

Printindia

April 1955

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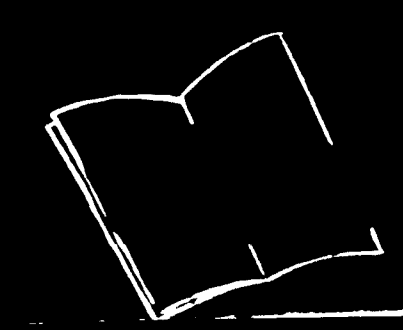
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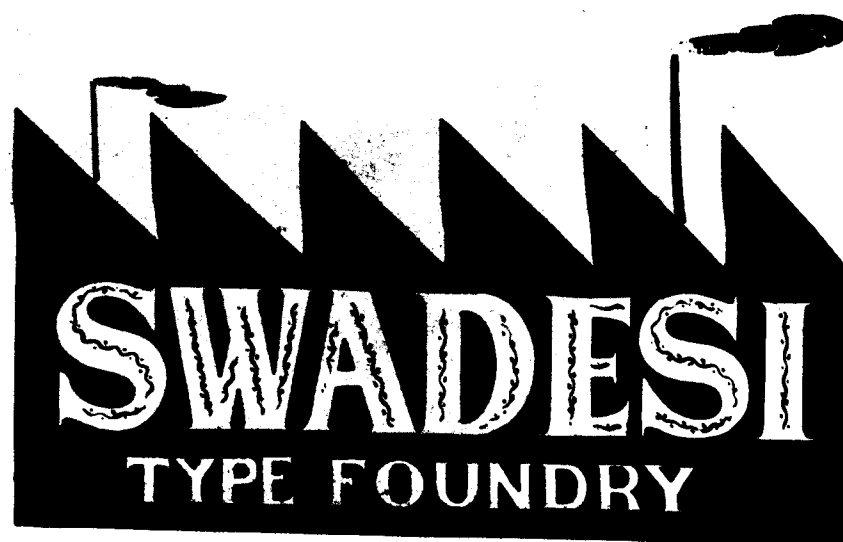
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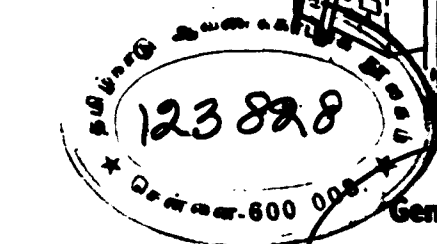
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The Modern Printing Inks

By
SRI E. RASQUINHA

Great strides of scientific development have taken place in the manufacture of modern printing inks. The author, an experienced chemist himself, in this article scientifically explains in detail the various types of modern printing inks manufactured in this country

Ever since the printing was realised to be the most powerful means of propagating knowledge and new ideas, better and faster printing machines as well as new printing processes have been devised so much so from the simple mixture of soot in oil which was the first printing ink, the modern printing inks evolved which are a complex mixture of natural and synthetic compounds. The necessity of producing inks of diverse qualities depending on the process of printing, the machine and its speed as well as printing surface forced the chemist to enter into the field and to-day it is done scientifically. Modern inks are 'tailor made'; the ink may be required for a slow handfed machine run at a speed of 1000 impressions per hour, or for a high speed rotary machine printing 40000 copies per hour, it may be required to dry in 8 hours or within a fraction of a second or it may be required to print on paper, board, cloth, plastics, metal sheets or foils, rubber, wood, glass or ceramics.

Printing inks essentially consist of solid particles finely dispersed in a medium. The solid materials consist of colouring matter which may be dyes or pigments, and extenders which are almost transparent. Aluminium hydroxide, calcium carbonate, China Clay, Blanc Fixe (Barium Sulphate) are the important extenders used. These are used, in conjunction with appropriate pigments to give

proper working properties and to adjust the cost of the ink.

A wide range of dyes and pigments are used to colour the ink which may be organic or inorganic. The most important inorganic pigments are lead and molybdate chromes, iron blues (Iron Ferricyanide complexes) copper phthalocyanine blues, zinc and titanium oxides. Organic pigments are made by treating dyes with reagents to convert them



Sri E. Rasquinha
Chief Chemist, Rainbow Ink & Varnish Mfg.
Co., Ltd., Bombay

into pigments. Among these lake pigments, pigment toners, pigment dyestuffs and fanal toners (Phospho-molybdo-tungstic acid dye complexes) are the most important. The pigments are chosen considering their colour strength, covering power and dispersing properties as well as the cost. Whatever pigments and extenders are chosen one important property to be considered is the

fineness of its particle size, i.e. it must be able to be dispersed to a fine state in the medium.

The medium is liquid portion of the ink and consists of varnish, driers, solvents and compounds. The varnishes are made with drying oils such as Linseed Oil, (dehydrated) Caster Oil, Tung Oil or Non-drying mineral oils by polymerising them and/or by combining with natural or synthetic resins. Suitable resins are chosen to give properties like rapid drying, gloss scratch proofness, adhesions etc. Driers are metallic salts of linoleic or naphthenic acids. Cobalt, Manganese, Lead and Zinc are the common metals used. The quantity of the drier required is mainly controlled by the nature of the varnish, the oil and the resin used, and to a small extent by the pigments. Compounds may contain various kinds of waxes, starches and wetting agents and are added to give specific working properties to the ink.

Solvents are not added to all kinds of inks. Usually they are used for gravure and (flexographic) aniline inks. These may be of petroleum or coal tar origin or may be alcohol and ethers. The solvents are blended to give proper evaporation rate solubility to resins and to adjust the cost.

The above delineates the general requirements of raw materials for making modern printing inks & proper selection is necessary

particular ink depending on the process of printing; the speed of the machine, the nature of the printing surface i. e. paper, and the kind of finish required whether matt, glossy, scuff-proof, quick drying etc., etc.

Typographic and Lithographic inks are made fundamentally in the same manner. The varnishes are made with polymerised (thickened) linseed oil with or without incorporating synthetic resins. The latter are used to a great extent for offset—lithographic inks. The pigments used are also similar but for lithographic inks pigments must be used in higher concentrations and must not be effected by water. Letterpress as well as Litho inks must be long, and tacky, have a good flow, while offset inks must be soft and short with a buttery body.

Inks for gravure and aniline are made by dispersing dyes, pigments and extenders in a varnish consisting of natural or synthetic resins dissolved in suitable solvent or solvent combination. The resin gives the flow to the ink as well as, acts as a binding agent. The solvents are chosen considering the evaporation rate, toxicity, power to dissolve resins and the cost. For aniline ink only alcohol (denatured spirit) is used while for gravure inks any solvent, petroleum, coal tar, alcohols or ethers could be used.

Whatever may be the process of printing the inks must be adjusted for the speed of the machine. As the speed increases a lot of problems pop up: Ink flying, distribution on the rollers, offset of the print etc. So the ink medium should be such it gives soft freely flowing ink with little tack, quick setting and with anti-offset compounds. To make the

ink suitable for printing on different surfaces, as well as to give different finishes, such as glossy, scuff-proofs and quick drying use of various synthetic resins are made. Each synthetic resin has its own special use; thus long oil alkyd resins are eminently suitable for offset inks as they give scum resisting and easy working inks, while for gloss ink, hard and high melting phenolic or maleic resins coupled with oils are used. So also for quick setting inks and to give good adhesion to plastic etc., short-oil alkyds combined with phenolics should be incorporated in the medium.

One of the most important factor in the formulator has to bear in mind is the mode by which the inks must dry. Some inks dry by absorption alone, news inks or inks used on highly absorbent stock. These inks are made with non-drying oils which penetrate the stock instantaneously as ink touches the paper leaving a thin layer of pigment on the surface. Letterpress and Lithographic inks dry by absorption and oxidation. As the ink touches the paper surface most of the thinner constituents of the medium penetrate the paper, this absorption is completed within an hour and the ink is said to have 'set' now. Then the drying oil in the medium starts absorbing oxygen (catalysed by the driers) and polymerises i.e. becomes thicker and thicker finally turns to a solid film which holds the pigment particles to the paper. The duration of the process of oxidation is dependent on a number of factors and may range from a couple of hours to a few days; oil the resin and the driers in the varnish as well as the pigments are the factors, which are within the ink while atmospheric conditions such as humidity and temperature and

nature of the fillers in the paper specially their Ph (acidity or alkalinity) are the factors without. Dehydrated Castor oil and Tung oils are faster drying oils than Linseed oil. For all varnishes there is an optimum of drier concentration and as a rule the resins increase the drying rate. Chromes, iron and phthalocyanine Blues accelerate the drying to some extent.

On the other hand mixing of the mineral oils, extenders like alumina most of the fanal toners and some of the black pigments retard drying. Lower the atmospheric temperature and higher the humidity slower is the drying rate. Acidity (Ph 4) in the paper retards drying but this becomes very powerful as the humidity increases and situations may occur when the ink may never dry for weeks even with large quantities of drier. This happens often with Lithographers in the rainy season. The humidity already is high and as paper picks up moisture from the printing plate, which due to evaporation in between the piled up sheets increases it considerably and if the paper is acidic the ink may never dry.

Gravure and aniline inks dry by evaporation or by evaporation and absorption. In these inks no oils are used but only solid resins and when the solvent goes off a thin film of the resin is left which binds the pigments. Silk screen inks dry by evaporation, oxidation and absorption.

In addition there are other novel methods of drying such as heat, steam or moisture set, wax set, quick or pressure set inks. The name itself suggests the method by which hardening of the medium is effected. As soon as the printing is done it is treated with heat, steam or wax,

(Continued on page 18)

Uniform Costing System

By
A. C.

A uniform costing system should be introduced in the printing industry of our country for eliminating cut-throat competition which is mainly responsible for retarding the growth of industry, says the author in this article

The bane of cut-throat competition is a common feature in most Indian industries, but no-where has it assumed such serious proportions as in the sphere of printing. For, in the printing trade almost 85 to 90 p.c. of the cost of production is incurred for the procurement of goods like paper, ink, type metal or types, blocks and stereotypes and block or stereo-making materials, such as zinc sheets, copper sheets, stereo metal, photographic plates, chemicals, binding materials etc., and for service of foremen, section-holders, linotype, monotype, ludlow or intertype operators, compositors, distributors, proof readers, correctors, make-up men, impositors, machinemen, inkmen, binders and so on,—not to speak of type or slug-casting materials, which are subject to constant wear and tear, remelters, motive power, stores, lubricants, the maintenance and replacement of machine parts and machines, and scores of sundry heads under which the seller of printed materials must incur 'Cash Down' expenses in catering this highly specialised service.

IGNORANT CLIENTELE

In this country, over 95 p.c. of the consumers or indentors of printed materials, not excluding the Government Departments, nay even the Department of Printing and Stationery, Government of India (which can, if it so desires, get an estimate checked by the Government of India Press) has hardly any idea of the technicali-

ties involved in printing, and as such, cannot appreciate the factors that account for the higher tender from the more respectable and better organised amongst the trade. Another factor behind this sorry state of affairs is the poor knowledge of an overwhelming majority of such consumers in regard to quality or to the time required for the execution of a job, as a result of which hardly a few of them is willing to allow any premium for quality and expeditious execution. Quite often, customers accept the lowest tender but insist on quality of paper, printing, binding, ignoring the fact that the accepted rates hardly cover the cost of paper even.

OMINOUS SIGNS

All these are ominous signs for an industry and betray a hopeless ignorance and reckless non-observance of the basic fundamentals of running an industry or a trade. Times out of number, organised printers have probed into this contagious disease and tried to enforce a uniform rate-structure for the various types of jobs. But in over 80 p.c. of the tenders, even influential printers responsible for the evolution of such rate-structures, have suffered a volte face, quoting abnormally low rates for 'roping in' a custom. Like the habitual liar, they thought that 'this is the last lie spoken by them' in every tender. The result has been: So long as the machines remain serviceable, materials are plentiful,

market credit is unimpaired, bank balance is on the high side, and customers' money is flowing in, the industry or the trade 'goes on' smoothly. But sooner or later, a stage comes when money is blocked in machinery and materials, the bank balance evaporates, market credit dwindles down and the enterprise has to resort to hypothecation of assets or borrow money at usurious rates of interest to keep the wheels of the machines rolling.

PREDOMINANCE OF AMATEURS

Without intending to offend anybody, it is a truism to say that people who are engaged in the trade are so more by accident than by training. In an outstandingly large number of cases, the line was taken by unemployed educated young men or by commission agents or order suppliers of printed materials. When they started the business, they had to run the show, and for the purpose, they had to spend the best part of their waking hours scouring the prospective clientele for more jobs, or the market for procuring the supplies, leaving the most vital part of the job, i.e. that of internal organisation and planning to mere compositors or machinemen.

Except in regard to a few solitary exceptions, the promoters hardly started with the initial experience of the technicalities of the highly specialised job or could find time to pick up adequate experience and

'know how' and the result is reflected in the lingering precarious predicament of a majority of the institutions, not to speak of the quality of the average printed matters.

In this article, an attempt is being made to discuss one of the most important facets of the printing trade, which every printer must first attempt to learn before embarking upon any venture. Where he cannot himself pick it up, he must secure the services of a dependable person thoroughly conversant with the job and always make it a point to adhere to his instructions.

ADJUSTMENT OF FUNDAMENTALS

In introducing a uniform costing system in the printing industry in India, the main difficulty will be faced in the adjustment of fundamentals between two extreme houses—one a very small working with a cheap and small treadle machine, the other with mechanical composition facilities and high-speed printing machines with departmental, supervisory and managerial staff. How can a uniformity in costing or in rates be expected from two such houses? This question would naturally appear insurmountable at the initial stage.

But considering for a moment, that wages have been equalised in all houses, minor or major, by the Award of the Printing Industries Tribunal, the problem should not assume a baffling nature. For when labour rates are equal everywhere, the main difference would lie in the on-cost or the overhead expenses.

The overhead of a one-man-show may be nil or negligible whereas that of a big organisation may be considerable. But what does it re-

ally matter? If the overhead expenses in a big organisation are great, the output is also large, in view of mechanical case-room arrangements and automatic machine out-turn, combined with double, treble or sometimes several settings, to ensure economic production. For after all, in a big house, there is no dearth of materials and naturally cost can be economised through expanding machinery, even maintaining high overhead costs.

It is therefore, the regular flow of orders and that also for millions and billions, which matters most in a big house. Uniformity in rates between the big and the small will automatically follow where unhealthy competition is eliminated. It is as such, a question between how the sales campaign is organised and the house is built up—a question of pure efficiency and nothing else.

If therefore, a uniformity in costing or in estimation is not maintained between the two houses, it is not for any other factor, but due to a lack of knowledge in costing and the ultimate hazards that follow under-quoting.

A MIRAGE

To introduce a uniform costing system so that rates of all the houses may be equalised, conformity to the fundamentals of costing should first be adhered to. Even though all houses do not consider these fundamentals to calculate their costs and attempt at quoting lower rates, it should be enough solace to bear in mind, that quoting below par, would definitely lead to ultimate loss, although for the time being such loss might not be discernible.

Once the fundamentals are taken into consideration, it shall be left to the printers to decide, what ad-

ditional percentage should be added by way of profit keeping in view the condition of the market, the credit of the customer, the requirements of the house and so on.

NEED FOR CORRECT ESTIMATES

Even if it be assumed for the time being that whether cost control is introduced or not, there must be anomaly between prices of big and small houses. Let the printers know their correct cost of production and then proceed according to demand and supply. Ignorance can never be a bliss in this vital matter. The variation if at all, will not be on the fundamentals, but on the percentage of profit. After all, there is no gainsaying the fact that rates tendered by a decent house will not be similar to that of a common-place one.

ECONOMIC SURVEY

To attempt at uniform cost control an economic survey is the first essential. We know wages form a fundamental constituent of cost control. But how effectively to calculate the cost of labour on each job in a uniform way in all houses is a device which will be deduced as a result of cost survey. If we straightaway advise all printers to introduce daily out-turn sheets or daily dockets of individual workers, it may be easy for such houses where there are section-holders who may prepare these dockets of the respective departments with proper checking for submission. But what about a small house, where the manager is the section-holder, foreman, assistant and salesman in one. Again, even if he introduces the docket system, who will calculate for him the allocation of direct and indirect labour as well as idle labour which if he cannot do himself the very introduction of the docket will be meaningless.

(Continued on page 21)

WHAT PHOTOSetting HAS DONE TO COMPOSING ROOM?

By
MR. A. LAWSON

In this article the author analyses the future of photosetting which has brought out revolutionary changes in the composing room

Postwar developments in the printing industry have been so many and so varied that most printers find it difficult to keep up with the announcements of new equipment. The period from the introduction of typesetting machines up to 1941 was one of quiet but steady progress in the production of the printed word. There were no "revolutionary gadgets", no fantastic new concepts that labelled obsolete all existing equipment and procedures.

This long period of easy adjustment definitely has passed. Today most printers feel uncomfortable when they contemplate the future. Almost every month, the trade press announces a new machine or a new method, until we find it difficult to remain disinterested in the face of such advancing technology.

As far as the composing room is concerned, most of the changes have occurred in the area of type composition, as foreshadowed for a number of years by the steady increase in the use of lithography and gravure. Because both of these processes reproduce type photographically, there has been an understandable demand for a more realistic approach to typesetting to meet the requirements of these specialities.

Two approaches have been made to the problem—one in which the objective is to produce a less expensive job, and another that aims to produce a better job. If we are to

understand these objectives, we first must separate them. We can then see that there is a place for both.

Paradoxically, the very industry that has so devoted itself to the ideals of human progress remains steadfastly conservative in its acceptance of new ways of producing printing. Many letterpress printers continue to make the mistake of terming anything but letterpress as shoddy goods, thus closing their eyes to the values of different printing processes. Because the principal product of printers is service, it is not indicative of the forward thinking to disregard all means by which service may be improved.

In the composing room, the argument was always less heated than in the pressroom, because the various processes all needed type composition. However, the method of producing this composition was bound to be subject to change. The manufacturers interested in the so called cheaper methods invariably chose the typewriter as the machine to develop. Postwar research in this field produced machines which ingeniously corrected the standard typewriter's original failings as a composing machine. The major fault, that of a single set width, was soon supplemented by two, three, and finally five widths in various machines. Second, the ragged right-hand column edge in typewriter composition was justified in several ways, the most effective

requiring a second typing, manual and automatic. In all cases, typewriting was considerably improved, and with fonts of characters designed to resemble standard type faces, these machines today are performing much of the composition formerly produced on type-casting equipment.

A still further development started with the typewriter keyboard and brought about a mating of this standard and familiar machine with the camera. Its product was a film, an obvious advantage in lithographic or gravure reproduction. Understandably, the equipment is more complicated than existing typesetting machines, because it operates on electronic principles that are presently foreign to composing room mechanics. The more complicated the mechanism, the more expensive production becomes, so that the selling point must be the product is better, not necessarily cheaper. Some manufacturers do imply, however, that their equipment is cheaper to operate.

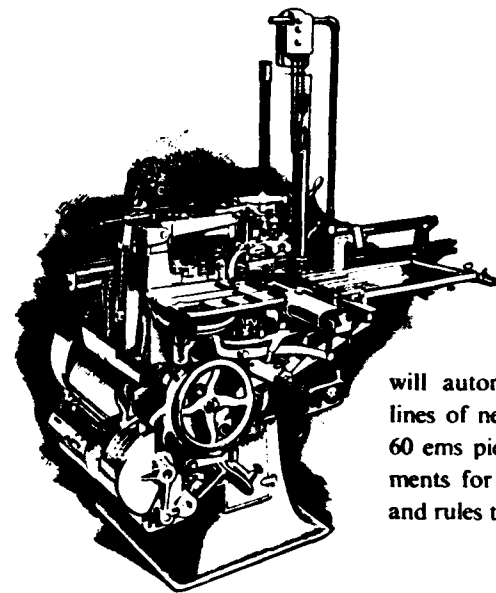
Most natural, according to printers, is the application of photography to existing typesetting machines. Such development has already taken place with both the single-typecasting and the slugcasting machines. The greatest interest to printers centers here, since they can readily understand a familiar machine.

(Continued on page 10)

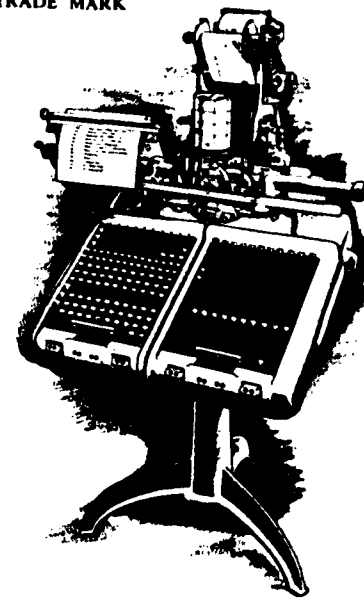
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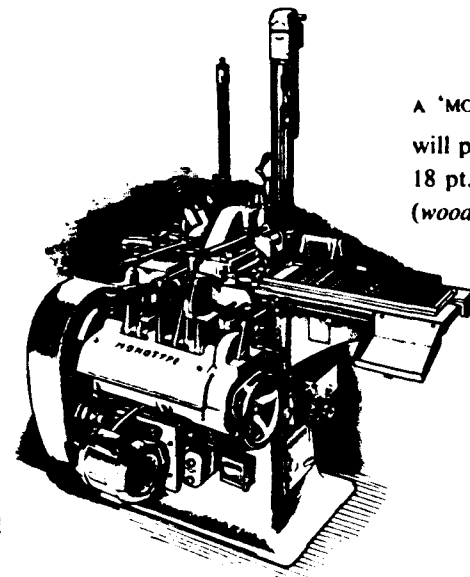
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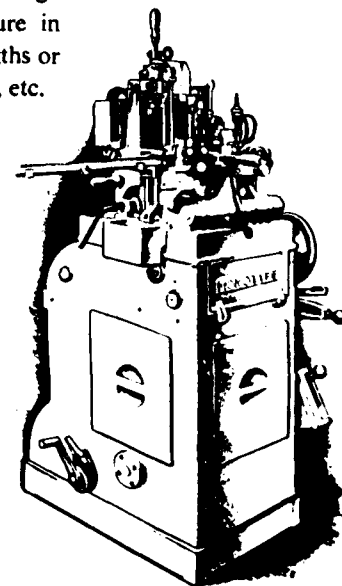
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Lithography & Offset Printing Techniques

By
SRI S. BANERJEA

Lithography and offset printing are popular all over the globe. In this interesting article the author gives a general description of this vital process of printing and also traces its evolution through the many years that rolled by

These German words, which can be still seen on Aloisius Senefelder's grave in Munich, mean "Here rests Aloisius Senefelder inventor of lithography."

Aloisius Senefelder, born on 6th November, 1771, invented out the new method of printing, known as lithography, rather lithography on stone, in 1798. However since then much have been changed in it today it is a worldwide industry. It is natural that general people will want to know something about lithography, that will give them at least an idea about it. Anyhow, I am going to write here only about photolitho, as chromo litho, known also as hand litho, has almost become obsolete in Europe, and its fate is bound to be the same in our country also in the not very distant future.

Before going to write something about photolithography, it will perhaps be better if we just discuss something about photography and colour, so that it may be easier for us to follow photo-lithography. Those, who have at least a little knowledge about photography, know that the darkest part of the object is the brightest in the negative, and the darkest again in the positive. And those, who have a little knowledge about colour, know also that the mixture of yellow, red and blue in full quantity is a very dark brown, which seems almost black in darkness. It should also not be unknown to them that the mixture of yellow and red is orange, that of yellow and blue is

green and finally that of red and blue is violet.

Suppose we have a picture of a flower garden with the blue sky. Now we have to reproduce it through photolithography in four hues yellow, red, blue and black. To proceed with the job, we have to make four negatives, so that we have one negative for each colour. When we make the negative for yellow, we have to remember that all the yellow parts in the picture should and must be changed in the darkest colour of the picture, in exception to black, and simultaneously the other two hues, particularly blue, which is the opposite colour of yellow, should be lighter. For these purposes, we use one violet filter before the lens, so that yellow light, reflexed from the picture, may be changed into a darker colour, while passing through the violet filter, and blue and red automatically become lighter as violet is nothing but the mixture of blue and red.

Exactly, in the same way, we use green filter for red negative, to change the red flowers and other red parts of the picture into a dark colour, and orange filter for the blue negative, to have the blue sky and other blue parts as dark. In the case of black, filter is used as it is necessary, but only to make the other hues lighter, as black is a very dark colour in itself. In the front of the film or plate one screen is placed and with its help the picture is built on the film or plate only in black and white dots.

The size of these dots are regulated through the quantity of light, passing through different parts of the screen. The screen is placed in different angles for different hues, so that the dots run in each colour in different angles. Without these dots, it is impossible to print something. These dots can well be seen in a picture, printed in a newspaper. If it is exactly noticed, it may be realized that those parts, where the black dots are bigger, are darker than those parts, where the dots are smaller, and also that the picture is formed only with the help of those black dots. Now let us go ahead with the job. When the negatives are finished, they are sent to the lithography department, where the black dots in negatives and in positive are reduced, as it is necessary. In fact, by reducing the dots in the negative, the quantity of colour is increased and by reducing the dots in the positive, the quantum of colour is reduced.

This job is called etching and it requires a long experience to etch a negative or positive. The quantity of colour in the final printing is controlled mostly by the size of the dots. When the positives are worked through, they are printed on metal plates. Now, work in lithography is finished, and they are carried to the machine department, which in this case is known as the Offset Department.

Why is it called offset? Is there any reason? Yes, there is one. It may be known to most of us that in Letter press, the papers get

direct impression from the block. To make it clearer, I would clarify it in this way—the paper and the block touch each other. But in the case of offset, a rubber cloth get the direct impression from the plate, and the paper gets direct impression not from the plate but from the rubber cloth. The impression is very soft, and in this way we can achieve much softer jobs in its character, than we can get in the letter press. One most important function of offset is the use of water. Before the ink rollers transfer ink on the plate, a water roller is rolled on it. Just afterwards ink is transferred on the plate, and owing to water, ink is caught only in those parts, where the image is printed, and the rest is left free from ink.

The invention of offset was quite an accident. The inventor W. Rubel of New Jersey (U.S.A.) was a printer. In those days machines were available only for direct impression. W. Rubel's machine was also of the same kind, but its cylinder was covered with a rubber cloth. Once he forgot to wash the rubber cloth after a false impression, and when he printed the next one, he found that the paper was printed on both the sides, on the front from the plate or stone as it was, and on the reverse from the rubber cloth. He was more pleased with the quality of the printing on the reverse than that

on the front. At his advice Peter Printing Press Co. built an extra cylinder for rubber cloth in their Zinc Rotary Press in 1905. That was the first offset machine in the world.

There is no wonder, if some one, seeing all these huge and modern machines, modern reproduction through, photolithography and rapid production forgets Aloisius Senefelder's contribution to this industry. Whether we print today on zinc or aluminium plates, whether we use offset, we still use directly his methods of using water on the plate before transferring of ink. There is no doubt, that his invention of lithography on stone brought a new era in the printing world. Today offset can be found in every corner of the globe. For all these we are thankful to Aloisius Senefelder, father of modern lithography.

(Courtesy: Amrita Bazar Patrika)

What Photosetting Has Done to Composing Room

(Continued from page 7)

The most recent additions to composing room tools are the specialized camera for the production of display lines, available in several models, and the distortion camera, which can photograph a proof to create unusual display effects.

We are, therefore, in a transitional period. The need for photo-

graphic composition is bound to increase rapidly, although possibly the equipment best adapted to the job has not yet reached a final form. Most printers recognize that there is a market for this service as well as for standard typesetting, but they cannot decide which of the many new devices to select when replacing present machinery. Scores of meetings on the subject attest to the present bewilderment in the face of technological advances which are bound to affect the craft appreciably in coming years.

The real task, therefore, is to look not just for a gadget that will do a "cheaper" job, but for a well-designed and well-manufactured piece of equipment that will perform in a superior fashion. By utilizing procedures which save steps, it will lower hour costs in the end and thereby open up new markets for all printers.

(Courtesy: The Inland Printer)

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From Our London Correspondent

F. & D. BROWNLEE

The aim of mechanical book back gluing has always been to maintain the high standard of hand work with the added speed and consistency offered by mechanisation. A new machine, which has been designed to eliminate the problem of drying and also improve the standard of gluing, has been evolved by Smyth-Horne Limited of London, known as the S-H book back gluer. This consists of a combined jogger feeder and gluer, the books being dropped into the hopper a handful at a time and are automatically fed into the gluer in two stages. In the first stage they are fed singly from the bottom of the pile into the jogger, and in the second stage the book is jogged square and fed into the gluer tracks. The feeder will handle tape work as efficiently as plain sewn work.

The book is nipped between the tracks and carried past the glue roller and glue brush, the latter being timed with the feeder in such a way that no headband of glue can be formed on the book. The tracks then deliver the book to the drier, and the whole operation is accomplished without disturbing the work of the jogger. For consistent gluing the glue roller is steam heated and the brush is steam softened, while the whole unit is designed for ease in cleaning down.

The flat conveyor ensures that the books are not disturbed during the drying process; they are accepted wet with glue from the gluer and are delivered at the end of the run quite dry and fit to handle. The space wasted in piling books

to dry is eliminated by this new technique, the whole of the drying process being effected within the floor space occupied by the machine, and the drying time is a matter of seconds. Also the drying process merely removes surplus surface moisture, and the glue is not backed. The size of book that can be taken ranges from 5" x 3½" to a maximum of 10" x 9" and a thickness of upto 2½", the output being 1000-3000 books per hour.

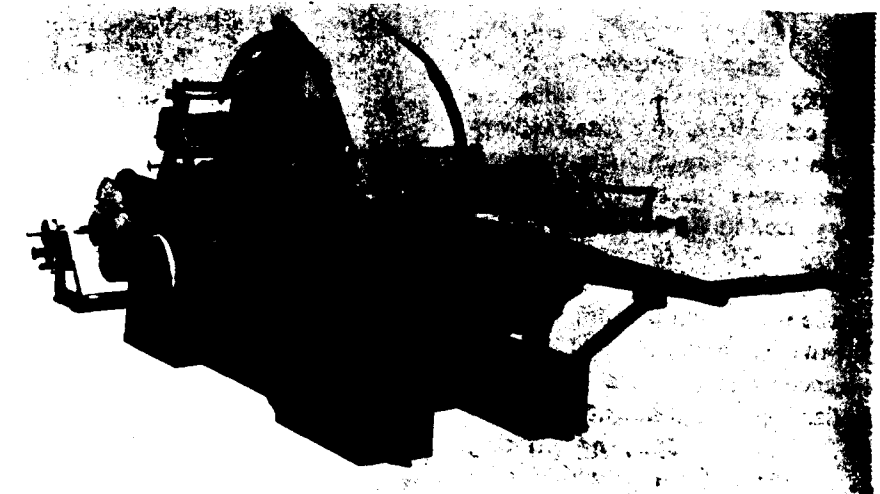
An interesting range of Fleetset Synthetic Offset inks is available as the result of a completely new formulation developed by John Kidd & Co. Ltd., after intensive research in their laboratories at Wolverhampton into the many new resins and related products which have become available to the printing ink industry in recent years.

The outstanding feature of this range is their quick-setting properties and freedom from drying problems. For normal papers sufficient

driers are included in the inks to dry off the print overnight, and if it is known that the stock used is of pH lower than 4.5, or is in any other way "difficult", a little extra drier can be added. Further, less water is required on the damping rollers during printing, which eliminates one of the most common causes of trouble in offset printing, while drying is also simplified. Over-printing and multi-colour printing is made much easier, and in the 4-colour set, for example, the amount of driers has been carefully balanced to avoid crystallization. It is stated that cobalt driers should never be used, except in a final colour.

In addition to the quick-setting properties, the final hardness of the print is greater than with linseed oil types of offset ink and the work can be handled quicker after printing, the hardness characteristic being particularly important when the job is subsequently to be

(Continued on page 14)



'Befanco' Printing and Sheeting Machine for producing wrappers



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Prepress Requires Rigid Plate Mounting

By

MR. R. T. RICE

Excessive overlay is required to give proper printing pressure when wood-mounted plates are used. Premakeready procedure essentially requires plates mounted on stable metal

Before proceeding with our discussion of the requirements of an accurate premakeready procedure, it might be well to review the basic principles of relief printing as they apply to cylinder press impression. The cylinder is undercut so that a resilient packing can be placed around it. This packing can be adjusted in thickness, not merely to accommodate the various thicknesses of paper stock, but so that adjustment in printing pressure may be made to suit the requirements of the form.

In order to get good quality and trouble-free printing, the impression line or travel surface of the impression must be maintained at an exact plane in relation to the pitch line of the gears on the impression cylinder and the bed of the press.

In order to maintain this travel line in the exact plane required, the form must be rigid—it must be seated on the bed of the press with uncompromising inflexibility. Any bridging or any resilient or compressible elements in the form will upset the travel line and destroy any impression adjustment which has been placed in the packing.

As stated in the preceding article, the press manufacturers establish the height of the bed bearers to accommodate the accepted standard printing height of .918-inch. Because of this, no printing element in the form should ever be under the standard height, and only in specific instances—which

will be discussed later—can certain elements exceed this height.

REASONS FOR ACCURATE HEIGHTS

There are two basic reasons for maintaining accurate printing heights in the form:

First, if the form elements vary in height in various parts of the form the travel line changes constantly as the cylinder passes over the form. This causes fast wear on the type and plates and is the chief cause of slurring of halftones.

Second, if the elements of the form vary in height, it is impossible to get proper roller adjustment. Rollers set to ink one part of the form properly will not ink other parts of the form properly. Correct roller and ink adjustment is just as important as impression adjustment when transferring ink to paper. Variations in height of the form elements prevent both good impression and good inking.

Perhaps no element we have been putting into our forms has been a greater deterrent to holding the correct surface travel than wood-mounted plates. Wood is elastic. Because of this, excessive overlay is required to develop proper printing pressure. There is a constant tendency to overpack the cylinder with overlay, thus changing the travel line from normal to below height.

Wood is compressible in greatly varying degrees. It will compress and take a set after a few impres-

sions and the impression will break away. The tendency is always to spot up with more overlay. Consequently, most of our press runs are begun with overpacked cylinders and uneven impression lines.

Wood is extremely sensitive to moisture changes. We never know just what is going to happen to the form or the impression when we have wood on the bed of the press. A beautiful "kiss" impression may be punching the sheet within a few hours because the wood swells, or the impression may break away altogether because it shrinks. But that isn't all! Wood swelling in a form can increase the lockup pressure to the point where it lifts the form off the bed of the press (bridging) or may shrink to the extent that the whole form loosens up.

Wood destroys accuracy in the makeup of the units. Any shrinking or swelling changes the justification, size and register of the elements. The instability of wood has prevented us from building accurate press forms.

The practical way out of this predicament is to mount plates on rigid metal bases by adhesive mounting.

One of the most profitable things that has been developed in recent years has been adhesive or flush mounting of plates. It has eliminated the necessity of breaking up material in makeup and lockup to accommodate nailing shoulders. Flush trimming is a real money-

maker so far as makeup is concerned, but its greatest advantage is that it provides the means of mounting plates accurately on metal base.

MACHINE OR STEREO METAL USED

Ordinary Linotype, Stereotype or Monotype metal is used for casting the base. Metal mounting is economical from the cost standpoint as well as in what it will accomplish otherwise. The metal is fully reclaimable. It can be handled with ease and our workmen are used to working with it. Very close tolerance can be attained in all dimensions. Printing heights can be held within .0005-inch with the equipment available for the work.

There are two approaches to metal mounting. One is to have the plates mounted by the photo-engraver or the electrotyper. The other is for the printer to mount his own plates. The latter is the better approach, because standards can be established and maintained much better this way.

Five major pieces of equipment are required for the work. They are a stereotype caster, a heavy-duty saw-trimmer, a hot-mounting press, a block-levelling machine, and a plate gauge.

Recessed moulds are available for the casters. Both recessed and solid blocks will be necessary. The recessed blocks are used for the large plates, but solid casts will be necessary for very small plates.

Heavy-duty saws with ball-bearing tables are best for trimming and squaring the mounted plates and for easy handling of the metal blocks.

There are several hot-mounting presses available which have been

especially designed for plate mounting. These are equipped with electrically-heated platens and thermostatic controls.

The precision block-leveller is used for most work, but the larger precision shaver will be needed for large plates over 12 x 18 inches. These devices are essential to achieving accuracy. The measurement standards must be controlled by use of the plate gauge.

MOUNTING PROCEDURE FAST AND SIMPLE

The procedure of mounting plates is fast and simple. The base is rough-cast on the stereotype caster in slabs that are over the finished heights required. Pieces of the base are cut to the approximate size of the plates to be mounted—usually one pica larger to provide for final trimming or squaring. Each block is then levelled to the specific height required for each plate. A levelling cast is taken off one side. Then the block is turned over and levelled to the required height. All heights are accurately controlled by using the plate gauge for checking and verifying thicknesses of plates and heights of the blocks as well as the final heights of the mounted plates.

A piece of the adhesive film is placed between the plate and the metal block. The assembly is then placed in mounting press under pressure at a temperature of 200 to 300 degrees for a few minutes.

After removal from the press, the plates are allowed to cool. They can then be flush-trimmed to accurate measurement.

As many plates as can be accommodated on the mounting press can be mounted at one time. Copper, zinc, magnesium and electrotypes can be mounted to very accurate heights by this method.

EXCESSIVE MAKEREADY ELIMINATED

Flush-mounted plates on rigid metal base provide the final link in permitting us to build precision forms. The metal base remains stable dimensionally, provides the necessary rigidity, prevents distortion of the the makeup, and practically eliminates the need for overlay. Because the printing heights can be controlled to close tolerances, the major cause of excessive makeready is eliminated. Consequently, we can get longer runs and better quality as well as more production from our presses.

It has been known for many years that close tolerances in printing height and the maintenance of correct surface travel have been the all-important factors in achieving good printing impression. One point is very important. In order to have correct surface travel, the form must be rigid. We cannot tolerate resilience on both sides of the travel line. All adjustment for correct printing pressure must be made in the resilient packing. Any resilient element in the form will upset the travel line.

The travel line between form and impression cylinder is important to all three major processes—offset, gravure, and letterpress. There is another factor that is common only to letterpress. This is bearoff. Both offset and gravure have a full plane impression surface. In relief printing we have an impression surface that varies from an isolated dot or hairline rule to a massive solid area.

Because of the nature of bear-off in cylinder presses, it is practical to increase the height of some elements in the form to compensate for it. This must be done within very close limits, however. A large

(Continued on page 24)

From Our London Correspondent

(Continued from page 11)

bronzed. Runs of 250,000 on deep etch plates have been achieved without any deterioration of the prints or plate.

A range of about 20 different colours has now been produced, and special shades can also be accurately matched. The bright finish given to the print is particularly noticeable on coated papers, which might be described as an "eggshell gloss finish" and is more attractive than the normal matt appearance of offset. The finish, however, varies with the paper, and is matt on some absorbent papers. Most synthetic rubber blankets are quite satisfactory for use with these new quick-setting inks, and in the laboratories 500,000 impressions have been taken from the same subject without affecting the synthetic blanket in any way.

The firm have also recently produced a new "Reflecta" overprinting varnish for use in letterpress and offset processes. In addition to the numerous applications in general printing it is of interest to producers of packaging material, and book jacket printers, due to the high quality and ease of handling. It is used as an ink, applied from solid plates on any type of letterpress machine, so that any printer can do varnishing himself without the special machines required by spirit varnishes. Any selected area of the printed page can be varnished in register, giving "punch" to key portions of the design.

The degree of discoloration is kept to a minimum and the new varnish can be used on the palest yellows without alteration of shade. As the gloss is impaired by the addition of reducers, these should

not be used, or at least their use kept to the absolute minimum. The degree of gloss is very much dependent on the type of paper being used, but the degree of soak into poor quality papers is far superior to existing overprinting varnishes, while there is less tendency to pluck and little stickiness in the pile. The varnish has a great advantage for offset printers in that it can be used without water, with cut blankets, specially helpful when gummed paper is being handled, while it can also be used with water as a normal offset ink.

A high-speed combination printing and sheeting machine for wrapper production, the "Befanco", made by Beasley French & Co. Ltd. of Bristol, handles wrappers of all sizes from 5" to 20" in length, in steps of 1 4", and in ant width upto 30", that is a maximum sheet of 30" wide by 20" long. Operation is from the reel and rubber plates are used, and the machine can be supplied with letterpress printer or aniline ink printer. Slitting is provided and the smaller size sheets are delivered two or three wide across the web. The wrappers are delivered into a super-imposed stream, counted in 50's or 100's, and can be stacked direct from the delivery table. Typical applications are the production of butter, margarine, bottle wrappers, and citrus fruit wrappers, and an attachment can be supplied for the impregnation of fruit wrappers if required. A speed of 400 ft. per minute can be regularly obtained even when using fruit wrapping tissue paper.

The special adaptation for producing impregnated wrappers for citrus fruit is stated to be the first machine to print, impregnate, sheet, count and collect citrus fruit wrappers in a single operation. Diphenyl, which is the only fungastat approved for the treat-

ment of citrus wrappers by the British Health Authorities is applied in a special solution within very exact limits as prescribed by the Citrus Industry. Diphenyl is a particularly volatile substance and it is obvious that such "last moment" treatment of the wrapper preserves the virtue of this well-known fungastat to the maximum. The machine, which caters for a large range of sizes, can be arranged to print in from one to four colours, and a number of units are in successful operation, for example, in the Union of South Africa for the production of fruit wrappers for the South African Citrus Board.

A development in silk screen printing is the production by Aerostyle Ltd. of a new metallic screen, which is claimed to have a number of advantages. This consists of a combination metal stencil and screen, being particularly suitable for the reproduction of artwork or photographic negatives at short notice. Fine-screen halftones can be produced, and the screen and stencil are not affected in any way by the solvents used in inks, thinners and washers, while the thickness of the film can be varied between a litho and a die-stamped effect.

Plans are well in hand for the forthcoming IpeX Exhibition at Olympia in July, and products of nearly 300 firms will occupy a total area of about 430,000 sq. ft. Though sponsored by the Association of British Manufacturers of Printers' Machinery, IpeX will be international in scope, with exhibits from European, American and other countries. Among trade associations represented will be the British Federation of Master Printers and the Federation of Master Process Engravers. Repre-

(Continued on page 22)

Press Organisation and Management

By
SRI N. DAS

Quality and quantity of production depend much upon the efficiency of the management of a press. The author emphasises in this article the necessity of introducing systematic scientific methods of managing Indian Presses

Printing Industry is one of the vital and a-heading industries of the day. The flourishing of printing industry, as we see to-day, serves us to the maximum extent by providing us with the every source of acquiring knowledge from manifold printing materials, such as books, newspapers etc. Truly, it would have been a great loss to us if this industry had not attained the marvellous perfection we see today. Back to the far old days if we cast our look, we find there was no such scope for the people living in those days. From this sense at least we should be proud of this age for one of the most useful gifts of science.

But, in our country this industry has not yet flourished to its best due to various factors. It was an age, not far back, when men of letters would not take least interest in this line, but with the growing importance of the industry the idea has gradually subsided.

Press Organisation is one of the vital organisations of the state for giving employment to the people and increasing the economic structure of the state. But in our country, due to lack of proper scientific management the organisations often fail to run in a systematic way. Before starting any organisation we should be properly acquainted with every aspect; and from this side the science of proper management should not be ignored. On the contrary; primary attention should be devoted to this side.

Selection Of Site : The selection of proper site bears a great relation with the cost of production and so

proper attention should be given to this. The site should be selected in such a place that the cost of supplying raw materials becomes less. At the same time watchful eye should be maintained regarding availability of skilled hands.

Press Building : The plan of the press building should be worked out in accordance with the plan of the lay-out of the press. The press building should be spacious, sufficiently airy and well ventilated. In case of one storeyed building the initial cost may run high, but, it will render scope for better management.

Selection Of Machinery : Without better machinery the printing will not be upto the mark and we will not be able to keep abreast of the times. The first thing we should bear in mind what type of work we are going to do and what type of machineries would be suited for that very purpose. So, we should try to get and include correct type of machineries for having quick production.

Selection Of Workmen : For quality printing the part of skilled workmen is indispensable, but in our country proper attention is not given in selecting right persons for the right job. On one hand it creates a set back to the good printing and on the other the standard is being lowered thereby.

Management : The role of the management is perhaps the most hard task as it is not so easy to deal with the labour in a spirit of humanity and manly feelings. We should know that wor-

kers are the assets of the organisation and they should be provided with all possible facilities. We spend lots of money on machines, because they are the assets of the organisation. In a similar manner the workers should be treated. Let the workers feel that the proprietors are not only the pay masters but also stand behind them in their hour of need. It is the job of the administrator to hear the grievances of the workmen calmly and come to a right decision.

It is a pleasure to note that the relation between our industrialists and workmen is growing sweeter day by day and they are providing all facilities for the workmen. Our National Government has also taken keen interest in the matter and planned for the upliftment of the status of the workmen through various schemes in operation, such as Factories Acts, Employees State Insurance Corporation etc.

Production : The last is production and the whole organisation depends on it. We must know the accurate costing in every operation and watch the various aspects so that the cost of production be always minimum. The cost of production depends upon the selection of raw materials, accurate-costing, overhead charges, sundry expenses and the quality and quantity of production. And we should never forget that the quality of production depends much upon the sweet relation between the management and the workmen.

(Courtesy: *Amrita Bazar Patrika*)

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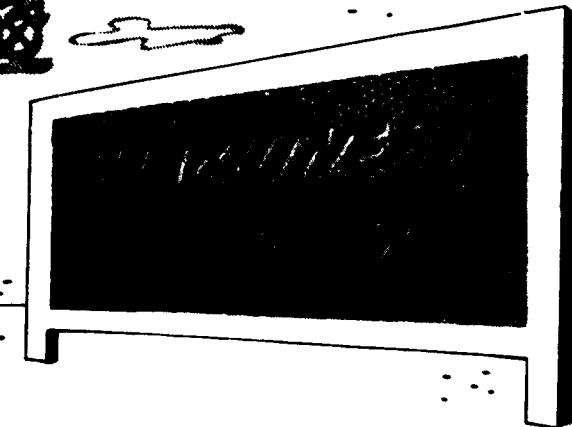


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Graphic machinery manufacturers and dealers may utilize the columns of this monthly feature to broadcast brief descriptions of their latest machines to the printers in India and surrounding countries.



MODERN



RTA CYLINDER

This is a Stop Cylinder of the latest make from the "NEBIOLO" family which was introduced at the Drupa fair held in Germany last year.

This combines the model of their "Rapida Di Lusso Cylinders" having incorporated in it, the single heavy cast unit of body, Pyramidal and cylindrical inking system, Helical cut gears, Automatic Front Suction feeder and delivery, accurate dot-to-dot registration etc., and an additional feature of this machine is the independent functioning of the bed and cylinder and absolute synchronization of bed and cylinder motion. As usual with all Nebiolo Machines, the machine will stop automatically when paper is torn out while feeding or is wrongly fed. To eliminate risk of accident to worker, the bed guard, when lifted up, the machine will automatically stop. The machine has an oil tank of capacity 1 gallon, and the lubricating system is completely automatic.

The short specifications of the machine are given below:

Paper size 16"x22" max.
" " 4 3/4"x5 3/4" min.
Printing area 15 1/2"x21 1/2"
Running speed up to 4,500 impressions per hour.

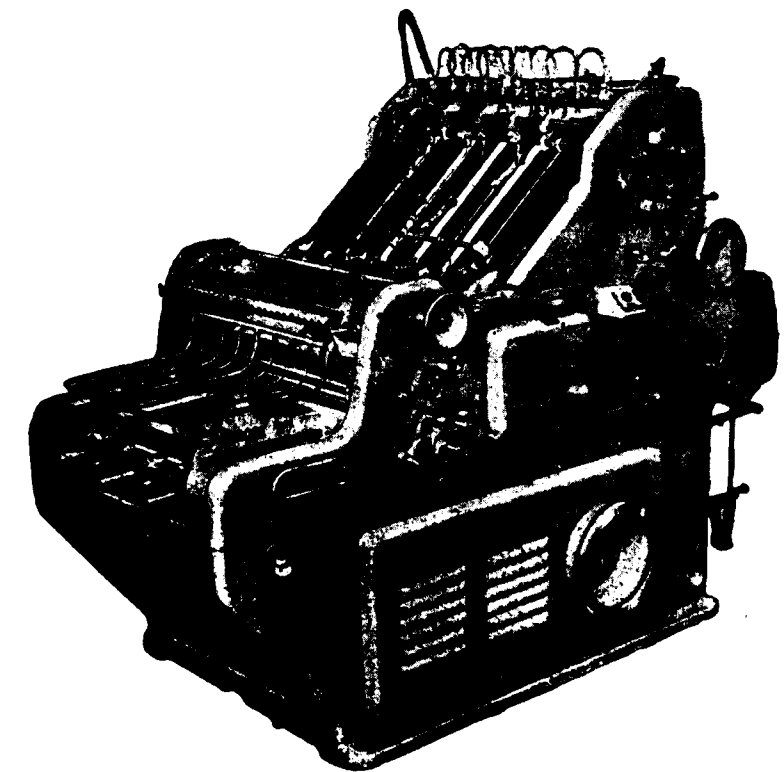
Power required 4 H. P.

Weight 6000 lbs. approx.

This machine is also available in Double Crown size with all similar technical improvements.

The factory manufacturing these machines employs one of the biggest number in Italy and has a worldwide organisation for sale of these machines as well as for service facilities to the buyers. Having

their own casting foundry, workshop, technical laboratory and personal, backed by many years experience in the trade, every year they bring out a new invention of their printing machines. This firm also manufactures other sizes of cylinders, offset machines, paper cutters etc., for printing trade and also textile looms, machine tools and others for many other trades.



RTA Cylinder

The Modern Printing Inks

(Continued from page 4)

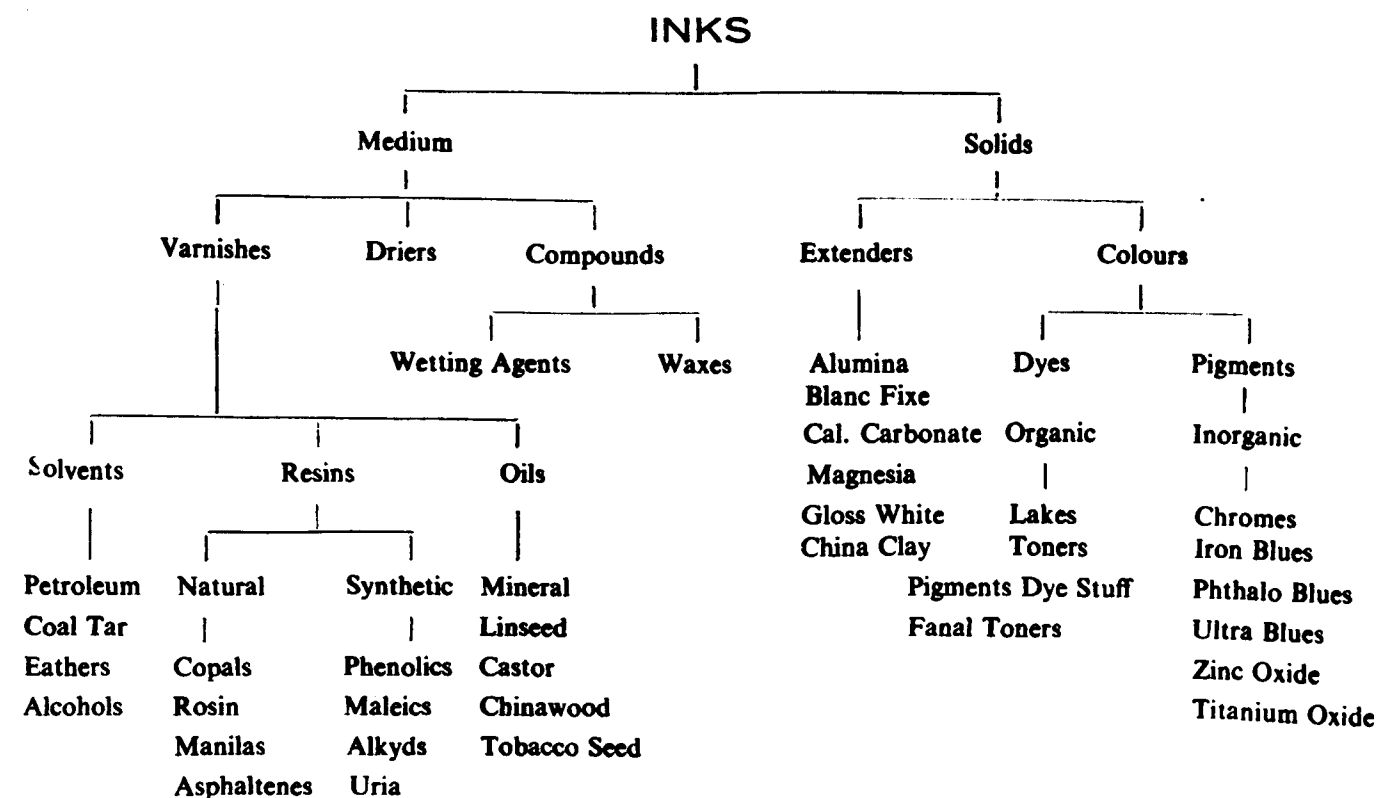
then due to definite chemical reactions the medium is hardened instantaneously. Quick set inks have medium consisting heavy (almost solid) varnish dispersed in a thin oil. As soon as these inks are printed preferential absorption of the thin varnish take place leaving the thick varnish with pigments and extenders on

the surface. This kind of inks require coating on the stock like art and chrome papers to give good performance.

Some of these new kinds of inks were not even heard of a decade ago, it shows the ink making is still evolving; rather the recent developments are almost revolutionary: A host of new synthetic resins, Plastics, Dyes and Pigments are offered to the ink technologist, most of which hardly have been

explored. On the other hand rapid changes are taking place in the printing processes, machine designs and paper surfaces which will necessitate new development in inks so much so it is not possible to predict what the ink making of tomorrow will be. It may be pertinent to apply to this young branch of science what H. G. Wells remarked about the human mind: "It is in its earliest dawn of greatness".

Tin Printing, Transfer, Steamset, Silk Screen, Poster, Die Stamp, Copper Plate, Security, Rotary, Job Press, Litho, Offset, Gravure, Aniline, Thermographic, Multicolour, Heatset, Ceramic, Metalfoil.



Courtesy : Rainbow Ink & Varnish Mfg. Co. Ltd., Bombay



The firm of Parsons & Whittemore (Madras) Ltd., has been shifted back from Bombay to Madras, and is now functioning at 17, Angappa Naick Street, Madras 1, under the management of Mr. K. G. Krishna Rao. Mr. Krishna Rao needs no introduction to printers in India. He has been a regular contributor to the pages of the 'Printindia' on subjects of varied interest to the Printing Industry. His association with the firm since 1952, his extensive travels and wide contacts have endeared him to most printers throughout the country. Printers will remember his genial personality in the Conference and Exhibition held in Calcutta in 1954. His absence at the Madras session of the Printers' Conference and Exhibition was keenly felt by his numerous admirers. Unassuming by nature and true to his friends, his choice as Manager augur well for the future of the firm of Parsons & Whittemore (Madras) Ltd., a hearty welcome back to Madras and wish him the best of success that he richly deserves.

The production of paper in India has increased by nearly 50,000 tons over the past four years, it was officially stated.

The production in 1954 went up to 1,55,328 tons as against 1,08,907 tons of paper produced in 1950.

The per capita consumption of paper in India, which was very low

until recently has gone up by 50 per cent during the last five years. A paper pulp expert of the FAO, Mr. Sundeli, who recently surveyed the paper and pulp industry in India has estimated that the demand for paper (including newsprint and boards) would go up to 4,81,000 tons by 1961-62.

As a result of the implementation of the expansion schemes of existing units and the establishment of new units, the capacity is expected to be over 2,87,110 tons by the end of 1956. The requirements of paper in the country have been estimated to be of the order of 2,00,000 tons per year. It is, therefore, expected that the actual production of paper and paper boards will adequately meet the requirements. Certain special types of paper in limited quantities may, however, be imported to meet the needs of certain consuming industries and a class of consumers. This small import is not likely to hamper indigenous production. It will, on the contrary, act as an incentive to indigenous producers to improve the quality of their products.

The paper industry at present employs over 26,000 people out of which 2,100 are technical personnel. With the planned development of the industry, employment is expected to go up to 54,000 by 1960-61 including 4,000 technical hands. The capital invested in the industry amounts to Rs. 21.72 crores. An additional investment of Rs. 14.3 crores

is envisaged under the new schemes which are being implemented and for expansion of existing units.

At present, 21 units are engaged in the production of paper, seven of them are in the South, five in Bombay and Madhya Pradesh, three in the Punjab and U. P. area and six in West Bengal, Bihar and Orissa. All the raw materials required by the industry like bamboo, sabai grass, bagasse, rags, waste paper, miscellaneous fibres etc., are available in the country. In pre-war years, considerable quantities of wood-pulp were imported. But, in recent years, only a small quantity of materials required for the production of specialised paper and viscose conversion is imported.

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AHMEDABAD - 1

A new step-and-repeat machine designed for fully automatic production of multiple negatives used for printing labels, name-plates, etc., has been introduced into the market by M/s. Consolidated International Equipment and supply Co., Chicago. All the operations in the machine are automatic and the time of exposure is preset which ranges from 1/2 to 2 seconds. At present the machine is available only in two sizes (viz :) 25"x25" and 40"x48".

The General Aniline and Film Corporation of Jhonson City, U. S. A. have produced a positive-working aluminium offset plate which can be exposed direct from any translucent original and the plate is named as "Ozalith" plate. It is so made that it by-passes the usual negative processing steps. It can be exposed in any regular exposure device and development time taken is less than one minute. By using this plate it is estimated that printers will save 20% of the costs which hitherto they have been incurring by adopting the present conventional methods.

The well known offset printing machine manufacturers M/s. Harris-Seybold Co., have introduced a

new chemical into the market known as Harris 3-in-1 solution. This solution is useful for offset plate making operations. It takes the place of the desensitizer, lacquer and gum ordinarily used in developing desensitized offset plates. After the plate is exposed the 3-in-1 solution is poured on and the surface plate is rubbed with a moist sponge. Now printing areas are completely desensitized and images are developed quicker. After the excess solution is wiped off the plate is rubbed dry and no additional washing or gumming is required.

Reliance Electric and Engineering Co., Cleveland have introduced a new type of "Super T" industrial DC motors designed specially for producing fast and accurate speed than the standard motors offered by other companies at present. Ranging from 20 to 1000 horse power the new DC motors can be extended to both higher and lower ratings.

Mr. M. Bhaktavatsalam, Minister for Agriculture and Industry, replying to a question put by Mr. N. K. Palanisami said that no investigation was made by the Government, whether a large num-

ber of workers were affected by lead poisoning in the press industry and type foundries.

He also said that the Government has not received any complaints regarding the above, but however, an investigation was made in the year 1951, by the Professor of Hygiene into the health of the workers in the Government Press, Madras, involving about 500 workers and no symptoms of lead poisoning were noticed among them.

He added that under Rule 95 of the Factory Rules, lead poisoning had been included as an occupational disease and the workers who are affected would get compensation under the Workmen's Compensation Act.

The Lithographic Technical Foundation of the U. S. Research Organisation have brought out a general index book containing the complete list of publications published by them so far. This index book may be useful to our Indian Lithographic and Offset printers. Copies of this can be had from: Lithographic Technical Foundation, 131, East 39th Street, New York-16, N. Y. U.S.A. (Price 4\$ 18 cents)

(Continued on page 24)

Uniform Costing System

(Continued from page 6)

As in labour calculation, so in materials, the same difficulty will be found, in rightaway asking to introduce store requisition debit and credit slips.

The question therefore arises—should we, by a thorough survey of all classes of printers — big, small, mediocre, offset, block-making and letter-press—categorise them, and introduce principles for each category separately for adoption? Or should we by our cost survey acquire knowledge of diversity to formulate a via-media cost control system? The latter course seems more intelligent, and for this the latest principle, is the application of hourly Cost Rate System for universal adoption, which the big as well as the small can fruitfully utilise, whatever be the procedure of collection of data.

COST RATE SYSTEM

The application of Hourly Cost Rate System should not all at once be introduced in any house before making a preliminary cost survey of the house, itself. Moreover, the Hourly Cost Rate Schedules vary from month to month and until by a study of several months' calculation, a norm is arrived at, no standardised cost can be deduced. Then will come a comparative study between one year and another, so that standard and dependable rates may be found out.

Therefore, it is for the printers at the initial stage to actually know how best to calculate the various items to find out the cost of a particular job. Once the principles are known, the same may be elaborately applied for a couple of months or for a couple of years according to capacity, in order to

standardise the hourly cost rate system of the house in question. To come to a generalisation by applying the principles for a few months would contain the principles all right but not be as perfect as attempted for years for comparative study. But in either case, the fundamentals would remain. This is how the big and the small houses can arrive at a mean in applying the fundamentals of cost control system.

ROLE OF LABOUR

In dealing with the fundamentals of the Cost Control System, the issue that comes uppermost is that of labour and their wages. In order to review the exact type and the different categories in the cadres of labour that a printing establishment has to handle, we have to chase the various stages of production. Barring the newspaper press, most of the commercial printing units have job production system. An order comes in may be for a letterhead or for a calendar, a label or a book. A job number is allocated to the order and entered in the Cost Register.

For big firms, a Works Instructions Ticket is prepared with all the details on it which circulates from section to section with the completion of the individual stages, ultimately coming back to the section from where it was issued, along with the finished goods and endorsements by the various persons that handled the job. Then the materials are despatched. Some time passes between the transmission of the materials and the billing, which interval is utilised by the Checking Department in scrutinising the actual labour-hours spent as also the cost therefor, and the materials utilised etc. to make a preliminary assessment of the actual profit-margin out of the job under scrutiny.

PRACTICE IN SMALL HOUSES

In small houses, however, this type of elaborate system is not maintained. No cost register is kept, nor is any works instructions ticket prepared. Neither do the sections keep any formal record of the time spent in the case and the machine rooms, etc. The ticket with the Daily Outturn Sheet, Materials Issue Docket, or Store Requisition Slips and the various Progress and Store Registers are not maintained. These are too elaborate for small houses to introduce with no such staff. In a small establishment like this, a job is received and entered, immediately sent to the case-room, thence to the machine room, and off to the despatching department.

NO APPARENT ANOMALY

But although on the face of things, there seems to exist a vast difference in the modus operandi of such extreme types of units, yet, fundamentally, the procedure is the same and the stages are interrelated. In a big house so much of formalities have to be gone through simply because of the fact that there exists a lot of division of labour, whereas in small houses every information is at the fingertip of the manager - cum - proprietor-cum-every body.

Nevertheless, the fundamentals of the system have got to be adhered to everywhere, perceptibly or imperceptibly, if the actual cost of production has to be ascertained. The labour rates have to be taken into account, the expenses under the head of materials detailed, and all other fore-seen and unfore-seen items, such as idle hours, expenses for scrutiny, proofing, maintenance, overhaul and repairs of machinery, lubricants, mill stores, etc. calculated and assessed on a pro-rata monthly outturn basis. In every department of the works, besides direct productive hands, whose

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working hours can be directly allocated to specific jobs, there are indirect labour like coolies as well. In addition to these, even direct industrial hands often remain busy in indirect work, for instance, in looking for materials and so on. All these, coupled no doubt with the expenses in office management, have to be included in on-cost expenses. Likewise, there are some materials like machine oil which have to be considered as on-cost expenses.

NEED FOR CAUTION

In making cost allocations, one basic principle has always to be borne in mind. In a printing house, big, medium-scale or small, every item of work or service means an expenditure to be earned out of the realisations from every single job. Care should therefore, be taken to allocate all expenses as much as possible on individual jobs, and where no such allocation

is possible straightaway, they should be recovered indirectly on a percentage basis on other items of work. In short, all possible expenses must be accounted for in a job for realisation, be it for imposition or distribution, proofing or make-ready, graining or machine-cleaning.

These are, in short, the basis of all costing. So long as a house takes into account all these factors, inclusive also of the expenses on stationery, gas, electricity, insurance, taxes, repairs, depreciation rent, transport, and so on, there is hardly any reason as to why it should be ultimately run at a loss, whatever be the procedure for the compilation or the maintenance of the data. It need hardly be emphasised that it is not by blind adherence to rigid formalities or red tapism but through the adoption of elastic but efficient procedure that a uniform Cost Control

System can be introduced and followed in the printing industry in India, for the benefit of the entire trade.

(Courtesy: Amrita Bazar Patrika)

From Our London Correspondent

(Continued from page 14)

senting the workers will be the Printing and Kindred Trades Federation.

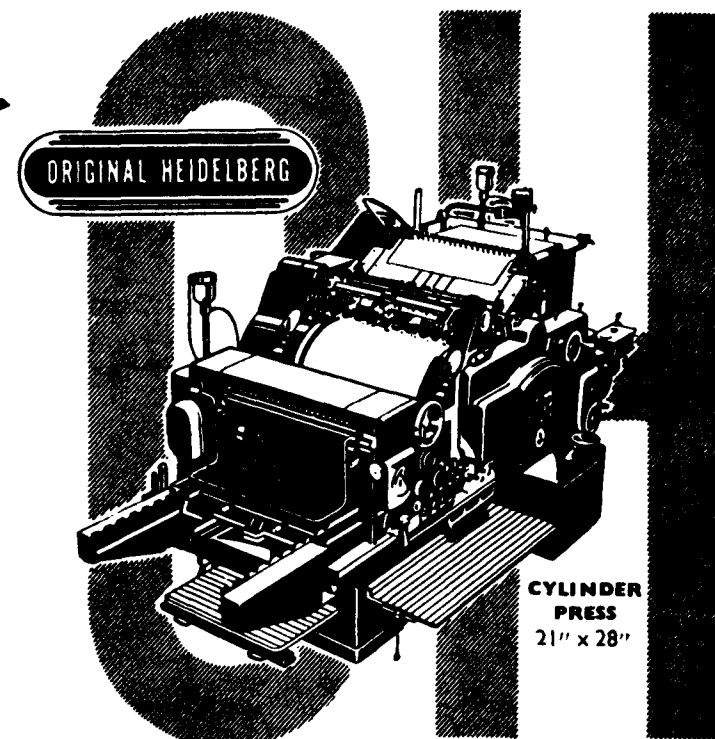
Of special interest to the packaging industry will be conveyor stoving ovens and automatic oven unloaders, representing some of the latest advances in tin-plate printing by off-set litho. Electric Engineering technique, now being more and more applied to printing, will also be an important feature, including new applications of electronics to control-gears, precision Engineering, slitting, re-reeling and box-making.

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27. Q. What is spirit varnish? Can't we use the usual overprint varnish in a varnishing machine?

A. Spirit Varnish is a thin Volatile type of Printing Varnish and is especially formulated to be rolled on to the paper; while on the varnishing machine it is kept fluid by constant contact of the rollers with the supply from the Duct or Tank. Being a thin non tacky fluid it transfers evenly to the paper and when exposed on the sheet dries rapidly by evaporation leaving a smooth glossy finish. It is not possible to use ordinary Gloss Overprint Varnish on this type of machine, it would, in the first place, give a very poor result and the Rollers would quickly 'Tack up' and rip the paper from the cylinder.

28. Q. We have got some old tricolour blocks made of copper with 125 screens. We want to use these blocks in our magazines, but the paper we use for our magazines is glazed mechanical white printing. We recently made an experiment and we found that the blocks did not come off well on the above paper. Is there any method for effectively printing blocks made for art paper on papers like newsprint and mechanical glazed?

A. Satisfactory results cannot be obtained from fine Screen Blocks on coarse papers, your paper requires Tricolour Blocks of 80 to 90 screen. If your existing Blocks are in a good condition and your circulation is not too large it may be economical to print them as an inset on a thin Art Paper or Imitation Art rather than have Blocks made to suit your Paper.

29. Q. From our experience we find that instead of using a tricolour set of inks manufactured by one company, we usually produce better colour printing by using the yellow ink of one company, the red ink of another company and the blue ink of some other company. This gives good results, but

technically speaking will you kindly let me know whether this method of using diverse inks made by various companies for the same job is right?

A. You are quite correct in what you are doing. Tricolour printing is an Art, a fact which a lot of printers who are not familiar with the process, overlook. Many high class Tricolour printers do as you are doing even to the extent of blending the colours to suit particular sets of blocks and originals. As you are getting good results, the set you have chosen obviously suits your Block Makers filters and methods the best.

30. Q. We hear a great deal about the photosetter. How many years do you expect it to take to make the photosetter available for the Indian language printer?

A. A lot is written and said about the Photosetter and in my opinion any Indian printer interested could get one of these instruments for setting almost any of the Indian languages, at a price. But the fact that comparatively few of these machines are in use generally, would tend to indicate that they cannot yet compete with the orthodox Type Setting machines. I suggest you to write to one of the manufacturers for details.

31. Q. I am interested in the manufacture of playing cards. I will be very thankful to you if you kindly let me know whether the manufacture of playing cards requires any special type of machinery. You may also inform me of the machines required for this purpose. Further I will thank you if you recommend me some books which deal with the manufacture of playing cards.

A. Playing Cards do not necessarily need specialised machinery although such machinery is manufactured. They can be printed in the sheet and either punched or cut square and round cornered. The Playing Card business however is very competitive and any new comer thinking of taking up the line should explore the possible markets very thoroughly.

Prepress Requires Rigid Plate Mounting

(Continued from page 13)

halftone or solid may be levelled at a height of .920-inch. Increasing the height of such areas .001-or.002 inch will not only compensate for bear-off but will reduce the amount of spotting which may have to be placed in the resilient paking. The height of these elements should never exceed .920-inch because any further increase will materially affect the roller setting and may cause a deflection of the impression cylinder.

The important thing to remember is that with rigidly mounted plates we can gain full control over these heights. We can establish definite standards and hold them to very close tolerances. No other method of mounting will permit this control of accuracy. Rigid metal mounting is the one practical means we have of attaining the accuracy stability which is necessary.

EQUIPMENT AVAILABLE, JOB EASY

Attaining this required perfection in building our forms is strictly a matter of mechanics. There are no tricks or mysteries involved. The necessary equipment is available and the procedures are easy to learn.

We must build accurate press forms by seeing to it that every bit of material that goes into the forms is accurate, rigid and stable.

We must eliminate bottled type and spacing material by establishing good maintenance and inspection procedures.

We must gain stability and rigidity by building all-metal type forms. We must gain accuracy by

providing proper equipment and working to definite standards of measurement.

Because the means of accomplishing these objectives are available and relatively easy to put to us, certainly letterpress management cannot continue to ignore this potential source of extra profit.

Materials and wages will offer no opportunities for cost reduction in the years ahead. The opportunity to reduce costs and meet encroaching competition lies in improved mechanical production. Every gain in operating efficiency means a gain in costs and subsequently a gain in operating profits.

With letterpress at the lowest efficiency level ever experienced, the opportunity to change this picture will never be greater. Relatively little new capital investment will be required to rejuvenate this industry. It will require some conscientious effort on the part of management, an effort thus far not too widespread.

The question has been raised as to which of the phases so far discussed in this series is the most important. It cannot be said that any single phase or procedure is more important than another. The failure to omit one may defeat the effectiveness of all or any of the others. However, it can be said that material accuracy and rigid plate mounting provide an excellent starting point for any plant. Stability and rigidity are prime requisites to accuracy.

All of the phases discussed so far must be initiated before efficient assembly can be started. Make-up and lockup are the final phases of form preparation. The omission of any one of the preliminary steps can very well prevent building ready-to-print forms.

(Courtesy: The Inland Printer)

News and Views

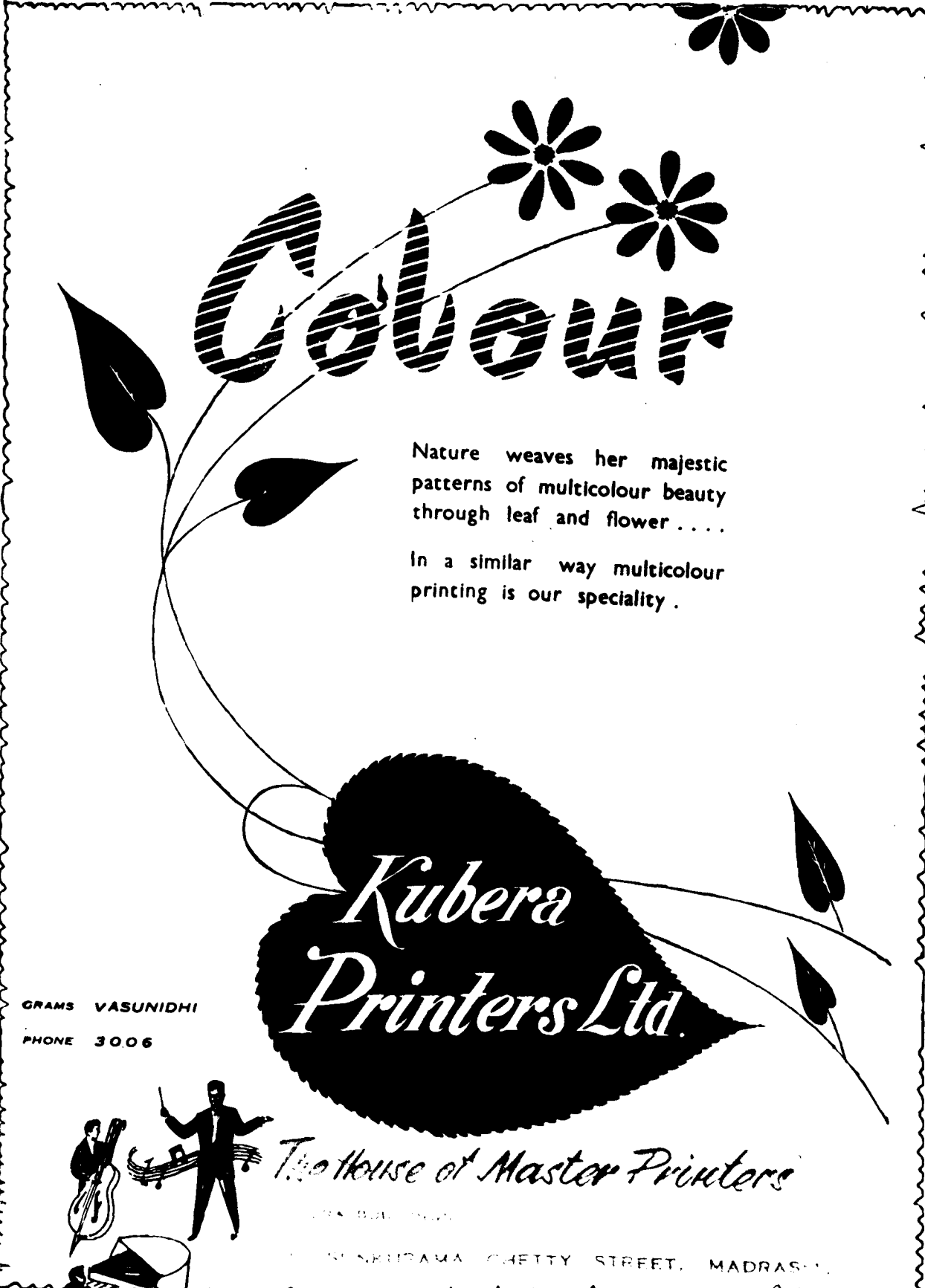
(Continued from page 20)

Import of Newsprint will be removed from the Open General Licence with immediate effect as per the recent notification of the Government of India. Imports will be regulated from now onwards on quota basis. It is likely that licences may also be granted to those who made firm commitments prior to 3rd April 1955. Merchants who have been hitherto importing Newsprint and selling direct to consumers will hereinafter be allowed to sell the stocks only to newspapers. Applications from people who require licences, for special causes will be considered on their respective merits.

A moderately-priced, 16x20 dark-room camera, especially designed for use in small press operations, has been introduced by a well-known firm in Chicago. Known as the Robertson 320, the all metal camera is delivered as a fully equipped package unit. Features include the Vac-U-Flat film holder that takes all sizes of film and contact screens, standard or irregular, and the Xtra-Dimension copyboard that holds copy of any thickness upto 1½ inches in focal plane. An electric push button timer automatically controls the shutter, exposure and lamps.

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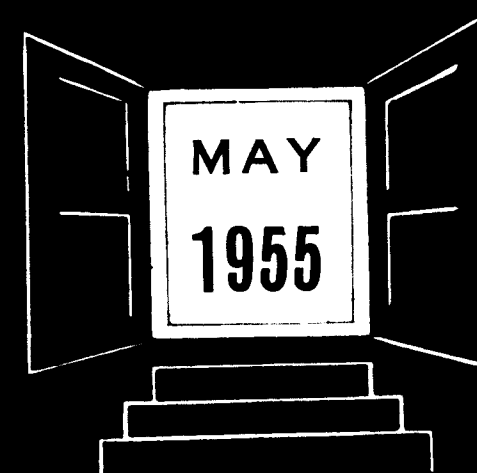
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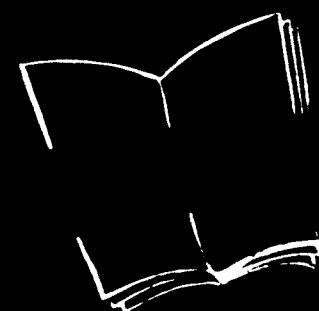
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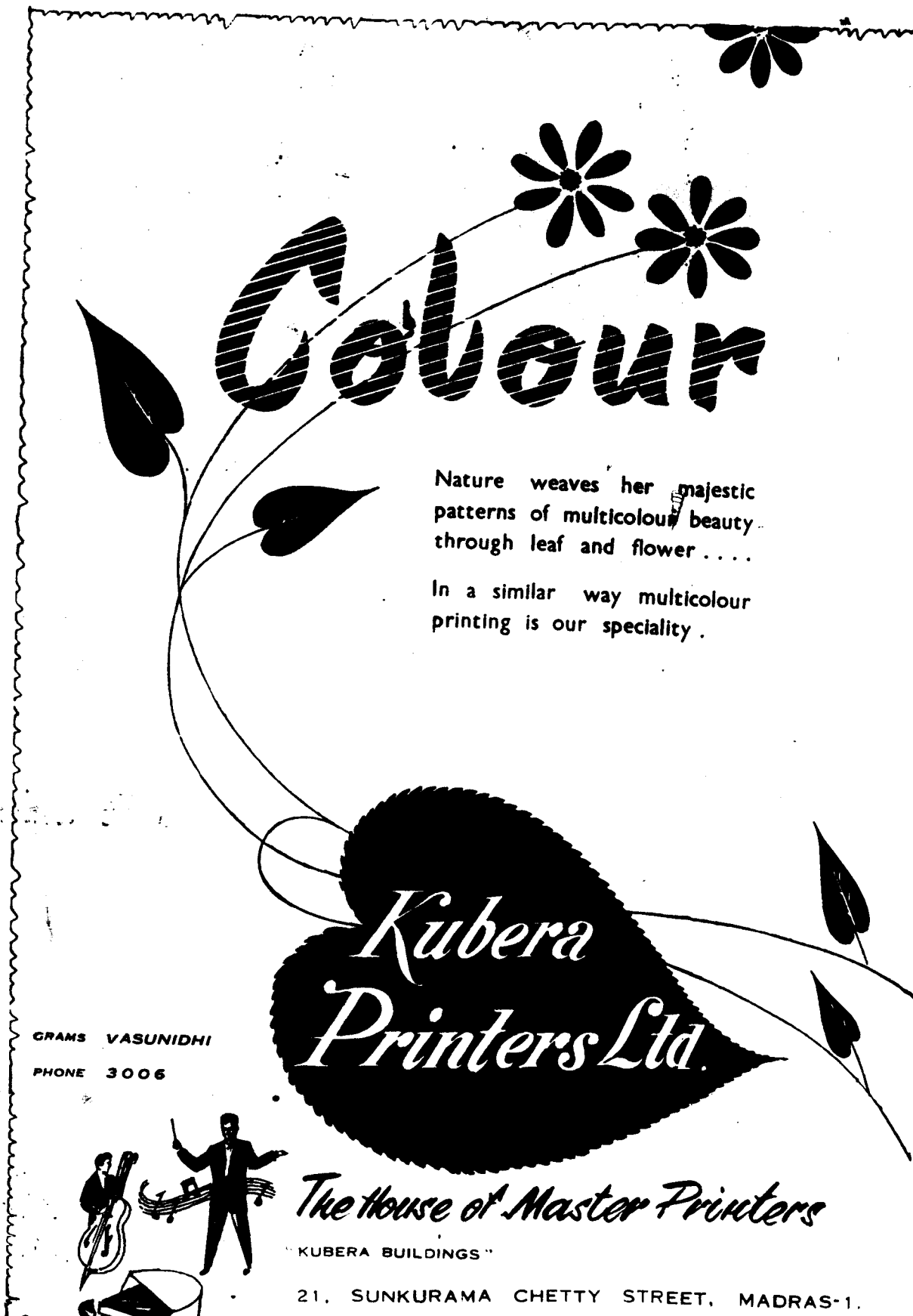


Printindia

A MONTHLY SURVEY OF THE GRAPHIC ARTS INDUSTRIES



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Estd. 1953

PRINTINDIA

A MONTHLY SURVEY OF THE GRAPHIC ARTS INDUSTRIES

VOL. 4] MAY 1955 [No. 1

In this issue...

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- ★ "Uniprint" System
- ★ Self-Sufficiency in the Printing Industry
- ★ Towards Close Register
- ★ The New Super Speed Etcher
- ★ Regular Features

From Our London Correspondent
Modern Machinery & Equipment
News & Views
etc. etc. etc.

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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TRAINING IN GRAPHIC ARTS

We have always emphasized in these columns the importance of imparting proper training in Printing Industry. It is of good augury that the Government of India propose to set up Regional Schools of Printing at Bombay, Calcutta and Madras. It will be interesting to know how the Government of India came to the conclusion of starting Printing Schools all over the country. The All India Council of Technical Education set up, some years ago, a specialists committee consisting of two official members and four non-officials to go into the question of training personnel for various positions in the Printing Industry and submit their report. The recommendations of the Committee were, among other things to start Regional Schools of Graphic Arts, one for each Region. These recommendations of the Specialists Committee were accepted by the A. I. C. T. E. and the Southern Regional School is to be at Madras catering to the States of Andhra, Coorg, Hyderabad, Madras, Mysore and Travancore-Cochin. This will be a joint venture of the Central and State Governments.

According to a recent press report, the "Union Government will contribute 50 per cent of the total non-recurring expenditure on the scheme, subject to a maximum of Rs. 4.5 lakhs and also bear 50 per cent of the net recurring expenditure, subject to a maximum of Rs. 70,000 commencing from the year 1954-55. A sum of one lakh of rupees on account has been paid to Madras by the Centre for this purpose. The Madras Government have already spent Rs. 3,13,235 on purchase of equipment; they have also sanctioned an additional expenditure of Rs. 2,37,000 non-recurring and Rs. 51,785 recurring towards the share of this state. A further expenditure of Rs. 51,929 is likely to be incurred towards expenditure within the current year."

We understand from our Calcutta correspondent that the building for the Calcutta School is well under way and it may start functioning very soon.

In Madras, the picture is different: Plans are afoot to construct a small annexe to the existing building of the Central Polytechnic. We regret this is not a satisfactory arrangement for more reasons than one:

(A) The Central Polytechnic is already cramped for space struggling as it does to provide room for the existing strength of 1700 students. It is not understood why the funds allotted by the Centre and State Governments are not to be utilised for building a suitable structure capable of expansion and situated in a commodious site.

(B) The needs of the Printing Industry are different and the progress and growth of the school will suffer as it has suffered if once again it is left to take its chance in the Polytechnic. We should remember that the Polytechnic has (as it should have) an engineering bias and has always allotted the last place to the growth of Printing Section.

(C) As a Regional School catering to the students of various southern states, our responsibility for setting up and running an efficient, self-contained institution teaching the Graphic Arts and training in its multifarious branches is greater. This should be an independent unit such as the Central Leather Institute, the Textile Institute, the Institute of Leather Technology and the School of Arts and Crafts and should not function as the tail of an Engineering colossus.

It is hoped that the Government of Madras will be alive to the dangers of hastily building a tiny edifice inside the Polytechnic compound as this would be a waste of public funds and cannot serve the desired purpose.

Further, we understand from the Annual Report of the Central Polytechnic, that new courses in Printing are to be started as Part—Time Courses only, *i.e.*, coaching for two hours a day—for three years. If real benefit is to be derived from the Regional School, full time courses should also be started giving coaching in theory and practice for not less than six hours a day. Moreover, we cannot see the idea of appointing highly paid staff for a mere two hours work which would be a huge waste of money.

The Government of Madras should without delay set up a Specialists Committee, as in Calcutta, consisting of the experts in the printing trade of Madras to go into the question of planning, housing, equipping and manning the Regional School of Printing at Madras. Such committee could formulate a broad-based plan with imagination and foresight, with only the interests of the Printing Industry at heart. Otherwise we are afraid that we would be betraying the Industry which we are supposed to supply with trained personnel; the constituent states forming the southern region for all of which our school would cater; and finally the tax-payer—the Indian tax-payer is perhaps the poorest in the world.

DISORGANIZED ORGANIZATIONS

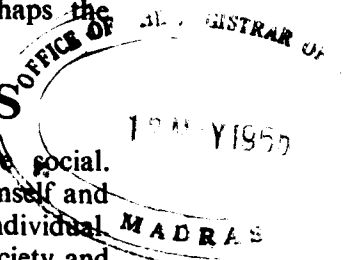
Man is a social animal. A businessman should be all the more social. It is long since man has discovered the advantages of associating himself and working as a team to derive more benefit than working as an individual. Present-day associations have become permanent institutions of our society and have achieved what could never have been achieved by individuals acting singly or on their own. If anyone still persists that individually he or she can serve the cause better than an association, no one would hear him.

Man has his foibles, shortcomings, imperfections, and scores of other defects which come between selfless work for the association and himself. Nevertheless after making allowances for all these, there remains a great deal of good that would accrue to the members of an Association.

The United Kingdom has a highly specialised Graphic Arts Industry and has a number of associations such as the Federation of Master Printers, Federation of Master Process Engravers, and similar associations. For a country of one-ninth of our population the number engaged in the Printing Industry is enormous and consequently the membership of the organizations runs to lakhs.

The Indian scene is different, with 36 crores of mouths to feed, but the majority of them not speaking grammatical language. In other words, due to the low percentage of literacy, the multiplicity of tongues, transport difficulties and poverty, the Printing Industry has not taken its rightful place among the leading industries of India. But its potentialities are great. It is, therefore all the more necessary to organize our printers, to unite them, to guide them, to look after their interests, to represent their case with the authorities—in short to benefit by such association.

A beginning has been made by some organizations like the All India Federation of Master Printers. To the extent they were able to pull their way around they have done some good to the industry. If nothing, they have made the printers to meet together and exchange views on problems of common interest. This is indeed a solid gain. But, cynics complain that organizations



do nothing but meet once a year and pass pious paper resolutions, eat dinners, drink soft drinks and adjourn *sine die*. No doubt, there is a certain amount of truth in this statement. These bodies are not as dynamic as they should be. We can liken their state to that of the political field where after the freedom struggle, there is no activity worth mentioning. If resolutions are to be implemented, who should implement them? If they are not for being put into practice, why waste paper and pass them, and most of all, publish them?

Who is to be blamed for this static conditions inside the only organization worth the big name? Naturally the office bearers who get elected or selected every year. (There was a breeze about the selection—or was it election—of this year's President—or was there? Correct me if I am wrong.) The governing council is to be blamed for not bestirring itself to implement their cartloads of resolutions. The members are to be blamed for not contacting the President and others at the helm and making them move—. We know that everybody is to blame, but there is no use of accusing everybody. What is to be done is the most important thing before us now.

The first and foremost thing is to have more meetings not only at high level, but at all levels. This may be objected to for economic reasons. However, in the long run it is bound to pay dividends. The members should be acquainted of the day to day (not year to year annual reports) activities. The State councils should appoint district councils, who in turn should meet and solve local problems relating to the printers of that area. By circulating their activities to other areas it will be easy to solve similar problems elsewhere.

Secondly, the local members should have their own club to meet and discuss, to arrange for periodical conventions, arrange for exhibitions, to give technical coaching at nominal rates, etc.

Thirdly, the State council should collect data of all presses in their jurisdiction, meet officials, discuss matters of importance to industry and voice the interests of the trade.

Fourthly, the All India Council should take space in newspapers and other mediums to publicize their activities and keep the organization in the forefront. They must enlist the co-operation of the newspapers to give publicity.

Finally, the tempo of the membership campaign (if there is really a campaign afoot) should be keyed up and kept up until every printer in the land gets himself enlisted as a member (as a genuine member and not a member to increase the number!).

There are many other things that can be done by the All India Master Printers Federation. For instance they should have no truck or trade with mushroom organizations. These disorganized organizations, which have sprung up overnight exist for the sake of the office bearers only, meeting once a year and hiding themselves the rest of the year, creating confusion in the minds of printers, masquerading as the champions of industry, in short organisations in name only containing only Government servants as office bearers. The All India Federation of Master Printers must declare unequivocally their separate existence so that the Printers of the land may know who is who and call off the bluff before it is too late.

A healthy organization should be pruned, weeding out parasitical creepers. Then it will take deep roots, afford shade and bear fruit to all its members without distinction, big and small. We hope our healthy criticism will be understood in the spirit in which it is written and ere long the organization will close up its ranks, girdle up its loins and start in right earnest to work for the uplift of the industry.

Important Features of Well-known Machinery

By
"RECTO"

In this monthly new feature "Recto" reviews and records outstanding qualities and qualifications claimed by machinery and equipment manufacturers of the Graphic Arts industry. Dealers and representatives of printers' requisites are advised to post us with all technical details, specifications, accessories, etc. of all items they are dealing in, so that the readers of PRINTINDIA may get well acquainted of the same

The SOAG Printomatic has two new modifications made to it recently. These are increased ink supply and a chain delivery. Greater ink supply means greater rolling efficiency and new chain drive results in higher output on the new machine, i. e., 4,500 impressions per hour. The sheet size is 15" x 22". This is an automatic stop cylinder press, with positive sheet control, printed side up delivery. The new inking arrangement can be regulated to a fine film by means of 17 steps on a wide scale.

The Glockner of Frank F. Pershke Ltd. is a fast modern cylinder press for paper or board up to 15" x 22". Simply constructed for ease in operation, it is claimed to run at a speed of 4,000 impressions per hour, over long periods. This moderately priced machine is said to produce high quality material and those requiring high workmanship.

The Kelly-Three is compactly designed for a sheet of 25" x 37" and simple in operation. There is a 22" feeder pile and 27" delivery pile which allows longer running time without stoppages. It takes less floor space than similar machines and is suitable for accepting work on a wide range.

The Rhenus—S. L., with an output of 3,000 copies per hour and a sheet size of 25½" x 37¾" is announced to be of solid construction assuring long life, trouble-free running and simplicity in operation. In this the cylinder is fitted

with three-way eccentric impression for light, medium and heavy formes. Even tension all along the sheet is assured by the individually sprung cylinder grippers. There is easy access to type bed and powerful pyramid inking assures perfect inking. There is also the infinitely variable speed control. Floor space required is only 12' x 8'.

The "Garant" Two Revolution machine has an hourly output of 3,000 copies with a sheet size of 26" x 38". Its dual purpose auto feeder allows stream or single feeding by means of a lever. The delivery consists of two aluminium pile boards fitted with ball-bearing wheels for transportation. The printed pile can be very quickly removed. All main bearings are automatically lubricated. There is the latest type of powder-spraying unit to prevent set off. Rollers can be washed in three minutes by means of the roller cleaning device. Easy wash up of the duct without altering set screws is possible.

The Buhler Duplex Rotary Printing machine prints direct from flat formes without any need for stereotyping. The speed is 5 to 6,000 copies per hour. There is a kite folder and the machine is available in eight models and five different cut-heights.

The Miehle Vertical has a new drop blade ink fountain which makes wash up and change over easier and quicker. It has easy accessibility to cylinder for quick make-ready.

GRAVURE

The Hoe-Crabtree Rotagravure machine gives high speed production of magazines and periodicals in multicolour and wire stitches them. The various printing units on the machine are equipped with enclosed ink fountains, patented doctor blade mechanism, separate ink reservoirs and motor driven pump feed. Cylinders can be removed by means of motor lift. The impression is preset. For each cylinder there is register mechanism. Each printing unit is provided with a solvent recovery device consisting of air drying hoods, re-circulating apparatus and ducting.

ANILINE PRINTING

The Olympia 99 is a four colour printing and re-reeling press, for paper, film and laminated foils. Prints up to 42" reel, maximum printing pitch being 31¼". It is fitted with one-shot pressure lubrication, simplified centralized control. It ensures accurate impression registration from edges; heavy mill reels can be easily loaded, has full accessibility, accurate colour registration and dried and keyed inks.

STATIONERY PRINTING

The Goebel Vari-forma prints continuous stationery and forms in a great variety of sizes. Variable printing length is possible by a single simple adjustment at the same time ensuring accuracy. The following operations can be performed

(Continued on page 28)

From the Editor's Pocket-book

COLOUR FILTERS

A knowledge of colour filters is indispensable to every printer—Letter-press, Litho and Intaglio. Some of us have a vague feeling of having heard about things called filters, but only a few of us can clearly define them and their purpose.

Colour filters are transparent mediums made of coloured gelatine sheets, gelatine mounted between glass or coloured glass. These gelatine or glass sheets are designed to absorb either partially or almost completely, certain of the colours in a coloured copy that is to be photographed.

The colour of the filter is complementary to the one which is to be photographed alone without the surrounding colours in the copy. Thus if we want to photograph only the yellow portions of the drawing, scenery, sketch or any other multicoloured copy, violet filter is used. For the red plate green filter and for the blue plate orange filter respectively is used.

Process cameras have filter-holders in front of the lens and the filter of the required colour is inserted before exposing for the particular plate.

Filters can be made from transparent mediums such as coloured gelatine, cellophane and glass. The glass used for cemented filters must be optically correct or "flat" in order to maintain the fine qualities of the lenses over which they are used. Cheap filters destroy these qualities to a certain degree.

Filters require the same care as fine lens. They should be kept dry away from excessive heat or cold, out of the direct rays of the sun.

Soft lens tissue should be used in cleaning filters.

SAFETY PAPER

This kind of paper is used for cheques and similar documents to detect any alteration of the original entry and prevent fraud. White paper pulp mixed with an equal quantity of pulp that is stained with chemicals such as would easily react to chlorine, acids, alkalis, etc., and made into sheets as usual, serves as a safety paper. Any attempt to wash out the original writing affects the whole paper surface showing plainly that someone has tampered with it.

HOME-MADE TRACING PAPER

Ordinary paper can be made into tracing paper by this simple method. Place the paper flat on a table. Take equal parts of Canada Balsam and oil of turpentine and apply this on the surface of the paper with a sash tool. Hang the paper to dry across a drying line. Take the next sheet and treat with a coat of varnish similar to the one used on the first sheet, until all the quantity is finished. If this has not made the sheet sufficiently transparent, apply a second coat of varnish as soon as the first has dried.

TO PREVENT GLUE FROM CRUSTING

In the binding department we often see glue crusting in the glue-pot and sticking to the walls of the pot. This can be prevented by the following method:

Clean the glue-pot thoroughly. Wipe the inside of the pot with a waste soaked in light mineral oil. As oil and glue will not mix, the film of oil on the inside walls of

the glue-pot keeps the glue from sticking to and crusting up.

DECALCOMANIA PROCESS

The decalcomania process of transferring pictures requires that the print, usually in colours, be made on a specially prepared paper. Prints made on decalcomania paper may be transferred in the reverse to any hard smooth surface such as Chinaware, wood, celluloid and metal. These transferred designs may be varnished to give them a fair degree of permanence. The original print is obliterated after transfer.

DECALCOMANIA PAPER

Smooth unsized paper, not too thick, is coated with the following three solutions—

Solution No. 1—Apply a solution of gelatin 10 parts in 300 parts of warm water with a sponge and dry the sheet flat.

Solution No. 2—Take starch 50 parts and boil it to a paste in 300 parts of water. Soak gum tragacanth in 300 parts of water and dissolve. Pour both together and boil. Coat the dried paper with a brush uniformly to form a thick coat. Dry the sheet again.

Solution No. 3—One part of blood albumen is soaked in 3 parts water for 24 hours. A small quantity of sal ammoniac is added. Dry the sheet after coating this.

The sheet or sheets which have been coated and dried with the above three solutions is printed with pictures in reverse so that they may appear regular when transferred to another surface. Any type of colour inks may be used.

(Continued on page 28)

Physical Properties of Paper

The average citizen who handles paper never connects it with the forests of Canada or Norway, the grasslands of Africa, the journey of the wood or Esparto or the Sabai grass of India to the Mill in pulp form or raw, and the various workers, technicians responsible for its production as a self-supporting dry sheet. He only knows that paper is the medium of presentation to the public of graphic details of Life's little joys and great sorrows.

The same average citizen will never understand that paper is endowed with numerous physical properties and there are scientific instruments for testing each. But most of the tests could be performed without any complicated apparatus.

Size: The size of a sheet of paper can be recognized at a glance by experienced warehousemen, but for others a foot rule can tell the same.

Substance: The thickness of the sheet is the substance. This is usually mentioned in pounds per ream. This also can be guessed by the feel of the sheet in relation to its size, but the balance may be used with advantage by the less experienced. The template may also be used or a square $3\frac{7}{8}$ " x $3\frac{7}{8}$ " and placing this on the paper balance.

Fibre: To define fibre furnish the tearing test may be made and the fibres examined under a microscope. Esparto has certain definite characteristics that are different from Wood or Rag. As the stretch or expansion of paper due to moisture absorption is injurious to accurate register, the printer should use a paper which has more

Esparto and no mechanical wood. Wood gives maximum expansion and Esparto gives minimum expansion. The following test may be employed to detect the presence of mechanical wood in any paper: Have a readymade solution of Phloroglucine 1 gm. rectified spirit 5 cc. and concentrated hydrochloric acid. Take the sheet of paper to be tested for presence of mechanical wood and allow a spot of the solution to fall on it. If a red colouration—an intensely red one—follows on the sheet, there is no doubt of the presence of mechanical wood in the sheet. There will be no stain in wood-free paper. Put a spot of this solution on your newspaper and you will find it stain intense red.

Dissolve 1 gm. aniline sulphate in 50 cc. water. Put a drop of this on paper containing mechanical wood. It will produce a yellow stain.

Direction: The vegetable fibres of which the paper is composed are like flattened tubes. They swell in width to a greater extent than they would in their length, when they absorb moisture from air. In machine-made papers the majority of the fibres arrange themselves in one direction, i.e. the direction in which the pulp is flowing on the paper-making machine. This direction is called the machine direction. This can be easily found out by holding the paper against light and looking through. This direction should always be on the longer side of the sheet to avoid unequal stretch. The other direction is the cross direction of the paper and along this direction the stretch is greater.

Properties: Properties of machine made paper differ in

machine and cross directions. The machine direction has high tensile strength but low stretch and low breaking energy. The cross direction has low tensile strength, but high stretch and relatively high breaking energy. Paper can be rendered soft and pliable and the tensile strength will be improved if the stretch is increased in both directions, particularly in the machine direction.

The tensile strength and extensibility affects bursting strength. During bursting test, the break almost always occurs right angles to the machine direction of the paper. The stretch is lower in the machine direction and tensile strength is greater than in cross direction. Strength of sheet is to be tested to know whether it will stand up to every form of printing especially those that exert a strong pull on paper. Strength should also be tested to assess wear and tear, constant handling, resistance to rough usage in transit as in the case of wrapping papers. To judge

(Continued on page 32)

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Casting off Copy

By

SRI R. NARAYANAN, L.P.T., F.T.C. (LOND.)

Scientific casting off of copy is the basis of accurate estimates and a "must" for all printers—says the author who does casting off work all the eight hours of a day in a highly specialised field

Strictly speaking almost all jobs have to be cast-off before setting and all presses have to do it. Actually all presses are doing it without understanding what they are doing.

Casting off is the process of calculating the number of printed pages a job or a copy will make in a given size of type, of a specified face and in a particular page size. In order to choose the proper type size, we have to find out how many pages the matter will occupy if set in a particular size. Further if we have got only certain area available for printing that matter, we have to choose a size that will fit in that space. Casting off is necessary also to assess the quantity of paper required, the weight of type required, time required to set or number of men for the same, quantity of lead required, etc. All these facts are to be based on the correct calculation of pages the copy will make. It is therefore essential that a correct method is followed in arriving at the number of pages required to print a certain matter.

Before going into the question of calculation we should examine what types of copy are usually received by the average Indian printer. A casual study of the copy box of a printer will be very illuminating. Without resorting to any exaggeration, we can say that anything is passed on to the printer as "copy" to be set from: Pencilled scraps, closely written

paper, thin transparent paper written on both sides, writing with a spreading ink and typewritten sheets which show colour of the old ribbon only here and there and all the rest mere impression. Little does the customer realise the difficulties of setting the badly written copy, the incidence of mistakes, the delay, the additional labour in the proof-room and composing room for corrections, the strain on the compositor for reading faint copy, etc. Further the lighting conditions in most of the presses are not ideal and naturally, this adds to the compositor's difficulties. The proprietor or manager in his anxiety not to displease a customer or being afraid of losing an order, accepts any and every copy that comes in his way. The scope of this article does not permit of further dilation about the nature of copy and the consequences of bad copy. But, a mention has been made above as bad copy affects the estimator's casting off also.

Copy can be classed either Good or Bad, in the sense whether the same is easily readable or difficult to decipher, uniformly written or irregularly prepared on various sizes of paper, containing no uniform number of lines or uniform number of words per line, or mixed copy—some closely written and some sparsely written. Reprint type-matter, typed script, legibly written manuscripts on uniform size of paper and same length of lines come under "Good". Copy

containing additions and deletions and which does not lend itself to finding any average number of words and consequently has to be counted from beginning to end is classed as "Bad." Cuttings from periodicals of different sizes and other mixed copy belong to the latter class. A good copy is suitable for averaging the number of words.

Having decided the size of type and face and the size of type page in which the book is to appear, three methods are open to the estimator to cast off. The most accurate one is as follows :—

This method known as the practical method or specimen page cast off involves setting up a portion of the copy in the size of type, face and measure chosen for the job. The passage selected should be typical or representative of the rest of the copy or else the results will not be accurate. The matter so set should be made up into a page of the proper depth with head and white lines. If the book is to have notes, these should also be set, but calculated separately. Having set a specimen page according to the typographical specifications of the job, a proof is pulled and the words in the page counted. The number of words in the copy divided by the number of words in the specimen page will give the number of pages the manuscript will eventually make when printed. The number of words in good copy can be found by taking at random

three or four representative pages in the copy, count the number of lines and the number of words in a line separately and strike the average number of lines per page as well as the average number of words per line. Having found the average, it is easy to arrive at the total number of words to be set.

Example: Assume that the copy has—

	lines per page.	words per line.
I specimen	35	12
II „	33	11
III „	36	10
IV „	32	15
	136	48

Average lines per page = 34

Average words per line = 12

A manuscript of 105 folios will have 42,840 words. If the specimen printed page contains 1,428 words, the answer will be 30 printed pages for the whole matter.

As it is assumed that the number of short lines in the copy will be equal to the number of short lines in print no percentage is to be added to the total number of words for short lines of paragraphs and consequent loss of space that may otherwise accommodate some more words. In the case of a bad copy 5 per cent should be added for short lines. The number of words in the bad copy is to be actually counted as no other method will give a correct picture. In other respects, the method of cast off is the same as for good copy.

There is a certain amount of time and labour involved in the above method of cast off by actually setting a portion of the copy. A slightly quicker method is to set a few lines of copy in the type, face and to the measure specified. Setting should be stopped when the line in the copy ends even with the line in the stick.

In other words the copy and the matter set should have identical endings so far as the last line is concerned. Now count the number of lines in the copy that has been set and the lines of matter that have been set in the stick.

This will give the proportion between the matter and the copy. From this proportion we can easily find out the total number of lines the copy will make: Find the number of lines in the copy and apply the ratio to find the total printed lines the copy will make. Total lines divided by the number of lines in a printed page will give the number of pages.

Example: A MS. contains 400 lines. When a few lines were set to the measure it was found that 5 lines in the copy end even with 3 lines in the stick. Therefore the ratio is 5 : 3. Total printed lines will therefore be 240. If a printed page is to have 48 lines, the number of pages the matter will make will be 5.

Although this is a quicker method than setting and making up a full page, it is likely to be slightly less correct. But in fairness to this method it should be said that no cost of any consequence is incurred and no time is lost in casting off and at the same time this is more accurate, relatively speaking than the method which follows.

Theoretical method: There are occasions when it is not possible or practicable to set a specimen page. In such a contingency, we should assume the average length of the word in terms of ens or ems of the body size. In the English language it has been found by experience that it is safe to assume the length of the word as 6 ens or 3 ems. On analysis we find that the average English word contains 5 letters and allowing an en space after every word it totals up to

6 ens. As 2 ens make 1 em, the length of the word is 3 ems. Whenever it is found that the words are definitely longer than this figure, it should be found out and calculated accordingly as a wrong assumption will lead to a very wrong figure with a colossal difference from the actual.

For Indian language words, 3 ems is not the correct length. They are definitely more, if for no other reason than the fact that each letter is almost double the width (or "set") of average English character. The space between is also more. Five ems per word will be a correct figure for Tamil, Telugu, Kannada, Malayalam and Hindi copy.

Having found the number of words by any one of the processes described under the first method, convert it into ems. This is called the em content of the copy or if you have converted the words into ens, the en content of the copy. Now find the en content of the printed page the dimensions of which you should know. The en content of the copy divided by the en content of the printed page gives the cast off.

Example: A MS. has 4,000 words. It is to be printed in 12 point to 20 by 36 ems.

One word equals 6 ens. Therefore 4,800 words equals 28,800 ens. This is the en content of the copy. The printed line has 40 ens to a line and 36 lines to a page. Therefore the en content of the printed page is 1440 ens. No. of pages equals 28,800 divided by 1440 = 20.

In the case of mechanical composition *i.e.*, to be set up on the Linotype, the Intertype, or Monotype machines, a slightly different method is to be followed for casting off copy.

(Continued on page 24)

PRINTINDIA

From Our London Correspondent

F. & D. BROWNLEE

LINE-UP AND PRE-MAKE-READY PRESS

A triple-purpose machine, designed to help printers using rotary machines printing from rubber and/or plastic stereotypes to obtain quicker and more efficient production, is the W. J. Rotary line-up and pre-make-ready press, produced by K. Warner-Jones & Co. Ltd. This has been developed to enable flat rubber stereotypes to be mounted on the curve of printing cylinders in accurate register and lined-up with a master-sheet (or previous print) showing the desired layout of the job being set up. Inking mechanism is provided to enable the device to be used as a proofing press, and this facility also enables pre-make-ready to be carried out.

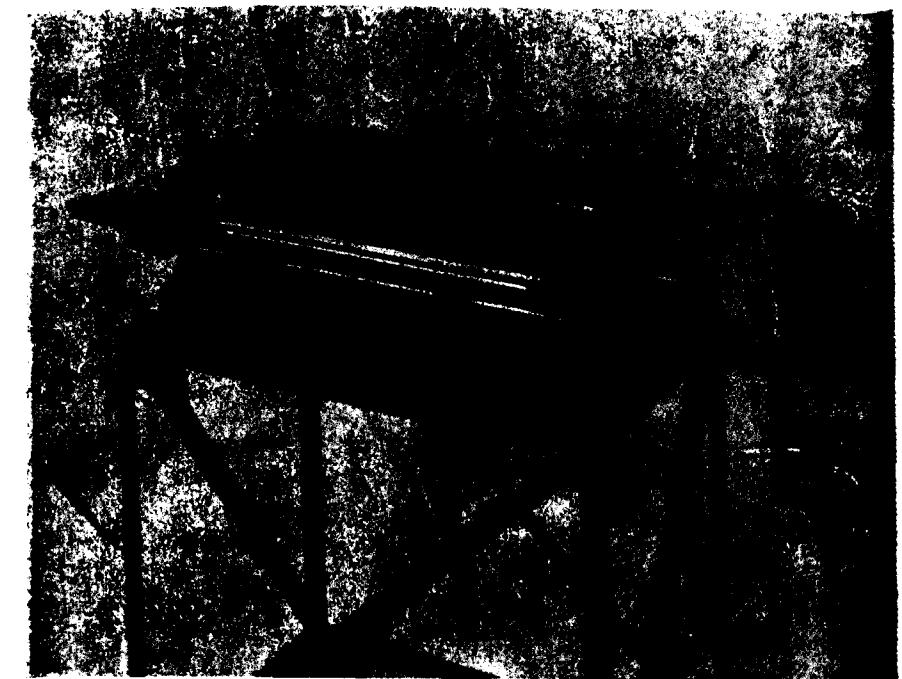
In the standard model, the rubber stereotypes are lined-up by the mechanism provided and affixed to a backing sheet held to the cylinder by quick-release mechanism. The cylinders of the units on the printing machines are fitted with identical backing sheet holding means. After a job has been set up, proofed and made-ready on the little press, the backing sheet, with the stereotypes attached, is transferred to a cylinder on the printing machine. Printing can start immediately, thus avoiding wastage of running time which occurs when the stereotypes are fixed to the printing cylinders and made-ready thereon while the machine is standing idle. Although the press was originally developed for use with rubber or plastic stereotypes, the basic principles can be applied to the lining-up and proofing of the curved metal stereotypes, and in this

application, for preference, use would be made of interchangeable cylinders.

The ability to line-up stereotypes, take pulls and add make-ready outside the actual printing machine obviates the need for the machine being stopped for an unnecessarily long period when changing over from one job to another, so that greater production is obtained.

The machine comprises a printing cylinder and impression cylinder forming a conventional printing couple, the associated inking mechanism consisting of rubber rollers and a steel reciprocating roller. A feature of the inking system is that the stereo inking roller can be moved clear of the printing cylinder when putting on

or taking off a backing sheet, while the grippers on the impression cylinder are self-acting and open and close automatically as the machine is turned by hand. The stereo line-up and register consists of sliding cursors mounted across the machine, the cursors having two cross lines and one vertical line engaged on their under surfaces. The first set of cross lines are used to line up with the master sheet and the second set falls above the printing cylinder, indicating the exact position at which the stereo must be affixed to the backing sheet. Sideways registration is obtained by the vertical engraved lines on the cursors. One advantage is that the stereotypes are lined-up and attached to the backing sheets on the curve. If rubber stereotypes are stuck on the flat, when



'W. J.' Rotary Line-up & Pre-make Ready Press

the backing sheet is wrapped round the printing cylinder, unequal displacement occurs (due to the different thickness of stereotypes in their printing and non-printing surfaces) with consequent loss of register.

FLEXIBLE PLASTIC DUPLICATES

Trials at the Printing, Packaging and Allied Trades Research Association have shown that there may be a future for flexible plastic printing plates, but with limitations. With the plastic used signs of wear were apparent after 50,000 impressions and there was a tendency to shrink slightly in the moulding press.

In a Report by R.G.W. Croney, R.R. Lovell and L. E. Boxall, published by *Patra*, it is suggested there is a possibility that the use of plastic

plates might substantially reduce make-ready, provided that absolute accuracy is observed in forme preparation and plate mounting. The authors state that these plates can be readily curved for rotary work, thus opening the way for higher printing speeds, and there is a field of application on the flatbed machine where suitably mounted plates can be printed without make-ready. It is stated that plates should be made to an accuracy of plus or minus 1/2 thousand, and that the mounts be planed to the same degree of precision, while the cylinder packing should also conform to this specification of accuracy and the machine should be in good condition.

The investigation was made with the object of seeing whether the quality of half-tone as well as line and type work produced with

flexible plates could be improved by virtue of the fidelity that can be obtained with plastic compared with rubber. Rubber plates are already used for type and line work with success, but they are not very suitable for half-tone except in the coarsest screens. The Report states that one of the main disadvantages of flexible plates is that they tend to "give", squash sideways, and hence produce "thicker" work. The *Patra* tests were undertaken to find a suitable plastic that would not have this property.

In an appendix to the report, instructions are given for making flexible thermo-plastic plates from a material which is produced commercially, and may be obtained from a manufacturer named in the report.

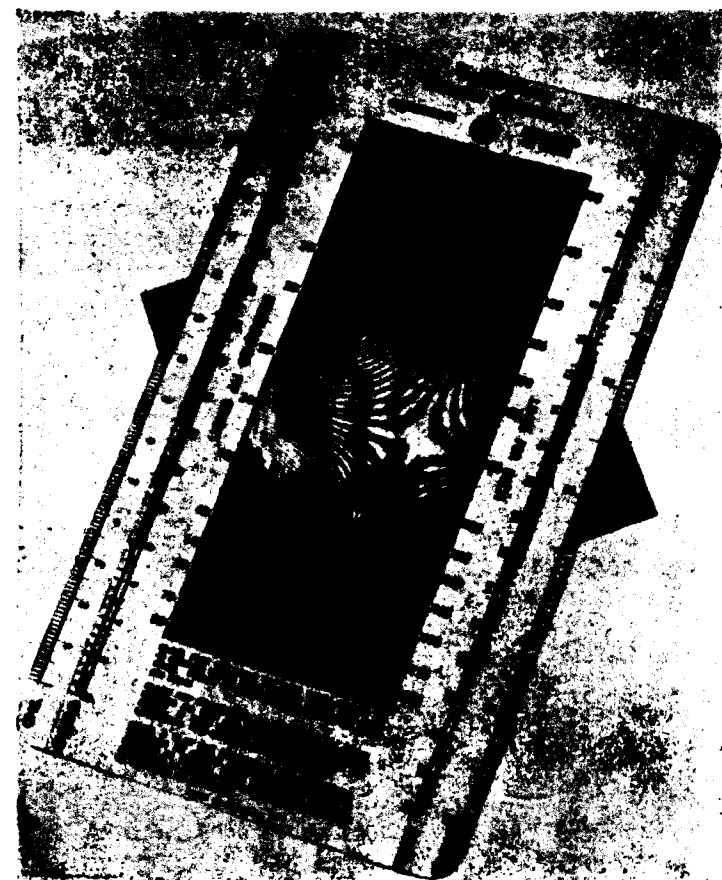
TRIAL RUNS

For the laboratory printing trials, plates of this material were prepared, mounted and run for 80,000 impressions without make-ready. There was no shrinkage but, slight thickening of 6 pt. type was apparent. Then a 133 line half-tone step wedge plate was made, and after 10,000 impressions wear on the plate was observed, particularly in the highlights. In view of this, it was decided to mask and back-grind a plate in such a way that the highlights were lower than the solids and then to compare prints with those from an unground plate. The report includes specimen prints from half-tone plastic duplicates made at the beginning of the run, after 50,000 impressions, and also comparison of the original copper half-tone with and without make-ready.

SCREEN DETECTOR

An interesting device for determining at a glance the rulings of half-tone prints is the "Cornerstone" screen detector of Hawthorn

(Continued on page 24)



"Cornerstone" Screen Detector

Indian Newspaper Typography

By
"TRAINED COMP."

Newspaper plays a vital role in the destiny of nations; it educates, informs and guides the people. It is but meet that this important instrument of power and influence should be produced well so that it can be put to the maximum use. The author points out the good and the bad in our newspaper printing. A nation is judged by its newspaper

LOW CIRCULATION

India has to her credit hundreds of newspapers, in English and the major Indian languages: Assamese, Bengali, Gujarati, Kanarese, Malayalam, Mahrati, Punjabi, Tamil and Telugu. The fair presentation of news, their accuracy and promptness have been appreciated by countries of both hemispheres. Although the circulation of our newspapers are not phenomenal as in U. K. or U. S. A. (where they run to millions), considering our illiteracy, our low buying power and other factors, the newspapers are doing quite well.

As regards their design, physical shape or format, typographical arrangement, printing and finish, they are, generally speaking, equivalent in quality to newspapers in other progressive countries. This does not mean that none of them are capable of any improvement.

I would like to point out only those flaws or lapses which can be remedied without any undue cost and without going in for any new equipment. In fact, it only needs a little care—but all the time this little care should be exercised by all concerned with newspaper production.

SELECTION OF SIZE AND FACE

The type face should be legible and should not be too small in size so as to strain our eyes. Newspapers use from 4½ or 5½ point for

their classified ads. to 8 or 9 point for their editorials. The trade and commerce columns are sometimes in 6 point. The synopsis and summary of the columns on top is in 9 or 10 point. So much for the text. The headings of single column are usually in 12, 14 or 18 pt. If more than single column headings are adopted, bigger sizes up to 48 pt. are used. Some newspapers use streamer headlines of 72 or even 96 point. The type face chosen should be of the class well known for its clarity, legibility, economy in space without long descending or ascending strokes necessitating deep beads. Excelsior, Times Roman and Ionic are some of the popular newspaper type faces specially chosen by famous newspapers. For the headings, Modern faces are suitable although Old style faces are used with good effect. Bodoni, one of the few Modern faces available, is very popular. Century family, Caslon, Times Bold and Perpetua are the others equally effective for headlines.

JUBILEE

In this connection it should be mentioned that the L & M people have brought out a new type face "Jubilee". This has been specially designed for newspaper, periodical and similar type composition and to suit modern conditions of printing. Jubilee is particularly useful in withstanding the mechanical processes associated

with high speed rotary printing. Further tests show that Jubilee is also suitable for rotogravure reproduction.

Jubilee letters have no thin, delicate elements in their design. They have been modelled full and even throughout. The serifs are firm and blunt and well finished with a chamfered end. Thin strokes in letters e, k, w, etc. are stronger than in other faces. The counters and openings are not likely to form ink-traps. In high speed press-work the middle section of "w" and the leg of "k" tend to close the openings. Therefore in Jubilee, these parts are without serifs.

DISPLAY ADS.

For newspaper display the contemporary type faces like the Sans serifs (Gill, Metro, Erbar) or square serifs like Rockwell, Cairo, Beton reproduce well on Newsprint and are suitable for stereo-typing. Faces having sharp serifs, hair-lines and kerns are considered unsuitable for stereo-typing or for printing on newsprint.

The newspaper advertisement is supposed to shout louder than others. But due to restrictions of space, every inch of which has got to be paid, the result achieved is rather disappointing. Add to this, the surrounding advertisements, each of which compels attention; some are illustrated: some have reversed lettering while others

have forceful background consisting of mechanical tints. As all newspapers live by advertisement revenue alone, it is very important that particular attention is paid to the proper lay-out, selection of type faces and their setting. White space and borders play a vital part in making advertisements effective.

DEFECTIVE PRINTING

We can always tell at a glance whether a newspaper has been well designed or not. The different parts of a newspaper should receive different typographical treatment: news stories, news proper, regular features and columns, etc. Newspapers should not try the patience of the reader by failing to retain interest. It should be dynamic throughout. Some papers which are well designed fall short of the standard by bad printing, strike through, show through, set-off, bad process blocks, bad proof-reading, wrong captions to pictures. Talking of proof-reading, the Governor of Madras paid a tribute to the proof-readers of this city during his address to the All India Federation of Master Printers. However well deserved that bouquet may be, here are some day-to-day examples which point to the contrary: A top ranking daily printed a photograph with the wrong name underneath and apologised the next day. There was another instance when an article published in a daily was questioned as regards its authorship and the author promptly apologised in a subsequent issue. Lino operator's names appearing in print are not uncommon in our dailies. Blocks have appeared upside down in advertisements. Even the editorial columns are not free from errors. Headlines in big bold faces stare us with a wrongly spelt word or worse still a wrong word (e.g. a single column heading in a famous daily had the word "FEAR"

instead of "YEAR" quite recently). But an Indian language daily was left to steal the whole show by putting a wrong date line on its first page top, underneath the title. This is not the climax; the same daily repeated the mistake the next day too! Now, tell me whether the Madras proof-readers deserve the Governor's bouquet or not?

CONSTRUCTIVE CRITICISM

We should not be misunderstood of being critical of newspaper publishers who are working against time and with hundreds of other difficulties. But, these are given with a view to opening the eyes of complacent editors, proof-readers and others responsible for turning out half-correct and shoddy work. The fact remains that in every sphere of activity India has lost and losing many old guards, veterans in their line—be it politics, statesmanship, teaching, business, industry or technique. Time was when an Indian Daily challenged its readers to find a single error in any of its editions and offered a reward for the painstaking mistake-digger. Now, every reader of a newspaper can have his eyes-ful of mistakes.

NEWSPAPER AWARD

The Newspaper Award for the best designed newspaper organized by "Printing World" went to the London Newspapers "Times" and "The Daily Worker." The Judges looked among the contesting newspapers for the following qualities:— Lucid and orderly layout of news and features; good choice of type and intelligent use of type variations for emphasis and to show difference between various classes of matter; judicious use of white space in headlines and display; absence of visual confusion between editorial and advertising matter; good use of illustrations; high

standard of reproduction with regard to pictures; efficient machining; good taste in design of front page and special headings; a pleasant general appearance or get-up, easy readability—a quality that makes readers like the paper.

PAPER AND INK

Although this article is titled Newspaper typography, it is not out of place to make a reference of paper and ink used by our national newspapers. Now that there is little or no shortage or control of newsprint, we don't know why our papers are still adopting the narrow column measure resorted to during austerity days. Some use tolerably good newsprint, thick to handle, shiny to look at, one or two have even a coloured or tinted surface which helps readability. There are others using bad newsprint that cannot bear handling a couple of times. We realise that the life of a newspaper copy is short and intended to be so; but paper of questionable quality further shortens the usefulness of the newspaper. On opening your morning newspaper, after your bath and coffee, your nostrils encounter the disagreeable smell of cheap ink: no wonder you lose all the pleasure of reading the latest news or the cricket results which you have already heard over the Radio. This objectionable odour is mostly due to the liquid part of the ink; the mineral oil, spirits, varnishes or other vehicles. Whatever the cause may be, it is the duty of the newspaper publisher to see that the smell of his paper is kept within agreeable limits.

COLOUR

Finally the use of colour in daily newspapers: The multi-colour advertisements are definitely more interesting than black and white ones. It has to be admitted that

(Continued on page 17)

Press Management or Mismanagement?

By
SRI S. GIRI

This is first of a series of articles on better press management by the author who has served the industry for over two decades. He diagnoses the causes of the high "death-rate" among printheuses and prescribes certain remedies, preventive and curative

As an aftermath of the world-war boom and as a natural corollary to the depression which is creeping in, in the industry, presses "die" by the score. Where the reasons are financial, I am not competent to discuss and it is outside the purview of this article. But an examination of the causes that led to the closure of many printing houses and the circumstances which are leading even some of the so-called "leading" houses to extinction reveals that nine out of ten die of inefficiency—in organization, control, administration—in a word bad management.

It should be remembered that all units, big and small, have to be managed. No printer however small or insignificant should try to dodge the issue by saying we have no manager, ours is a one-man show, no management is involved in such a tiny press, etc., etc. The difference between a big printer and a small printer lies in quantity and quality: There is no saying who could or would produce the better quality: the big brother or the small brother; but generally it turns out to be the latter! So, it is all the more necessary that the small unit is managed wisely if it is to stand competition with the giant concerns. As for the big units, for maintaining quantity production as well as to raise the standard of quality, good management is a must.

WHO CAN BE A MANAGER?

True, everybody aspires to be a manager and draw or earn a fat pay cheque. But it is not the manager's only duty. There are

other difficult and arduous tasks for him. He controls the methods and systems of production used there. He has to make decisions on the type of orders to be accepted by his press and organise its production economically and expeditiously. He should plan what records regarding cost, output, material, etc. are to be kept. He should recruit suitable apprentices and give them appropriate training to step into the shoes of retiring craftsmen. These and other multifarious duties call for certain qualities. To mention a few: At the outset he should have a genuine interest in the art, craft and industry, a legitimate pride in running the press efficiently, methodically and on scientific lines. His general attitude to his business is very important as this reflects in everyone of his actions, his policies, terms and conditions of service for his men, etc. His strength or weakness can readily be seen in these. He should have a sound judging capacity to select proper personnel to assist him and delegate his powers, only to those who would not shirk responsibility. Instead of preaching to his men regularity, punctuality, orderliness and cleanliness, he should set an example by himself being always punctual, regular, orderly, clean and sincere. His men are bound to follow him. A readiness to hear suggestions of improvement from his men will improve labour relations.

A manager without initiative, drive, pull, imagination and diplomacy with tact will be a misfit. He should not only control his men but also control his own temper.

Prestige is not a commodity bought in any store nor demanded compulsorily from anybody, but is created by solid qualities of ability, leadership and self-confidence. No doubt most of these qualities are inborn; it is also true that quite a few of these could be cultivated. Therefore, it is only a half-truth when we say "Managers are born, not made". In short, the manager should plan, co-ordinate, inspire and control.

He should have had some technical training; where this is not the case, he should acquire as much knowledge of the processes in his press as possible—otherwise his men will regard him as an intruder, ignorant of the niceties of the art and to that extent he will lose their co-operation. Knowledge of the Press Acts, Factory Act, Workmen's Compensation Act, Company Law, and Income-Tax Law will greatly help him to avoid pitfalls.

The Press with an efficient manager impresses every customer by its psychological tone even when he deals by a telephone or by a chance visit. A good manager keeps up his promise, his word is his bond. He should not abuse his power and authority, by snap dismissals, hasty fines or unnecessary reprimands. He should assert his authority only when absolutely necessary.

HOW TO MANAGE?

Organisation and management, administration and maintenance will be efficient only when they are progressive. The manager should not wed himself to certain set

(Continued on page 18)

"UNIPRINT" SYSTEM

A new method of preparation of rubber cylinders for gravure printing to print on paper, film, foil and board materials is described in this article

SIMPLE SYSTEM

A new method of gravure printing from rubber-covered cylinders which has recently aroused widespread interest among experts has been developed in Germany. The system, which is strikingly simple, involves the covering of a cylinder sleeve with a special quality rubber plate into whose smooth, non-porous surface the design is moulded during a vulcanizing process.

SIMILARITY WITH CONVENTIONAL GRAVURE

The photographic preparations are essentially the same as for the traditional photogravure method. Uniprint have invented a special tissue to take the place of the pigment paper normally used. This tissue, sensitised with potassium bichromate and dried, is held in intimate contact with the negative by vacuum and exposed to light. A non-reversed negative must be used, since the Uniprint method involves the moulding of the image into the rubber surface from a kind of matrix. Only one exposure is necessary, since the type-matter and pictures have previously been provided with a photogravure screen by a special process. The surface layer of the Uniprint special tissue is then brought into close contact with a thoroughly cleaned brass plate on a transfer machine. By treatment in warm water, the paper backing of the special tissue is removed and those parts of the surface layer which have not been hardened by light are dissolved. The brass plate bearing the hardened parts now constitutes a matrix for the subsequent vulcanising process.

PREPARATION

In preparation for vulcanisation, a cylinder sleeve is treated with a vulcanising medium and a raw rubber plate with a special-quality printing surface is laid around it. The brass plate is then bent to the circumference of the sleeve and wrapped tightly around it so that the raised image presses against the rubber. The cylinder is placed in a Uniprint vulcanising chamber which has been brought to the required temperature, and a pressure of 150 lbs. per square inch is applied for forty minutes. After vulcanisation the cylinder is taken from the vulcaniser, allowed to cool, and the matrix plate removed. A very thin ridge of rubber which has extruded where the brass plate had met is polished away mechanically. It should be noted that the rubber does not shrink during

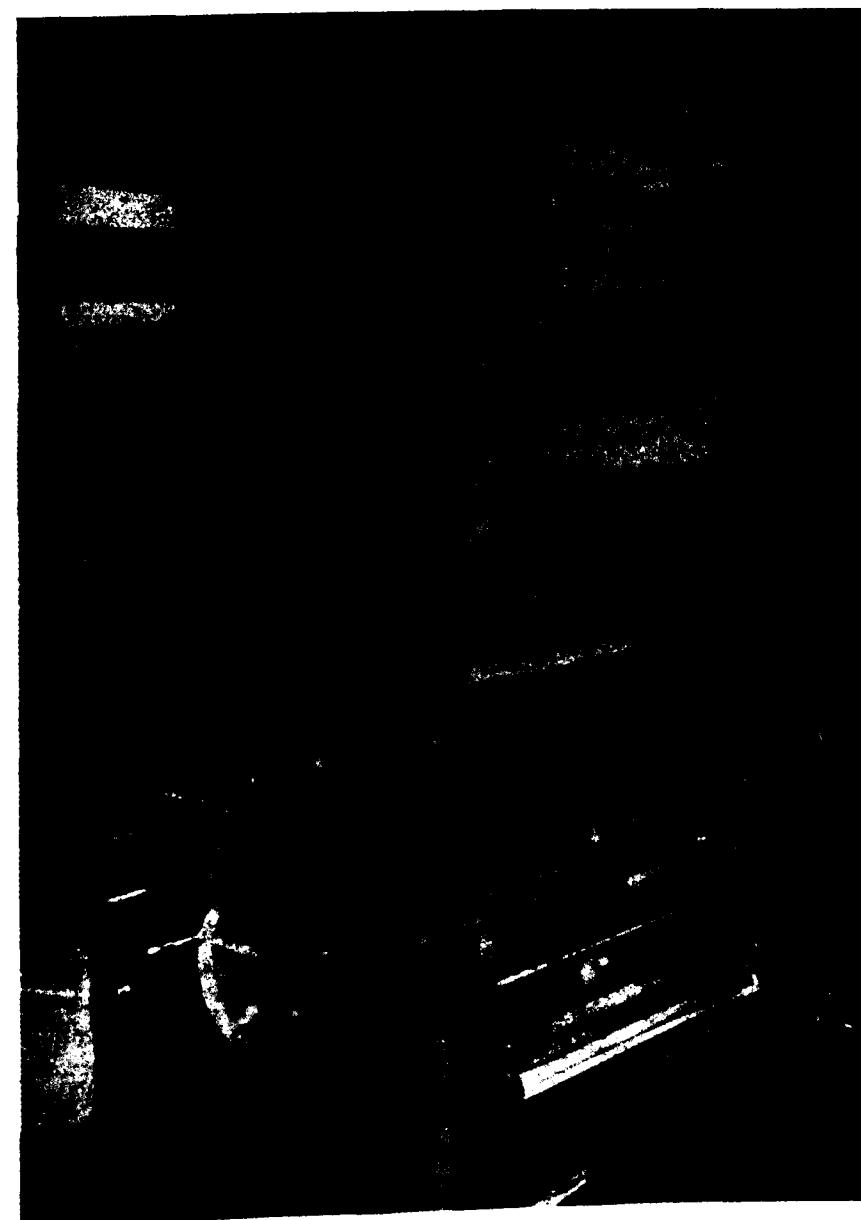
vulcanisation and that the ends of the rubber plate fuse together, provided the plate has been wrapped round the cylinder sleeve with care and accuracy. The cylinder is now ready for printing.

ADVANTAGES OF THE UNIPRINT METHOD

The Uniprint method can be used on any type of gravure printing machine which has detachable cylinder sleeves, and it is anticipated that it will, therefore, also be used in combination with aniline printing and in the future possibly also with rotary letterpress printing. Production costs of these cylinders are considerably below those of copper cylinders, so that the system is not restricted to long runs. A number of large-scale users in various countries have already installed their own processing equip-



The Uniprint vulcanising chamber or autoclave



A Uniprint Cylinder working in a rotary printing machine

ment, which costs only a fraction of the outlay required for the manufacture of copper cylinders.

An outstanding advantage of this new method is to be found in the resilience of the rubber printing surface, which makes it comparatively easy to print coarser surfaces. Snagging or tearing of the web or gritty particles are less likely to damage the printing surface of the cylinder. Experience so far tends to show that the life of a cylinder is considerable.

PRINTING ON PACKAGING MATERIALS

Very good quality prints have been obtained on most types of packaging material, including hard-sized and heavily calendered papers, chromo paper and carton boards, vegetable parchment, cellulose film, cellulose acetate, foil, etc., type and pictorial matter—including fine gradations of tone value—being cleanly and faithfully reproduced. The quality of the print will depend largely on the original copy. Exact

duplicate cylinders can be made and the depth of the cells held constant provided the photographic work is done with care, so that uniform printing results are assured.

SPECIAL INKS

The inks must be alcohol or water based, since hydrocarbons, etc. would attack the rubber. Such inks have the advantage of not giving off unpleasant vapours, as do most conventional gravure inks, and solvent extraction means are not therefore required on the printing machine. By adding thinners to the inks, control of the character of the printwork is easy and good running speeds can be reached.

Indian Newspaper Typography

(Continued from page 14)

some glaring shades are used in these at times which give the jolt to our nerves. Here again an agreeable tint, shade or full colour should be used. Authorities say that broken colours and tints are more effective than loud gaudy shades or full colours. Colour is welcome but only the correct type of colour and not too much of it, please!

In conclusion, we can sum up somewhat like this: Indian newspapers lack careful proof-reading; although they are well designed for the most part, their typography is not beyond reproach; there are plenty of improvements that can be made. Even when typographic design and lay-out is good, bad machining, improper handling, unsuitable ink or wrong paper mar the otherwise good effect of type arrangement. Readability should be the prime consideration of newspaper publishers as, after all, when all is said and done, every printed product including the newspaper is printed to be read.

Press Management or Mismanagement ?

(Continued from page 15)

methods or processes, however good they may be. There should be a constant endeavour to improve, to persevere, to prosper at all odds. In other words it does not pay one to be confined to a rut.

LAY-OUT OF THE FACTORY

A simply planned office will be easy to manage. Careful thought should be bestowed on the "flow" pattern of layout; the various manufacturing units should be located as far as possible according to sequence of operations; the composing room, the make-up room, the proofing room, the lock-up table and premake-ready room, the platen press room, the cylinder machine room, the automatic machine room, the warehouse, the bindery and finally the despatch or the delivery end—all together may form a semicircle with opening in the centre for natural light, ventilation, etc. This would be ideal. The departmental foreman is in a convenient place commanding a full view of all men under him. A comfortable temperature and good working conditions go a long way to accelerate production.

EQUIPMENT

Unsuitable equipment is one of the rocks on which many a press

flounders. Having decided what type of jobs the press should accept, i.e., Bookwork, Display jobwork or miscellaneous and blank-form jobwork, machinery should be bought to produce such type of work. A general printer accepting all and sundry jobs that come his way is less likely to succeed than a printer specialising in a particular line such as carton and container making, calendar and diary manufacture, Letterpress posters, Voluminous Bookwork, magazine production, embossing and copperplate printing or high-class tri-colour printing. There is less competition for the specialist printer, his quality will be unquestionable, his rates reasonable and his production unsurpassable. Custom-built machinery or machines built specially for the production of a particular work is not common in this country. Even our newspaper rotaries are not built to order but bought ready-made, the only consideration in choice being the number of units (to produce a maximum number of pages). Representatives of Machine manufacturers employ clever salesmen who are out to sell one of their machines to you; it is for you the manager to be on your guard, and come to a correct decision regarding the usefulness of their machinery. The manager should not be carried away by the terms, however attractive they may be. It is not uncommon for our printers

to buy a costly automatic in a hurry and think leisurely of getting work for it to keep it engaged.

CARE IN BUYING MACHINERY

When you are sure what type of machine, of what capacity at what speed and at what price level will suit your press requirements, you should not feel shy of taking professional advice from people of repute specialising in printers' engineering, mechanism, maintenance people or/and press managers who are actually using a similar type of machine. (It is imperative that India should have its own consulting engineers for the Printing Industry who could advise any printer for a nominal charge with regard to purchase, care, maintenance, repair and servicing of all types of Printing and allied machinery.) All moving parts should be tested by running by hand and power, rigidity and solidity and the quality of steel or cast iron or other metal tested, toothed racks, gear-wheels, cams, bowl tracks, runners etc., tested, actual work should be carried out and the performance carefully scrutinised. Broken framework might have been painted and this should be carefully checked. All accessories usually supplied along with the machine should be insisted upon. Any guarantee the firm would give should be carefully filed for future reference.

Self-Sufficiency in the Printing Industry

By

SRI K. G. KRISHNA RAO

Self-sufficiency in men, machines and materials is our goal. Arise, awake and stop not till the goal is reached, says the author in this forthright article—a call to all concerned

Every nation aims at achieving self-sufficiency in all fields of activity. Some have succeeded to the extent this aim has been backed by sustained effort. Others are still trying their utmost to achieve this aim. The necessity for being self-sufficient, was felt keenly during the second world war when absence of external supplies threatened to paralyse the life of any nation depending on supplies from abroad. Such dependence on outside supplies may lead to exploitation of the dependent nation.

India too has been steadfastly pursuing this laudable aim of self-sufficiency. If not in all fields, at least in the essential fields of food, textiles, steel and most varieties of consumer goods, India can claim to have realised this aim in part. But a great deal still remains to be done to achieve complete self-sufficiency if a breakdown of the kind that was faced during the war years, is to be averted in future.

Every printer in India will remember the most trying times through which the industry passed during the critical days of the last war. He realised too well what dependence meant. There was a general blackout of supplies from outside, and what little was available in India went into the black-market. Prices of even ordinary printers' sundries soared up so high that the common printer found his very existence at stake. Business in the industry as a whole threatened to come to a standstill. Only after conditions became so intolerable

did the industry wake up to grapple with the problem. Something had to be done, and done quickly, if the industry was to survive. Hectic attempts were made to start manufacture locally of some of the essential requirements of the industry. This was a beginning in the right direction. But, much remains to be done still.

The essential needs of the printing industry can be broadly classified as Paper, Ink, Equipment and Skilled Craftsmen.

PAPER

Paper is the most essential need of the printing industry, for there is no print without paper. Paper is, perhaps, the most important material for the printing industry, but also for the life of the people. Paper ranks the highest among the most essential needs, next only to food, shelter and clothing. No Government can function without paper. So, the entire life of the nation depends on paper.

It is a general complaint that the quality of paper produced by the Mills in India leaves much to be desired. The Industry has been crying hoarse about the apathy of the paper mills to improve their standards. The Federation of Master Printers has voiced strongly its feelings in this matter, but the mills do not seem to have taken any effective action to meet the requirements of the printing industry. It is a common experience for any printer to find that no two sheets are alike in a ream of paper

made in India. With all their modern machinery, equipment and continuous research, one fails to understand why the paper produced by the Indian mills should not compare equally in quality and finish to paper produced by similar mills abroad.

There are about 50 paper and board mills, big and small operating in India. Besides these, there are many smaller units producing hand-made paper. The entire output of all these mills does not touch even a fringe of the total requirements of the country. A major part of the production is taken over by the Government, leaving but a meagre supply for use by the printing industry and the general public. It is no wonder that the industry has still to look for imports from outside to meet its full requirements. It is heartening to find that the Government is aware of the inadequacy of paper supplies. There is no dearth of raw materials essential for the production of paper in India. It is therefore very important and urgent that this problem is seriously considered in its proper perspective, so that we will be self-sufficient in paper at least within the next ten years, if not earlier.

INKS

Ink is another important material necessary for the printing industry. Except for two major factories producing ink in India before the war, we have always relied on imports from abroad. We have now 7 major factories manufacturing inks in

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India. We are in a better position so far as our requirements of inks are concerned. But the quality of inks is capable of improvement. The peculiar tropical conditions obtaining in India demand careful study, if inks produced here are to satisfy printers scattered over the length and breadth of the country. Then, there are the extreme dry conditions prevailing in the interior parts of the country. Printers are helplessly compelled to make the best of what is available. Where first class quality work is required the printer would prefer to use imported inks. Almost every ink factory has its well-equipped laboratory for research and experiment, and it should not be difficult for them to produce inks suited to the varying needs of the printing industry.

EQUIPMENT

This is, perhaps, the one field which has not received the attention it deserves from our industrialists. It is encouraging that attempts have been made to manufacture locally many of the printers' sundries and a few machines like perforators, cutters and treadles. With all the inducement of cheaper prices, machines made in India have not appealed to the printers who still prefer imported machines. Apart from these sporadic attempts, no serious attention has been devoted to the manufacture of printing machinery in India. The country is now manufacturing or assembling locomotives, ships, tractors, planes and automobiles, besides many other lines of machinery. While all other industries, major, minor and even cottage, have been specifically listed, the printing industry is conspicuous by its absence in this important statement of policy by the Government.

A start may be made with the production of the simpler types of machines like platens and letter-

press cylinders which are always in demand. Other machines could be added on in stages. Besides helping the printing industry particularly, such a project will go a long way to solve the acute unemployment in the country. Over a period of years, it should be possible to achieve freedom from dependence on countries abroad for our essential requirements of printing machinery.

SKILLED CRAFTSMEN

The dearth of skilled craftsmen has been a long-standing cry in the printing industry. Printing is a highly specialised art that needs specialists of every type to handle the many intricate problems confronting it.

There are intelligent and able men in the country, many of them not classed as experts, who only want opportunity to work. Given the opportunity to prove their worth, our craftsmen will at least equal, if not excel, their compatriots elsewhere. The Regional Schools of Printing to be established in the country should aim and work at achieving self-sufficiency for the requirement of skilled craftsmen in the industry, by training out specialists in every branch of printing.

It will be seen that while we feel the absolute need to be self-sufficient, the effort so far put in has not been commensurate with the growing needs of the industry. The Second National Five Year Plan is just in the making. It should be the aim and endeavour of everyone interested in the progress of the industry to induce the Government to include in the Plan a comprehensive scheme to achieve the goal of real self-sufficiency in the essential requirements of the Printing and Allied Industries.

PROGRAMME OF PRIORITIES

In order to achieve self-sufficiency in men, machines and materials, a detailed survey should be taken

to assess the present capacity and future potentiality of the various manufacturing units in the country, the requirements of the industry in respect of raw material, finished products and skilled craftsmen, the percentage of each of foreign origin and ways of improving the supply position of each item of reference.

This detailed survey will give a correct picture of the needs of the industry and will pave the way to formulate a plan to achieve the target in stages. Priorities will have to be laid to certain things urgently required. Over-production may be curtailed and attention devoted to improving quality and in cases where the target has not been reached but quality is being maintained, methods to improve production by improved machinery, bettering supply conditions of raw materials and better marketing, servicing facilities, making spare parts available; balancing the over-produced and the scarce commodities and other incidental matters should be decided. The programme or plan so chalked out should be followed and the industry as well as the State should co-operate and help in achieving this end.

In this connection it is worth emulating our Eastern neighbour Japan, which manufactures all types of machines and materials and has to her credit many outstanding craftsmen and engineers. Indeed they have produced not for their internal needs but for export. Their products stand competition with those of the West. As a matter of fact, nowadays Japan has become to be reckoned as one of the major competitors of machines and manufactured goods and is very much envied and even feared in the market places of the world.

In conclusion I hope that the needs of the Indian Printing industry will be met within her frontiers—but how long it will take is anybody's guess.

Towards Close Register

By
"DAWSON"

Bad Register is one of the bugbears the printer has to confront with. The basic factors necessary for hairline register and the causes that contribute to erratic register are focussed in these pages

WHAT IS THIS THING CALLED REGISTER?

Register is the proper positioning of printed matter on paper. In single colour work perfected sheets (*i. e.*, sheets printed on both sides) should have the printed pages in identical positions on either side. A Bookwork forme printed on both sides of a sheet should lie perfectly one over the other; this can easily be checked by holding the printed sheet to light and looking through. If the folios (page numbers), running heads, the first lines and last lines and edges of pages on one side fall exactly upon those on the other side, good register has been obtained. A badly registered sheet will show edges of one side projecting or the bottom lines falling out in relation to those on the reverse.

In multicolour work, register does not concern itself with alignment of matter or block on the other side. It means the various colours on the printed sheet should be positioned exactly as in the original which they are reproducing. Obtaining and maintaining register in multicolour work, is therefore very complex and everyone connected with production of tricolour blocks knows that too well. Blocks that have been printed out of register can be readily recognized by the appearance of single colours at the edges, white line showing between two colours, lettering not sitting snugly on their allotted places resulting in a shadowlike formation and the whole production

lacking the fineness and sharpness of well registered work.

WHO CAUSES BAD REGISTER?

While causes of faulty register cannot be generalised, as in each individual case it may be due to a peculiar defect, the following are fundamental to the problem of imperfect register. Reasons for inaccurate register can be traced to one or more of these :—

1. Factors relating to the printing machine.
2. Factors relating to the printing surface—the plates, the forme, the matter.
3. Factors relating to the printed surface—paper.

When bad register is encountered it is better to localize the cause to one of the three, *i. e.*, whether it is defective adjustment of the machine, defective forme or improper paper. Then only we can tackle the problem quickly and satisfactorily.

WHAT IS WRONG WITH THE MACHINE?

Register work requires machines in good condition. Although no class of machines can be condemned as unfit for register work, experience proves that certain classes of machines lend themselves better to precision work than others on which such work cannot be done with equal accuracy. It is usual for machinery manufacturers to claim that theirs are the exclusive type and hence indispensable for register work.

Some of these claims have germs of truth in them while others are just tall-talk—part of their sales promotion programme. Assuming that the machine belongs to that class of machines handling register jobs, it should be checked for wear on racks, whether they have been set properly and they mesh perfectly. Cylinder boxes, cylinder bearers and bed bearers should receive attention next. It is essential that they should be absolutely level.

PROPER PACKING

Packing the cylinder has not received the attention it deserves. It is not realised by machine minders that improper packing may cause, among other things damage to forme, undue wear of important parts of the machine such as cylinder bushes and endless waste of material, slowing down of production and increase in cost.

The dressing should be of the hard or medium class depending on the nature of the forme with a manilla draw sheet. The temporary and permanent halves of the packing should together not exceed the height of the cylinder collar or bearer. The packing clamps should hold the packing securely. The packing should be taut, free from wrinkles or bagginess.

ARE ALL ADJUSTMENTS CARRIED OUT CORRECTLY?

The grippers should be set correctly and evenly across the cylinder. Too much grip will leave a mark on the sheet while uneven grip will

The drop guides are intended to hold the sheet during the momentary period after the lifting of the front guides and the closing of the grippers. The cylinder bands or sheet bands control the sheet and it is essential that they should be set close enough to the cylinder so as not to allow the sheet to wander. In other words the bands should not interfere with the sheet or the grippers. The cylinder brush should

The mounts of blocks, the plates, the matter—all should be absolutely

Green or unseasoned stock is sometimes the cause of bad register. Blank paper is to be aired well before printing. The humidity of the machine room is to be controlled to avoid stretch or shrink in paper due to sudden atmospheric changes or rise or fall in the moisture content of air. After printing one colour the printed paper should be kept covered during the intervals between different workings. If the

Many machine minders think that cleanliness of the machine has got nothing to do with register. The reverse is the truth. In fact, we can go a step further and say that every defect in printing has got something to do with proper oiling, cleaning and maintenance of the machine. For example accumulation of dirt results in "trip" trouble. Other instances are excessive oil in any part, sticky or lazily operating parts, dried ink or sheet holding parts, stop fingers or register plate, improperly set stop fingers, ink, dirt or lint under stop fingers and accumulation of fluff or paper lint under side guide. Compressed air may be used for cleaning parts free from fluff, lint, etc. Lastly, the machine minder should be a man with experience and a stickler for precision, accuracy and clean working. Then you may be sure he would attend to other causes of misregister and apply the proper remedies and not only obtain good register, but hold on to perfect register.

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Casting off Copy

(Continued from page 10)

Linotype or Intertype : The linear space occupied by a complete alphabet is furnished by the manufacturers concerned and this is called the alphabet length, i.e., the length of lower case letters when set together.

Example :

The en content of a line of 10 pt. measuring 22 ems 12 pt. and set in a Linotype face whose alphabet length is 22 ems. is found as follows :—

Width of line in 12 point x 2 (to convert into ems) x 12 x No. of Alphabets 26. Divide this by 22 (alphabet length) x 10 (body size in which matter is to be set).

$$\frac{22 \times 2 \times 12 \times 26}{22 \times 10} = 62 \text{ ems of 10 pt. in a line.}$$

From this the en content of a page may be found out by multiplying this figure by the number of lines in the printed page. The total number of ems in the copy divided by the number of ems in one printed page will give the cast off.

Monotype :

An em of any size is the square of its body, i.e., a ten point em is 10 pt. by 10 pt., a six point em is 6 pt. square. This applies to Monotype in so far it relates to even set faces only. For wider or narrow set, the set figure should be taken into consideration in finding the en content. For instance 10 pt. even set is 10 pt. square, but 10 pt. 9½ set is 10 x 9½ (narrow) and 10 pt. 10½ set (wide) is 10 x 10½.

Example :

The en content of a line set in 10 pt. Monotype 10½ set will be, assuming the width of line is 22 ems 12 pt.

$$\frac{22 \times 2 \times 12}{10\frac{1}{2}} = 50 \text{ ems of 10 pt. in a line}$$

Adopt the same method to find en content of a page and then find the cast off.

In calculating the en content of the printed page attention is to be paid to the following points :— What is the depth of the page or the number of lines of that body in a page? Does the figure include head and white also? (The running head and page heading which appears on top or bottom of every page is called "Head" and the white line immediately below it, i.e., between the head and the first line of matter is called "white". Sometimes a third white line—the one at the bottom of the page, which sometimes serves as the signature line—is also included.)

(To be continued)

From Our London Correspondent

(Continued from page 12)

Baker Ltd. This gives accurate instant readings from 50 to 200, and although it is a precision instrument, the detector need not be used with precision. It is merely placed across the print or plate at roughly 45° and a four-pointed "watered-silk" star appears. Two points of the star indicate the count of the screen in lines per inch or per centimetre. and the detector's margins bear centimetre, cicero, em and inch rules with transparent graticules.

COLOUR REGISTER BAR

Another new Cornerstone tool is a colour register bar, giving simple, fast and accurate registration for all classes of composing room work, including multiple-colour formes, giving a permanent proof, showing register before the particular job goes to press. This means that time wasted doing this work in the machine room can be cut and turned into production hours.

Several compositors can work on each of four colours at the same time, and each compositor can pull up in actual colour, stage by stage, the job he is producing. The sheet, or sets of sheets can be retained by the composing room as a record of the work going through correctly, or retained for reprints, and if it is not necessary to retain the foil sheets they can be washed off easily and re-used on the next job. The special foil lies flat, is impervious to atmospheric change and shows no distortion over many months. It is clear to check through, has a polished surface on one side to which the ink is applied, and the top surface has a matt finish to obviate reflection and paralax. The surface can be marked with corrections or ruled up for regular single-colour work in ink and the tool then employed as a permanent register frame. Although designed for use with honeycomb base, this tool can be housed equally well on the bars of an ordinary broadside, book or folding chase. The register bars are adjustable, in sizes from 18½ to 22½", 25½" to 32½", and 37½" to 49 5/8", enabling the fixing points to be located as near as possible to the corner of a chase so that the most stable point, free of "bow", can be used.

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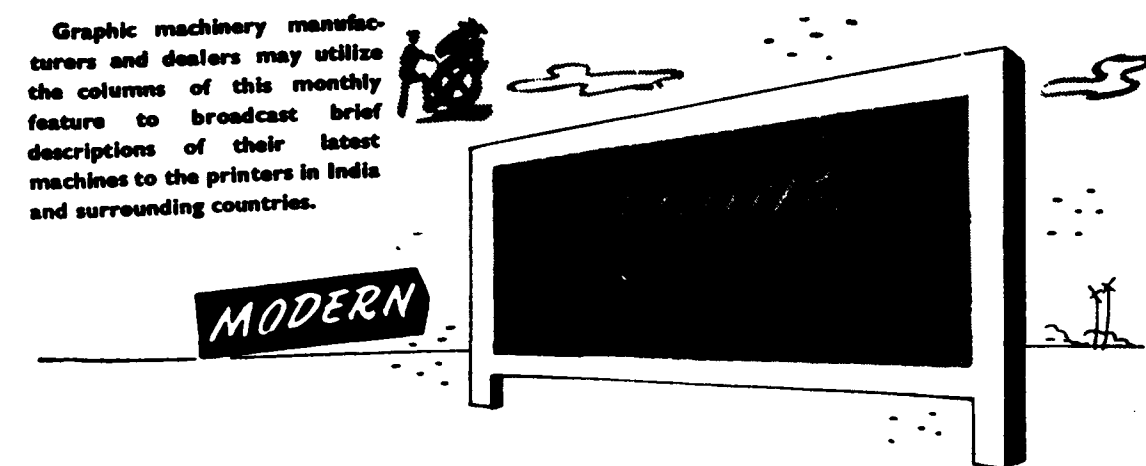
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PRINTINDIA

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.



THE N-54 SINGLE REVOLUTION PRESS

This machine has a one piece solid base giving great strength and rigidity to the press. The cylinder which is equally heavy does not allow flexure even with the heaviest of formes. All castings on N-54 are manufactured in the now famous Meehanite. The inking system is of the cylindrical type. The ink fountain is of the modern collapsible pattern thus reducing washing up and changing time to the barest minimum. Micrometer screws capable of fine adjustment control the flow of ink from the fountain. The duct is capable of adjustment while the machine is running.

The sheets are fed from the pile feeder by telescopic suckers. Even sheets that are spongy or soft and sheets from an uneven pile may be fed from this feeder. The suckers have double pneumatic connections and are moveable. The sheet is automatically registered to the side and front lays after which the swinging grippers feed it to the cylinder grippers at cylinder speed. Positive register is guaranteed on N-54 because the swinging grippers do not release the sheet until the cylinder grippers completely take hold of the sheet.

Mechanical sheet control prevents automatically any damaged or

double sheet being printed. An electro-magnet controls the table lift. Free access for make-ready is ensured as the feedboard and the swinging grippers can be swung clear of the cylinder.

The N-54 has a continuously revolving cylinder and produces one impression per revolution. The bed motion gives a slow printing stroke and a fast return "idle" stroke. The diameter of the cylinder is large and fully accessible. The make-ready may be done quicker considering the large area available to the machine minder. A pawl and ratchet with a reeling bar ensures proper tensioning of the cylinder dressing.

The maximum speed is claimed to be 5,500 impressions per hour. The maximum size of sheet is 12 3/16 x 17 5/16 inches.

There are thirteen different speed changes on the N-54. The speeds can be changed while the machine is in motion. Thus the operator can fix the speed at a convenient rate from 900 to 5,500 impressions per hour. The drive of the press is by a v-belt pulley and twin v-belts from a 2.5 H.P. motor.

The delivery is at the front. Delivery is effected without the use of tapes. The delivery mechanism can be swung away for easy access

to bed for positioning of forme or for corrections.

There is a cylinder brush to control the sheet while on the cylinder and to remove any foreign substance or dust. This brush is adjustable.

PROGRESSIVE INTERTYPE

An out of date machine makes the press to sacrifice quality, limits the variety of jobs the press can handle economically and restricts profit.

The Intertype people who are always ahead of the times have introduced the following new features in the New Intertype machines :—

White space can be set automatically by means of the Autospace. This device saves the use of quads and eliminates hand operations in centreing lines. Quads and spacebands need not anymore be keyboarded and time wasted in opening the gate of the assembling elevator; counting and transferring quads and spacebands from right-hand end of the line to the left-hand end is a laborious process and is not required while centreing.

Magazine positions can be changed by power instead of pushing or pressing a handle. This is caused by the No-turn Autoshift. Mixed composition can be set at straight matter speed by means of

the Finger-Flip Shift. This is a very fast method for mixing matrices from any two adjacent magazines.

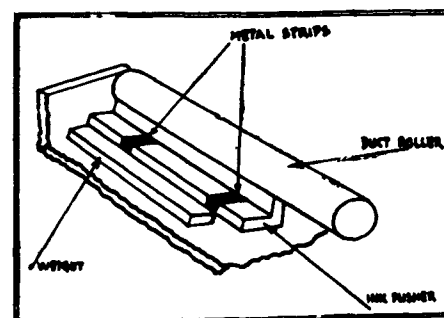
The Six-Mould Disc speeds up production as it allows 50 per cent more 30-em mould capacity at all times. It practically eliminates liner changes, supplies maximum overhang capacity for complicated advertisement work without use of mould caps.

SIMPLE INK PUSHER

Machine Minders of Letterpress machines as well as Litho frequently experience trouble with inks that will not feed properly. Consequently the ink in the fountain or duct has to be kept constantly agitated. Much difficulty is caused especially when the duct is at the end of the machine and not readily accessible. This trouble is acute in long runs with transparent

colours. Inks that are jelly-like, stiff or short quickly roll away from duct surface and fail to feed through unless kept constantly agitated.

The Printing Packaging and Allied Trades Research Association have evolved a simple device for pushing the ink and solving the feed trouble. This device is very easy to make with improvised material. All that is required is a piece of wood, 1" x 1" and as long as the



Rough diagram of the Ink Pusher

distance between the clumps in the duct. A 2½" wide strip of rigid metal or plastic is fastened to the wood. Two other strong metal strips 1" wide are taken and bent to the shape of two steps over the wood. These steps are placed on the wooden base. The whole thing is placed in the duct with the metal plastic surface against the ink. Adjust the metal strips to suitable distance apart to accommodate a stereo metal block or other similar heavy object. The metal steps are to prevent rising of the device from its position. This device acts as a pusher by pressing the ink against the duct surface causing it to revolve. At the same time it sets up a form of agitation at the back of the ink mass.

Even when only a small quantity of remains, the pusher operates quite efficiently.

The New Super Speed Etcher

Particulars are now available about the new 20-minute etcher which has had great success in America and is now being introduced in the United Kingdom. This is mainly made of stainless steel. It is designed to etch magnesium metal available in nine different thicknesses from gauge 5 to gauge 19. The actual etching process takes only about six minutes when the etching bath is new. As the bath gets older the time extends to 12 minutes.

An operator working on the new modern etcher could finish a plate of 24" x 26" in 15 to 20 minutes when the etching machine is in good chemical condition. During the process of etching the plate to be etched is constantly moved. The liquid is applied by rows of paddles moving at speeds from 200 to 1000 revolutions per minute. The quality and uniformity of the image is claimed to be excellent. Both fine and open line work can be done on this machine.

The Dow Etching machine is the biggest post-war development in process engraving. The machine offers great potentialities. It ushers in a new way of improving efficiency and increasing output. Hence, it is bound to have a big impact on the printing Industry.

WONDER MATERIAL FOR IMPREGNATING PAPER NEOPRENE

The best material for impregnating paper is NEOPRENE

Announcing

The IPEX Special Number OF PRINTINDIA

This Special Number presents an exhaustive survey of the IPEX Exhibition being held at Olympia, London

Amplly illustrated with special photographs and interesting information about the Exhibition covered specially by our Correspondent

Exquisitely printed on Art Paper

Price Re. 1/- Postage Extra

The IPEX Special Number will be released in the month of August 1955
Limited number of advertisements from reputed firms are accepted

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GRAMS: VASUNIDHI

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PUBLISHERS: PRINTINDIA

'KUBERA BUILDINGS' 21 SUNKURAMA CHETTY STREET, MADRAS-1



Mrs. & Mr. Siddique who are going on a world tour seen off at the Santa Cruz airport by Mr. E. J. Coelho, Business Manager of Rainbow Ink & Varnish Manufacturing Co. Ltd.

LATEX. It offers a wide range of properties on the sheet which is impregnated. Among others it imparts high bursting strength, high resistance to tear, both at the edge and internally, excellent folding endurance, resistance to oil and water penetration and flame resistance.

Paper with open formation made from long fibred pulp is easy to impregnate by the tub-sizing technique or by spraying. It gives maximum increase in physical properties of paper. Experiments conducted reveal that 10 per cent of Latex on the weight of paper untreated, gives double bursting strength; 40 per cent Latex gives double tear value; 80 per cent impregnated raises the folding endurance from 24 to 5,000 double folds; 20 per cent of Latex increases edge tear strength six times; the elongation increases four times and tensile strength twice as much. 70 per cent of Latex increases resistance to flame, resistance to water and grease penetration and seventy per cent retention tensile strength after wetting the paper.

From the Editor's Pocket-book

(Continued from page 6)

PICTURE TRANSFERER

Recent prints from newspapers, magazines, etc. may be transferred to unglazed paper on the decalcomania principle.

Any one of the following two solutions may be used to dampen the print.

Solution No. 1—Soft soap $\frac{1}{2}$ oz.

Pearlash 2 drachms.

Distilled water 16 fluid oz.

Lay the print flat on a table or on a drawing board and moisten it with the liquid. The paper on which the print is to be transferred is laid over this and a thicker sheet of paper on top. The whole is now rubbed with a blunt instrument such as the bowl of a spoon until the desired depth of colour on transfer is obtained.

Instead of the above,

Hard Soap 1 drachm.

Glycerine 30 grains.

Alcohol 4 fluid drachms.

Water 1 fluid ounce.

may be coated on the print with a sponge and proceed as before.

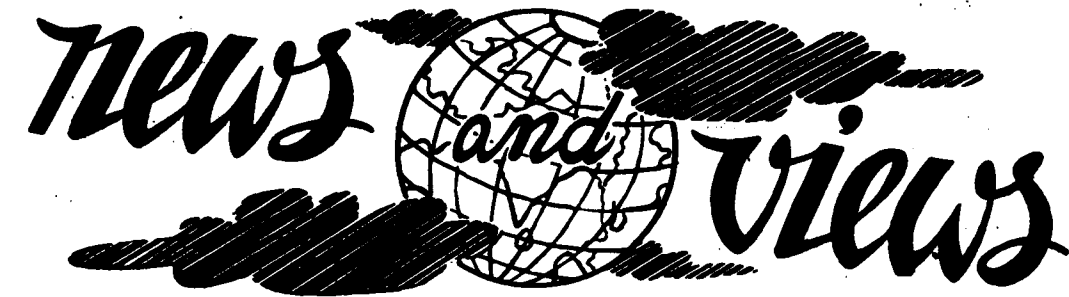
Important Features of Well-known Machinery

(Continued from page 5)

med continuously from the reel in one pass and the job finished on the same machine: printing, numbering, perforating, hole punching, carbonising, carbon inter-leaving, edge-gumming, re-reeling zig-zag folding or sheeting.

THREE-KNIFE TRIMMERS:

Magazine and book offices find these a necessity. The Pivano three-knife trimmer is massive with rigid side frames. All main shafts have large diameter bearings. Heavy smoothly acting expanding clutch. Large rigid knife-operating shafts with direct reading setting scale. An average working speed of 15 cuts per minute is claimed. This is double that of ordinary trimmers. The cut piles are automatically ejected and may be taken off by hand or transferred to extended conveyor delivery. All connecting rods are enclosed, guard bars protect feed and delivery. Feed errors like overloading, bad register, etc., stops the machine instantly.



THE HEIDELBERGS AT IPEX

Indian visitors to the Tenth International Printing Machinery and Allied Traders Exhibition (IPEX) scheduled to be held at Olympia London, from 4th to 16th July 1955, will be pleased to learn that among the exhibitors will be the well-known West German printing machinery manufacturers, Schnellpressenfabrik A. G. Heidelberg. In all a total of 10 ORIGINAL HEIDELBERG printing presses—five 10" x 15" and two 12" x 18" platens and three 21" x 28" Cylinders will be on display and demonstrations will be given during the entire period of the fair. One stand will be devoted to the exhibition of an anniversary machine mounted on a turntable. This will be the 7500th Heidelberg printing press due for delivery to Great Britain at the time of the Exhibition.

The ORIGINAL HEIDELBERGS will be exhibited in the "National Hall" Stand No. M. 7, by the manufacturers' British representatives, Heidelberg Printing Machinery Co. Ltd., Eyot Works, Eyot Gardens, St. Peter's Square, London, Hammersmith W6. Among the team of experts who will be there to offer information and guidance to visitors will also be the German manufacturers' expert printer, Herr Jakob Beckenbach. He will be visiting Britain specially for the occasion.

Another familiar item of interest to visitors from India will be the POLAR range cutting machines, also of West German origin, in Stand No. 109, arranged by the manufacturers' British Agents, Messrs. Graphic Arts Equipment, 6-7 Russel Gardens, Kensington, London W14.

The East Asiatic Co. (India) Ltd., who represent both the ORIGINAL HEIDELBERG and POLAR interests in India have made special arrangements with British Agents to look after Indian visitors to the Fair and one of the East Asiatic Company Executives, Mr. H. A. Sommer, will be in Britain throughout the period.

IPEX

During July next a vast display of everything that is new in the Printing World will be assembled conveniently and accessibly under one roof. The total exhibition space will be 430,000 sq. ft. This is going to be a great international event, with all the leading manufacturers from the U. S., U. K., and many European countries, showing to the vast concourse of people from all over the world, some of their up-to-the minute machinery, supplies and services at the great Olympia Exhibition Hall. The Tenth International Printing Machinery and Allied Trades' Exhibition, which will be held from July 5th to 16th 1955 at Olympia, London should not be missed by Printers of this country: There

you will find so much of vital interest to you, so much that can profit your organisation, no matter how large or small. Visitors from overseas will be warmly welcomed. To those unable to visit the exhibition, a free copy of the official catalogue can be had from the Organising Director F. W. Bridges & Sons Ltd., Grand Buildings, Trafalgar Square, London, W. C. 2, England.

COIMBATORE-NILGIRIS PRINTERS' ASSOCIATION

A meeting of the Printers of Coimbatore and Nilgiris districts was convened by Sri S. Ramaswami, L. P. T., Managing Partner, Kalaivani Press, Coimbatore on 5th April 1955 with the object of forming a Master Printers' Association of the Coimbatore-Nilgiris districts. All the presses in the said districts were adequately represented in the large gathering.

Inaugurating the Master Printers' Association of Coimbatore-Nilgiris, Sri S. Viswanathan, B.A., President, All India Federation of Master Printers narrated the objects of the All India Federation of Master Printers and emphasized the need for unity among the printers, the advantages of having a fully representative and responsible Federation to voice the needs of the Printers of our land and work for the advancement of the trade and industry. Sri P.

PRINTINDIA

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FRONT COVER	500	400
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INSIDE FULL PAGE	150	125
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COLUMN INCH RATE (per col. inch)	6	5

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* Contract means six or more insertions in one year the space for which is reserved in advance and must be consumed within twelve months from the date of reservation

Ramakrishnan, M. Sc. (M. I. T.) presided.

WELCOME NEWS FOR LETTERPRESS PRINTERS IN BOMBAY AND MADRAS

A Printers' Finishing School for letterpress printers who have already been in this line for a couple of years will open shortly in Bombay and Madras.

These classes will be conducted on the same lines as printing schools conducted in Europe. The duration of the course will depend on the qualifications of the individual printer.

After completing this course the printer will have to undergo an examination and should he pass

this test, he will be awarded a diploma stating his qualifications.

The printing course covers every aspect of letterpress printing, practical and theoretical, viz.

- Maintenance of the machines.
- Adjustment and locking of formes
- Roller setting.
- Packing.
- Ink mixing.
- Adjustment of automatic feeders.
- Running of the machines.
- Knowledge of the various types of paper.

As such these schools of printing will no doubt be a boon to every press - owner in Bombay and Madras.

The Schools are being established by the printing experts of the East

Asiatic Company (India) Ltd., Printing Machinery Section, who represent a number of well-known European manufacturers of printing machinery among which are the famous ORIGINAL HEIDELBERG machines.

There are many press-owners who, although possessing ORIGINAL HEIDELBERG machines, do not get the most out of their machines for the simple reason that their pressmen are not fully acquainted with the unlimited scope of work these machines can produce. Press-owners who possess ORIGINAL HEIDELBERG machines are advised that they would gain by employing pressmen who have had their training in these schools.

* * *



A German Printing School Class-Room, a model for the new schools being arranged in Bombay and Madras

PLAN TO INCREASE CAPACITY OF ANDHRA PAPER MILLS

Plans are under way to improve the Rajahmundry Paper Mills to implement necessary measures to make the mills function effectively and to produce better quality of white paper and for cream-laying of the paper on both sides, so that the paper produced at the mills might find a ready market.

At present, the mills are producing only brown paper, some quantity of paper used for the manufacture of envelopes and bond paper. The present production in the mills is to the tune of eight to ten tons a day which is the capacity of the mills.

With the addition of one more boiler and other machinery for the manufacture of white paper and for cream-laying, the production and quality of paper from the mills could be improved. The machinery has been ordered and it is expected that this work will be completed in about three months' time.

For all this work, a sum of Rs. 16 lakhs has been sanctioned by the State Government.

It is proposed to increase the capacity of the mills further to produce 20 tons a day. This scheme will, it is learnt, be included in the Second Five-Year Plan.

* * *

"The Daily Sketch", fame as London newspaper, profusely illustrated, has the fastest method of making white on black blocks. But, now, "Evening Despatch" another newspaper of Edinburgh has gone a step further. It has developed a process by which white-on-tone blocks can be made in half hour.

* * *

NEW PAPER PROJECTS NEW ZEALAND :

In order to make New Zealand self-sufficient in newsprint and Kraft paper, a unified plan to develop forest industries is being executed. Pine and Douglas Fir are the trees from which pulp will be made. Last year 18,000 tons of paper and 43,000 tons of wood pulp were made by one firm alone. 250,000 acres of plantation are being utilized. A giant paper making machine manufactures 120 inch wide reel of paper at a speed of 1,150 feet per minute.

* * *

The United States, always on the forefront in everything under the sun, has come out with certain new-fangled but very interesting words. Here they are with their definitions. It should be noted that most of them relate to smoke and all of them to weather.

- SMAZE = Smoke plus Haze.
- SMOG = Smoke and Fog.
- SMOUD = Smoke plus cloud.
- SMUST = A combination of Smoke and Dust.
- SNEET = Snow plus Sleet.
- RAIL = Rain and Hail.

* * *

MANUFACTURE OF NEWSPRINT

The Forest Research Institute in Dehra Dun has conducted several experiments on the production of newsprint and come to the conclusion that printing paper could be manufactured from Bagasse pulp mixed with 30 percent bamboo pulp.

They have carried out further investigations in the direction of producing printing paper from Bagasse at a cheaper rate, and though the paper now produced by the Institute has a higher yield than by the earlier process, the capacity has not been up to the standard required for ordinary newsprint.

The Madras Government have proposed eucalyptus and wattle pulp for the manufacture of newsprint.

* * *

EXPORTS FROM FINLAND

List of some of the goods available for Export from Finland to India during 1955 :—

Newsprint.

Paper products, such as :

Wallpaper, Novelprinting, Kraft-paper, M/G Sulphate and Cap, M/G Bleached poster, Greaseproof, Woodfree Writing and Printing papers, Mechanical Writing and Printing papers, Bond paper, Ledger paper, Cartridge paper, Imitation Art Woodfree Boards, Manifold, Duplicating paper, Blotting paper, Tissue paper, Cropped paper, Tracing paper, Pure Vegetable Parchment, Hollerith Board, Insulating and Cable paper, Carbon Body paper, Airmail paper, Cigarette paper, Security and Cheque paper, Condenser paper.

Wall Boards of wood fibre (soft and hard).

Boards, such as :—

Woodpulp board, Chip board, Container board, Test board, raft-liner, Trunk board, Prespan, etc.

Textile spinning spools of paper and board, impregnated or unimpregnated.

Papersacks for packing of cement, flour, fertilizers, sugar, etc.

Grocery bags and Glassine bags.

Containers of corrugated and solid fibre board.

Corrugated board, single and double faced.

Pitched kraft paper, such as :—

Ocean paper, Union kraft, Bituminized cable paper and Tarred paper.

Metal foil paper.

Gummed type and Gummed label papers.

Fruit wrapper, printed and/or chemically treated.

Toffee paper and waxed paper.

Household papers, such as:

Facial tissue, Handkerchiefs.

Paper towels, Table cloths. Napkins and Toilet paper.

Fancy papers for riding and setup boxes and bookbindings, coloured, embossed, printed.

Stationery including compendiums, envelopes, writing pads.

Exercise books.

Cellulose wadding and products thereof including sanitary pads.

Monotype paper.

Decalcomania paper.

Embossed paper and board.

Adding machine coils.

Trunk-lining paper.

* * *
NEWSPRINT
TAKEN OFF O. G. L.

The Government of India have decided, with immediate effect, to remove newsprint from the O. G. L., for purpose of import.

Imports will hereafter be regulated on the basis of a quota. The quota for the current half-year has been fixed at 110 per cent, which will be calculated with reference to the actual imports in any of the last three financial years ending 31st March 1955, at the importers' option.

Licences will also be given for firm commitments to import which may have already been entered into prior to 3rd April 1955. The value of licences given against such commitments will be debited to the quota, which the importer may be entitled to.

Importers, who are not actual users, will be expected to sell directly to consumers *i. e.*, newspapers. It is possible that in future import licences to such importers may be given on the basis of actual sales to newspapers.

Requests for extra licences on special grounds, such as the starting

of a new newspaper, will be considered "ad hoc" on merits.

* * *
MASTER PRINTERS
MEET AT DELHI

The Governing Council of the All India Federation of Master Printers met in the Hindusthan Standard Buildings, on April 23. Mr. S. Viswanathan, President of the Federation, presided.

Mr. S. N. Guha Ray, Honorary General Secretary of the Federation in his report dealt with the various activities of the Federation. Among other things, he informed the meeting that a monthly bulletin of the Federation would come out early in June. He dealt extensively with the serious situation which had been created for the printers by restricting the import of Art Board by imposing a heavy import duty of 66 2/3 per cent *ad valorem* and by the failure of the local manufacturers of Boards in maintaining regular delivery to their customers. In Bombay, the supply of the indigenous art boards had been restricted in such a manner that many of the large card board box makers were on the verge of collapse. Mr. Guha Ray also pointed out the situation created by the Paper Mills in passing on to the consumers of paper the 10 per cent excise duty recently imposed on all factory products.

The Secretary pointed out that the recent removal of newsprint from OGL and restricting its use to newspapers only would retard the advancement of knowledge as most of our religious books, alphabet books, help books and school texts were printed on newsprint. In view of the very small production figure of the NEPA Mills, Mr. Guha Ray was of opinion that this restriction should be removed immediately.

The Council discussed all the problems raised in the report of the General Secretary and proposed that a deputation should wait on

Commerce and Industry Minister and the Director, Development Wing (Paper), to place before them the entire position. The Council also discussed a resolution proposed by the Mysore Printers Association regarding the changes in the Sales Tax Act in Mysore and resolved to approach the Mysore Government in this connection. The Council accepted the invitation of the Hyderabad Association and decided to meet in Hyderabad during the first week of November.

Physical Properties of Paper

(Continued from page 7)

look-through or opacity, hold the sheet to the light and see.

Surface finish: Is the finish of sufficient smoothness for halftones or is it fit for offset as in the case of eggshell finish? Will typographical characters appear in true form without greying of thickened parts or can sing indistinct reproduction of thin ascenders? Will the coating pick? Is the high sheen finish solid or blotchy? Damp your thumb, press strongly on the sheet and sharply pull away. If the coating does not give way it is good.

As regards writing paper, hold it to light and find out whether it is laid or wove by the lines at frequent intervals or clothlike woven appearance respectively. We can also find out whether the watermark is registered on the sheet or staggered.

Finally is it engine sized (E. S.) or Tub Sized (T. S.)? Criss cross on the sheet to be tested with inked lines and examine the spread or penetration of ink. If there is no spreading it is good writing paper. This can also be tested with the tongue. Sticky paper is generally well sized. Banks to be written on should have a smooth writing surface, but those for typing should have a slight tooth.

Manufacturers of 14 LANGUAGES IN PRINTING TYPES, HALFTONE, LINE & ELECTRO BLOCKS etc

SUPPLIERS OF PRINTING REQUISITES

தமிழ் தெலுగు देवनागरी ENGLISH संस्कृत हिन्दी मराठी ഗ്രന്ഥം മലയാളം ಕನ್ನಡ ஆங்கிலம் தமிழ் தெலுగు देवनागरी ENGLISH संस्कृत हिन्दी मराठी ഗ്രന്ഥം മലയാളം ಕನ್ನಡ

ENGLISH

TELEGRAMS: 'BHUVANA'

TELEPHONE: 8291

CHINTADRIPET, MADRAS-2

1-14
2-25

Estd. 1953

PRINTINDIA

A MONTHLY SURVEY OF THE GRAPHIC ARTS INDUSTRIES

Vol. 4]

JUNE 1955

[No. 2

In this issue

- ★ We Preach—You Practice
- ★ Magazine Production in India
- ★ Textile Printing
- ★ Casting off Copy
- ★ Prestige of the Printing Profession
- ★ From the Editor's Pocket-Book
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From Our London Correspondent
Modern Machinery & Equipment
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Business Manager
V. S. N. Murthi

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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.

PRINTINDIA is Published
on the 10th of every month

ANNUAL SUBSCRIPTION RATES	
INDIA	Rs. 10/-
Ceylon	Rs. 12/-
BURMA	Rs. 15/-
U. K.	£ 1 Shs. 10
U. S. A.	\$ 5

Editorial & Publication Office:
PRINTINDIA

Proprietors
KUBERA ENTERPRISES Ltd.,

"KUBERA BUILDINGS"

21, Sunkurama Chetty St., Madras-1
INDIA

Phone: VASUNIDHI

Phone: 3006

FOR QUALITY BLOCKS

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Messrs. NEWTON & CO.

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Estd. 1953

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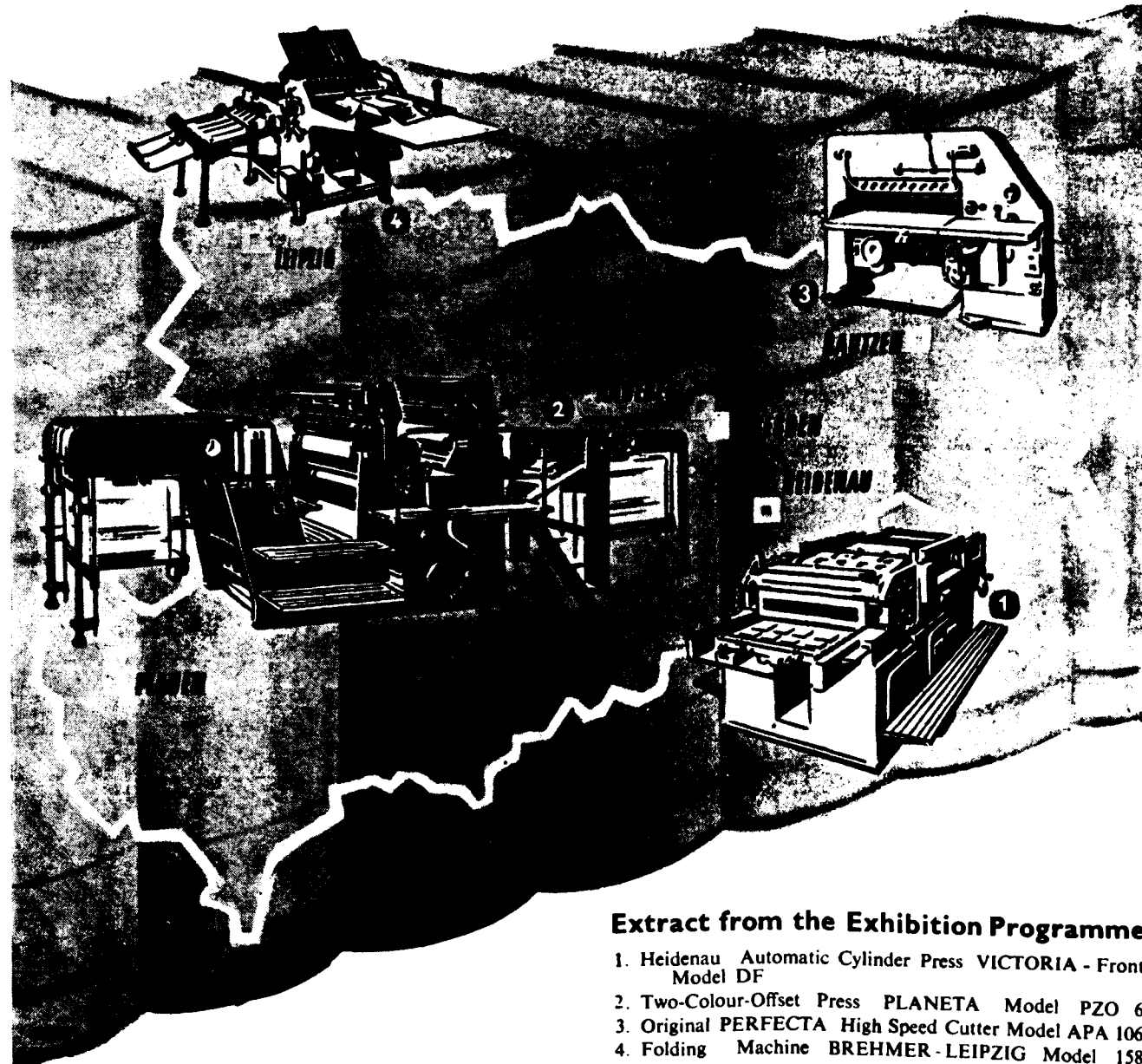
FOR QUALITY BLOCKS

CONTACT :

THE LEADING BLOCKMAKERS OF MADRAS
80 WALLAJAH ROAD :: MADRAS 2
Phone : 86729

POLYGRAPH

MACHINES FROM SAXONY - THE INDUSTRIAL CENTRE
OF ENGINEERING FOR PAPER AND PRINT AT THE IPEX
OLYMPIA LONDON FROM 5TH - 16TH OF JULY 1955



Extract from the Exhibition Programme

1. Heidenau Automatic Cylinder Press VICTORIA - Front Model DF
2. Two-Colour-Offset Press PLANETA Model PZO 6
3. Original PERFECTA High Speed Cutter Model APA 106
4. Folding Machine BREHMER - LEIPZIG Model 158



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EDITORIAL

WE PREACH-YOU PRACTISE !

India is one of the stablest, if not the ablest, democracies of the Free world. All the constituent states of India are *de facto* and *de jure* democracies in miniature. The "Press" is a powerful instrument of power and influence even in an autocracy or dictatorship. In a democratic set-up like that of our own its role is vital, its impact is great and its contribution in shaping, moulding, guiding, educating the citizen and opening the eyes of the unwary politician, the indifferent M. P. or the reckless businessman is mighty.

The previous issue of "Printindia" contained an interesting article on Indian Newspaper Typography, wherein high tributes were deservedly paid to the Printers of our national newspapers. The above mentioned article has spurred us on to the present comment—also relating to the printing side of the newspapers, not to the technical aspect, but to the more important human aspect.

Indian Journalism not only equals but sometimes excels that of the progressive western nations. Now that the Bandung Conference has exploded the myth of superiority, invincibility and versatility of the Occident, Indian Newspapers also, as a part and parcel of the Eastern cult and culture, its art and traditions, can justly feel proud of their achievements in news presentation, coverage, promptness, printing execution, etc. The above list does not include an important item of which also our newspaper editors can pat their backs and satisfy their Ego. This is their impartial editorial which has always reflected the solidarity, unity, integrity of the Nation and extolled its democratic character. In other words, while the politicians sang the praise of our newspapers whenever opportunity was afforded, the newspapers praised their singing. The song and the praise were democratic in tune. Here is Democracy unalloyed indeed !

A peep into any of our newspaper presses will reveal latest machinery, shining floors inside tall and imposing buildings. But the faces of the men who work inside are not so shiny, one has to painfully state. Many workers are under-paid, many do not have any increment for years on end, some get a paltry increment of a rupee or two. Most of them are paid as low as 50 rupees (allowances inclusive) a month while they turn out work to the tune of 500 rupees. There are no proper scales of pay or graded increments. All this has resulted in the growing inefficiency of the newspapers, in every aspect of printing.

One may legitimately ask what is the Department of Labour with its 4-figure salaried Commissioner of Labour and a host of other sinecure offices doing ? We need not have wondered if there were no Democracy in India, no Industrial Legislation to protect the interests of Labour, no Labour leaders like Sri V. V. Giri, ex-Labour Minister, and no platforms and press chorus.

We never misunderstand the politician's game, his vote-getting talk, his evaporating memory once he is in office and the great unsurveyable distance between his pronouncements, promises and preaching on the one hand and his practice on the other. But, we can never understand our national newspapers on whom everyone from the man-in-the street (by which one may also mean a man who has no home and hence who is always in the street) to our Prime Minister Nehru relies too much on, when they talk through their editorials democracy,

fair deal and square meal while at the same time denying these very things to the workmen who set these very editorials, read them free from mistakes and print them! In polished language this is hypocrisy, make-believe, pill-for-the other-man philosophy—in short “WE PREACH—YOU PRACTISE!”

The newspaper proprietors have their reasons for the low pay, irregular insignificant increments, absence of promotions, bad working conditions, frustrated atmosphere, bleak outlook of their printing room. Business is dull. Money-market is tight. Circulation curve is dipping into an all time low. The slump is creeping in.

The real reason behind is this. Most of our newspapers are family affairs, pure and simple. Nepotism is enshrined there as Goddess and worshipped well. The passport to high pay, good increments and promotions is kinship with the boss or the lesser luminaries of the ruling hierarchy. Casteism and communalism are rampant. Under the circumstances it is inconvenient to have fixed rules for appointment, grading, fixation of pay and increment, scales of pay, etc. These will to a certain extent tie their hands in doubling the pay of their sister-in-law's son, nephew's son-in-law, brother's brother-in-law or the man of “our community”. Their only qualification is their relationship. A question may be asked. Why not employ ONLY their relatives, from top to bottom at all levels, that would simplify matters and prevent disgruntled elements? But *who is to do the work?* The relatives are only cashing in on their relationship. Work is another matter. If a non-relative is paid 75 rupees a month for turning out 750 rupees worth of work and is paid an increment of 3 rupees every alternate year, the relative-worker (?) gets 120 rupees a month with an increment of rupees 15 *every year*, relaxed leave facilities and other considerations as advance, loans, etc.

Another interesting feature is the so-called workers' committee convened by the proprietor himself and presided over by a relative and consisting of some “yes-men” who can always be found to betray the majority of their colleagues. This farce of a committee meeting and passing some useless resolutions serves but one purpose—that of circumventing certain provisions of the Labour Legislation. For the rest the committee is bottomless, is never given any credit by the rank and file of the workers and the committee members—the stooges of the boss—the blue-eyed boys of the Proprietor's Parlour—are laughed at in their faces. This goes on from year to year until the back of the middleclass camel is broken.

We do not grudge the fat salaries of the boss' relatives and his weakness for a foreign expert on a four-figure salary. After all one has to keep up appearances also. But why not pay the poor devils also some decent pay and increment; consider their claim for promotion also once in a way; understand their point of view so that they can be made to understand the proprietor's difficulties; in short try to practise at least to a small extent what they preach in their editorials.

It should not be thought that we have any particular concern in our mind in making these comments. But the above will fit any of our national newspapers. As the picture is sad, unrelieved by any hopeful colours, something should be done and quickly before the bottled up discontent and frustration explodes into unnatural and unconstitutional channels. When and if it does so, it will be an unhappy day for the preachers of democratic ideals.

We don't preach when we say “An ounce of practice is worth a ton of preaching”—we only utter a friendly warning—lest it be too late.

We live in a land of great organizations. In another sense we can also claim to be living in a land of great individuals. Our newspapers are our great assets and great organizations in their own way. They are manned by great individuals. The newspaper proprietors should prove their greatness of mind, breadth of vision and a capacity for handling this delicate human problem. If they don't prove, the labour will disprove all their assertions.

The real test for an organisation as it is for an individual is its power to preserve our human values while adding to our national heritage. Let it be remembered that Man is not just another factor in the mechanical productive chain—he is the reason for its very existence.

BELATED ELECTIONS

Among the constituent units of the All India Federation of Master Printers, three State Associations are noted for their age and activity. Poona, Calcutta and Madras are the oldest and represent the major number of Printers in this subcontinent. The Madras Printers' and Lithographers' Association has been functioning very well and in no small measure contributed to the success of the February Printers' conference. The present office bearers headed by the veteran, but unassuming, pioneer printer Mr. Philips of the Diocesan Press, Madras, have been responsible for the outstanding achievements of the All-India Printers' Exhibition held at Madras. Like some small fry, these devoted workers for the cause of the Industry and its uplift, *did not* project themselves for cheap publicity. By this, they have made themselves all the more endearing to the Printers of Madras in particular and of India in general.

The Election of office bearers of the Madras Printers' and Lithographers' Association has been long overdue and for some reason not known to us, is postponed. It is the hope of all interested in the industry that early elections according to accepted democratic principles will be held ere long and the office bearers so elected will function with renewed vigour. Thus the Madras Printers' and Lithographers' Association would have written another page of silent history.

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Magazine Production in India

By
"TRAINED COMP."

The author, a keen technical observer, who reviewed Indian national newspaper production, now narrates the production of magazines in this part of the world. Our magazines like our newspapers have caught the eyes of the world by their neat exterior and interesting interior, says the author. Let us keep it up

India has always been one of the largest consumers of magazines. It is natural that she is today one of the major producers of magazines also. But, how much does she produce? How good are her magazines? How can they be improved? These and other problems will be discussed in these pages.

Our newspapers, I said last month, are no match to the British newspapers like the "Daily Express" with four million copies, and the "Daily Mirror" with five million copies daily or the 1,700 newspapers that run coast to coast in the United States. If the American newspapers do not boast of a seven figure circulation, they do rightly feel proud of the 150 page Sunday editions of newspapers, thanks to the phenomenal supply of pulp from the North American forests and newsprint from their mills. The largest circulation in the world is 60 lakhs and the honour goes to a Japanese newspaper. The highest figures for U. S. is 3 million or 30 lakhs. We printers should remember one thing before criticising newspapers: Daily printing fifty lakhs of copies and distributing them is no easy matter. Equally difficult is gathering articles for and printing 150 or more pages of Sunday editions. This brings us to the subject of this article: Magazine production.

Our definition of a newspaper is "a periodical regularly issued at certain intervals not longer than a

week". As no magazine is or can be issued daily we can define a magazine as "a periodical published at intervals not more frequent than a week". The magazine is a little more permanent than the newspaper and hence a little more care is taken in its planning and production. As it is not issued daily, the printers and publishers have a little more time, between them to avoid the waste of haste. Further, a mistake committed in a magazine is not taken as lightly as one found in a daily nor so quickly forgotten. For instance that mistake about the authorship of an article for which the author apologised immediately, saying that it was taken from some other magazine written by somebody else, all this in two important dailies of Madras, will not be forgotten before the fast-drying ink on the newspaper dries. First, the mistake in such an important thing as the authorship of an article, about which one should have no mental reservations, would never have been committed at all, had it been a magazine. Further there would have been much time to find out such cases before it reaches the final stage for printing. But, again an Indian language weekly, very popular in the south comes to the rescue of the aforesaid dailies: This weekly published an article with the wrong author's name. The author, this time scoring one over the printer, reminded, after seeing the wrong name under his article, the eminent editor of his responsibility. The editor was quick in

confessing the mistake in the next issue.

The famous American weekly "Time", famous in its Anti-Indian and Anti-Nehru outbursts had once written linking a mountain hundreds of miles off with an Indian town. The mistake was pointed out by an Indian reader, which the proud magazine published. In the same magazine many more factual errors are printed about our country. But that is beyond the scope of an article which examines typographical details.

Death rate of printing presses is remarkable, according to an article in *Printindia*, and the cause is attributed among other things to mismanagement. But mortality among magazines of our country are excelled only by human mortality here. Magazines come and go, but there are always certain periodicals that continue for ever, without being infected by the epidemic among their kind.

Low literacy, lower purchasing power, the babel of tongues and the shyness of capital as well as the risk involved in starting and holding on to a magazine apply equally to this industry as it does to the production of newspapers. There is this difference between newspaper production and magazine production: All newspapers own their printing plant while many magazines cannot afford the luxury of a press. Only the prosperous

weeklies or those linked to dailies boast of a press exclusively their own. The advantages in having one's own press are obvious. For one thing, they need not depend upon another press to keep the deadline. For another, all the departments and their equipment are tailored to the needs of the magazine which solves half the difficulties of production. The other half is solved by the enormous saving in production costs. Besides all these, there is ample scope in a self-owned press for change of format and trying out new styles and technique, making last minute alterations in matter, suiting matter to available space and other similar adjustments which cannot be dreamed of when the magazine is printed in an outside press.

SIZE OF MAGAZINES

We, in India, have quite an array of assorted sizes of magazines, from the outsize folios, through the square quartos to the compact octavos. Of late there has been a tendency among a number of magazines to reduce their size from a quarto to an octavo. One would have thought that the austerity days are back again. Examples of Madras magazines adopting a new smaller page size are, *My Magazine*, *Dinamani*

Kadir and some Bombay magazines which slightly reduced their size. Page size reduction has invariably lead to increase in number of pages or bulk of the magazine. While the folio is too unwieldy to handle or carry about without folding, the quartos offer great freedom in layout, arrangement of pictures, headings, etc. The octavos are cramped for space and resemble the stiff appearance of the daily newspaper in which white space is hard to find. The function of the magazine is quite different from that of a newspaper. Even regular subscribers of newspapers sometimes never read a line of it on certain days, and their newspapers are left on their tables untouched; meanwhile the next day's paper comes along. Not so with a magazine. It is bound to be read by more members of a family, not only because it is informative, but because it is entertaining too. Many features which would not find a place in the newspaper are added to the magazine fare. Newspaper-reading is considered as a painful duty or a cruel necessity by the modern businessman, lawyer and politician. Magazine-reading is a pleasant pastime, an agreeable diversion, a healthy habit. In order to serve its purpose well, the magazine should be produced well, it should be emi-

nently readable unlike the newspaper. A good type face should be used.

SUITABLE TYPE FACE

Periodicals are produced for the most part by letterpress with one or two in offset or gravure. The *Times of India Illustrated weekly* and *Filmfare* prefer the square serified type faces like the Rockwell for perfect reproduction by gravure. The offset magazines use same type face as for newspapers, i. e., Excelsior, Century, etc. The Letterpress magazines use the same or Ionic and similar type faces. *Times Roman* has scored a very high popularity with magazine printers and I hope, with readers. Bodoni comes as a close second. Society and fashion magazines use Garamond, Centaur and other light, classic or old style faces.

FAIRFIELD MEDIUM

The Linotype Co. has brought out a type face called Fairfield Medium. This is supposed to be a favourite with art directors, designers and printers. This has been found suitable for magazine work through Letterpress, Offset or Gravure. This versatile type face has been used by such leading magazines as the *Reader's Digest*, the *Esquire* and the *Harvard Business Review*. The letter structure of



Top 1. A Typical cover of Tamil Weekly "Kalki"

2. A Good cover design of Telugu "Detective"

Bottom 1. A Fine cover of Hindi "Chandamama"

2. A Striking cover of Eve's Weekly

The cover of a magazine offers great scope for artistic ability and production of fine printing. Creative designs have a permanent value and are preserved long after the contents of the magazine have become obsolete. A shabbily produced cover or one printed hastily has the stamp of cheapness all over it.

The cover of the Detective (a Telugu monthly popular all over India) is striking in conception, dynamic in design and excellent in execution. It has good background that throws the picture in sharp relief, the composition of colours, their selection, placement and their relationship have all been handled admirably first by the artist and finally by the printer. The depth of design and scale are marvellous. All these have given the "Detective" a cover that dramatically attracts the eye and announces the contents of the magazine, intrigue, crime, detection and the ultimate triumph of good over evil proving that Crime doesn't pay.

Other covers reproduced on the opposite page are typical South Indian, one of the Tamil weekly "Kalki" and the other of "Chandamama" (Hindi). Both have been well drawn and superbly produced. Eve's Weekly which recently took to tricolour covers has a nicely printed photographic reproduction.

Fairfield Medium has remarkable sharpness, combined with that subtle degree of interest and variety characteristic of all good types. It prints well by almost every process. Its weight, legibility and decorativeness without excess make it a good choice for magazines. The old style figures balance well with the text and the lining figures are ideal for tabular matter. This contemporary face has a bit of an old style flavour, which adds dignity, strength and grace to the printed matter. In short, the matter printed with Fairfield speaks firmly without shouting and conveys the message with assurance and without ostentation. This is exactly what a magazine should do.

PAPER-TYPE HARMONY

While typographical purists wrangle over what type face is good on what paper, it can be safely laid down that certain type faces print well on rough papers, antique or feather-weight, soft, "hi-bulk", offset and similar varieties while they do not come off well on coated and smooth or enamelled papers. Similarly there are other type faces which are ideal for the smooth-finish papers while not so good for rougher surfaced papers. Old Style faces with intricate details in serifs, hairlines and terminals are suitable for antique finished papers while Moderns with straight contrasty lines, angular serifs, like Bodoni are suitable for coated stock. Midway between these two extremes, well-tailored type faces like the Baskerville and Granjon are good for S. C. and other smooth surfaces. A reviewer in *British Printer* says Baskerville "is not an ideal choice for combination with heavy weight halftones on a coated paper". Eric Gill's Perpetua, now very popular with magazine printers comes off well in Art, Matt Art as well as Newsprint. Perpetua for the larger sizes and Times for

the body sizes form an excellent combination.

Outside these, there are the versatile sans-serifs and square serifs, good for any paper, any process. Their uniform tone and colour adapt them for any and every form of printing. A word of caution is needed regarding the use of these two. In their lighter variations, they do not look so good on coated paper for text. The medium is good for text of magazines. All their variations are very useful for headings and display.

HEADINGS

Hand lettered headings with reversed lettering for regular features are generally used by the well-to-do magazines. This is more economical than buying many job founts. Further, hand-lettering allows pictures or patterns to be used in conjunction with lettering, appropriate to the subject matter of the article. Often lettering assignments are handed out to artists who are new to lettering. It should be made clear that lettering requires typographical knowledge and understanding of the various classes of faces, their weight, tone, colour, etc. As this has not been realized by magazine printers, who seem to think that an artist should be able to draw anything, very bad lettering litters the pages of our magazines. Large size types are always preferable to badly lettered headings. An uncouth heading spoils the whole appearance which may be otherwise good.

Setting in columns is the usual way magazines are produced. Bleeding pictures or blocks printed flush are the fashion now. Periodicals printed by gravure have the most pictures, all printed flush. Even those with margins have a very narrow margin around. The Indian language weeklies are the

most badly printed of the lot seen from every angle. Their poor capital resources, poorer advertisement revenues and poorest circulation with the danger of closing down are the causes for bad production. Bad production is also in turn the cause for poor circulation, etc., thus establishing a vicious circle.

PAPER

Newsprint is widely used with a few notable exceptions where mechanical glazed is preferred. A handful of magazines print on art paper. But their price is prohibitive and they live a precarious life from issue to issue except the well-established ones. The Cinema magazines, in general, have adopted a uniform pattern, i.e., newsprint or mechanical glaze for text and art paper for cover with a tri-colour halftone on it. These covers are the only attractive things about these cine magazines. Printing inside is always a nightmare to go through. Varnishing of covers has now become common for all magazines using a tri-colour block for cover. In addition to imparting high gloss, varnishing protects the cover print and keeps the magazine new for quite a long period. Besides it enhances the appearance of the magazine as a whole. Here again over-zealous printers put a heavier layer of varnish, do not care to dry the varnished stock carefully or use the wrong type of varnish. Clean and careful handling is called for in printing on art paper and varnishing.

Wire-stitching at side or saddle stitching at the centre by wire is the usual binding operation for magazines. Wire stitching by machines run by power, but fed by hand are used. Some printers find it cheaper to handstitch by thread than wire stitching. India is still famous for cheap labour.

(Continued on page 25)

Textile Printing

By
SRI T. KRISHNA

Printing is generally classified into Typography, Planography and Intaglio. But I prefer to classify the Printing process according to nature of the material that is printed upon: Printing on Paper, Printing on Cloth, and Printing on Tin, Plastics, Glass, Wood and other materials not covered by the first two classes. Each material calls for special inks depending upon the nature of the surface, its absorbency and other qualities, special impressing surfaces such as rubber or harder metals than lead, and special treatment of the printed surface before and after printing.

INDIA, A PIONEER

Textile Printing or Printing on cloth—cotton, silk, linen or other fabrics—is older than Printing on Paper and hence had a greater lead in Printing machinery, inks, etc. India manufactured in her ancient past, internationally famous fabrics such as Dacca Mull and she is famous even today for her silks of Kollegal, Rajahmundry, Benares, her Calicut checks, printed voiles (e.g., Khatau), Bhawani Carpets, etc.

Hand Printing of textiles was in vogue in India before any other nation thought about it, just as tailoring or stitching was quite common in India before the Greeks ever imagined of a tailored garment. Neatly printed sarees and other wearing apparel adorn the gents and ladies painted in the Ajanta Frescoes which afford ample proof of the above.

OLD METHODS

The Oldest method of decorating textiles was by impressing woodcar-

vings smeared with ink on the cloth. Later came the stencils. Both these methods are still current in the country-side in spite of competition from giant mills. But they depend much upon the skill of the man or woman for uniformity of inking, proper alignment of designs, freedom from smudges, filling in etc., whereas mechanically controlled processes give several colours in one continuous operation.

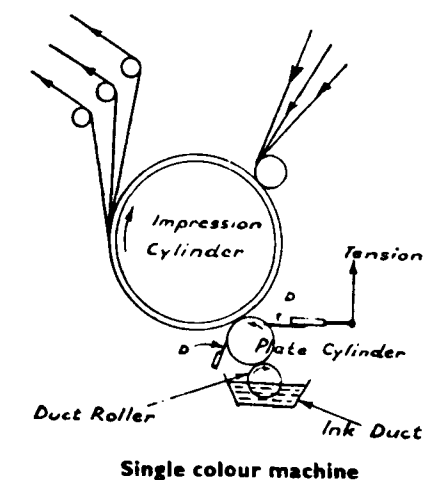
Cloth printing machines fed from a continuous roll of cloth were perhaps the forerunners of our reel-fed rotary presses which are the fastest type of machines available for the printer today. Fabrics of all materials may be printed and there is not much of a difference between cotton textile printing and silk, woollen or linen printing. Before any fabric can be printed some preparation of the fabric is necessary and beating machines, brushing machines and cleaning machines are used for the purpose. These adjust the tension of the fabric, brush it clean from all traces of dust by air blasts, beating and kindred processes. Shearing machines are employed to improve the surface of the fabrics by cutting off the nap and loose fibres and afterwards brushing. During preparation, dyeing or other treatment, fabrics usually shrink in width, while their weft threads become askew. (Here, it is worth comparing the behaviour of paper after absorbing moisture from the air. The cross direction expands due to the fibres bulging, while the stretch in the machine direction is not appreciable. Again during dry weather the shrinkage in the cross

direction is enough to upset register while in the machine direction it is not noticeable.) There is a machine known as clip stretching machine which allows stretching of the fabric to a desired width and prevents the shape of the fabric from becoming out of square. Before printing, fabric is prepared or mordanted in a preparing range. In this the cloth is impregnated with a liquid and dried by means of mangles.

Cloth printing inks look like paste and the colours are mixed in colour mixing pans, which look like a part of a Printing Ink manufactory. These are mechanically agitated and are fitted with swivelling apparatus. Manually operated colour mixing pans are also used.

SINGLE COLOUR MACHINE

The simplest kind of cloth printing machine consists of a cylinder over which the cloth passes. At the bottom of the cylinder is the colour box (printer's ink duct or the gravure-man's ink reservoir) with a ductor roller which transfers directly the ink to the plate cylinder. A sharp steel blade called the doctor

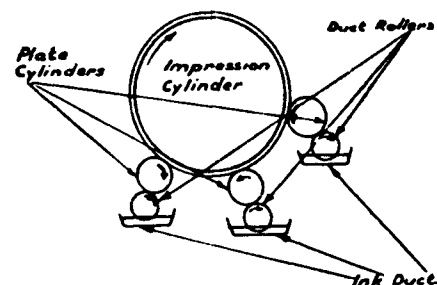


removes excess ink from the plate cylinder. The design is engraved into the recesses of the cylinder, which are filled up with ink and the raised non-printing portions are cleaned by the doctor. The clarity of the printed design on the cloth is dependent on the efficiency with which the doctor removes excess colour from the smooth top parts of the plate cylinder and leaves the colour within the recesses of the plate. The length of the doctor is equal to the width of the plate cylinder, width from 2 to 3 inches and upto 1/16 inch thick. The cleaning edge of the doctor is bevelled and its pressure adjustable by means of levers. The doctor gets a small traversing motion by means of an eccentric drive, so as to make its wear even.

The impression cylinder (called the pressure bowl) is of cast iron, lapped with a dozen thicknesses of linen wool. In order to give the printing surface elasticity, the cloth to be printed is fed not alone, but with two other webs: a blanket and a back-grey cloth. The staining of the blanket is avoided by the intervening back-grey and all the three, viz., the cloth to be printed at the bottom, the back-grey next to it and the blanket, pass through a freely rotating drag roller which directs the cloth to the impression cylinder or pressure bowl. Three guide rollers on the other side of the impression cylinder guide the fabric which flows continuously over the pressure bowl, after getting impressed with the design from the plate cylinder.

MULTI-COLOUR MACHINES

For printing in more than one colour, a machine is employed which has one common impression cylinder around which are situated the colour units. Each unit consists of an ink reservoir, a doctor roller, a plate cylinder and a doctor. It is obvious



Three colour machine

that each plate cylinder will have only those portions engraved which are to appear in that particular colour. The plate cylinders are adjustable laterally and also above or below for ensuring register. The Plate cylinders are also capable of independent rotation. Machines for printing fancy handkerchiefs in as many as fourteen colours were available as early as 1920. Pressure between the impression cylinder and the plate cylinder may be by means of nipping plates or by springs, the latter being preferred for multi-colour printing machines.

SAMPLE PRINTING MACHINE

For printing of sample patterns a simple machine is used as printing the sample on the regular machines will interfere with production. This serves the purpose of a power proof press, but looks like a Crabtree rotary. This is simple in construction and capable of printing patterns in several colours. Here the plate cylinder is raised by means of a cam until it comes in contact with the rotating impression cylinder. The printing roller i.e., the plate cylinder then rotates and the fabric is printed. At the end of one revolution of the printing roller, it automatically lowers. The fabric is then drawn back by hand, any slackness being compensated by the compensator and another plate put on the machine. The ink also is changed and after adjusting for register, the second colour is printed as before. The printed fabric is

rapidly dried by steam in a steam chest provided.

SUCTION CLEANING DEVICE

We have seen that the cloth to be printed is not fed alone, but with a blanket for elasticity with a back-grey between the two to prevent staining the blanket during printing. The back-grey has to be bleached and washed before using again and difficulty was experienced in removing certain kinds of inks. Therefore, a Printing machine with a rubber covered impression cylinder was evolved so as to give the resiliency necessary for perfect transfer of the design on to the cloth. As the rubber becomes marked with ink while printing, it is washed with water while passing through an attached suction cleaning apparatus. This consists of a hollow box extending across the impression cylinder and through which water passes and is withdrawn by a suction pump. The box itself exerts a scraping action on the rubber surface of the impression cylinder. This loosens the adhering colouring matter to be readily removed by the washing water. A lint doctor in front of the washing device removes lint from the rubber surface. This washing device can be fitted to any cloth printing machine and is especially useful while using a strong alkaline or acidic ink. Trouble in cleaning back-greys is avoided by using the washing device.

DUPLEX MACHINES

Machines for printing both sides of cloth are called Duplex machines. These consist of two sets of plate cylinders and impression cylinders and separate sets of blankets and back greys traversing each impression cylinder. The construction of the Duplex Printing machines is similar to those of ordinary cloth printing machines. The construction of plate cylinders, impression cylinders, ink ducts are similar. To

(Continued on page 27)

Casting off Copy

By

R. N.

In this, the second of a series about casting off copy, the author says that the importance of correct casting off cannot be over-emphasized. Every printer should acquaint himself with the scientific method of arriving at the space required to set given matter or the suitable size of type to fill in a given area. The latter is copy fitting elaborately explained with examples in this article

Copy for an eight page booklet is given to a printer. In what size of type and what face of type will he set it? What thickness of lead, if any, would he use? The matter so set should not exceed the eight pages nor should it fall very short of those eight pages. The process of finding the correct size of type and leading to fill a given area is called copy fitting.

It will be seen that the problem of copy fitting is the reverse of casting off copy. In casting off we are given the size of type, as well as that of the page and are asked to find out how many pages of that size will the copy make in that size of type with particular thickness of leading or solid. But in copy fitting we are asked to find the size of type having been furnished with the total number of pages and the size of page.

The theoretical method which is based on many assumptions is a very approximate way of finding the size of type. This method has, as its merit, quickness in arriving at the result. The number of words (a) to be printed are found out by actual counting or by striking an average in the case of uniform or good copy. The total number of words so found out (a) is divided by the number of pages (b) the finished work is to make. This will give the number of words that are to go in one printed page (c). The measure of each type line (w) in the printed page in points is multi-

plied by the depth of the page in points (d). This gives the point content (e) of the page or the whole type page area. Assuming the length of a word is 3 ems the total em content of words in one printed page (f) is found out by multiplying the number of words in a page (c) by three. The area in points of the printed page (e) divided by the em content of the page (f) will give the point size of type to be used.

$$\frac{a}{b} = c$$

$$w \times 12 \times d \times 12 = e$$

$$c \times 3 = f$$

$$e \div f = \sqrt{t}$$

Where (a) is number of words in copy

(b) is number of pages to be printed

(c) is number of words in one printed page

(w) is width of page or measure of type line

(d) is depth of page

(e) is point content of printed page

(f) is em content of printed page

(t) is area of point size type to be used

EXAMPLE

The MS for an eight page booklet contains 3,376 words and has to be printed to page size 22 ems by 40 ems.

The total words are for eight pages and by dividing 3,376 by 8 we get the number of words for one page, i.e., 422. Each word is theo-

retically 6 ems or three ems long. Therefore the em content per page will be 422×3 . The point content or area of a printed page is $22 \times 12 \times 40 \times 12$. Therefore the type size to be used = $\frac{22 \times 40 \times 12 \times 12}{422 \times 3} = 100$.

The square root of 100 is the type size, i.e., 10 pt.

In the case of leaded matter the number of leaded lines per page should be taken into account in arriving at the type size.

EXAMPLE

A MS for a 16 pp. booklet is to be set to 20×36 ems size middle leaded. The number of words in the copy is 3,200.

Point content of printed page = $20 \times 36 \times 12 \times 12$

Em content of words in one page = $\frac{3,200}{16} = 200$

$\therefore$ Type and lead to be used = $\frac{20 \times 36 \times 12 \times 12}{200 \times 3} = 172 \& 12 \text{ point}$

type with 2 point lead is the answer. $(12 \times 14) = 168$

The more accurate method will be to find the correct em content or number of characters in the copy and divide it by the number of pages the matter is to make. Then for the size of the page the number of characters that can go in one inch can be found out by referring to the copy fitting chart for the particular type face and size.

The difference between the first method and the second lies in the fact that the first assumes the width of letters to be uniform and the length of words is also assumed to be of a definite number of ems *i.e.*, six. These two assumptions are not always likely to be accurate. But in the second method the copy fitting chart lays down the number of characters that would go in an inch of space or characters in a line and by referring and checking with the available space we can pitch upon a probable size that will fill the required space.

EXAMPLE

For a 24 page brochure to be set in 46 x 24 ems the nearest type size and lead is to be found out. The character count shows the number of characters is 50,000.

The number of characters per page = 50,000 divided by 24 = 2083

The number of characters per line of the face to be used by a reference to the copy fitting chart for 46 ems width is 84, 90 and 100 respectively for 10, 11 and 12 pt. The number of solid lines in a page measuring 26 ems of twelve point is respectively 26 lines, 28 lines and 31 lines for 12, 11 and 10 pt. The number of characters that should be accommodated in a page has already been found out to be 2,083.

If we use 10 pt. the number of characters in a page =

$$31 \times 100 = 3,100$$

$$\text{If we use 11 pt. } 28 \times 90 = 2,520$$

$$\text{If we use 12 pt. } 26 \times 84 = 2,184$$

$$\text{If we use 12 pt. one pt. lead} =$$

$$\text{lead lines } \frac{26 \times 12}{(12 + 1)} = 24$$

$$24 \times 84 = 2,016$$

∴ 12 point type with one point lead will be the nearest point size type and lead that should be used to fill in the characters given in the copy in 24 pp. of 46 x 26 ems

measure. Any smaller size will be gappy and any bigger size cannot be accommodated within the number of pages given.

DISPLAY COPY FITTING

For Advertisement and display work, copy fitting methods should be ideal to avoid resetting of copy and unnecessary labour and waste of time. The layout is drawn to scale preferably on an em graph sheet (6 lines to the inch either way). Type sizes, blanks, leads, rules, borders, blocks—all are marked in appropriate positions to scale so far as depth is concerned. As regards the width of letters the copy fitting chart gives the number of characters that can be accommodated in a linear inch. A trained layout-man correctly draws the width of characters of large sized lines and the small sized lines which are not completely lettered but generally indicated by straight lines, he draws the exact number of lines that are required for the matter. Thus the advertiser gets the maximum out of his copy. If too small a size is used by an evercareful layoutman who is anxious to be on the safe side, the party is affected as he doesn't get the maximum out of his advertising space. Too large a size may, if at all accommodated within the available space, spoil the appearance of the job and defeat the object of the advertisement. A rule of thumb method to find the size of type that can be used is to allot an em per character as well as for a punctuation point or space and multiply by the number of characters to check if they could be accommodated.

EXAMPLE (1)

In a measure of 24 ems 24 characters are to be accommodated. Assume each character is one em or half em. Total

points available is $24 \times 12 = 288$. A 24 pt. character will be 12 pt. wide. Therefore 24 pt. type will just fill in. If 18 pt. type is used it should be a wide fount (*i.e.*, expanded), or it should be inter-spaced or letterspaced.

EXAMPLE (2)

There are 144 characters to be accommodated in a measure of 12 ems by 3 ems. The copy fitting chart shows 12 characters to a linear inch. of 12 pt. So, 12 inches are required. Each line makes 2 inches and 3 lines will make only 6 inches which is insufficient. An 8 pt. face gives 18 characters to the inch.

$$\begin{aligned} \text{No. of characters per line} \\ &= \frac{12 \times 12}{4} = 3 \text{ ems depth} \end{aligned}$$

$$\begin{aligned} \text{No. of 8 pt. lines in 3 ems depth} \\ &= \frac{3 \times 12}{8} = 4 \end{aligned}$$

∴ If 8 pt. is used $36 \times 4 = 144$ characters can be set.

8 pt. type is the answer.

Printindia for September

Printindia is prepared and printed to be read, bought to be read and sought after to be read, and having read, to be thought after until the next issue.

In order to save the time and labour of leading, frequently smaller faces cast on a bigger size body are used. This would give a beard equal to the thickness of white space required and give the appearance of being leaded. In such cases, the width is to be taken from the point size of the face as usual and the depth from the size of the body of type inclusive of the beard. Thus if a 10 pt. face on 12 pt. body is used, for finding the content only 10 pt. is to be used. But for the number of lines 12 pt. should be taken into consideration.

(Continued on page 30)

PRINTINDIA

From Our London Correspondent

F. & D. BROWNLEE

BUREAU FOR INTERNATIONAL CONTACT

The Council of Administration of the International Bureau of the Federation of Master Printers will meet in London during the IPEX Exhibition in July. Among the business which will be discussed are proposals for the international classification of type faces and international production standards. The yearly meeting of the Secretaries of the member organisations will also take place in London, and separate conducted tours of IPEX are to be made by the Secretaries and also the Council members.

The Bureau represents many countries including Austria, Belgium, Denmark, Finland, France, Germany, Great Britain, Holland, Italy, Luxembourg, Norway, South Africa, Spain, Sweden, Switzerland, and the United States and since it has renewed its activities after the War has developed into a very useful medium for the general improvement of the printing trades all over the world. In addition to the exchange of technical and administrative ideas internally, the Bureau plays an important part in promoting human contact between the people of different nations. Their International Congresses have been held in London, Stockholm, Budapest, Utrecht, Cologne and Gothenburg, and the next Congress, which is to take place in 1957, will be held at Lausanne in Switzerland.

NEW ELECTRIC PROOF-PRESS

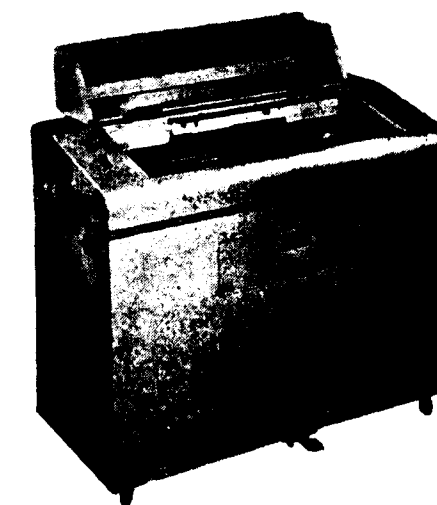
From the House of Hunter-Penrose Limited comes news of an

electric self-inking galley proof press. Following the modern trend, this machine is totally enclosed, even to having a plastic dust cover which can be pulled into position over the bed when the press is not in use. A two-tier paper shelf and a strip light mounted to illuminate type matter completes an attractive looking machine.

MECHANICAL FEATURES

The whole of the mechanism, including the motor, is mounted on anti-vibration rubber mats and the method of motor mounting ensures that the driving belt remains taut at all times, without needing adjustment. Slackness in driving chains can be adjusted simply and quickly by means of two control knobs situated on the side of the cabinet.

The movement of the rollers, both inking and impression, is foot-controlled and can be operated intermittently or continuously. The progress of the rollers is around and under the press bed, the forme



Hunter-Penrose electric self-inking galley Proof Press

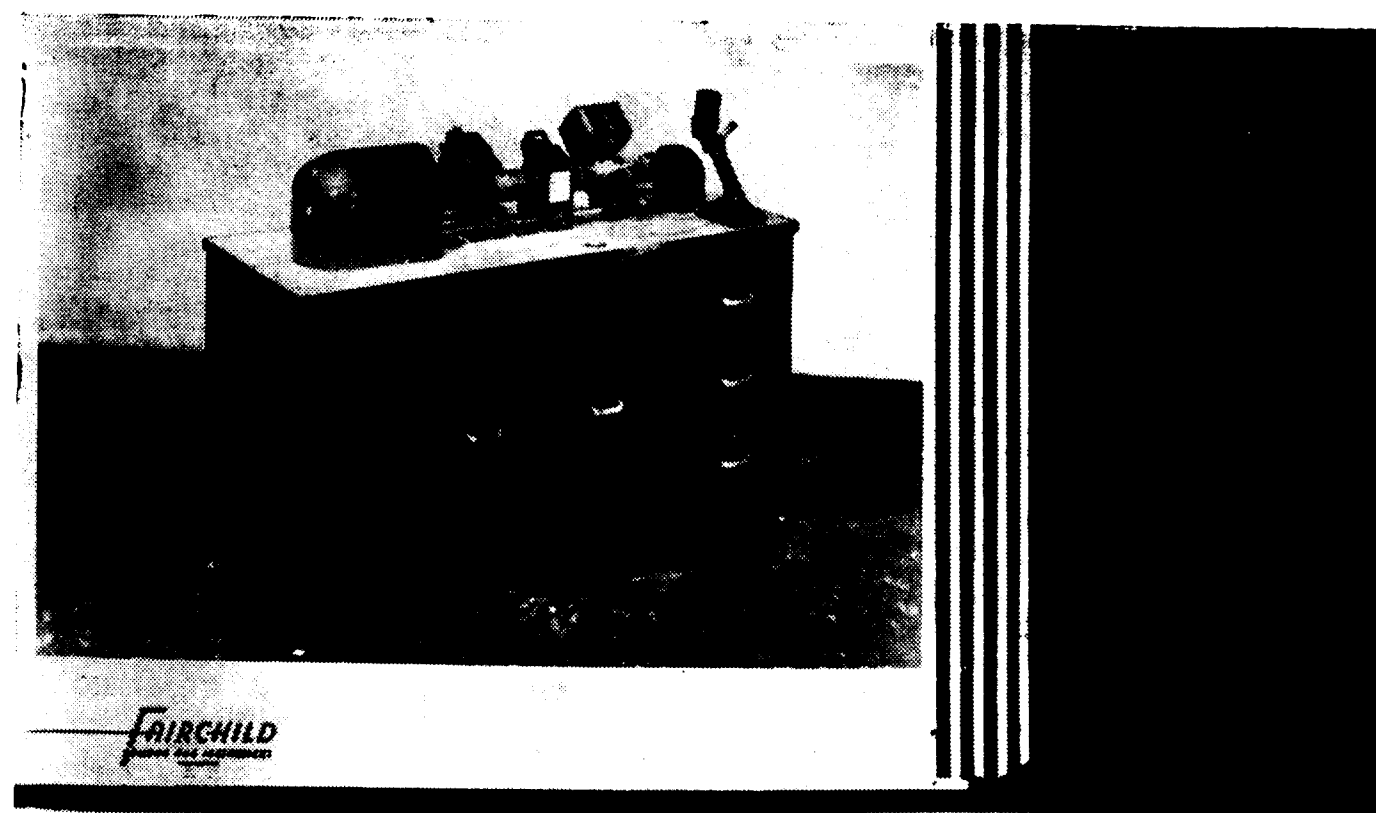
rollers coming into contact with the revolving inking disc situated underneath the press bed. A special braking arrangement ensures that all rollers are completely clear of the bed when not in motion. The machine is manufactured in two bed sizes, namely 29" x 10" and 29" x 15", and upto thirty-six proofs per minute can be obtained, depending of course upon the deftness of the operator.

ALUMINIUM FOIL LITHO PLATES

A demonstration of a new plate-making material, a pre-sensitized aluminium foil suitable for the preparation of litho plates for both office machines and large presses, was one of the main features of a Symposium on Photomechanical Techniques held in London earlier in the year. This was organised jointly by the Scientific and Technical Group of the Royal Photographic Society and the British Federation of Master Printers.

The new material was described by M. Hepher (Kodak Ltd.) at a session under the chairmanship of Dr. V. G. Harrison (Patra). Mr. Hepher stated that it had a sensitive coating of a remarkable stability and that processing procedures were quite simple. The foil had been used successfully in 3-colour reproduction on office litho machines. Resultant plates were of high fidelity, and over 30,000 copies of a line original had been run off from a single plate. It had a shelf life of not less than two years under normal storage conditions.

(Continued on page 18)



First Batch of SCAN-A-GRAVER PLATES Arrive in India

PRINTINDIA was the first in this country to acquaint our readers with a detailed account of the Scan-a-graver with illustrations (See page 37 of July 1954 issue). We are now reproducing some of the first plates to reach the Indian shores, made on the Fairchild's Scan-a-graver. The plates were supplied by the Sole Agents for Scan-a-graver Messrs. Indo-European Machinery Co., Ltd. and mounted by the well-known block-makers M. C. Appasamy Chetty & Co. The Three plates show two views of the Fairchild's Scan-a-graver and direct mounting of plates made on the Scan-a-graver for rotary printing. Scan-a-graver plates may be duplicated by Stereo or Electro or mounted as they are for direct printing.



From Our London Correspondent

(Continued from page 15)

MERITS OF CONTACT SCREENS

In a paper on "Tone Reproduction in Offset Lithograph", Dr. Harrison, G. A. Mitchener and L. E. Lawson (Patra) spoke on the relative merits of cross-line and magenta contact screens. Their opinion was that both fell far short of the requirements for satisfactory tone reproduction. The highlight reproduction of both types was similar, but in the shadows contact screens gave the worst reproduction. Patra had examined a batch of contact screens obtained from America and had found that their shadow contrast might be more than five times the highlight contrast. It was stated that the use of filters for controlling contrast with these screens was unsatisfactory, since the contrast varied so much between shadow and highlight.

PREVENTION OF MOIRE PATTERN

A number of other interesting papers were read at the Symposium, including one by Dr. D. Tollenaar (I. G. T. Amsterdam) on moire patterns in four-colour printing. This effect could be considerably reduced by using a special type of screen (Schulze screen) for the yellow printer instead of the conventional Levy Screen. The difference was that the Schulze screen had an hexagonal dot formation, whereas the other had a square shape.

Mr. F. G. S. Cackett (Brown, Knight and Truscott Ltd.), speaking on "Positives for Photolithography by Chemical Reversal", said that film was the best material for chemical reversal and, as this was necessary for much work that had to be patched up, its use was particularly appropriate. While some colour work had been done, the

method was at present most suitable for single-colour jobs with "lith" screens. The relationship between densities and dot sizes of multi-colour half-tone images was discussed by F. Pollak (Kodak Ltd.). The speaker said that with equal dot sizes of the image components, a neutral grey scale could only be obtained if restrictions were placed on the concentration and colour of the inks.

FAIR CHARGE FOR SETTING IN LESS THAN FIVE MINUTES

An interesting chart for assessing typesetting charges has been devised by Vincent Steer of Orpington (Kent). This claims to assist the print buyer to assess the fair charge for setting any displayed advertisement in three minutes, simply by identifying the size of type used for the body matter and then measuring the type area in 12 point ems. The chart then gives information on the number of hours it should take to set, and over-charges are shown up immediately. This new "Lightning Estimator", which should be useful for estimating setting charges at the layout stage when new advertising campaigns are being planned, is on a printed sheet, and there are four duplicated pages, giving full instructions as to its use.

HOARY HOUSE OF BERTHOLD

The "British Printer" is running an interesting series of articles describing notable typefoundries of the world. The most recent of these relates to the Berthold Typefoundry in the Western sector of Berlin. This was established in 1858 by Hermann Berthold as a small workshop for making brass rules, and subsequently grew into the largest brass rule factory in Germany.

Berthold was commissioned by all the German typefoundries in 1879 to establish a standard typographical

measure and to manufacture gauges for its universal application throughout the German printing industry. These Berthold Typometers became the basis of the Didot point system in Germany and many other countries.

Despite extensive damage during the last War, full production was resumed by 1949, and Berthold products are exported to about 58 countries and are cast on the Anglo-American point system as well as on the Didot system in use throughout continental Europe and many other parts of the world.

Many distinguished designers of international repute have co-operated with the Berthold foundry, including Herbert Post, Martin Wilke and Gunter Gerhard Lange. In addition to contemporary display designs, Berthold has also been responsible for the revival of classic faces such as Walbaum, but in the early years of the nineteenth century and re-popularised in modern times throughout the world. The fashionable revival of nineteenth century display types has received its contribution from Berthold with re-cuttings of Normande, Normande Italic and Normande Condensed, and in addition to its wide range of roman alphabet type design, the foundry's international connections have resulted in the growth of a very extensive collection of non-roman founts, including orientals such as Sanskrit, Amharic and Tibetan, as well as Greek, Arabic and Hebrew.

A more recent activity has been the development of poster letter in chemical-resistant plastic and non-corrosive light alloy, both of which are virtually indestructible under normal conditions. Spacing materials cast in light alloy are also available in very wide variety, and mounting quads in various heights, including corner clip mounts and angled wood-cored mounts.

Prestige of the Printing Profession

By
SRI S. GIRI

This is the second of a series of articles dealing with better management. It is needless for us to say how important good management is to the industry. The author, ripe in experience, feels the pulse of the trade and forecasts a golden age for printers. Printindia wants that era to start forthwith

The days when printing was considered the worst investment, and the last profession one should turn to, have happily gone. The day when a father disdained giving his daughter to a printer in marriage has gone too. Since then, the industry has attracted many enlightened intellectuals to its fold. To that extent the industry has benefited by shining as a noble profession. But there are many who live *on* printing, unlike the foregoing who live *for* printing. At the hands of these, the industry suffers and hence there is much mud-slinging on the printer by the print-buying public. Even these class two printers are better than class three, who are living *in* printing. They are just part and parcel of the equipment of the press and may well be taken into the stock book of plant. They are the people who just watch the clock, watch the calendar; count their pay or income and pass as printers. These inert, static fixtures make the industry the dumping ground of outcasts of other industries, failed cinema magnates, successful oilmongers, struggling toothpowder kings, etc.

Of late however, the stock of the printer in the eyes of the general public is rising. The prestige of his calling has remarkably gone up. He can feel a sense of personal appreciation when in the company of intellectuals, eminent members of the bar or of other learned professions, university vice-chancellors,

politicians and savants. One cause for this is the Printing Industry's economic prospects.

The printer is supposed to be paid enough. Printing is becoming a profession like engineering. The least brilliant printer is regarded definitely more than a top grade official or departmental head. There is no one above him and the printer being a businessman is unchallengeably at the top of the social ladder. This change in status of printers has reassured parents who used to instil into their sons a liking for Government jobs. To-day they look for printing careers for their bright boys. At least one engineering boss wanted a printer as son-in-law. The "Wanted" advertisements in the dailies offer good posts to able men in the industry. It is still possible for a man with ideas to build a sizeable fortune or a good career as a printer.

The Printing Trade in the South has built up a valuable connection with buyers of print in many Afro-Asian countries outside India. One Press in Madras supplies printed books for Burma, Malaya, Ethiopia and South Africa. Languages unknown to anyone here are printed from reprints by photo-offset, but for which process, such work could not have been undertaken in the absence of type in that language and compositors and proofreaders knowing that language. This is by no means an inconsiderable

contribution to the world of print by India.

There has been no lack of work during the previous year for good printers. Good has not been the enemy of the best as is sometimes said. But the "Good-enough" still remains the enemy of all quality work in the country. The price factor and dates of delivery are becoming increasingly important in the face of keen competition. Quotations range over a wide area with the result that the customer doubts even properly prepared estimates of the reputed print-houses. As an example the author of this article wanted a quotation for printing 16 pages Crown octavo bookwork. The quotations for the first 1,000 copies of the 16 page forme exclusive of materials were: A. Rs. 40, B. Rs. 35, C. Rs. 25 and D. Rs. 20. I leave the reader to draw his own conclusions from the foregoing regarding estimating methods, if any method is followed at all.

Madras firms are holding their own against external competitors but their capacity to quote for work is limited by the shortage of skilled craftsmen which has its effect on production and delivery. How many automatic machines are idle in Madras for want of suitable operators? Good operators have left due to low pay and the not-so-good ones were sent out before or after they have spoiled many reams of paper and/or many parts of the machine. It can be

said that Madras Printheuses have the equipment for much of the work that is going elsewhere. The lack of suitable operatives and efficient managers is causing considerable concern to the trade because of its immediate effect and possible consequences. But this state of affairs does not deter newcomers to the Printing line from their dreams to grow rich quick. I know of at least one retired Reserve Bank Official, one Lawyer, one Journalist, one College Professor starting presses. A doctor has joined the printing family quite recently. In course of time this cavalcade of Neo-Printers will grow rich in its diversity of human element and complete in representing the cross-section of the entire Indian populace.

The raw material supply position is better, although some items such as cover paper, policy paper for invitations, strawboards of good quality, ready-wound thread for sewing machines are difficult to obtain.

Much work previously done by printers has been diverted to small office duplicators installed by the print-buyer and operated by unskilled labour. There is no doubt this has eaten into the turnover and profits of the industry as a whole.

QUALITY IS THE THING

Printers yielding to the customers' pressure for lowering prices at the expense of quality are common. The worst part of it is that the printers confess frankly about this. Careless workers form another problem. The obstinacy of managements in thinking that workers will become careful if they wait long enough is another thing. There is not enough insistence on quality and that it should be maintained for every job big or small. Managements are unfamiliar with methods of modern mass production. They never realise that

there has been vast changes in the methods of say, conveying materials inside the factory.

The reluctance of the Indian consumer, above all, male or female, *even to complain about poor quality* far less to insist on perfectly produced print and sensible design is the greatest danger to quality production. The print-buyer, it would appear, is if anything, conscious of the price of the product alone. If along with cheapness he is offered quality also, he doesn't *mind*. There should be a campaign for greater productivity and side by side one for recapturing the old Indian predominance in quality in the new world of mass production.

SELLING PRINT OR SELLING SERVICE

It is felt that merely selling print is no good, printers should sell service. They should point out to the customer sales promotion ideas *via* printing such as intelligent labelling of packages, honouring of delivery promises, the desirability of sending proofs of blocks to the author on the quality of paper on which they are to be finally printed; the artist, photographer and blockmaker, designer and printer should understand the job as a whole and plan it for economical and efficient execution. The importance of having matched letterheads, envelopes, visiting cards and other stationery should be impressed on all customers. An out of date letterhead design should not be slavishly printed and supplied by the printer in accordance with the dictum

"Ours is not to question why
But to print and sigh".

But it should be redesigned and proof sent for approval. A sensible customer will certainly appreciate this "service." The printer should be frank in refusing such

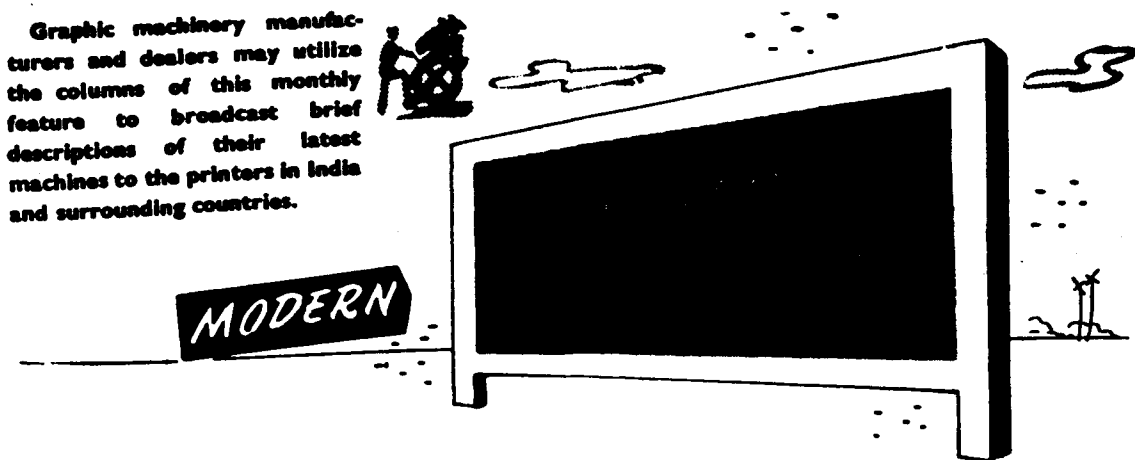
type of work that cannot be efficiently handled by him or deadlines that he cannot keep. Every printing establishment should print and keep an up to date Type Specimen Book containing all the faces and sizes of types available for printing. In addition to this a style book giving in detail the style of indentation, capitalization, word division, punctuation, heading etc., to be followed in all work is to be kept. This style, known as the style of the house, should be followed in all work, unless the customer wants a different style to be followed for a particular work. Printed specimens of visiting cards, letterheads, labels, invitations, coupons, circulars, advertisements handbills and posters should be neatly filed for future reference of customers as well as of the printers. Many printers have a repulsive stuff, an apology for collected specimens which is enough to drive the customer away.

It has already been emphasized in the previous article (*Printindia* May 1955, page 15) that managers and supervisors should be well trained and competent. In Indian Presses too often a man is chosen for a top job, or promoted for the sole reason that he is senior, or the best available, or the most affable or likeable. It turns out that he is lacking in management qualities. The fundamental qualities required for a manager are worth repeating: character, organizing ability, energy and know-how. Although several years of training is insisted to become a compositor, a machine minder or a binder, one is promoted overnight without any training whatsoever to a supervisory post or a managerial one. This is not the worst part of it. Some men who are not even good craftsmen are thought as born Managers and appointed as such.

(To be continued)

PRINTINDIA

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.



THE ULTRA-MAN OFFSET MACHINE

All offset printers will be interested to learn details about this new single colour offset press. Users of the machine in the European Continent have expressed great satisfaction of its working.

SIZES AND SPEED

Built in two sizes of $30\frac{1}{2} \times 44\frac{1}{8}$ in. sheet size, and $35 \times 49\frac{5}{8}$ in. sheet size with a minimum sheet size for both of $16\frac{1}{2} \times 23\frac{1}{2}$ in., the models are known as size IV and size V respectively. Both have delivery and feeder piles of $39\frac{1}{2}$ in. Their speed is of a maximum of 6,000 impressions per hour, which is quite a good speed for a sheet fed machine.

INKING ARRANGEMENTS

Large ink cylinders and large distributing rollers ensure good ink supply. Even and perfect inking is assured by the forme rollers having different diameters. The machine is equipped with a device for washing rollers. This built-in device enables the inking unit to be washed up in the shortest possible time. It is, therefore, now unnecessary for the machine operator to have around him several containers for water, gum, etc.

The design of inking and damping units is the last word in efficiency. Most sensitive regulation of ink or water supply is possible; adjustments may be made while the Ultra-MAN is running. Ink and water duct rollers can be adjusted minutely indeed infinitely minutely from nil to 60 mm. for ink and nil to 40 mm. for water—by a scale reading.

FEED AND DELIVERY

A built-in stream feeder, of modern design for efficient working has electrically controlled rise and fall of the feed table. Double and damaged sheets are automatically prevented from being fed by stops.

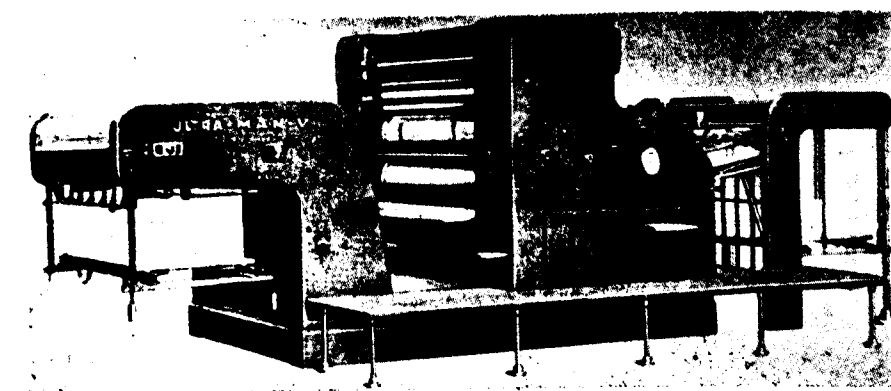
The chain delivery enables the sheet to get the maximum time for drying before reaching the pile on the delivery table. Separate suc-

tion roller and air compressor are available for the delivery. The feed and delivery boards are identical and are interchangeable. Three side joggers jog the sheets and automatic pile control of the delivery is connected with the pile feeder.

CYLINDERS

The plate cylinder, the blanket cylinder and the impression cylinder are made of a special steel alloy imparting great strength and eliminating flexure. A scale fitted to the plate clamping bar ensures finest adjustment of the plate cylinder. This guarantees rapid and perfect registration of the plate. The cylinder may be taken up and given a smooth seating on the cylinder by means of the heavy clamping bars which are provided.

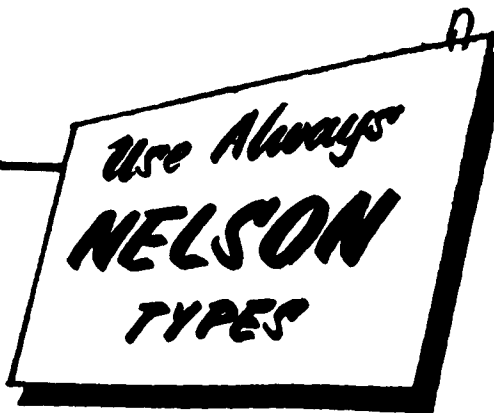
(Continued on page 32)



Ultra M. A. N. offset size V

Manufacturers of PRINTING TYPES IN
ENGLISH, TAMIL
TELUGU, KANADA
HINDI & MALAYALAM
Languages.

Suppliers of "MANICKAM" PAPER CUTTING
PERFORATING
RULING
LEAD & RULE CUTTING
Machines & Treadles.



ESTD: 1916
(THE FINE-ART TYPE FOUNDRY)
62, SWAMI PILLAI ST., CHODALAI, MADRAS-7
Post Box No 452 Grams: NELSONCO

62, SWAMI PILLAI ST.,
CHODALAI MADRAS-7
PHONE: 2722

ANIKTAKARAI
MADRAS-10
PHONE: 86313

News and Views

Till now the Sino Press was owning some founts of Japanese and Chinese types. News is to hand that the Cambridge University Press has acquired the extensive range of Chinese and Japanese matrices and type formerly belonging to the Sino Press. There are four body sizes and four display sizes in Chinese. There are only three body sizes in Japanese. Altogether they make three tons of type and fifty thousand matrices.

Outside Hong Kong and Singapore this is the largest collection of Sino-Japanese characters. Its purchase was assisted by a grant from the Universities China Committee.

Work people employed in general printing and binding, lithographic printing and photogravure printing, envelope and stationery manufacture, periodical and newspaper production in U. K. got an increase of 4s. a week in the cost of living bonus with effect from January 1955.

A Ministry of Labour Gazette notification of February 1955 estimates the number of employees in Paper and Printing Trades in U. K. at the end of May 1954 as follows:—

	Males	Females	Total
Printing and Publishing of Newspapers and Periodicals	91,110	22,520	113,630
Other Printing, Publishing, Book-binding and Engraving	141,270	92,640	233,910
Paper, Board, Cardboard etc.	108,420	82,850	191,270
Total Paper and Printing	340,800	198,010	538,810

Complete control of all advertising and printing records by a single simple system has recently been devised. This controls the entire production of printing jobs and single or series advertisements, including records of insertions and any other information of a special nature. This system is invaluable for mail order and similar advertising where a complete record of cost per insertion, cost per reply, cost per sale and a multitude of other data must be maintained.

Briefly, it visually signals reminders of copy dates and press dates for insertions so that they just cannot be overlooked. The progress of each stage, i.e., layout, artwork, copy, production, etc. The progress of special jobs like leaflets, special advts., blocks, drawings and anything out of the normal run. The basis of the system is a compact, narrow card holding all the details you need to know. It has a visible edge for quick reference and upon which you can progress every stage by coloured signals, thereby providing a fool-proof basis for efficient planning of work. Fuller particulars can be had from Shannon Systems, 323, Shannon Corner, New Malden, Surrey (U. K.).

PRINTERS IN KHAKI

At the IPEX, Khaki clad soldiers will print War Maps to be used in the field of operations at a speed of 5,000 an hour. Readers of *Printindia* are already posted with complete details of the forthcoming Tenth International Printing Machinery and Allied Trades Exhibition to be held this July at London's Olympia. (See *Printindia* May 1955 page 29 for a fuller account and description of IPEX.) These maps will be produced under service conditions in two mobile printing units. The ABC countries (America, Britain and Canada) have laid down certain standards for map printing and these maps conform to these standards so laid down.

The field unit for map production consists of ten vehicles using printing plant, photographic and processing equipment and stores of paper and water. The two vehicles that will be on show at Olympia

For Prompt & Quality Result

JEETHA & CO
HALFTONE, LINEBLOCKS
RUBBER STAMP MAKERS
18 FRANCIS JOSEPH ST. MADRAS.

will be lithographic and dark room units. The lithographic vehicle has an offset printing machine (sheet size 30" x 22½") with automatic feeder and roller cleaning mechanism. The dark room equipment in the other vehicle can develop a plate of 30" x 24" with air conditioning and temperature-controlled water. Contact printers, driers and enlargers complete the equipment.

The Ministry of Supply, Directorate of Weapons Research, U. K., have designed the Mobile Field Printing Units.

NEW DEVICES IN AMERICA

The Ultrasonic Viscometer, a new instrument for controlling the colour shade of gravure inks, is used by an American printer. This new viscometer detects the loss of solvent by evaporation which affects colour on a gravure press, thus enabling the pressman to compensate for the loss by adding solvent to the ink fountains. This viscometer ushers in new development in the sphere of colour control.

Other new machines are: a new silk screen printing machine for printing on cylindrical surfaces like bottles; a unit for controlling inking roller temperature on presses; a machine which automa-

tically flat-wraps and fold wraps periodicals for direct mailing at speeds ranging from 3,500 to 6,000 copies per hour.

A new auto-backing machine for electros has been produced for the duplicating trade. The speed of this backing machine which does the backing under controlled conditions is in the neighbourhood of 290 plates per hour or more than 4 plates per minute. The advantages claimed for this machine are: Improved colour register and better adhesion of the backing metal to the shell; prevention of plate cracking, elimination of air, gases and impurities in the backing metal, controlled plate thickness resulting in saving of time required for finishing processes. Heating, casting and cooling cycle of the backing machine takes about 13 minutes.

Three new instruments for testing paper and boards are now available: A photo type instrument for measuring gloss on paper, an air gauge for measuring the porosity and smoothness of paper and a portable dielectric moisture measuring instrument.

A new solvent for cleaning rollers has been found: This is claimed to revitalise rubber rollers, improve ink distribution and prevent skidding of rollers.

Sometimes it is found that old images reappear on zinc plates. This can now be prevented by treating the plates with 5 per cent hydrochloric acid before cleaning and re-graining. An automatic type-gauge for measuring type, blocks, etc. in galley or chase or measuring thickness of paper is also available.

WORDS OLD AND NEW

"Punch", the London humorous weekly has evolved a new word to be used in Cinematography:

QUADRUPLANACINEPANOVISTASCOPE, a word of 29 characters occupying more than an average alphabet length, it means a combined elder sister of all new fangled cine projection such as three-dimensional, cinema-scope, panoramic screen, vistavision, kaleidoscopes, etc.

Several abbreviated forms are used by printers and paper dealers to denote qualities of paper, describing the finish or the furnish. One such is the TSAD which means Tub Sized and Air Dried, generally imparted to high grade writing paper. Others in the line are:—

ES for Engine Sized
MF for Machine Finished or Mill Finished
MG for Mechanical Wood paper Glazed
SC for Super Calendered.

Magazine Production in India

(Continued from page 10)

MAGAZINE ADVERTISING

Advertising has become a highly specialised field and thanks to the advertisement agencies, who are keen on conducting new campaigns for all products advertised through them, a steady flow of advertisements is maintained to all good periodicals. One thing should be noted and that is the new trend in advertising. Old fashioned advertisers would shout "Buy our Goods. They are the best in the market." This direct appeal will not attract the modern reader or achieve its object. The new technique is to give useful information to the reader and by the way remind him of the name of the product and the concern producing it. This has made the advertisements more readable than the articles. The educative value of present-day advertisements is unquestioned. Examples of good wholesome advertisements are those of Burmah Shell, Imperial Chemical Industries, Tata Iron and Steel and Khatau Mills. Layout, proper selection and use of type faces will ensure that the object of the advertisement is more than ensured. It is said that magazines publish articles more to please the author than to please the readers. So also, the design and wording of the advertisement should not be merely to satisfy the ego of the designer or the magazine publisher, but with an eye for reader response. Rarely we come across within our shores a magazine which combines, good readable articles, nicely displayed advertisements and fine printing of both.

Delhi magazines have earned a reputation for bad printing, the notable exception being the *Caravan*. *Caravan* has the best get-up very

well executed. The *Shankar's weekly* is an example of poor printing, bad proof-reading and even careless binding. (Several issues lack four pages instead of which two sets of other four are supplied. I think this weekly is carrying its jokes too far to practical regions.) The cartoons and contents are evidently so much hot-stuff that the readers ignore or tolerate bad printing. None can say they have a love for bad printing.

Children's magazines have of late caught the public eye and here is some fine printing including colour printing. The Chandamama Publications of Madras have earned a reputation for wide readership and the B.N.K. Press for fine colour printing and chaste typography. A string of monthlies in more than eight languages are published for children by this press.

No magazine printer here has special rotaries for producing his magazine. Only the Times of India has a gravure plant to produce the three periodicals *Dharmayug*, *Filmfare* and *Illustrated weekly* of India. The Times of India people are the first and only ones producing gravure work in this country barring Government. While their pioneering work will be appreciated by all printers and public alike, their maintenance of quality is also admired. Recently they went in for a new German gravure plant. This entitled slight change in the sizes of the three magazines and also some noticeable delay in bringing out their issues in time for a few weeks. We hear that a press at Calcutta has bought a gravure plant, but are keeping it idle till to date for want of craftsmen.

Magazines of the Printing Industry are for the most part unimpressive, repeating verbatim articles from their western contemporaries, having nothing original to offer.

Even in this republishing business they are a flop and are unable to do it properly. Some omit the source completely, others feel ashamed to give even a credit line. There are monthlies which bring out as little as 8 pages and 12 pages an issue. None would call these as spectacular efforts in the uplift of the industry as all the information contained therein are not applicable to Indian conditions being exact replicas of matter that appeared elsewhere. These handouts which mislabel themselves as magazines will one day prove the famous doctrine of "survival of the fittest." No reader will tolerate a third rate magazine for any appreciable length of time. Again, no advertiser will deceive himself by buying space in a periodical that has no contact with the industry worth mentioning. Therefore, my friendly advice for all magazines is to improve their get up, increase their volume of matter and introduce new features. Thus they would interest the readers and the magazine and the industry will surely be mutually helpful. Further the magazines of any industry should be unbiased and impartial, bipartisan and fearless in telling the facts, however unpleasant they may be. There is no use of some magazines being Linotype or Miehle enthusiasts and others Monotype, Intertype or Wharfedale enthusiasts. They should serve the common interests of the Printer. More useful information should be available for him in every issue. Printers should benefit by such articles and vital information. Then and then only they would value the periodical.

Printindia in recent months have included many original articles of practical interest to Indian printers and is marching ahead with the industry. The number of pages on an average is more than 32 per month on art paper. *Printindia* cover alone is a fitting proof of



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the possibilities of the progressive Indian Printing Industry.

Each industry has its own magazines, such as the Textile, the Soap, the Heavy Chemicals, the Steel, the Building etc. The professions such as the Engineering, Medicine, the Legal, also have their periodicals. The schools, colleges, institutes, some commercial firms like the Burmah-Shell, have their magazines too. All these from the printers' point of view are very poor specimens of Indian printing. The reason is that they are not handled by printers except at the final stage. Planning is neglected, selection of paper, type and ink are not considered properly resulting in badly printed stuff. Sometimes their printing is entrusted to pseudo-printers or those who have never handled such type of work. All concerned should remember that it is worth employing a typographer to plan and execute these house organs in a manner befitting the good name of the firms.

As regards magazines devoted to the Printing and Allied Industries, there are very few in India. Most of them are of recent origin, and are hitched to some concern or organization. The result is that the main issue of devoting the pages for the improvement of the industry is brushed aside and they appear always to have an axe to grind. Issues are not regular and printing is not perfect. While their articles deal with the necessity for perfect typography, their advertisements are in glaring contrast to their avowed typographical taste. The necessity for magazines representing industry to be well printed should be appreciated and nothing that should not have left the press should be allowed to reach the hands of the discerning readers. No correction is too small so as to be overlooked, no flaw is trivial, if these

printing magazines are to be the last word in magazine production. They should not suffer from the drawbacks of other magazines for which printing is considered of secondary importance. There the matter, rather than the manner of presentation on paper, counts. Here the matter as well as the printing is important and should be scrutinized well.

ENTER OFFSET

There is a fallacy that magazines could be produced better by offset than by letterpress. This has been proved by one or two taking to offset and coming to grief. The truth is both letterpress and offset require careful and efficient handling in every stage of the process. There is nothing in offset which commends itself more to the magazine producer than in letterpress. Some of the world's top-ranking magazines like "Life", "Saturday Evening Post", "Punch" and similar periodicals are produced in excellent letterpress. There are good magazines in gravure too, but the high initial cost of plant and the necessity to have a very high circulation make it uneconomical for the Indian magazine printer. We hear of cheap gravure machinery being produced. Perhaps those at least will suit the slender capital of the Indian producer.

CONCLUSION

The wide market for magazines in India is exploited more by foreign magazines than by the Indian ones. Poor printing is one of the major causes. There is plenty of scope to improve the lay-out of the magazine cover, typography of its text, its pictures and general format. Attention is not paid to planning and competent men are not given the opportunity to handle the work. Third rate printers quoting under-cutting rates attract the

unwary magazine publisher resulting in indifferent printing, careless handling, set-off and a thousand other defects. Magazines that own presses could do a better job than they are doing. Competent proof-readers should be on the staff. Some magazines slavishly copy foreign cover designs, although it is not beyond the capacity of Indian artists to produce original cover designs. Anything new appearing in western periodicals are devoured immediately with a view to reproducing in toto. Constant changes of sizes should be avoided. Even some of their annuals or special numbers are not free from the defects caused by careless printing. But the overall picture of Indian Magazines is reassuring and represent some of the best produced printed matter. The aim of the author in writing this frank article is to increase the number of well-printed magazines in this country. Our magazines when they go abroad are eloquent ambassadors of our land and if they are to give a good picture of India, they should be well produced.

In the Service of the Printers for many years Now!

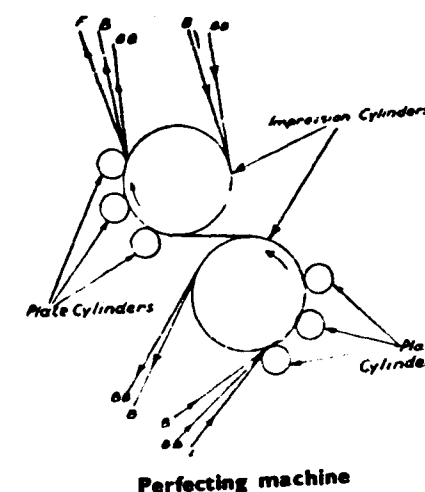
- C & P RUBBER ROLLERS
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PRINTINDIA

Textile Printing

(Continued from page 12)



Perfecting machine

enable the design printed on one side of the cloth by the lower set of plate cylinders to register with that printed by the upper set, the plate cylinders are geared together. The impression cylinders are arranged diagonally, since this allows the shortest possible length of fabric between the two sets of printing cylinders and correct register of the design is thereby ensured.

SAREE PRINTING MACHINES

It is sometimes necessary to print intermittently leaving some cloth without printing, instead of continuously printing the cloth. The machine which does this is called Saree printing machine. The design may be repeated at any interval from 2 to 16 yds. As soon as printing is effected at one spot, the plate cylinder is thrown off or forced out of contact with the fabric. This is achieved by means of a series of specially constructed cams to time the throw-off at suitable intervals. Table-cloths, bedspreads and shawls are treated in this manner.

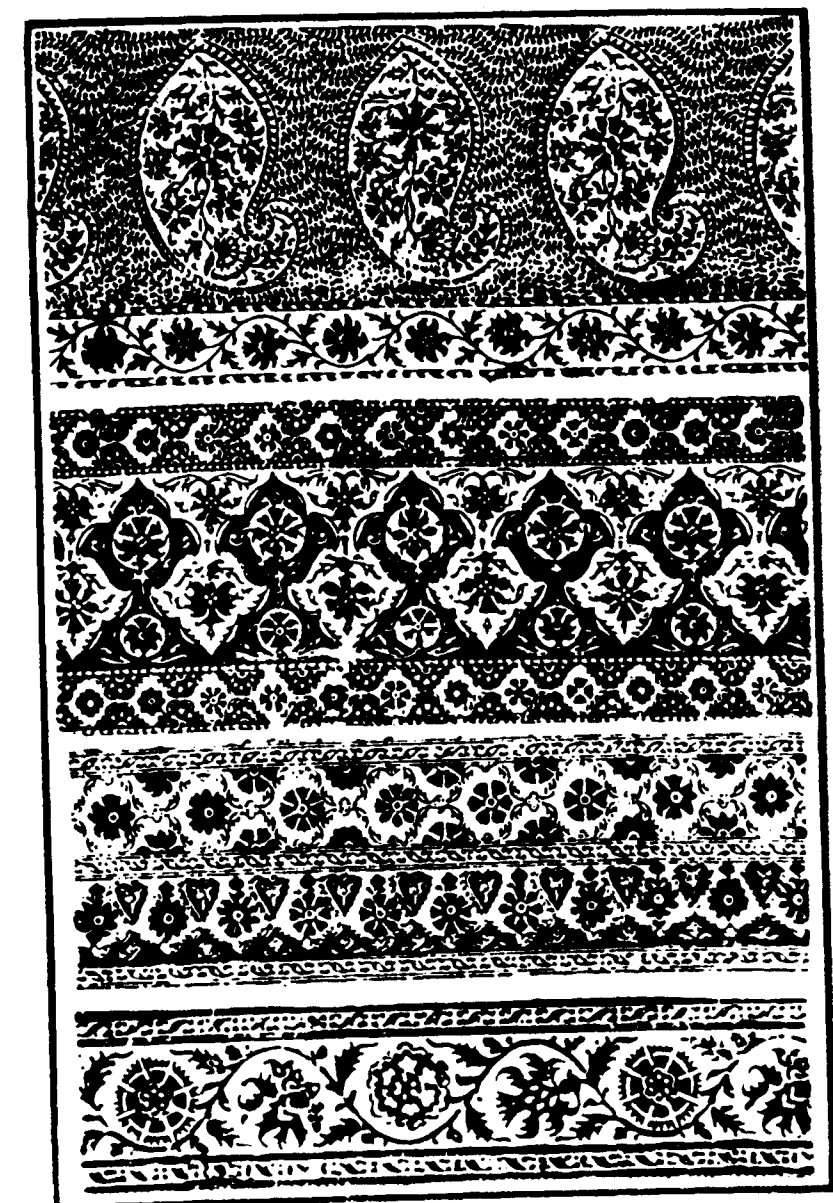
The printed cloth is treated after printing. Drying, chloring, dunging, soaping and steaming are some of the operations after printing.

PRINTING ON HOSIERY GOODS

Knitted garments like socks, vests, sweaters, etc. are printed with stripes, borders or other designs. The machine for printing on small hosiery goods are different from continuous printing machines on woven cloth. The printing plate is a suitable design in relief (unlike the intaglio engraving of the textile printing machine), secured to the vertical part of the machine. The garment to be printed is secured to an inclined plate opposite the print-

ing plate. The printing plate is inked by a set of rollers after which the plate holding the fabric to be printed assumes a vertical position parallel to the printing plate. Now pressure is exerted and impression effected on the hosiery. After impression the fabric holding plate becomes horizontal for easy removal of the garment and replacement with a fresh one for printing. These are later on dried.

Textile Printing can be done by the offset method also, in addition to intaglio and relief printing.



Ancient Indian Saree Printing Designs

Whatever process is adopted, some preparation before printing is necessary to make it fit for receiving and retaining printing ink. Any number of colours can be printed at one operation. As the fabric is porous, frequent cleaning of the back-grey and blanket is necessary. Separate machines are used for printing samples, printing on both sides and for printing knitted garments. After printing the cloth is dried.

The similarities between cloth printing and ordinary printing on paper cannot escape attention. Web-fed rotaries resemble to a certain extent cloth printing machines. The multi-colour machines with a common impression cylinder resemble the American three colour or four-colour printing machine with a common impression cylinder.

An exhibition ending on April 7, held in London, featured Screen Process printed fabrics. A particularly attractive specimen was an olive green satin screen-printed with picturesque designs of sailing boats, arched bridges, ornamental gateways and riverside scenes. The screen printed fabric gave a general impression being produced by gravure. Rapid strides have been made in using screen process for printing fabrics and a number of English firms specialise in screen printing fabrics. Silk screen printing, a comparative newcomer, has spread to the textile printing field also.

The Textile Industry is a major industry in India and we have achieved self-sufficiency in cloth. Cloth printing forms an integral part of the textile production and at the time of rationalisation, no

doubt, cloth printing by faster, better and more economical methods will come for consideration. Among our mills which are concentrated near Coimbatore and Madura in the South and near Bombay and Ahmedabad in the West, many do not have printing units. Of late printed fabrics have caught the eye of the public especially our womenfolk. The need for more cloth printing units are called for. Some mills have their separate subsidiary concerns doing only cloth printing. This is as it should be, for, cloth printing is a highly specialised industry and calls for considerable skill to produce quality products.

As in our printing industry, the patternmaker, the chemist, the mechanic or the engineer and the textile specialist co-ordinate each others activities in bringing out an attractively printed fabric.

PRESSROOM PROBLEMS

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

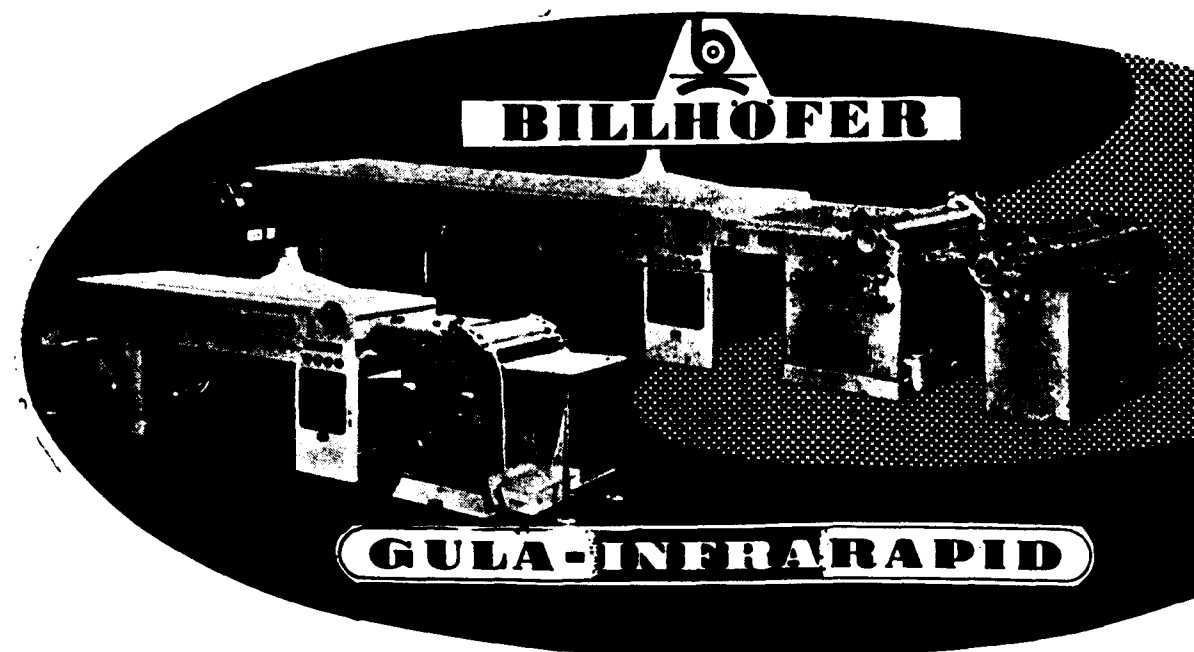
SOLVED by *Graphicus*

32. Q. We are printing a letter-head on a Chandler and Price Platen. The packing is good, the impression is good, the forme is locked level and is type high. But the print is not sharp. What can be the reason for the spottiness in print? The slug also appears to be of good metal.
- A. The trouble in this case would appear to be inking, no doubt you are using a hard surfaced paper and this combined with running up too much ink would give a mottled effect to the print combined with squash. If this is not the case perhaps your rollers are at fault and may be cut or pitted. If you are still in doubt please send a copy of the printing complained of and I will try to advise further.
33. Q. 20,000 copies of booklet covers had to be run through urgently. Cover matter is to be over-printed black on blue tint. We are using Azure blue toned down for tint. Some copies are found not to take the black well. Can we print the black first and the tint later, as the latter appears to be a transparent one. A double crown Stop cylinder and Demy Two rev. are used for printing.
- A. It would appear quite in order to overprint the Blue Tint after printing Black since from what you say the tint is transparent. Before overprinting you would need to ensure that the black was sufficiently dry not to pick back into the blue and discolour it. In such cases it is always safest to proof the job first to see if the result is as required.
34. Q. We buy our inks in yearly or half yearly lots—i. e., our requirements for the 6 months are indented in advance and used when necessary. Some tins are not affected even if opened after eight months. But others appear hardened, or disintegrated. What is the time limit or the safety zone for use of inks after the date of manufac-

ture, especially in a tropical country? Do you advise us to put on the date of purchase on each can, as the manufacturer doesn't, to show its age?

- A. There would appear to be no necessity to buy your inks so far in advance of requirements, since most Brands of inks can be obtained reasonably quickly from centres of manufacture in a fresh condition, it would be worth while paying the surcharge for Passenger Freight in cases where delivery is urgent rather than loose money by virtue of inks becoming hard in your stock. Most Blacks may be stocked for any length of time without any deterioration and can be safely purchased in advance. Coloured inks however are all liable to harden and apart from using large quantities of mineral oils in their manufacture, which would naturally affect the drying, there is no way of entirely overcoming this and the reasons are too complex to explain here. I suggest that you contact your ink manufacturer for his advice in the matter of your supplies.
35. Q. Imitation Art gives me lot of trouble in printing and backing on the same day with black ink on a stop cylinder. When I adopted the time honoured way of adding some dope, the condition worsened, with the result that it now takes more time with the drier added than without. Can you fix this up?
- A. Backing up Blacks on coated or other hard surfaced papers is always a problem, an anti-set off spray may help, it is better however to give the first printing time to dry properly before backing up. Should it be necessary to back up immediately a soft printing paper over the top sheet on the Cylinder might help to prevent marking due to set off from the Cylinder itself and interleaving is the most satisfactory way of preventing set off in the delivery pile.

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Chandni Chowk
DELHI - 6

9 Mangoe Lane
Off Bentick St.
CALCUTTA - 1

(Continued from page 14)

A MS of 30,000 words is to be set in 10 pt. on 12 pt. body to 22×40 cms size. Find the number of pages the MS will make when printed.

Therefore number of ten point ems
in a page = $\frac{22 \times 12 \times 40}{10} = 1,056$ ems

TABULAR MATTER

30

EXAMPLE

ARTICLES ANALYSIS OF *PRINTINDIA*

1954

Name of the month.	Pages	Articles devoted to		
		Admn.	Technique	Machinery
January	32	2	6	4
February	32	2	4	3
March	60	9	2	3
April	28	1	3	3
May	28	2	4	3
June	28	3	3	3

PRINTINDIA

Col.			
2	five characters =	$2\frac{1}{2} + 1 - 3\frac{1}{2}$	ems
3	„	$3\frac{1}{2}$	„
4	„	$3\frac{1}{2}$	„
5	„	$3\frac{1}{2}$	„
1		$9\frac{1}{2}$	„

For four rules at $1\frac{1}{2}$ pt. $\frac{1}{2}$ cm

20 ems

24 ems of 10 pt. or 20 ems of 12 pt.

As regards the depth : —

The column heading has 2 type lines of 10 pt. plus 4 cross rules and 4 lines in the body.

This is equal to 8 lines or 80 points
(8×10) and 4 rules $4 \times 1\frac{1}{2} = 6$ points
= 86 points or 7 ems of 12 point.

Exclusive of the heading the Table can be set up in a space of 20×10 . Four blanks used have been included.

THESE BORDERS

**This border with
lower case 'x' is
very effective**

Parentheses, leaders, letters o, v, w
 and many others could be used as
 borders with greater effect.

Colours that do not quarrel between themselves are called harmonious colours. Those that do quarrel are contrasting colours. The following combinations have been tried and found pleasing in the order in which they are listed :—

1. Black on yellow
2. Green on white
3. Red on white
4. Blue on white
5. White on blue
6. Black on white
7. Yellow on black
8. Yellow on purple
9. White on red
10. White on green
11. White on black
12. Red on Yellow.

It should be remembered that the above are pure colours and are not mixed or toned, shaded, tinted

JUNE 1955

EMBOSSSED EFFECT

A fairly embossed effect can be obtained by dusting on the wet print powdered resin and subjecting printed sheet to moderate heat in a stove.

When no perforator is around and you have to perforate a job urgently, an improvised perforator can be made this way. Material required: a small square of steel (worth as. 6), a $1/8$ in. iron rivet and a short length of 6 cm furniture to be used as handle. The piece of steel should be made into a disc and the edge of the disc sharpened like a knife. At $1/16$ in. intervals file it along the edges fairly deeply. Drill a $1/8$ in. hole in the centre. Cut a slot at one end of the furniture for the disc to go in and drill a hole, insert disc and rivet up. Now the disc will revolve freely. Round the other end of the furniture. This tool if rolled along the part to be perforated will perforate 16 sheets of medium thickness at a time depending upon the depth of the notches at the edges of the disc.

EASY OPENING ENVELOPE

I have seen an anxious man trying to open an envelope and in his hurry tear the enclosure (a cheque) across, making it null and void. He was vexed too. The American idea to solve this opening problem is to perforate across the short side of the envelope at one extreme about 1/8" from edge. The recipient of the mail can safely and

YOU INVITE—I ACCEPT

When printing invitation cards, it is better to include a small acceptance card also which says "I acknowledge your invitation and shall be pleased to attend the function/party/wedding, etc." The invitees will promptly reply with these acceptance cards. At least this is one way to inculcate gentlemanly habits in our invitees. Don't we find that many neither turn up nor even reply or acknowledge our invitations !

India produces quite a quantity of linoleum—the mackintosh-like product, used in western countries for bathroom floors. In India they are made into many patterns of covering material for floors, in place of costly rugs or carpets. But the printers can use linoleum for cheap production of pictures or other patterns for exercise wrappers, wall-papers, end-sheets, etc. For an outsize letter or a band of colour in an emergency, a piece of linoleum tacked on to a piece of wood will give good results. Its smooth surface is ideal for printing on a press. It is not expensive and easier to carve than wood, it is resilient and helps make-ready. White lines or the non-printing portions are cut away and the printing portions are kept in high relief. Any printer of modest means can try these linocuts.

SHH! THIS SLUR

Has slurring annoyed you? Slur generally develops at the leading or

leaving edge. This distortion of impression can be remedied in a simple way. If the first line slurs insert a thin rule at that extreme end beyond the printing matter. If at the tail put a thin rule into the forme at the extreme tail. Generally, the slur will transfer itself to these extreme rules, which of course should be trimmed off after printing.

FOLD WITH OR AGAINST THE GRAIN

If you fold with the grain of the paper, the fold will be smoother but weaker. But if you fold against the grain, perhaps you have to crease the paper first before attempting to fold. The fold is bound to be strong. Is strength important for your job? Then fold it against the grain. Otherwise the other way. Do not allow the stock to stand in the warehouse before folding. When the stock absorbs moisture, it sort of bubbles under the folder. If left in a dry room it will lose moisture and crack under the folder. When delay in folding cannot be avoided, protect stock with moisture-proof cover on all sides.

TABULAR WORK—URGENT

Two printed tables, full page size probably were received by two Madras newspapers on the same day for reproduction in their columns as advt. You know our trains change their time in April, July, October etc. This was one of these time tables sent in by the railway people. One newspaper began to set it, all the columns, all the figures, all the headings. But, that evening the other newspaper published the entire table. How was it possible to set the big table all 6 pt. matter in 24 hrs.? They didn't set, they photographed it and printed it in a few hours, while their patient neighbour was taking three days in setting!

BEWARE OF ULTRAMARINE

Ultramarine (a kind of blue) has great brilliance and covering power. But all this will be lost if you use it on copper blocks as a chemical action is set up between sulphur based pigments and copper. Remedy is to nickel face the block or use aniline substitutes. On stereotypes also ultramarine mixes with the lead and turns dirty. Don't use ultramarine with a lead white for the same reason. A dirty grey will result. Zinc or mixing white should be used. Again don't mix ultramarine with chrome yellow to make a pale green. Chrome yellow has a lead base.

SELF-PASTING WRAPPING MATERIAL

"Saran-Wrap" a plastic covering material manufactured by the Dow Chemical Co., USA, is ideal for wrapping and storing metal parts of machinery, process plates and similar articles, to prevent corrosion, instead of the usual way of coating the metal parts with grease.

Saran-Wrap is very thin (5.10000 inch thin), impervious to air, moisture and gases, unaffected by acids, oil, grease or other substance. It has high tensile strength and can be rumpled, crumpled, twisted and still found ready for re-use.

The most important characteristic of Saran-Wrap is that it pastes itself automatically without the application of any adhesive. You have to simply bring the edges together and press. Presto! the edges paste themselves securely. This clinging property of the edges is brought about by the static electricity which is always active on the surface of Saran-Wrap. In this one case the usual trouble shooting static is a help and not a hindrance.

Modern Machinery and Equipment

(Continued from page 21)

CONTROL

All operating levers are arranged on the near side of the machine within easy reach of the operator. Regulating levers control adjustment of all cylinders. The special scales and pointers by means of which these adjustments are made fix the regulating limit upto 1/10 mm. The machine is so designed as to give maximum overall visibility. The driving gears are arranged completely outside the frames and encased in dust-proof housing. Increased rigidity results from this arrangement which allows for a narrow width between the frames and short cylinder and roller end shafts.

Positive register is assured at all speeds and for all types of work. Smearing of the sheet when transfer grippers swing back is a very usual occurrence in other machines. But in Ultra-MAN this is prevented by the location of the swinging grippers beneath the sheet and these take the sheet over from the feeder. Improved feeding is ensured by a rotating drum located between the swinging grippers and impression cylinder. Clear return motion of the swinging grippers is afforded by the drum. A sheet cutter may also be attached.

The Ultra-MAN sheet-fed single colour offset machine is distributed by Graphic Arts Equipment and is claimed to be the most modern in offset production, built by craftsmen for craftsmen.

Please refer to

PRINTINDIA

while writing to advertisers

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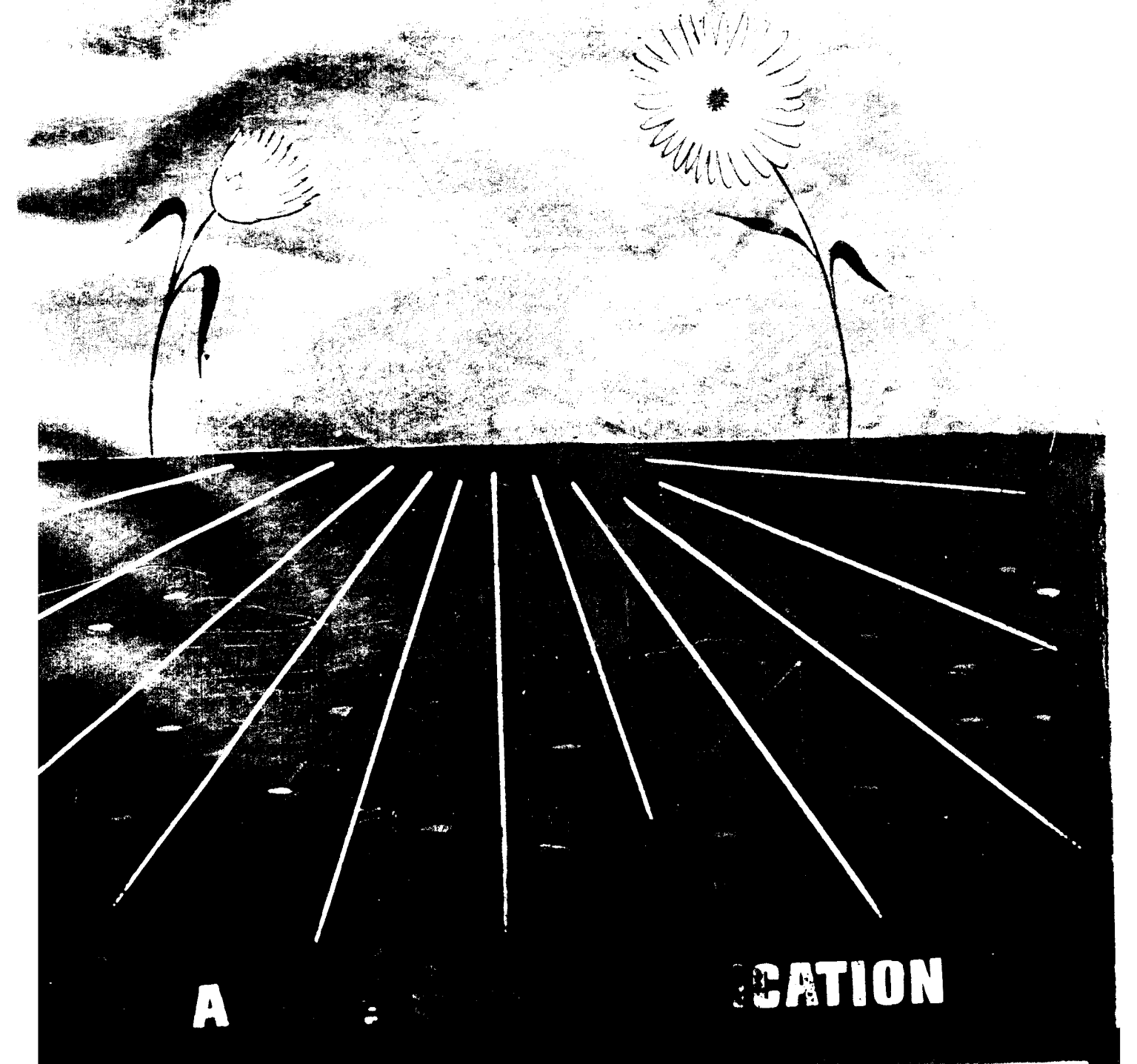
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Ma

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ENGLISH

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CHINTAMPET, MADRAS-2

Found, 1953

PRINTINDIA

A MONTHLY SURVEY OF THE GRAPHIC ARTS INDUSTRIES

VOL. 4]

JULY 1955

[No. 3

In this issue....

- ★ Government Presses Need Overhauling
- ★ Sensitizing Media for Ink-Albumen Plates
- ★ Monotype Training
- ★ Prestige of the Printing Profession
- ★ Why Set-off?
- ★ Half a Century of Hope
- ★ Some Offset Problems
- ★ From the Editor's Pocket-Book
- ★ Our Growing Family

From Our London Correspondent
Pressroom Problems Solved
News & Views
etc. etc. etc.

Managing Editor
TEMPORAU

Business Manager
V. S. N. Murthi

Circulation Manager
Y. V. Rau

London Correspondent
F. & D. Brownlie

Roving Correspondent
G. V. G. Krishnan

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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on the 10th of every month

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Ceylon	Rs. 12/-
SIAM	Rs. 15/-
U. K.	£ 1 Shs. 10
U. S. A.	\$ 5

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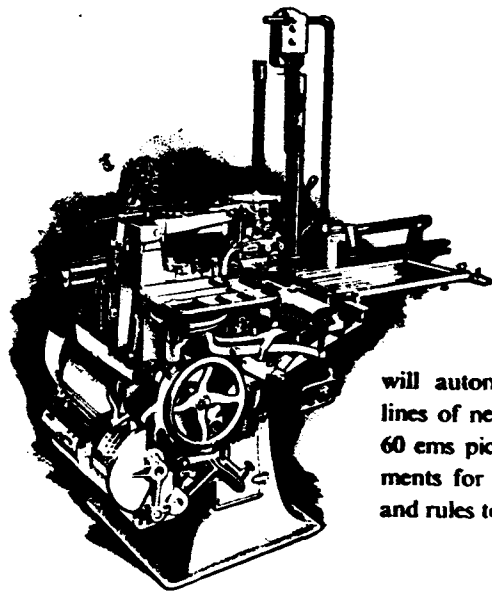
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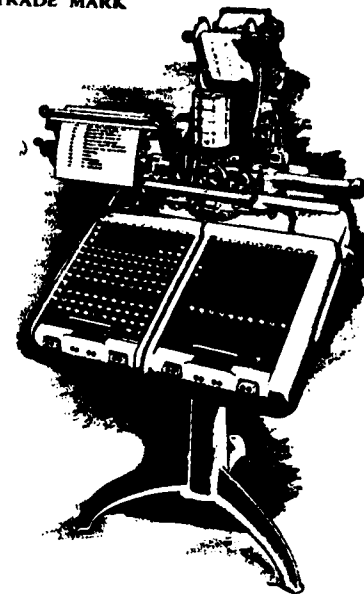
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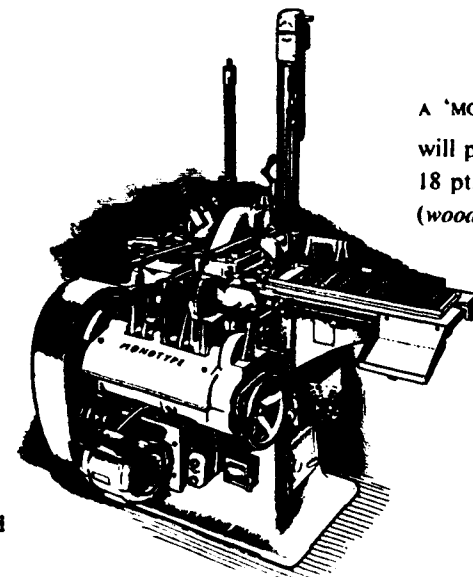


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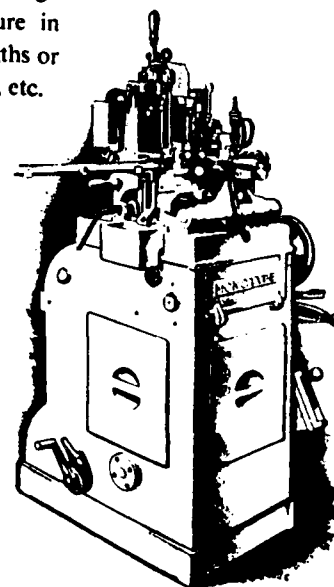
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EDITORIAL

Government Presses Need Overhauling

"Nationalise and get burst!" wrote an Englishman. India after hundreds of years of Imperialist rule voted for a welfare state with a socialistic pattern. No one has appreciated what the public experience has been with nationalization. Our railways, claimed to be the greatest nationalized undertaking are also the laziest and most indifferent public or business enterprise ever run in this or any country. The telephones since they changed to Government hands are sluggish and beyond the reach of many. The Electricity system, another big undertaking, cannot even issue proper bills at proper time. The State Bus Transport is notoriously inefficient. In short, a few years' trial of these state enterprises has shown that the ability of Government-appointed functionaries to run these things conveniently, cheaply for the public, or profitably for the nation is very limited.

The Government Printing Presses formed one of the major State enterprises, even before nationalization was ever thought of. That these undertakings have not only survived till now but have actually grown in size and numbers is no proof of either their fitness for survival or of their efficiency, viability, economy, etc. For, the Government Presses are there to print what the State wants. Further, they came into existence to print certain confidential documents, records, etc. which could not possibly be passed over to a private printer.

It is interesting to roughly trace the history of the Madras Government Press. To begin with, it is over a century old, and consisted of many district presses, Secretariat presses, a press at Ootacamund to work during the summer exodus of the Governor, the Mount Road Press, the High Court Press and the central one at Mint Buildings. All except the High Court Press were amalgamated with the Central one in 1938. After the merger of the Pudukottah State, there now exists the former Pudukottah State Press as a branch of the Government Press. Now over two thousand workers including women are employed in the Central Press and it is administered by two Deputy Superintendents, six Assistant Superintendents, one Superintendent, one Assistant Controller and one Controller. Until about seven years back there were no controllers when the Superintendent who is a technical officer functioned as the head of a technical organization, which Government Press is. But some causes, about which we are not prepared to go over here, resulted in an I. C. S. officer being appointed to look after the affairs of the Government Press. He remained for some time and was followed by another non-technical officer titled as Joint Superintendent. He too had his chance to perform the task allotted to him and gave way to the present Controller and his assistant (the Assistant Controller).

Assuming for a moment that all this was necessary there is no justification for producing such shoddy work as is complained of by Sri K. Srinivasan, in his Presidential Address to the All India Master Printers' Conference. Of course he did not mention particularly the Madras Government Press, but in fact he could not have meant any distant Government such as the Portuguese Government or the Pakistan Government. It is customary for the Government Press officials to boast about the size of their press, and the so-called prestige printing they are doing. We do not see any prestige attached to printing occasional souvenirs or annual numbers while the work turned out day in and day out is of the lowest standard by any test.

Space does not permit us to go into details or throw a searchlight on the activities of the Government Press. The State should appoint one or more persons of standing in the industry or foreign experts—not retired or tired Government officials—to study the problems that confront the Government Press and devise means by which it can be cleaned up and changed into a Model Printing Unit, serving as an example for all private presses in the country. An officer from H. M. S. Stationery Office, London, was requested to visit the Government of India Presses and re-organize them on sound economic lines to work as efficient units. A similar commission for the State Presses will be the least that the Government can do.

Since the appointment of the present Controller of Printing and Stationery, the Madras Government Press is having a new lease of life. Out of the ashes of the inefficient past is born a streamlined organization shorn of unnecessary red-tape and nonsense. We have never accepted the principle of non-technical officers being placed at the helm of affairs of technical institutions. But, after seeing the transformation of the chaotic Government Press into an orderly outfit, we deceive ourselves that after all the Madras Government were wise in selecting the proper officer to man the unmanageable State undertaking.

The notable features of the Stooks Administration is the direct method dealing with the problems that arise from day to day. Every man with a grievance is allowed an interview with the Controller, who hears patiently, understands sympathetically and acts firmly. The vacillating ways of the old managements, of removing one man today and re-instating him tomorrow, are gone. Mature decisions are arrived at by the seasoned administrator, which is what Mr. Stooks is. The rival unions which spoiled the scope of any collective bargaining are now merged into one for ventilating the aspirations through constitutional channels.

Time was when authority was questioned, orders disobeyed, urgent work, including Gazette Extraordinaries, was delayed. Absenteeism and late-coming was rampant. The Controller went to work in right earnest and solved many a knotty administrative problem, that baffled his predecessors. Papers are now disposed of promptly, there are no ugly-rumours about the Account Section and everything is ship-shape.

Technically trained men are given preference over untrained men. Many young men have joined the Press in supervisory jobs after the Controller took over. Although we don't see eye to eye with the idea of Rs. 35/- for an Assistant Foreman who does the lion's share of the departmental work, we are glad these chances wouldn't have been there but for the present Head of the Government Press Administration. We hope that soon their pay will be enhanced. Appointing qualified men is a farsighted policy which is bound to pay rich dividends in the long run.

Casting our eyes on the Central Government Presses, we simply shudder. They are in such a bad shape that the Madras Government Press is an ideal one relatively speaking. Machinery rusting for years on end, sometimes for want of a building, at other times for want of work or for other reasons. The Railway Press bought a lot of equipment long ago and the Central Government are still to construct buildings to house them. Who is delaying the building and why is worth investigating.

A critic with a sense of humour said like this about the Government Presses: "They cannot print very fast, but they do print very *strongly*; none shall say they fail to make an *impression*; for, you could read their print as well in the

dark as in daylight; as well from the back as the front; as by the sight as with the sense of touch, so firmly the characters are embossed upon the paper. They have an illusion of speed, power and quality."

Crusade against Masquerade

A good cause thrives by obstacles. Its success is measured by the number of battles that have to be fought no less by the number of fronts it has to battle in. In recent times there has been no greater or better cause than the establishment of what are now called Regional Schools of Printing in various parts of our country. That such schools in general and the southern school in particular should be well planned, adequately housed, properly equipped and efficiently staffed is the concern of every responsible printer in the land. Such a noble undertaking is not the monopoly of a few. We are happy that an increasing number are evincing keen interest in the outcome of the plan. In other words, they have flocked in good numbers to fight the peaceful battles in the righteous crusade. This crusade has unveiled many a weak spot and touched off many masqueraders to desperate self-defence.

FEAR COMPLEX

Of all enemies Fear is the worst. When a man is motivated by fear—fear of losing business that has been promised, fear of not getting the promotions expected, fear of being deprived of power and pelf—he loses balance. In this state of unbalance, he commits blunder after blunder until he falls into the trap he had laid for himself. Our editorial of May 1955 has brought in a rich harvest of bouquets and encomiums. This is not because *we* have written it but only because the idea is sound. It has also brought a tiny thorn. We are placing this thorn before the public to examine and pass a verdict on it and its authors: A section has taken objection to the healthy idea of having a separate building for the Regional School. We wonder why they are afraid of such a progressive and natural step forward.

BACKWARD HO!

All right-thinking printers have accepted the idea of housing the Regional School in an independent block, to afford an unfettered growth in a climate suited to the printing craft. This acceptance conforms to our expectation. Further, this is also in line with the principles of the National Plan. Top-ranking officials and non-officials, qualified to pass an opinion, have concurred with us and say that the Polytechnic site is too small. One need not attach too much importance to the belated criticism of some self-trumpeteers. When the dust has settled on this question of location of the RSP, some think that the dust has not settled according to their specifications. They harp on the question of small additional block to the Polytechnic building, they gloat over the advantages of remaining within the compound—it almost seems that they want to bury the RSP scheme within the compound. This only reveals a subjective and slavish mentality. These myopics view with suspicion the recent developments favouring the logical idea of an independent building. Let us look at their arguments which in fact belie the honesty of their intentions. "The Electrical, Mechanical and other (sic) workshops of the Central Polytechnic will be an essential auxiliary....." Has the London School of Printing, the last word in Graphic Arts Training, a similar array of auxiliaries? The truth is, the Polytechnic engineers want the Printing Section to be an auxiliary of the engineering courses to the detriment of our training. The RSP consists of over a dozen courses of its own. None should allow it to be located in the backyard or barnyard of any institution, big or small, old or new.

LET FACTS SPEAK

Here are the facts :

1. The existing set-up of the Printing Section of the Central Polytechnic will certainly be the nucleus for the proposed Regional School. Its staff, equipment and other facilities will be utilised and increased to the maximum.

2. The existing accommodation is inadequate even for the existing engineering courses. According to the Annual Report of the Principal for the past five years, there is a standing grievance of shortage of space for the lecture classes as well as for workshops. The growing engineering courses, in fact, silently demand the exit of the printing section from its compound so that they could spread out and grow. A very understandable feeling, this. The construction of a small tail inside the compound with the funds of the regional school and then use it for holding classes for other courses will not appeal even to the most gullible. This would amount to misusing of Government funds. It should be noted that only part-time classes are proposed, so that full time use may be made of the premises by other courses. Sooner or later, as envisaged in the expert committee report, full time classes should be started. Where lies the provision for such development?

3. Adequate funds are available for each item of expenditure, i.e., buildings, equipment, staff, etc. Amount earmarked for one cannot be spent for another. India is undergoing rapid industrial advancement and ample funds are placed at the disposal of the State Governments. The bogey of shortage of funds is thus laid bare.

4. The Department of Industries which is so ably running the Institute of Leather Technology, the Textile Institute, the School of Arts and Crafts, etc. will continue to administer the RSP. There will not be a parallel school at the Polytechnic and hence there is no duplication or waste of equipment. The theory that there will be loss of facilities is as untrue as it is unsound. The suggestion that there will be duplication is as mischievous as it is ludicrous. None would ever think of having two identical schools run by the same department in the same city. The credit for inventing such an unholy idea goes to mushroom organisations who claim to monopolise the technical interest of the industry. Sri M. Bhakthavatsalam, Hon. Minister for Industries, recently declared that he would like to have a Polytechnic for each district. Had he asked these critics, they would have advised him to house all these in the Central Polytechnic. Otherwise they would all miss the "essential auxiliaries" available only in the consecrated soil of the Central Polytechnic compound!

5. Organisation without individuals cannot claim representation in the advisory board of the RSP.

We can safely assert that the Madras Government who have shown the way for the rest of the country in many spheres, will also guide wisely the destinies of the Regional School. They should not allow the scheme to be hustled by pseudo-printers or scuttled by sickly engineers, or manoeuvred by anaemic bulletins. We are sure that the energetic Director of Industries and the enthusiastic Minister for Industries will investigate the facts outlined above, examine the issues dispassionately and arrive at a mature conclusion. Then the die will be cast for the Premier Institution for the Graphic Arts of the Southern Region, a veritable model for the rest of Bharat. Truth will triumph. They shall not be intimidated into building tiny castles in the air of the smoke ridden polytechnic.

Sensitizing Media for Ink-Albumen Plates

By

SRI BIMAL C. DATTA, B.A., Dip.-Tech. (Leeds), F.R.G.S. (Lond.), A.P.S.A. (Phil.), I.R.A.S. (Lond.)
Manager, Map Reproduction Office, Survey of India.

To introduce the author to our readers will be like introducing the Himalayas to Tensing Norkay. Ample qualified and adequately experienced Sri Datta is eminently fit to write on any printing subject from Aluminography to zincography. He is particularly in high form when he writes about Lithographic chemistry, as he does in this article

The simplest and most economical method of producing photo-litho images on metal plates for lithographic printing is the ink-albumen or "surface" photo-litho process.

The underlying principle in the ink-albumen method is to render the dichromated colloid solution which is coated as a thin film on the metal surface insoluble in water by exposing it to strong actinic light under a negative transparency. Portions protected by the opaque parts of the negative remain soluble when developed in water.

Fundamentally, plate-making is very simple, but in actual practice it has many pitfalls. The very words "suitable film", "proper exposure", and necessary "after-treatment" indicate that the process can be subjected to many variations.

PLATE MAKING METHOD

In using this process, a grained and "preped" lithographic metal plate, usually zinc or aluminium, is coated with light-sensitive solution composed of egg albumen or synthetic products and ammonium dichromate in plain water. The metal plate is then exposed under a negative to actinic light in a vacuum printing frame. It is then covered with a thin film of quick-drying black greasy transfer ink or liquid ink and afterwards developed in running water. This washes away the unexposed part of the

coating with ink on, leaving an ink-receptive positive image on the metal. The plate is then prepared for printing on the machine.

The main criticism of the albumen process is based on some degree of uncertainty with regard to the uniform qualities and durability of the printing image in comparison with other methods of lithographic formation. On the whole, however, this method has definitely proved successful if correctly and properly processed. The relative advantages are sufficient to ensure its continued use for many classes of work.

SUITABLE COLLOIDS

Any coating solution consists essentially of a colloidal solution which is sensitized with a sensitizing medium and for the best performance is held at some definite pH.

Colloids suitable for coating solutions are egg albumen, gum arabic, gelatine, glue, casein and various vegetable proteins, such as Soya-bean proteins. Besides these, there are many other materials, such as shellac, bitumen, etc., which when properly treated, become light-sensitive and insoluble in water. Duck egg albumen is not suitable for the purpose.

SENSITIZING MEDIA

The chemical that is used as the sensitizing medium in the coating solution is ammonium dichromate.

The chemical action of these dichromates in colloidal solutions when exposed to strong actinic light is this: the light splits the dichromates into chromium and ammonium or potassium particles which are electrically charged. These are called "ions", and they attach themselves to some colloidal particles located nearest to them rendering them insoluble in water.

FORMULATION OF SOLUTIONS

Before attempting to formulate a coating solution, I should explain the ratio (quantity) of the main ingredients of the solution, i. e. egg albumen, ammonium dichromate and also liquid ammonia (.880).

The best effective ratio generally, is 3 or 4 to 1, that is, 3 or 4 parts of albumen to 1 part of dichromate. Some time ago the Lithographic Technical Foundation of New York conducted an investigation into the causes of the large variations in the plate life which occur. Taking numerous formulae, they compared the dichromate-albumen ratio. They found that it ranged from .057 parts of dichromate to 1.0 parts of albumen or a ratio of 1:18 to .057 parts dichromate to 1.0 parts of albumen. They also recommended that the ratios of 1:3 and 1:4 were the most popular and effective ratios. All the plates experimented on were made of solutions containing albumen flakes.

AMOUNT OF DICHROMATE

The more the dichromate used in proportion to the amount of albumen, the less is the time needed for exposure. On the other hand, with very small dichromate, the exposure required is unnecessarily long, particularly in low humidity, with the result that the image becomes very soft on the plate.

Again, when the solution contains more than the proportional amount of dichromate, crystals are formed in the exposed dried film on the plate, which make the coating completely useless as minute cracks are found through which the developing ink penetrates and causes scummy plates.

AMMONIA

The amount of ammonia required is another factor needing clarification. It is proved that ammonia does not help the solution to

become more sensitive to light, but it definitely assists the solution in preserving its steady action *i.e.*, to preserve the sensitiveness for a relatively long time (about ten to fifteen days), if kept in a dark brown bottle. Its function is to neutralise the acidity of the albumen. Dichromated albumen is slightly acidic (pH 5.1 to 5.6). If it becomes more acidic, the albumen will precipitate out of the solution. The addition of ammonia changes the dichromate to a chromate which is seen by the change of colour from orange to yellow. It changes the solution to a slightly alkaline substance (pH 7.2 to 7.6), prolongs the life of the solution and afterwards makes developing easier.

The solutions which contain no ammonia give a harder and more viscous image to stand longer runs in the machine. But, these solutions cannot be used after 24 hours,

whereas solutions with ammonia will remain good for more than a week if kept in a dark brown bottle at an average temperature of 50° F. to 65° F., provided the alkalinity of the solution is not brought beyond pH 7.6. Too much ammonia also reduces the light reactive speed of the solution.

DENSITY OF THE SOLUTION

Any water that is fit for drinking may be used for making a coating solution. The amount of water required in a given formula may vary in many cases, as a plate having a relatively coarse grain needs a thicker coating than if it were finely grained. The same applies to the speed of the whirler when coating.

The thicker the film of coating on the plate the longer the exposure necessary to harden the film to

(Continued on page 31)

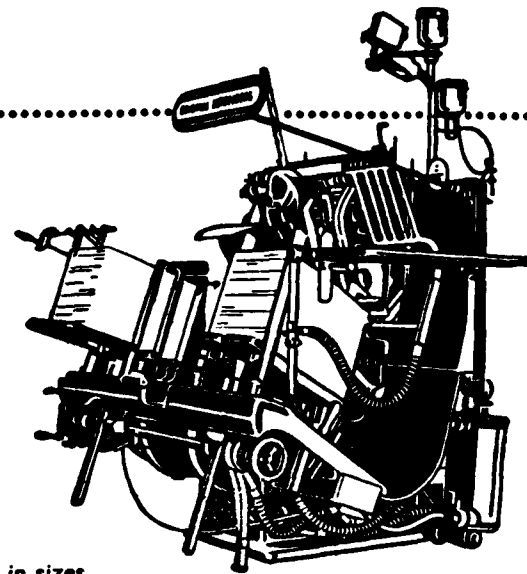
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Monotype Training

Merely installing a machine will not produce the goods. Adequate training of men to man the machine is a sine qua non of good production. The far-sighted Monotype people give elaborate training for operating the keyboard in a short but well-packed course

MONOTYPE TRAINING

When "Monotype" machines are installed in a printing office for the first time, it is necessary and desirable to train the compositors of that printing office to operate the keyboard.

It is always preferable for the embryo operator to undergo the thorough and complete course of six weeks' training which is given at the school maintained by the Corporation at Calcutta. Training is given, as required, in English, Hindi and Marathi, Bengali and Assamese. Other arrangements can be made for Urdu, Gujarati, Tamil and Telugu.

But many master printers are naturally anxious to benefit as speedily as possible from this new asset, and the time which is available for training an operator may consequently be limited. In this event an individual, intensive course is given at the new user's own printing office by an expert of The Monotype Corporation. The course is carefully planned and calculated to make the training as thorough as possible within the restricted period.

This training is directional and is concentrated on the class of work produced in that office, and

actual "good" copy is taken up often after a few hours' instruction. Such a system of training is of paramount importance as it is quite probable that subsequent operators may receive their training at the hands of the compositor

a good operator, and that those who have had no previous experience on composing machines often qualify both as rapid and accurate operators after a few weeks of training and practice. This is largely due, of course, to the plan of "Monotype" keyboards, which is the universal typewriter arrangement. The new operator easily learns to transform words into keystrokes at maximum speed with the minimum effort because it is an arrangement which enables him to hit the same key with the same finger whether he is setting to capitals, italic, or any other group of characters. This principle not only assists rapid learning but becomes a system of touch-operating which is soon translated into an unconscious habit of mind and movement.

There are many other things to be learned besides the position of the keys and their rapid operation, and these matters are taught by a series of simple exercises which become increasingly comprehensive in such a way that every exercise is not only a new



The newly-built "Monotype House" at 43, Fetter Lane, London E. C. 4

who becomes the first operator of "Monotype" machines in the printing office.

Experience shows that, generally speaking, a good compositor makes

one in itself but also includes previous exercises. Thus each new principle is rapidly absorbed and soon becomes a natural part of the operator's knowledge.

Most important is the preliminary training which is founded not only on mechanical axioms but includes an appreciation of healthy attitudes of mind and body, and conservation of energy.

WORKING CONDITIONS

The quantity and (what is almost as important in type composition) the quality of a man's work depends largely on the conditions under which he works. Good ventilation and proper lighting reduce what the modern scientists call the "toxin of fatigue". Without reducing the craftsman to a Bedaux automaton, it is nevertheless possible and advantageous to study and direct motion with regard to conservation of energy, and so not only eliminate needless fatigue and increase the crafts-

man's output in working hours, but also increase his joy and appreciation of life in his leisure hours.

CORRECT POSTURE

The new operator therefore is at the outset taught to sit properly, because correct posture governs accurate and effortless operation, avoidance of strain, and easy natural breathing. The position of the copy and direction of the light so that eyestrain is obviated is also considered, and the adjustable copy holder and lamp bracket are big assets in securing this object.

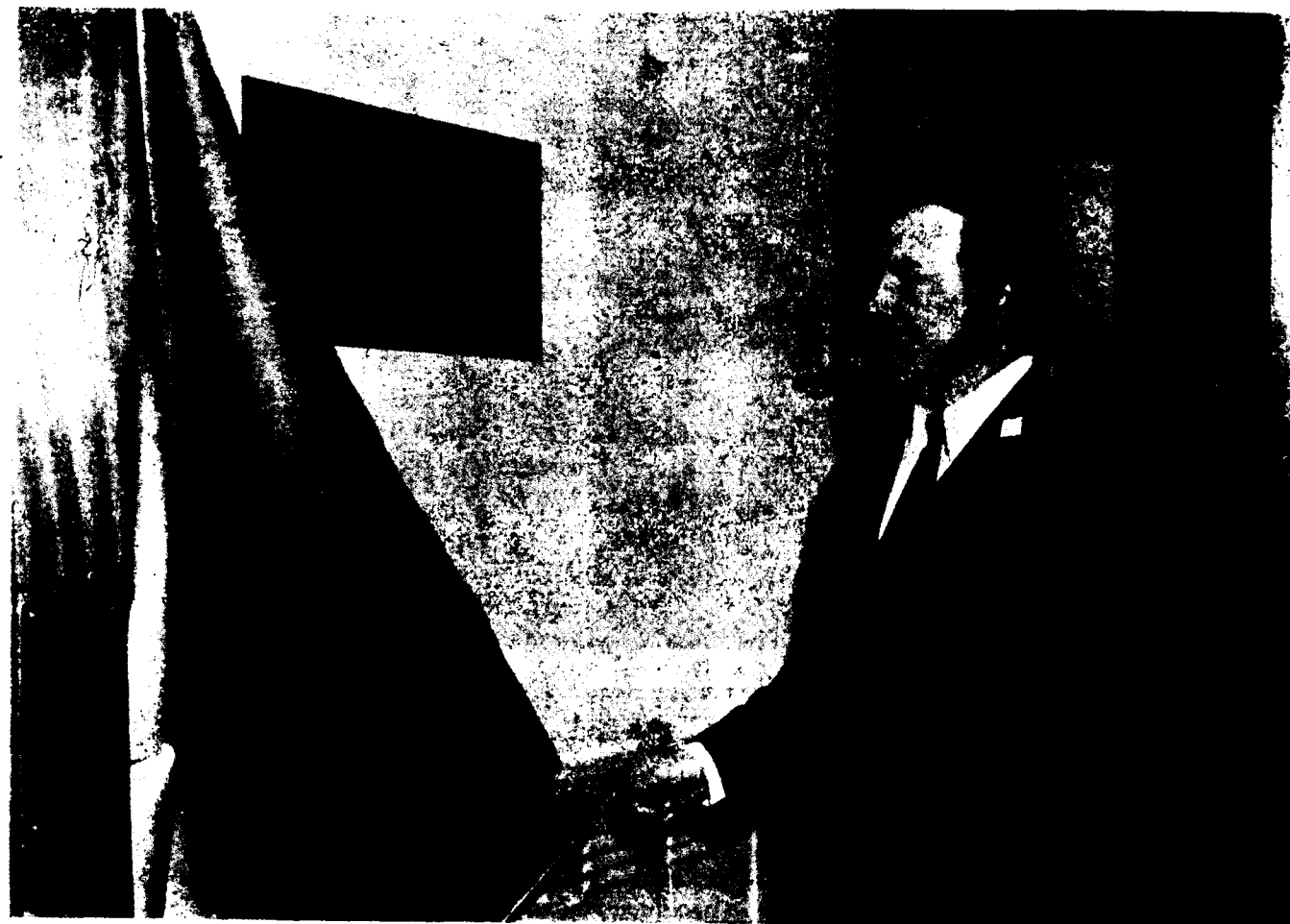
These preliminary matters settled, the new operator is now ready for a series of graded finger exercises from "The Monotype Operator's Keyboard Manual". This manual, together with the

careful supervision of the instructor, forms the backbone of the operator's course of study.

The compositor invariably takes to the new method of type-setting eagerly; he is able to appreciate, by his training and experience, to even a greater degree than the master printer, what an asset the new machine will prove, not only as a composing unit and as a source of all kinds of typographic material, but as a safeguard against the waste of time spent in hunting for sorts, and "dissing" for type.

A student who takes the full course of instruction of six weeks at the Corporation's school can be taught conveniently and efficiently. Operators trained locally are instructed as well as possible within

(Continued on page 28)



Brigadier Sir George Harvie-Watt, Chairman of the Monotype Corporation Ltd., unveiling the plaque to mark the opening of their new London Office

Prestige of the Printing Profession

By
SRI S. GIRI

Some important suggestions for better organization, quicker production and lower cost are given in this the third in the series on Better Press Managements. Administration of the composing section, with an eye for avoidance of waste, saving of labour and economy in material forms the main theme.

The best practices will fail to build the right spirit unless management bears witness for its own professed beliefs. This should be remembered every time a manager or supervisor is appointed. The spirit of an organization, it should be borne in mind, is created from the top. If an organization is great in spirit it is because the spirit of its top people is great. If it decays, it is because the top rots. Trees are truly said to die from the top. This is true of a Press also. No one should be appointed as a Manager unless his character can serve as a model for all his subordinates. Integrity is the thing that makes people trust you. The men with whom you work know in a few weeks whether you possess integrity or not.

WORKSHOP PLANNING

Planning and organization of work should be ship-shape. No doubt a general planning for all print-shops is difficult but the simplest plans are often the best, judged by their results. A good system should be followed. Layout and shopfloor methods should be examined and improved. The lighting should be satisfactory in regard to intensity, diffusion and glare. The light should fall on the work produced and *not* on the worker and not at all against his eyes. (An interesting article appeared on Industrial Lighting on page 18 of *Printindia*, January 1954). As regards composing room layout, galley racks should be positioned near at hand for corrections, proofing, make-up or imposing. The

same applies to forme racks also. Forme racks under the imposing surface are not advisable for more reasons than one. The most commonly used type cases should be near each frame, those rarely used being relegated to storage racks or cabinets at the corners.

Lead and rule cutters, mitreing machines, storage racks, fount cases, all should be suitably situated to avoid unnecessary travel. Supplies of material should be adequate, but not superfluous. Wooden quoins and furniture should have long been discarded. There is no substance in keeping thousands of wooden quoins strewn in all parts of the premises and taking quite a time selecting suitable quoins. Light metal furniture combines the advantages of wood *i.e.*, lightness with that of the strength and durability of metal. Mechanical quoins do away with the side and foot sticks that make the formes out of square, the noise of using mallet and shooters with the danger of damage to printing surface due to slipped shooters.

THE BITTER PILL, DISTRIBUTION

What is known as the dead bank or the corner frame is where all distributed matter waits for an auspicious day to be cleared or an inauspicious moment to vanish into the melting box rightly called the hell box. In a good composing room there should be no dead bank. Matter should be distributed then and there and every one should understand that distributing is not a non-productive operation. It may be

argued that live jobs can't be kept waiting for the compositors to finish distribution, but several jobs have got to be stopped for *want* of sorts. This want of sorts is caused by delayed distribution. This proves the importance of distribution. Many good print-houses possess an enviable distribution dump and sorts are picked by their lazy comps, with pincers leaving pie behind and damaging in the bargain the face of the type so picked by the pincers. The reason is, none has understood the "why" of distribution. The usual answer is types are required for other jobs and hence distribution is necessary. There are other equally important reasons than this well-known one. Type should always be in the case when not being printed. It has no business to be in a galley or a forme after printing is over. When it is not in the case it occupies valuable storing space which the printer can ill-afford and in which he could keep standing matter or matter under print, *i.e.*, live matter. Waste of floor space is the second reason. Not only types but spacing materials and locking up materials are also required for other jobs. These, unlike the type are limited in quantity and can't be kept idly locked up with dead matter. Apart from these, materials and type kept under pressure of lock-up tend to get damaged, furniture warp, rules bend or get damaged, chases rust, type faces get battered, as the dead formes are dragged from one corner to another as an unclaimed deadbody in the General Hospital. These are suffi-

ent reasons to make distribution a "must" in every composing room. There are times when a lot more than the capacity of the cases are available for distribution. In this case, the type pages should be unlocked, materials cleared and returned to their proper places and the type pages tied with page cord and bundled in strong cartridge and pasted with a proof of the page, to be later distributed when type in cases are used up.

As regards furniture and side sticks of bookwork pages, the South Indian custom is to bundle the complete set of furniture for the various margins along with side and footsticks to be later used for the same size forme to avoid delay in searching suitable ones. Thus a Royal 8vo set is kept apart from a Demy 8vo or a Crown 8vo one. I have nothing to say against this procedure which has its merits. Furniture, wooden, light metal as well as steel step furniture should be kept in specially marked pigeon holes properly arranged according to depth and length for ready use.

Page gauges should be available readily for make-up. Making up should be done only on making up randoms complete with cupboards for leads, clumps, slugs, etc.

The floor of the hand composing room should not be littered with types. It should be realised that much type will be lost this way. Rare sorts of job founts can be lost too. I know of a printer who had a small script fount which had only 4 lower case a's. One of these got battered and another was lost on the floor. With the two remaining a's he could not set a visiting card containing 6 a's. A bad proof-press or improper pulling of proofs can batter or bend many jobbing letters. Similarly careless planing of kerned letters and scripts will break the kerns rendering those letters useless. Frisket fingers and lay pins have been the cause of damage of many

job founts at the hands of careless machine-minders.

How many compositors are taught to clean matter that has been proofed? How many machine-men are asked to clean formes with soap and lye after printing? How many know that wood letters and halftones should *not* be cleaned with lye water? How are the halftones cleaned and stored?

PLATE STORING

It is better to dismount the plates and store them than store wood-mounted blocks. The block surfaces should be cleaned with a harmless solvent such as petrol and covered with vaseline to prevent corrosion. Proofs of blocks should show clearly the rack number where they have been stored.

STANDING MATTER

Are you charging for matter kept standing? If so on what basis is the customer charged? Surely not on the basis of personal friendship. Matter is kept standing for the benefit of the customer for a stipulated period and should be paid for by him on the basis of the materials locked up, i.e., the amount of matter and the period it is kept standing. The customer does not pay for resetting but bears a small proportion of it in the shape of charges for standing matter.

AUTHOR'S PROOFS

Proofs sent to the author should be asked to be returned promptly as considerable dislocation of other work is caused by keeping galleys of matter waiting for the author's proofs to return. If by a week's time the press doesn't get back the proofs, they should remind him and say politely that the matter is likely to be distributed and the customer charged. This suggestion may be scoffed at as a sure way of exasperating and eventually losing the customer. But sound business considerations should weigh over sentimental ones.

The number of times the author can get proofs from the press and the number of proofs each time should be stipulated to one or two. Anything more than the number should be charged for. All departures from original by the author during his corrections should be charged.

EDITING COPY

A carefully prepared copy, i.e., typewritten, one side double spaced with ample margins, is ideal copy. Further, it should be read by the press, preferably by a senior reader acquainted with the style of the house and that of the work and all instructions clearly marked. This will save delay and wrong composition. In big presses, a separate desk is allotted for editing or marking copy and every job, small or big before being sent to the compositor is scrutinized and marked.

New method for marking copy is to stick a slip containing instructions for indentation etc., with every "take" of copy. By this the comp. doesn't have to waste time in enquiry or go to anybody for clearing doubts regarding size etc., or set in wrong size or style to be re-set up. For type size colours are used, e.g., 10 pt. red, 11 pt. blue, 12 pt. violet, etc., when in course of time these standing symbols are readily understood by the compositors and this saves time of editing also.

USE OF COLOURS FOR EFFICIENCY

Coming to talk of colour to improve efficiency, names of type faces may give place to a coloured label or the case rack containing one series of a type face may be painted in a particular colour. Red for Cheltenham, Blue for Bodoni, Green for Garamond, Purple for Plantin, etc. Urgent work may be kept in a red painted galley or forme rack. The walls and ceilings of the room, the wood and metal

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Why Set-off?

By
"DAWSON"

There is no printer young or old not acquainted with set-off. Few will dispute that it should be prevented at any cost. This vexed problem is solved by the experienced author in this article

All accidents, mishaps and mistakes don't just happen. They *are caused*. In analysing the causes and arriving at remedies, we should always remember the basic fact that proper care and maintenance of machinery will prevent most of the printing defects. The next but equally important factor is the human element. If the machine minder is a systematic and cleanliness-minded craftsman, most of the problems in the machine room simplify themselves. Machine stoppages and loss of time can be prevented if a clean machine and a good minder are working in harmony.

Set-off and off-set are terms that have caused considerable confusion. Therefore it is necessary at the outset to clarify their meaning. Both mean the indirect transfer of printed images or impression from an already printed surface to another surface that comes in contact. A distinction is made between the two by some hair-splitting pedants as follows: (1) A miss is made on the packing of the press (cylinder or platen top tympan sheet). Before this is dry another is fed into the press. Now, the impression on the tympan is transferred to the backside of the printed sheet. As this is an indirect transfer from the packing to the back of the sheet, this is termed "set off." (2) Printed sheets are delivered one over the other and during this period or while stacking the printed stock,

the wet ink from the printed surface transfers itself to the non-printed or previously printed undersurface of another sheet over it. This is called "offset". This defect should not be confused with the planographic printing process called Offset, wherein the reproduction is made not direct from the plate to paper but through a rubber blanket, which first gets the impression in the reverse and transfers it on to the paper. For the purpose of this article we shall refer to the defect of ink transfer as "set off" which term is satisfactory and anyone with a simple and clear mind will prefer this term.

Set off is considered to be purely an ink problem. As all ink problems are related to paper, it is correct to say it is a paper problem too. Ink is fed into the fountain from where it is transferred, spread and ground into a thin film and re-transferred on to the forme. Because of this, some of the causes of set off emanate from the machine also. So, it is far from correct to say that set off is an ink problem or an ink defect and blame the ink manufacturer always.

When selecting a quality of ink for a particular job, we should examine its suitabilities to the stock, to the forme or printing surface and to the type of the machine, i.e., platen, cylinder or rotary. The most important of these is the matching of ink to the stock. Among various qualities of inks, we have quick setting

or quick drying inks as well as those that require a considerable time for drying. This drying quality, more than anything else affects the quality of the print. Putting it in another way, non-drying of ink has been the cause of defective printing including set off. The absorbent quality or the degree of absorbency of the paper on the one hand and the amount of penetration of the ink into the grains of paper on the other are important in preventing set off. Drying is different from setting. While the former may take several hours to days depending upon the quality of paper, ink and the atmosphere, setting takes only a few seconds to minutes, especially in the case of quick setting inks. Setting is solidification of the liquid film into a semi-solid one like the clotting of blood. Setting to a great extent prevents set off as an impression that has set has no tendency to transfer unless the printed sheets are very rudely handled. Thus unsuitable ink is one of the causes of set off and the remedy is to change to a suitable one. Adding driers should be done very carefully by experienced minders, as this has led to complications of the trouble such as ink drying on rollers and the forme.

When more than the required quantity of ink is allowed to reach the forme, the thicker layer of ink on the paper readily transfers itself to the subsequent sheet. Too much of ink on the forme is the second cause of set off. Proper setting

of the fountain, and the ductor roller, feeder roller, the distributors and the inkers, to give no more than the necessary film of ink will ensure that no set off takes place. As one pound of ink is generally enough to cover a million square inches of solid type it should be remembered that only a very thin film is necessary for printing. The nature of the forme should be studied to regulate the ink according to its requirements. A solid tint forme requires the maximum of ink, while bold types, half-tone blocks slightly less and an open form of thin letters requires the least ink. More than the necessary ink, if carried to the forme not only causes set off, but also filling in and resultant stoppages of machine. When more ink is necessary, it is better to transfer a larger area of thin film than a thicker film of the same area. The teeth of the fountain and not the duct screws need adjustment.

The third cause of set off, although indirect is poor makeready. Inadequate or improper packing results in poor pressure. Lack of impression results in poor printing. A wrong diagnosis of this may lead to increasing the flow of ink with a mistaken notion of improving the results. This causes set off. Before looking for other causes of set off, it is necessary to have the correct pressure, enough to get a sharp, clear and even impression. Anything less than this will cause set off. Hard packing is necessary for certain printing surfaces like half-tones and this should be adopted.

We have seen above how too much of ink or too little impression cause set off. Some will be surprised to hear that too much impression has sometimes caused set off. The truth is anything in excess of the requirements, pressure, ink, drier, is bound to be a trouble shooter somewhere. The indentations on the other side resulting from too much impression

contribute towards set off. This can be avoided by regulating impression by careful make-ready.

Static electricity in paper causes considerable delay in the machine-room and also damage of materials. The paper behaves in a peculiar manner, sheets stick together and travel irregularly. When sheets cling to each other at the delivery end, the wet ink readily transfers itself to the next sheet and set off results. Many devices are available to neutralize static on the feed-board. Alternatively, the sheets may be aired, seasoned or reconditioned. The temperature of the machine room has much to do with the time required for drying of the ink on paper. In humidity controlled machineroom, static may not accumulate.

Bad setting of the joggers at the delivery end or on the delivery board has often caused set off. Sometimes it is necessary to put the jogging apparatus out of action in order to eliminate set off.

The perfection delivery, the extended pile delivery or any other tape delivery has been found to cause less set off than the flyer delivery. In these a cushion of air is allowed between each sheet falling on the delivery board, thus minimizing the causes of set off.

While printing on two colour and perfecting machines, set off is encountered more often than in single colour machines. This is due to the immediate printing of the same or the next side, without any time lag. The simplest way to prevent set off while perfecting is to run an oily rag over the cylinder packing before printing the other side. Waxed manillas are used as top draw sheets to obviate set off.

The Printing, Packaging and Allied Trades Research Association has tackled this problem from various angles. Recently, they have worked on the question of second impression set off. This

problem is of especial importance to newspapers, the largest rotary users. Experiments are conducted by reproducing the actual newspaper plant conditions including speed and impression to find a remedy.

This second impression set off can be recognised either by the appearance of a ghost image slightly off register with the printed sheet or as a reproduction of the printed subject matter on the reverse side. The setting off of ink from the first impression cylinder on to the second one results from the first side of the web remaining wet with ink. This is because the oil vehicle of the ink has not been entirely absorbed into the paper. We have already seen that one of the problems concerned the speed of ink penetration into the pores of the paper. Anything which slows down the rate of absorption will cause set off.

By Patra experiments are being made to investigate the effect of various blanket materials and paper coverings on the second impression cylinder. The amount of ink which set off on the covering and the paper is estimated by measuring optically the effect on both blanket and paper after suitable time of running. In this way, it is hoped to compare the various materials available to the printer for the second impression cylinder. At the same time efforts are made to reduce the effect to a minimum and perhaps even eliminate set off altogether.

Every imperfection is as old as man and set off is as old as the Printing Press. Perhaps the earliest set off outside the printing industry was the transfer of wet paint on the underside of an unwary sitter. Attempts have often been made and are still being made to eliminate set off. These attempts may be classi-

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PRINTINDIA

From Our London Correspondent

E. M. BROWN

NEW FOLDING MACHINE

A machine designed to assist offices and small printers with their folding problems is the "Junior", the latest production of Bancroft Folding Machines Limited (Luton). This is a gear-driven fully motorised (200-250 V., A.C.) 2-parallel machine of the portable type, which takes a maximum paper size of 15" x 10" and folds in five styles, that is single, double, letter, accordion and wallet. It will, however, not do cross folding in one operation. To set the machine from one style of fold to another takes a matter of seconds, and requires no more effort than the turn of one or both of the setting wheels so that the pointers are at the correct reading. It will fold 15" long sheets at the rate of 7,500 per hour and 10" sheets at 12,500 per hour.

OPERATION

The sheets to be folded are placed on the feed table and the side guides (one fixed and one movable) adjusted so as to square up the sheets, which are then fanned (by stroking them from back to front with the finger nail) until the pile is "staggered". It is only necessary to allow a clearance of about $\frac{1}{4}$ " between sheets. Packing is done by means of a receiver box situated immediately beneath the feed table. The back plate of this box is adjustable and when setting, a sample of the folded paper is laid in the tray and the back plate adjusted accordingly.

ADJUSTMENTS

When a single fold is required in a sheet of paper it is only neces-

sary to use the first folding plate, putting the second plate out of action by means of a deflector fitted to the fold plate stop. Setting simply entails the adjustment of the fold plate stop to the graduation corresponding with the length of the fold to be made, which is achieved by turning the pointer to the correct reading on the scale. Thus if a sheet 10" long is to be folded in half, the stop would be set to the graduation 5". Both folding plates are used for double fold, letter fold, accordion and wallet fold work, in all cases the variations in the length of fold being made by adjusting the pointers to the correct reading, and the machine will make a minimum fold of 1".

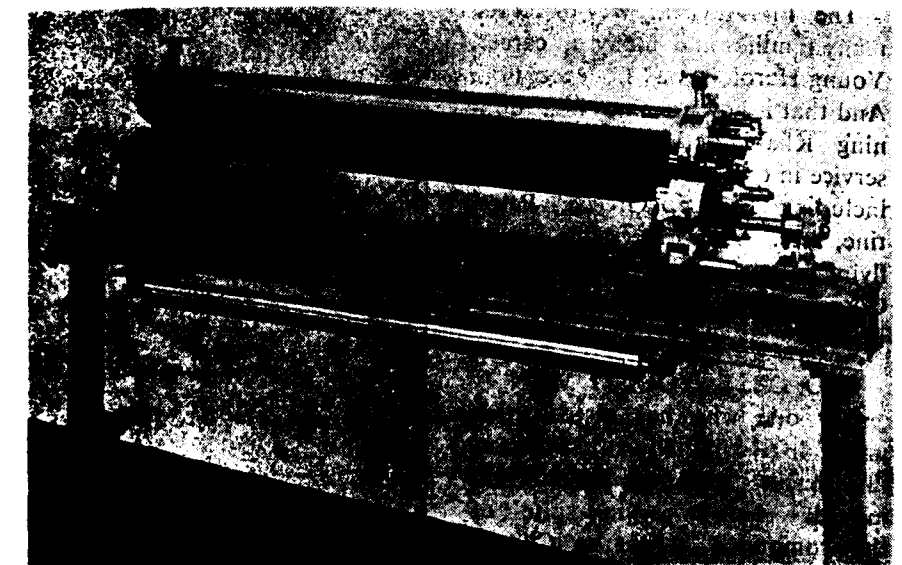
If it is required to make folds in the width of the sheet it is necessary for the parallel folds to be made first and the sheet re-fed.

It is preferable, if possible, to feed the sheets with the folded edge towards the fixed side guide, which gives better register with correspondingly more accurate folding. On the whole, however, it is not recommended to put the work through twice. If a jam-up should occur, both fold plate stops are set to the minimum reading and the machine wound backwards by means of the handwheel.

RESEARCH CONFERENCE

The Third International Conference of Printing Research Institutes was held in Holland last month and was attended by thirty delegates from nine countries, including Britain, Denmark, Finland, France, Holland, Germany, Sweden, Switzerland, and the United States. Research problems in connection with the science of lithography were discussed, and many

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Aniline Printing unit fitted to a paper interleaving machine

Half a Century of Hope

When Lord (Earl) Stanhope invented a Hand press, it was hailed as a major event in printing History. Now, Harold Stanhope, Eastern Area Manager of the Monotype Corporation, has played a significant role in the development of the Printing Industry in India. One of the outstanding men in the field of printing, he has served the craft in a variety of ways. It is in the fitness of things that he has attained an enviable place in Indian printing world. Mr. Stanhope has retired from his post of Manager, Eastern Area, Monotype corporation on 30th June 1955. We have great pleasure in presenting to our readers a brief pen portrait of this outstanding Printer-Editor-Craftsman

YOUNG APPRENTICE

Put the clock back by five decades. Printing was not as much a necessity as it is today. But to young Harold it was a stark necessity, the only thing in the world that mattered. Odhams Press was not as big in those days as it is today. The young apprentice from "Hampstead Record" Printing office found it big enough. Linotype was still a novelty and Monotype an innovation. As for Monophoto, it was unheard of even as a phantasy. And only some years later (1916), the first edition of the Estimating and Costing system of the British Federation was to be published. None ever thought of connecting the young apprentice with any of these things. And yet, how much intimately was he to be connected with the above, in later days!

YOUNG PILOT

The First World War disturbed many families and many a career. Young Harold's was no exception. And that is how we find him donning Khaki and seeing active service in quite a number of lands including France, Greece, Palestine, etc. How he came with flying colours in the Royal Flying Corps, which he joined later, is history.

GO EAST, YOUNG MAN

For one who has tasted active army life especially in Mid-East, life back at home was dull indeed. This was in spite of the promotions he got as Cliquer and Deputy Father of the Chapel. The time honoured Chapel Tradi-

tion of the London Printing Industry still remains the best training ground for practical democracy. So, it was in 1927, that Mr. Harold Stanhope of Messrs. Odhams Ltd., London was selected by the India Office to proceed to Calcutta to take up the post of Deputy Superintendent, Bengal Government Press. This is how and why we find him still in India.

FIRST IMPRESSION

Needless to say, the demobilised Pilot impressed Mr. Norton, the Superintendent as well as the Government of the day with his matter and manner. Stanhope was not surprised nor was puffed up when he was promoted to Superintendent of the East Bengal Railway Press a few years later. He took this in his stride. The one-time



Mr. H. Stanhope

apprentice of Odhams Ltd., London was 42 now and in the prime of his life, but not necessarily at the apex of his career. In fact, the ascent of his amazing career had only just begun. Some of his notable achievements were made during this period.

WORLD DEPRESSION

When he arrived in India, the Government presses were in bad shape and needed plenty of re-organization. No training was given to Compositors, Machinemen etc., and the men just drifted to wherever it led. A Printing School was a necessity. Therefore, Mr. Stanhope along with Mr. C. E. Sanford worked on the idea of a Printing School. The result was a blue-print for the first printing school in the East. Unfortunately, the 1930 depression which engulfed the world swallowed this scheme too. The tenacious Stanhope is still after it and is now in the Calcutta Printing School Committee.

COUNTING THE COST

Printers in those days, true, arrived at some sort of cost, but there was hardly any system in reckoning the cost. This made Mr. Stanhope think. As a result of his thinking the railway presses got an adaptation of the British Costing System. Adapting the Federation of Master Printers Costing System to Indian conditions is no ordinary thing. Only a Stanhope could have performed that feat. No doubt, many other improvements, minor and

major were brought out by him. Having seen the classic specimens of printing at home, printed stuff in the East was a far cry. Stanhope decided to do something about it and did. He worked with perseverance towards the goal of perfect printing by scientific methods.

THE EDITOR

"A good craftsman like a good doctor must not take away his skill with him when he retires." Mr. Stanhope, after retiring from Government Press Service continues to this day to evince interest in sharing his knowledge with the younger generation. As the need of a magazine devoted to Printing was felt the *Indian Print and Paper* was born. Mr. Boothroyd who was editing this quarterly handed it to Mr. Stanhope, whose vigour and fertility of writing is impressive even if read today. Years later Mr. Norman Ellis took over.

THE MONOTYPE MANAGER

Half a century ago, Mr. Harold Stanhope started his outstanding career as a humble worker in a County Newspaper Press. Today he can look back with pride the solid achievements to his credit in the field of progressive printing. He has all through maintained connection with the London Typographic Society and the Printers Managers and Overseers Association. As the Manager of the Eastern Area, Monotype Corporation, he was responsible for considerable expansion in business, better marketing and servicing facilities which make the Monotype Corporation a perfect outfit that it is today. Service depots more than doubled from a modest three to seven under him. The business map changed to three independent groups for India, Pakistan and Ceylon, consequent to the change in their political status.

IDOL OF YOUNG TECHNICIANS

At 64, Stanhope is moderately tall, white-haired, with quick incisive movements and a constant smile. He is idolized by the young technicians who come to him with their problems (technical, domestic and financial). He tells them "keep your chin up, boys, have faith and never give up hope."

All work and no play makes Jack a dull boy. Far from dull, Stanhope is always bubbling up with energy and enthusiasm. He is a good soccer and foot-ball player. He has represented several times the Bengal Government Press team and the Calcutta Football club. With a scholar's mind and a worker's hands and an executive mien he has a hatred for pseudo-printers. Everything in his life has given him a deep regard for good craftsmen. He has been included in the Governing body of Regional School of Printing Calcutta, now under way. No doubt his experience and technical acumen will go far in shaping the new school for printers.

THE HOPEFUL APPROACH

His whole approach to the problem of the Printing Industry is realistic. He does not exactly believe that Indian Printing is once for all gone beyond re-organization. But he knows that the problems are much more serious than casual observers think. He has faith that they could be solved, but not overnight. He has been the Secretary for many years of the Bengal Master Printers and Allied Trades Association. This has given him an intimate knowledge of the printer's problems.

THE IDEAL

Stanhope believes in the role of Printing Magazines, and says "In this far-flung country it is desirable that printing journals with a national outlook should be produced in each major centre of the industry. This should lend to a spirit of emulation and so ensure that our trade literature will go on improving its standard." What poet Calverley said below is true of Mr. Stanhope:

"For trades are brisk and trades are slow,
But mine goes on for ever."

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From Our London Correspondent

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interesting papers were presented. The only language used during the proceedings was English, as this had proved to be the most satisfactory method at previous conferences.

In the course of the discussions it was discovered on several occasions that uncertainty prevailed in regard to the precise meaning of technical expressions. For example, it was agreed to define scumming and tinting as follows:—"Scumming" is the sticking of ink on the non-image areas of the plate, etching being required to remove it. "Tinting" is the mixing of ink with the dampening solution on the plate. The non-image area is easily cleaned by wiping with extra dampening solution.

PRODUCTION STANDARDS

The delegates also had an opportunity of visiting the laboratories of the Dutch Printing Research Institute in Amsterdam, where the President, P. van Gelder, received them. In one department the visitors were shown new methods of measuring the stresses encountered in various types of letterpress and offset machines. The Bureau of Production Standards was also visited, which carries on time studies in numerous printing plants and compiles averages, the work undertaken often leading to the investigation of technical troubles. The President pointed out in his speech that one of the greatest problems the Institute has to face is to make printers appreciate the importance of thorough and continuous scientific research, although the increasing flow of enquiries seems to indicate that progress is also being made in this direction. The next conference is to be held in Germany in September 1957, when the subject to

be discussed will be "Research Concerning Print Quality".

AUTO PLATE CASTER

The latest addition to the well-known R. Hoe & Crabtree range of printing equipment is the Baby Rotaplate Model A, which is an automatic self-contained plate casting plant for producing good solid plates at a production rate of three every two minutes. The pot is totally enclosed and fitted with a chute which enables used plates to be fed back into it without splashing or exposing the metal to the air, this method conserving heat and greatly reducing oxidation. These machines can be fitted with a fully automatic lift pump or a hand pump for pouring the amount of metal required for each plate. Agitation is carried out by paddle which has its own motor functioning for that purpose.

WORKING PRINCIPLES

The casting box is of the vertical type in which the water-cooled concave carrying the matrix is fixed in the upright position. The core is also water-cooled and after casting is swung to the horizontal position, carrying with it the stereo plate. Automatic matrix clips strip the mould from the plate after casting and obviate the need for resetting at each cast. The plate is propelled automatically into the boring arch, where it is shaved to correct thickness, the tail is parted and the end is bevelled. After shaving the tail is removed by hand. From the boring arch, the plate is again moved automatically to the water spray where it is cooled and finally dried by a revolving brush.

These models can be fitted with the particular size of furnace according to customer's requirements, and the furnace itself can be heated by electric immersion elements or by gas or oil burners.

WEB-FED ANILINE PRESS

A new series of aniline printing units has been developed by the Lerner Machine Co. Ltd. of Ponders End (Middlesex), specially designed to meet the requirements of paper converting machinery handling continuous webs. A typical unit, for example, was designed to be fitted to an existing toilet-paper interleaving machine. It is extremely robust, the rolls being mounted on massive links incorporating adequate bearings, and the adjustment of pressure between the rolls is so arranged that the adjustment of any one roll does not affect the setting of the others. The rolls can be separated and returned to their correct setting with ease, the setting knobs being conveniently placed and extremely accessible.

The displacement of the duct rolls ensures good ink control with an absolute minimum of splash, while the ink-duct is designed so that any sediment or "sludge" falls well away from the rolls. The duct is easily drained, and the ready removal and replacement of the duct has been carefully studied. This particular unit prints a web of 40" in width and has an impression length of 8". It will deal with a web-speed of over 250 ft. per minute.

Whilst preserving the basic principles and layout, these units can be specially designed to be fitted to almost any type of reel-fed paper conversion machinery.

ELECTRO-HYDRAULIC PAPER CUTTER

A Thruster-operated paper guillotine has recently been put into operation for cutting sheets at the Snakely Paper Mill of T.B. Ford Ltd. The Thrustod, manufactured by the British Thomson-Houston Co. Ltd. of Rugby, is a self-con-

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Some Offset Problems

By

MR. CHARLES F. KING

In describing lithographic plates, we generally say that the printing or image areas are made ink or grease receptive, while the non-printing areas of the plate are made water receptive. In keeping with this description it is well to remember that many plates and stones were made before the advent of photolithography by drawing directly on the plate or stone with a greasy crayon, or by transferring an impression of wet ink directly on to the printing surface either from a rubber blanket or from a special piece of paper. Two modern counter parts of these older methods are direct typing of copy on to plates for use in office duplicators and the recently developed method of pulling letterpress prints directly on to paper-backed aluminium foil in turn used as a lithographic plate.

PHYSICO-CHEMICAL REACTION

In these methods there is apparently some reaction which takes place between ink and the plate or metal. Whether this reaction is chemical or physical is not known, but the bond set up between the metal and the grease receptive film is practically indestructible. In the case of the old hand-transfer plates, a good image would last until the plate was completely worn out. This might mean that the plate had been put on and taken off the press so many times that the clamps had torn out the edges or the grain was completely gone. Actually it appears that the surface of the metal is converted into a material which will take ink.

LACQUER BASE FOR IMAGES

With the advent of the deep-etched plate this conception of ink receptivity was lost. Lacquer was introduced as a base on which a lithographic image could be built. Anyone familiar with painting or lacquering realizes that it is possible to apply paint to a surface but there is no assurance that it will hold. Generally speaking, instructions for lacquering any kind of metal state that the surface must be both clean and dry. Often this precaution was not observed in making plates, and the lacquer held only long enough to permit the pressman to get position and run a few sheets; he would then find the images beginning to go blind. As in the case of the non-work areas, and for the purpose of this discussion, we are going to presume that the plate has been made properly and blindness does not occur until the run is well under way. Just as the gum, acid and other chemicals which are added to the water fountain solution continually replenish the water receptive film on the water-wet areas of the plate, certain materials within the ink should continually restore the ink-receptive abilities of the image areas of the plate. Just what this action is or how it occurs, brings up quite a question. A number of years ago, the idea was propounded that organic acids such as oleic acid reacted with the metal to form, in the case of zinc, zinc oleate, and on this basis the theory was discarded as incorrect.

OLEIC MOLECULES ATTRACTED

Another theory held that instead of the acid reacting with the metal,

the portion of the oleic acid molecule known as the carboxyl group is attracted to the metal. Oleic acid is only one of the materials which contain this group and any one of them should tend to act in a similar manner. In fact cellulose gum (sodium carboxymethyl cellulose) is thought to behave in a similar manner but since it is water-wettable, it can be used for the non-printing areas. This theory was developed in the metal finishing field and does explain many of the effects which have been noted in the adhesion of plain and lacquer finishes on metal.

However, neither of these theories can fully account for the things that happen to the image areas on the press, although they do to some degree explain the behaviour of some of the lacquers which can be used in platemaking. Many lacquers do contain materials which could behave in a manner similar to oleic acid. In fact, it was found that the lacquer recommended as a non-blinding lacquer appears to react with zinc, whereas it does not with aluminium. Hence its behaviour differs lithographically on the two metals. It does not show as great a resistance to blinding on aluminium as it does on zinc. In testing lacquers to determine their ability to resist blinding a test procedure has been developed which perhaps duplicates some of the press conditions which can cause trouble. The test is made in the following manner:

When the plate is finished, put it on the press. Run it until you get about 100 good sheets. Then

dampen the plate with water using a sponge. While the plate is still wet with water, wash it with gasoline or naphtha to remove all the ink. Don't wash the ink off with turpentine or lithotine. These leave an ink-receptive film on the lacquer. Go over the plate again with water and a sponge to remove all the dissolved ink and solvent.

Apply a good plate etch. Rub it down and fan it dry. Wash the etch off with a wet sponge, start the press, drop the forme roller and pull some sheets.

This is a severe test. But good lacquer will take it and still accept ink quickly and produce a strong image. Lacquers that are relatively poor will not. If you apply this wet wash and etch treatment three or four times, you will soon separate the good from the not so good, as only the very best lacquers will remain ink receptive.

Actually from a chemical standpoint this test could be considered either a practical means of dissolving away the lithographic base or extracting the ink receptive portion from it. How thoroughly the lacquer is dissolved or the ink-receptive portion extracted depends on the solubility of these materials in naphtha. Readily soluble materials will be removed on the first wash while less soluble ones will require several washings to remove them. Apparently some similar action does take place during press operation when certain types of lacquer are used or when the ink does not continually renew the receptivity. When this occurs the work areas become wet with the etch and are desensitized.

There is a fallacy about ink transfer which has been repeated so often that many believe it to be true, to the effect that offset inks must be stronger than letterpress inks

because the ink film splits in half when the ink is transferred from the forme rollers to the plate and in half again when it transfers from the plate to the blanket, and in half again from the blanket to the paper. Thus it concluded that only half as much ink can be transferred and for that reason the ink must be twice as strong. The truth of the matter is that letterpress cannot use inks as strong as offset inks because it cannot transfer them uniformly to the paper. It therefore has to transfer twice the volume of ink to make up for the irregularities in the paper and the printing forme. But in neither case does the film necessarily split in half at each transfer point. The whole subject of ink transfer is being very thoroughly investigated in a number of research laboratories at the present time. But it does appear safe to say that in addition to the characteristics of the surface to which the ink is applied, such things as speed of transfer, pressure and resiliency of the giving and receiving members do play a part. These are in addition to the characteristics of the ink itself.

INK SHOULD NOT BE RUN TOO SPARE

As regards controlling water and ink on the press: Don't try to adjust colour by running your ink too spare. If colour is too strong, add a good laketine or aluminium hydrate to the ink. If you don't provide enough ink on the plate to protect the image, abrasion may cause it to walk off, or the fountain etch may attack it and you may have trouble with gum streaks when the plate is gummed up. This represents a very common cause of blindness which very closely resembles that created in the test mentioned earlier. However, during the printing operation the grease receptive material is extracted by the ink and transferred to the

blanket and then to the paper. With the resistance to wetting lowered the fountain etch can then take effect.

Similarly, the image can be destroyed by insufficient ink transfer from the forme rollers to the plate. This can be caused by a number of factors including the condition of the rollers, the coverage of the forme, composition of the ink and the pressure between the rollers and the plate and between blanket and plate. Although carrying too much water could also be listed, this is not just done by good pressmen unless the composition of the ink or a very light forme make running with the proper amount impossible. In any of the above cases ink transfer from the rollers to the plate is poor and does not compensate for the amount of ink-receptive materials removed by the blanket at each revolution.

It will be noted that in making the blindness test, emphasis is placed on the fact that gasoline or naphtha must be used since Lithotine or turpentine tend to leave a grease receptive film on the lacquer. This is another way of saying that turpentine and Lithotine contain materials which in themselves are capable of forming an image base similar to lacquer. However, the film which is left behind when they dry down is easily dissolved in naphtha. In spite of this fact, many plates have been made to run many hundred of thousands of impressions with only Lithotine as a base. But in order to secure such runs, care must be taken to be sure that sufficient ink is continually fed to the plate.

There is further evidence to indicate that various essential oils or fatty acids can be applied and the tendency to blind will be no greater than when lacquer is used. In fact, in the routine of putting

(Continued on page 27)

From the Editor's Pocket-Book

WATCH THE WATER-MARK

Printer's think that they are not concerned with the water-mark. Let me show how water-mark on a sheet affects the printing as well as the reputation of a printer. Letter-heads and office stationery ordinarily printed on bond paper have water-marks. When printing on one side only, say a letter-head, only the right side should be printed on. The water mark should be in the readable way. Further, printing on the wrong side, say a cheque, an insurance policy or other document, gives one the impression that the printer is careless. So, be on the look-out for water-mark when printing your next letter-head or printed stationery.

CUTTING COSTS ON CUTTING MACHINE

Cutting or trimming is an important operation. The blade of the guillotine is the most important part of the machine. I have seen careless cutting of a wire-stitched magazine so that the knife came on the wire and lost its fine edges. Even after months of grinding and sharpening the injured edge leaves a permanent mark on every cut book, magazine or pile of paper. So, if you see a ridge or ridges running across the cut edges of a book, don't start scolding the operator. Examine the cutting blade. You will find the injured spots on the cutting blade. Then scold the operator for having previously cut some old book with wires, straw-boards or other harmful items.

COLOURFUL COLOUR MATCHING

All are not endowed with an aesthetic sense of appreciation of

colours. Many do not know the niceties of colour harmony. Here is a tip for quick decisions on colour matching with guaranteed results. When your proof press has some leisure, take a hand roller, well cleaned and a small ink-slab also clean. With a solid tint block (any old one of an inch or so will do) pull several proofs with each available colour. Variation of the three primaries (yellow, red, blue) in one row, of the secondaries in the next row (orange, green and violet) and the tertiaries in another row (citron, olive and russet). All tints, shades of graded tones, metallic inks included, should be represented in these charts. After you have well nigh exhausted every known form of single or mixed colour, cut windows to the same size as the tint block on the edges of the charts corresponding to each colour. With this any colour combination may be seen by placing the window on the colour to be combined, before proceeding to print with that combination. If making charts are not possible, ink-dealers' catalogues may be used instead of colour proofs, adding only newly mixed colours at the end. Some dealers sell these aids also.

WHEN YOU ORDER FOR BLOCKS

Certain definite instructions are necessary when ordering blocks with your block-maker. Vague or incomplete instructions will result in loss. Here is an instance. A group photo was handed into a block-maker for enlarging the figure of a particular person in the group alone, which is to be made into a separate block. Due to lack of specific instructions, the printer got an enlarged block of the

whole group. Give size of the plate in inches (Don't say, half size or quarter size). In reduction or enlargement, write one size alone: both cannot be stipulated by you as this can be done only according to the proportion in which the original copy has been made. The finish of the plate, square, oval, vignetted, cut-out, plain finish, fine line or double line border, what mounting is to be done, copper or zinc block are all to be mentioned. In halftones, screens should be mentioned, or paper on which to be printed sent. Mechanical tints in line blocks are more attractive than halftones for certain type of copy. Line blocks are easier to print than halftones.

ELIMINATE STATIC BY THIS EASY WAY

Static electricity manifests itself in many ways in the machine room. It will disturb the sheets while feeding or while being delivered, may start ink-flying, may upset register etc. In automatically fed printing or folding machines, static upsets production by slowing down, stop-pages, double sheets or sheets sticking together, etc. A simple way is to keep a basin or bucket

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of water near or under the machine. This neutralises the static as water is a good conductor of electricity and the dry weather readily absorbs the moisture. Static accumulates more in dry weather and more on dry sheets. Incidentally, this keeping of water in buckets in the machine room also conditions the press-room atmosphere and ensures register in colour work to a certain extent.

OPENING INK CANS

Ink cans sometimes vex us by refusing to open. Every expedient is tried and proved useless. This old idea sometimes works for opening ink cans. Assuming your feet are booted, put the ink can that is to be opened sideways. Place your foot on it and roll it a few times forward and backward. This rolling with your shoes easens the lid and it will now come off smoothly. For softening rollers also, they are rolled on the ground a few times when the roller becomes soft to pick

up the ink. But care should be taken not to roll the roller on a floor dirtied by oil, grit, pieces of metal etc. Which will injure the roller surface.

BOOK MARKS OF BOOK MAKERS

Every printer will have plenty of offcuts of pulp-board or stiff paper. These small pieces cut away from other jobs while trimming need not be a waste. They may be used as book marks, after printing a small displayed advertisement of your press on them. These marks, when nicely printed, form a piece of interesting advertisement item and may be inserted in all copies of the books printed by you. Coloured offcuts will be more attractive. Even very small pieces may be used as book marks and they will remain for a long time with the reader, as a reminder of the press where the book was printed. They may bring in several new customers too. At least the name of the press, the

address and telephone number will be known to all.

CANADIAN PAPER AND PULP INDUSTRY

130 mills produce 1,000 tons of paper and pulp every hour worth 125,000 dollars, in Canada. This Paper and Pulp industry is Canada's first in employment, first in Capital invested, first in wages paid, first in value of production and first in export values. 300,000 Canadians are employed in this paper and pulp industry. The modern newsprint-making machine is a marvel of engineering and science. It costs four million dollars (about one and a half crores of rupees) and longer than a football field. A newsprint making machine can turn out a continuous sheet of paper 20 feet wide at the rate of 2,000 feet a minute. Every 24 hours it produces 200 tons of paper. The machine is so sensitive as to control tolerances of ten-thousandths of an inch in the final product.



MONOTYPE AT IPEX

Messrs. H.L. Mazumder and A. B. Mazumder are being flown from Calcutta and Messrs. C. Masilamony and C. V. Navsariwala from Bombay to assist at the 'Monotype' stand at the IPEX. They will be well known to many Indian printers as the Monotype representatives in the Delhi, Calcutta, Madras and Bombay areas.

Under the usual yearly arrangement Mr. A. B. Mazumder jnr. is already at the 'Monotype Works' at Salfords undergoing a four-month course in advanced training on 'Monotype machines.'

THE PHOTON AND THE DOW ETCHER

No two modern inventions have evoked so much interest in the Printing and Process industry as the Photon and Dow Super Speed Etcher. The May issue of *Printindia* contained a thumbnail sketch on the magnesium etcher (See page 27, May 1955). Here are some more details of the working of the twins.

The first newspaper to put the Photon Filmsetter to regular commercial use is the *Quincy Patriot Ledger*, Massachusetts, USA. It has been used for some months now for setting leader columns of the paper as well as classified and display advertisements. These are etched by the Dow Rapid Etcher. The printing depth of plates etched by the 'Dow' is over .035 inch. The plates so etched have perfect appearance with the sides of letters sloping down smoothly to a perfect-

ly clean and evenly etched base. In these plates routing of open areas are unnecessary considering the depth of etching and hence they are not painted in.

After etching, the plates are taken out, rinsed, sponged in running warm water and dried. The Plate is finished and ready for printing or for duplicating by stereo after removing of the edges held by the plate holder. It is not now necessary to etch halftones and type matter separately. They can be done together in the same machine. The halftone and type etch down together until the halftone reaches a depth of .0055 to .007 inch for a 60-line screen. Then the tone fills in leaving type alone to continue etching.

The back side of the plates etched by the Dow Rapid Etcher are perfectly level and show no penetration by acid. For the protection of the back of plates the manufacturers of Zomag have perfected what is known as "Backote."

The negatives of news pages are obtained from Photon transparencies. These transparencies are in the first instance used to make-up the news pages. From these a contact film negative is made. This is printed down on to a 16 gauge magnesium plate with poly-vinyl alcohol resist (known to the Americans as Gaco). This resist stands up well to the prolonged etching in the Dow Etcher. Pre-sensitized plates using another form

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of resist are also being used with success.

The solution in the Dow Etcher has to be renewed once a day due to extra depth in etching. Experienced craftsmen are able to know the appropriate moment for replenishing of nitric acid, diethyl benzene or other ingredients in the etching bath.

* * *

CITY & GUILDS, LONDON TO START NEW DIPLOMA EXAMS.

News is to hand that the City & Guilds whose examinations in Technical subjects are world famous, are to introduce soon new qualifications in Typography and Bookbinding trades.

The new scheme in advanced qualifications in Printing is open to any student holding a Final certificate of the C & G. There will be two stages A and B. A Diploma in Printing will be awarded in passing A and B. Stage A will consist of (i) General survey of Printing Processes and of the Printing industry. (ii) Technical processes: Letterpress, Lithography, Gravure, Bookbinding and Warehousing. (iii) Application of science in Printing. (iv) Appreciation of Colour and Design in Printing.

Stage B consists of: (v) Cost-finding. (vi) Printing Administration. It will be noticed that all technical subjects are grouped under stage A leaving Business and administration under B.

At present there are Intermediate and Final Examinations in each of the subjects in Typography. A student who passes the Final in Machine or Composing and the Qualifying Examination in the other is permitted to sit for the Full Technological Certificate Examination. This is the highest exam. under the existing set up in the British Commonwealth. Centres in India for the C & G Exams. include Madras, Bangalore and Calcutta.

Prestige of the Printing Profession

(Continued from page 12)

of which equipment are made may be painted in soft pleasing colours. Composing rooms or machine rooms with dirty walls and unpainted wood or metal give a drab appearance and kill the initiative of the workers while pleasant colours improve the atmosphere a great deal.

Galley of certain sizes may be painted in certain colours. Racks for keeping matter in various stages, viz., in print, for striking, for reading, for proof, with author, etc., may be painted in various colours for ready recognition. All this is possible only in fairly large establishments. But it is in these establishments better management is called for to reduce their high prices, to maintain their quality and to keep their delivery promises.

Waste in the composing room may be avoided in many ways. Leads should not be cut indiscriminately. Rules should never be cut at all, if it can be helped. Labour-saving rules of all standard sizes should be kept in a proper rule case. Leads also should be cut and kept in lead racks. Accumulation of pie should be prevented and when it accumulates should be promptly cleared. Battered types should never be mixed with good type in cases but kept in a separate box and sent for remelting when sufficient quantity accumulates. Frequently lazy compositors throw good types into these boxes to avoid distribution. For this, two things can be done: the hell box may be kept locked and the key kept by the foreman. The contents of the box should be carefully examined before condemning types for re-casting. Lead pieces, rule pieces and types are to be kept in separate chambers or separate boxes for re-casting.

Type cases should be cleaned once a day. No distribution should be allowed in a case full of dust or one in which there is no room for further types. The imposing stone should be oiled with machine oil at the end of the day and the next morning wiped clean. Formes should not be kept on the imposing surface for any length of time hampering other formes to be put.

A slovenly habit of storing galley and formes on the floor persists in several good establishments. This makes the composing room cumbersome, moving about difficult and dangerous, formes liable to breakage and types to damage. This should be discouraged by all. Some times formes are stacked one over the other without even caring to place a "fender" (a piece of slotted wood or metal interposed between formes to prevent damage to types) between the chases. Above all, it makes the room ugly and inefficient to look at, difficult to clean, impossible to trace and take out the forme you want and is contributory to accidents.

Forme should as far as possible be transported from one section to another on a forme trolley and not bodily lifted. The latter is the cause of many serious accidents, crippling the individuals involved, in addition to avoidable waste of energy.

Cases in case racks should be arranged from the smallest size on top to the largest size at the bottom for easy handling. Similarly, forme racks of more than one tier, should have large size formes at the bottom level, with the smaller formes on the higher tier for easy removal for corrections, proof or striking. Formes locked with wooden quoins are likely to get loosened during hot weather. An imposer should be allotted to go round and tighten the formes to prevent breakage and loss in re-setting a complete forme.

PRESSROOM PROBLEMS

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

SOLVED by *Graphicus*

36. Q. We have some quantity of opaque tints. Do you think it is possible to convert them into transparent tints? Similarly is it practicable to make transparent inks opaque or vice versa?

A. It is not possible to convert opaque tints into transparent tints. The answer to the second part of your question is dependent on so many factors relating to the original formulation that a general answer is almost impossible. It may however be safely said that an opaque ink cannot be satisfactorily converted into a transparent ink. A transparent ink of a high colour content could be made opaque with the addition of an opaque white at the expense of colour strength and with a considerable change in shade.

37. Q. Our press has to handle a metallic ink job of long run for soap wrappers (or containers). Two problems seem insurmountable: (a) When we use ready mixed gold or silver they didn't give the brilliance and when metallic powder was dusted after printing with yellow, the lustre didn't last long as it was liable to be rubbed off. (b) There is a tendency for the metallic ink to dry on rollers and on the forme resulting in constant stoppages. Please guide us.

A. Inks for printing soap wrappers must be soap and Alkali resisting, most types of metallic inks and powders will tarnish when exposed to the chemical action of soap. In these cases it is best to consult your ink maker for guidance. There is very little one can do about the metallic inks drying on the rollers during printing, the addition of a medium for slowing down drying will obviously help, but great care must be taken not to add too much. The problem can be eased to some extent by con-

tinuous agitation of the ink in the fountain and the machine should only be stopped to wash up when the ink on the ~~slab~~, rollers and forme tacks up too much. The continual movement of the rollers over the forme and plate helps to keep the ink from drying on these units.

38. Q. Recently I had to deal with a peculiar customer. He wanted his work, a souvenir, to be printed with fine screen half-tones, the originals being pencil sketches, crayons, oil paintings etc. But he wouldn't let us use a good coated paper. He insists on using some rough surfaced paper. If at all this is practicable you should know this. Is it?

A. Your customer asks too much, fine screen half tones should be printed on good quality coated papers only, although a high grade white Super Calendered or sized paper could be used.

39. Q. Here is a numbering problem in which I would be grateful for your kind suggestions. Four lakhs triplicate have to be numbered in a foil work. What, according to you, is the most economical and quick way of doing this? Size of work is Foolscap quarto. Do you advise numbering boxes, paging machines or hand numbering?

A. Numbering in triplicate in my opinion is most economically done by hand after making up the pads but before gluing or stitching same. To use of numbering boxes on a machine often leads to great wastage unless the operators are used to and skilled in such work.

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Some Offset Problems (Continued from page 20)

a plate on the press, the pressmen in one shop were required to wash the plate out with a solvent mixture which would remove all the lacquer. This was done while the plate was still under gum, and a greasy base was then applied. As far as length of plate life was concerned there was no difference between these plates and those which were permitted to run with the lacquer left on them. The reason this technique was adopted was to eliminate an epidemic of gum streaks, and by removing the lacquer with solvent, the gum also was removed.

SOME INKS DESTROY IMAGE AREAS

Just as Lithotine and other materials tend to restore or preserve the grease receptivity of the image areas, whereas naphtha tends to destroy them, some inks have the same tendencies. Some help to preserve these areas while others, over a period of time, destroy them. Perhaps this may sound like a harsh statement, but nevertheless it is true. Adjustments can be made in inks to make them run on particular jobs. Mention was made of the property known as ink transfer and how it may be affected by rollers and other factors. Sometimes in order to satisfy all of the requirements of the ink, some of the image-restoring properties of the ink are consciously or unconsciously sacrificed. Also pressmen are often guilty of adulterating ink and altering its lithographic properties. Usually they are not in as good a position to know the effects of such additions as ink makers are.

Perhaps there will be some pressmen who will be quick to challenge me on the statement concerning inkmen's ability. They will be able to cite cases where the same ink

from different sources will behave differently on the press. They will be unable to tell how they were able to make an ink work well that worked poorly prior to their making additions. Likewise they will undoubtedly be able to tell of times when they were having trouble holding a plate and they changed to ink from a different supplier and the plate came back and printed as well as it did when it was new. Or they may even be able to tell stories of ink from one branch of a large ink company causing the plate to go blind while the ink from another branch did not.

INK CHARACTERISTICS VARY WIDELY

It is found that slight differences in inks make great differences in plate life. The ability of various ink formulations to destroy, preserve or restore the ink-receptive properties of the image does vary greatly and those which tend to preserve it best could be considered to have a slight tendency to scum. This follows an age-old rule in lithography that "A plate prints best just as it is ready to scum."

One phase of image destruction which has received little attention upto this point in the discussion is that phase specifically related to so-called surface or albumin plates. The use of lacquer or lacquer type materials in the production of surface plates is not new. They have been used with varying degrees of success for the past twenty years and although vinyl resins were not available for this purpose at that time, 150,000 sheet runs were habitually printed in one plant from lacquered albumin plates. In this case the lacquer was applied after the plate had been developed, etched and gummed and was burned into the albumin image. Even without lacquer, sufficient exposure greatly reduces the possibility of

swelling when a sufficient quantity of good ink is continually fed.

It should be remembered that even the best lacquers must permit water to penetrate them if they are to be removed from the non-work portion of the plate during development. I personally made a number of lacquers which should have been good as long as the plate would hold together, but they were so waterproof it was impossible to develop them off the open areas of the plate. Therefore the maximum waterproofness must be exposed into the light-sensitive coating.

Up to this point an attempt has been made to treat the questions of scumming and blindness separately, although it was mentioned that at times they do take place simultaneously. It has also been stated that there is a very narrow limit between a point at which the plate will print most perfectly and the point at which it will begin to scum. The composition of the water fountain plays an important part in keeping the non-work areas in a water-receptive condition. Pigment manufacturers, inkmakers and varnish-makers know some of the things which can happen and some of the reasons why they happen, but there is much they do not know and have no way of finding out.

Due to the variety of formulations for fountain etches which are in use, it is impossible to predict all the reactions which can take place between an ink or some of its constituents and the fountain acid during the operations of printing. Great strides have been made in improving the materials which the inkmaker has available for use. These improvements have been made possible thro' the meagre information available concerning fountain water mixtures and have been intended to protect the ink from any deleterious effect the

er may have on it. What is often not realised is that while a certain concentration or pH value of one fountain mixture may cause a plate to tend to go blind, another mixture of corresponding pH will tend to help the ink preserve the image.

SOLUTIONS CAUSE FOGGING

A more concentrated solution may permit carrying less water on the plate and hence require less water to be evaporated from the distribution system in order to print the maximum colour density. With fountain etches of certain materials, this increase in concentration, although it may not affect the pH, will cause the grain to clog rapidly and the image destroyed. Too much gum in the fountain water causes stripping or the reversing of the water-in-ink emulsion. Permitting stripping to continue will blind the plate. There is also the possibility that a high concentration of acid will work in from the edges of the work areas and undercut them. This reduces the dot size until the fine highlights walk-off the plate. This effect is directly related to the low pH. Thus concentration of gum, ammonium dichromate, and other salts and acidity, all play an important but not thoroughly understood roles in perpetuating the life of the image.

Lithographic printing treads a narrow path, constantly beset on one side by the fear of destroying the image areas and on the other by the fear of losing ink repellence. Improved lacquer formulations such as that discovered by Patra and others tend to add a fence on one side of the path. The same could be said for the method to coast riders and drum with copper to discourage stripping. Thus an image which might have been temporarily or even permanently destroyed may be saved.

POOR COPY CONTRAST AND COMBINATION PRINTS

It is very hard to judge negatives and be certain that there is enough density in the exposed portions to give good tonal values. It is sometimes quite difficult, to see fog between dots. Simply because the negatives will make good halftone prints does not mean that they will make good surface plates. There is also the possibility of giving an excessive exposure to the plates. This is shooting through the fringes of the dots produced in making the corrections. From the standpoint of life of the image on the press, it is much better to have too much exposure than too little. Through the use of the exposure guide it can be found that it is possible to give the plate less exposure and still not affect its life on the press. In so doing we may more faithfully reproduce the tones the cameraman is putting into his negatives. If it is found that plates tend to go blind more easily when the exposure is reduced, there is a method by which the quality of the final job can be helped. Some of the best black and white work has been made through its use, although this is expensive.

Instead of the cameramen making a series of halftone shots for all the illustrations and another for all the line work, prints are made of the halftone work and pasted up with the line work. Line shots are then made of the paste-ups. In this manner the halftone prints are copy-dotted and the negative which contains both the line and halftone work will withstand as much exposure as any other line negative without altering the tone relationship.

Copy-dotting increases contrast and much of the black-and-white offset work is lacking in this one feature above all others. Following

this technique will perhaps change much of the routine which is followed in the preparation of jobs. But once the method is established everyone will be satisfied with the results.

(Courtesy: The Inland Printer)

Monotype Training

(Continued from page 10)

the time available, and may follow, more or less fully, the following sequence of training:—

UNIT SYSTEM

Having spent some time on finger exercises and acquired a working knowledge of the system of operating by touch, the student is taught to set his scale to various measures (which may vary from anything up to 60 ems pica). He has to learn to think in units rather than in thicks and thins, as the unit system is the basic principle of all composition on "Monotype" machines. The method by which the units are registered and the scale which indicates how the lines are to be justified soon become familiar to him, and he is perhaps rather amazed to realize that spacing, even to infinitesimal amounts, and justification, are far more accurate and flexible on a "Monotype" keyboard than they are in hand composition in the stick.

Later on he commences, in a carefully graded series of exercises, tabular work—each exercise being strictly related to definite kinds of current commercial work and to the class of work performed in the office for which he is being trained. He finally receives instruction in most intricate work, both tabular and jobbing.

At the end of the course a certificate is issued giving the results of a final four-hour test. Constant practice on the machine in the printing office is necessary to enable the operator to reach his maximum average speed.

PRINTINDIA

Our Growing Family

There are those that consider India's Manpower as a liability and her growing population as a symptom of a malady. We in the Printing Industry believe that growth of population is not a disease as such, but on the other hand it can be harnessed into right channels by proper training and utilization of the available working population. Then it becomes a great asset. We furnish below extracts from the Census Report recently released. The Statement shows number of men and women employed in the Printing Industry in various regions of India as well as number of employers and independent workers in the industry. Although the figures relate to the year of Census

i.e., 1951, these are, it should be remembered, the only latest figures available. It will be seen that a total of 124 thousand males and 29 hundred females are in the industry. Of this about 8,000 are employers (males) and 200 employers (female) and the rest employees. The major portion of the workers are in the region of Bombay, i.e., Western India, Calcutta (East India) coming as a very close second leaving South as a good third with about 28,000 men and a little over 1,000 women. We believe the number of workers in the printing industry is an index of various things relating to that region. First it means that there is more education, the people are more cultured and civilized and

that they are interested in inter-communication and exchange and spread of knowledge. Secondly the figures show that there are many presses and hence a market for trade and industry. Thirdly, there is a need for printing schools in these regions. These figures, if anything should make all connected with the industry think. Our aim in publishing for the first time these very important printing statistics is only to make printers, paper makers, machinery manufacturers, educationists, printing school people, students of the craft, the state—all think and act for the good of the industry and its progress. For on this progress depends the progress of all branches of knowledge.

Printing Industry—Employers and Employees in India—1951

	TOTAL		EMPLOYERS		EMPLOYEES		IND. WORKERS	
	Males	Females	Males	Females	Males	Females	Males	Females
INDIA	123759	2877	7928	199	93553	1614	22278	1064
ZONES:								
I. North India	17999	296	906	37	12148	80	4945	179
II. East India	31053	325	2287	31	21921	175	6845	119
III. South India	27977	1182	2314	94	21294	803	4369	285
IV. Western India	31228	568	1580	27	27400	367	2248	174
V. Central India	8978	220	524	9	7207	164	1247	47
VI. N. W. India	6518	286	317	1	3577	25	2624	260
Andamans	6	...	...	...	6	...	...	...
NORTH INDIA:								
UTTAR PRADESH								
Himalayan U.P.	397	9	112	3	197	2	88	4
East U.P. Plain	3110	31	230	17	1998	3	882	11
Central "	7715	60	254	6	6385	34	1076	20
Western "	6532	149	302	11	3495	41	2735	97
U.P. Hills and Plateau	245	47	8	...	73	...	164	47
EAST INDIA:								
North Bihar Plain	574	5	40	1	178	...	356	4
South "	1422	...	97	...	536	...	789	...
Chhota Nagpur	321	...	14	...	216	...	91	...
ORISSA:								
Orissa Inland	78	16	...	...	75	16	3	...
" Coastal	421	27	10	...	367	...	44	27

JULY 1955

	TOTAL		EMPLOYERS		EMPLOYEES		IND. WORKERS	
	Males	Females	Males	Females	Males	Females	Males	Females
WEST BENGAL :								
W. Bengal Himalayan	388	12	13	...	302	12	73	...
" Plain	26124	211	2070	28	18769	117	5285	66
Chandernagore	29	...	3	...	20	...	6	...
ASSAM :								
Assam Plains	1564	45	38	2	1357	28	169	15
Assam Hills	40	4	2	...	33	...	5	4
Manipur	53	2	...	...	50	...	3	2
Tripura	32	3	...	...	12	2	20	1
Sikkim	7	...	...	...	6	...	1	...
SOUTH INDIA :								
Madras	20743	981	1978	94	15332	652	3433	247
Madras-Deccan	431	144	34	20	213	32	184	92
North Madras	2707	34	232	2	1764	14	711	18
West Madras	1918	45	88	4	1696	30	134	11
South Madras	15687	758	1624	56	11659	576	2404	126
Mysore	2862	74	157	4	2301	42	404	28
Travancore-Cochin	4349	127	176	8	3642	109	531	10
Coorg	23	...	3	...	19	...	1	...
W. INDIA :								
Bombay	29668	507	1461	25	26223	360	1984	122
" Deccan North	7183	109	369	4	6448	87	366	18
" " South	1040	17	102	2	587	4	351	11
" Gujerat	3425	53	280	1	2675	39	470	13
Greater Bombay	16615	203	609	16	15353	172	653	15
Bombay Konkan	1405	125	101	2	1160	58	144	65
Saurashtra	1497	59	116	1	1121	7	260	51
Kutch	63	2	3	1	56	...	4	1
CENTRAL INDIA :								
Madhya Pradesh	4204	155	306	7	3105	114	793	34
N. W. "	738	91	128	2	477	76	133	13
Eastern "	331	25	26	...	271	9	34	16
S. W. "	3135	39	152	5	2357	29	626	5
MADHYA BHARAT :	1643	23	43	2	1397	13	203	8
M. B. Lowland	580	1	12	...	519	...	49	1
" Plateau	1023	22	31	2	851	13	141	7
" Hills	40	...	...	...	27	...	13	...
HYDERABAD :	3063	42	174	...	2660	37	229	5
" North	166	4	27	...	124	3	15	1
" South	2897	38	147	...	2536	34	214	4
VINDHYA PRADESH :	11	...	...	...	1	...	10	...
Bhopal	57	...	1	...	44	...	12	...
NORTH-WESTERN INDIA :								
Rajasthan	469	256	11	...	277	15	181	241
E. Rajasthan Plain	170	196	...	...	142	...	28	196
Rajasthan Dry Area	172	6	4	...	64	1	104	5
" Hills	76	14	3	...	56	14	17	...
" Plateau	51	40	4	...	15	...	32	40
PUNJAB :	2031	29	94	1	990	10	947	18
" Himalayan	237	11	23	1	167	10	47	...
" Plain	1794	18	71	...	823	...	900	18
HIMACHAL PRADESH & BILASPUR :	...	...	...	...	...	...	...	...
Pepsu	60	...	4	...	18	...	38	...
Delhi	3632	...	193	...	2148	...	1291	...
Ajmer	326	1	15	...	144	...	167	1

Sensitizing Media for Ink-Albumen Plates

(Continued from page 8)

its full depth. Thick coatings extend above the grain of the plate too far with the result that they are easily destroyed by abrasion on the press. They are also susceptible to swelling, as moisture and acid from the fountain solution can reach them and they do not present as good a surface for anchoring the ink to the image as a thin film which follows the grain of the plate.

On the other hand, on very thin coatings in which the tips of the grain remain uncovered, there is every possibility of the ink taking a hold on the metal during developing which results in a scummy plate unfit for printing.

The following are some of the most used formulae of egg albumen coating solutions :

SOLUTION NO. 1

Egg albumen flakes	...	5	oz
20% ammonium dichromate	...	6½	"
Solution	...	65	"
Water	...	5	drms.
Liquid ammonia (.880)	...	4°	Beaume
Density of the total solution is	...	...	...

SOLUTION NO. 2

Albumen crystals or flakes	...	3	oz
Ammonium dichromate	...	1	"
Water	...	32	"
Few drops of liquid ammonia.	...	...	...

SOLUTION NO. 3

Albumen crystals or flakes	...	6	"
Ammonium dichromate	...	1½	"
Water up to	...	80	"
Liquid ammonia	...	1½	"

HOW TO MAKE SOLUTION

Weigh out the dried albumen. If crystal is used, then grind into a fine powder, when it can be dissolved more readily.

When albumen flakes are used, make a bag of the proper size to hold the albumen, using 12 to 16 thicknesses of cheese-cloth. Moisten the bag and squeeze out the excess water. Place the flakes in the bag and suspend it in water so that it is just covered. Allow to stand overnight, or at least 3 to 4 hours, to dissolve completely. Remove the bag gently and drain it. Do not squeeze the bag. Never use hot water. Test the mixture with a hydrometer and adjust it to about 5.2° Be.

The ammonium dichromate crystal is powdered in a mortar, but some water should be added (use the remaining water) during this operation to prevent dichromate dust.

Liquid ammonia is then added. The solution is filtered through wet cotton-wool placed in the neck of a funnel. Always keep the solution in a dark brown bottle and in a cool place.

Where fresh egg is available, the following formulae may be used for coating solution :

SOLUTION NO. 1

Natural egg albumen	...	White of 7 eggs
Ammonium dichromate	...	32 grains
Ammonia (.880)	...	3 to 4 drops (or sufficient to change colour)
Water	...	7 oz

SOLUTION NO. 2

Natural egg albumen	...	White of 2 eggs
Ammonium dichromate	...	40 grains
Ammonia (.880)	...	12 drops
Water	...	8 oz.

In America, frozen egg white is also used.

From Our London Correspondent

(Continued from page 18)

tained electro-hydraulic device which is designed to exert a constant thrust on mechanisms of various types, and operation can either be by means of a limit switch or by a photo-electric relay.

OPERATION OF THRUSTER

On the guillotine in question, the material is passed under the guillotine head and then between two tables that form an aperture through which the light from a photo-electric relay equipment is projected. When the light beam is interrupted by the material as it is fed between the tables, two Thrusters operate the guillotine so that cutting to the required size takes place. When the cut is completed a third Thruster tilts the lower table so that the sheet slides clear. When the light beam is restored to the photo-electric cell, the blade of the guillotine returns to the top of its stroke and the table to its original position.

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Why Set-off

(Continued from page 14)

fied into physical, mechanical and chemical means.

Interleaving, is the simplest method of getting over the problem. But this is laborious and involves additional room and materials, apart from cost and delay. Mechanical devices which automatically slip-sheet printed copies as they are delivered are also available. Chemical sprays, liquid or solid are also used to interpose between one printed sheet and the subsequent a thin spray of some waxy substance by means of a gun. This prevents one sheet from actually touching the subsequent sheet and set off is avoided. Further a layer of air remains between sheets to accelerate oxidising and quicken drying.

Various types of wax sprayers are the "Grammer" paraffin wax sprayer, the "Rodas" sprayer and the "Aeroset", etc. These are independent spraying units complete with motor, air compressors and air receivers and tubes for conveying air, all mounted at a convenient height on a platform. Spraying equipment connected with the machine is also supplied for platen as well as cylinder machines. Liquid or powder spraying chemical may be used on these. The location of the spraying equipment is generally near the delivery board. But the Americans prefer to have it fixed to the lower path of the sheet travel before delivery.

The Aeroset dry spray process claims positive prevention of set off, elimination of spray fog, freedom from harm to operator and damage to machinery. It does not cause sticking, facilitates subsequent operation and is extremely economical. It can be used, according to the manufacturers, for every class of printing, from carton production to the finest multi-

colour work on any type of machine.

On the other hand the Aeraspray anti-set-off equipment was invented twenty years ago.

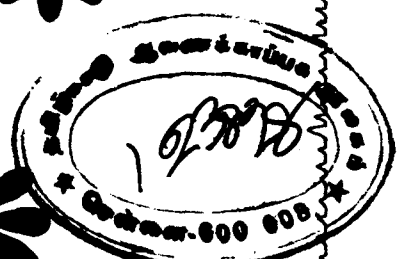
A new principle in set off prevention is by the Aeroset Mk. III gun which ensures positive mechanical metering of powder. By simple interchange of needles, positive presetting of rate of spraying is possible. There is visible delivery, i.e., the operator can see plainly each sheet before it reaches the nozzles. The rate does not vary even in such small quantities as half a milligram. The perforated needle picks up exactly the right amount of powder for the job. The correct needle size is shown on a chart from which selection is to be made. The change-over takes only a few seconds.

There is a tendency to prefer the powder spray to the liquid spray to prevent set off. But the disadvantages are that the powder should always be kept dry. Otherwise the passage is clogged and free flow is prevented. Another disadvantage is when the sheet has to pass through the machine for another printing. This causes accumulation of powder on the cylinder. The latest in anti-set off equipment is the oxy-dry device. Across the cylinder is a container like the ink duct over which a roller revolves and brings down a predetermined quantity of powder into the range of an electronic tube. The powder is immediately ionized and dispersed over the printed sheet. This layer of powder deposited on the sheet serves as a support for the subsequent sheet thus allowing time for the ink to set. It also neutralizes static electricity. Delivery is made easy and friction is avoided and hence set off also. Ionization is resorted to attract the powder particles towards the inked part of the sheet

only. Infra-red heat driers are also used in the U.S. by allowing the sheets to rest in a region of high temperature on the delivery board.

Set off is more common on coated papers and glazed stock and to a lesser extent on highly sized paper. Every printer is conscious of the great danger of set off on coated and imitation art. The difficulty may be experienced to a greater extent when unsuitable ink is used. Slowing down of the speed, extending the delivery time or having a double extended delivery prevents set off. In double extended delivery, adopted in U.S., there are two piles and the printed sheets are delivered on alternate piles thus extending time of another sheet being deposited. Though additional space is required for this double delivery, it is a method worth trying, as the principle upon which it is based is sound.

As was pointed out in the beginning of this short discourse, set off is preventable, avoidable and remediable by adopting easy methods. A little carelessness will ruin the whole job which would have otherwise been unblemished. Set off is no major problem as bad register. Sometimes set off occurs while clamping on the guillotine, while rubbing with the bone folder for section folding, while nipping or smashing in the hot press or rolling machine. A little presence of mind on the part of the warehouse hand will avoid set off in the binding stage. A sheet should be examined by running the nail or thumb over the print, across. If, the ink smudges, it is not yet dry and the printed sheets are not safe to be clamped, folded or pressed. But principally it is a machine room problem and has to be dealt with as such although set off may occur at any stage until the books or other printed work leaves the works.



255-3828

Colour

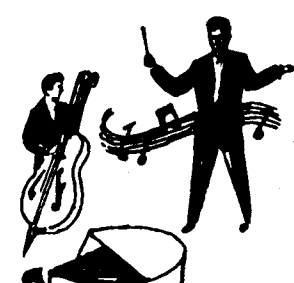
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