than one hour.
Platen machine halftone single colour needs not more than 2 hrs.
Platen machine tri-colour halftone not more than 2½ hrs. for the first colour and 3 hrs. for the second and subsequent colours.
Cylinder machine forme of 4 page type matter needs 2 hrs.

do	8 pages	,,	2½ hrs.
do	16 ,,	,,	3 hrs.
do	4 ,,	halftones	3 hrs.
do	8 ,,	,,	4 hrs.
do	16 ,,	,,	5 hrs.
do	tri-colour		50 per cent more

INKS HARMFUL TO ROLLERS

Inks harm printing surfaces. Some injure the rollers too. Here are a few dangerous ones:—Scarlet lakes contain excessive lead acetate in their composition. They form an insoluble compound with the glue in the roller. Lifeless rollers result and a tough skin can be seen on them. The remedy in such cases is to soak affected roller in 10:3 solution of glycerine and water.

Quickdrying bronze blue reduces life of rollers. Prompt cleaning may to some extent obviate the above nature of the ink.

The vehicle of Copying inks cause rollers to crack as it contains glycerine. The glycerine absorbs water from the roller and creates local contraction. Washing with warm water may remedy this.

SPACEBAND TROUBLE ON THE LINOTYPE

For spaceband clogging in the spaceband box, see that the lugs are all flat to each other. Every spaceband should fully extend. The retaining plate in the spaceband should half cover the rivet on the long slide of the spaceband. Polish escapement pawls if they are sluggish. Check tension of spring that makes the pawls lift. Check whether both escapement pawls lift evenly. Spaceband guide rails should not be rough. Clean spacebands with graphite every morning.

STOP WRONG USE OF SALIVA

I have seen machinemen and binders using a liberal amount of saliva while handling or counting sheets of paper. They put their finger into the mouth, moisten it and manipulate the sticky finger to separate the sheets while feeding or counting, This, needless to say, is a highly unhealthy and slovenly habit. A sponge is a good substitute. Now comes the news from the US of a harmless, greaseless, stainless, odourless, non-irritating chemical to be used on the finger while handling paper. This chemical is aptly named "Tacky-Finger" and absorbs moisture from the atmosphere to render paper handling easier. Sponges, rubber finger stalls, glycerine or saliva are not now necessary.

PRESSROOM PROBLEMS SOLVED by Graphicus

In these pages "GRAPHICUS" an expert in the printing and allied industries solves month by month the Pressroom problems of the printers. All questions may be addressed to:
"GRAPHICUS". C/o PRINTINDIA

40. Q. We are printing a weekly newspaper on a perfecting machine. We constantly have to contend with "Strike through" or halos around the printed characters. This sometimes extend to the other side of the paper also. We have changed the brand of ink but have not succeeded in eliminating the above defect to any appreciable extent. The stock we are using is good newsprint and we use good news ink. Our machine prints around 3,000 impressions an hour. We would be grateful for any helpful solutions to this seemingly unsolvable problem.

A. It would appear from the speed of your machine that you are using a Duplex Reel Fed Flat Bed Machine. The question of strike through and oil bleed or halos round the printed matter is solely concerned with the ink used. I can only suggest that you use a better class of ink, with properly adjusted settings all round; it is possible to use a medium priced Book or Jobbing Black economically on this type of machine. To test your inks for 'free oil content' take a small amount of ink about the size of a 'Pea' and place it in one lump on a sheet of Newsprint, allow it to stand and examine later for the amount of bleed out and strike through. To compare different varieties of inks the test can be carried out simultaneously, from which one can make comparison with another. You may also be up against ghosting, that is the previous print being picked up on the draw sheet and offset back on the reverse side of the web during the second impression; to obviate this a 'Gold Tympan Draw sheet' specially manufactured by 'The Minnesota Mining & Manufacturing Company' is, I believe, available with a number of leading machinery dealers.

41. Q. My firm handles container and package. In the course of our business I get orders to print on cellophane. Although special cover ink is used, there is a tendency for the ink to rub off on drying. Drying also takes considerable time and interleaving large number of printed copies is a nightmare. When I changed to a tacky ink the printed paper never gets separated from the forme and sometimes even tears off. Please suggest a suitable ink for printing on such jobs, which would be trouble-free.

A. Cellophane printing is most satisfactorily carried out with Aniline inks requiring special machinery. Since you are obviously using the Letterpress process I can only suggest you contact a reliable Ink Manufacturer with full details for his advice.

42. Q. While printing a tricolour order from old halftones supplied by the customer, we wrongly printed the blue with the red plate. There was no guide and the progressive proofs from the engraver were not available. In such circumstances we were forced to depend on our instinct, which we later found had led us astray. Could you possibly give us an easy method of identifying the colour of each tricolour plate in such situations? Of course we couldn't get even an old printed copy.

A. You are most certainly up against a difficult problem and I first refer you to A: 13 in the

January 1955 issue. The yellow Plate of course is fairly easy to pick out being usually the biggest and having the greatest printing area. In certain illustrations it is easy to decide a predominance of Red, i.e., in human studies the lips and many other examples may come to your mind or be apparent in any particular illustration reproduced. When in doubt make a comprehensive set of Progressives using the two doubtful plates for Red and Blue alternatively, the comparative results will show which set is correct and it would be as well to have the customer give his confirmation of your opinion.

43. Q. We are printing a type matter transfer on an ATF Chief Offset machine. Frequently the printed pages appear dull. Strengthening of the printing portions results in frequent stoppages due to scumming. Is there a way out of this difficulty? The paper used is newsprint and the ink good offset ink from a well known firm of ink makers. The speed of the machine is 4,000 i.p.h.

A. This trouble would be due to numerous factors; it would be better to send full details to the Ink Maker together with sample prints.

44. Q. An illustration has to be reproduced from an already printed halftone block. As you know, such reproductions from a printed photograph results in the halftone dots forming a pattern interfering with the proper rendering of the original subject. In this case, the screens are also not identical. The photograph is in a coarse screen and we have to reproduce it in fine screen. Kindly post us with a method by which the resulting reproduction will be free from artificial patterns of dots.

A. One way out of your trouble, which is very unorthodox but usually works very well, is to tap the front ledge of the camera stand lightly with your fist throughout the exposure. Should this not work the only thing to do for a good straightforward reproduction is to photograph the illustration, make an ordinary enlargement and have a good artist touch this up in Black and White to give a new original.

45. Q. A colour job of a fairly long run is giving me a problem. I would be much obliged if you could try and solve this for us. The job I am referring to is in colour necessitating keeping the ink duct of the machine replenished constantly with the result that at the end of the day, we have to leave some ink behind. But the next morning the ink is found to be partially dry and the whole duct has to be cleaned. I have always kept black ink in the duct overnight and have found no change in the condition of the ink. What can be done to prevent the colour inks drying in the duct when left for a night?

A. The best advice I can give is always clean your forme, machine and duct at the end of every day's run. If however you must leave the ink in the duct place a strip of grease proof paper direct on the ink to prevent skinning in the same way as ink makers put a circle of paper over their ink in the tin. The reason your blacks don't skin is that, due to its formulation and chemical make up, blacks generally do not skin.

46. Q. Up to this time our press is using unbleached white cloth for the permanent packing (dressing) of our cylinder machines. But this constantly gets damaged and occasionally shows the grain of the cloth through on the paper. Further the cloth known as cambric which is recommended in books is also not strong enough to last more than a couple of months. Can you recommend a good variety of fabric fit for cylinder dressing which will be durable and smooth and is available in our market?

A. From your question it would appear that you are using too much pressure to obtain your printing results; printing should be done with the minimum of impression and the permanent packing on the cylinder should last for many months. The cloth dressing should be next to the cylinder, one sheet only, oiled to prevent cylinder rust, the rest of the packing should be Manila sheets and no more than are necessary to give a 'kiss' impression. Any irregularity in the forme must be adjusted with orthodox makeready and not extra tympan sheets; this practice damages not only the packing, but also the machine and the forme.

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In this issue....

EDITORIAL

HARMFUL PUBLICATIONS BILL

The preamble to the constitution of India loudly guarantees liberty of thought, expression, belief, faith and worship. But this oft-spoken preamble is very often insulted by a plethora of bills introduced hastily in the Lok Sabha. A specific example is the Young Persons (harmful publications) Bill which Sri G.B. Pant has introduced in the Lok Sabha. If one scrutinizes the Bill carefully, one cannot help coming to the conclusion that if this Bill is passed into Law, then the death-knell of all classic literature is tolled for ever.

By the above lines we are not to be misunderstood that we encourage books of repulsive and horrid nature which glorify crime and encourage violence. We only seek that the Bill gets a thorough revision before it is taken up for hearing at the next session in the Lok Sabha. The Bill should be aimed and restricted to banning only those publications which specialise in the glorification of crime and which encourage criminal proclivities in the readers. For instance, detective novels and stories are being produced the world over and they have entertained millions of readers and all such stories start with a few murders and converge to a climax where the criminals are found and punished and nowhere in such stories criminals go scotfree. Similarly there are many children's books known as "comics" where stories are told in panels of pictures, where there is some fist-fighting and horse-riding and the blow of guns, which delight the child mind a great deal. We are only voicing the opinion of millions of Indians when we say that the Bill should be revised largely and should be worded with care so that it is not open to farfetched interpretations by officials who are empowered to seize the publications under the Bill.

We do not know what particular objective the Hon'ble Minister has in his mind while introducing the above Bill, but we are awe-struck that the Bill should have been made so very comprehensive that almost all fiction in its entirety is likely to be banned at the discretion of a few individuals whose knowledge is doubtful and whose interpretations of the Clauses in the Bill can stretch to any extent. Clause 2 of the Bill says that "harmful publication" means any book, magazine, pamphlet, leaflet, newspaper or other like publication which consists of stories told with the aid of pictures or without the aid of pictures or wholly in pictures, being stories portraying the commission of offences, acts of violence or cruelty or incidents of a repulsive and horrible nature. Since good and evil dwell side by side in the world, both of them have been utilised by the greatest thinkers and writers of the world in the classics they have produced depicting the descent and ascent of human personality.

In other words this Bill which has the clothing of a sermon and which aims at moralising humanity by legislation covers all varieties of books and novels. "An unimaginative Police Officer may quite possibly seize 'Treasure Island' or 'Uncle Tom's Cabin'", some of the Shakespearian dramas and the literary classics of Hugo and Dostoyevsky, of Emile Zola and Anatole France, of Bernard Shaw and Somerset Maugham. Similarly the most interesting detective novels of Sir Arthur Conan Doyle, Agatha Christie, Erle Stanley Gardner may also be snuffed out with this Bill. It may be recalled here that the highest Ministers of many countries are used to read with great interest the writings of the authors mentioned above and the Sherlock Holmes stories of Conan Doyle were used by the Egyptian Police as text books for gathering ideas about crime detection. Even our old mythological books like Ramayanam, Bharatam etc., come under the purview of this Bill as they are full of incidents portraying commission of crimes etc. We wonder what will be left to the thirsty readers in India in the wake of this Bill if passed but the boring sermons of our politicians and the vegetarian tirades of our ministers!

Inaugural Day of Printing Technology Students' Association

Two leading personalities took active part on the Inaugural Day. Both made important observations on the working of the printing section. Mr. H. J. Stooks, Controller of the 2,000 strong Madras Govt. Press and policy-maker of Govt. Printing, paid a glowing tribute to the performance of ex-students of the Madras School and guaranteed a bright future. Mr. T. I. Archer, Process Expert of the National Daily "The Hindu", exhorted the students to be always in the forefront of developments

The Students' Association Inaugural Day of the Printing Section, Central Polytechnic, Madras was celebrated at 5 p.m. on 7th October 1955. Presiding over the day's function Mr. H.J. Stooks, Controller of Printing and Stationery, Madras, said :—

"I am not competent to preside over a technical association as I do not profess to know anything about Printing. I rather feel out of place as I do not know anything about printing technique. Only due to circumstances, I am what I am (*i.e.*, Controller of Printing). I have been many things in my time, but now I am at the head of the present establishment."

Tracing the history of printing, Mr. Stooks said that many changes have taken place in the sphere of printing. From the old Hand Press we have the Platen, the Cylinder and the Rotary machines. From hand composing we now have the Linotype, the Intertype, the Monotype and many other inventions. The Camera also is much being used in the field of reproduction.

"There are printers and printers. All printing done here, including the establishment which I belong to (*i.e.*, Government Press) is, to say the least, very shoddy. You all can improve it a lot. Whatever is worth doing is worth doing well. I hope you will remember this when you go out on conclusion of training or when you set up your own presses.

"Let me take an example. Our marriage and other invitations are not well planned, properly executed or satisfactorily arranged. The colour combination, the type and general layout are bad. Without incurring any additional cost, the printer can certainly improve their appearance a lot. Whenever the customer gets anything printed from you and finds that the printing is not good, he will not come back to you for the next order. It is here that your training will help.

"If I am permitted to say a few words about our newspapers, when we take a newspaper and handle it for 5 minutes, the ink will not only adhere to our hands but on all our clothes as well. Further when we point out an error in printing they say it is a printer's devil. When these devils multiply to numerous ones in a single paragraph, the time comes when we should draw a line somewhere. This shows how important proof-reading is.

"I am sure something can be done about this ink so that it will not soil our hands and clothes. I know that our newspapers have good circulation and they even go to other countries. Ink industry is indigenous and I am sure something will be done about this.

"Another thing I wish to tell you is that you should have an inquisitive mind. By this I do not mean that you should pry into other's affairs, but try and learn the details

"WELL DONE LPTs!" The Controller of Printing Mr. Stooks addressing the gathering

"KEEP AN OPEN MIND, BOYS!" Mr. T. I. Archer delivering his Address

of your art. An inquisitive mind is an acquisitive mind. You should try to improve the various materials used in this industry.

"At present Printing machines are manufactured outside India. When India manufactures Automobiles, Aircrafts, Railway Coaches, Telephones, Machine tools, they can also manufacture printing machinery. She can make a beginning by manufacturing small parts and components of Printing machines. That is how they manufacture Automobiles in this country. We are soon to have a Typewriter factory at Madras. In 5 or 10 years we would be able to manufacture almost all parts of Printing machines and in course of time we would be self-sufficient.

"Printing is a craft, an art and an industry as well. The youngsters who are going out of this School should improve the craft and eventually have their own research laboratories here.

"I would like to say a few words about Central Polytechnic Printing Section. The Madras Government were the first to introduce a curriculum in Printing and hundreds have passed out with LPT diplomas. There are many who are doing quite well from Travancore-Cochin to Simla in the North, from Bombay to Assam in the East. Many LPTs are in Madras and I have quite a few in my establishment. I am sure you will maintain and improve the standard of training. The Regional School of Printing which has been started in Madras will surely reorientate training in Printing and Allied Crafts. The Madras school with the one to be started at Bombay and Calcutta will make a great contribution towards improvement of quality in printing."

In the course of his Inaugural Address, Mr. T. I. Archer, Process Expert, "The Hindu" said that considerable improvements have been made in Printing technique such as electronics for colour separation and registration. Students should have an open mind and keep abreast with all the latest developments in the Printing field. The use of colour is increasing, offset has become more popular. He also referred that the Government should take the advice of technicians in formulating plans for the manufacture of Printing Machinery in India, instead of

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A section of the distinguished gathering : R to L. Messrs. V. K. Sriramulu, Madhava Balakrishnan, Krishnaswami, Mohana Babu, Dakshinamoorthy, and Venkatachalam

Blueprint for Printing

By

SRI RAMAKRISHNA NARAYANAN

Planning is accepted as an essential preliminary for every kind of production. For producing printed matter, planning forms a very important pre-requisite. This and other points regarding a "Layout" are emphasised in the article that follows. The author is a diploma holder in printing, a Full Tech of London and a Bennet College pupil in commercial art. Needless to say he knows what he is talking about

WHAT IS A "LAYOUT"?

Whenever a job is proposed to be printed, a plan is necessary. This should be laid out on paper, irrespective of the size and nature of the job. A visiting or interview card needs as much planning as a brochure or an advertisement. Bookwork and newspapers, posters, and showcards—all require to be well planned ahead of beginning actual production. This working drawing or plan of a proposed job for printing is technically termed "Layout".

A Layout bears the same relationship to the finished print as the architect's blueprint does to a building project. Therefore it is correct to call a layout "the printer's blueprint", although there is nothing blue about it or any printing, for that matter.

FUNCTION OF A LAYOUT

The layout gives the complete picture of the job. As we have seen, it is made before work is begun on it. It serves as a guide to the compositor, make-up hand, machine-man and others including the process engraver. All these people, instead of guessing, can safely rely upon the layout, throughout the various stages of producing the printed job. In other words, a layout conveys the intention of the designer to the producer or the printer. Thus layout forms the connecting link between the designer and printer, and harmony between them results in an excellent production.

ARE LAYOUTS REALLY NECESSARY?

In spite of the foregoing important role of the layouts, the small printer as well as the big may be sceptical about the usefulness of a layout. Some consider it as a waste of time and straightaway want the printing section to proceed in setting the copy without the aid of a layout. I have to quote a recent instance of a city newspaper which tried to dispense with the layout and came to grief. This is how it happened: Usually, the copy of advts. were routed through their layout hand. The latter marked the sizes, drew the shape of the matter, its arrangement, blanks and leads, etc. Then it was easy to distribute the copy to the particular comp. who did setting in those sizes and type faces and submit the proof again to the layout hand who approved it. Someone thought that layouts were unnecessary. After all, they had to set in one or the other of the sizes and faces they were having. So they experimented for a day, of directly receiving the copy for setting. But when they proceeded to set direct they could not estimate what size will be suitable for the space available, which are the usual faces for the particular advt. etc. etc. Doubts assailed their mind. They always guessed wrongly. Their decisions were erratic. Everything ended in chaos. The copy for advts. was delayed. So, they made a comeback to the scientific way of laying out on paper first and then in type. Now if you go and ask them about their experiment in dispensing with layouts, they shake their heads and pronounce that "Layout is a must."

I summarize here some of the reasons why layouts are considered necessary for every job : —

The result of a job is assured. The element of chance is eliminated. The layout gives complete and detailed information and specification of the finished work. It indicates the final arrangement of a page, a job or the complete book. It serves as a guide to the press estimator as regards the quality or grade of the work. When a single job is distributed to many hands, a chaotic condition will result in the absence of a common layout. Printers' salesmen can get orders by showing layouts.

POWERFUL SELLING AID

The print-buyer can see in advance how his finished job will look like. Thus he can avoid disappointment by confirming its appearance beforehand. During slack periods layouts are powerful selling aids. New business can be created only by means of a layout. It is a satisfactory medium to present new ideas. It helps the printer to sell on quality instead of price cutting. Lastly it speeds up setting and production. There is no need

for time-wasting trials and erratic experiments on the part of the printer. All trials can be undertaken easily on paper and decided on it finally. Valuable time and money can be saved by detecting beforehand errors, inappropriate and unharmonious elements and correct them before the job is put in type. Even when the work is distributed to a number of hands, uniformity can be maintained by means of the layout. Large catalogues and other work can be put through many sections. As all departments follow the instruction given on the layout, smooth-running of every job through the entire works is assured. Various pieces issued by the same firm can be correlated and a consistent style followed in all. The customer can get the colour he desires and the machineman can match the colour to the one on the layout and be sure that the customer likes it. Layouts have made close estimates possible reducing the margin of error and approximation to the barest minimu n.

PREPARATION OF A LAYOUT

Obtain the correct size of the paper to be used for the job. Read the copy carefully. Every copy has one dominant feature. It may be the name of the commodity, a catchy phrase, one striking or outstanding quality of the article advertised, or a main heading. Then go to the next important thing and so on to the lesser and lesser degree of important elements. Too many elements should not be emphasised, when the result will be all emphasis which means no emphasis at all.

Just as common politeness, custom and manners decree that only one person can talk at a time, so only one point should be brought out at a time in a good advertisement. When illustrations are to form part of the advertisement, note their style, tone, colour, weight. etc. Upon these will depend the kind of type face to be used to make a harmonious whole.

ILLUSTRATIONS AND BORDERS

The best position for illustration should be decided upon. There are those that recommend the right flush and others the left flush while a few adopt the centre. All depend upon the size of the illustration. The position of the illustration will decide the location of the headline and other units in the display. Take a proof of the illustration and paste in proper position. The type lines may be lettered now. When lettering type lines, we should remember that the type does not occupy the entire depth of its body and some allowance is to be made for their beard unless they are full faced.

When a border is decided to be used, the design of the border should be in keeping with the illustration and the design of the type face used. If plain rule borders are to be used, they may be drawn round the job. No border should be tight or too close to the type line above or below it. Sufficient margin should be left all round. Here comes the usefulness of white space. In case plain borders are not to be used, the proof of the border may be taken and cut and pasted around the job. Talking about borders, for example the modern type face Bodoni harmonizes well with a thick and thin rule due to the difference of thin and thick strokes in Bodoni. Similarly a classic type face like Centaur may harmonise with a wavy border but not with thick and thin or other heavy border designs. An open or inline or outline type face will go well with double medium ru border and so on.

Time need not be wasted in drawing complicated border patterns round the job on the layout. It is enough if these are pasted or indicated in the corners only. The name and size of the border should invariably be mentioned.

SIMPLICITY

Every effort should be made to keep the style of the layout simple. A few display lines and a few groups will go to make a good but effective layout. Too many elements or units and confused arrangement fail in the purpose of the display. It will not be able to deliver the message of the piece. Too many groups will make the job scattered. *The reader should be enabled to understand the vital points at a glance. This should not require much mental effort.* This is the essence of a display and a layout.

CASTING OFF

Allotting sufficient space for the body matter requires considerable experience. It was here that the local newspaper people who wanted to give the good-bye to layouts found that they were sadly mistaken. The words should fill the space allotted to them. Neither the face should be too small resulting in a lot of white space eating out the whole advertisement nor the face should be too big cramming fighting for every inch of space. As large and legible a type should be chosen consistent with white space requirements. Body matter is generally indicated by irregular lines to give the grey effect of set up matter.

There is a general tendency to fill up every open space with an ornament or other decorative material. This temptation should be overcome. Reason: white space is essential and it has a functional role. It is a

(Continued on page 31)

The Screen Process Story

By

SRI S. GIRI

This 50 year old process challenges the 500 year old Letterpress. What has made the Silk Screen so popular in so short a time and how many printers practise it with success in India and abroad are dealt with briefly in this article. Our feature writer Sri Giri has presented the story of the Silk Screen so vividly that a layman as well as a printer of the allied process will indeed greatly benefit by it

It was Emerson who said, "Man loves to wonder and that is the seed of his science." What he did not say, and which is nevertheless true, is: Man has been wondering-In the great world of Man's economic creation, his power to wonder is the secret of his power to advance, to progress, to prosper. The Printers of the world have enough to wonder and one such wonder is the Silk Screen Printing, shortly called by busy people as "screen process."

Although the process as such appears to be young and new, the principle is as old as China or Egypt. Tapestries of these countries and other decorative material remind us of the modern screen process.

SIMPLICITY OF THE PROCESS

To put the process briefly: Special ink is forced through open spaces of a fabric (specially manufactured silk) on paper, cloth, tin, wood, glass or other material. The design to be reproduced is painted on the fabric.

THE FRAME

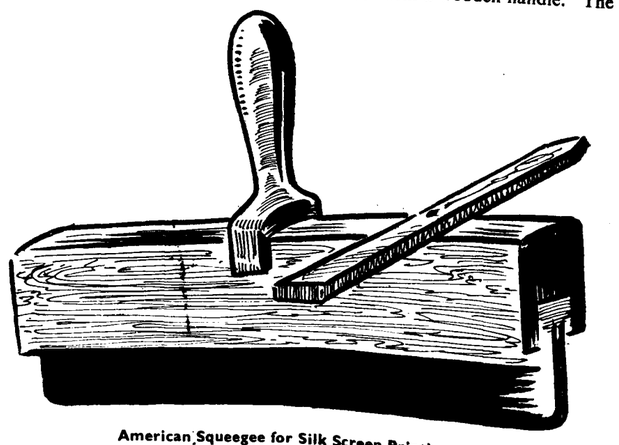
The printing frame may be made of wood or other material; it is rectangular and the cloth is securely fastened on it. It may be tacked on to the frame or by wooden wedges set in corresponding grooves at the bottom of the frame. Formerly bolting cloth was used exclusively. The fixed and exact size of the pores and the sturdiness of the bolting cloth were considered as advantageous to the process. But at the present day, a special silk woven in "taffeta fashion" as opposed to the former interlocked silk is widely used. This silk surface serves the purpose of a printing surface similar to the forme of letterpress or its halftone blocks, the plates of offset or the etched cylinders of gravure. All frames are not necessarily covered with silk. There are other fibrous materials like nylon and even metal like bronze and stainless steel that are used in place of silk.

The design to be printed is drawn or copied on the fabric. Non-printing portions are carefully blocked by coating with nitrocellulose lacquer or water-colour base. Any pin holes left in this coating will cause ink to force through and spoil blank portions. The latter defect may be likened to scumming in offset or smudging due to quads rising or filling up in letterpress.

When this is dry, the frame is hinged to a board of wood, with guides to register the sheets that are being printed. The frame with the cloth or mesh stretched across the bottom forms the receptacle for ink. Ink is placed in it and the sheet to be printed is placed under the screen. The impression is effected by pushing the ink across by means of a "Squeegee."

THE SQUEEGEE

This is a rectangular strip of rubber with a wooden handle. The



American Squeegee for Silk Screen Printing

nearest approximation to a squeegee is a window cleaning tool or the windshield wiper of the automobile. It should be noted that the squeegee serves the purpose of the inking rollers on the letterpress printing machine. The ink is forced through the pores of the mesh except where they have been blocked. There is a tendency at first to absorb the ink and varnish contained in the ink by the fabric, but soon perfect copies can be obtained, when the fibres are saturated with them.

There are other elaborate methods of Screen process employing photo mechanical stencils and automatic machines which print very fast. The stencil may be cut separately in celluloid or plastic and glued to the screen. Multi-colour work can be carried out by blocking portions not required in one colour. For this purpose a water-filler such as gum arabic solution may be used. This can be easily washed out and other portions may be similarly treated for the next colour.

SCREEN INK

The inks used for this process are specially prepared. It is known that in the earlier days of this process ordinary house paints were used in place of inks. But this was discarded as results were unsatisfactory as paints lacked body fineness and other desirable qualities. A short non-oily ink is most suitable to prevent drag on the squeegee. This will also ensure sharpness of the print. The defects known as oil rings or halos can also be avoided. A silk screen ink will break with a short thread and will not be tacky or gummy. It will run over the screen easily. Excessive pressure on the squeegee is not called for when using a good ink. Further, processed matter will drop from the screen without any hazy edges.

Strong pigments are ground in China wood oil or special castor oil. Synthetic resins, boiled linseed oil, kerosene, varnolene or naphtha (solvent) are also used. The pigments are of full colour strength with fine texture. This quality prevents piling ink on the surface of the paper to obtain good coverage and opacity. Moreover, they will not clog the pores of the screen. The best pigments produce short, butter-like inks. They have enough affinity for the vehicle and combine well with it. They prevent bleeding and causing formation of rings round the printed matter. Coarse and gritty pigments which easily aggregate and give working difficulties are not to be used for Screen Process. The Siennas, umbers and ochres, well known earth colours are not suitable for this reason as well as due to their poor colour strength.

WATERCOLOUR INKS

Beautiful effects not obtainable through any other medium are got by using watercolour inks. Indoor displays are usually printed with these colours as they dry quicker, but are brighter and clearer than oil based inks. If it is desired to use watercolour inks for outdoor displays, a protective coating of varnish may be given.

POSTER WORK

Posters by screen process can be speedily produced at more economical rates than by other processes, such as offset. They are also doubly attractive when printed by screen.

HISTORY OF THE STENCIL

The silk screen process can well be considered as a descendant of the ancient stencilling adopted by the Egyptian and Chinese for decoration of fabrics, temples and pottery. Papyrus stencils were first used. Then came fabrics stiffened with lacquer. These stencils had some difficulties. For instance if you wanted to print a zero or letter "O", two cross ties were inevitable. Otherwise the inner island formed by the counter will not be supported. The birth of silk screen in 1885 put an end to this difficulty. In that year Japan practised this art apparently copied

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From Our London Correspondent

F. & D. BROWNLIE

STROBOSCOPE

Electronic control is finding increasing application in the printing industries, and an interesting example is the use of stroboscopes for inspecting print at high speed.

A stroboscope is a lamp which does not burn steadily but is constantly flashing, and the number of flashes per second can be varied within a wide range. If a stroboscope is aimed at a rotating part, say a white spot on a wheel, and is arranged to flash once with every rotation of the wheel, the flash will illuminate the spot in the same position in every cycle. The wheel will therefore appear to stand still—its motion is said to be "frozen". To ensure that the lamp flashes at the right time, it can be "triggered" by the wheel itself, by means of suitable contacts, so that the flash is released at exactly the same point in each cycle.

APPLICATION

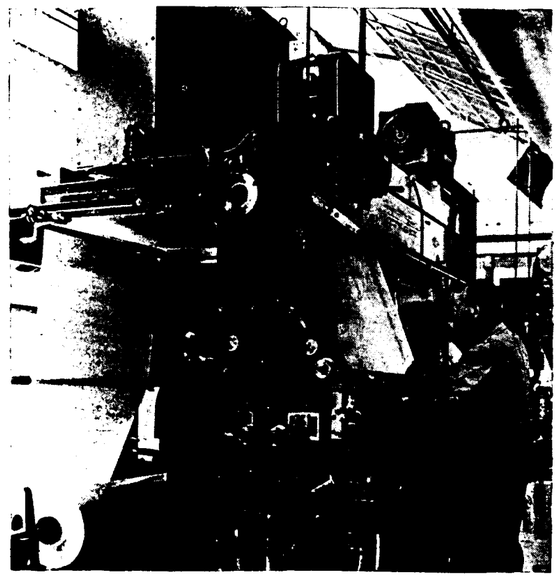
This principle has been applied to checking the impression of rotary printing machines, such as litho, rotogravure and flexographic presses. A skilled operator can check the impression on rotary presses by following a pattern with his eye, but even a highly skilled operator cannot follow patterns moving at more than about 200 ft. per minute. Even at such low speeds, he can never be sure that he has checked all the patterns repeating on a cylinder. If the press is fitted with a stroboscope, the printing speed does not matter, the web will always be frozen and can be inspected at leisure. Presses fitted with stroboscopes are already running at over 1000 ft. per minute, yet print inspection offers no difficulties.

SIMPLE INSTALLATION

Typical of the latest practice are the stroboscopes made by Dawe Instruments Ltd. of London (shown in the photograph on a Victory-Kidder press). Installation of the equipment is very simple, the housing containing the electronic controls being mounted on top of the press, out of the way. The lamp slides on a bar extending over the whole width of the web. The contacts for triggering the lamp are fitted on the impression cylinder shaft. An ordinary tumbler switch enables the operater to switch the stroboscope on or off as required. Adjustments for colour register and heaviness of impression can also be carried out while the press is running at speed. The effects of adjustments can be studied while they are being carried out.

PORTABLE UNITS

Stroboscopes need not be triggered by the mechanism studied, and smaller portable units are available with a built-in speed control. They can freeze, or show in slow motion, any cyclic motion, so that events too rapid for the eye can be studied during operation. Stroboscopes can



Dawe Stroboscope on Victory-Kidder Press (Speed about 700 ft. per minute)

also be used for very accurate speed measurements since, when a moving part appears stationary, its speed and the flash rate of the lamp must be the same. The speed of the mechanism can thus be established simply by reading the flash rate off the calibrated dial of the instrument.

BRIMULTA SORTSMASTER

A new design of hand-operated casting machine for the duplication of type sorts for which no matrices are available has been introduced by Multiple Acting Flux Ltd. The equipment, which is known as the Brimulta Sortsmaster, is neat and compact in appearance, the dimensions being only 11" x 12" x 10" high, and the weight about 55 lbs.

VERSATILITY

The universal mould takes any body size from 6 to 48 point and provides a type-metal matrix from which sorts can be cast at a speed of 12 per minute or over. Body size changes are controlled by adjustment of a lever, and the mould opening is automatically adjusted to the body and set of the original type from which the matrix is produced. Borders, ornaments, and braces can be reproduced either singly or in combination, and mitred corners can be cast in single pieces. Floating accents can be cast in conjunction with fount sorts, split fractions as single types, and logotypes produced from single type combinations within the set limit of the mould. Further, hand-cut signs, small line blocks and similar items can be converted into metal castings.

SPACING MATERIALS

Spaces and quads can be produced upto 48 x 48 point, and a special vice adaptor enables wood-cored mounting base to be cast, stable under all operating conditions. The height can be varied according to requirements, and bodies of original sorts can be increased or decreased by the addition of leads or by shaving before making the matrices. The heating unit includes a ring heater outside the melting pot, which has a capacity of 14 lbs., and it is stated that the machine, suitable for all standard voltages, can be kept heated and ready for casting on a consumption of less than one unit of electricity per hour.

ROTARY PERFORATOR

During the recent Ipex Exhibition the Soag Machinery Company showed for the first time their "Will" fully automatic rotation perforating machine, with deep pile feeder and deep pile delivery.

The feeder is of the rotary suction type and the side lay guides which are located between the feeder and the perforating machine proper are of such design that the sheets are guided with certainty along a feed rail so that they can enter the perforating machine perfectly squared. When the sheets are delivered, perforated, even on the thinnest substance a check will reveal that the perforations are absolutely parallel throughout their length with the edge of the sheets.

BURR-LESS PERFORATION

As the sheets are perforated singly by this process as opposed to perforations in small piles there are no burrs on the reverse side of the sheets, as so often happens with normal processes of perforation. To make quite certain of these perforating results, presser wheels are installed immediately behind the perforating tools to iron out any minute burrs that may be present, due possibly to blunt perforating knives. As a result of this "burrless" perforation, the sheets can be neatly piled in the deep pile delivery, and as the whole operation is entirely rotary the output is very high.

"WILL" fully automatic rotary Perforating machine

OPERATION

The chase is locked on the imposing surface with quickly adjusted dogs, and every part of the table is easily accessible to the operator and well illuminated, while there is ample storage space for working sheets, spacing material, quoins and honeycomb base hooks. The transverse beam head travels easily in adjustable ball bearings and the control wheel gives fine setting, a flack-clamp locking the head in the working position. Included is an adjustable zero mark for centreing chases which gives rapid margin reset and compensates for use of unequal chases. The travelling square is similar in structure to the transverse beam mechanism and glides just above the surface of the type but can be removed easily. The square is secured to the beam by turn of a large knurled job and the plastic surface of the squares is deep etched with clear red lines on the lower surface to give clear reading and easy control. Scales are clearly marked in inches and ems, on left and transverse beams locating zero in centre and right-hand with zero at grip line. Two models are available, Double Crown and Quad Crown, the former taking a maximum chase area 29½" x 35" (maximum measuring area 25½" x 31") and the latter a maximum chase area 36" x 49" (maximum measuring area 31¾" x 45").

Simplified Costing for the Printer

By

GRAPHICUS

The Author is well known to the Graphic Arts Industry as an exponent par excellence on technical matters associated with this Art. As a solver of "Pressroom Problems" from all over the subcontinent, he has endeared himself to printers big and small. He has now come out with a treatise on Costing, which although not a panacea for all financial ills, is surely bound to check the drift and the absence of system in arriving at the cost. The simple style is all Graphicus' own and this makes the article eminently readable apart from its practical utility in every press

SCIENTIFIC METHOD

Costing is the first essential step towards reliable and scientific estimating and is the only way to ensure that all costs in a business are recovered and, more important still, that they are allocated correctly. In order to estimate the Price of a job correctly, one must know what amount of time is likely to be taken on the various processes involved and how much each unit of that time is going to cost, just as much as one must know how much paper is going to be used and how much that will cost.

ITEMS OF EXPENDITURE

Firstly, let us take a look at the items of cost which the Printer must recover in order to maintain his establishment. He will naturally have premises which requires rent and rates to be paid; this former item should be recovered even if the building belongs to the Printer himself, since it is a legitimate form of expense. The building will require numerous repairs and decorations which will no doubt be the tenant's responsibility.

Having premises in which to operate, the Printer now has to buy the various machinery, fittings and fixtures all of which cost money in upkeep and depreciation, besides their initial capital cost. Then there is the labour force to operate the various departments and the office staff to supervise and administer. Electricity will no doubt be used for lighting if not for power, but in these days we will no doubt find it used for both. Lastly, there are a host of other expenses to be accounted for: Stationery for the works and office, stamps, telegrams, telephone and so many other items of petty expense daily met in any commercial establishment, not forgetting a salary for the working Proprietor.

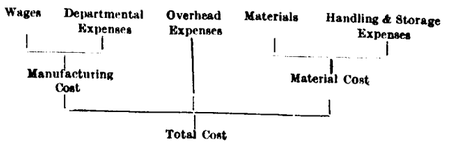
All these items total upto a certain amount of money in a day, week, month or a year and all must be recovered in the 'Cost' of a job before we can consider the price; the problem now is how to recover these costs fairly from each and every job printed.

FLAT PERCENTAGE LEADS TO LOSS

Some printers work on what is called 'a rule of thumb principle' usually adding a flat percentage to the Proprietor's idea of the cost to cover profit and other incidentals. This system usually leads to losses or at best the Printer does not know which type of work his press can do most economically and, therefore, does not make as much profit as he should; it becomes a case of 'what is lost on the roundabouts is gained on the swings'.

The diagram, given here shows what is to be recovered from the price of the job.

DIAGRAM 1



The difference between selling Price and the total cost shows if a profit or loss has been made.

A Costing System properly run follows up each job estimated to ascertain from actual figures of time taken and materials used to see how accurate the original estimate was. It also follows the day to day production to ensure that the productivity of the printing press as a whole and the rates estimated are recovering expenses actual and budgeted (See Form 8 in Appendix).

RECOVERY OF EXPENSES

In order to come to an hourly rate, all direct expenses must be allocated to the departments according to a formula :—

Rent, Rates, Repairs and Insurance relating to premises are allocated according to area ;

Insurance on Plant and Fixtures in proportion to the value of same in each department ;

Employers' Liability etc., on wages ;

Lighting charges according to the number of lights and voltage ;

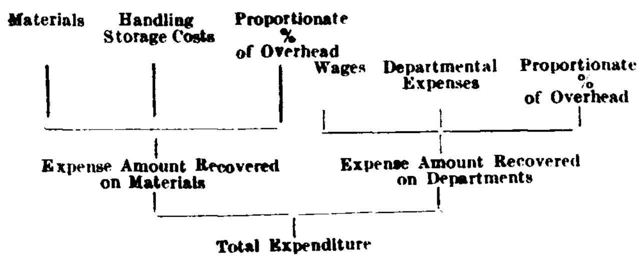
Cost of Power to the various machines and process units by Wattage or Horse Power ;

Repairs and Renewals to the departments concerned ;

Sundry Department Expenses to the departments concerned.

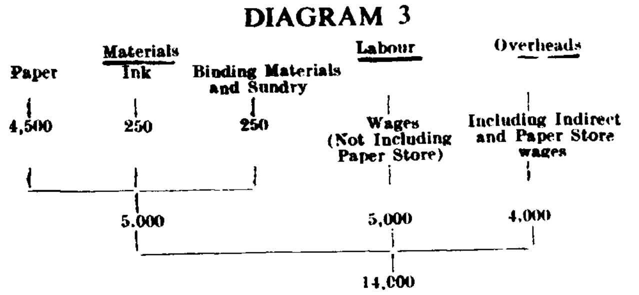
Depreciation, while this may vary from press to press, a percentage should be arrived at for Particular machines or plant, fittings and fixtures and distributed according to value of the items concerned. Overheads are best recovered by allocating a percentage to materials and the balance to Departmental overheads. Thus we find something as under .

DIAGRAM 2



Now from the numerous expenses, both direct and indirect, a satisfactory hourly rate and surcharge on materials must be arrived at. For simplicity an arbitrary unit figure is given here relating to a purely fictitious business :—

DIAGRAM 3



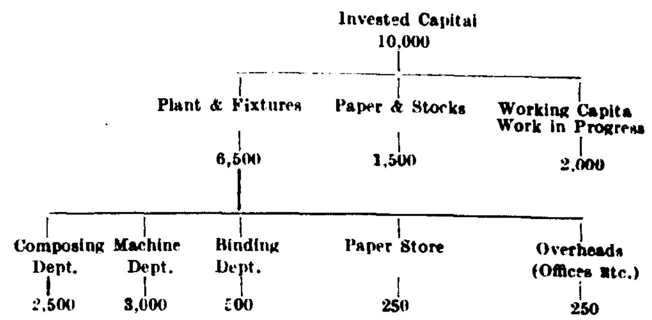
It will be seen from the diagram given that materials form approximately 1/3 of the total expenditure ; overheads may therefore be allocated accordingly after distributing direct department overheads which can be allocated as outlined previously.

We will now take a hypothetical capital investment for the same business say 10,000 split up as follows :

Plant, Fittings & Fixtures	6,500
Stocks. Paper, Ink etc., ...	1,500
Working Capital (including work-in-progress)	2,000
	10,000

and the diagram hereunder will show how the above capital might be distributed.

DIAGRAM 4



This breakdown shows where the money invested has been spent or is held, and it must be remembered that interest is payable on this amount just as much as if it was invested and, since it is an industrial risk, 5% interest is by no means unreasonable and can now be allocated to its proper place.

ALLOCATION TO DEPARTMENTS

The next important step is to spread Wages over the departments and ascertain the floor area, the latter for the purpose of allocating such items of expense as come under Premises.

DIAGRAM 5

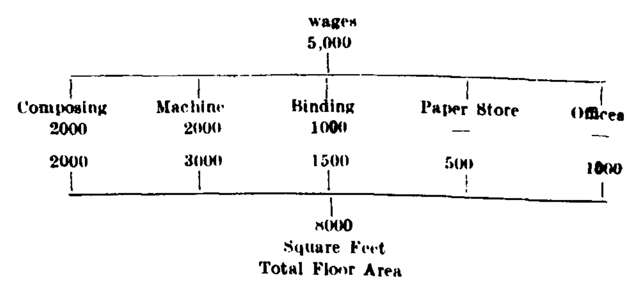


Diagram No. 6 shown here gives a breakdown of the Business, department by department Capital, Wages, Departmental Expenses and overheads. It must be assured when making this breakdown for any business that every item of expense is included and allocated as correctly as possible. Only a few items in general are given here as a guide.

DIAGRAM 6

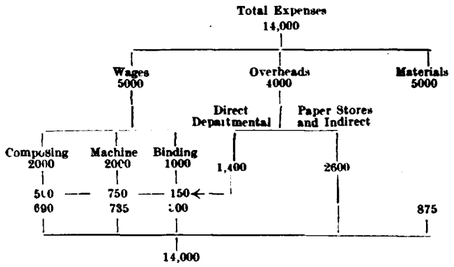
Area in Square feet	Direct Departmental Wages	Working Capital / Stocks & Work in Progress etc. (Capital Invested)	Fixtures, Fitting & Plant (Capital Invested)		1 Rent, Rates, Insurance & Repairs Building (Allocated according to Area Ratios)	2 Depreciation taken at 10% Insurance of Plant & Fittings (Allocated according to Value Ratios)	3 Repairs and Renewals (Allocated where Expended)	4 Electricity Lighting (Allocated according to Number of Points)	5 Electricity Power (Allocated by H. P. or Wattage)	6 Employers Liability Insurance (Allocated on direct wages Ratio)	7 Interest on Capital taken at 5% (Allocated according to investment)	Total Direct Departmental Expenses	8 * Salaries and Office Wages (Allocated 1/3 to Stores; 2/3 to O/Heads)	9 * Stores and Sundry Factory Wages (Allocated 1/3 to Stores; 2/3 to O/Heads)	10 † All other Indirect Expenses (Allocated 1/3 to Stores; 2/3 to O/Heads)	Totals columns 1-10. Actual	Rounding off Figures †	Direct Departmental wages	Grand Total
2000	2000	—	2500	Composing Dept.	75.0	275.0	15.0	5.0	—	4.0	125.0	499.0	—	—	—	499	500	2000	250
3000	2000	—	3000	Machine Dept.	112.5	330.0	80.0	5.0	60.0	4.0	150.0	741.5	—	—	—	741.5	750	2000	2750
1500	1000	—	500	Binding Dept.	56.5	55.0	10.0	3.0	5.0	2.0	25.0	156.25	—	—	—	156.25	150	1000	1150
500	—	1500	250	Stores Dept.	18.75	27.5	3.0	3.0	—	—	87.5	139.75	500	100	160	899.75	875	—	875
1000	—	2000	250	O/Heads Charges etc.	37.75	27.5	2.0	4.0	—	—	112.5	183.5	1000	200	320	1703.5	1725	—	1725
8000	5000	3500	6500	Totals	300.0	715.0	110.0	20.0	65.0	10.0	500.0	1720.0	1500	300	480	4000	4000		
		10,000																	
Information and Figures for Proportionate Distribution of Costs					Directly allocatable Expenses								Indirect and Overhead Expenses						

* Salaries and indirect wages can also be divided according to direct wages Ratio.

† This column is best divided up into the various items it represents; this gives a clearer picture of the overall position. (Such items as Telephone, Stamps & Postage, Telegrams, Stationery, Printing, Advertising, Donations, Travelling, and Entertainment Expenses, Motor Cars, Audit and Legal fees, Bad debts, Packing Materials, and many others fall into this Category.)

The figures split up by departments have been rounded off for ease of distribution of the overhead figure shown in the last column and the percentage to add to material cost worked out for recovery of the total shown under "Stores." In this case the nearest correct percentage figure is 17½% which, taken on material cost of 5,000, is 875. This leaves 24.75 to be added back to overheads and 3.25 to be deducted in respect of adjustments to the departmental columns. Now the overhead figure of 1725 can be allocated to departments in proportion to the department costs shown plus the wages element above. This works out to 40% of overhead to composing dept., 42½% to machine and 17½% to Binding. The figures obtained can be again rounded off for simplicity as shown in the diagram here.

DIAGRAM 7



Since it is very unlikely that the small Printer will be working on a piece-work system, for the purpose of this treatise only hourly rates will be calculated. Actual producing workers only are to be taken into account since any non-productive foremen or overseers who merely supervise will be classified under the expenses of the department. If these persons are working supervisors their productive working time will need to be included in order to arrive at the number of productive hours chargeable for calculation purposes and the time spent actually supervising only will be charged as departmental expenses.

We will now assume that 4 weeks' paid holidays are taken by the workers in a year, *i.e.*, 48 working weeks to base the figure on at 48 hour a week; thus the total for the year for all departments is 2304 hours. This only applies to workers since the machines will be working even when individual workers are on leave.

HOURLY RATE

To take the *composing department* first, in ascertaining the actual hourly rates, it may be found that the productive time, that is time spent on customer's work, averages 2/3 of the actual time for the year and these productive hours may now be divided into the cost of the department 2/3 x 2304 actual hours = 1536 productive hours divided into the cost 3190, $\frac{3190}{1536}$ = 2·076 per hour and assuming there are 5 productive compositors in the department, the hourly rate per man will be .415, this rate if in practice is found to be an awkward decimal may be rounded off in respect of any particular job, *i.e.*, a job taking one hour round off to .5 or ½ or a job taking 4 hours would be 1.66 to 1.75 or 1¾, and so on.

The same principle would probably apply to the *Binding department* in most small printing houses where all work is done by hand, and the productive hours would probably be found to be higher. So it may be assumed that ¾ of their time is productive. If 3 men are employed, the rate per hour per worker is ¾ x $\frac{2304}{1}$ = 1728 into 1450 = $\frac{1450}{1728}$ x ½ to the nearest decimal would therefore be .26 or ¼ approximately.

The Productive time would include possible time spent by the Binding department workers. Such jobs as Packing, Despatch and Delivery can be charged to customer's work or an average rate worked out as an overhead expense and distributed under indirect wages for this type of work.

The *machine department* needs special attention. There will be the various machines of different sizes and values, each of which needs individual attention. In the diagram shown, 3 machines have been taken to be in the department, 2 Double Demy Machines Nos. 1 & 2 and a Crown Folio Platen, No. 3. The values shown are of course arbitrary as are the area figures; it must be remembered that the area occupied by a machine includes all necessary working space round it. The rest of the area would be storage space for paper awaiting printing and printed matter awaiting to be moved, besides gangways racks etc., this unallocatable area is shown under "A" and productive hours are taken as ¾.

MACHINE DEPT. HOURLY RATE SPREAD OVER

DIAGRAM 8

		Fixtures		Machines	
	Total	A	1	2	3
Value	3000	300	1200	1000	500
Area	3000	2850	150	150	50
Horse Power	6		2.5	2.5	1
Area Expenses and sundry	117.5		50.5	50.5	16.5
Insurance, Depreciation and Interest	480.0		205.0	205.0	70
Repairs and Renewals	80.0		34.5	34.5	11
Power	60.0		25.0	25.0	10
Annual Cost	737.5		315.0	315.0	107
Weekly cost ÷ 52	14.2		6.1	6.1	2
Weekly Wages	38.5	Machineman	10.5	9.0	8
		Assistant	5.0	5.0	1
Employer's Liability	4.0		1.5	1.5	1
Total	56.7		23.1	21.6	12
Plus 42½% for Overheads	24.0		10.5	9.0	4.5
	80.7		33.6	30.6	16.5
Hourly Rate ÷ 36			.93	.85	.46

It will be seen that the hourly rate for the Double Demy machines differ; these rates should only be used for cost checking purposes. But for estimating, the rate should be worked at an even hourly rate for make-ready and a composite rate for each 1000 impressions, *i.e.*, the hourly rate for make-ready for jobs only suitable for these machines would be .89 each for estimating and if one was capable of 2000 impresions per hour and the other 3000, the rate per thousand 1.78 divided by 5.

The rate for cost comparison, both in terms of cash and output, will indicate to the management when any machine becomes uneconomical.

WORK DOCKET

In order to arrive at figures for productive hours as against non-productive, it will be necessary to institute Work Dockets for each worker, machine or process, and also Job Cards in detail, if this is not already done.

From the Work Dockets, the Job Cards can be entered and also the productive and non-productive hours recorded. If no records are immediately available and it is desired to introduce the system, an arbitrary figure can be worked out based on experience, but accurate records must be kept and the arbitrary figures amended and corrected as quickly as possible.

Naturally the system depends on a budget being worked out for the year and this can be based on past figures or experience of likely expenses and material purchase for the coming year.

To arrive at the minimum necessary Forms for the small Printer, it might be as well to follow an enquiry.

FORMS FOR THE PRINTER

Firstly it is most likely a quotation will be required by the customer, this can be given on the Printer's normal Letter heading overprinted 'QUOTATION' in bold type (see Form 1). The quotation itself should describe the enquiry with sufficient detail to avoid any argument if the customer places the order with extra requirements or changes; delivery times and the period for which the quotation holds good must also be stated. It is a very good scheme to have standing conditions printed on the reverse of the quotation form to cover the Printer completely.

In order to prepare the original quotation for the printer's own reference which will give full details of hours of work, materials, costs and profit element, a detailed printed form on the lines of (Form 2) can be used.

On receipt of a firm order, this must now be recorded and the simplest method is on the lines of that given in the list of forms (Form 3) which can be bound as an Order Book; the orders will naturally fall in numerical order and the job number should now be filled in on the estimate form and the Job Card (Form 4). The estimate number should be recorded in the column provided in the Order Book, the price if quoted, can be entered in pencil in the Order Book to be inked over on completion and invoicing. The original estimate should be kept handy for comparison of times and rates with the job card before the latter is filed.

In connection with the invoicing and general recording of orders for the purpose of financial control, a Day Book (Form 5) and customer's journal (Form 6) will be required.

The former can be either loose leaf or a bound ledger and is kept in strict numerical order of Invoices and the latter is better kept as a loose-leaf ledger. This allows customers' accounts to be kept in strict alphabetical order and for extra sheets to be inserted as and when necessary. It will be noticed that complete details as to Invoice, order, job and estimate numbers are given in both forms of ruling, since any of these items may be required to be referred to, and cross indexing in this way can save a lot of time in tracing these documents at a later date, since they can be found by reference to a known number, a date, or a customer's name. The order, estimate and job cards should of course always be filed in numerical order when completed.

The job card now goes out to the Departments to carry out the order detailed thereon. Work Dockets (Form 7), should as far as possible, be filled in by the Workman himself, the entries concerning each particular job with details of job number and hours taken for the various types of work should be checked by the Departmental foreman and transferred to the relevant Job Cards for costing and pricing by the office. When the work dockets are completed for the day or any period for which they are issued, they should then be sent to to the office for recording chargeable and non-chargeable hours so as to arrive at an average for calculating the hourly rate, or for keeping a check on the average already estimated or calculated. An idea of how this can be done is given in (Form 8). This form, it will be seen, sums together the hours for all compositors and binders since an overall rate is required for all productive workers in these departments. The Binding department has an extra column for time spent on packing and despatch which can be averaged out and

the percentage arrived at, put to overheads if desired. The machine department is split up into individual machines. Where extra labour is employed in the machine room for general work such as moving printed and unprinted paper, type and other formes, sweeping etc., these wages should be put under indirect wages in the costing schedule. These workmen may sometimes be used for productive purposes such as interleaving, in which case an average should be deducted from the indirect wages and added to direct wages, as it will be charged direct to any particular job requiring such work.

HOW TO CHECK HOURLY RATE

Finally the total productive hours for the whole press, can be multiplied by the relevant hourly rates and the figures arrived at compared with the actual or budgeted cost of expense, in order to check the recovery of expenses, and accuracy of the hourly rate.

The main requirements for the correct costing of a business have been dealt with in as simple a manner as possible and it is hoped that this treatise gives some idea to the Printer of what is required in order to ensure that his expenses and profits are equitably recovered from his various customers.

Should any Printer who reads this, require more detailed information on the subject of costing and estimating it is recommended that he purchase "The British Master Printers Federation Costing System" and "Estimating for Printers" which are two separate Volumes and are available from 'The British Federation of Master Printers.'

FORM 1

QUOTATION TO CUSTOMER

(Front)

Tel: 2222 Gram: PRINTCO

PRINTER & CO.

10 Point Lane

Quotation No. Date

QUOTATION

(Reverse)

Standing Conditions

FORM 2

ESTIMATE FORM
(For Printing use only)

PRINTER & CO.

10. Point Lane

Customer's Name.....
Enquiry dated.....Quotation No.....
Quotation required on.....Quotation accepted on.....
Order placed on.....Order No.....
Delivery required on.....

Press Job No.

Description of Enquiry
Any special requirements

DETAILS

	Quantity or hours	Rate
Composing:		
Machine		
Binding		
Outworks		
Materials		
	Cost	
	Percentage of Profit	
	Total	

PRINTINDIA

FORM 3

ORDER BOOK

Date	Job No.	Customer's Name	Description of Work	Estimate No.	Inv. No.	Price	S.Tax

FORM 4

JOB CARD

Customer's Name.....

No. Date Customer's order.....Date.....

Estimate No.....Customer's Quotation No.....

Description of Work and quantity required

		Actual Hours	Rate	Rs.	A.	P.	Estimated Hrs.	R.	A.	P.
COMPOSING										
Date in	Setting Make-up									
Date out	Imposing Corrections									
MACHINE										
Date in	Make-ready Running									
Date out	Wash-up if any (chargeable) Customer's cor. if any									
BINDING										
Date in	Cutting or trimming Folding									
Date out	Gathering Sewing Binding									
OUTWORKS										
MATERIALS										
	Paper									
	Ink									
	Sundries									
Date required	Total cost									
	Add Profit									
Date delivered	Selling Price									
Challan No.										

FORM 5

DAY BOOK

Date	Invoice No.	Customer's Name	Order No.	Job No.	Estimate No.	Price Rs.	As.	Ps.

FORM 6

CUSTOMER'S JOURNAL

Customer's Name.....

Date	Invoice No.	Description of Job	Order No.	Job No.	Estimate No.	Price Dr. R. A. P.	Cash Red. Cr. R. A. P.	Outsanding Balance R. A. P.

FORM 7

WORK DOCKET

Department
Machine No. or Name
Number and class of worker

Date

Job No.	Customer's Name Description of Job	Class of work	Ordinary Time	Overtime		Chargeable	Non-Chargeable

FORM 8

PRODUCTIVITY CHART

Day	Composing Prod.	Composing Non. Prod.	Composing Total Hours	No. 1 P.	No. 1 N.P.	No. 1 T.H.	Machine No. 2 P.	Machine No. 2 N.P.	Machine No. 2 T.H.	No. 3 P.	No. 3 N.P.	No. 3 T.H.	Binding P.	Binding Non Prod.	Packing	Total hrs.	Remarks
M	30	12½	42½	7	1½	8½	6½	2	8½	6	2½	8½	22	1½	2	25½	Prod—Productive Hours
T	32½	10	42½	5¾	2¾	8½	7¼	1¼	8½	7½	1	8½	22½	2	1	25½	
W	24½	18	42½	7	1½	8½	5½	3	8½	5½	3	8½	21¼	2¼	2	25½	Non Prod—Non Productive Hours
Th	31½	11	42½	6¼	2¼	8½	8½	—	8½	4½	4	8½	21¼	2¾	1½	25½	T. hrs.—Total Hours Worked
F	26	19	45	6¾	2¼	9	7	2	9	8	1	9	23	2	2	27	D. W.—During Week
S	13½	11½	25	3¼	1¾	5	—	5	5	3½	1½	5	13	1	1	15	No. 2 machine under repair
Total	158	82	240	36	12	48	34¾	13¼	48	35	13	48	123	11½	9½	144	

Actual weekly cost 66.45
Recovered in Hourly rate 65.55
Under recovered D.W .80

Actual Weekly Cost 33.6
Recovered in Hourly rate 33.5
Under recovered D.W .1

Actual Weekly Cost 30.6
Recovered in Hourly rate 27.5
Under recovered D.W 3.1

Actual Weekly Cost 16.5
Recovered in Hourly rate 16.1
Under recovered D.W .4

Actual Weekly Cost 30.2
Recovered in Hourly rate 31.9
Excess recovered D.W 1.7

9½ hours to overhead 2.47

Under recovered Comp. & Machine—4.48
Excess recovered Binding +4.17
Nett Loss on hourly rate —.31

LAY GAUGES OF THE PRESENT AND THE FUTURE

Machine-minders in India still use the traditional way of fixing side and front lays on platens. They do not know that pins and quads stuck up have been superseded by gauge pins. Pins are likely to get loose after continuous feeding. Quads do not give as accurate a seating for the stock as may be desired, although they are better than pins for heavy stock and card feeding. The Spring tongue gauge pins are easy to fix, can be slightly adjusted without altering the original position of the gauge. We have to get accustomed to the use of these gauge pins instead of ordinary pins and quads.

GOOD SPACING FOR GOOD PRINTING

Compositors do not realize for a moment how important is spacing for the look of the finished matter. This apart, badly spaced matter makes reading a drudgery. The only rule that the comp. knows about spacing is that a thick space will do for lower case matter. Even this rule is observed more in its breach than in its observance. Another rule that has shared the same fate is that spacing should be equal. He forgets that spacing even when it is equal between all words, appears to vary. Allowance should be made for this appearance. Usually space between tall letters like l, f, or caps appear to be less than what it is. When you wish to increase spacing in a line for bringing the line to the measure, start by increasing between tall words. Similarly when reducing, start between sloping and curved characters such as v, w, o, etc. and after a comma. The extra shoulder space make up for the deficiency and appears equal. Too wide a spacing is sometimes recommended possibly to accommodate any omissions or additions during correction. This is a contingency to be avoided. Tight spacing is the modern trend and makes easier reading. Condensed type faces take less spacing than standard width characters. Fat founts such as the Gothics and square serifs need wider spacing.

OIL YOUR WHEELS WELL

The importance of lubrication has not been realised by the pressmen. Many bearings have worn out by sheer neglect. Although Central Lubricating system governs automatic machinery, by and large, most of our printing machinery have to be lubricated by hand. Wherever I have found auto lubricators, they have been either disconnected or discarded. The correct brand of lubricant is another snag. Thin oil may not suit a heavy duty machine. Some parts may require grease. Cleaning and oiling go together. Without cleaning, oiling will take the dust inside the bearings bringing ruin in its wake. Too much of oiling is, in addition to being a waste, a fire hazard, a dust trap, a cause of accidents by making the floor slippery. Parts that work by friction should not be oiled. Begin your day with oiling. Use forced feed oil gun. Set apart the Saturday for cleaning and oiling *all* parts.

KEEP A SAMPLE PLEASE

Hundreds of jobs pass through your press and many come for a repeat order. Always cultivate the habit of keeping a copy of every piece of print you turn out. These will help in estimating similar jobs, serve as a specimen for customers, and assist in orders with alterations on the original. A file should be kept containing a neat assortment of visiting cards, letter heads, labels, invitations and another for other miscellaneous jobs. The customer too will be impressed with this array of specimens. Make sure you select a properly printed copy for the file.

LONGEVITY FOR LITHO PLATES

Thanks to the "five in one solution" manufactured by the Sun

Chemical Corporation, N.Y., USA, offset plates can have 250,000 impressions and a shelf life of one year. Plates coated with this solution are not affected by humidity. It is not necessary to use the plates immediately after coating. Use can be delayed as much as two weeks after coating. Known as Metalife, this solution specially manufactured for processing surface plates, serves as counter etch, pre-etch, plate-etch, gumming up solution and as fountain solution—all in one. But for coating, a companion Matalife surface coating is available. Between the two, the life of the plates is increased.

LINO HYDRAQUADDER

Centering and quadding have been the drawbacks of line casting machines. All that is past now. The Linotype Hydraquadder is a device operated by circulating fluid. Dependable, economic supply of display setting is guaranteed. Perfect centering and accurate margins are assured. Smooth, sure, gentle, jaw action prevents "slap"—there is no mechanical linkage. Uniform vise jaw pressure is regardless of line length or quadding function. Jaws are kept free of metal by automatic "wipe" action. This device can be fitted to existing machine or ordered along with new machine. The quadder may be operated manually or by tape.

TYPES ON THE FLOOR—BEWARE!

You don't realise how many pounds of type you are losing every month from those that fall from the case or the hands of the comp. These are never picked up and are allowed to litter the floor of the composing room. Every comp. at the end of the day should kneel down and pick up all types he finds under the frame and near his case. This is the only way to stop the leak in your stock of types. Especially job founts will become useless if key letters are left to drop down and never picked and put back.

KEEP THE CANS CLOSED

When you take ink from the can, more often you leave it open. At the end of the day too, you are busy—this is the same story day after day until precious inks are left to dry or allow dust to settle into them. Make it a point to close the lid after taking ink from a can. And close it tight. Then don't forget cleaning the push knife with which you took out the ink. Do not use lead pieces or rule bits in place of the palette knife. Lead or other metal may discolour the ink pigment.

NEW WONDER ADHESIVE—ENVA-LOK

For sealing envelope flaps, labels, sealing tapes, decalcomanias and other packaging requiring instant remoistening adhesive, Enva-Lok is the answer. Manufactured by National Adhesives, N.Y., USA it gives instant sealing on all stock including kraft and rag. Its thin crystal clear film eliminates curling flaps and permits tighter stacking, speedier automatic addressing and stuffing and better printing and engraving. The seal is so strong that the paper tears before the adhesive yields. It does not cause envelopes to stick together during manufacture, storage, addressing and stuffing !

PRINTER! MEET THY MASTER

Every press proprietor, when asked who is the master of his press will unhesitatingly answer that HE is—who else? He is wrong. Who is the individual that pays your profits? Who buys your products? Who spends his money where he chooses? Who must come to your press if you are to succeed? There is no doubt this time as to his identity. He is your customer. When you meet your customer, you meet your master. Beware if you treat him as your servant! *He* will not be the loser.

DIRTY DAMPING ROLLERS

The Letterpress Printer knows only about inkers and distributors, riders and feeder rollers. Offset printer knows one more—dampening rollers. So, he has one more headache than his compatriot in the letterpress room. These damping rollers which are to supply only water to the non-printing portions of the plate, also by the way accumulate some ink. After a few thousand impressions they need washing. If left unwashed, scumming will result. This is more true when printing halftones. The scum develops between the dots. Running less ink may offer a compromise with the problem. But the resulting print will be grey and not dark. Each day we should start with a fresh fountain solution, although the concentrate may be old. The dampeners should be re-covered as often as is feasible.

PIN HOLES IN PLATES

Unwanted transparent portions in the wet plate negative are called Pin Holes. These points are transferred to the metal plate and result in poor finish in printing. They are caused by dust on the plate or over iodizing of the silver bath. Keep all chemicals and baths free from dust and all rooms where plates are sensitized or exposed free from dust. Over oxidization of silver bath is avoided by diluting it a third or half with water. It may also be neutralized with a few grains of sodium carbonate. This, if allowed to stand in sunlight, will precipitate excess iodides. Cutting should be avoided as far as possible, as this will enlarge pin holes.

SPOTLIGHT ON PERSONS & FIRMS

Meet Master Printer Philip

Printers come, printers go. But Veteran Printer V. M. Philip stays on for ever! What makes this pioneering master craftsman so important in the Printing Industry of the Madras State? The answer to this and other interesting human side of this outstanding printing personality is told in the following article

MAN'S STORY IS HISTORY

Indian History has been often rewritten, especially after our independence. But, the portions relating to the Southern Metropolis of Madras need no alteration. There are many things for which it is famous for, for instance, its long beach, ancient churches and oldest printing houses. One of the last mentioned is the Diocesan Press. Heading the administration of this good old printing establishment is none other than the silent, self-effacing Mr. Philip.

PIONEERING REVOLUTIONARY

For several decades now, for several hours a day, this unassuming figure has been making history. He has been pioneering in some fields, revolutionising others, rationalising yet other spheres. Always well-dressed, but not over-dressed, he presents a simple but effective appearance of an ideal Superintendent. His mode and habits, dress and demeanour, talks and gestures speak volumes about his technical acumen, his tact and human understanding and quiet efficiency.

FIRST IN MANY FIELDS

One of the first in Madras to introduce block-making, he has easily the best equipped studio in the City. In those days only the leading newspapers, like *The Mail* and *The Hindu* had their process sections. For a press to make its own blocks under its own roof was something that required great initiative. Needless to say, once the Diocesan Press started manufacturing their own lines and halftones, others followed suit. But the credit to be one of the first goes to the Press and its Management.

OFFSET WITHOUT TEARS

For a long time now, Letterpress Printing has reigned supreme and offset and direct lithography had considerable difficulty in getting accepted as a suitable process for certain classes of work which were considered the sole preserve of letterpress. The Diocesan Press headed by Mr. Philip saw the advantages offered by the Lithographic process especially photo-litho. They did not lose much time in introducing this. What is more Mr. Philip is responsible for attempting large reprinting orders of various language books unknown to us, by this process. Now many of the Afro-Asian language books are handled by the Diocesan Press, thanks to the forethought and farsightedness of Mr. Philip.

Mr. V. M. Philip

A HUNDRED YEARS OF PRINTING

A hundred year old press is something unique in the annals of Indian Printing Industry. The history of the Diocesan is the life story of the Superintendent Mr. Philip. Much organization, considerable labour and skill in selection of personnel, perfect judgment in buying equipment have gone into the making of this century-old press.

TRAINING FOR THE FUTURE

Superintendent Philip wants to lay the foundations for the future firm and sound. Hence his belief in thorough technical training for all the branches in his press. Indeed one of the earliest to send apprentices to the Printing School at Madras was Mr. Philip. That was three decades ago. Still Diocesan Press apprentices crowd every class of the Regional School of Printing. Some of his Foremen and Supervisors and many of his technical staff are all products of this school.

YE BE JUDGE!

A Printer can be judged by his work, *i.e.*, quality and expeditiousness in production as well as the quantity or out-turn, by the way he organizes his press: by his treatment of the workers: by the salaries he pays them and the amenities he

provides them with ; by the contribution he makes for technical education, by the sacrifices he makes in the larger interests of the industry ; by the lead he gives and the counsel he imparts to younger printers. All these tests and many more, printer Philip has passed. In fact *he has made recently a great sacrifice for the Regional School by sparing the services of his Process expert and an assistant.* No one except Mr. Philip could have agreed to do this.

In organizational life Mr. Philip is equally successful. He has been the President of the Printers' and Lithographers' Association, Madras for some years now. He was even tipped for the Presidentship of the All India Federation of Master Printers. We still hope that the wise members of the Governing Council of the August body will break all precedents by unanimously selecting Mr. Philip as the President of AIFMP the coming year. We need hardly say that not only he is eminently fitted for the post, but that, coming from a family of printers and with his rich background and special assignments, his experience in running printing and mammoth publishing concerns, advising many presses of South India, the organization will be very lucky to have a President who is a *real* printer in every sense of the word.

PRINTER WITH A CAPITAL "P"

The Superintendent of the Diocesan Press has brought in many sons of our land into the printing fold. What is more, his own son Mr. Mammen Philip was specially trained at the London School of Printing and the Continent. The younger Philip who is every inch a chip of the old block is now at the Head of Wesley Press, Mysore.

INDEPENDENT BLOCK FOR THE REGIONAL SCHOOL OUTSIDE POLYTECHNIC

Elder Philip is keenly interested in having an excellently equipped, efficiently manned Regional School of Printing for Madras. For this he has made, in the capacity of Member, Board of Visitors, for the Printing Section, and as an Examiner for the Printing Subjects of Technological Diploma Examination for a number of years, very helpful suggestions, in this direction. One of these will bear repetition : On the Inaugural Day of the RSP, in his forthright and telling speech to the City Printers who had gathered in their hundreds, Mr. V. M. Philip told :.....*it will not be possible to house the Regional School in the crammed Central Polytechnic compound. I am sure that soon the Regional School will be shifted to an independent block of buildings specially planned to meet the needs of its multifarious courses, in a commodious site where it would have ample scope for expansion and development.*"

The above words are still ringing in the ears of every right thinking printer. We need not say, all are for the happy fulfilment of Mr. Philip's words. They know they can reckon on Mr. V. M. P. to give the right lead at the right time. Many a small printer, during his lean months has profited by contacting the inimitable Mr. Philip. He is a proof of the rich Indian heritage of the past, a living embodiment of the throbbing present and a mountain of hope for the glorious future of the industry, to youngmen and all others associated with fine art. *Printindia* in this attempt to cover a few events in his Himalayan career, is only voicing the gratitude of thousands of printers in the land for what he is doing for us and what he will continue to achieve for the Graphic Arts Training and Industry in this part of the world.

Like his press which is over a hundred years old, we are sure he would serve the craft for a century and more.

Inaugural Day of Printing Technology Students' Association

(Continued from page 6)

asking non-technical executives to select or plan such manufacture. He asked the students to be loyal to the firm in which they work. He considered this as essential for the progress of workmen. He demonstrated with special prismatic torch lights how white light is composed of the spectrum colours (V-I-B-G-Y-O-R) and how the theory of colour separation and super-imposition are different in theory and practice. For instance when Red and Green are mixed together a muddy grey results. But when green light is superimposed on Red and Violet on that, the three form white light. The Process Expert then proved his statement by throwing a green patch of light and on that a red patch. In conclusion Sri Archer advised the students to develop thoroughness and neatness in execution.

Earlier the Student Chairman D. Ramalingam welcomed the distinguished guests of the evening. The Secretary K. Sankaranarayanan proposed a vote of thanks to those assembled.

The function ended with a variety entertainment by the students of the Printing Section in which Messrs. Rangamani, Md. Ismail and Loganathan of first year class gave an excellent performance.

The meeting was well attended by Asst. Superintendents of Govt. Press, the Head of Printing Section and other staff members and students.

Paper Notes

THE WEST COAST PAPER MILLS LTD.

This company has been formed, particularly to manufacture white printing and wrapping papers from bamboo and other raw materials.

There are at present 20 Units in the country for the manufacture of paper and paper board with a total capacity of about 1,85,600 tons. Heavy imports are necessary to meet the present demand, requiring valuable foreign exchange.

On the basis of the above figures the annual per capita consumption of paper in India is hardly one lb. This is very low in comparison with that in other countries such as U.S.A. having approximately 400 lbs., Canada 175 lbs. and U.K. 154 lbs.

With the growth of literacy, the expansion of trade and industry, the general rise in the standard of living and the increase in population, consumption of paper in India is bound to increase. The Planning Commission has envisaged a steady increase in the demand and the target fixed for the Second Five-Year Plan for the paper industry is 3,70,000 tons compared with the production of 1,55,000 tons in 1954.

The present installed capacity together with the expansion already sanctioned leaves a wide gap to be bridged in order to meet the minimum requirements of the country. The industry, therefore, has bright prospects for further expansion.

The present rate of import duty on paper is 39$\frac{3}{4}$% *ad valorem* which provides sufficient protection against undue foreign competition. Moreover there are indications of worldwide shortage of paper as will be evident from the following observations made by the President of the Newspaper Society, London, and the Indian Tariff Board :

"*We face a famine, a real famine in paper not only newsprint but every form of paper. A new source of supply must be found.*"

"*There is an overall world shortage of paper and pulp, making import of any substantial quantity of these products into this country from abroad, a remote possibility.*"

SELECTION OF SITE

The promoters have selected Dandeli in North Kanara District of Bombay State as the site for the factory after a thorough investigation of all major factors which are briefly enumerated below :

RAW MATERIAL

The various forest ranges around Dandeli have adequate resources of Bomboos for a continuous output of 60 tons paper per day and there will be sufficient supply of suitable bamboo for any expansion of output that may be visualised in future.

It has been ascertained that supply of bamboo is available within an average lead of about 10 miles of the proposed site sufficient to supply a factory with a daily output of 100 tons.

WATER SUPPLY

Kalinadi, a perennial river, flows within a distance of about two furlongs from the factory site, assuring an abundant water supply all the year round. Permission of the State Government has already been obtained to discharge the effluent back into the river after necessary treatment.

CHEAP POWER

Hydro-Electric power will be available from the Jog-Karnatak Electric Grid, a sub-station of which is situated just opposite the proposed factory site. It is also proposed to establish a thermal power plant for the generation of a part of the Electric power requirements and to make use of the steam from this plant for the process in the factory. Apart from the saving in the costs of operation this will assist in ensuring a continuous supply of Electric Power.

TECHNICAL PERSONNEL

Qualified and experienced personnel required for the erection and in the initial period of operation will be obtained from the Machinery Suppliers.

TRANSPORT FACILITIES

Dandeli is a terminus on the metre gauge branch of the Southern Railways. Furthermore, it is a centre of a number of motorable forest roads. The factory site is

(Continued on page 30)

news and views

ANNUAL PRIZES FOR GOOD PRINTING

The Union Ministry of Information and Broadcasting has instituted annual State awards for excellence in printing and designing with a view to promoting higher standards in the production of books and visual publicity material.

A Government Press note said that the awards for the year 1955 will be given for the best produced material in the following categories: Best children's books; best book without illustrations; best produced book in an Indian made paper; best publicity folder (letterpress); best publicity folder (offset); best single or multi sheet calendar; best utility or presentation diary; best produced magazine or periodical: best produced English or Indian language newspaper and the best Devanagari printing type suitable for casting.

The Press note adds: The competition, sponsored by the Ministry of Information and Broadcasting, which has its own Publications and Visual Publicity Divisions is intended to encourage better printing and designing standards and the entries would be judged solely on the basis of production values irrespective of the contents or the language of the publication. There will be two awards in each category: one to the publisher or the designer and the other to the printer.

In addition to the State award for the best entry in each category, there will be other prizes in the form of certificates of merit.

As this will be the first competition of its kind sponsored by Government, all books produced since Independence will be eligible for the 1955 awards. Devanagari types produced since Independence would also be eligible in the case of posters, folders, calendars, diaries, magazines, periodicals and newspapers. However, the competition will be confined to material published in 1954 and not earlier.

Entries have been invited from printers, advertisers and advertising agencies and these should reach the Advertising branch, Ministry of Information and Broadcasting, Government of India, New Delhi, by September 30, 1955.

A Panel of Judges, consisting of representatives of Government and the trade, will be constituted for selecting the winners.

* * *

TRAINING IN PRINTING

NEED FOR PROPER SCHOOLS

Mr. Tushar Kanti Ghosh, Editor of *Amrita Bazar Patrika*, welcomed the decision of the Government of India to start printing schools for training young men in this branch of industry.

Inaugurating the West Bengal Printers' Conference, Mr. Ghosh said it was not possible for one individual to possess even a fair knowledge of all the departments of a modern printing press. It was an industry which required diversified knowledge and proper training. He appealed to those, who had specialised in the various categories of the industry, to devote some thought and time towards the development of printing schools so that young men might receive proper training at a moderate expense.

The Chairman of the Reception Committee Mr. Asok Kumar Sarkar, Managing Director of the *Hindustan Standard* and *Ananda Bazar Patrika*, said that about one lakh employees were engaged in the printing presses in Calcutta and Howrah. The industry, he thought, deserved encouragement from the State from the point of "employment incentive", besides other considerations. The Government

could open up new avenues of employment if they stopped the present import of Rs. 2½ crores worth of foreign printing machinery, which, he said, could be produced in this country. He hoped the Union Government would set apart a portion of Rs. 250 crores, which they intended to spend for producing various machinery during the Second Five-Year Plan period, for this purpose.

SCHOOLS OF PRINTING TECHNOLOGY

Prof. Humayun Kabir, Secretary to the Union Ministry of Education, said at Bombay on 9th Sept. that schools of printing technology would be established at Calcutta, Bombay, Madras and Allahabad in the near future. He said that construction work of the school at Calcutta was already started and that of Bombay would start sometime next year.

IMPORT OF NEWSPRINT

The Government of India have decided that in the case of small newspapers, whose six-monthly requirements of newsprint are five tons or less, an actual user licence for the import of a minimum quantity of five tons may be issued, it was learnt.

Under the import policy for the period July-December, 1955, newsprint is to be licensed to actual users, namely publishers and printers of newspapers and periodicals on the basis of actual consumption. as certified by a Chartered Accountant during any one of the financial years 1952-53, 1953-54 and 1954-55.

The Government of India have taken the new decision after examining the position, following representations made to them that the developing requirements of small newspapers are not adequately met under the present arrangements.

Small newspapers applying for licences in terms of the new decision will be required to execute a bond to the effect that the newsprint imported against licences granted will be consumed for their own requirements and not sold to others. A half-yearly consumption account would also have to be rendered to the licensing authority.

The Government have also decided that small newspapers making actual user-applications for the import of newsprint upto five tons in terms of the present decision will be exempt from payment of licence fees.

* * *

MANUFACTURE OF NEWSPRINT

A team of scientists headed by Dr. W. H. Gau, an Associate Professor of Chemical Engineering at McGill University, is expected to start tests soon of a new device which may save waste in making newsprint.

Research workers, in co-operation with the pulp and paper industry, have devised a high temperature reactor which separates solids, vapours and gases from the thousands of millions of gallons of waste liquids in the manufacture of sulphite pulp and paper. The team hope that most of the material recovered by the reactor can be used again.

More than two-and-a-half years and 2,50,000 dollars have been spent in research and now a prototype reactor is being built in the Pulp and Paper Institute's laboratories to determine the industrial application of the technique.

* * *

LONDON PAPERS TO COST MORE

Because of increased costs, a number of Britain's national newspapers announced on 16th Sept. that the price per copy will be stepped up as from the following week from three half pence to two pence.

The journals concerned are *The News Chronicle*, *The Daily Herald* and *The Daily Mirror*.

Sri N. Padmanabhan L. P. T. (Macmillan & Co. Ltd. Press Dept.) and his beautiful bride Smt. P. A. Rukmani. Their Wedding took place at Madras on 26th June '55 and a large number of Printing Technologists and elite of the city attended the function

The Screen Process Story

(Continued from page 10)

from German Printers who were pioneering in Screen process. In 1915 it came to the United States and in 1920 the UK took it up. The latter country used a carbon tissue and in the following year a process printing press was invented. It gave about 1500 copies per hour. For the most part, even today Silk Screen Printing depends upon manual labour and considerable skill and craftsmanship go to produce the best results.

THE OPERATION

Equipment for production consists of a table with a printing bed. On this the material is placed. On the superstructure of the table is mounted the frame. It is lifted to and fro, but is always returned to the same spot. This is for registration in the same position when the frame is lowered.

The frame may be likened to a letterpress printer's chase. The operator squeezes the rubber blade of the squeegee to force the ink through the pores. When the frame is in the raised position, the paper is to be placed in position under it. Now, the frame is brought down. The squeegee is worked across the mesh, distributing the ink through the stencil. The frame is raised and the printed sheet is withdrawn. It is left to dry on a drying rack. A second sheet is placed in position and the operation is repeated.

STENCIL MAKING

The design is roughly sketched on a drawing board. The stencil paper is fixed in proper position over the design drawn by hand. With the aid of a stencil cutter, the design is now traced. The stencil so cut is placed in position on the base board and the screen is lowered on top. The stencil is gummed to the screen. Care should be taken to gum up all islands in proper position. The non-printing areas may be masked with paper. This will stop the ink penetrating through those portions where the stencil is open. When operating the squeegee, ink is forced through those parts where the stencil is open.

FLUORESCENT SCREEN INKS

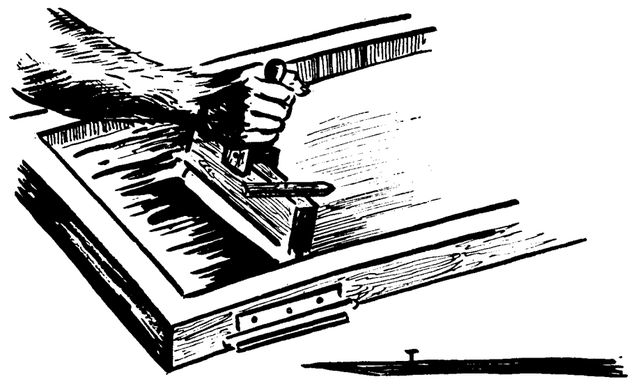
When screen printing is done with these inks, the letters shine and stand out very well. These are also called Phosphorescent inks. The brightness of these inks depends upon the sub-micron size of the fluorescent pigments. The manufacturers claim three months fastness under normal conditions of exposure.

BOOK COVERS BY SCREEN PROCESS

If up to date screen process equipment is available, it is possible to produce high class book covers by the million. It is understood that stencil production also should go hand in hand. Clean sharp results can be achieved for long runs of type even as small in size as 6 pt. Fine detail illustrations and delicate line drawings can be reproduced with startling results. The advantages offered by Screen Process printing can be summarized as follows:—

No blocks are necessary, no complicated ink manipulation, ink adjustment, roller adjustment, impression adjustment or the chemical treatment as in the case of offset. No pre-treatment of the stock as in the case of die-stamping is necessary. Attractive posters, good class book covers using light colours of good hiding power can be printed on one working on dark stock, without any pre-treatment. The use of silk screen process eliminates embossing on the reverse side of the board and enables sharper and cleaner results. A wide range of booklet covers has been successfully produced. Materials for the process are available. If we have the patience to try out this new method, small difficulties that are encountered can be easily overcome. Good craftsmanship, attention to detail and insistence on high standards are necessary for successful results.

The example of Messrs. W.W. Curtis Ltd., Coventry, U.K. can be quoted as a proof of the success of the process in the Booklet Cover Field. In 1947, experiments were started to assess the possibilities



Inked Screen frame with squeegee at work forcing ink through the pores.

and potentialities of the process. A few months later, 70,000 two-colour covers were executed by mechanised methods of screen printing. Now considerable progress has been made. Photo stencils have replaced hand-cut stencils. Extensive range of photographic equipment has been installed. An exceptionally high standard of proofing is necessary to reproduce type matter.

THE INDIAN SCENE

India is far behind in taking up screen process printing. The few attempts made at Bombay and Calcutta have been until recently of an experimental nature. The February exhibition of All India Federation of Master Printers contained attractive exhibits of Silk Screen Printing. Most of these were of alien origin. Messrs. Winstone Ink Co., are pioneering in supplying material for this line. As silk screen process is suitable to be practised as a cottage industry, Indian craftsmen should take up this line. The simplicity of the process, the cheapness and the few items of equipment required and the remarkable results that can be obtained with only a couple of workers lend itself to our slender economy as the most feasible reproductive process for poster and illustrated work, covers, etc.

DRAWBACKS

The shortcomings of the process are stated to be its slowness, the long drying time and the space required for drying racks, its unsuitability for long runs and the high cost of mechanising the industry as well as photo-mechanical methods of stencil production which may take the economical feature out of this process are to a certain extent true and cannot be disputed. The long drying time is due to the thick layer of ink which is used in the screen process. With all these limitations, Silk Screen Process Printing will have a good future in India, in view of its simplicity, if not for its cheapness in accessories.

LOOK AT JAPAN

Japan, which has successfully mastered the secret of cottage industries on a nation wide basis, has much to teach us in Silk Screen Printing too. Therefore, if we look West for inspiration with regard to Gravure, we can certainly steal a look at our Eastern neighbour for emulation as regards Screen process.

Paper Notes

(Continued from page 25)

about 133 miles by rail from Marmagoa Port, which may prove very useful in the long run for the despatch of the products to coastal towns by sea route.

MARKET

The products of this mill will be sold primarily in Bombay, Madras and Andhra States, which are easily accessible by rail or sea from the factory site.

Highly qualified experts have thoroughly examined the location from various aspects and have unanimously acclaimed the suitability of the project. The Chief Engineer of a leading German Machinery Supplier has observed.

"*The Dandeli site is probably the most suitable of the comparatively few presently eligible locations in India for the establishment of a major pulp and papert-making unit based on bamboo.*"

AGREEMENT WITH GOVERNMENT

By an agreement, the Government of Bombay have granted to the Company necessary concessions for a period of 30 years, the royalty payable being Rs. 3-2-0 per ton on paper or pulp going out of the factory and subject to revision after five years and subsequently after every ten years; such revision at each stage shall not exceed 25% of the basic rate of Rs. 3-2-0 per ton. They have further agreed to grant lease or occupancy rights of 200 acres of land for the Factory and Housing Colony.

Blueprint for Printing

(Continued from page 8)

positive element and not a negative one.

HARMONY

The various elements in the layout should produce an agreeable effect; jarring contrasts should be avoided. Discordant notes should be subdued. The type should be appropriate to the subject of the advt., the paper used for printing and the process of printing. The border likewise should match the type face. It should aid and not compete with job as a whole. A too attractive or too heavy or gaudy border swallows the effect of the whole display leaving its own noise alone.

Arrangement of the various masses of type needs careful consideration. Their shape, size and colour should be proportionate and harmonious. Once the eye is attracted, it should be led logically step by step through a natural course.

SPECIFICATIONS

Every layout should not only be attractive but also useful. It is as much an ornament or a thing of beauty as it is a piece of useful guide. The information required on every layout is:—

Size in 12 point ems of the whole matter, *i.e.*, width of job and depth.

Point size of type and body size—handset or Lino, Ludlow or Mono should be mentioned. Amount of leading, letter spacing, blanks to be used are all to be specified. Paragraph indentions or other special indentions such as square, lozenge, pyramid etc. should be indicated.

If initial letters are to be used their size and style, *i.e.*, 2-line 3-line, mortised, ornamental, two colour, etc. Sizes of rules and borders and margins.

ESSENTIALS OF DISPLAY

A good display is calculated to arrest attention and arouse interest, It is suggestive of the qualities of the article. There will be no jarring elements and all will be harmonious. The weights in various parts of the display will be evenly distributed. No top or bottom heavy effect should be there. Weight to one side is also to be avoided. Elements should not be ineffectively scattered, but the display is to make a coherent whole. The various parts of the display should be logically arranged according to the degree of importance and emphasis laid accordingly. The secondary display. elements should be correctly featured. The sales message should be easily understood. Effective use is to be made of white space. Above all the attention should be focussed on the correct part of the advertisement.

PRESSROOM PROBLEMS SOLVED by Graphicus

In these pages **"GRAPHICUS"** *an expert in the printing and allied industries solves month by month the Pressroom problems of the printers. All questions may be addressed to:*

"GRAPHICUS", C/o PRINTINDIA

53. Q. We have a 16 page booklet within which are included 4 full page halftones (fully-bled). We want to impose this as one forme and print at one time as work and turn. We would be grateful if you could suggest a method of imposing to avoid gripper bite. As you know we don't want to go in for the next bigger size of paper or to work it in a bigger machine which we don't have. Size 20 × 30.

A. Assuming the standard layout plan given here does not put the offending pages in the middle of the forme or away from the gripper edge, perhaps the alternative layout given will answer your problem.

Standard Imposition Layout

2	15	14	3
7	10	11	6
8	6	12	5
1	16	13	4

Cut. →

First Fold ↑

An Alternative

11	9	5	14
10	7	2	15
6	8	1	91
12	5	4	13

← Cut.

First Fold ←

The alternative layout entails cutting the fully printed sheet as normally into 15″ × 20″ but the first fold would have to be made across the 20″ width of the sheet instead of down the sheet as in the standard layout. Had you sent the actual page numbers concerned, I may have been able to assist you further. It is possible either layout will put the half-tones on the gripper edge.

54. Q. Recently my firm bought a platen machine. The dealers have supplied an extra rider roller. What is it for, I wonder? Kindly help.

A. It is impossible to say from the information given by you if you actually have a rider in excess to the machine's usual complement of parts or not. Perhaps it has been included by mistake or it may be given as a spare for some reason. I suggest you ask the supplier of the machine.

55. Q. Here is a paper problem brought up by my traveller. What is enamelled paper? Is it the same as coated? Is it superior to S. C.? Are bank & bond one and the same?

A. Enamelled paper is a general term for a glossy coated paper and is superior to super calendered printings. Bank and bond are both writing papers of a similar kind. Banks are usually under 15 lb. demy in weight.

56. Q. We have recently gone in for an embossing press. Can we possibly do die-stamping work on it? How are we to proceed. Is heating required?

A. This question cannot be answered without further details of the type of Embossing Press, you have. I doubt if it can be used for die-stamping.

57. Q In our bindery we generally do the pressing "cold." Our friends in the line appear to prefer hot pressing. Do you have any reason to prefer one than the other?

A. I should say for most purposes, particularly in India, the cold press is preferable and suits the conditions here much better.

58. Q. Recently we had an order to set a big statement. The order was to do it as "Tabular Work." We did it in the usual way with rules. Now the party turns round and says that "Tabular Work" is always without rules and only "Table Work" is with rules. I have never heard such hair splitting distinctions in my life. Printers use these two terms to express one fact. Am I correct?

A. Rules or no rules, that is the question. 'Table Work' or to be precise and correct 'Tabular Work' can be set with or without rules depending on the type of work or the author's fancy. You are therefore quite correct.

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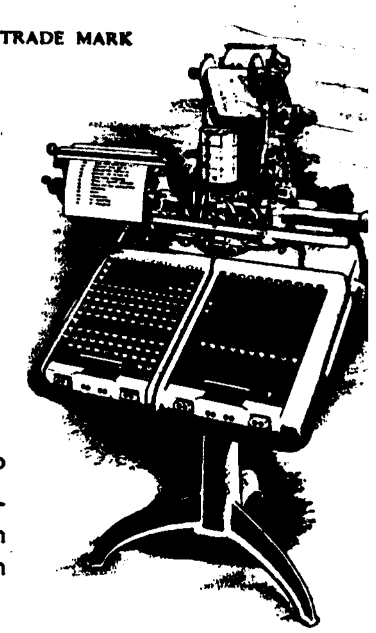

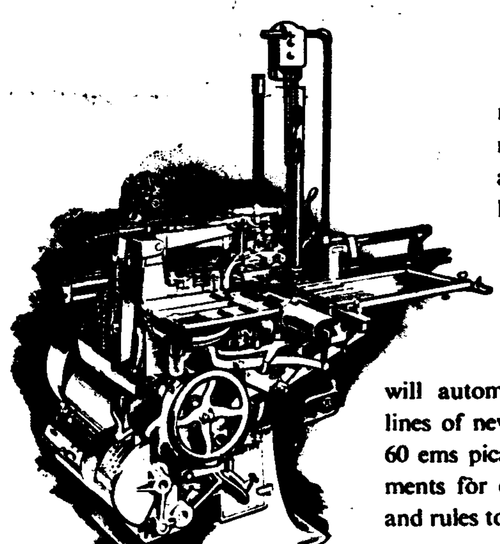

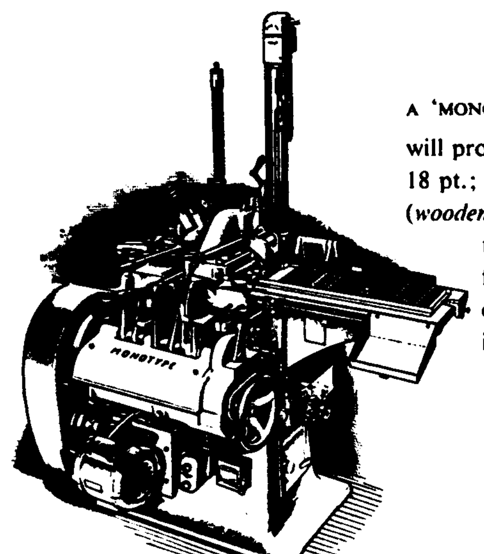

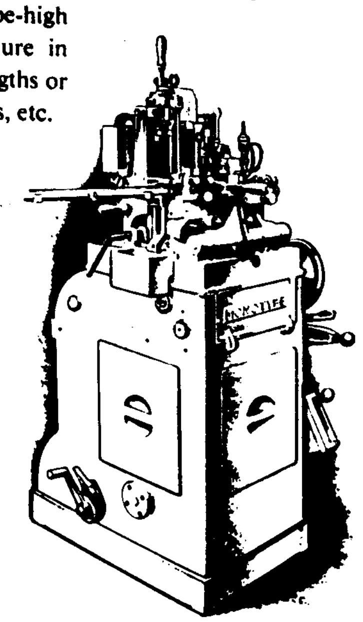

The Editor invites articles on printing and allied industries for publication in the magazine. Articles should be of a good standard and should be neatly typed on one side of the paper only. Payment will be made after publication for the articles published as per the rates agreed upon by the Editor.

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Printindia

A MONTHLY SURVEY OF THE GRAPHIC ARTS INDUSTRIES

VOL. 5] NOVEMBER 1955 [No. 1

In this issue....

EDITORIAL

THE MARCH OF PRINT

Another year has passed. Another milestone is reached. It is time to look back and take stock of our achievements and shortcomings; to chalk out the plan for the years ahead; to march forward, and stop not until the goal is reached.

THE GOAL

What is our goal? Better days for the Printer, better printing for the customer, higher wages for the craftsman, greater productivity and larger margin of profits for the employer, a well-oiled industry for the nation. All these and more are our goals. They are not easy to reach nor cheap to attain. A price is to be paid for everything in this world. This is the eternal law of nature. A long road is to be traversed.

THE ROAD

This road is not the same as the one to Utopia, the dream of the politician, the Heaven of the spiritualist, the tool of the fanatic, the excuse of the fatalist. True, this road is full of hardships, pitfalls and obstacles: scarcity of materials and machinery; dearth of trained hands and training facilities; cut-throat competition and a cost-conscious customer; a young democracy grappling with Himalayan problems, social, political, cultural and international; disunited printers with the AIFMP struggling to bring them together; mushroom organizations enacting "the Peacock and the Turkey" fable; an ever-widening public-sector gradually swallowing every printing item under the sun.

THE GUIDE

The role of an enlightened public and a progressive trade magazine mirroring the mind of the common printer is obvious even in an advanced country like the U.K. In an infant democracy amidst 85 per cent illiteracy, its role becomes more pronounced. It is true that a trade magazine is shaped by the industry and in turn shapes the industry; true too that it follows the printer and at times leads him; that where the road is dark it throws light, where his eyes are clouded it guides.

TORCHBEARER FROM THE SOUTH

Two years back, one November morning, Printers all over India were suddenly conscious of this magazine from the South; they were pleasantly thrilled to witness the emergence of a good and well-produced trade magazine.

For two summers now, this ambassador has made new contacts, strengthened old bonds, in lands distant and near; *Printindia* has become a household word in every printing house, big and small. Every student carries it around month by month as a handy guide for technical matters.

EVENTFUL CAREER

Bharat is called an "ancient-infant" democracy. Likewise, *Printindia* can well be phrased as the youngest giant among printing magazines of the world. Besides covering many Indian Conferences and Exhibitions, opening of the Madras Regional School and other red-letter days of the Indian Calendar, no International Fair passes without our correspondent covering it in full, ready for your eye-ful (of pictures and news, information and instruction). Drupa, Paris Fair and IPEX—all have been milestones in the World Printing Industry. For *Printindia* they have been landmarks of progress. For a two year old, magazine this is no small achievement. Add to this, what a variegated number of articles in all subjects from aluminography to zincography, administration to costfinding, apprenticeship training to management—has been covered in the shiny pages of your magazine!

FROM CHINA TO PERU

Lest we be accused of being immodestly beating our own trumpet, we conclude with but one more observation. Trade magazines are sustained by two things: Readership due to excellence of articles and publicity clientele due to good readership. In short: circulation and advertisements. Our subscribers are spread from Travancore-Cochin at the tip of the sub-continent to the Himalayan health resort Simla. This is not all—*Printindia* crosses the five continents and flies over the seven seas. There are subscribers in

Ceylon, UK, USA, Czechoslovakia and Germany. Our eastern neighbours like Burma, Malaya and Indonesia have developed great love and affection for *Printindia*. As for our advertisers, we take only the leading concerns and discriminating sellers. With all this encouragement and our ever beautiful cover, is it a wonder that *Printindia* marches onward towards the goal that the Indian Printing Industry has set for itself?

WE SEEK TO SERVE

On this, our birthday, we re-dedicate ourselves to the service of the nation, of which the Graphic Arts Industry forms a vital part. If the railways and comunications form as it were the legs of our nation, printing and allied industries can be likened to the nation's eyes, ears and brain. Without printed matter there can be no intercourse of culture at state, national or international level. The cheapest medium of spreading news to-day is the newspaper, the cheapest work of art is still the printed illustration, the best advertisement is only the printed poster, the delicious dish is still looked up on the printed menu: Thus the Printer is the man who is remembered by all sections of the society. Perhaps, he is not sought after, say like the doctor, but a doctor too wants him. An electrician is more necessary than a Printer, but the electrician's manuals are printed by a printer. Printing is not much of a commercial utilitarian industry, but it is a service industry during war and peace, in town and village, in school and office, at home or on the road, during work or in pastime, everywhere, anytime. *Printindia* takes pride in taking her rightful seat among other sister magazines devoted to other equally important branches of knowledge.

COMPETITION

Competition is an essential ingredient in every industry; but for it, there will be no progress in production, no improvement in quality, no widening of horizons. But unfair competition spells disaster in an unorganized industry like ours. Healthy competition sows the seeds for fruitful business. We hope that our printers will eschew price-cutting and other suicidal practices and unite themselves into a powerful industry of a great country. *Printindia* will continue to serve the nation, to promote the larger interests of the Graphic Arts, to train young men better, to strengthen the hands of the premier organization, *i.e.*, The All India Federation of Master Printers, to encourage better exhibitions and more conferences, to implement resolutions, to spread knowledge and information, to place before the country progressive views, new techniques and up to date equipment. Then we will have reached our goal and justified our existence.

Jai Hind!

COMPOSING ROOM'S QUOTA OF FAMOUS MEN

Many famous men have taken to typesetting by necessity or as a hobby. The world knows of the great American statesman Benjamin Franklin - scientist, diplomat, printer and publisher as well as editor.

V. Shantaram, India's Ace Director, whose "Jhanak Jhanak Payal Baje" is running to stormy houses in the City, was a Compositor in Bombay, before he lime-lighted into the Silver Screen.

M. P. Sivagnana Gramani, the problem of Tamilnad politicians and leader of the Tamil Arasu Kazhagam, was a compositor for some time.

Layout and Lettering

By

SRI RAMAKRISHNA NARAYANAN

The article "Blueprint for Printing" in the October issue has evoked many appreciations from our readers. This new feature dealing with various aspects of typographical arrangement will be useful to students in printing and others in the commercial art line. Our Layout Expert will be pleased to solve any layout problems in these pages from PRINTINDIA readers

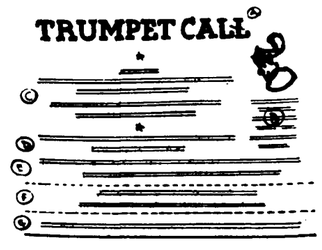
Two Newspaper advertisements have been taken at random from a city newspaper for the subject of this month. The healthy criticism

that is offered is not against the advertising agency, the advertisers or others responsible for producing these displays. What is aimed at is the proper appreciation of the essentials of display, the degree of emphasis given to various units and the adequate utilisation of space available for the advertisement.

Both advts. lack appropriateness to the subject, *i.e.*, fabrics in the choice of type face. This can be explained off by taking shelter in the excuse, that these are newspaper advts., produced through stereotyping, on a fast-running rotary, printed on newsprint. Even so, lighter faces or even bold italic might have been more apt.

The one relating to woollen fabrics is badly arranged. A lot of caps have been used rendering it un-readable. It should be remembered that capitals are never intended to be used in mass. The two-column width of the display has not been utilised properly for featuring the main message of the piece, *i.e.* "Kashwool Fabrics are guaranteed All Wool etc." Instead the central part of the advt. where the reader's eyes will naturally fall is occupied by "varieties at a glance." Even an hour-long glance will not interest the reader in the block caps. The alternative arrangement given makes judicious use of the space available. It should be noticed that the matter is arranged as a long one instead of a two-column one. The shape of the advt. is appropriate to the amount of matter available, rendering the matter more effective.

The advt. "Trumpet Call" exhibits a sad state of affairs. The available white space is wasted on either side of the trademark and all the matter is huddled solid beneath. The message of the piece is lost, if it is anywhere at all. Every advt. requires to be split up into convenient units. Each unit is allotted the emphasis consistent with the wording contained in it. What do we see here? Everything is set up in one solid mass, the same size is



used throughout. This is a typical arrangement to show how *not* to set up a display. In the alternative layout suggested, the matter is arranged in indented lines. This means more legibility. It shows how best the advertisement can be set up in the existing limitations.

The Role of Chemistry in Lithography

By

SRI LAKSHMAN P. MISRA

Atomic energy and nuclear physics are not the achievements of the Physicist alone. Physics separates or splits the atom. Chemistry brings things together. The Printer, in addition to being a metallurgist and physicist, should also be a chemist. This article shows us why.

All substances in the world are, in a sense, chemicals. Similarly, it will not be far too wrong to say that all changes are brought about by chemistry. The basic fundamental concept of chemistry is change in form. An understanding of the meaning of chemistry is necessary for intelligent and efficient working of any trade, business, profession or industry.

Printers' ink is a chemically complex substance, and so is paper. Chemical re-actions take place on the printing surface by inks. In photography and Photo-lithography chemistry plays a vital part and more than a hundred chemicals are used daily in the two last-mentioned, for production of process plates and printing. It will be now appreciated that it is not academic or idle curiosity that has made the author to undertake this brief survey of the role of chemistry in this branch of the Graphic Art.

METALS AND NON-METALS

Students of elementary science will be familiar with *physical change*, which is only change in form and not in substance; *chemical change* which is change in composition; *mixture*, where two substances are brought together without change, and *compound* which denotes a change by such bringing together. An expansion of a metal rod on heating is a physical change, but further heating will bring about chemical change by the metal combining with oxygen and forming oxides. Anything that cannot be broken into different substances or that which cannot be formed by combining two substances is an *element*. All the substances in the world are classified into 95 elements. There is no substance known to science outside this orbit. These 95 are classified into metals and non-metals. The metals are :—

Aluminium
cadmium
calcium
chromium
cobalt
copper
gold
iron
lead, magnesium, manganese
nickel
potassium
silver, sodium
tin
zinc.

The non-metals are :—Argon, bismuth, boron, bromine, carbon, chlorine, fluorine, helium, hydrogen, iodine, neon, nitrogen, oxygen, phosphorous, sulphur, xenon. Most of the metals and non-metals are used in the printing industry in some form or other. When oxygen combines with another substance an *oxide* is formed. Carbon + oxygen = carbon oxide, zinc + oxygen = zinc oxide etc. The process of combining is called *oxidation* and the substance which gives its oxygen away is the *oxidizing agent*. Oxidation generates heat and therefore heat promotes the process of oxidation. An example of this can be found in the oxidation of our food to maintain our body temperature. The slow drying of zinc plates cause oxidation as water which contains 88 per cent oxygen gives some of this to the zinc at the time of evaporation. Oxidized zinc plates will not print well.

Varying quantities of constituent substances produce different chemical compounds. Therefore under certain conditions, we can predict definite re-action on the part of the compound under those conditions. Examples of this are found in water = two atoms of hydrogen to one of oxygen. When Oxygen is increased from one to two, *i.e.*, H2 O2 is Hydrogen Peroxide. Similarly if we take Ammonia = one atom of nitrogen and three atoms of hydrogen; by having 3 atoms of nitrogen and one of hydrogen we get hydronitric acid. Due to the foregoing it is imperative in all handling chemicals, there should be no guess so far as quantities are concerned. They should always be accurate, the chemicals should be pure and maintained in that pure form; contamintion and oxidation should be prevented. The order of mixing them also should be scrupulously observed. Keeping chemicals without cork or exposed to moisture, keeping them in paper, etc., should be avoided.

ACIDS

Other than non-metals and metals we have to contend with what are known as Acids, Alkalis and Salts. These three are the substances formed, of course from metals and non-metals. Acids may be organic, *i.e.*, from animal and vegetable tissues. They may be inorganic, *i.e.*, manufactured by artificial means. When considering the formation of acids, we come across an important ele-

ment called Hydrogen. Being a very light substance, its atomic weight is used as basis for measuring other elements. Hydrogen along with oxygen, with which it mixes freely, together produce many compounds with other elements. Petroleum, natural gas and water have hydrogen as a constituent. All acids contain hydrogen as an essential part.

REDUCTION

When acids re-act on metals, hydrogen is obtained. Zinc is usually treated with acid to secure hydrogen. When water is brought into contact with metals, the hydrogen in water is displaced and this is another method of obtaining hydrogen. When a substance containing oxygen gives out its oxygen, *reduction* is said to result. In other words, just as a substance combines with oxygen and produces what is called oxidation, reduction is the reverse of oxidation. Mathematically illustrated. A + oxygen = oxidation. B—oxygen = reduction.

Water, chemically hydrogen oxide, is a compound available in plentiful supply in the earth. Its power to dissolve any substance and hence its use as a solvent as well as its power to oxidize substances are very important factors.

When a substance is dissolved in a given quantity of water to the maximum degree, when it can no longer dissolve any more of the substance, *saturation* has resulted. The amount of any substance that can be dissolved in water depends upon the the nature of the substance and the temperature of the water. On combining with a substance, water becomes a compound.

BASES AND SALTS

We have seen that metals form oxides by combining with oxygen. These oxides with water form *bases*. Non-metals combining with hydrogen form *acids*; non-metals combining with oxygen form oxides and on further combination with water form *acids*; acids and bases combined produce *salts*. A soluble base is called *alkali*. The hydrogen of an alkali is not easily displaced. But the hydrogen in an acid is easily displaced by contact with metal.

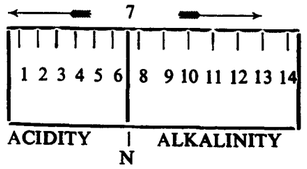
The chemical re-action which takes place when acid and metal or acid and alkali are brought together is called *neutralization*. Because, when they combine, neither alkali nor acid remains, but a new compound called *salt* emerges. When all the hydrogen in the acid is displaced, then neutralization is said to be complete. Under incomplete neutralization, *i.e.* when all the hydrogen in the acid is not driven off, then an acid salt will result if acid is stronger, or an alkali or basic salt will result if alkali is stronger. Neutralization can be encouraged or prevented in Offset Lithographic printing. In fact, the fundamenatal principle of Lithography rests on the chemical play or re-action or absence of re-action of grease against water, of acid against alkali. The Drama of Lithography is enacted by playing ink against water, acid against alkali, or bases.

STRENGTH OF ACID AND ACIDITY OF SOLUTION

Even weak acids can neutralize an alkali. When an acid is dissolved in water, hydrogen in the acid separates from it and remains active. The strength of acid depends upon this dissociation of hydrogen. The proportion of the displaced hydrogen influences the acidity of the solution. A large quantity of a weak acid is better than a small quantity of strong acid for withstanding neutralization. This is because the amount of acid that can be neutralized by a given quantity of alkali depends upon the quantity of hydrogen present and not the quantity displaced. For example acetic acid which is weak in acidity can be used in large quantities to resist neutralizing action, as a large amount of hydrogen is suppllied.

MEET MR. pH

The two letters pH have baffled many laymen. This symbol is an expression showing *concentration of Hydrogen ions in a solution.* As we know, Units of measurement exist in various spheres. The degrees of a Fahrenheit or Centigrade show the intensity of heat. On a Baume Hydrometer scale, the density of substances can be found. Likewise on a pH scale sketched below the intensity of acidity or alkalinity can be found.



From the above sketch it is clear that the scale extends from 1 to 14, having on the one extreme the acids and the alkalis on the other. At reading 7 is reached the neutral point. When a substance has pH 7 it is neither alkaline nor acidic in property. All numbers below 7 denote acidity, the lesser the number the more intense is the acidity of the substance. Alkalinity is denoted by the numbers from 7 onwards, the alkalinity increasing as the numbers rise. No one should presume that pH scale indicates the quantity of acid present in water. Not at all. pH test only shows the *activity* of the acid. Addition of water to the solution will make very little difference to pH, although the solution may be unstabilized thus quickening neutraliza-

(Continued on page 25)

THE CONVENTIONAL versus THE HEIDELBERG

By

"S"

The author, a top-ranking authority on machines, their erection, maintenance, repair and servicing, has made a special study of the problem of platens and the Heidelberg solution. Few engineers can explain as Sri "S" the mechanical highlights of an acceptedly superior machine which the Heidelberg certainly is. The recent exhibition in which the Heidelberg figured prominently followed by a phenomenal sales-era makes this article rich in topical interest.

THREE METHODS

All printers are aware of the three methods of imparting impression: The flat printing surface and the flat impressing surface or the platen. The flat printing surface and the cylindrical impressing surface or the cylinder machines and the cylindrical impressing surface impressed by a cylindrical impressing cylinder *i.e.*, the rotary. For speed the last one is the best. For fine impression and large printing areas the second is good. The third is good enough for a limited printing area, say upto Demy Folio ($17\frac{1}{2}$ x $11\frac{1}{4}$). It is also good for a greater dwell and solidity and hence perhaps a thicker layer of ink. Cardboard work has got to be done on platens for fear of a crease or due to sheer impossibility on a cylinder (e. g., photo mounts).

TWO KINDS

Platen presses fall into two distinct classes, which are familiarly known as direct and clamshell. The latter term is evolved from the prong-like surfaces of a clamshell. A direct platen has a stationary bed and reciprocating platen, the impression taking place at right angles. In the clamshell, both the bed and platen move and when they meet, impression is effected. The latter has not been a satisfactory type of imparting impression due to the attendant defects of slur and bad register. Further an absolutely correct packing is essential for clamshell platens.

In addition to the above classifications, yet another division is possible, *i.e.*, into Heavy and Light platens. Naturally the clamshell type is not suitable for Halftones, full-size tints and other heavy duty or work requiring better inking and more solidity of impression. Clamshell platens are provided with disc inking while Art platens have a drum. Cutting, embossing and creasing and carton work calls for extraordinarily heavy impression. Some of the oldest light platens are the Cropper, the Falcon, the Arab, the Golding, Harrild's Bremner, Chandler & Price, etc.

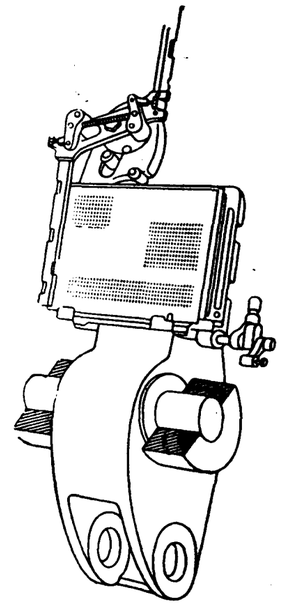
WORKING PRINCIPLES

The main driving shaft carrying on one end a fly wheel has a small toothed wheel. This small wheel transmits power to a large cog-wheel. The camway inside this actuate the platen from a horizontal position to a vertical one. Two strong arms cause the bed to move forward and meet the platen for impression. A rod outside the large cog wheel working loose on fixed bearings draws the back frame with which the other end is connected. This has a crank action. Large screws behind the bed make it perfectly level with the platen.

We have seen that the platen press makes impression with a vertical or almost vertical contact between platen and the printing surface or forme. The forme is usually clamped against the bed of the press, the paper is laid to the guides on a flat surface; the platen is raised, carries the paper to the forme which has by now been inked. After printing, the platen lowers itself for the printed stock to be taken delivery of and for another sheet to be fed in. We have also seen that the whole of the printing surface comes in contact with the paper at one time.

GREATER OUTPUT

The ever increasing demand for higher output without any loss in quality has resulted in the invention of automatic platens of a great variety. The Super-speed Original Heidelberg is in use all over the world. In India too, it has become the last word in fine printing machinery. In addition to being fully automatic, it has the feeder as an integral part of the machine.



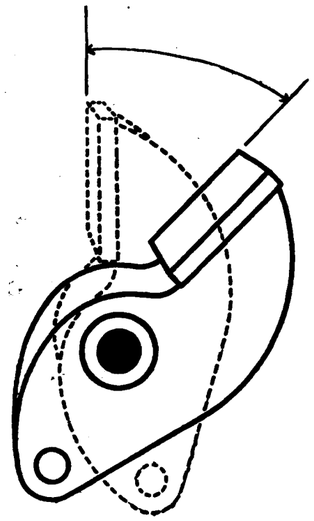
Lock up the Matter, at Left, Right, Top or Bottom

There is no need to lock the forme or the job in the centre of the bed in the Heidelberg. Every printer knows that the matter has got to be set up in the centre to ensure right kind of impression, or, in other words the maximum amount of impression the machine is capable. Further, locking up to a side will produce unequal wear of the flat surfaces resulting in uneven level. The positive geared movement of the swinging platen on the Heidelberg prevents one-sided strain. The platen is sturdy, made of a special alloy and the platen shaft is of high quality tempered steel. Large rigid bearings support the platen shaft and the platen is connected to the shaft. There is no appreciable wear as there is little movement of the shaft while the machine is in operation. It is therefore quite clear that even after prolonged usage, there cannot be any cause for slur or the platen yielding to impression.

Due to the necessity of imposing the matter in the centre on other machines, it becomes necessary to re-set the guides, the movement of the sucker bars and associated parts. Further many jobs do not lend themselves to be imposed in the centre. Such formes on other machines make slur a daily feature and many makeshifts such as using pieces of furniture are called for. Machine minders have got used to the necessity for locking their matter in the centre of the chase. Only a few know of the reason therefor. Only in machine with side arms this is necessary to avoid unequal wear and slur.

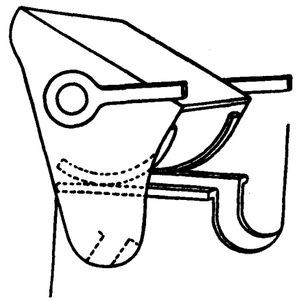
FAST RUNNING AUTOMATIC'S DESIGN

Due to the high speed potential of the Heidelberg platen, there is much reserve speed even when the machine is operated at top speed. The platen, its shaft and other connected parts are incapable of easy wear. The oversize shaft and the positive movement and the short reciprocating time of the Heidelberg are for the high speed. The locking movement of the side platens and the additional locking movement while on impression are not positive movements actuated by cams. When the speed is higher the platen will have a tendency to rise. This necessitates various guides and mechanical devices and locks and other constructional elements. The liability to wear in any or all of these is all the more greater. This results in deterioration in quality of printing, especially when the machine gets older.



Positive and Short Movement

All automatic platens are evolved from a hand-fed one. Unlike these, the Original Heidelberg did not originate from a hand-fed platen. A quarter of a century back, the inventor, not a mere printers' engineer but a printer himself, designed this as a fully automatic press from the very beginning. Therefore the feed and the delivery are not merely placed in front of the machine but form an integral part of the machine itself. This makes the machine a technical unit. A Heidelberg without its automatic mechanism is inconceivable.



Rocking Movement of Side—Arm Platen

Hand-fed platens are in the first instance designed for slow feeding. At some later date, when an automatic feeding mechanism is fitted, it is difficult for the machine to develop double or treble its usual speed. This is like making a cart horse run a Guindy race. In such machines, for short runs the automatic attachments are put out of action as they are incapable of adjustments or take too long a time—in short they are an encumbrance. The removal and replacement of the automatic adjuncts involve time. Time is a factor not to be ignored by the printer of the present day. It is true to say that time is money. Time lost is money lost.

THE HEART OF HEIDELBERG

The entire mechanism of the Heidelberg Platen is placed inside the interior part of the machine and is centrally lubricated. Paper fluff and dust cannot reach and clog it. The blowing air generally stirs up dust which in turn clog

(Continued on page 27)

The Importance of Graining in Lithographic Printing

By

SRI B. C. DATTA, B.A., Dip. Tech. (Leeds), F.R.G.S., A.I.P. (London)
Manager, Map Reproduction Offices, Dehra Dun

Plates have to come to stay and graining them is half the job. The technique of plate graining is ably handled by the Wizard of Lithography, Sri Datta.

Due to the lack of porosity in zinc and aluminium metals, thick surfaces have to be grained or given a matt surface which serves as an anchorage for the design or image and also supplies small reservoirs for holding the necessary amount of water for printing purposes. Thus unlike stone, they are prepared both physically and chemically due to the non-absorbent nature of the metals.

Basically there is not much difference in procedure in graining a polished zinc or aluminium plate as compared to the re-graining of used plates. To remove old work from used plates, apply turpentine to remove printing ink.

Caustic soda solution (caustic soda 1½ lbs. to one gallon of water) for zinc plates and sulphuric acid solution (50 c.c. sulphuric acid in 1000 c.c. of water) for aluminium plates are used for removing the old images from the plates by way of polishing with felt. The plate is washed clean with water before it is fixed in the graining machine.

GRAINING MACHINE

The graining machine consists, principally, of a wooden tray about 6"–8" deep, and has metal protection at parts which are liable to wear and tear. The tray rests on steel balls, one at each corner and these rest in cups attached to the frame-work of the machine and must be well lubricated. (Do not lubricate when the machine is running.) A slight circular motion is given to the tray by an eccentric underneath. This oscillation during each revolution effects the path of the travel of the marbles in the tray. When the plate is fixed in the tray, enough marbles are put to cover it plus 25% on top to give depth to the grain; graining powder evenly distributed, and sufficient water to moisten it sprinkled over; then the machine is set in motion. The marbles will revolve and, at the same time, will move in small circles.

This action produces a fine, even, conical grain on the plates. A grainer with a very short stroke and high speed will cause the marble to skid rather than to roll. A sliding marble causes unevenness and wear (makes flat grain) and gives a scratchy grain, because the abrasive (powder) is driven along the surface rather than into it. The ideal speed is that in which the marbles roll freely and have sufficient time at each change of direction to force the abrasive into metal to its maximum depths. Usually, the speed is kept at 180 R.P.M. and oscillation being 2½"–2¾".

MARBLES

Various kinds of marbles are used. They vary in size, density and toughness, and may be divided into three classes — (1) Wood, (2) Flint, Glass, Porcelain, (3) Steel.

Steel marbles are roughly three times heavier than glass, and the glass is twice as heavy as of wood (Lignum Vatae—a black and heavy quality of wood which does not float).

The size of the marbles the texture of the grain. Wooden marbles give a coarse grain and have a deeper surface in the plate. Steel marbles cut deeper than glass or wood and are also used in graining recently introduced steel plate in lithography and the abrasive used is carborundum. Steel marbles do not wear so readily, but they wear down the abrasive more quickly. One of the disadvantages of steel marbles is their tendency to rust. They also cause electrolytic corrosion spots on zinc and aluminium if they are allowed to stand wet. For rust, soak in a 2% to 5% solution of potassium bichromate. Majority of our printing presses use river sand and glass marbles of 1" for general graining purposes.

ABRASIVE

Several abrasives (powders) are used such as, sand, pumice, glass, emery, flint and carborundum.

CARBORUNDUM

It is widely used owing to its durability (hard metal) and wear, and the extra cost of this abrasive is usually repaid by its economy and results. It is very keen in its action on the plate and a comparatively small quantity is enough for graining. The best advantage is its cleanliness in comparison with sand as it is free from accumulation of slime.

These abrasives are supplied in various grades:—coarse, medium and fine and usually classified as so many holes or hole.

HOW TO WORK

The plates are firmly fixed in the bed of the machine, sprinkled over with a quality of abrasive over the

(Continued on page 31)

Picture Printing

By

SRI T. KRISHNA

Books and magazines of the present day are becoming more and more illustrated. The function of illustrations for the spread of education among children and of knowledge among adults cannot be overemphasized. In this article the author has explained at length the production of line illustrations

There is a growing demand for pictures in the printing field. As a result, good commercial artists, process cameramen and etchers and re-touchers are in great demand too. Thanks to the growth of newspapers and periodicals, the invention of fast-running rotary printing machines, an unlimited field exists for properly trained hands in this branch of the Graphic Arts industry. Clever mind and clever hands are necessary for the production of good illustrations. A knowledge of chemistry will certainly be a great asset. Every business, industry and profession needs illustrations and artists who could make them.

Original design as drawn by artist

EARLY WOODCUTS

Blocks are sometimes technically termed 'cuts'. This is due to the first woodcuts used in China. In fact the earliest of printing was done by copying manuscripts on wood. The letters which stood in relief were smeared with ink and a piece of parchment was pressed heavily upon them. Illustrations were reduced to lines which were then carved on wood. Considerable skill and care were essential to produce woodcuts. The woodcuts were followed by wood engravings and steel engravings. These had the printing portions in a lower level into which ink was applied and before printing the higher portions were wiped clean.

LINE BLOCKS

The word "block" to describe a printing surface for reproduction of illustrations is perhaps derived from pieces or blocks of wood which were the forerunners of the present-day mounted plates. After the invention of the camera, what is known as the "Line Block" came into use. In this the object to be reproduced is photographed. The negative thus produced is printed on to a prepared plate of zinc instead of to a bromide paper. The zinc plate having the illustration on its surface is then etched with acids. All parts of the metal surface, where the photographic impression does not appear are etched away. The printing portions alone are allowed to stand out in high relief. The line blocks are more accurate than woodcuts as they are photo-mechanically etched, and more durable. They are also much quicker to make than the laborious woodcuts. It is true that woodcuts have their own characteristic beauty which cannot be equalled by any other process. This is the reason for the survival of woodcuts in spite of competition from modern reproductive process.

Reversed block of the original

HALFTONE

In Letterpress Printing, only solids can be reproduced. In other words, there are only printing and non-printing surfaces which can either completely print or will be completely left out. The various gradations of tones are obtained by breaking the subject into a series of dots or small solids. These vary in size depending upon the amount of light reflected from the copy. The subject in the solids has white dots in black background while in the highlights the dots are black in white background. The breaking up of the subject into dots is done

by interposing a crossruled screen between the lens and the sensitized glass plate. Thin lines are drawn on this plate glass horizontally and vertically equidistant from each other. The negative thus obtained has the subject broken up into dots varying in size according to the values of the sketch that is being photographed.

The number of dots per square inch is determined by the fineness or coarseness of the screen. For fine paper a closely ruled screen is used to have more tiny dots and for a coarse paper a widely spaced screen that would give bigger dots is used. Using a fine screen on coarse paper would result in filling up of the minute dots as the ink will not readily transfer on to the rough surface of the paper. Printing a coarse screen on fine surfaced paper will show the breaking up of the picture by means of large dots.

SCREENS

Halftone screens are available in 55, 65, 85, 100, 120, 133, 150, 175 and 200 lines to every square inch.

Partly reversed

Only the detail reversed leaving background in tact

Although screens finer than 200 lines are occasionally resorted too, there appears no sufficient justification for so fine a screen. Newsprint, M.F. and other coarse surface papers need upto 85 line while S.C. papers will take from 100 line. Real art paper is necessary for 133 screen onwards. Apart from these [conventional type of screens there are special screens to give special effects such as linen screen resembling a fabric, grain screen which converts the subject into closely or sparsely strewn sand or other granular substance.

MECHANICAL TINTS

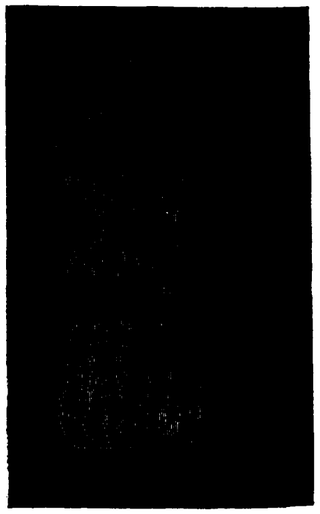
A line drawing has the advantage of being well printed on any quality of paper, smooth, medium or rough.

When a line block is printed on super calendered or coated stock, all the delicacy of the design is well brought out. The strength and sensibility is far more interesting than halftones. The impressed ink is left hard and brilliant on the smooth surface. When the same line drawing is reproduced on newsprint or other coarse stock, the lines tend to thicken. Nevertheless, the delicacy of lines is still retained. This is due to the thickened lines printing a trifle grey as the paper is absorbent. These two things can be observed by comparing a line illustration, say a cartoon in "Filmindia", printed on Art paper with one appearing in the Bombay daily "Times of India". Another advantage of a line drawing is that it can be reduced and still print with clarity.

With the advent of mechanical tints or shades, an endless variety is possib e from the same design. More than one colour can be printed from the same original drawing using tints only for subsequent workings.

Wherever the tints or shades are required, the artist need not shade them in full. He need indicate only the tint number against the part which is to be shaded. Various reference numbers on various parts

(Continued on page 19)



Background reversed, detail tinted

Saga of Printers' Ink

By

SRI DINA NATH BATRA

Good paper, perfect printing surface, up-to-date machines and an expert machineman will NOT produce high class printing. Why? Good Ink is a necessary adjunct. The importance of ink and the need for a comprehensive knowledge of their nature and behaviour under varying conditions of working are discussed in this article

"Pen is mightier than sword." Certainly not a pen without ink! The importance of ink has been appreciated by writers long before printing was ever thought of as a practicable feasibility. The scribes of old had their own recipe for preparing their inks. India had much to offer in the way of manufacture of dyes and pigments, which form the essential ingredients for the making of inks even today. The word "Aniline" throws some light on the origin of coloured pigments. "Anil" or "Nil" in Sanskrit means blue or colour. Most of our ancient dyes were vegetable dyes or other earth colours. In time these were superseded by German dyes more or less of synthetic origin. Drawing ink is still known as "Indian ink." This is a clear reminder for our industrialists to get back our country's name in the manufacture of inks.

CHINA DOES IT

The Republic of China, which is much despised by the West, is responsible for the product which we call ink today. No doubt she has to her credit a score of other inventions in the field of printing and other branches of advanced knowledge. Indeed, long before the West had any conception of Printing as such, China was printing her own books. Paper was first made in China by one named Tsai Lun. Nearly 2500 years before Christ, a Chinese nobleman, Tien Tcheu, made the product called ink. About the last years of the sixth century, ink for printing was manufactured on quite a large scale by one Tsu Ming. Pi Sheng who was the forerunner of the Austrian counterpart Gutenberg, invented moveable types. With this, ink consumption increased a million fold.

WRITING INKS

It is natural for people to think that more ink is used for writing. Actually, only a tiny fraction represents writing inks. This is usually a pigment dissolved in water. It easily gets spoiled although a certain amount of preservatives is used as constituents. Writing inks are available in all colours such as black, blue-black red, violet, green, etc. Fountain-pen inks are specially made so as not to corrode or chemically re-act on the costly nibs. Writing inks require writing paper, hard sized, so as to be written with the watery ink. The latest in writing inks is the one called "superchrome" which dries as you write.

INKS FOR THE PRINTER

Experts describe the printers' ink as a paint-like substance. The statement is true to some degree. But the difference between a paint and printing ink lies in the method of application. While paint can be applied manually or by spraying, printing ink cannot be satisfactorily applid likewise but only mechanically. Printing Ink is defined as "a fine mixture of pigments and other ingredients in a viscous vehicle."

INK MAKING

The manufacture of printing ink consists of three specialized branches: 1. Preparation of pigments and dry colours from the raw materials. 2. Preparation of oils, varnishes and other vehicles. 3. Mixing and grinding these two. Very costly equipment and advanced technical knowledge are necessary for making dry colours. Therefore they are bought from firms which specialise in this field. Similarly some firms specialise in the making of varnishes and vehicles. The Shalimar people make very good vehicles not only for the ink-making trade but also for paints and other purposes. Only the mixing and grinding are done in the average Indian Ink factory.

After selection of the proper ingredients such as the pigment and the vehicle, a formula or recipe is evolved according to the requirements called for in the finished product. This formula shows the names of various constituent ingredients, respective quantity, and at what stage each is to be added. Arriving at the proper formula is very important and calls for considerable experience. Now, all the substances are put into a mixer and thoroughly mixed. Proper mixing is important as otherwise more grinding time will be taken at the grinding room. The next process after mixing is grinding in a mill containing rollers running at different speeds. Generally much time is not allowed to elapse between mixing and grinding. Otherwise there is the possibility of the mixture losing some property, change in colour or cause other unexpected chemical changes. The ink after being passed through the

rollers once, is scraped off and fed into the mill again and again, several times until it is ground to a fine consistency. The number of times that the ink has to pass through the grinding rollers depends upon the following factors :—

1. Coarseness or fineness of the original pigment. 2. The quantity of the pigment in relation to the vehicle used. 3. The nature of the vehicle, *i.e.*, whether viscous or not. 4. The quality desired in the ink that is being manufactured. Grinding is a very important job and should be done properly. After grinding, the ink may be put through the mixer once again. This ensures homogeneity of the ink. After manufacture the ink is tested for the various requirements. A good ink should —

- Print sharply
- Print cleanly
- Print legibly having the desired colour
- Dry on the paper within a reasonable time
- Not dry on the work or on the rollers
- Have a good covering capacity and colour strength
- Be opaque or transparent as is desired
- Be suitable to paper, process & machine used for printing.

PHYSICAL AND OTHER PROPERTIES

Printing Ink is a complex chemical substance and has many physical properties important to the printer. *Consistency* of the ink depends upon various factors such as the temperature, age of ink and the amount of agitation. After manufacture, the ink changes consistency until it forms into a semi-solid substance, when it is said to have "liver"ed. Inks stored up in a hot room, tend to affect the body of the ink. It becomes thinner. In cold temperatures it is likely to thicken. Electricity sometimes interferes with the body structure. A seemingly solid ink may be made to break and flow by agitation. This is due to re-arrangement of particles.

The "Long" and "Short" of ink: Some inks are described as long and others short. These qualities depend upon the size of pigment particles. The larger the particle the longer the ink; short ink consists of comparatively short particles of pigment. The degree of dispersion also affects this property. Well dispersed inks are long.

The *Viscosity* of the ink has much to do with the working qualities of the ink. This can be measured by a viscometer. This shows the resistance or rigidity offered by the ink to metal cylinder or plate immersed in it.

A short ink has low cohesion, *i.e.*, when drawn between our fingers, it breaks suddenly. An ink which allows long strings to be drawn when lifted with a push knife, is termed long. The length of the ink to a large extent is based upon the cohesive forces of the liquid part of the ink. But the ratio of the vchicle and the pigment, the specific gravity of the pigment, and other factors also influence the length of inks. The proper transfer of inks from the roller to the printing surface and then on to the paper is due to the property known as "adhesion." This should not be confused with the foregoing property called "cohesion." A solid and liquid will have more adhesion.

What makes the ink not to flow? What makes it sticky? What is the reason for ts pull? The answer to all these is one word "*tack.*" This property of the ink makes it resist deformation and flow to a certain extent. For testing this quality, adhesion is necessary.

Opacity is the hiding power of the ink. If an ink can obliterate the background, then it is opaque. If the colour of the background can be seen through, then it is transparent.

Covering capacity is the amount of ink required to print certain number of impressions of a specific area. This cannot be assessed accurately due to too many factors that have to be taken into consideration. Each authority gives his own pet coverage tables and the difference is as much as double. For example, type matter printed on M. F. stock requires one lb. of ink for every million sq. inches. In other words, says this authority, a thousand impressions of a thousand sq.inches need one lb. of ink. According to another, this is exactly half. All that we can say is that each press should maintain its own out-put tables or production records which should show the amount of materials spent for every job. From this a reasonably correct forecast of the quantity of ink required for similar work can be computed. But we should remember, the quantity varies according to the quality of paper, the printing surface, the colour of ink, etc. Planographic inks are consumed more per thousand sq. inch than letterpress inks. Coated stock requires half as much as offset stock. Among coloured inks, black has the most covering capacity and yellow the least. Therefore, more yellow ink is required to cover the same area than other colours. A cover stock requires more ink than M.F. Antique requires more ink than enamel. A good ink (*i.e.*, which costs more) has a greater covering capacity than a cheap ink. Therefore, the costlier inks are *cheaper* and more economical, although this statement may appear to be a contradiction in terms.

(Continued on page 29)

From Our London Correspondent

L. & D. BROWNE

ASTRAFOIL BASE FOR NEGATIVES

Information continues to be released by the Astrafoil Research Laboratories concerning the new Astrascribe process, which attracted considerable attention when it was shown at Ipex for the first time.

One important application is the use of Astrafoil transparent sheeting as the base for positives or negatives. The principle of leaving work standing on the plate in view of the probability of a reprint presents a number of problems. Zinc plates are too expensive to tie up indefinitely when they can be regrained and used again, while they are cumbersome to store and are liable to deteriorate due to oxidation unless thoroughly gummed-up and frequently examined.

Printing to metal from Astrafoil involves only a single exposure on the printing-down frame, and the image is indestructible and not affected by humidity or temperature. The originals are particularly valuable in the case of colour or label jobs involving expensive process and step-and-repeat work, and many label printers are now putting down Astrafoil multi-positives or multi-negatives to save step-and repeat work on plate re-makes. When stored these are invaluable for reprints.

EASY TRACING OF MAPS

It is claimed also that map-making time and costs can be reduced to a third, and far greater neatness and accuracy obtained by using specially coated sheets of transparent Astrafoil as the drawing surface, the coating being translucent and enabling easy tracing. A ruling or drawing pen is dispensed with and lines of uniform thickness are drawn by removing the coating with a special pointed stylus, the width of line being regulated by using different thicknesses of stylus. Apart from complete uniformity of line thickness attained, work is prepared far more quickly, and lines can be ruled or drawn far closer together than was hitherto possible. Corrections are also

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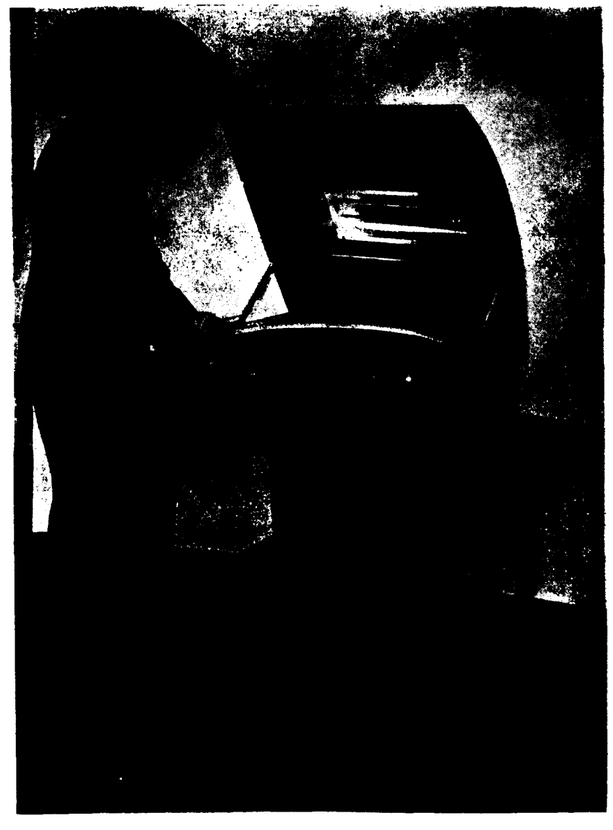


Minimum Mark II Whirler

BOUQUETS TO PRINTINDIA FROM FAR AND NEAR

PATRA CHIEF GREETS PRINTINDIA

Greater technical knowledge and the exchange of ideas are two of the most important factors likely to promote better quality and efficiency in the printing industry. The more that is known about the printing processes, the better for the trade as a whole and in the end better conditions for those who work in it. It is with these thoughts in mind that I congratulate *Printindia* on the completion of its second year of publication, for this journal has provided a much-needed outlet for the steady flow of information about new developments in printing and allied subjects from research organisations, manufacturers and supply houses.

It is the trade journal which provides the link—a vital one—between the manufacturer, the supply house and the technical organisation with the printer. *Printindia* is discharging its functions with great success as I am sure it will continue to do in the years to come.

Dr. G. L. RIDDELL, F.R.I.C.
Director of Research,
The Printing, Packaging and Allied Trades Research Association, London.

★

On the completion of its first two years, I wish to convey to you and your colleagues on the staff of *Printindia* my hearty congratulations and my best wishes for the future. May the journal continue to serve all those interested or engaged in the Printing and allied industries in India.

K. SRINIVASAN,
Managing Editor, The Hindu.

★

I am glad that *Printindia* Magazine has completed two years of its valuable services for the uplift of Printing & Allied Industries of our country. I think magazines of this kind are of inestimable value to our Free India where we have still to struggle hard to compete with other free nations in the world in respect of printing of high quality. I wish the magazine all success in its march towards continued progress through the years to come.

TUSHAR KANTI GHOSH,
Editor, Amrita Bazaar Patrika.

★

I have watched the progress of *Printindia* since the first edition and look forward to receiving my copy each month.

Now that India is to have regional schools of printing, I feel sure that your publication will be read and appreciated by the trainees in the schools. If they obtain as much pleasure and information from *Printindia* as I do myself then I feel that it can be rightly said that your publication is a contribution to the growing band of young craftsmen and the printing trade in general.

G. W. IRONSIDE RADMORE,
Manager, Eastern Area, Monotype Corporation.

★

We are pleased to note that *Printindia* is now in its 3rd year. Undoubtedly, India, as a developing industrial nation, requires a technical and trade press of its own. However, to enter into this field, it requires considerable courage as in the early days it is undoubtedly difficult to obtain support; support which is in any case bound to be limited until the industrial expansion schemes materialise.

Obviously therefore, you deserve hearty congratulations on having been tenacious during these early days. Let us hope that you reap the reward for your pioneer efforts in the future years.

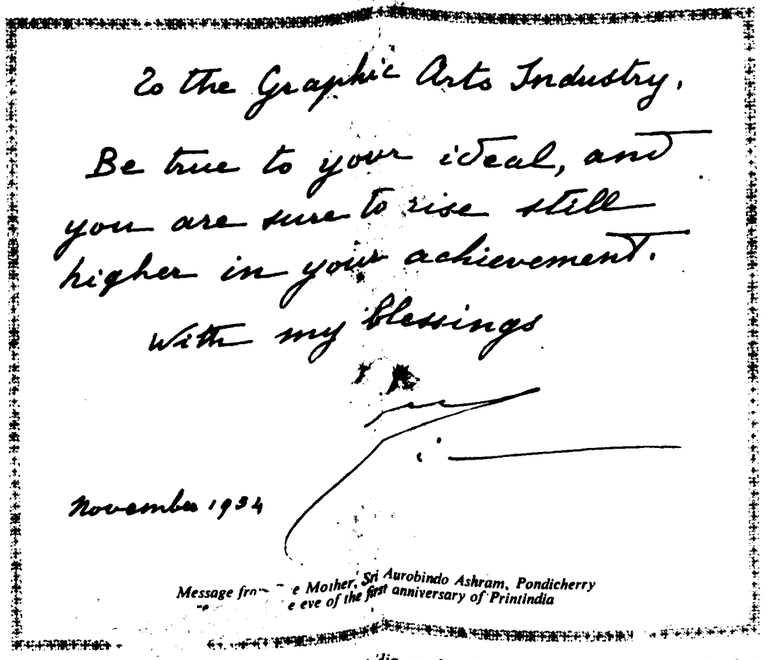
G. H. GATES-REED, M.I.A.M.A.
Publicity Manager, Shalimar Paint, Colour & Varnish Co., Ltd. Calcutta-1.

Technical magazines are of great [illegible] industrial progress of the country. *Printindia* has been of immense service to [illegible]cted with Printing and allied industries. I am glad that *Printindia* has com[illegible] useful existence. I wish the paper great success.

J. C. JAIN,
General Manager, Bennett Coleman & Co. Ltd.

I know it is not an easy task to make a journal like yours a success. Nevertheless, it was your perseverence and love for this industry that has enabled you to surmount the initial difficulties and put your journal on a sound basis. I am sure with your zeal and energy, *Printindia* has come to stay and will be a source of help to every printer in our country.

S. VISWANATHAN
President, All India Federation of Master Printers.



Message from the Mother, Sri Aurobindo Ashram, Pondicherry on the eve of the first anniversary of Printindia

My heartiest congratulations to *Printindia* on its third birthday. The magazine has indeed rendered very useful service during the last two years to the Printing and allied industries in India. I am pleased to learn that *Printindia* is getting a larger readership with every issue that is published. I would like to take this opportunity of congratulating Messrs. Kubera Enterprises Ltd. for publishing this very useful magazine.

G. U. MEHTA,
Vice President, A I F M P.

I feel very happy that *Printindia* has completed two years of its life rendering people interested in print craft and allied industries a very valuable and informative service, towards the betterment and progress of the industry.

N. K. GOSSAIN,
Gossain & Co., Calcutta.

Allow me to offer my heartiest felicitations on the successful completion of two years life of *Printindia*. Your journal has already created for itself a cosy and welcome niche in the heart of the Indian Printing Industry.

It has rendered quite a useful service to our printing community and I am confident that it will continue its useful activities for years to come.

S. N. GUHA RAY,
Secretary, A I F M P.

★

Printindia has just completed two years of its existence and has done signal service to cater to the varied need of the Printing & Allied Industries by providing useful, instructive and technical information especially when there are only very few monthly publications dealing with "Printers' Problems" within easy reach. May *Printindia* ever remain with us growing more and more in its activities to carry on its cherished ideals.

H. K. DASS,
Managing Director. Eagle Litho Co.

★

Best wishes for many more years of successful publication.

John D. BARTON,
Manager, The Hooghly Ink Co., Ltd., Madras

★

I am glad that *Printindia* is completing two years of its useful service to the printing and Allied Industries in this country.

On this occasion, I send you my Good Wishes and hope that it will continue to serve the Industry as before.

S. BHANDARI,
Managing Director, Indo-European Machinery Co., Ltd.

★

As a reader of *Printindia* I take this opportunity of congratulating the publishers of *Printindia* on the second anniversary of its very useful and informative magazine. During a short period of two years *Printindia* has come to occupy an outstanding position not only among trade journals relating to Printing and Allied Industries but trade journals in general. Its excellent get-up, high standard of its reading material and wide sphere of information which it covers make the magazine not only a prize production but also an indispensable source of information for all printers and all others interested in the Printing trade.

As a medium of advertising also, we have found the employment of space in *Printindia* as very remunerative.

In India today there is great need of higher printing standards and good printers. The printing technique is becoming more and more complicated and more and more specialised. The printers need more knowledge about developments in printing techniques and about the revolutionary changes which are daily taking place in printing equipment. Apart from ever increasing literature on the subject, it is magazines like *Printindia* which can bring to the printer knowledge of developments in the printing world and make him alive to the constant advances which are taking place in leaps and bounds in the printing Industry. *Printindia* is therefore doing a distinct service to the development of high printing standards in the country and of improving the knowledge of the Indian printer.

K. D. KOHLI,
Managing Director, The Printers House Ltd.

★

Graphicus, on the first anniversary of his association with *Printindia*, congratulates the Editor on the 3rd Birthday of the magazine *Printindia*.

GRAPHICUS

[Continued on page 34

PRINTINDIA COMMENCES THE THIRD YEAR OF INCREASING ACTIVITY FOR THE GRAPHIC ARTS

From Our London Correspondent

(Continued from page 15)

quickly made by spot coating afresh and re-scribing.

The perfect dimensional stability of the sheeting ensures perfect register under all conditions of temperature and humidity, and when the drawing is complete, each sheet of Astrafoil becomes a negative or, by dyeing the image and removing the coating, a positive, which can be used for printing down to metal for the making of printing plates. Coated Astrafoil sheets in standard types and sizes from 0.010" upwards, styli for different line widths, as well as black positive dye, are now available.

MERCLI-BLOCK MOUNTING DEVICE

A new device for block registration has been designed by the Mercu Trading Co., known as the Mercli-block mounting and register apparatus, which is claimed to reduce considerably the time taken in registering, squaring and mounting single or multi-colour plates. Transparency proofs of the plates are pulled in black and laid in register over a frosted glass panel marked with a square angle. After squaring up correctly, the transparencies are clamped in place and two small holes punched in them. Each in turn is then laid over two register pins on a transparent glass panel below which, some little distance away, is a mirror. The appropriate plate, to which adhesive backing is attached, is laid face downward on the transparency, and by observing the reflection in the mirror exact register is obtained without trouble. The mount for the plate is locked up with furniture in a hinged chase fixed to the side of the apparatus, and brought down over the plate on the glass panel. By repeating the procedure, each plate is mounted in exactly the same position on a mount of exactly the same size.

NEW WHIRLER FOR SMALL OFFSET

Of interest to the rapidly growing number of printing firms who are establishing small offset plants as an auxiliary to their existing equipment, is the Minimus Mark 11 Whirler, a product of Pictorial Machinery Ltd., and marketed in India by John Dickinson & Co. Ltd. This is a compact and serviceable unit specially intended for coating litho plates upto 20" x 16" or 20" x 14" as used on small offset machines. The casing is constructed of sheet steel and the turntable of 1 8" anodised aluminium sheet. The water-tight surround is well protected from corrosion by chemical-resisting paint, and the outlet is a perforated pipe which cannot get accidentally stopped up. The enclosed drive is from a universal 230–250 volt motor with speed regulation from 40–150 r.p.m., and the final drive by means of a cork clutch, which acts as a safeguard to the operator and protects the motor from accidental damage.

Drying is by means of an infra-red unit in a specially designed reflector, which dries the plate evenly from the centre to the outside and is actuated by a switch with a red warning pilot light. The cover is specially designed so that dust-laden air cannot reach the plate and it is retained by chromium-plated sides which automatically lock in the open position. A chromium-plated water arm is provided for plate washing, and the electrical controls are conveniently situated on an insulated panel in front of the machine, while an accessible 5-amp Slydlock fuse protects all the electrical circuits. No lubrication is required, and the durable grey hammer finish is easily kept clean.

GOOD-BYE TO SET-OFF

Some practical and technical items connected with composing and machine rooms are given by "Printer" in a recent issue of "The Sales and Wants Advertiser". One of these deals with the problem of overcoming set-off during and after printing, mostly applicable to surfaced papers and colour work. The majority of ordinary runs can be worked without interleaving, but where the paper stock is either of coated surface or one not readily absorbent, slip-sheeting is the only safe way as a set-off preventative. Paste driers mixed in with the ink is not recommended for a forme of engraving, since it tends to clog the screen, with consequent press stoppages.

Important points in respect of inks is that they dry by (1) oxidation, (2) evaporation, (3) if a drier is necessary starch is ideal as a medium. It is by far the best way to allow newly printed sheets to settle after travel along the extended delivery in a regulated number and not "jogged". Of great assistance against set-off is delivery into a box arrangement where sheets float down, and paper heating and drying facilities are also helpful in preventing set-off. The modern tendency is the installation of a spraying apparatus to facilitate speedy drying.

FIBRE DIRECTION

Another item interesting to the machine room, particularly useful in colour plate printing, is finding the machine direction of a paper stock. It is common knowledge of course that paper in process of manufacture flows in a continuous web on the machine, and in many

(Continued on page 26)

Picture Printing

(Continued from page 12)

of the sketch will signify that different kinds of tints are to be used in the respective parts. The blockmaker will print the respective shadings on the particular portions masking the others with gum and water. After all the parts are laid with tints one by one, the plate is ready for etching as usual.

Considerable texture, depth and body can be obtained by these tints on an otherwise uninteresting outline. There is no extra labour for the artist. No artist could draw in full all the kinds of tints used in one drawing. Even an attempt to draw a few of these will be laborious. When a drawing is reduced, the tints can remain the same size as in the charts.

The modern trend is to use more tinted line blocks than halftone illustrations. Like halftone screens, tints can be matched to the surface of the paper. Thus there are fine tints for coated stock, medium stipples for average surfaced papers and large shadings for coarse stock.

Another Variation

ENDLESS POSSIBILITIES

Many variations are possible from a single drawing: The original can be completely reversed, *i.e.*, black lines on white into white lines on dark background. Part of the design may be left un-reversed to get a second variation. The background alone may be reversed to black and a stipple or tint added for the object. Conversely the dark background may be cut away and the object with black body and white lines left. The shading alone may be reversed leaving the background black. The variations may be multiplied a thousand fold proving the versatility of the Line Photo-mechanical art. The blockmaker can give any interpretation necessary to heighten parts of a line sketch with the resources at his end.

Wash drawings are well reproduced by halftone, especially fine screen. Brush drawings can be reproduced in line or halftone. In a halftone, intermediate greys will not be lost while in line block there will be only two things, the solids and highlights. A combination of line and halftone gives endless avenues of expression to the artist. The realism of the photograph combined with the imagination of the artist produce marvellous results unequalled in line or halftone used alone. Advertisements of the modern day are generally a combination of line and halftone. The contrast of texture can be well brought out when line is combined with halftone.

SCRAPER BOARD

For a strong, rich result nothing can excel scraper board sketches. In this, a thick chalk coated paper painted with black ink is worked in by a special knife. When the inked portions are scratched with the knife the white chalk beneath is revealed. The design in entirety is made by the knife working on the inked chalk surface. Drawing on scraper board produces an effect similar to wood-cut work. It is easier to draw on scraper board than to carve on wood. Scraper board should be mounted on thick cardboard as otherwise the design may be bent and the chalk surface will crack. Scraper boards are available either in white or in white and shades of grey. The grey surface is in the shape of dots, giving a halftone appearance. By adding black to the already existing grey surface, a combined woodcut-cum halftone effect is produced. A line block can be made from the scraper board designs. A scraper board drawing prints cleanly and crisply and as the tonal values are treated in a way different from the conventional line or halftone, a unique strong and rich result is obtained.

Mechanical Tints used to heighten effect

Paper Notes

RAW MATERIALS FOR INDIA'S PAPER INDUSTRY

A conference of State Forest Ministers and officials held at New Delhi under the presidentship of the Union Food and Agriculture Minister, Mr. A. P. Jain, decided that, pending the formation of a Forestry Commission, an *ad hoc* body should be immediately set up to co-ordinate various measures that are proposed to be taken for ensuring regular and proper supply of bamboo and other raw materials required for the expansion of the paper industry under the Second Five-Year Plan.

The Inspector-General of Forests, Government of India, will be the chairman of the body, which will consist of representatives of the Ministry of Commerce and Industry, the Planning Commission, the Railways and States which grow the raw materials.

The conference decided that a survey of the materials available in the country for the manufacture of paper should be undertaken by the States as early as possible.

The consumption of paper in India as compared with that of the advanced countries is very low. It is proposed to increase the production of paper to about six lakh tons per year by the end of the Second Plan period. On the basis of this target, which would be about three times more than the present rate of production, the *per capita* consumption of paper in India would increase from 1.5 lbs. to about 4 lbs.

The gap between the proposed target under the Second Plan and the present production capacity would be made up by expanding the capacity of the existing new units.

Representatives of the States gave a brief account of the raw materials available and the scope and facilities for the production of paper in their areas. Some representatives suggested that the States should participate in the setting up of new paper mills.

The Union Minister for Commerce and Industry, Mr. T. T. Krishnamachari, Mr. K. C. Neogy, Member of the Planning Commission, and Dr. Panjabrao Deshmukh Union Minister for Agriculture, took part in the discussions.

The import of paper into the country is rising as demand is increasing. That is why it has been proposed to increase the production of paper to six lakh tons. The problem of raw materials would not be a major one if increasing use is made of the mixture of bagasse and boo for paper manufacture. But mere availability of raw materials would not mean much without coal and water supply, which are essential for the production of paper.

PAPER MILLS

They agreed with the suggestion of the representatives of some States that paper mills should be set up where adequate resources were available. But, in any plan for establishing new paper mills, the question of consumption has also to be considered. The State representatives should offer incentives to private industrialists to set up paper mills.

The Planning Commission's point of view on the question of State participation in the setting up of new paper mills, is that the State should not start any industry earmarked for the private sector. But there is no bar to the State entering the private sector, if there is a strong case for doing so.

Dr. Panjabarao Deshmukh said the States concerned should undertake a survey of raw materials as that would help to have a more realistic picture of the resources.

The States represented at the conference were Assam, Bihar, Bombay, Himachal Pradesh, Jammu and Kashmir, Madhya Pradesh, Madras, Orissa, Punjab, U.P. and West Bengal.

IMPORT OF GLAZED NEWSPRINT

The Government of India have decided that quota licences for printing paper, issued during the July-December (1955) licensing period will also be valid for the import of glazed newsprint. It will not be necessary for the quota licences for printing paper to be endorsed to this effect. A public notice on this subject has been issued by the Ministry of Commerce and Industry in a recent Gazette of India (Extraordinary).

PAKISTAN TO SET UP NEWSPRINT FACTORY

Pakistan's Foreign Minister, Mr. Hamidul Huq Chowdhury, disclosed recently that a newsprint factory would shortly be set up in Khulna district, East Bengal at a cost of Rs. 20 crores.

Some foreign financial aid in this regard would be necessary, he said, but he would not say wherefrom this was likely to come.

PAPER MILL FOR DINAPUR

A paper mill costing Rs. one crore is being started at Dinapur by a private company. The first of its kind in Assam, arrangements for the establishment of the mill are now complete.

(Continued on page 28)

COLOUR CONNOTATIONS

Each colour the printer uses has much meaning behind. It has more: a positive quality. For wisdom, intelligence and inspiration, there is nothing to beat Yellow. If you want to suggest valour, chivalry, anger, danger or fire, use Red. Apostles of non-violence may well choose Blue to denote peace, tranquility, serenity, reverence, solemnity and similar qualities. Light and knowledge are exemplified by orange, while green represents youth, vitality, vigour and vim. The colour purple is often chosen for typifying loyalty, fidelity dignity, seriousness, royalty, ceremony, austerity, pompousness. A mature mind is portrayed by brown and exhibits, soberness, strength of mind, benignity, benevolence. Finally we have got Black. This is a hard necessity, although it can indicate beauty and refinement.

CARE OF ROLLERS

Machine minders usually set the rollers to the height of the forme. It is better to set them to the ink table or a type high block. When forme is low to paper, it is better to raise the forme by underlaying than lowering the rollers. When set, the roller should just touch and not skid or bump due to too much pressure. Too much pressure may soften rollers rendering them unfit; they also become hot and may melt. Watch the inside roller which should be driven by the vibrator; if not, it is liable to skid. The feeder roller or supply roller should be set to the fountain roller as well as to the ink table. For this, turn the machine by hand until contact is established. Now tighten screws and bring the machine to the other extreme position when the feeder roller contacts the ink table and tighten at this point. The roller sockets and journals should be well oiled. The rollers should leave quarter of an inch streak evenly across the ink table. At this point the roller sockets should be tightened at each end. It is essential that the rollers should be set evenly at either ends. Rollers should be lifted at the end of work as otherwise roller flats from stationary ones will result.

MACHINE-ROOM HINTS

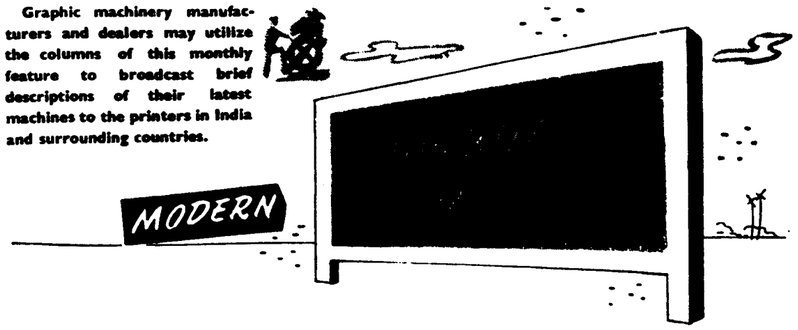
For improving quality a well as production in the machine-room the hints which follow will be helpful:—

Set apart the first quarter hour for oiling and the last quarter for cleaning. Idle Saturdays should be allotted for thorough over-hauling. Standardize packing for every machine, by using uniform cloth, substance and quality of sheets, and always maintain the permanent packing to the same thickness. Check impression of machines periodically with type-high blocks and rectify any defect found. Reduce work on the forme to the barest minimum on the machine. Have tools of each machine available readily from a tool-rack located nearby. Have a separate spare set of rollers for each machine. When a machine has served its time it is false economy to expect it to work for some more years. A plan for gradual renewal of plant should be prepared and the machine-room brought upto date.

CO-EXISTENCE

Presses which have letterpress and offset have taken a new line in the production of printed type matter. Instead of the traditional way of type-setting and printing from the forme direct, a city press printed the matter through photo-offset. No doubt the cost of plates is high. But it is worth, considering the wear on foundry type, the time during which all the type will remain in lock-up, especially the spacing and locking materials which are required for other job. By taking an art proof of the matter the work of the type is over and it is ready for release and return to the cases. The offset places have a longer life and there is no danger of spaces rising, types getting pied, battered or broken. Incidentally, the life of precious foundry types is also increased. This is an experiment worth trial by other printers who have letterpress as well as offset facilities.

Graphic machinery manufacturers and dealers may utilize the columns of this monthly feature to broadcast brief descriptions of their latest machines to the printers in India and surrounding countries.



NEW TYPE CASTER

Messrs. Kustermann & Co., Gross-Gerau, Western Germany, manufacturing the Type Casting Machines for the last eighty-five years, have now constructed a new model Automatic Type Casting Machine, *i.e.*, Model KC-4, to cast types, spaces, quads etc., from 6 pt. to 48 pt. This machine has been manufactured by them to meet the persistant demand of the Indian Type Foundries. This machine is built according to modern principles; it has got a number of special superior features. It is equipped with adjustable casting mould. Only by changing the cores, this adjustable casting mould casts types for different sizes of types that are to be cast.

The prices of these cores are negligible as compared with the prices of the moulds. Thus this machine would prove to be most economical as there is huge saving in the prices of the moulds. This machine is equipped with electric heating, with automatic heat regulation and built-in electric motor with special gear for changing to different velocities without graduation.

It should be noted that the output on this machine is 8 to 10 times of the output of hand-casting machines. Thus, this machine will prove to be exceedingly profitable and most economical.

Further, this machine can cast completely finished types and also from the hardest metal. Uptil now the manufacturers were manufacturing automatic Type Casting Machines, Model Kuco-2 to cast types from 6 to 14 pt. and Kuco-3 to cast types from 6 to 72 pt. But looking to the demands of Indian Type Foundries, they have now added this model KC-4, and this will admirably meet the requirements of Indian Type Foundries.

'AUTOMAT' ADDITION TO THE ROLAND RANGE

Very little was known to the world about the Roland 'Automat' before opening of the Ipex.

The Automat is constructed on the same principle as the other Roland Offset machines and it is intended to fill a gap in the range. It is a small high speed machine requiring a minimum of make-ready and very compact in construction. This will be manufactured in two models one to take sheet upto 14" x 20" and another one to take sheet upto 18" x 24". The larger one will be manufactured first.

The machine is fitted with a Mabeg stream feeder similar to that used on the larger Rolands, the sheets being separated at the rear edge. Newly designed swing grippers are mounted with a markedly eccentric motion, so that they make the return movement in a lifted position.

Cylinder settings can be made without tools, adjustment being possible from the operating side of the machine. As the cylinder trip mechanism alternatively applies and releases pressure, the water and ink supply is simultaneously interrupted, and the inking and damping rollers applied to and lifted from the plate. There is a hinged ink duct and built-in roller-washing device.

The area occupied by the smaller machine is 5 feet 9 inches by 4 feet 10¼ inches, and, by the larger machine, 6 feet 1 inch by 5 feet 3 inches; both are 5 feet 1¼ inches high.

The blocks reproduced in "Picture Printing" appearing elsewhere in this issue were made by M/s M. C. Appasawmy Chetty & Co., Madras-1

news and views

PHILIPS' NEW COLOUR LIGHTING UNIT

Day light is not suitable for colour matching. Its colour constancy is insufficient and accurate colour matching cannot be undertaken. Cloud formations, atmospheric dust, change in altitude of the sun resulting in more diffusion and red content of the spectrum—all these are obstacles.

Constant colour illumination is provided by the Philips' fittings. These consist of a number of fluorescent lamps in reflector casings, adjustable supports for mounting, or for suspension from ceiling, indicator lamps to show proper functioning of circuits. A number of carefully selected light sources mounted in a single fitting provides constant colour illumination. This is substantially of the same spectral composition as natural daylight from a clear sky at noon.

* * *

MADRAS MASTER PRINTERS MEET

To meet the members of the Madras Printers' and Lithographers' Association, Mr. S. Viswanathan, President, All-India Federation of Master Printers, got up a dinner party on 29th Oct. '55 at 'Acton Lodge', McNichol Road, Chetpet. The party was attended by a large gathering of printers in the City and officials connected with the printing trade.

After dinner, Mr. Viswanathan reviewed the achievements of the Federation during the last three years and referred to the formation of regional schools of printing at four centres. In Madras, the printing section of the Central Polytechnic has been converted into a regional school of printing and steps should be taken to equip the school with the latest machinery. He added that opportunities should also be provided for those, who were in charge of teaching in the institution, to go abroad and acquaint themselves with the latest developments in the field of printing. He pointed out that the Federation had brought out a bulletin through which an attempt was being made to acquaint the printers with everything concerning the industry.

Mr. S. A. Aiyasami Chetty, Chief Presidency Magistrate, pointed out that there were about 20,000 printing presses in the country, out of which 600 were located in Madras city. He was sorry to note that out of them only about a dozen printing presses could be said to be really good ones and regretted that the quality of printing in the rest was very poor. He expressed the hope that the Federation would take up the matter and take steps to improve the standard of printing in the country.

Mr. P. V. Viswanathan, Chief Inspector of Factories, explained the provisions of the Factory Act.

Mr. K. N. Sundaram, Assistant Educational Adviser (Technical), Government of India, said that steps were being taken to equip the regional school of printing in Madras with the latest machinery.

Mr. Natesan, Regional Director of Employees State Insurance Scheme, explained the benefits under the scheme. The scheme, which was to be introduced throughout the country in stages, would begin with factory workers and ultimately it would cover all categories of employees.

* * *

MONOTYPE FACES SCORE VICTORY

International Book Design Exhibition showed fifty British books chosen for the National Book League's festival. All the books chosen for this exhibition by the League were Monotype Faces famous for their beauty, elegance and readability. They include such famous Modern faces as Bodoni and Scotch Roman as well as the classic Baskerville. The latter dominates the book printing field. Times New Roman gets the next popularity. The type faces used in the best British Books were: Baskerville, Bell, Bembo, Bodoni, Bulmer, Caslon, Ehrhardt, Fournier, Garamond, Imprint, Modern, Pastonchi, Perpetua, Plantin, Poliphilus, Scotch Roman, Times New Roman, Van Dijck and Walbaum.

* * *

PETER PICA AT IPEX

T. C. Thompson & Son Ltd., the people who make the well-known

Thompson-British Auto Platen, have toted up the number of impressions achieved by a battery of four of their machines working at Ipex. The answer is 924,000 impressions. 'If our stand had not been so crowded,' remarked Mr. John Sanders, one of Thompson's demonstrators, 'we'd have done well over a million.'

Thompsons planned their Ipex printing programme months in advance. They realized that they would have to think in terms of hundreds of thousands of impressions, and wondered how on earth they would find space for all the necessary paper. The solution was to keep the paper stock low by printing in as many colours as possible.

They decided that a 6-colour line job requiring really accurate register would absorb a fair amount of machine capacity, and commissioned Miss Jill Frackson, a brilliant young artist, to provide four sketches for reproduction by line in six colours. Together with Ellic Howe, she devised *Peter Pica's Auto Praten*, a children's story for grown-ups.

Two machines produced 26,000 copies of the 8-page 'Peter Pica' booklet. Each pair of facing pages required 156,000 impressions, and for the whole job the total came to 624,000 runs. The two platens were run at a steady 4,2000 i.p.h. Despite 48 wash ups for colour, make ready, and the interruptions inevitable at such an exhibition, an average speed of 3,120 i.p.h. was maintained throughout the entire period of Ipex.

A third machine produced 42,000 copies of a leaflet with a large 4-colour halftone on one side and type matter in black ink on the other. This job required 210,000 impressions and was run off at 4,100 i.p.h.

Machine No. 4 was used for demonstrating a cutting and creasing job and got through 90,000 boards (size 14x7½ ins) to produce 360,000 finished cartons. This machine was run at 4,300 i.p.h. Production would have been higher but there were numerous interruptions while Thompson's George Hewitt answered questions put to him by visitors.

* * *

NEW PLASTIC STOCK FROM SWITZERLAND

A swiss paper mill has produced a new plastic stock from Wopavin. The process consists in making a matrix from the original stock by warming the Denz-Duplo. This along with the original stock are put under pressure for a minute. The new stock hardens under pressure and due to heat and cannot be changed. From the new stock it is possible to print about 4 lakhs of prints.

* * *

CHAIN IN PRINTING MACHINERY

Many important functions are performed by modern chain-drives. Letterpress, offset, folding, bronzing and other machines use the chain drive in a variety of ways. Power transmission, tripmotion, reciprocating and return motion, toggle action, chain rack and roller table, inter-connection between rollers in conveyors etc. Renold Chains Ltd. manufacture these chain drives.

* * *

GESSLER AND THE QUICK DRYING INK

It was Albert E. Gessler of Interchemical Corpn. who invented the quick drying ink in 1930. This ink was odourless and was very useful for news and magazine printing. Gessler, born in Germany, was awarded a Ph. D. at the early age of 22. But it was in the U.S.A. he made these researches bringing about various products to speed up printing operations. He also invented textile coating compositions, decorated wall coverings, a process for making ultramarine, and one for inorganic maroon.

* * *

SENTENCED FOR PRINTING OBSCENE BOOK

Mr. S. A. Ayyasami Chetty, Chief Presidency Magistrate, Egmore, convicted, Doraikkannu of an offence under Section 292, I.P.C. (printing obscene books) and sentenced him to one month's rigorous imprisonment.

The prosecution case was that the accused was the keeper of a Press called "Taninadu Press" in Narasingapuram Street, Mount Road, and about the end of May 1955, he printed copies of a book in Tamil styled "Kamakalai" which contained obscene passages.

The accused pleaded 'not guilty' and contended that the book was printed in some other Press in Kosapet.

The Magistrate observed that the evidence in the case had established that the accused was guilty and he felt that a deterrent sentence was called for. More than the author, it was the printer who gave country-wide currency to the scurrilous matter and it was the mechanical device which duplicated the scurrility thousandfold. The printer should know that the scientific devices should not be abused and utilised for broadcasting matter, which was calculated to deprave public morals. The accused knew quite well the depraved nature of the matter he was printing. Therefore, the Magistrate remarked, he took a serious view of the matter and considered that it would meet the ends of justice if the accused was sentenced to rigorous imprisonment for one month.

The Role of Chemistry in Lithography

(Continued from page 6)

tion. No change of pH can be attempted by admixture of water.

It is well to remind ourselves at this stage that Lithography is a chemical process unlike letterpress which is more mechanical. Hence, we should understand that successful printing depends upon use of precision instruments such as pH control set; every factor influencing chemical action should be controlled; guesswork and inaccuracy are to be avoided; lack of proper control leads to waste of materials time and money. If the results obtained should be uniformly good, we should realise that chemical processes are definite in their action, and we should study the factors that affect the processes.

CHEMICAL JAWBREAKERS

There is a standing complaint that chemists invent long words with a vengeance. But, the names are self-revealing as regards their chemical composition and not at all fanciful or arbitrary, as may be imagined. The suffix "ide" may denote oxidation. A compound containing two elements ends with "ide." When more than one compound is formed by two elements, they are differentiated by certain prefixes indicative of their quantity or number of atoms: a monoxide has less oxygen than dioxide; trioxide denotes three atoms and tetrachloride means more. When the compound is an acid, then the "ide" becomes "ic" and the word "acid" is added: sulphuric acid, hydrochloric acid, nitric acid. When instead "ic" or "ide", "ous" is added, three elements are indicated in that acid, *i.e.*, hydrogen, oxygen and a non-metallic element: When there is less oxygen, "ous" is used: Sulphurous acid. When more oxygen is indicated than the "ous", "ic" is used; for still more oxygen content "per" is used in the beginning: chlorous acid, chloric acid, perchloric acid (HCLO2, HCLO3, HCLO4, respectively). On the downward scale when less than the "ous" oxygen is encountered, the prefix "hypo" is used *e.g.* hypochlorous acid (CLO). Acids without oxygen begin with "hydro": hydrochloric acid, hydrobromic acid, hydrofluoric acid. Bases are named hydroxides and the name of the metal is given first: sodium hydroxide, potassium hydroxide. Salts of acids are named with a suffix "ate" for those containing more of oxygen (instead of "ic") and "ite" for less oxygen (in place of "ous"). The difference between a sulphate, sulphite and sulphide is obvious and consequently they are not interchangeable.

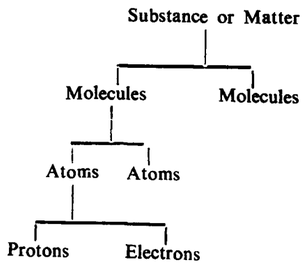
Lithographic substances such as inks, varnishes, zinc and aluminium plates, gums, shellac, etc. are to be successfully handled to yield optimum results. Most of these substances are in a state described as colloidal. It is important for the lithographer for retaining all the substances in the colloidal state as upon this depends successful printing. Coagulation, crystallization and precipitation are to be prevented at all stages.

WHAT IS A COLLOID

Any substance which will remain in suspension when dispersed in a solution is colloid. All substances that are not very soluble in a liquid can be brought to a colloidal state, by reducing the size of particles and increasing the fineness of the substance. Then the substance remains suspended in the liquid without settling to the bottom. This is due to the collission of the particles with the molecules of water. By this collission they are kept in constant motion. It should not be assumed that there are some definite substances under the class "colloids" just as salts, bases, metals or non-metals. It indicates only a form of matter. But it is true to say some have a pronounced tendency to become colloidal in state than others. Example: albumin, gum and other colloidal gels.

For the study of colloids, it is necessary to acquaint oneself with certain other chemical nomenclature. First, the smaller division of a substance is called *molecule*. When a substance is split up or broken repeatedly until each fragment cannot function as the original substance, each fragment is a molecule.

THE PHILOSOPHY OF MATTER



In effect there is no such thing as substance or solid. Every form of matter, as we know, is energy. Proton and Electron, the tiniest forms of energy, are only electric charges. These form the atom. Many atoms, in turn, constitute the molecules and numerous molecules form matter. Chemical compounds can be decomposed by passing electricity through it. When water is charged with electricity, it is decomposed into its constituent chemicals, *i.e.*, oxygen and hydrogen. Atoms that travel are termed "*ions.*" When a group of atoms form into geometrical patterns, it is called *crystallization.* The colloidal form of matter is of a higher stage

than crystals. When molecules of an insolubule solid are gathered into lumps of some size, the colloidal state is reached. When these lumps grow further, precipitation results.

When electrically charged atoms, ions or molecules adhere to a solid surface, *adsorption* is said to result. This should not be confused with *absorption* which means penetration into a porous solid. Certain substances adsorb considerable quantities of liquids and gases. Zinc and aluminium plates are to be protected from adsorbing external gases and vaporous substance from the atmosphere. They adsorb gum arabic, albumin, glue and other colloidal substances. The property of charcoal adsorbing gases is utilised in the manufacture of gas masks to adsorb poisonous gases and release oxygen; hydrogen gas is adsorbed by platinum; dried silica adsorbs water vapour. This principle is applied in air conditioning. Adsorption depends upon the division of the surface or its fineness, its porosity and the method of its preparation and the extent of surface presented by the solid. Plates are grained to make them porous.

COAGULATION

The colloidal state of a substance is maintained by repulsion of particles belonging to different electrical signs. Only those belonging to the same electrical sign (*i.e.*, positive or negative) will adsorb each other. But for this repulsion, larger particles will be formed resulting in precipitation. When a neutralizing substance is added to a colloidal dispersion, the particles tend to unite. This is due to lowering of the electrical charge. When such uniting takes place, *coagulation* is said to result.

ELECTROLYTE

What happens when two colloids are brought together? It depends on the sign to which the colloids belong. If of same sign, the colloidal state of the substance is strengthened or made more stable. If of the opposite sign, they precipitate each other. A substance, which, when added to a colloid, will bring about coagulation or precipitation is called *electrolyte*. The colloids can be protected or destroyed by the admixture of substances that are alike in sign or *vice versa*. Black ink can be protected from precipitating by gum arabic or similar material. Another example of a colloid used to protect another is found in gelatin added to colloidal silver in the manufacture of photographic plates. The gelatin keeps the silver salts dispersed.

EMULSION

Man is introduced to an emulsion fairly early in life. When the baby sucks in milk, it may not be aware that it is taking an emulsion. When two liquids, which would not dissolve each other, are brought together, an *emulsion* is formed. Oil and water, shaken well may form into an emulsion, but if left to stand, they will separate and run away. To prevent this an emulsifying agent should be used. This agent holds them together by forming a layer and preventing separation. Milk is the emulsion of water and butter. The emulsifying agent is casein. Lubricating grease is an emulsion.

[To be Continued]

From Our London Correspondent

(Continued from page 18)

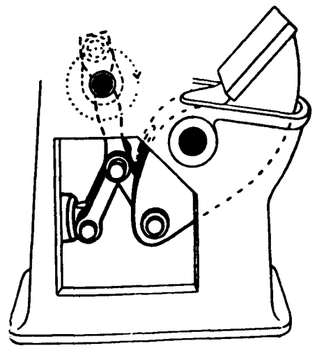
cases it is essential to ascertain in which direction paper came off the paper-making machine and in which direction it was cut. This is important to the colour printer, since paper has a tendency to slightly stretch or contract, especially if humidity exists in a machine room and there is a possibility of waiting periods between each colour printing. As a safeguard it is advisable to find in which direction the fibres of the paper lie. One method is to cut two circular discs, one from the length and one from the width of a sheet, marking each accordingly, and then damping one side only of each disc. As the dampness is absorbed into the fibres, one of the discs will commence to curl. This indicates the machine direction and therefore the direction in which the full sheet should be fed for printing.

An alternative method is to cut two strips from each direction of a full sheet of paper and then proceed as described for the disc method. The direction of fibres in a sheet have a tendency to swell in the width. As regards litho papers used for lithographic printing it is said that such papers are cut from the web, so that the short side is the one that stretches. The term "grain" sometimes mentioned means the direction of the majority of fibres in the sheet. Tearing a sheet both ways will also give an indication of the direction in which the fibres lie.

The Conventional versus The Heidelberg

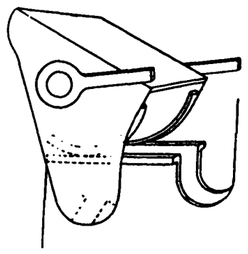
(Continued from page 8)

important moving parts. The toggle lever mechanism is the impressional system of the modern era for fast running machines. This



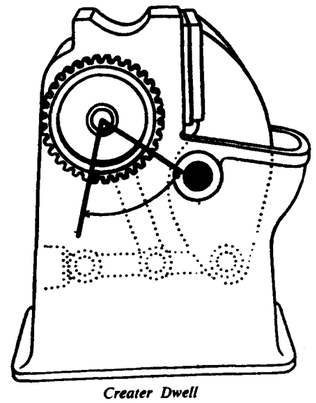
Toggle Lever

lever is positive, affords maximum impressional strength even at top speed. The toggle lever actuation is considered most suitable for a fast running automatic press.



Rocker Track Dust Traps

The open rocker tracks of the conventional platen offer obstruction to correct lubrication and are soiled with fluff and dust. The tracks get worn out easily, what with absence of proper lubrication and dust clogs. The tangle of rods, levers and wheels, which is the spectacle presented by the ordinary

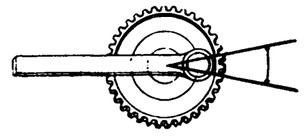


Greater Dwell

open platen are a far cry from the protected Heidelberg.

PERFECT IMPRESSION

The proper impression period, *i.e.*, 1/6 revolution per impression gives perfect impression at high speeds. The sheet has sufficient time to take the ink off the forme fully and completely. The dwell of the platen on the forme is characteristic of the Heidelberg. This is three times that of ordinary platens. As we have seen earlier, only the dwell of the platen on the forme commends the platen process and if this is not proper and has to be sacrificed, the very process becomes useless. On ordinary platens, there is practically no dwell worth mentioning, and there is only a "touch and go" affair. It is questionable whether this can be termed "dwell."



Little Dwell

AUTOMATIC LAY GAUGES

The operator has the option of using or not using the lay gauges, depending upon the size of sheet, forme, etc. When using the lays there should be sufficient side margin for grippers plus any additional margin the job may require. All this should be provided for in the forme. The matter should be positioned from the bottom of the chase allowing 1/50th inch or 1/5th inch depending upon whether the nickel or brass lay guages are to be used. In addition to this any further margin required by the job may be put inside the chase. Whenever the lays are not to be used, we should proceed as follows: The chase supplied with the Heidelberg is bevelled on one side to indicate the feeding edge. This bevelled edge carries a centre mark. Use should be made of this mark by making it fall in line with the middle of the printed sheet. This mark should not be used when auto lays are being used. Further a quarter inch margin is necessary at the feeding or bevelled edge of the chase. Over and above this minimum, any additional margin needed by the job may be provided in the forme.

The gripper swings over the tympan packing and hence it is absolutely essential to have the proper packing, *i.e.*, 1/25 inch. It is better to make ready with an extra sheet behind the forme. After it is over, the extra sheet is removed, and another sheet pasted over the packing as a draw sheet. Patching should never be left on the top sheet, but always buried under it. The packing should be absolutely smooth, especially in the position where the gripper opens. It is usual to cover any overlays used with a thin rubber sheet under the top sheet. A tight damp sheet may also be put over all the make-ready to ensure the printed stock reach the automatic lays without obstruction, in the case of register work.

UNIQUE FEATURES

It has been shown that the Heidelberg platen possesses many unique features. The toggle lever drive gives great impression strength and has called for a safety device in case of misuse or overloading. Whenever the maximum impression has been exceeded, the toggle bearing conveys the impression pressure on to a hardened thrust collar. During period of excessive strain, the safety collar will be sheared off. This makes excessive impressions almost impossible. The broken shearing collar can be changed in a few minutes. This protects the machine from damage when careless operators use impression far in excess of need. This is known as the shearing collar safety device.

Other features of Heidelberg platen include instruction plates which indicate in all adjustable parts of the machine, necessary amount of adjustments to be done when changing over from one type of job to another, for lubrication, cleaning etc. The paper feed setting indicator is an example. This shows a scale for adjustment from a thin stock to thick board.

The manufacturers of Original Heidelberg claim the following unique features:—Ball-bearing forme rollers and disconnection of forme rollers, built-in roller-washing, cylinder ink-distribution, automatic fountain trip, fountain key tension band, collapsible ink fountain, handy forme roller scale adjustment, adjustable roller tracks, added roller and ball bearings, 5,000 per hour maximum speed, automatic press stop, toggle lever drive, one-stroke per impression pump, 40 tons impressional strength, speedy forme positioner, save-a-step press stops, positive wide-range speed control, improved type frisket finger, improved and extended air filtering, control one-shot lubrication, wide scope lubrication system, built-in spray gun, aero dynamic controlled sheet delivery, flick-o-wrist impression control, streamlined flywheel and motor guard, permanent hairline register gauges, automatic sheet jogger, automatic overload safety, rotary feed and delivery system, 13" flat feed and delivery magazines and many others. None will dispute the uniqueness of these features, which have simplified the machine-minder's job for all time.

Paper Notes

(Continued from page 20)

RAW MATERIAL FOR PAPER INDUSTRY

CO-ORDINATION OF SUPPLY

The conference of State Forestry Ministers and officials meeting at New Delhi on 22nd October decided to appoint an *ad hoc* committee for co-ordinating measures for the supply of bamboo and other raw materials for the paper industry under the Second-Five Year Plan.

The committee will advise on the preparation of a basic plan for the expansion of the paper industry from the point of view material supply.

The committee is being asked to consider measures for ensuring full exploitation of 'coupes' (bamboo and other groves) for private contractors for supply to paper mills. It will also examine and advise on methods of increasing the availability of cellulosic raw materials for future expansion of the paper industry in the third and subsequent five-year plans, by using new raw materials and by a planned programme of plantations of suitable species.

According to the other terms of reference, the committee would investigate existing specifications prescribed by paper mills for bamboos, with a view to relaxing them where possible so as to enlarge supplies for the paper industry; advise on the utilisation of fibrous raw materials for production of various kinds of paper; consider and suggest standard terms of base (and royalty) for working bamboo and other fibrous material-bearing trees and examine the zones of supply of existing mills with a view to ensuring sustained supply of raw materials to them on the one hand and on the other, to advise how best to utilise any surplus availability.

Saga of Printers' Ink

(Continued from page 14)

A coarse offset plate consumes more ink than a fine plate.

PIGMENTS

The pigments for printing inks should satisfy the following conditions :—

The substance should be in powder form or capable of being converted into that form easily. Further the pigment should mix readily with the liquid part of the ink to form a homogeneous substance. It must have colour, hiding power, and should impart body to the ink. The texture of the pigment should be smooth and disperse easily.

Pigments can be classified into Mineral or Inorganic and Organic. Inorganic pigments can be further classified into those naturally ocurring as such and those that are produced by manufacturing processes. Analysis of the important inorganic pigment and their properties is given below.

White :—

Semi-opaque, Barytes. Fast to light, water and alcohol. Useful as extender for copper-plate and die-stamping inks.

do. China Clay. do.

Semi-transparent. Silica. do.

do. Blanc fixe.

Used for high grade letterpress and offset inks.

Transparent. Magnesia (Magnesium carbonate.) Offset & Letterpress inks.

Nearly transparent. Used as extender in all types of inks.

Transparent. Alumina Hydrate.

Pure opaque white. Lithophone. Not so fast to light and water. Used for mixing white and cover white inks. Moderately priced.

Fairly opaque. Zinc Oxide. Used in opaque white inks.

Highly opaque. White lead. (Also called lead carbonate). Was in use for opaque cover whites, metal printing white.

Yellow :—

Opaque primrose to orange. Cadmium yellow. Metal printing inks.

Opaque primrose to orange shades. Chrome yellow. Not so fast to light. Opaque letterpress and offset inks.

Semi-transparent, weak, bright yellow. Zinc Yellow. Sometimes preferred for outdoor sign inks.

Dull brownish yellow. Ochre. Earth Colour. Used for poster, copper plate and die-stamping inks.

Red :—

Dull. semi-opaque, yellowish to brownish red. Indian Red. Also called Venetian Red. Used for posters.

Opaque dull shades of Red. Cadmium Red. Metal printing inks.

Very opaque, heavy, orange to deep red shades. Vermilion or Mercury sulphide. Used in cover inks.

Blue :—

Transparent greenish to reddish shades. Iron Blue, Milori blue, Bronze blue, Prussian blue. Not so fast to light. Used for offset, letterpress and gravure inks.

Semi-transparent, greenish to true-blue. Ultramarine. Chalky, used for copper plate inks.

Green :—

Opaque yellowish to bluish green. Chrome green. Not so fast to light. Offset and letterpress inks.

Orange :—

Opaque, bright, weak Orange mineral. Red Lead. Not so fast to light. Carton, box printing and other letterpress inks.

Opaque and bright. Molybdate orange. Not so fast to light. Cheap orange pigment for letterpress and offset inks.

Brown :—

Yellowish brown. Raw Sienna. Earth colour. Poster inks.

Reddish brown. Burnt Sienna. Raw Umber. Dull yellowish brown earth colour.

Burnt Umber. Deep coffee brown.

The above pigments are used in addition to printing inks in paints, artists' colours, linoleum, etc.

The organic pigments are derived from natural and artificial dyestuffs. As they are very expensive, and are not uniform in colour, they have been superseded by synthetic dyes. Further they have poor tinting strength. The main source of synthetic dyes is the Coal Tar. Some of the organic pigments are :—

Greenish yellow. Quinoline yellow. Not fast to light. Used for label, handbill and other letterpress inks.

Reddish yellow. Transparent Tartrazine yellow. Used for offset and letterpress.

Semi-opaque yellow. Hansa yellow. Used as toner for offset and letterpress inks.

Semi-transparent, medium to reddish shades. Benzidine yellow. Used for letterpress and lithographic inks.

Bluish red. Alizarine and Anthrosine Reds. Offset, Letterpress and poster inks.

Yellowish Red. Rhodamine. Not so fast to light. For high speed letterpress and offset inks.

Strong bronzy blue. Alkali blue. Used as toner for black inks.

Medium shade blue. Brilliant blue. Used for lithographic and letterpress inks.

Brilliant greenish blue. Peacock blue. Used for non-permanent label and other works.

Reddish shade true blue. Victoria blue. Used for label and offset inks.

Semi-opaque orange. Permanent orange.

Medium transparent orange.

Persian Orange. Not so fast to light.

Bronzy reddish purple. Methyl violet. Not fast to light.

Reddish-shade brown. Bismarck brown. Not fast to light.

BLACKS

All pigments used for black inks originate from carbon. Manganese black is the only exception. Lamp-black is obtained by incomplete combustion of oil. Creosote oil from coal-tar is generally used for this purpose. A soft, grey, opaque, dull ink results. When natural gas is burnt with a limited air supply and the soot is scraped off metal ceilings on which it has been allowed to form, the result is carbon black. Fine halftone and lithographic black inks use carbon black. This is not gray like lampblack, but dense, strong and not affected by heat, light, acid, alkali or other solvent. It can be freely mixed with any other pigment and vehicle without any risk of chemical reaction. Furnace blacks are cheap and are made from hydrocarbons, either in the liquid or gaseous state. They have a bluish undertone, long flow and high opacity, dry better than carbon black and lamp-black, are more alkaline (have a higher pH), more useful for lithographic inks. Heat-set and moisture-set inks contain furnace blacks.

Bone blacks are obtained from animal refuse and bones. Used for copper-plate and die-stamping inks, have a greenish-black appearance in mass with a brownish undertone. It resists light and heat. In addition to the above, charcoal black, slate black or mineral black, iron oxide black, manganese black and graphite are rarely used to produce black pigments.

VEHICLES

The pigment is the solid part of the ink which is seen on the printed paper. The liquid part of the ink serves as the medium for the pigment, gives flow, and makes it transfer from rollers to the printing surface and then on to paper. It is the vehicle which binds the pigment particles and gives the drying qualities for the ink. The various types of inks are differentiated by the use of various qualities of vehicles. The same pigment may be used with different vehicles for inks of various processes.

Mineral oils, synthetic oils, vegetable oils and animal oils are used in the making of printers' inks. Vegetable oils are more often used and among them Linseed oil stands out as the most used. The modern trend is to replace the costly linseed oil by synthetic oils. All vegetable oils have the quality of absorbing oxygen and change quickly from a liquid to a solid state. Vegetable oils that dry well are linseed, china-wood or tang oil, soyabean oil, perilla, etc. Recently, safflower oil has also been used. Mineral oils are also used as a vehicle in certain grades of printing ink. These are obtained by distilling petroleum and are used for photogravure inks also. Heat-set and other rapid-set inks utilise this vehicle. Mineral oils dry only by absorption while vegetable oils dry by oxidation. In rotary and cylinder press inks paraffin and other lighter machine oils are used in place of linseed oil. This arrangement is good for printing on absorbent stock but for other paper a proportion of drying oil is mixed. The disadvantages are their penetration or strike through, greasy stains on the reverse. These make it unfit for the better grades of inks or for thin or better stock.

DRYING

Many substances are used in hastening drying of ink, in preventing set-off and in making the ink set quickly. Printing inks dry in a variety of ways, depending upon the nature of the vehicle as well the quality of stock used for printing. There are three important methods of drying. The first is by combining

(Continued on page 32)

ALL-INDIA FEDERATION OF MASTER PRINTERS

The Governing Council of the All-India Federation of Master Printers, meeting at Hyderabad on November 5, demanded that the Government of India should include the printing industry in their schedule of eligible business entitled to receive loans and aid from the Industrial Finance Corporation.

Mr. S. Viswanathan, President of the Federation, presided. Members from Bombay, Calcutta, Madras and other centres attended the meeting.

By a resolution, the Governing Council requested the State Governments of U.P., Madras and Bombay, to form autonomous governing bodies to run the respective regional schools of printing in their regions. It also requested the Central and State Governments of West Bengal, U.P., Bombay and Madras to take at least two representatives of the Federation on the governing body of the regional printing schools.

The Council called upon all uneconomical or marginal printing business throughout the country to consider running their business on co-operative basis or amalgamating with other units.

The Importance of Graining in Lithographic Printing

(Continued from page 9)

surface and marbles are then placed on top, and a supply of clean water sprinkled over evenly, and the machine is set in motion.

Periodically fresh abrasive and water are sprinkled on and the graining continues for about one hour. About ten minutes before removing the plate, a fresh application of abrasive is applied and then before this has time to wear down to a smooth slime and mud, the plates are removed and thereby having crisp but close fine grain. When the machine is just to be stopped, a little extra water should be sprinkled over the tray to free the marbles.

Some plates require longer graining than others, *e.g.* Deep Etch Litho Plates; in fact some firms grain the other side rather than graining off old job and alter the gauge of the plate. In removing the plates, it is customary to do so when the machine is in motion, but modern graining machines can be cleaned off marbles in very short time by a tipping-and-washing arrangement. The plate should be well washed in clean water with soft brush, then 'preped' and dried as quickly as possible to prevent oxidization, particularly aluminium plates.

WATERING

While keeping moist by sprinkling water if *too much water* is applied it will float the abrasive and prevent the marbles from crushing it into the metal. This causes a more shallow grain and is covered with minute scratches and thus will be a poor substitute for grain.

Too little water causes rapid wear of the abrasive and excessive wear on the marbles. The abrasive forms a sticky paste and the marbles become motionless and so increase tendency to flatten the graining instead of the production of a crisp and close fine grain.

Some workers add a little caustic solution to destroy the greasy residue which is gradually coming off from the old design. This point is debatable. To remove oxidisation of plates during graining, a 2% solution of sodium bichromate in place of plain water can be used.

Pictorial calendars will be reviewed by our art crtitic in the January 1956 issue. Printing Houses specialising in calendar production are requested to send in their specimens by 31st December 1955. Selected entries will be reproduced in *Printindia*

Saga of Printers' Ink

(Continued from page 30)

with the oxygen of the atmosphere. This is called *oxidation*. This action can be quickened by adding metallic soaps of cobalt, manganese or lead. Vegetable oils dry by oxidation. Bond, ledger, job, offset and lithographic inks dry by this process.

Aniline inks, gravure inks, heat-set, flash-dry inks dry by *evaporation* either by evaporating at room temperature or by burning solvents. Evaporation is more or less the reverse of oxidation, as the solvent molecules go out and get absorbed in the atmosphere whereas in oxidation, the oxygen molecules of the atmosphere enter the ink film and oxidizes or solidifies. Inks that dry by evaporation are more and more used in the present day.

Thin fluid inks penetrate into the fibres of the paper. The fibres of the paper absorb the vehicle. This form of drying is called *penetration*. News inks are those that dry by absorption and that is why we find papers of our subcontinent having the well-known defect of strike through and show through. Excessive penetration causes this defect. Too much absorption of the vehicle causes separation of the same from the pigment.

Although the three forms of drying, *i.e.*, oxidation, evaporation and penetration are better known than others, there are other processes by which printing ink dries on paper. For example, when the resinous ink vehicle solidifies, it is called *gelation*. No doubt there is a certain amount of absorption in this, but the ink mainly dries by gelation or solidification. The "wink-dri" and instant-set inks are made from phenolic resins, vegetable oils, rubber, waxes and other substances to hasten gelation.

Solid, easily-melting ink is heated in the fountain, rollers and printing surface. When this hot ink contacts the cool surface of paper, instantaneous solidification results. By this process penetration is prevented and hence the attendant evils of show-through and strike-through are given the go-by. Extensive commercial application of this ink is yet to be done due to special equipment for heating the various parts of the press.

When a water-soluble binder and water mixable solvent are included in the ink, a spray of steam on the printed stock makes the ink precipitate and dry. Ethylene glucol plus water in the steam make the ink to set rapidly.

Apart from the above-described methods, ink may dry by chemical reaction called *polymerization*. The small molecules of the vehicle combine themselves into larger ones resulting in a solid condition of the semi-solid ink. Urea formaldehyde, acetylene, melamine and chinawood oil are the substances that polymerize easily.

INK TESTING

The best method of testing any property of the ink is by actually using it in the circumstances under which it is going to be eventually used. For this purpose all the conditions are simulated in the laboratory and the behaviour of the ink watched and properties assessed.

(To be Continued)

STATE AWARDS FOR PRINTING

Nearly 1,200 entries have been received for the State Awards for excellence in printing and designing, instituted by the Ministry of Information and Broadcasting.

A five-man Committee has been set up to adjudge the entries for the awards which are intended to promote higher standards in the production of books and visual publicity material. The judges are: Prof. N.K. Siddhanta, Vice-Chancellor, Calcutta University; Prof. V. N. Adarkar, Head of the Department of Applied Art, Sir J. J. School of Art, Bombay: Mr. Norman A. Ellis, Editor, Print and Paper, Calcutta; Dr. K.S. Krishnan, Director, National Physical Laboratory, and Kakasaheb Kalelkar.

Nearly 600 entries have been received in the various categories of books in 11 languages. Entries in other categories include 130 newspapers. 80 magazines, 157 posters, 140 folders and a number of calendars and diaries.

The awards will be presented by the Vice-President, Dr. S. Radhakrishnan, in New Delhi. An exhibition of the entries received will be opened simultaneously at the Postal Centenary Hall on Queensway.

PRESSROOM PROBLEMS SOLVED by Graphicus

In these pages "GRAPHICUS" an expert in the printing and allied industries solves month by month the Pressroom problems of the printers. All questions may be addressed to:
"GRAPHICUS", C/o PRINTINDIA

59. Q. In our press we do not have separate ink for platen, cylinder and automatic press. We use the same ink. Could you advise as to the necessity for having separate ink and if so, what is the difference between the three?

A. When considering the question of separate inks for different types of machines one must also consider separate inks for the various jobs printed and papers used. I therefore do not feel it is so much a question of inks to suit machines but inks to suit papers. Good all-round inks for your machinery can be obtained by contacting your ink manufacturers.

60. Q. We want to order for ink for newspaper press, *i.e.*, a rotary. What particulars do you think necessary for us to give the ink-maker to supply us a suitable ink?

A. The details required by the Ink Manufacturer are the make, type and speed of the machine and if possible the type of paper that will be used regularly; even newsprint paper varies.

61. Q. Due to our enormous increase in circulation we have stopped varnising the outer cover of our weekly. Can you think of an alternative method of producing a glossy effect for our cover without resorting to the costly and time-consuming process of varnishing?

A. I would refer the questioner to last month's *Printindia*. One of India's leading manufacturers published an inset printed with Tricolour Inks ideal for the purpose.

62. Q. Recently we ordered for some Chromo Art Paper. The dealer supplied a matt art. When we returned it, we got back one-side coated. Which is the chromo art, assuming either of these is actually C.A.?

A. Chromo Art Paper is a one side coated stock. You therefore got what you ordered on the supplier replacing the matt art.

63. Q. We have a lot of numbering work to do. At present we use only hand numbering machines and also type-high numbering boxes wherever the space in the forme permits their use. We understand that paging machines and/or rotary numbering boxes will do our work more economically and quickly. Kindly oblige us with your valuable advice?

A. The purchase of a paging machine depends on the amount of work you can give to such a machine. For most Jobbing Presses I do not think it would be economical. It would be well to go into the question of price and out-turn of such a machine with a reliable agent and decide on the basis of the amount of work you could give such a machine.

64. Q. Can you give us a simple method of eliminating static in our stock, which troubles us by making the sheets stick together or taking a wrong course after feeding or at the time of delivery.

A. Static has to be taken to earth; this can be done by means of a damp strip of cloth placed over and down the pile to the floor before it is passed to the machine, or if the static is very bad by a copper brush, connected by insulated wire to a prepared earth, fitted to the machine, the brush being in contact with the paper on its way down the delivery board.

Please also refer to Answer 10, December 1954 issue of *Printindia*.

Bouquets to Printindia

(Continued from page 17)

On hearing that *Printindia* has completed two years of effective publication in this country, I congratulate its Managing Editor for his tireless efforts in trying to establish an institution in this country which is noted for its poverty in technical publications.

S. RAMU,
General Manager, Commercial Printing Press Ltd., Bombay.

★

On the occasion of the Third Anniversary Year of *Printindia*, I am happy to convey my compliments and best wishes to the management for their much valuable service to the graphic arts industry and the public.

It is only through the medium of trade journals that the improvement of the standard of production can be attained by imparting best available technical knowledge to each individual.

May *Printindia* enjoy wide and ever increasing readership and be the esteemed organ of the printing fraternity.

BIMAL C. DATTA,
B.A.,DIP. TECH. (LEEDS),F.R.G.S., A.R.P.S. (LOND.)

★

Printindia is to be congratulated on completion of two years of its publication.

Even a cursory glance shows that the magazine's standards of production have been set fairly high. The magazine also contains useful material, some of it very informative, on printing and what are termed as industries of "the graphic arts".

Managing Director, R. M. D. C. (Mysore) Ltd.

★

The recent institution of Annual State Awards by the Ministry of Information and Broadcasting, Government of India, for excellence in designing and production of the best books and publicity materials by the Indian Printing industry, is an indication of the importance which the industry has assumed in recent years. Further with the rapid industrialization and expansion in the educational sphere visualised in the Five Year Plans, it is only natural that the industry will have to play a more prominent role in future. The dissemination of technical and organizational information with regard to the industry has a significant place in this future development of the industry. While there are many foreign journals devoted to the printing and allied trades discharging this function, they cannot be expected to meet the special requirements and conditions of the printing industry in India. *Printindia* is one of the few Indian journals which have filled up this gap and in view of the fact that this journal has rendered useful service since it was started two years ago, I have no doubt that it can face the future with confidence. Therefore, on this occasion when this journal is entering its third year of publication it is a great pleasure to me to associate myself in wishing it a prosperous future.

K. C. RAMAN,
Production Manager, Times of India Press.

We are glad that you have completed two years of your successful useful service to the Printing and Allied Industries in this country.

You have given all valuable information regarding printing in your issues, which were very useful to those, who are in the line.

We hope you will continue to give all necessary and useful informations in future also, which will be beneficial to those interested in the graphic Arts.

Messrs NELSON & Co.

★

"Congratulations to "*Printindia*" on attaining its third birthday. From the first issue this has been an extremely well-produced and interesting magazine, and the rapidly increasing circulation is the best possible indication of its value to every section of the printing and allied industries. We wish *Printindia*, and everyone concerned in its publication, very many more "Happy Birthdays".

F. & D. BROWNLIE

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Printindia

A MONTHLY SURVEY OF THE GRAPHIC ARTS INDUSTRIES

A KUBERA PUBLICATION

DEC. 1955 PRICE RE. 1

The Editor invites articles on printing and allied industries for publication in the magazine. Articles should be of a good standard and should be neatly typed on one side of the paper only. Payment will be made after publication for the articles published as per the rates agreed upon by the Editor.

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Printindia

A Monthly Survey of The Graphic Arts Industries

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In this issue : . . .

EDITORIAL

INDIA CAN MAKE THEM

The Indian Industries Fair is called " the shop window of the world." In another sense it is a door opening into India. While we see much evidence of the development in other countries of the world, we also give the countries participating in the fair a vivid idea of our own industrial advancement. This advancement has not been considerable compared with the U.S., U.K. or U.S.S.R. But the progress is substantial and comparable with our Eastern neighbours barring Japan.

PLANS FOR PROSPERITY

The first National Plan laid emphasis on Agriculture and Irrigation and Power, as India has a rural economy based on agriculture. The Second Plan has shifted the emphasis to Industries and Employment. Hence the importance of the Fair. Today, India makes her own rail coaches, assembles locomotives and air-craft and is even in a position to export small tools and components to the South East Asiatic countries. She has planned for more steel production and other heavy industries.

PLACE FOR PRINTING MACHINERY

In these days when automoblies are manufactured in our own land and ships are built in our own shores, the manufacture of printing machinery is conspicuous by its absence in the Second Plan. No doubt, there is a small scheme for the Madras State to manufacture Platens and Cutting machines in Tinnevelly district. Why Tinnevelly was chosen is anybody's guess. Surely, Madras City and its suburbs offer all advantages for such an industry. Further the amount sanctioned for the plan (a mere 2½ lakhs) is a drop in the ocean. It is clear from these that no technical expert has been consulted in evolving this tiny and unimaginative project.

At a public function in connection with the opening of the Southern Regional School of Printing at Madras, Sri Bhaktavatsalam, Minister for Industries, said that the Government were vitally interested in manufacturing printing machinery in the course of the second plan period. We hope that soon a realistic scheme would be evolved for a plant to produce printing machinery. A beginning can be made by making small components of treadles, cylinders, numbering, punching, and cutting machines, which can well grow in time to a full-fledged industry meeting the demands of the country. At present we have to depend upon other countries for our spares and considerable time and valuable foreign exchange are spent in procuring them. We are sure that foreign machinery manufacturers would come forward to help in a joint enterprise for making printing machinery spares in India. Availability of spare parts and proper servicing of machinery are a crying need of the industry. This need, if met, will pave the way for better quality and greater production, lessening in turn loss of time and waste of materials.

A BIT OF CAUTION

Our platform printers often proclaim that straightaway India can make Printing Machines: platens, cylinders, rotaries and every other kind. This is only indulging in loose talk. For a considerable time to come we have to depend on the West or on Japan for the principal parts of machines, made by special alloy steel. Unless our Heavy Industries improve, we cannot hope to make these parts ourselves. But till then we need not keep quiet. We can manufacture spare parts of all types of printing machines. Instead of building this industry from the bottom, if we launch headlong into the manufacture of entire machines, we are heading for disaster.

DRAWBACKS

India lacks the industrial background of the West, fuel and power resources are meagre, capital is shy, research in this field is next to nothing; she also lacks the cottage industry spirit that pervades the Japanese, their industrious nature and perseverance. It should be borne in mind that each country is by nature endowed with special advantages for a particular trade, profession or industry. The Swiss are the watchmakers of the world, the Danish are the dairymen of the globe, the Canadians are the paper-makers, the Germans are the scientists, etc. We should find out what has India got to her credit? Our textiles and handloom fabrics have earned a good name abroad. We should not stop with that, but should make headway in other fields. A rotary machine in the Chinese Pavilion shows how much the East can advance in Industrial sphere also. We agree that India too can make these machines, but how soon is a matter for conjecture. One thing is certain–India *can make them*!

Offset Plate - Troubles

By

SRI B. C. DATTA, B.A., Dip. Tech. (Leeds), F.R.G.S., A.R.P.S. (London)

The author, a well-known exponent of Lithography, has explained the various troubles in the machine-room and their possible causes. Coming from the pen of such a highly experienced and qualified writer, these hints are sure to help every Offset Plate-maker and machine-man. Sri Datta is out to banish Plate-troubles from Pressrooms!

Every lithographer will agree when we say that about 75% of his worries are solved if a properly made plate reaches the press-room. The term "properly made" demands many things before it bears fruit. Plate-making passes through such a complex procedure that even under rigid control, failures will still occur. In this short discussion, endeavour has been made to point out some of the many usual faults that are connected with a metal plate. This is also an attempt to afford the plate-makers and pressmen to supplement their knowledge by which they may be able to locate the inherent causes of the plate troubles. This will ultimately do away with the expense of making a press ready with a faulty plate. The earlier the fault in the procedure of plate-making is detected, the less the time and money are involved.

Hereunder I have tried to put a summary schedule for ready reference of the faults and their possible causes for (a) Albumin plates, (b) Deep-etched plates.

(1) *Refusing Ink* or Blind plates or over-sharpness of Albumin plate is due to (i) Over development or too much ammonia used, (ii) too much acid in etching solution used during make-ready in the press, (iii) too thick a negative or under-exposure.

Causes for the above faults in Deep-etch plates are:— (i) Insufficient development, (ii) Washed too soon, (iii) Faulty cleaning after etching with Deep-etch solutions, (iv) Etched too deeply.

(2) *Scum* — *i.e.*, the non-image portion taking ink:—

(a) Albumin plates — (i) Too long an exposure and too thin coating solution, (ii) Insufficient development or too much time elapsed between coating and development, (iii) Thin negative or poor contact, (iv) Masking out material damp, (v) Sloppy ink, (vi) Too much alum in paper coating, (vii) Too fine or flat grain on the plate.

(b) Deep-Etch plate — (i) Too short exposure, (ii) Over development, (iii) Beaume of the solutions, and meths. (gum method) are not according to the standard, (iv) Dampness or water present in rags or cloth used, (v) Spotty positives, (vi) Too much alum in paper coating, (vii) Sloppy ink and hard dampers and inkers on the machine or press, (viii) Too much water on plate on machine or press.

(3) *Working Weak*—(a) Albumin plate — (i) Lesser percentage of ammonium bichromate in the coating solution, (ii) Too much ammonia used during development, (iii) Too much acid in the damping water, (iv) Badly set or hard inkers and dampers.

(b) Deep-etch plates — (i) More or less for the reasons stated for Refusing ink and items (iii) and (iv) stated in Para (1).

(4) *Thickening Up* — (a) For Albumin plates:—(i) Over exposure or insufficient development, (ii) Use of too much pomades, paraffin, etc. in the ink, (iii) No acid in damping water, (iv) Hard dampers causing uneven distribution of dampness, (v) Too much alum in the paper coating.

(b) For Deep-etch — (i) Under-exposure and all the causes referred to above in (ii) to (iv) of para (4).

Mr. Joseph Normon Solomon of M/s East Asiatic Co., Ltd. Madras being garlanded by local printers before his departure for Germany for specialized training in Original Heidelberg Machines

LAYOUTS and Lettering

By

SRI RAMAKRISHNA NARAYANAN

An outstanding layoutman writes in these columns about type selection, type arrangement and type sketching. Good pieces of advertising are also reproduced and reviewed here. Discerning advertisers may use these columns for getting their choice advertisements commented, improved and made effective

MEN WANTED for hazardous journey. Small wages, bitter cold, long months of complete darkness, constant danger, safe return doubtful. Honour and recognition in case of success.

Sir Ernest Shackleton

The above piece appeared in *The Times*, London, in the year 1900. Today, it still remains a classic. The passage of time has not dimmed its value as the best piece of advt. copy published anywhere any time. In newspaper parlance, this is a "classified" or "small." But there are classifieds...and classifieds! An example such as the one given here is very rare. Although a classified, it conveys a rich, imaginative mind at work. The beauty and objectivity of this tiny piece puts to shame all other advt. copy. This brings us to the

IMPORTANCE OF COPY

The success of a motion picture does not solely depend upon the technique of production. There should be a good story to tell. Similarly, bad copy (unsuitably worded, unnecessarily loaded with verbiage, indiscreetly phrased, lacking the crispness and forthrightness that are essential in news advertising) however nicely displayed with all the glowing colours, pictures and types will not evoke response. Therefore, it should be made clear to advertisers that good script (matter or copy) is a basic necessity. The layout, but, rests on the foundation of good copy, neatly written. (The writer has seen quite a few of scribbled, pencilled, and illegibly prepared copy, sometimes on no more than the flaps of old envelopes!) The best of layouts cannot be made to hide the lack of proper raw material, *i.e.*, copy. Good arrangement enhances good copy while the same layout throws into stark relief the unsuitability of the script. Looking at the spate of ill-written copies, one wonders whether the advertisers realise that it costs money to advertise and that *it should begin with a well-worded copy!* The language advertisements are the worst offenders, as they literally translate their English counterparts, throwing all the meaning to the winds. Whenever there is some meaning in these regional language advts., they are too literary and appear so much out of the textbook that the average news reader will not venture to understand the veiled wording. So, here is failure of purpose, not due to bad layout, but due to bad copy.

WHAT MAKES AN ADVT. PULL?

I don't exactly remember where I came across the following. But I could not forget these words—they have made such a deep impression: "Advertising, like steel, must be magnetised before it has power of attraction." An advertisement display can be made attractive in a variety of ways :–

1. By using bold contrasts in sizes of type and variations of the same type family.
2. By symmetrical balance of the various units forming the advt.
3. By employing associated or allied type faces harmonizing with each other.

Example one reproduced here demonstrates very clearly the bold contrasts of type faces used: Erbar condensed Bold and Light, Metro Bold and Metro Medium. These faces are eminently suitable for news advertising, well known for their uniform colour and strength of strokes and their suitability for any kind of product.

Grouped Style rather top heavy

The same matter is arranged in a centred style unlike No. 1 where a left flush grouping is adopted. The matter is symmetrically balanced being centred.

Neat Centred Style

Three allied series of types have been used in example three. The square serifed Memphis Bold has been chosen for the top headline which is the important unit in the advt. Square serifs are as popular as the sanserifs in news advertising. Again, Erbar condensed which goes well with square serifs is used for the address line. For the body matter, Excelsior, the news face used throughout the world, is used due to the volume of matter. Any job face would have made the advt. crude. The judicious use of white space and an appropriate triple rule border enhance the effectiveness of the advt. This is harmonious association type faces, sizes and borders, without neglecting the function of white space.

Well balanced layout

Lest readers may wonder why the subject of Lettering has not been touched so far, a brief historical outline is given here. When we have well designed type faces, one may be tempted to ask

WHY LETTERING?

In present day display, Lettering fills up the gap left by type designers, whenever and wherever the existing type forms cannot do justice to the requirements of a particular display or where they cannot reach or meet the demand of particular requirements. Lettering gives the individual touch to the advt. as a custom-made suit or a custom-built car. The place of hand lettering cannot be usurped by any type. A word of caution is necessary here in the employment of lettering. Slipshod lettering, instead of improving the look, spoils what look there is. So, if a good lettering artist cannot be requisitioned, better use types.

EMERGENCE OF THE ALPHABET

Do you believe that the English alphabet is the descendant of the Egyptian Heiroglyphics? However, this is the fact: The 1300 characters of the Egyptians were reduced to 22 by the Phoenicians, who in 900 B C bequeathed the heritage to the Greeks. When the Romans conquered the Greeks, it was a conquest for the so-called vanquished too: The Greek culture, language and civilization conquered the Romans who adopted them. The Romans gave the alphabets the Capitals during the middle of the 8th century. At this period there was the danger of language and learning becoming extinct. Indeed, this would have been the case, but for the monasteries which kept the fire of learning burning and lettering improved due to their scribes.

REVIVAL

Alcuin of York, an Englishman was mainly responsibile for the revival of letters under the patronage of the Great Charlemagne. His single mindedness and devotion achieved the task he had taken. During the Renaissance, the calligraphers of Italy gave the art of lettering a great fillip by designing better and new type faces. An example of italic handwriting written by Mr. T. Wilson is reproduced below by courtesy of "Intertype Ltd." from their magazine "Interlude." I leave it to the readers to judge for themselves the elegance and rhythm that are found in the piece of lettering given below.

Italic Handwriting

Illegible handwriting is an even greater offence than mumbling speech because, with the former, immediate clarification cannot readily be obtained.

The Society for Italic Handwriting (Hon. Secretary: Miss Anna Hornby, 32 Blomfield Road, London, W.9) wishes to help those who are often heard to remark 'I must do something about my handwriting.'

The aim of the Society is to revive & perpetuate the beautiful, legible and easily-learnt handwriting of the Italian Renaissance, which provided models for our early typefaces.

It costs only ten shillings a year to belong to the Society for Italic Handwriting. Interest and pleasure in writing are sufficient qualification.

A beautiful specimen by Mr. T. Wilson
—Courtesy Intertype Ltd.

Saga of Printers' Ink

By

SRI DINA NATH BATRA

This is the second and concluding article on manufacture, properties and use of Printing Ink. It gives modern instruments for testing and other useful information vital for fine printing

The colour and strength of ink can be tested by pulling proofs on the particular quality of paper and drying. The colour is examined upon the dried proofs and compared with any sample available. The quantity used also indicates the strength or weakness of ink as only the minimum quantity should be needed for covering a particular area. The photovoltmeter is used for testing uniformity of colour. The tack and consistency of ink is tested on an Inkometer. This device simulates press printing conditions. For colour control various devices are in use such as Spectrophotometer of the General Electric Company, The Colour Eye of the Instrument Development Laboratories, etc. Differences in colour or non-uniformity is clearly indicated by these devices.

The time taken for ink to dry or set can be tested by pulling proofs and placing them inside heavy books for some time and examining the period within which it dries. In such experiments care should be taken not to expose these samples to draughts of air as then the true drying time cannot be assessed.

The coarseness or fineness of grain of ink can be seen by running a palette knife through the ink. Unground particles will clearly be observed and in such cases the ink should be rejected. For smooth running and working qualities of the ink, the pigment should be finely ground.

The tinting strength of two inks can be compared by drawing patches of the respective inks side by side with a palette knife on a sheet of bond stock. The inks should be first reduced by zinc white of the same quantity for comparing the strength.

Dip a palette knife into the can of ink and hold it over a glass plate. By drawing the knife across the plate and observing how the ink settles itself, the length, flow and fountain-following properties can be judged.

The adhesion, tack or pull of the ink is tested by taking the ink by the finger and dabbing on the desired quality of stock. Picking or over-tack can be observed by pressing on the stock.

The light-fastness of ink is tested by a device called Fade-ometer. The Inkometer tests consistency of inks.

The printability of a paper can be tested by applying a drop of kerosene to the paper through a drop bottle. With a stop watch find the time it takes to disappear on the paper, *i.e.*, the time taken to penetrate. The diameter of the spread of kerosene will indicate the amount of absorption of the fibres. A large diameter indicates too much spread of printing ink.

DRIERS

Driers may be liquid or solid. Soft black inks need liquid drier. Lead or manganese dissolved in linseed oil is used as drier in halftone, offset and other illustration inks. Cobalt drier is the most powerful, quick and safe drier. It is used for halftone blacks, but not for colours that are to be overprinted or super-imposed. Paste driers are used in colour inks. It is slower than others but uniform. An ounce or even half an ounce to a pound of ink is the safe amount of paste drier that can be added. Process inks or tri-colour inks need

only paste driers as they never interfere with the subsequent overprinting of colours. Cobalt drier is unsuitable for this purpose, because, it dries with a gloss and hard surface preventing the subsequent colour from taking.

INK MANUFACTURE IN INDIA

Starting with Hooghly inks, India has more than half dozen leading ink manufacturers now. Import for foreign inks is restricted to Rotary Inks. The manufacture of the latter is not so well developed as yet here. The Rainbow, The Ganges, John Kidd, Winstone, Coates (India), are the others in the field. Needless to say, much advance has been made in providing the Indian printer with a good, dependable, uniform quality of ink. It is true we are not fortunate in having such development in the paper manufacture field. Perhaps due to the latter, inks continue to give trouble for a satisfactory paper and a matching ink are the pre-requisites of perfect printing. Frequently, we see good Art paper printed with excellent blocks are unsatisfactory due to false economy in buying inks. A good ink pays itself with rich results and every printer should bear in mind that *every ounce of good ink paid for is worth its weight in gold.*

The cost of linseed oil has forced many manufacturers to substitute it with mineral oil. Large tins of these can be found decorating the front yards of ink manufactories. When you open your newspaper in the morning, the smell encountered by your nostrils is not that of paper or pigment, but that of the oil used in the ink. Sometimes the smell is not pleasant. coconut oil or gingelly oil, if used as a vehicle, may make our mouths water, as these oils are associated with edible products of our kitchen! Conversely, castor oil as a vehicle will produce revulsion in our stomach! We don't know whether it is beyond the scope of our research scientists to find an odourless vehicle. Alcohol or spirit inks are fortunately less common in India. Otherwise our Prohibition staff may well pounce upon a voracious reader, smelling an intoxicant! A vehicle-less ink may solve all these problems, but a pigment-less ink is a dream like a decoction-less coffee!

Table showing Inks to suit Printing Processes

Letterpress	Flat	Firm oily ink that dries by oxidation
	Rotary	Fluid oily ink that dries by absorption
Flexographic	Rubber	Aniline inks with water and alcohol
Lithography	Metal	plate. Same as 1.
Offset		Drying by oxidation and absorption
Collotype	Gelatin	.do
Gravure	Metal	Very fluid, non-oily ink drying by evaporation.

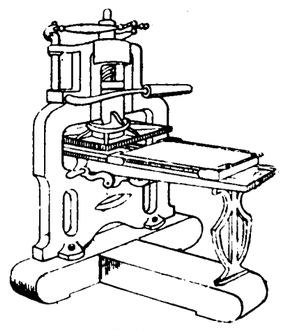
Hand Press is Here to Stay

By

SRI S. GIRI

In the maze of modern fast-running machinery, printers forget the forerunner of these. For our country, hand press has continued importance and will continue to play a role. This article shows how

In certain respects India reverses the rule followed by the West. Products made by hand offer typical examples in this regard. Hand-made paper is considered superior and hence costs more in other countries. Similarly handloom fabrics are luxury items in the UK, USA, etc. But in India anything made by hand is looked down upon and is considered cheap. Our hand-made paper is used by some philanthropic agencies, and is well known for its poor quality. Hand Presses have been left behind long ago and can be found now only as museum pieces and as relics of a bygone age. Even students neglect their study, little remembering their history and the basis they offered for the evolution of the fast-running presses of the present day. In India, the story of hand presses is different: they still serve some useful purpose and, far from being an obsolete equipment, are full of energy and sturdiness for which they were well known in their heyday.



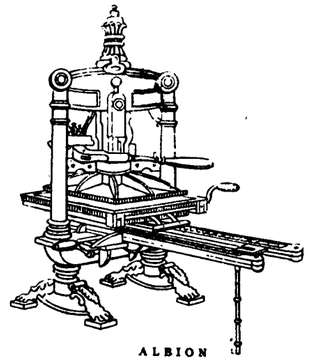
Stanhope

HISTORY

Those interested in the development of Printing will find the story of handpresses very absorbing. Originally a wine press was used in Europe to do the work of a printing press which was yet to come. It was left to Charles, Earl of Stanhope to bring out the first iron press. This happened in England in the year 1772. In Basle, Switzerland, one printer and typefounder by name Has is said to have manufactured an earlier iron press. But it was not accepted by the printing profession.

In the Stanhope Press, the horizontal arrangement of a series of levers enable with one pull by a single pressman to impart the required impression from a forme. A handle acts through these series of levers on a screw to which the platen is attached. About 200 impressions per hour could be taken with this press. This was definitely an improvement on the old screw presses which required equal pressure to go down on impression and come up to the original position. But the Stanhope levers give greater pressure when it is required, *i.e.*, at the time of impression and when the position of the levers is reversed the platen comes up with the least effort or power.

In the year 1824, the Albion press made its appearance having been introduced by an Englishman by name R. W. Cope. Meanwhile, the pressess invented by the Earl Stanhope crossed the seas to USA and many of the newspapers of the



ALBION

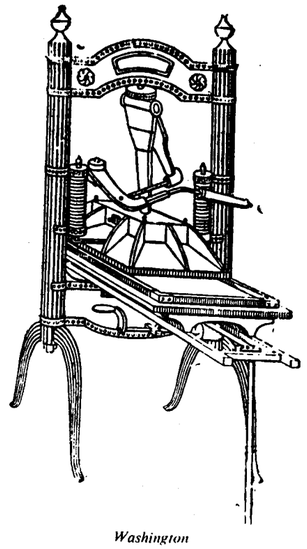
day were printed on Stanhope Presses. One would hesitate to believe that any newspaper was ever produced by the slowest contrivance, *viz.*, handpress especially in a country like the USA. The New York newspapers in time were tired of the Stanhope and hungered for something new. They thought that something new was news! Under these circumstances the world witnessed the birth of the Columbian Hand Press. The year was 1813 and the man who invented the Columbian was George Clymer, an American printing mechanic. The major printing establishments including newspaper concerns used the Columbian with great satisfaction. The Eagle and the Serpents which served a mechanical need as counterpoise on the top of the press also functioned as a piece of ornamentation. Men of the present day would perhaps call that as "design in industry." The Chill and the toggle joint of the Albion had already made a deep impression on the mechanics of the day. Then in 1819, we hear of John Wells bringing out an effective and unique togglepress. Wells was an ink-maker and originally used the toggle press for pressing linseed oil which formed the vehicle for the printing ink. As there was need for a press with improved features, he successfully employed the toggle

lever for a printing press. But it is unfortunate that Wells died and with him the Wells Toggle Press.

Mr. Hopkinson's Albion (1824) has two upright frames with a crosspiece. The crosspiece was familiarly known as "the staple." All the parts are of iron. That is why the handpresses were called "Iron presses." A couple of ornamented feet erected on a wooden pedestal support the top of the press called frame head.

A rib leg supports ribs or rails on which the bed is rolled out and in. There is a bolster at the extremity to prevent the carriage running off the rails. The handle for working the carriage works with a roll of leather or webbing on a wooden cylinder termed the rounce. The platen is strengthened by radiating plates. There are guide plates to prevent vibration or side to side motion of the platen in its descent.

The piston vertically runs downwards from the head and is connected with a series of levers.



Washington

Power is obtained by causing an inclined piece of steel called chill to become perpendicular. The chill is elbow shaped and when the handle is pulled towards the pressman, it straightens and forces the platen down. The Albion is well-known for the absence of screws which were a feature of the older presses. A powerful helical spring at the head of the machine effects the return of the platen, which is forced down by pulling the handle.

THE HOE PRESS

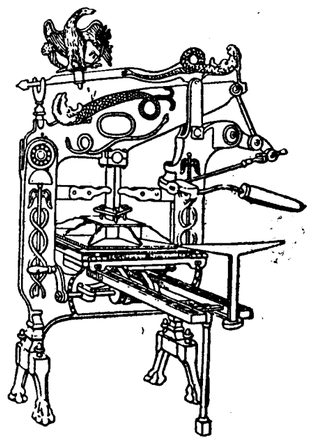
Peter and Mathew Smith were brothers and Robert Hoe was a brother-in-law. When Smith invented a press none ever thought the inventor as well as his brother would pass away bequeathing the press to the brother-in-law. But this was what exactly happened. In 1823 the Press came out. Robert Hoe was the sole owner of the business. The press which also utilised the toggle joint of the short-lived Wells Press, was of a heavier construction. This strong piece of equipment appealed to the people of that rugged age. In 1835, Hoe altered the design to one of Washington design.

THE WASHINGTON

This is the most famous of all iron presses and was invented in 1821 by Samuel Rust. He embodied the toggle of the Wells press with improvements with a view to provide greater leverage. In 1829, an improvement lightened the press considerably. Dismantling and shipping was made easier. When Rust retired at the height of his popularity in 1834, the Hoe Press adopted the Washington design of frame.

The above in short is the story of hand presses, their birth and growth.

The Columbian has the pulling bar elbowed and its connecting rod is diagonal. A powerful lever action is obtained by the rod chang



Columbian

ing the horizontal movement of the bar into a vertical one. A strong iron bar attaches the lever to the platen. The descending movement of the platen is steadied by two girders projecting from the cheek. In the Columbian the power of the Stanhope press is greatly enhanced and the principal characteristic is the long arm which is forced down by the rod.

THE FUTURE

India has got plenty of these iron presses and most of them are working. In district presses, they are employed with success for poster printing of short runs. Even in the city there are presses which use solely handpresses. For India's economy, it seems as though handpresses will continue to play a role not less important to that of other simple devices such as the hand-operated guillotine (rotary cutter), hand numbering machines, hand ruling machines, etc. The cottage industry affords scope for the handpress to function, although in a limited sphere, as effectively as any other contrivance, which for most of its success depend upon human skill.

(Continued on page 24)

The Role of Chemistry in Lithography

By

SRI LAKSHMAN P. MISRA

This is the concluding article regarding the chemical side of photo-lithography. It explains the part played by the various chemicals and their interaction in producing a perfect reproduction and pleasing printing

Chemicals may be used in solid, liquid or gaseous state. Solids may be supplied as crystals. Crystals contain a large part of water. Therefore, substances in a crystal state are not concentrated. Crystallization results when a saturated solution is made to evaporate by exposure to air. Each substance when formed into crystals takes various geometrical shapes, depending upon the nature of the substance.

OTHER FORMS OF SOLIDS

Table Salt affords us another example of a different state in which a solid can be obtained. This form known as "granules" consists of tiny crystals. Like crystals, granules also are the least concentrated. A solid which is dry and free from moisture is called "desiccated." The "monohydrated" state of solids is midway between the crystalic and dry states. Consequently the monohydrates have less water than the crystals and more than the dry forms. The strongest form of any solid is "Anhydrous" which means absolutely free from water.

PLATE PREPARATION

The offset plate is so prepared as to absorb ink in the printing portion alone and repel it in other areas. As inking and dampening rollers go over the plate, the printing portions are greasy and attract ink and repel water, whereas other portions absorb water and reject ink. Formerly Lithographic stones which were porous were in use. They kept the surface damp. The metal surface is grained mechanically to give a similar effect. Chemical graining can be given to aluminium plates. It has a superficial oxide layer. By electroytic oxidation, capillaries such as those of stones are produced.

COUNTER ETCH

After graining, plates are stored and before use undergo an acid bath. The stability of the image depends upon this acid bath called counter etch. Transfer of images on prepared plates may be done by making a photographic print on it. For this a coating of dichromated colloid, *viz*.. albumin and dichromate or casein and dichromate is used. After drying, it is exposed to light which hardens the coating. Another method is to transfer the image by exposing through openings in the light sensitive coating, the openings forming the image. When an image is transferred to an offset plate, there is a chemical reaction of fatty acids in the ink with the metel base.

ETCHING OR GUMMING

The portions of plate not carrying image are desentized so as not to absorb ink. Gum arabic has a desensitizing action on metal. An etch is prepared with acid salts and gum arabic. Formerly acids alone were used to make the non-image areas water receptive. The substance called gum arabic is a pitch taken from certain species of acacia trees. Although this alone, if used in a concentrated from, is capable of desensitizing parts so as not to take ink, it is likely to damege the image in the printing portions. Therefore, acids and acid salts are added to the gum to increase its adsorption. After rinsing, polishing and drying, a residue of gum is left in the grain of the plate.

WASHOUT SOLUTION

A preparation of bitumen, asphalt, wax, turps, etc. is applied to strengtren the image. This makes the ink dissolve and fresh ink is rolled on it after smearing the excess with a sponge. For removing old work from plates, caustic soda, sodium cyanide (or lye) are used. If ink on the plates are not washed out properly it will be difficult to remove the image. Longer time, greater soaking will be necessary and the risk of some ink remaining will be there. Further, more metal will also be lost.

Zinc plates are liable to corrosion due to eleclrolytic action when immersed in water. This is due to generation of current and formation of a salt. Metal that is impure or one which contains another metal are subjected to electroytic action due to difference in potential. The weaker of the two metals is destroyed as a result.

The following are some of the chemicals used in photo-engraving and offset processes :—

Alum: This is a double sulphate formed by aluminium and an alkali metal. It is readily soluble in water. In order to give the zinc plate a tooth to hold albumen-bichromate solution, it is used with dilute nitric acid.

Ammonia: NH3 consists of Nitrogen and Hydrogen, is volatile, otherwise known as Ammonium Hydroxide. It is used as a blacking agent. To neutralize acidity, ammonia is used with bichromated albumen and fish-glue solutions.

Ammonium Bichromate: This is a sensitizer and is used with albumen for line negatives and with fish-glue for tone negatives.

Asphaltum: This is derived from dry distilation of coal tar pitch.

Carbons: Used for arc lamps to produce light for exposure by passing electric current.

Casein: A water-resisting glue made from cow's milk. This serves as a good adhesive.

Beeswax: This is got by melting honeycomb of bees. It forms one of the constituents of etching ink.

Bitumen: Used in line plates to strengthen acid resist in etching.

Caustic Soda: This is a cleaning agent used in removing ink in line etching.

Collodion: Nitrated cotton (Gun cotton) dissolved in alcohol and ether. This holds the sensitizing silver salts for wet plates.

Dragon's Blood: A preparation from the sap of a kind of palm tree of West Indies. It is used to protect the side walls in line etching.

Turpentine: This is obtained from the exudation of pine trees. It is a reducing agent and is also used to remove ink from plates. An improved form of turpentine is Lithotine.

From the foregoing it will be clear that a number of chemicals are used in the process of lithography. A lithographer, unlike a letterpress printer should have knowledge of the chemistry of substances he is using. Without this knowledge he will be just like a person moving in the dark. It has been found by experience that those with a good grounding of chemistry become good photo-engravers and lithographers. There are many who are new to chemistry in theory, but the same persons are handling daily many chemicals and they know also the behaviour of each of them under set conditions. When such practical lithographers begin to study chemistry, they will have a sensation as if new light has been thrown on the subject already known to them. Every operation takes a new meaning and all doubts have new explanations. In other words, he begins to know the "Why" of every process. This reasoning behind every operation is the fundamental basis of all technical education. The day is not far off when every one of our craftsmen will have proper training under the scheme of Regional Schools of Printing. These schools will not transform bad printing into good overnight. But sound training will certainly show the causes for the defects and also the remedies. If by this article, at least a few take to reading chemistry, then the aim of writing the article is fulfilled and the reward is already gained.

The Firm Messrs. Minchel Et Cie of France, manufacturers of the Luxographe electric engraving machines, have amalgamated with Messrs. Fairchild Graphic Equipment Inc., New York, manufacturers of the famous Scan-a-graver and Scan-a-sizer machines. This amalgamation will mean more improvement in the field of electric engraving

Sri S. Ramu of Commercial Printing Press (Tata's), Bombay, receiving the State Award for Fine Printing from the Vice President of India

Tone Reproduction

By

SRI D. R. VARMA

The article "Picture Printing" in our last issue has aroused much interest in the readers. A much more interesting subject, dealing with halftone printing is admirably handled here by an expert. The subject is as absorbing as the pictures

The hand engraver has long ago been superseded. He has given his place to the process engraver. In other words, photo-mechanical reproduction has come to stay. And what is more, it is progressing fast. The employment of the camera, in letterpress, gravure, lithography and collotype has been found to be quicker, economical, and gives a more faithful reproduction. Stories without photographs are today considered as savoury without salt. The numerous pictures reproduced in the dailies and magazines, not to say of the books, are ample proof of the wide field of application of photography for block-making.

PROCESS ENGRAVING

The meaning of process-engraving is "the art of photographically printing an acid resist on a metal plate and etching the unprotected parts with acid. The protected portions are left in high relief for receiving ink and impression." Both line and halftone reproduction come under this head. The line drawing is a solid line on a white background. Pen drawings, type matter, etc. do not require a screen. Although a negative can be made with all the intermediate tones of grey, they cannot be transferred to metal as such. This is due to the fact that the light sensitive material will be washed away as it will not be hard enough to form an acid resist. So a tone is produced by means of accumulation of dots, the surface of which will carry ink. As this cannot reproduce various grades of light and shade and the intermediate tones of grey, a "halftone" is used for the reproduction of subjects in a continuous tone photograph, wash drawing, water colour or oil painting.

The difference between line and halftone lies in the fact that the varying tones of the photograph are faithfully rendered by the process camera and translated into the plate. The infinite variety of shades between the solids and highlights are reproduced by means of dots. All these dots are solid, but they vary in size depending on the tone required. In a light area, the dots are smaller with a white background and in the solid area the dots are larger, with small white dots (in a black background). As the size of the dots increase, the darkness of the area increases.

Solid Dots *Mid-tone Dots* *Highlight Dots*

THE SCREEN

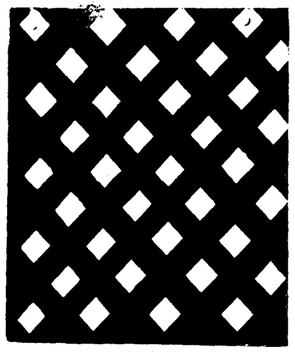
The variations of tone are produced by interposing between the sensitized plate and the lens a cross-ruled screen. This screen consists of two pieces of ruled optical glass cemented together in such a way as to make the lines to cross at right angles. These lines are usually at 45 degrees to the vertical.

In the year 1882 Herr Meisenbach of Munich invented the halftone process. The halftone screens were perfected by later inventions such as that of Max Levy of Philadelphia, USA. Various kinds of screens are available now, such as pair of screens, circular screen for tricolour work, special grained screen, etc. When the original is exposed, the screen translates the picture into a series of dots of varying size. The difference between an ordinary negative and a process negative produced through a screen is that the ordinary one is "a continuous record of even character and uneven density but a screen negative is a record of uneven character and even density." The light reflected on the sensitized plate from the photograph in varying intensity is faithfully recorded on the negative in dark, semi-dark, grey or light tones. In typography no greys or intermediate tones can be printed at one printing and only solid ink of one thickness can be printed on paper. Therefore the screen is employed to render the varying tones for breaking the subject into dots varying in size.

The ruled lines of the screen are filled with an opaque pigment. The result is a network of opaque lines and forming transparent squares. The width of the squares are equal to that of the opaque lines. The number of lines per square inch varies from 65 lines for newsprint, 100 lines for super calender to 120 for imitation art and 133, 150, 175 and 200 for real art and highly enamelled stock.

The light forming the image first passes through the screen before reaching the sensitized plate. The shadow of the opaque lines with the inertia of the photographic plate form into dots of varying size. For correct dot formation on the negative the factors of screen distance and size of lens opening should be considered. A straight line reproduction is possible with

the following ratio. Diameter of lens opening: camera extension:: screen aperture: screen distance. Satisfactory result in etching is obtained by flat dots got from the above.



Enlarged Halftone Screen

Wet plates are considered suitable for halftone negatives and they produce good quality images. Dry plates leave a fringe, but wet plates have the image on the collodion film, with a sharper definition. Further the wet plate dot formation can be easily and quickly built up by intensification. Complete opacity in the shadow dots and firm joining of the highlight dots are obtained by fully exposing the dots resulting in a slight excess of silver nitrate on development. After fixing and intensifying with a copper bromide solution accompanied by silver nitrate solution, the above result is obtained.

BLEACHING AND CUTTING

The negative is bleached in an aqueous solution of iodine. It is necessary to reduce the shadow dots to the smallest size possible to retain the depth of the original. Simultaneously the dots in the highlights are to be reduced retaining the link at the corners. For this "cutting" is necessary. To "cut" is to reduce the plate with potassium cyanide solution. Reduction may also be carried out with a solution of potassium ferricyanide and hypo. This is done until the dot formation is judged to be proper. Intensification can now be done with lead-ferricyanide. After intensification negative is blackened with sodium sulphide to increase density.

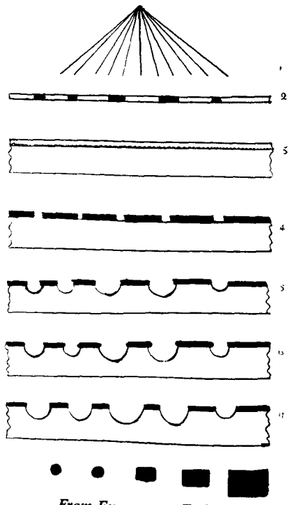
PRINTING ON METAL

A bichromated colloid after exposure to light is rendered insoluble in cold water. This is the principle employed in halftone printing on metal plate. Fish glue is employed as the colloid which when heated forms into an enamel acid resist protecting the printing portions. The etching mordant used is either nitric acid or ferric chloride. It is usual to choose 16 or 18 BWG plates of zinc or copper for halftone plates. Generally a half inch margin all round the subject is allowed for handling. Economy in metal and lighting can be effected by stripping a number of films on a glass and only one printing made for a number of plates together.

Zinc is unsuitable for halftones due to its low melting point (419 deg. C.) which is closer to the heating temperature of 350 deg. C. during burning in of the fish glue. Further, a change in structure of the zinc takes place during heating. A rough granular result on zinc surface makes it unfit for true reproduction. Zinc has a straight finish while copper has a circular polished finish which is better adapted for halftones. Therefore, where softnesss in etching and fine screen reproduction are called for, copper is to be preferred. But due to high cost, zinc is still widely used for coarse screen and where stereotyping is done and no direct printing is required.

The metal is cut to required size, cleaned, polished and rinsed. The back of the metal is also washed thoroughly. The metal is now coated with the sensitized glue solution on a whirler. The speed of the whirler determines the thickness of the glue solution. Thinner films are necessary for dry plates as the gelatine emulsion is thick. Similarly for copper, thinner film will do. When dry the coating is sensitive to light.

The negative is warmed to the same temperature as the plate to prevent condensation. Both are placed in contact in the printing frame and exposed to arc lamps. The character of negative will call for less or more exposure time. The layer of glue is rendered insoluble. The light passes through the transparent parts of the negative. Where the negative is opaque the sensitized glue remains soluble



From Exposure to Etching

and can be washed away. After developing in running water and being satisfied that the exposure is correct, burning in is done. Heat is applied to the metal, the dyed image disappears, the glue changes colour from yellow to brown to

(Continued on page 26)

From Our London Correspondent

F.& D. BROWNLIE

LEARN LITHOGRAPHY

An extremely interesting booklet, "The Art and Craft of Modern Lithography" has been published by The Amalgamated Society of Lithographic Printers of Great Britain and Ireland.

Answering the question "What is Lithography", this says there are three principal ways of printing whether on paper, metal or glass. They are technically different and require special skills, and those operating them are classified as letterpress printers, lithographers, and gravure printers. The methods are (1) printing from a raised image or type (letterpress or "relief" printing and the oldest form of printing), (2) printing from a flat or planographic surface (lithography), and (3) printing from an engraved or etched (recessed) image (intaglio printing, of which an example is photogravure).

UNDERLYING PRINCIPLES

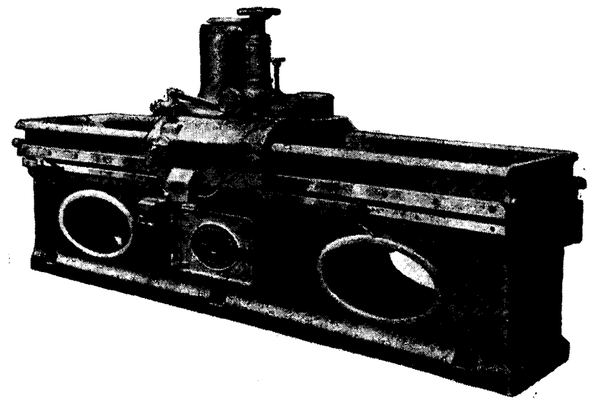
Lithography is a chemical or physical rather than a mechanical method of reproduction, and is based on the fact that grease and water will not mix. Equally important is the affinity which grease has for certain kinds of stone or metal. It was the discovery by Alois Senefelder of these two chemical principles (or more properly physical properties), namely the antipathy of grease and water, and the affinity of grease and prepared stone, that revealed the possibilities of lithography. He found that if an image were drawn on a flat smooth surface of stone with a greasy crayon, and if the rest of the stone (being porous) were kept moist an inked roller could be passed over the the surface of the stone and the ink would adhere only to the greasy image or drawing. At the same time the moistened portion of the stone's surface would resist the ink because of the antipathy of grease and water. This explains how it is possible to print an image when the printing and non-printing areas are on the same plane. It was from the use of stone as a printing surface that the craft of lithography derived its name, originating from the Greek words Lithos and Grapho (to write on stone). Introduction of the offset method by Robert Bartley in 1875 overcame the obvious difficulty of having to draw the original image in reverse in order that it should be the right way up on the printed sheet. This was done by taking an impression of the image first on to a rubber blanket and transferring it to the paper.

Stone has almost entirely given place to metal as a printing surface, zinc and aluminium being the most widely used, while plastic plates and even suitably prepared paper plates are also used. For long runs it is possible to make plates which have different metals for the image—which has to accept ink—and non-image portions which have an affinity for moisture.

MECHANICS

Whilst the lithographic process is basically chemical in nature, the actual printing has its mechanical side. Thus a good lithographic craftsman must have a knowledge of chemistry and mechanical ability, as well as a discerning appreciation of tone values in colour. A great stride forward was made with the development of the rotary offset press. Previously, the printed image

(Continued on page 20)



Automatic Knife Grinder

Printindia Sample Survey

Printing Machinery in City Presses

A survey throws light on many things. For example, the types of machinery used by the printers will be a pointer to the future of these products. The pattern they form is worth a study by students, businessmen and others of the printing family. The present-day trends, the endless variety and the amount of progress made in the industry are all brought out in this sample survey.

THE PRINTED WORD

A healthy circle is set up by the spread of literacy. As education spreads, the thirst for knowledge grows, the need for newspaper, magazines and book grows, and this in turn results in further spread of literacy—thus it goes on round and round. In the post-war world the power of the printed word has grown. Even the spoken word is printed immediately for wider publicity, first through the dailies, later through weeklies and finally made permanent in books. Inventors of printing and allied machinery have done yeomen service to humanity by making printed literature reach the poorest of the masses. This sample survey is undertaken to encourage interest in printing machinery.

This is confined to the limits of Madras City and again only to about 20 presses—small, medium and large.

THE PATTERN

The table at the end of the article concerns only the 20 presses visited. The small presses had only platen machines, the medium ones more platen and one or two cylinders and the large ones an equal number of each. More light platens and more stop cylinders are in use evidently due to low initial cost. The sizes range from small card platen to Demy folio and in cylinders from Crown to Quad Royal. Double Crown is the most popular size in cylinder machines as Crown Folio is in platens. Royal is an unusual size. The American Chandler & Price is losing ground due to dollar trouble and thanks to Japanese models which are definitely cheaper. One or two Indian makes like the LIPI of Maya Engg. works were seen. Of the heavy platens Emil Kahle, the German, is liked by the few who have it. The Automatic platens have become very popular and *there is a rush for the Original Heidelberg*. Auto Thompson, Victoria Art Platen, are a close second. Contrary to the orthodox theory that light platens are not useful for cutting, creasing and punching work, these operations are carried out successfully on light platens.

A good deal of carton work is being turned out on platens and one is even doing printing on fabrics!

Dawson, Payne and Elliot are the bread and butter machines of the Indian Printer. Good colour work is being turned out on these. Their simple and robust construction has endeared itself to the buyers. The Two Revolution Miehle is still the aristocrat of the Machine Room. Its high cost has not deterred the leading printing houses, including Govt. and Railway undertakings to go in for the same. Demy is the common size. A few two colour machines are seen in the City. Some American Miehles are also being used. The latest in cylinder machines is the small automatics of single Crown or similar size, and the Hirundo, Frontex, Mercedes, Nebiolo, Meteor, etc. are all well represented. A few vertical jobbers like Vertical Miehle are doing good work with their characteristic floor saving. The Falcon platens belong to a class by themselves and are doing good work in some leading presses.

Drum cylinders like the Babcock have been encountered here and there. But this class seems to have had its time and is now more or less superseded by the two revolution machines. One two-feeder machine was encountered as a museum piece, as a relic of the past. This is remembered only as a forerunner of the modern rotary.

As a whole, the latest machines have automatic lubrication, are compact and space saving, the moving parts and gears are entirely enclosed, their design is more streamlined, are generally fitted with automatic feeders and improved delivery and spraying and roller cleaning devices.

ROTARY MACHINES

Flat-bed rotary machines or more correctly reel fed flat-bed machines have definitely gone out of even the daily with a 4-figure circulation. Sheet-fed rotaries are seen in only a few offset machines. The Hoe-Crabtree, the Goss, Duplex Tubular Rotary are the brands seen. Some of them are two floor models the delivery being down. Colour units are available in all but one. It is worth remembering that a Madras daily was the first to introduce colour in the daily newspaper field. Small rotaries for running job stereos of Foolscap or Double Foolscap are seen in a press. This handles blank form work expeditiously.

PRODUCTION

The average outturn of hand-fed presses are around 1000 and mechanically-fed ones about 3,000. It is true that automatic presses are having a boom.

COMPOSING MACHINES

Some medium and all big presses have the benefit of line casting and individual type-casting machines for mechanical composition. The Linotype and the Intertype are quite common. Indian language Linotype is being used by quite a few presses and notably by a daily too. Indian language Monotype is used by two dailies and a host of other book printing presses. The Ludlow is doing well in handling display work. The Elrod and the Super Caster as well the All Purpose Linotype are used by the bigger presses (especially the newspaper concerns) for spacing and decorative material casting. Here again the trend of mechanising typesetting is noticeable.

The composing room of the medium and big presses are marked by the use of labour-saving rules and leads, light-metal furniture of the "Cornerstone" variety and mechanical quoins of the Hempel and Wickersham brands, strip borders, etc.

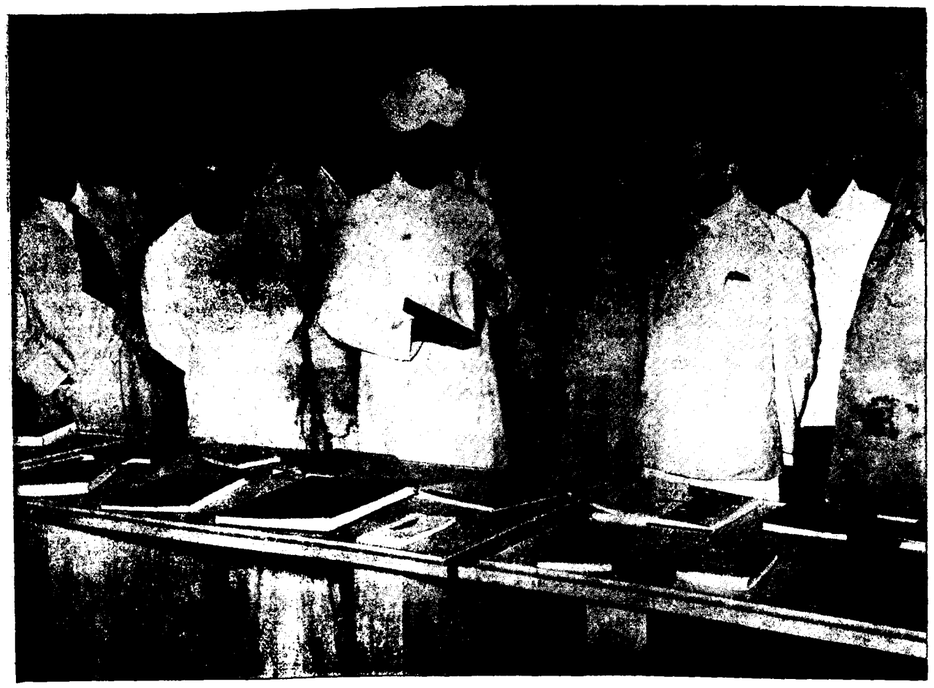
BINDING

Cutting machines observed were the Maxima, Perfecta and Polar, the Seybold etc. Some three-knife trimmers are used too. Indian cutting machines are steadily coming in although with foreign blades. Our steel plants when they produce better steel may perhaps bring in the all-Indian machinery, not only for cutting but for other branches of the press also.

Pen-ruling machines are more popular than disc ruling ones. Knife folders are scoring over the buckle fold, although some machines have both the types of folders. The Camco, Baum, Brehmer, Cundall are the folders seen.

Perforators, Indian, Japanese and British are seen in every press. Hand numbering machines are more used than type high numbering boxes, or paging or rotary number-

(Continued on page 22)



Dr. S. Radhakrishnan, Vice President of India, admiring the Books displayed at the Exhibition of State Awards for Excellence in Printing & Designing sponsored recently by the Govt. of India at New Delhi. With him are seen Dr. B. V. Keskar, Union Minister for Information & Broadcasting, Sri P. M. Lad, Secretary, Ministry of Information & Broadcasting and Sri S. N. Guha Ray, Genl. Secretary, A.I.F.M.P.

From Our London Correspondent

(Continued from page 17)

had been taken from a flat horizontal surface, although the paper receiving the image traversed the printing surface by means of a revolving cylinder. To-day almost all presses are of the rotary type, the printing image being drawn or photographed on to a zinc or aluminium sheet clamped round a cylinder.

WORKING

The most familiar type of lithographic press has three main cylinders whose revolutions are synchronized. One carries the metal plate containing the matter to be printed; another, known as the offset or blanket cylinder, is covered with a fine rubber blanket which comes lightly into contact with the plate containing the image and delicately takes a faithful impression on to the rubber blanket and, in the course of its circuit, transfers it to the paper or metal which is carried on the third or impression cylinder. The introduction of the rubber blanket has, perhaps more than anything else, given to lithography the distinctive feature known as offset lithography.

The latest type of multi-colour offset lithographic sheet-fed printing press will print four colours at once on sheets of paper 52″ by 76″ at a speed of 4,500 or more sheets an hour. By the use of what is known as the "four-colour" process, based upon the skilful blending of the three primary colours, red, blue and yellow, with black as a fourth, a reproduction in four printings of a picture, which in the original may contain a dozen or more different colours, can be produced at one pass through a 4-colour press. In the field of artistic reproductions, whether works of art, posters, showcards, or decorated metal containers, the photo-litho offset process is unequalled.

MORE PHOTOGRAPHY

Perhaps the most spectacular developments in lithography have resulted from the use of the camera, and the lithographic artist is to-day far more a highly specialized photographer and retoucher than a chromo artist in the traditional sense. In printing, as in many other industries, specialization is having its effect. In lithography, traditional craftsmanship is having to give place to new skills which combine mechanical and chemical precision with an aesthetic appreciation of colour and design. Its range embraces beautiful old lables on bottles of vintage wines, attractive memo headings, pottery decoration, decorated metal containers of endless variety of design and colour, display cards, bank cheques and Treasury notes, travel posters and books of every kind but particularly children's books in colour.

Sri S. N. Guha Ray, General Secretary of the All India Federation of Master Printers, thanking the Government at the Exhibition of State Awards for Excellence in Printing & Designing held recently at New Delhi

NEW KNIFE GRINDER

A new automatic knife grinder has been put on the market by Luke & Spencer Ltd. of Altrincham, specially designed to grind a wide variety of guillotine and doctor knives, scraper blades, and light section shear blades, such as fly and dead knives used in the paper industries. Briefly the machine comprises two main units, the main bed carrying a stationary knife holder, and the reversing traverse mechanism: and a reciprocating head. The upper section of the bed forms a trough, partly filled with soluble oil coolant, in which the knife holder is mounted. Thus the knife is partially immersed in coolant during the grinding operation, and the knife holder is adjustable to the bevel angle of the knife.

Two accurately machined and ground steel rails are carried off the sides of the bed, and the grinding carriage travels on these on hardened steel rollers. Driven by a 0.5 h.p. reversing motor, and suitable automatic reversing switchgear housed in the lower part of the bed, the carriage traverses the length of the trough over the knife holder. The grinding head is unique in that it dispenses with the usual external machine slide and motor, and houses in one streamlined dustproof casing the complete vertical spindle grinding motor and feed screw mechanism. This head is mounted on hinges on the grinding carriage, to allow it to be swung clear for access to the grinding wheel for easy replacement and adjustment, and also so that it can be adjusted to an angle to the vertical, to permit of a certain degree of hollow grinding where required. Grinding is done by a facewheel chuck, carrying segmental facewheel blocks which can be graded to suit the quality of steel to be ground and the ground finish required. The advantages are cooler, swifter cutting, and less wheel wear per traverse than where a cup wheel is used, particularly valuable when grinding long knives. The grinding head, running on ground steel rails on anti-friction rollers, cuts wear and loss of initial accuracy to negligible proportions, and reduces power consumption.

COLOUR COMPARING DEVICE

A new instrument, the Chromameter, designed by Victor Letouzy, and developed in consultation with Dr. V.C. Harrison of the Printing, Packaging, and Allied Trades Research Association, for accurately measuring and comparing colours of papers, prints and similar opaque materials, is now being tested in Patra's Laboratories. The device consists of two units, a measuring head and the main body containing power pack, electronic equipment and galvanometer. The measuring head consists of a light source maintained at a constant intensity level, a set of 12/18/24 narrow band interference filters and photo-electric cell.

Operation is simple. The instrument is plugged into the mains, allowed to warm up for 20 minutes and is then ready for use. As in most colouring devices it is necessary to obtain a 100% reading before colour measurements can be made which is achieved by positioning one of the filters and placing the measuring head on a standard white block of magnesium carbonate. By adjusting one of the knobs on the body, the indicating needle is brought to the required position. The head is then placed on the test sample, electrical impulses are passed to the galvanometer and the reading obtained is the percentage reflection at the wavelength given by the filter. This procedure is repeated for each of the filters in turn and from the figures obtained a curve can be plotted which gives a complete analysis of the colour under investigation. The instrument can be moved about quite freely providing the galvanometer is clamped beforehand, which is done merely by depressing a switch. The instrument is now being manufactured in Britain and will be available very shortly.

Printing Machinery in City Presses

(Continued from page 19)

ing machines which are conspicuous by their absence.

Automatic feeders for folding and printing machines observed are : Elless, HTB, Universal, the cross continuous being the most sought after.

OFFSET

The Roland, Crabtree, ATF Chief are the ones seen in the presses visited. A couple of presses have the Japanese Komari. They do good work. The Colourmetal was seen in one press. Two-colour machines are rare. Hand-fed machines are still in large use. The American and Swedish models of the Chief were seen in two offices.

POWER TRANSMISSION

Individual drive has captured the field in spite of high initial cost, due to their floor spacing and other advantages such as economy in current consumption, independent working etc.

CONCLUSION

The results of the survey indicate :

1. Latest types of machinery have made a deep impression in the minds of the City Printers. Their advantages are appreciated. There is a swing towards automatic machines, platen and cylinder.

2. Press-owners are not after cheap machinery but are discriminative buyers, of the best ones, fool-proof and automatic.

3. More continental and Japanese machinery are bought now than before when there was a British monopoly. But for Dollar trouble American machines will have a greater popularity. The British are fighting to retain their market. The East and West German firms, the Danish and the Swedish and the Czech are coming into their own in international trade in Graphic Arts machinery. The dearth of spare parts and servicing staff and mechanics which was the snag before, is being slowly overcome. The British firms are still the ones having qualified mechanics and readily available spare parts for all their makes and a well oiled administration.

4. Indigenous makes are slowly coming in and with proper encouragement are bound to grow in quality and volume.

5. Low quality letterpress printing has brought the offset in many spheres of printing, especially in pictorial reproduction.

6. *Well-trained, technically qualified young men are in ever increasing demand*, thanks to up to date machinery which demands expert attention and careful maintenance.

7. The era of modernizing our printing plant has begun.

PLATENS	No. in use
Golding Jobber	6
Chandler & Price	16
Emil Kahle	5
Victoria	5
Kluge	2
Falcon	8

AUTOMATIC PLATENS	
Original Heidelberg	10
British Thompson	2
Kluge	6
Victoria	2

CYLINDER MACHINES	
Dawson Payne & Elliott	10
Babcock	4
Summitt	2
Miehle Two Rev.	8
Two-colour Miehle	1
Perfecting Cylinder	1
Two-feeder	1
Centurette	2

SMALL AUTOMATICS	No. in use
Frontex	2
Hirundo	1
Mercedes	3
Nebiolo	3
Poly—50	1
Kelly	3
ROTARY	
Hoe	1
Goss	3
Duplex Tubular	1
OFFSET	
ATF Chief	3
Colourmetal	1
Roland	1
Crabtree	2
Harris	1
George Mann	3
Komari	2
Waite & Saville	1
CUTTING	
Maxima	2
Perfecta	1
Polar	1
Seybold	2
FOLDING	
Camco	2
Brehmer	3
SEWING	
Martini	2
Brehmer British.	4
,, German.	6
NUMBERING	
Roberts	10
Leda	8
COMPOSING	
Linotype	45
Intertype	6
Ludlow	2
Monotype	20
All purpose Linotype	2
Elrod	2
Supercaster	1
AUTO FEEDERS	
Universal	5
HTB	4
Elless	3
L & M	2

Indian Printing Industry

By

SRI C. S. PILLAI

Some problems facing the industry and solutions for them are presented in this article by a London trained and qualified printer

Printing Industry has come to be recognised as one of the major industries today. There is hardly any sphere of human activity where Printing has not a part to play. Indeed the industry has a vital role in building up sound democratic institutions and traditions and sustaining them. India now is in the threshold of dynamic changes. The Five Year Plans are bound to change the face of the country in the coming few years by ushering in an era of all-round prosperity consequent upon greater production of wealth. This is bound to lead to mass awakening and enlightenment, resulting in an ever increasing demand for more and more printed literature of all kinds and in all languages.

The place of printing industry in the future scheme of things, is therefore, doubly assured. If today the industry has not made as much strides as it should have, commensurate with the all-round industrial and technological development that is taking place all over the country, the printers have only to blame themselves for it.

OLD IDEAS

In this atomic age when man is making successful efforts to travel at supersonic speed, when newer and newer gadgets are invented to help ensure human happiness by making life easier, by eliminating delay, inefficiency and waste, it is deplorable to see this industry in India stifling in the hands of men wedded to old world ideas and ante-diluvian notions. No doubt progressive minded men are coming forward to help this industry on its feet. But the pace is rather slow and the result is that the industry is lacking proper organization and leadership.

The organization of bodies like the All India Federation of Master Printers augers well for the industry and deserve the unstinted support from the trade. But the trade, in its present state of stupor, cannot be expected to support such organizations enthusiastically unless they (the bodies) come forward with a positive lead to solve the grave problems facing the industry.

NEW PROBLEMS

The greatest and most pressing problem, is the unhealthy competition existing now. Most of the Printing Presses are ill-equipped, run on unsystematic and haphazard lines. Many of them are one-man shows, often run by men whose experience in printing is confined to years of drudgery in their own ill-equipped print-shops with a rattling type of foot-treadle as old as 20 or 30 years! Most of these stalwarts of industry, who will resent the slightest criticism, have hardly known the value of automatic machines, their capacity and the quality of work such machines are capable of producing. Many such presses have only one treadle, no proof press, not even a lead and rule cutter, much less a mitreing machine. It is also no exaggeration to say that these men do not know what is depreciation, what is wear and tear, overhead expenses etc. Yet, their capacity for unknowingly damaging the prestige and scope of the industry is immense. It is this class of printers, who are by no means small in numbers, who undercut the rates and bring positive harm to the trade as a whole. The print-buyers, many of whom are either unaccustomed to seeing high quality work or not having sufficient imagination to realise the immense advantage they stand to gain by having better produced and high quality materials to boost up their wares, are content to accept anything as printed matter, their only consideration being to get the work done at the lowest rate, without any thought whatsoever for the quality. It is here that the industry has to play its part by demonstrating that the expenses they incur for better material is but a fraction of the returns such better-produced materials will invariably bring.

Western countries offer us examples of the value of publicity for boosting up sales. Indian industrialists, being comparatively new in the field, may not be in a position to appreciate the value of spending on publicity as their western counterparts are. But it is necessary for the industry to bring home the above truth by producing better materials and convincing them.

With hundreds of mushroom printshops, ill-equipped, ill-managed and carrying on a hand-to-mouth existence, dotted all over, it is too much to hope that the industry can rise from its present state of lethargy unless drastic measures are taken. I call upon the leaders of this Industry to come forward with a positive, I should say, dynamic lead. I would even go to the extent of suggesting that in the interest of the industry, two or more such small printing presses should be brought into one unit with the individual proprietors becoming partners or directors of the firm. Such amalgamations will help raise

capital for expansion by getting loans, Governmental aid etc.

MASS PRODUCTION

The main thing is that only by organising the industry on mass production basis, by the addition of automatic and modern machinery could production be stepped up and standard of quality be raised. I have nothing but sympathy for the individual who has constituted himself into Proprietor-cum-Manager-cum-workman. Many of them are hard working and carry on the trade in their desire to be independent. But they are not promoting either their own interests or that of the trade. They must realise that Printing is an Industry, and not just a business, and it can be run successfully or developed only with adequate capital.

Here, it may be argued by some that if production is increased by applying mass production methods, there will be lack of work. This argument is not correct. It is one of the inherent principles of industrial production that the greater the output, greater will be the demand. When Lancashire mills adopted a gigantic programme of expansion early in this century, there was a hue and cry in certain quarters that there will be acute unemployment as a result of over-production. Events proved that this was not so. Similarly when Henry Ford started the first Automatic Assembly system for automobile manufacture, fears were expressed that there will be more cars than buyers and events have proved this also wrong. Recently, there was a news item to the effect that the millionth Volkswagen (People's Car) was turned out of the Assembly plant in Germany and that "though Volkswagen is now producing cars at the merry clip of better than 3,00,000 a year, Germany's well-heeled burghers still form endless queues for the little snub-nosed vehicle first dreamed by Hitler". And let us not forget that we are a nation of over 350 million, free to shape our own destiny, just embarking upon great schemes of industrialisation of the country and in this, we are backed by the great nations of the world.

Let us therefore get round the problem in a spirit of service we owe to this great industry and organise it on sound lines so that this industry may be enabled to play its part well and make a positive contribution to the great task of building a new, great and prosperous India.

Hand Press is Here to Stay

(Continued from page 12)

Modern machinery has cheapened art and made man an automaton. His skill and initiative, not to say imagination and intuition have been given the go-by. Hand press is a timely reminder of the essential creative aspect of man. There is more for man to do on the hand-press: inking, make-ready, damping of sheets, drying are all skilful arts in themselves. Registering is equally difficult. Further, connoisseurs who want to make everything by skill of human hands, are still using the handpress. There is no doubt that really high-class work could be produced by handpress. But it requires a capable pressman.

Wherever handpresses are relegated as junk, they could be reclaimed and repaired with local skill, in the village smithy and made use of to print the local newspaper, posters for village entertainment, festivals and fairs. Wooden types by the village carpenter plus the good old handpress form a veritable "Printing House Square" such as the West boasts of. It will be a pity if these handpresses which are sturdy and which can be made use of are condemned as scrap. For Handpress is here to stay!

Members of Governing Council of All India Federation of Master Printers who recently met at Hyderabad, going round Shivaji Press after a Tea party arranged by the Press

METICULOUS WAY OF MELTING METAL

Even in large presses, enough care is not bestowed while remelting type metal. Proper equipment is not available and some makeshift arrangements ruin the metal, the types and hence the quality of printing. The man in charge of remelting is not conversant with the essentials of the process. In short, there is no proper organization in the foundry.

An important thing in remelting is to examine the metal and remove any brass rules, zincos, copper plates etc. Linotype slugs should be melted separately from Monotype and foundry or case types. The temperature should not go beyond:—

For Slug metal 600 deg. F.
For Monotype 750 deg. F.

The metal pot should be thoroughly stirred and cleaned with flux. Dross should be removed from the surface. Any reviving alloy necessary should be added now.

Remember poor metal produces poor type and that means bad printing.

REASON FOR REJECTIONS

The City presses are now familiar with the word "Rejection". They print thousands or tens of thousands and the customer rejects them. In short, he refuses to pay for them as the copies are not according to specification. Generally, calendars, colour work, booklets and similar jobs are the ones most rejected. A carefully worded contract may bring the money but may lose the reputation of the printer. Machine proofs should be got approved and only after that, the work should be proceeded with. Nothing should be taken for granted. Much care should be taken in matching colours to the original. However carefully you might have done, the customer has the right to say "it is no good" Therefore, get his signature on the approved copy. Print all copies as per the approved proof. In this way no rejection can be made.

MECHANICS, BEWARE!

During the publishing season, many machines fall sick and mechanics are summoned to bring them back to condition. Some do bring them back to work, but many fail and still get paid. Always be on guard in calling mechanics unheard of before. There are many self-styled "engineers." They have spoiled a good deal of machinery in this part of the world. Their remedies always worsen the malady. Others in the field are good at work but demand unreasonable remuneration. The ignorant proprietors pay through their noses. A good thing will be to approach a reputable machinery dealer and get the machine repaired through him. Then there cannot be any room for complaint. Some sort of guarantee also can be got from the dealer. No doubt the dealer may be billing you something extra. This is worth paying considering the uncertainty and risk in employing a mechanic from the streets. So, next time when your machine falls sick, do not call a quack, but telephone the hospital (*i.e.*, machinery dealer) and get the services of a qualified doctor.

PLAN FOR PURCHASE

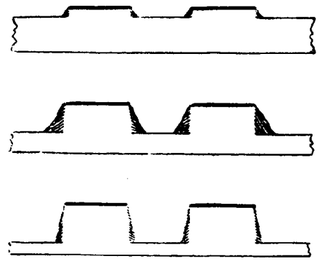
Our printers are famous for lack of planning. It is no wonder that they have not even thought of the necessity to plan for purchasing equipment, tools and machinery for their press. Every machine has a predetermined serviceable period under normal conditions after which it should be disposed of. There are cases where obsolete, unserviceable machinery is continued for a period far beyond our imagination. Some even consider it as a matter for pride to keep a good old machine running. On the other hand it is a discredit to continue to

(Continued on page 28)

Tone Reproduction

(Continued from page 16)

chocolate. The plate is taken from the heater and cooled. Flaws and white spots are touched by sable brush and bitumen. After lining up, the plate is etched.



1. Dragon's blood at sides to prevent undercutting
2. Shoulder resulting from successive etchings
3 Shoulder removed after final etching

ETCHING

The removal of unprotected metal on the zinc or copper plate is known as etching. Dots of varying size constitute the image protected by hardened glue. Nitric acid is agitated over the plate in a rocking trough or in an etching machine. Fine screens are etched shallow while coarse screens (85 and below) require greater strength of acid and etching time resulting in more depth. Etching is a very specialised field calling for accurate judgement and vast experience. For however good the negative and printing down, if carelessly etched the plate is useless. Small and isolated dots require shorter etching time to prevent undercutting. To counteract undercutting, powdering after rolling up are adopted for line etching. But for halftone etching, the undercutting action is necessary to a certain extent to get the tonal gradations of the picture. The dots should be examined through a magnifying glass to judge etching time, as no hard and fast rule can be laid down for the same. Longer time is necessary in trough etching, but it is easier to examine the etching action. Etching machine is quicker and essential for newspaper work where time is an important factor. In a solution made up of Commercial nitric acid (Baume 40 deg.) 2 oz. plus 40 oz. of water, 65 line screen takes about 3 minutes, an 85 line 2 minutes and a 100 line about 1½ minutes. After etching to the required depth, the plate is rinsed, dried and rolled up for depth with ink or etcher's black. The ink is dusted with bitumen powder, sprayed with water and heated to fuse the ink and the bitumen. After rinsing again, it is placed in the etching bath to deepen the plate. A 5/1000ths depth is considered good for newspaper work. One more etching is given to remove the shoulders and give a cone shape to the dots.

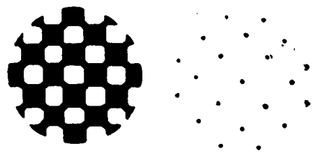
In order to judge the printing result of the plate it is rubbed with fine magnesium carbonate which fills the interstices throwing the subject in sharp contrast. An impression also can be taken to see the result. Re-etching may be done to correct any portions.

ELECTROLYTIC ETCHING

The principle adopted in this is the reverse of electroplating and electrotyping. In making an electro, the mould is made electrically conductive and is suspended in the cathode or negative pole while a copper piece is suspended in the anode or the positive pole. When

Model of Dot formation

electric current passes the copper ions are carried and deposited on the mould. In electrolytic etching, the plate to be etched is the anode and a perforated or corrugated sheet of iron forms the other pole. 3 parts of salammoniac with one part of salt forms the electrolyte. As the rate of removal of copper is very high, the particles removed from the plate being etched are not diposited on the opposite pole but are thrown as spongy copper. The voltage of the current is about



Chess board pattern of shadow dot formation and widely dispersed highlight dots

8·5 volts. The salt is decomposed on the current passing from plus to minus and makes the copper ions combine with the copper from the plate. Thus the metal between the dots are etched away. Undercutting is said to be eliminated by electrolytic etching.

DEEP ETCHING

For certain classes of work deep etching may be found necessary such as pencil drawings. After preliminary and fine etching, the plate is given another etching called deep etching. For stereotyping and for coarse screens, deep etching is done before rough or fine etching, to ensure a clean edge to the work.

LATEST DEVELOPMENTS

Many developments in the manufacture of halftone plates have been made recently. Electronics is playing an increasing role and magnesium plates have come into use. Plastic plates are also used for coarse screens. New patent screens are used to improve the effects. Tri-colour printing has also advanced and printing by halftones is improving day by day.

Paper Notes

By

"DANDY ROLL"

The cost of printing represents a large percentage of price of paper. Paper is one of the materials that influence modern printing. It offers a fascinating subject for study for every machineman, binder, packager, stationer and proprietor. Good paper is essential for good printing. This monthly feature gives important points for printers and others on paper

A uniformly level surface is necessary for printing papers. But a hard sized paper is necessary for writing. The latter is not necessarily very level-surfaced. Hence printing papers are not heavily sized. Ledger paper is given the best possible sizing. Bonds are also supersized. Hence the metallic twang of ledgers and bonds. The saftest paper is the blotting paper and it is the least sized and hence the most absorbent. The ledgers and bonds are the least absorbent and take a long time for the ink to dry.

Newsprint is loosely and openly fibred and absorbs inks quickly. An absorbent and liquid ink is used. Super-calendered paper has compressed fibres and ink dries by oxidation. A viscous and tacky ink is used for these. Driers are also added for printing on these papers to hasten oxidation. Super-calendered papers are made by passing the paper when still in a wet condition through hot rollers at great pressure. It forms a smooth, hard surface by flattening out the fibres. It also fills up the interstices between the fibres.

HARMFUL AGENTS ON PAPER

Residues of sulphur or sulphur compounds, sulphuric acid, alkalies, hypochlorites or other bleach residues, wood plup organic deposits and excessive alum (especially for offset papers) are the undesirable agents that may be found on paper. These will ruin the printability of paper unless they are removed.

The pigment of the ink as well as the vehicle may be affected by the mineral content of paper. Vehicles saponify and pigments get discoloured by sulphuric or other acids and excessive alum in paper. Paper may be weakened or blackened by the presence of hypochlorite bleach residue. During the lithographic process, black or brown spots develop due to iron compounds in paper reacting with coloured compounds. Lead pigments are affected by sulphur compounds, as they form black lead sulphide. Sulphur compounds also spoil bronze powders. Prussian blue is affected by alkali residues in paper. Other acid pigments are similarly affected by alkali residues. Organic materials derived from wood pulp and glue change coloured pigments.

The durability of the paper and its printing qualities are affected by the physical properties of paper. For instance when a sheet has to be perfected (or printed on both sides) it should have opacity. The tensile strength of paper is also important. In order to get perfect register in multi-colour work, the paper should resist atmospheric changes or changes in humidity. For pictorial reproduction, uniformity in thickness, smoothness of surface etc. are important. Even for type formes, if a sheet is not uniformly thick, the impression will vary and good printing is impossible. This is the reason for the majority of printing papers being free from any watermark or laid mark. In the places where the marks are found paper is likely to be thinner owing to the impress of the dandy roll and hence will affect impression. Mottled and cloudy appearance results from an uneven paper surface.

PAPER TESTING

There are modern devices to test the qualities of paper such as opacity, oil absorption, smoothness, folding resistance, dusting, picking and softness. When printing with coloured inks, the colour of the paper is an important factor that may affect the final printing. A neutral coloured stock is desirable. A grey or muddy colour on paper will produce changes in a light coloured ink. A pure white background gives good printing results. Blue or buff shade spoils the printing. It is considered that the standard white sheet should reflect 92 per cent of the light at the surface, but not below it, which means that it should be opaque.

Fluff and other impurities cause frequent stoppages and slowing down of production, necessitating cleaning. No doubt, a certain amount of fluff or paper dust is inevitable. But this should be so low as not to cause a single stoppage in an 8-hour run. The sheet should not buckle when autofeeders are used.

PAPER FOR LITHOGRAPHIC PRINTING

Litho paper should be loosely constructed so as to make it nonsensitive to atmospheric changes or changes in humidity. Therefore in the manufacture of litho paper, minimum beating and refining are employed. The resultant paper is one having large directional difference. The grain or direction

of fibres is more pronounced in the machine direction. It tends to swell and expand to a greater degree in the cross direction. The tensile strength of paper will be greater across the grain. No grain or machine direction is produced in hand-made paper and the properties of the sheet is same in both the directions. Lithographic papers are surface sized. Such papers have the right amount of absorbency to prevent set-off, but at the same time they hold the ink near the surface.

RELATIVE HUMIDITY

For good printing, the machine-room should have controlled humidity. Paper used for printing is to be conditioned in the machine-room temperature. The cellulose fibres of paper are capable of holding about a per cent more than the usual moisture. This is due to their hygroscopic quality.

It has been found that whenever the moisture content of paper rises above 95 per cent, register troubles occur. The position obtained by the previous printing surface will not correspond to the succeeding colour plate. A permanent shrinkage of fibres results when over 95 per cent moisture content is reached. The fibres of paper become pulpy and re-arranged.

COATING, CALENDERING, SIZING AND FILLING

Bible paper which is thin, uncoated and soft gives a good surface for fine impression. Half-tones require coated or super-calendered stock. Filling substances give the paper opacity and better appearance. But the drying time is increased, it has less affinity for ink and there is less absorptivity. For spreading of ink, some inter-space between fibres is desirable. The air present in these interstices produce quicker drying. Excessive filler tends to weaken paper structure, but it evenizes the texture of the sheet.

The composition and quality of sizing material affects printing. A gelatin size makes the surface non-absorptive. Coating of resinous substance increases penetration.

Absence of calendering will make the paper rough and unfit for printing. Too much calendering results in decrease of drying qualities. A quick drying ink such as that used for metallic and ceramic surfaces may be called for. Low absorptivity of paper may be due to over-calendering or thick sizing.

From the Editor's Pocket-Book

(Continued from page 25)

use an unserviceable machine. A comprehensive plan for purchase is essential for every press. The date of purchase of each machine and other relevant factors such as production records, shifts, number of hrs. worked, etc., are maintained. The dealers, although full of exaggeration for the performance of machines they are selling, will always be ready to condemn other makes and old machines in general. A certain number of years should be set down as the maximum life and then the time would have come for buying another machine. For renewing existing old machinery, every year a specific sum may be earmarked for buying a few machines, so that in about five years the entire press will be modernised. Whatever plan is adopted, it is important to have some plan for purchase.

GUARD YOUR GUARDS

I have seen many big establishments do not use a guard for guillotines, platens and other dangerous moving parts, as prescribed by the law. The usual complaint (or rather excuse) is that the guards are more dangerous than the parts they are supposed to protect from and have been responsible for quite a few accidents. This may be true. It is also true that guards do serve a purpose, *i.e.*, prevention of accidents. Even when guards are supplied by the dealers along with the machine, these are, in certain presses, put out of action or removed. Safety of the employee is the primary responsibility of the employer and apart from the pure legality of it, there are moral and human considerations too. So, we say, "guard your guards please!"

What Makes a Good Manager

By

SRI T. R. RAMAN

The executive is born, not made. But what qualities make a manager successful? What is the recipe for efficient supervision? The author gives the answer to these and allied questions

We all read history. If we learn anything from history, it is this: Top men touch off national calamities. The destiny of a nation, will, for a long time, depend upon the personalities of its President, Premier, Ambassador, etc. The same is true of business organizations. The Manager or the top executive is the king of the vast business empire. His whim is law, his idiosynchrosies are sacred instructions, his fancy dictates policy, his frenzy dismisses men, his pleasure promotes their interests. Someone thought of testing the intelligence and other mental powers of employees. But, here is vital necessity to test top executives. The very reason they are at the top shows that theirs is no mean personality. At least, it affords us a very interesting item of study.

PERSONALITY PROBES

There are many proofs that we are advancing in our civilization. Aptitude tests are considered to be one more forward step towards more confused life, complicated by tests of many kinds. All agree that efficiency cannot be gauged, behaviour cannot be predicted by any precision instrument. The reason is, apart from one's capability, lack of interest and weakness in personality have contributed to more failures. For this, interest tests and personality probes came into use. There are, today, more than 500 tests available for various industries. The U.S.A. stands foremost in perfecting these tests and applying them in everyday factory life. The U.S. consider that, for raising productivity, for cutting turnover and saving training costs, these tests are an important factor. The Psychological Corporation of the United States have given valuable advice to industries in all their personnel problems. These include attitude and moral surveys, development and training programmes, appraisal of executives, supervisors, salesmen, hiring and upgrading procedures, etc. Among these, the test that would guarantee a sure-fire salesman is in greatest demand. The reason is obvious.

QUALITIES THAT QUALIFY

Although no one can clearly define the quality that makes a successful salesman, psychologists and industrial consultants quote the following characteristics that are to be tested: Extrovert or introvert, aggressive or soft, courteous or not, has he a large vocabulary, tall or stout, etc. Strange as it may seem, no stress is laid on "intelligence" as a necessary quality to be tested, as it is evidently not considered essential for a salesman!

GADGETS FOR GLEANING PERSONALITY

Behaviour can be tested by a machine invented by the anthropologist E.D. Chapple. Known as the "Interaction Chronograph", it measures objectively, initiative, resourcefulness, sociability, etc. The operator works on two keys on a tape recorder, while clerk and customer are engaged in talking or in any other activity.

Another method is to give one or more pictures and asking the person to be tested to make up his own stories after seeing them. His statement will reveal his drive, conflicts, social action, etc. This test is called the Thematic Apperception Test (or TAT). Then there is the Forced Choice method. This consists in conducting an enquiry as what constitutes a good foreman, supervisor or manager. Favourable and unfavourable qualities are collected, but the deciding factor is what is known as the "discriminating" quality. The data so collected from several hundred executives are codified and listed. For promotion or recruitment, the applicant is presented before the supervisor who chooses among the listed qualities one that is most descriptive of the applicant and another the least descriptive.

NEUROTIC SYMPTOMS

Neurotic and Psychotic symptoms can now be detected by a test that goes by the name "ink blot test" of Rorschach. This also shows how an executive will fare under new environment or under severe stress and strain. As proved by these tests, the successful executive exhibits the following traits:—

He is always motivated by accomplishment of work. He accepts authority without resentment. He has strong drives towards achievement and he is after material rewards as well as prestige and position. He is endowed with enormous powers of organization; for this he makes a study of all important events, gathers facts and analyses their inter-relation. When it comes to making a decision, whenever quick ones are desired he makes them on the spot; but when deeper consideration is called for, he decides on mature thought. No

snap judgments from our Ideal Executive! He has clear-cut conviction of what he wants and how to get it. He has well developed techniques for obtaining these. He is never caught napping, being by nature alert, always doing something useful. He fears failure and as a result works his way up to cent per cent success. *He sees opportunity in every difficulty*. He is not a dreamer and is conscious of realities and their immediate implications. He always identifies himself with his superiors, regarding his subordinates as "doers of work."

WAY TO FAILURE

If you want to be a failure as an executive, please practise some or all of the following qualities :—

Take interest in tiny details, see the trees and even leaves and not the wood. Be detail-minded. You are sure to perish in the executive field. Shirk responsibility, avoid it, run away from it. Do not study the changes in your industry, don't keep abreast of modern developments. Dislike executive work and develop a taste for non-executive work. You should have no truck with co-operation and never for a moment tolerate any criticism. Be arrogant with subordinates. One of them will bring your downfall! As regards the authority from your superiors, you resist it with all your might: they will surely show you the door. Have an unconscious urge to fail and always fear success-either your own or others. Criticise yourself too much and be convinced that you cannot succeed.

A useless executive interprets situations in terms of his own fixed ideas about himself and others. We have this from an authority: An unsuccessful executive, at day's end will think of getting home fast to his family or to a cinema. But the successful one will recollect his accomplishments of the day and his plans for work on the morrow.

QUESTION-ANSWER TESTS

By questioning and eliciting answers, the true personality will not be revealed. A true picture of the individual will not emerge out of the answers. But questions such as "What do you think of, at the time of quitting office?" may reveal the interests of the individual and his attitudes, as he does not know how his answers are going to be interpreted. In this country qualified psychological consultants are few and far between. These few charge exorbitant consultation fees. This makes the customer shy to engage such white elephants. But it is true that such psychological test can only be conducted by qualified people who have specialised in this branch. Each industry requires special kind of tests. Psychologists believe that they can measure the abilities and personality traits that make for success or failure on the job. Research should be undertaken for this purpose, to rate accurately the performance and to determine criteria for success on the job.

GENERALIZATIONS

The difficulty in picking a good salesman or executive is that no one clearly knows what exactly goes to make such a personality. No tests have conclusively proved that a particular technique is infallible. The success and failures of management appear almost to bear no relation to aptitudes and skills. But it is true that the psychologists have developed a science of statistical values consisting of "norms", "reliability", "validity" etc. to check results. These tests have their success which point towards further possibilities in this line. By their failures the tests have helped to drive home to the management the following points.

Man is infinitely complex and unpredictably dynamic and future experience may result in his unprecedented growth in spite of present test results to the contrary.

So when a man appears to you as unlikely to make a good executive, don't condemn him. He may develop qualities which are dorment for the moment. Only the proper atmosphere is necessary to bring out these latent qualities which are lying under the surface. We in India believe in pre-destination and the Law of Karma asks us to accept the lot into which we are thrown in. Therefore, we say when a man is chosen as an executive he unconsciously tries to develop the requisite qualities. If he does not do so, he will be finished as an executive before long and someone who is clever enough takes over. Then, none but he himself is to blame. Therefore, it is only a half-truth when we say that the executives are born, not made. True, many are born executives. But quite a good number rise to be efficient and dynamic executives. If we study closely what are missing in us that have contributed to our failures, then we would be on the road to becoming to good executives. By industry and observation we can cut that road short and blossom into a full-fledged efficient executive.

Prime Minister Nehru inaugurated the second annual meeting of the Federation of Publishers and Booksellers Associations in India at New Delhi on Dec. 7.

Among the subjects discussed at the meeting were the procurements of books under the Indo-American Technical Co-operation programme, Copyright Bill introduced in the Rajya Sabha recently and steps to improve the standard of production of books in the country.

STATE AWARDS FOR FINE PRINTING

The following is the list of winners in the competition for State Awards for excellence in Printing and Designing, instituted by the Ministry of Information and Broadcasting :—

Category	*Prize*	*Publisher Designer*	*Printer*	*Name of Entry*
I. CHILDREN'S BOOKS (Below 10 years)	1st	Sri Samar De	Saraswati Press Ltd., Calcutta.	"Chhodar Chabi" (Bengali)
	1st	C.H.G. Moore-House.	2nd Prize to Raj Kamal Publications (Printer and publisher)	"Nane Langur ki Kahani" (Hindi)
	Certificate of Merit	Purna Chakravarti	Saraswati Press Ltd., Calcutta.	"Chabite Ramayana" (Bengali)
II. CHILDREN'S BOOKS (Over 10 years)	1st	Satyajit Ray & Sukumar Ray	do	"Khai Khai" (Bengali)
	2nd	Sri Surja Roy	do	"Chhutir Dine Megher Galpa" (Bengali)
	Certificate of Merit	West Bengal Education Department.	Government Printing Press, Calcutta.	"Chitre Bharate Itihas"
III. ILLUSTRATED BOOKS	1st	Popular Book Depot, Bombay.	Karnatak Printing Press, Bombay.	"A journey through Toyland"(English)
	2nd	Sri Acharekar	Commercial Printing Press, Bombay.	"Sky-scraper & Flying Gandharvas" (English)
	Certificate of Merit	Theosophical Publishing House, Madras.	Theosophical Publishing House, Madras.	"Kingdom of the Gods" (English)
IV. ART BOOKS	1st	Lalit Kala Akadami, Delhi.	Vakil & Sons, Bombay.	"Moghul Miniatures" (English)
	Certificate of Merit	Publications Division	Times of India Press, Bombay.	"Kangra Valley Painting"
V. 1. BOOK PRODUCTION (English)	1st	Reserve Bank of India.	do	Banking & Monetary Statistics of India.
	1st	Sri R. S. Dharmakumar Sinhji, Bhavnagar.	do	"Birds of Saurashtra"
	Certificate of Merit	Sri K. D. Chatterjee M. D. (Calcutta)	Saraswati Press Ltd., Calcutta.	"Human Parasite and Parasitic Diseases"
2. BOOKS PRODUCTION (Indian languages)	1st	Signet Press, Calcutta.	Sri Gouranga Press, Calcutta.	"Ananya"
	2nd	Vishwabharati Publications Department.	Nabhana Printing Works, Calcutta	"Gelpa Salpa"
	Certificate of Merit	Bangalore Press, Bangalore.	Bangalore Press, Bangalore.	"Yashodra"
VI. BOOKS ON INDIAN MADE PAPER	Certificate of Merit	Signet Press, Calcutta.	Saraswati Press Ltd., Calcutta.	"Bharat Sandhaney Nehru"
	do	Oxford University Press, Bombay.	Times of India Press, Bombay.	"Our India"
	do		Indian Press Ltd., Allahabad	"Ritu Sanghar"

Category	Prize	Publisher/Designer	Printer	Name of Entry
VII. 1. DAILY NEWSPAPERS (English)	1st prize	Statesman	Statesman, Calcutta	
(Indian Languages)	1st Prize	Navbharat Times (Hindi)	Times of India Press, Bombay (Hindi)	
	Certificate of Merit	Prajavani (Kanarese)		
	do	Ananda Bazar Patrika (Bengali)		
VIII. ART MAGAZINES	1st	Marg, Bombay.	Commercial Printing Press, Bombay.	
	Certificate of Merit	Roop Lekha All India Fine Arts & Crafts Society.	Caxton Press, Delhi.	
	do	Shankar's Annual—Sri Shankar.	National Printing Works, Delhi.	
IX. HOUSE JOURNALS	1st	Burmah Shell	Times of India Press, Bombay.	Burmah Shell News
	Certificate of Merit	Dunlop–D. J. Keymer & Co.	Gossain & Co., Calcutta.	Dunlop Gazette
	Certificate of Merit	I. C. I.–D. J. Keymer & Co.	do	I. C. I. Bulletin.
X. PERIODICALS	2nd	Central Social Welfare Board.	National Printing Works, Delhi.	"Samaj Kalyan"
	Certificate of Merit	Kirloskar Bros. Ltd.	Kirloskar Press, Kirloskarwadi.	"Kirloskar"
	Certificate of Merit	Delhi Printing & Publishing Co., Ltd. Delhi.	Delhi Printing & Publishing Co. Ltd., Delhi.	"Caravan"
XI. POSTERS	1st	Air India International Bombay.	Bombay Fine Art & Printing Works, Bombay.	"India"
	1st	Director of Advertising & Visual Publicity, Ministry of Information & Broadcasting.	Saraswati Press Ltd., Calcutta.	"Taj Mahal"
	2nd	J. Walter Thompson Co. (E) Ltd., Bombay.	Claridges, Bombay.	(Mobilgas - Double Power)
	2nd	Associated Cement Companies, Bombay.	Claridges, Bombay.	(A. C. C. Cement)
	Certificate of Merit	Burmah Shell	Eagle Lithographing Co., Calcutta.	(Shellubrication)
XII. FOLDERS (offset)	1st	Director of Advertising & Visual Publicity, Ministry of Information and Broadcasting.	Eagle Lithographing Co., Calcutta.	"Himalayan Holiday"
	2nd	J. Walter Thompson Co. (E) Ltd., Bombay.		"Mobil Oil"
	Certificate of Merit	Director of Advertising & Visual Publicity, Ministry of Information and Broadcasting.	Eagle Lithographing Co., Calcutta.	"Agra"
(Letterpress)	1st	Times of India Press, Bombay.		"Ahmedabad"
	2nd	All India Handicrafts Board.	Caxton Press, Delhi.	"Phulkari"
	Certificate of Merit		Gossain & Co., Calcutta.	"Salva"

Category	Prize	Publisher/Designer	Printer	Name of Entry
XIII. CALENDARS (Offset)	1st	Air India International Bombay.	Eagle Lithographing Co., Calcutta.	
	2nd	Voltas, Bombay.	Claridges Printing House, Bombay.	
(Letterpress)	1st	Garlick & Co. Ltd.	Times of India Press, Bombay.	
	2nd	Jardine Menzies & Co., Alpha Advtg. Co.	Calcutta Job Press.	
	Certificate of Merit	J. Walter Thompson Co.(E)Ltd., Bombay.	Saraswati Press, Calcutta.	Imperial Tobacco Co., Calendar.
	do	Calico Mills, Ahmedabad.	Nil	Cloth Calendar.
	do	Philips	Gossain & Co., Calcutta.	Philips Calendar.
XIV. DIARIES	1st	New India Assurance Co. Ltd., Bombay.	Vakil & Sons, Bombay.	"New India Diary"
	Certificate of Merit	Director of Advertising and Visual Publicity, Ministry of Information & Broadcasting.	Glasgow Printing Works, Calcutta.	
XV. DEVANAGARI TYPE FACES	1st	Gujerati Type Foundry.		
	2nd	Sree Type Foundry Calcutta.		
XVI. PUBLICITY BOOKLETS	Certificate of Merit	1. Associated Cement Company, Bombay. 2. Burmah Shell, Bombay. 3. Bombay Government Cottage & Small Scale Industries 4. Glaxo Laboratories, Bombay.		
XVII. LABELS	Certificate of Merit	Karnodaya Litho Press, Old Victoria Mill, Bombay.		

Executive of Hyderabad State Printers' Association Photographed with A I F M P Governing Council during the recent meeting.

news and views

UNION GOVERNMENT HONOURS GOOD PRINTING

Vice-President Sri Radhakrishnan on Nov. 8 presented awards to winners in the competition for State awards for printing and designing. The competition, which is the first of its kind, has been instituted by the Union Ministry of Information and Broadcasting.

Dr. Radhakrishnan stressed the importance of books as a medium for the communication of knowledge and said these had taken in modern times the place of inscriptions and edicts. Books have a more permanent effect on persons than other media of communication of ideas like the radio, television and cinema.

In a democracy like India, it is necessary to get more and more educated and for this purpose people must be made to read classical literature from cover to cover. Reading must also be regarded as an essential quality in educated men.

The Vice-President said that more and more people would take to reading only if books were made attractive. The art of binding has suffered a set back in recent days and it is necessary to improve it.

He said he found that while many corporations got prizes for the excellence of their printing and designing, few individuals were successful. Individuals must take more interest in the art, so that production of books would become a really satisfying business.

Dr. Radhakrishnan described the exhibition of printed and display publications, which he inaugurated in the Centenary Hall as the first step in the direction of "giving the children of India a dignified background of home life". Unhappy homes result in neurotic children; home with beautiful books around would provide happiness for growing children.

The first prize for books for children below ten years went to the printers and publishers of "Chootoder Chabi" (Bengali) and "Name Lagur-ki Kahani" (Hindi) and a certificate of merit to the printer and publisher of "Chabite Ramayana" (Bengali).

The first prize for books for children over 10 years went to the printer and publisher of "Khai-khai" (Bengali), the second prize to the printer and publisher of "Chhutir Dine Maghergalpa" (Bengali) and a certificate of merit to the printer and publisher of "Chitre Bharater Itihas."

The first prize for daily newspapers in English went to the *Statesman* and the Indian languages to *Navbharat Times* (Hindi). while certificates of merit went to *Prajavani* (Kanarese) and *Anand Bazaar Patrika* (Bengali). *Marg* of Bombay got the first prize among art magazines. There was no first prize for periodicals but *Samaj Kalyan* won the second prize, with certificate of merit for *Kirloskar* and *Caravan* of Delhi.

Among the other awards was the first prize for calendars to the Air India International.

MINISTER OPENS TIMES ROMAN EXHIBITION

Sri C. Subramanyam, Education Minister, inaugurated on 25th Nov. an exhibition of the Times New Roman types and selected English books printed from 1480 to 1940 at the White Memorial Hall, Madras.

The exhibition was organised by the British Council in collaboration with the Madras Printers' and Lithographers' Assn. and the Publishers' Assn. of South India.

Mr. H. C. Norminton of the British Council took the minister and others round the exhibition.

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Mr. Joseph Norman Solomon, the Printing Engineer-cum-*Heidelbergs* Erector, The East Asiatic Co. (India) Ltd., Madras, has left for *Germany* by Air India International for further specialized training in *Heidelberg* Presses at the Factory, *viz.*, Messrs. Schnellpressenfabrik AG Heidelberg.

Mr. J. N. Solomon has a thorough knowledge in the mechanism of printing machinery as well as small tools and he is a good printer too. During his 3 months' stay in Germany, he will not only get further expert training in the assembly servicing of *Heidelberg* Presses and *Polar* cutters but also undergo training in Printing in reputed *German* Printshops.

When Mr. Solomon returns to Madras, with the added technical knowledge, he will be able to render *still better* service to the printers in general and *Heidelbergers* in particular.

PRESSROOM PROBLEMS SOLVED by Graphicus

In these pages "GRAPHICUS" an expert in the printing and allied industries solves month by month the Pressroom problems of the printers. All questions may be addressed to:
"GRAPHICUS", C/o PRINTINDIA

65. Q. We have started recently Silk Screen Printing. We find the cost of Ink abnormally high (between 20 and 30 Rupees a lb.). Is it possible to get cheaper ones ? What makes Screen inks so costly ?

A. Silk screen inks are made by Indian Manufacturers and one of the leading companies produce a range which is well within the price of the average letterpress inks. I suggest you approach your ink supplier or write to the manufacturers for details.

66. Q. I want to buy a ruling machine run by power. Do you recommend the pen ruling type or the disc ruling machines ? What do you consider as the limitations of each ?

A. In my opinion a disc ruling machine is to be recommended. It is faster, cleaner in its ruling and more accurate. Both may be said to be efficient but for many reasons the disc type is more versatile.

67. Q. Our firm has received an order for printing containers on grease-proof paper. We would be obliged to be enlightened on grease-proof paper and any special ink required to print on the same.

A. From your question it would appear that the containers you propose to print should be waxed after printing in which case you should buy Wax Set Inks or at least ensure that the inks you propose to use do not bleed when waxed.

68. Q. Standard Wharfedale in our press (20 x 30) gives an unusual noise at the end of the printing stroke. We have tried many local mechanics without any result. Could you possibly guess at the correct source of knocking and other unnatural sound ? What in general do you consider essential adjustments on a stop cylinder of this type for a noiseless and normal pick-up.

A. Strangely enough it has often been found necessary to adjust the bed motion of a Warfedale so as to 'Bump' at the end of its stroke to obviate slur on the leading edge. If it is printing correctly and well there is not much wrong with the machine. However to satisfy yourself in the matter why not write to the selling agents about the matter.

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