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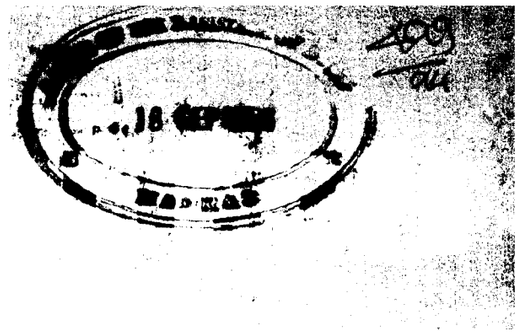

OFFICIAL JOURNAL OF THE INDIAN FEDERATION OF PRINTING TECHNOLOGISTS

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PRINTECH

THIRD ANNUAL NUMBER

Official Monthly of
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Articles of technical interest on Printing and Allied Trades are invited for publication from Master Printers, Technologists and others connected with the industry.

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THE THIRD MILESTONE

THE third birth anniversary of the PRINTECH coincides with the ninth anniversary of India's independence, and while rededicating ourselves to the service of our Motherland we also renew our pledge to strive ceaselessly in the cause of the Graphic Arts and of those whose avocation relates to printing.

Looking back over the three years that have passed, we notice with satisfaction that PRINTECH has done a valuable job in respect of disseminating knowledge in the technical field it serves. The journal has gradually grown in importance and is now recognized by printers as one devoted to the cause of improving printing standards in India. In addition to publishing articles on various aspects of the industry, PRINTECH has also been a chronicle of important events. Special numbers were brought out on significant occasions like the Indian Industries Fair at Delhi, the Books Exhibition at Madras, and the All-India Master-Printers' Conference and Exhibition at Allahabad.

But the sense of satisfaction is by no means complete, for there appears before us an unending vista of things to be done to put the industry on a sound footing, in the technical sense. The printing industry in India has now come out of the Slough of Despond, and its increasing prosperity is reflected in greater profits and the larger number of hands employed. The demand for the printed product is very much on the increase, and with the publicity and other work connected with the country's five-year plans is bound to go on increasing at a rapid rate.

While this is so, it must be pointed out that there has not been simultaneous or commensurate improvement in the quality of printing, except in exceptional cases which only prove the rule. The need for trained craftsmen in this field is greater now than ever before; and it will increase in the years to come.

The Regional Schools of Printing which have been started by the Government have to tackle this onerous task with imagination. The first and fundamental requirement is a realization on the part of those in charge of technical education that a course in printing should mean complete instruction in all aspects of the craft; the purpose of technical education being twofold, viz., to enable those who undergo it to raise the standards in their chosen field and to help them secure good jobs with decent emoluments.

There has been woeful deficiency in the matter of practical training in the technical institutions. Diplomas and certificates awarded by these institutions have not been given much respect even by the very departments which awarded them. The reason trotted out for this is that the diploma-holders lack sufficient practical training and experience. This anomalous and ridiculous position arises because these printing institutions did not give adequate practical training and the master printers do not have any scientific scheme for recruitment and training of apprentices. All this inevitably results in persons who sacrifice the prime of their lives learning whatever is taught at these institutions not securing even a respectable livelihood.

It is therefore obvious that the mere starting of more and more schools of this kind will lead nowhere, so long as there is no system to co-ordinate the course of education and training in the private sector of the industry. We have had occasion to refer to this problem before and to place before our readers an outline of the manner in which this problem should be tackled.

Together with this, the Government should ensure that the diplomas and certificates awarded by them do not become worthless by their not being recognized by employers. It is government's duty to prescribe these as the minimum qualification for employment of technical personnel in the Government establishments all over India, so that master-printers may also be persuaded to follow suit.

We take this opportunity to thank the advertisers, paper dealers and the editors of various technical journals and others who have helped the regular publication of this journal.

QUALITY *and* price-cutting

By V. JOHN, M.A. Proprietor, Klein & Peyerl, Madras

It is not quite unusual for us to hear a customer remarking "another printer has quoted cheaper than you" and the printer replying "if it is so, I will give you one rupee cheaper". It is quite rare to hear the printer answering "well, if it is so, let that printer do it for you. We keep a quality and we keep a definite price. If you don't pay us this price we will not be able to keep the quality, and we will not send out of our press an inferior job."

If we look at this matter very carefully, we have got to admit that we are in a vicious circle. We should seriously think and analyse as to how any printer can cut prices.

Let us first of all consider what factors contribute to the price of printing. The important factors that go to determine the price are, paper, ink, investment and wear and tear of machinery, the technical personnel employed for production and the overhead expenditure. Let us consider each of them individually.

Paper can be purchased locally or imported. Whether you buy locally or import paper, the difference is not very much, if we take into account the investment; the idle stock and many other factors against the small savings effected by import. Of course, big differences occur in the fluctuating market by prices shooting up and down. This has also to be considered. The net result will round up to the fact that paper prices are almost the same for all printers.

The second item is ink. This also remains the same for all good printers who use good inks. The printer who wants to produce good work buys good inks, and so the expenditure involved is the same for all good printers.

The third item is the wear and tear of the machinery. Here the expenditure-calculation is a little more involved. Let us consider that one printer has a first class machine capable of printing 4,000 copies an hour while another printer has a cheaper machine giving only 2,000 copies an hour. If the price of the first is Rs. 15,000, the price of the second will be about Rs. 7,000. So the investment is smaller, and the depreciation is smaller. Also, if second printer buys two machines, he can almost equalise the production. Of course, the better the machine, the better is the possibility of good work. But we can, for our calculation's sake, put down the expenditure, when everything is taken into account, as equal.

The fourth and the most important is the technical personnel. Here also we find that a good workman has always to be paid good wages, and it is almost the same in all places.

The fifth item is the overhead expenditure like supervisory staff, canvassers, rent, etc., and this also is normally a particular proportion of the turnover in all establishments.

Now that we find that, for getting a quality production, the expenditure involved is almost the same in all good printing establishments, it is for us to find out how and why any printer can under-cut prices. There are four types of printers who undercut prices.

The first type of printer cuts prices for customers who bargain, and loots customers who do dot bargain, but give an open order, and thereby compensates the previous loss. This method is something which no decent printer will adopt. Those who practise it and who think that they can get away with it will find out, sooner or later, that they have backed the wrong horse.

The second type cuts prices and gives inferior printing and tries to talk the customer into thinking that the work is very good. If the customer refuses to take delivery of the work, this printer appeals to the customer's good sense not to make him bankrupt by not taking delivery. Somehow, in the end he forces it on the customer who may not have the time or the patience to get it reprinted by another printer. This type of printer will also find out that this is bad business-technique to adopt, and that this eventually will give him a bad reputation and thereby will cost him his clients in the long run.

The third type who cuts prices by working on a loss and still gives very good quality is the most dangerous of the whole lot. He is the man who banks on his fat bank balances created most probably from other gambles which have succeeded. His idea is to create an impression in the market that all the other printers have been looting the customers, and that he is the only honest man giving good work at low prices. He does not care to look into his losses for the moment, or even for sometime His whole idea is to put all the other printers nearby out of job, and grab all their clients by this underhand method His idea is also to make other printers close their business, and then slowly increase his prices on some pretext or other, and compensate his losses very soon by charging higher prices to the customer who has nowhere else to go. But normally this type, who is a curse to society, is not always encouraged by the decent customer. The customer sees through his deception when honest printers put facts and figures before him. Instead of getting encouragement from customers, this man soon finds that his bank balance is leaner and all his castles in the air have been blown away.

The fourth, the finest type of printer, is the progressive printer who thinks for his customer, and considers his customer's work as his own. He devises methods to save at every stage of the production, without sacrificing quality. He strives every moment to study modern methods and their advantages. He utilises all this useful knowledge to reduce the cost of production, and transfers the saving to his clients. This type of printer keeps his head high. He is able to keep a steady price. He is able to slowly bring the prices down without losing on quality, and still secure a fair margin of profit for himself. This type of printer is able to cut the prices to the lowest level and attract customers not by price-cutting, but by lower prices consistent with good quality, which is what all of us want. This man is the progressive printer.

Let us now pause for a moment and think whether every printer cannot attempt to be a progressive printer and what methods he should adopt to achieve this. As is explained above, we have to save at every stage, consistent with quality.

We have already analysed the items that go to make up the production-cost. They are paper, ink, machinery, technical-staff and overhead. Let us find out methods to cut down each of these items without sacrificing quality and with the intention of transferring the savings to the customer, and thereby reducing prices.

First is paper. A customer approaches you for a good booklet with some blocks thrown into it. He wants to print it on first class art paper, and he says he does not mind the cost. It is the duty of the printer to show him various types of papers which will give the customer an idea as to what he needs, and advise him the cheapest paper consistent with good quality-production. The printer should not try to get more handling charges by showing the customer only the costliest art paper. He should feel with the customer, and advise him properly as if the job is his own. By such an approach he saves the customer unnecessary expenditure, and indirectly gains

a very valuable client. A satisfied customer who trusts the printer and recommends him to his friends spontaneously is the printer's biggest asset.

The second item is the ink. Here the customer does not come in. It is the printer's own conscience that he should satisfy. The customer can never see the make of the ink the printer uses. The printer owes it to his conscience and his decency to use only first class inks for the job. To save money on this item he has to buy inks in bulk, and save a little. But this way he cannot save much. His saving must come out of avoiding the unnecessary waste that happens in many establishments. Many printers have just to wipe off the ink after printing a few hundred copies of one job, because another colour will have to go on the same machine. This is criminal wastage. It will be wiser to add more machines if such wastage can be avoided. The printer, who carefully calculates and finds out methods to eliminate such waste, will be able to substantially reduce his prices for his customers.

The third one is machinery. A printer who equips himself with first class modern machinery is able to reduce prices for production. Let us study the consequences of installing the latest equipment with modern time-saving devices. Except for the initial investment, everyone will agree that modern automatic machine give better printing and faster production. To the progressive printer who can invest or find sources to borrow, modern machinery saves more than the interest on the investment and the wear and tear by saving on man-hours and overhead. An investment of rupees one lakh must produce towards interest about Rs. 9,000 a year. This is equal to Rs. 750 a month, which is Rs. 24 a day or Rs. 3 an hour approximately. If you are able to print 3,000 copies extra per hour you will earn Rs 3 per hour, i.e., the money to pay interest. If you print another 3,000 copies more per day, you are able to cover the normal depreciation of Rs. 9000 a year. If you are able to print more than that, it is your profit. This, of course, does not take into

"What do you think of the new production manager?"

Courtesy: Printing News

consideration the saving of labour which brings an extra profit. It is for the printers to judge whether it is wise for them to go in for better machinery and whether their expectation of work will justify the new investment. Of course, the investment in better machinery will definitely be justified if quality is the only consideration. But if the machinery cannot be fully utilised at least in a year or two, or if there is no scope in your area for more work, you have to think twice before you go in for such investments and you will have to make the best of what you have.

The fourth and the most vital factor where large savings are to be effected is by the technical personnel, your workmen and supervising staff. I consider this the most important, because a good workman can manage to produce good work even on a bad machine and exceptionally good work on a good machine. I have already said that a good workman always has to be paid well. "Now, where is the saving" will be the question which everyone will ask. It is here that good employer-employee relationship, understanding and co-operation come to play. A progressive printer

considers his employee one of his partners in the business and treats him as a partner with equality. If such a healthy relationship can be created in any institution, that institution can always produce anything better and cheaper. It is this spirit that promotes the finest in human nature for the benefit of everyone. But I have to warn you here that sweet talk and nice words or promises will not work for long. Solid action alone will work and give you everlasting co-operation. You must devise means and methods so that the workmen and staff share in the prosperity of the firm and enjoy the fruits of the prosperity in rupees, annas and pies. If the workmen feel absolutely sure that their future is directly linked with the prosperity of the institution, I can assure you that they will willingly sacrifice anything if and when the institution faces bad times. Not only that, they will not tolerate idleness, of a few black sheep among them who stand as stumbling blocks in the progress and quality of production. The workmen will become self-appointed guardians of the progress in production, in quality and quantity. They themselves will devise time-saving methods. They will consider the institution as their own and increase the production by putting their best into it. The normal expectation out of this healthy employer-employee partnership is a doubling in production without loss in quality. This is the sum-total of the savings effected in make-ready time, printing time, printing wastage, and idling time. At this stage I would like to make some observations apparently outside the subject, but which have a definite bearing on this employer-employee relationship. By workmen I mean those men who, though they are not highly educated, are willing to do any manual labour and who unconsciously have realised that there is dignity in labour. I have got to exclude many of the modern so-called technically educated young men who consider themselves good printers since they have studied a few years in a printing school. Having passed through the portals of these technical institutions where theory has more place than practice, they consider themselves demi-gods who should not

dirty their hands or spoil their pants. I would like to warn them that they are looking at life through a pair of green glasses. Of course, they have studied books, heard lectures, and seen many modern techniques. But they have still to learn the most important thing, that "practice makes perfect". They should realise that their knowledge is more in theory than in practice, and when they are put as supervising staff they do not have the same practical experience of the practical workmen whom they have got to control. These workmen have put in a lot of years of hard work and learned many more things in the practical way than what the novice with theoretical knowledge knows. They should be willing to learn more from the practical though less educated workmen and should treat them as his equals or even betters. Then, and then only, they will be able to learn to do things better. They will also find that their technical education is completed by practical experience and they will then become real printers.

The last item is the overhead. This can be saved automatically by putting these staff also in the same healthy-employer employee partnership and by treating them with understanding. The canvassing staff will then go about and get more and more work, the office staff will put your customer at ease because they consider themselves partners in the institution. You will find that every customer, who comes in, continues with the institution and does not go in search of other printers. You, thereby, create a satisfied set of clients, and multiply them every day. These clients will become your biggest advertisement medium because they will talk to others and convince them that you are the best printer, who combines quality with moderate prices.

This method of good quality work combined with moderate prices is what everyone can achieve with a little more thought and organisation put into the working of one's institutions. One printer should not underquote another because they belong to the same Brotherhood. They can try to excel each other in quality and in service, but keep the same prices. It is high time that the printers join together and work with this end in view. It will be a good practice if all the printers agree together and each one specialises in one or two particular types of printing. When jobs outside his speciality come to him, that printer should recommend the customer to go to another printer who specialises in that line. A customer will then have confidence in both the printers. The other printer will then in turn repay by sending his customers to the first one when they want work outside his specialities. This, healthy chain-reaction will have far-reaching effect. It will create a very healthy atmosphere among printers and will pave the way to better printing at cheaper prices. One printer will be able to shake hands with another printer over a cup of tea and say very sincerely "Congratulations, your work is very good" while the other can return the same compliments with sincerity. What we face now-a-days is just the opposite. There is jealousy, bickerings and a tendency of fault-finding among printers.

Let us strive to bring in healthier relations between printer and printer, customer and printer, and also printer and his employees, by keeping up quality in printing, and healthy competition. Let us create a brotherhood of printers, who will help each other and in turn serve the trade well ★

Management Competes with Management

"You can't determine where you are heading, or lay down any course to follow, until you know exactly where you are right now. Your company can offer all kinds of products and services, but it won't succeed without GOOD MANAGEMENT. In the final analysis, you are not Competing with the products and services of other printers; you are competing with their MANAGEMENT".

—Houston Graphic Arts Bulletin

The Early History of Printing

By VICTOR SCHOLDERER

Among the many problems in the early history of printing which are unlikely ever to be solved the most notorious are those surrounding the first stages of the invention itself. It is true that the claim of Johann Gutenberg to be considered the father of western printing is no longer challenged, for there can be few who still follow J. H. Hessels and Gustav Zedler in believing that his achievement was anticipated by Lourens Coster at Haarlem, however uncouth the appearance of the so called *Costeriana*. And the combined evidence of the records and the actual books makes it practically certain that while Gutenberg was already experimenting at Strasburg in the 1430s, his efforts were not brought to full fruition until the 1450s at Mainz. But we must remember that only three of the surviving archival records connected with him make any mention of him as a printer, and that neither his name nor any date or imprint occurs in any piece of printing referable to him.

There is little likelihood that further records will ever come to light, but of late years the typographical remains have received on important reinforcement in the shape of four leaves of printed proof preserved in the Library of the Universitas Jagellonica at Cracow. It is not known how or when they entered the library, but their condition shows that they have been taken from a binding, while writing decipherable under the print discloses that they originally formed part of a daybook or ledger kept by a cloth-dealer at Mainz towards the end of the fifteenth century. The most remarkable of them is a proof (or possibly a variant) of the so-called *Astronomical Calendar*, the only known copy of which (and imperfect at that) was discovered by Zedler at Wiesbaden many years ago. Another is a leaf of proof appertaining to a Latin Bible of 40 lines to the column, and the remaining two (together with one blank) are from a Donatus of 27 lines to the page. All are printed with what is generally referred to as the "Donat-und kalendertype," a fount of the same class at that of the 42-line Bible, which in its final state was used to print the 36-line Bible, and it is evident that all are very close together in time.

From the fact that the *Calendar* is calculated for the year 1448 it has usually been assumed that it was also printed at this early date and should therefore be regarded, together with other short pieces typographically akin to it, as Gutenberg's earliest work, long prior to the 42-line Bible. This assumption, however, has always caused difficulties, the chief of which is that two of the kindred pieces relate to an agitation for a crusade against the Turks, which culminated in a Bull proclaimed by Pope Calixtus III in June, 1456. The improbability that a sheet printed in 1448 should show the same typographical peculiarities as others printed eight years later was never squarely faced by the bibliographers. Only Otto Hupp, who was not a bookman but a designer and metal-worker, repeatedly declared that there must be some error in the date of printing assigned to the *Calendar*, which he preferred to regard as a type-specimen executed to advertise the printer's skill without regard to the text—scarcely a convincing explanation. The matter has now been cleared up by Dr. Carl Wehmer, who, in the course of a minute investigation of the Cracow fragments (*Mainzer Probedrucke*, Munchen, 1948), has shown that the *Calendar* is not really a calendar at all, but a popular guide to the casting of horoscopes, which, although based on astronomical calculations for 1448, would continue to be serviceable to amateur astrologers long after this date, and might thus quite well have been printed considerably later. In fact, the *Calendar* and all its compeers are mere preliminaries to the printing of the 36-line Bible, which cannot have taken place much before 1460, and the type, so far from being the earliest known, is actually later than the founts used in the 42-line Bible and in the famous Psalter of 1457. At no stage can it be connected with Gutenberg; more particularly, Gutenberg was not responsible for the 36-line Bible, for, although this is largely reprinted from the 42-line Bible, it is not entirely so but follows on its first few pages an inferior manuscript; an inexplicable procedure if the printer had been Gutenberg, to whom his own earlier work would surely have been available as a model from the very beginning.

The Cracow fragments show beyond any doubt that in the beginning the type was evolved at Mainz. On the other hand, there is every reason to suppose that the 36-line Bible itself, after being originally planned with 40 lines at Mainz, was ultimately produced at Bamberg, an episcopal city rather more than 100 miles to the west: the water-marks of its paper, the provenance and bindings of surviving copies, and the fact that the discarded type is found a little later in the possession of an undoubtedly Bamberg craftsman, Albrecht Pfister, all point to this conclusion. At Mainz the firm of Fust and Schoeffer was now all-powerful and may have been already contemplating the splendid Bible which left its presses in 1462; a hint of this would be enough to induce any prudent competitor to shift to less debatable ground.

While this matter may now be regarded as settled the same cannot be said of the problem presented by the *Missale speciale* for the use of Constance, which has been known to students as long as Zedler's *Calendar*, and which has recently been much discussed in connection with the purchase of one of the three known copies of it by the Pierpont Morgan Library. The Missal, a plain folio of medium size, without date or imprint, contains but one type more, and that the smaller of the two types used in the Fust-Schoeffer Psalter of 1457 in its earliest state (as now distinguished by Sir Irvine Messon in his monograph *The Mainz Psalters and Canon Missal, 1457-1459*). Otto Hupp, who was the first to submit the Missal to close examination, convinced himself that it was an early production of Gutenberg, made when he had not yet acquired full mastery of his art, and that it was in fact the earliest surviving piece of western printing, prior even to the 42-line Bible. His view met

ff den vnde dag februarij das ist off passentag so nacht zu xij
uren nach mittage ist der mane nuwe Vnd sint sonne vnd
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wagen vnd gen hindersich · Mars in dem xv gde des scorpions ·
Venus in dem xij grade des wassergiessers vnd gen hindersich ·

Portion of the proof in Cracow University Library of the Astronomical Calendar, composed in the type of the 36-line Bibles, printed in Mainz almost certainly in 1458 and in an office not connected with Gutenberg.

with general opposition at the time, but much expert opinion looks with favour upon it to-day and it is accepted in many quarters. Its difficulties, however, seem to be underrated at the moment. The lengthy interval posited by Hupp between the various states of the type is not borne out by Sir Irvine Masson's researches and the general appearance of the Missal scarcely suggests a primitive effort. As the provenance and binding of the three known copies point to a connetion with Basle (to which see that of Constance was suffragan) a case might be made out for supposing the book to be the work of some indifferently equipped craftsman setting up at Basle with the type discarded at Mainz. The appearance of an exhaustive review of the whole subject which Dr. Curt F. Biihler, of the Pierpont Morgan Library, is understood to be preparing will be awaited with great interest.

The Helmasperger notorial instrument, our only source of information about the famous lawsuit which ruined Gutenberg in 1455, has recently been submitted by Dr. Rudolf Blum, in *Der Prozess Fust gegen Gutenberg* (Wiesbaden, 1954), to what is perhaps the most searching examination that it has yet received. While not acquiting Fust of having had a particularly keen eye to the main chance in timing his action, Dr. Blum suggests that there may also have been some sharp practice on the part of Gutenberg as his debtor. The book concludes by advancing the novel theory that the great work planned by Fust and Gutenberg at the outset of their partnership was not a Bible, as generally assumed, but a Missal requiring four different founts of type. This was never realized, but one of the types was used for the 42-line Bible, to which Gutenberg switched over when Fust applied financial pressure, while two others subsequently appeared in the Psalter of 1457.

—Reproduced by courtesy:
The Times IPEX Printing Supplement

OFFSET-LITHOGRAPHY PART 1

By K. V. MURTHY

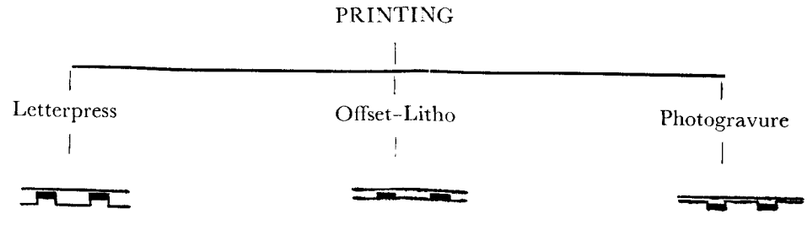
Assistant Production Manager, Associated Printers Private Ltd, Madras

ALLOYS SENEFELDER (1777-1834) was a music composer. He wrote his music on stone slabs which were calcareous in composition and found in abundance in Bavaria, South Germany. He soon found that the stones had a natural affinity for the ink, the main ingredient of which was mutton tallow or animal fat. This fact led to the discovery of lithography or planographic printing.

Planographic printing as the name suggests, is printing from plane surfaces, in contrast to the other two, letterpress or printing from relief surfaces and photogravure or intaglio printing. After Senefelder patented the process of lithography in 1800 it took more than hundred years to replace direct Lithography with offset lithography. This was all the more strange because tin printers were already using resilient media like rubber to transfer images to metallic surfaces. But once this idea was found applicable to paper, offset soon replaced direct litho in most places.

In direct printing we are limited to use a paper that would not be easily affected by the large amount of moisture it will contact on the stone or the plate. Another big disadvantage was that the ink would not transfer from the plate to the paper properly on all stocks. Besides this paper fibres coming in direct contact with the image soon weakened it thus giving a short life to the plate. The diagram below explains how from the nineteenth century flat beds we have reached present day rotaries. (Fig. 1).

ADSORPTION: It is on this phenomenon that Lithography is based. As distinct from absorption this is entirely a surface effect, due to the forces of attraction and cohesion between molecules on the surface of all materials. This is more apparent with colloidal substances like gum arabic, egg albumen, fatty acids, etc., which when dissolved in water form very minute particles in suspension in the vehicle. These colloidal solutions when



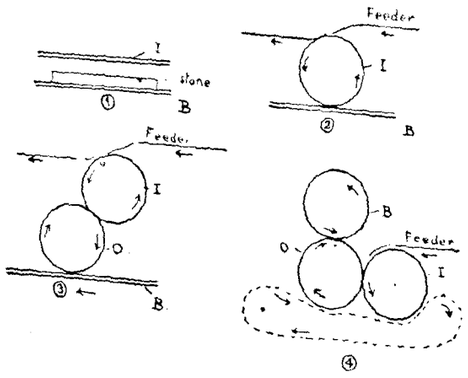


Fig. 1 I = Impression cylinder or tympan in fig. 1
B = Plate cylinder or bed
O = Blanket cylinder.

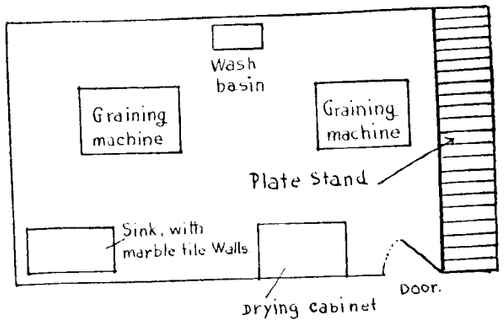
applied to stone or plate get adsorbed,i.e., form an intimate mixture with the molecules of the stone or metal. In the light of the above theory let us now see what we mean by desensitising a plate. The plate has a drawing on it in ink firmly adsorbed into the plate. Now when we gum it the gum is absorbed all over the plate except where the image covers up the plate. On the machine though the gum is washed off the absorbed layer is not removed. This absorbs the moisture and prevents the plate from scumming or catching ink in the non-printing areas of the plate. When a plate is etched the etch containing phosphoric acid deposits films of insoluble zinc or aluminium phosphates, which are neutral in character, in the non-printing areas of the plate. The original basic metal which was ink receptive now becomes neutral as further adsorption is prevented by a layer of neutral phosphate. It was originally thought that Arabic acid in the gum formed a chemical compound with the metal. But this was discounted when it was found that Arabic acid was a very weak acid and further that it formed a very small percentage of gum.

MAKING THE PLATE-GRAINING : The metal most commonly used in lithography are zinc and aluminium. Of the two zinc is preferable as it oxidises much slower than aluminium, besides it will take to transfer work much more readily. Storing of new plates is very important as plates kept in a damp atmosphere will oxidise and scum on machine. Newsprint must never be used to interleave plate as these contain alum which is an oxidising agent and further newsprint will readily absorb moisture from the atmosphere. Tissue paper serve the purpose best.

Graining may be defined as the process by which a litho plate is roughned in a uniform and controlled manner. Now let us see why this is necessary. Firstly the printing area must have a good foothold on the plate to prevent it 'walking-off' due to friction between plate and rollers and between plate and blanket. In the non-printing area the graining helps the plate to carry the required amount of moisture to keep the work clean. On both these factors depends to a large extent the life of the plate.

Graining can be a headache if all the variables are not standardised. Marbles, abrasives, graining time, proportion of water to abrasive and abrasive to marbles must never be changed frequently and haphazardly. All traces of the old ink is removed by brushing with turpentine and then with caustic soda which dissolves all the grease and hardened albumen. In Germany an easier and quicker method of preliminary treatment is followed. A hand graining machine is moved to and fro over the plate after sprinkling dilute Acetic acid 5%, and an abrasive. The plates are thoroughly washed under a strong spray of water and then clamped on the bed of the trough when still wet. Hoppers containing the marbles are turned over to cover the plate. The graining trough is constructed so that it will move in a horizontal eccentric fashion causing the marbles to roll and grind the abrasive, against the plate surface. This produces on the plate a microscopic tooth and pit formation. A fine deep grain more closely approaches the litho stone in performance. The quantity of abrasive and water should be

carefully measured until the correct balance has been found by experience. When graining is completed the marbles should be removed while machine is still in motion, as the marbles if allowed to rest on the plate will form spots which catch ink on machine and further, it is very difficult to remove the plate under the weight of the marbles without scratching the surface of the grained plate. In the case of steel marbles when they come to rest on the plate an electrlytic action takes place between the two metals forming oxidation spots. After a satisfactory grain is obtained the plate is washed clean and all traces of mud removed. It is a good practice to go over the plate with a hard sponge which will get down to the grain and remove all dirt. The plate is then dried in a drying cabinet or with a hot air blower. The plates are then stored in a dried place. Some firms gum the grained plates before storage But this is not advisable if the plates are to be used for chromo-litho. Among the abrasives, e g, sand, ground glass, granite, aluminium oxide. silicon carbide,etc., the most popular are sand as it is cheap and can be got easily; and silicon carbide which is considered to be most effecient. Sand has many disadvantages. Particles of sand vary in size and this affects uniformity of the grain. Sand forms a mud early in the graining operation which stick to the marbles and prevent proper rolling on the plate Various types of marbles are used in the industry such as wood, glass, porcelain and steel. Wood is too light and should be used only when a very shallow grain is required as in the case of solid work having no screen or fine details. Steel marbles 5/8" diameter give excellent results with zinc, when used with synthetic abrasives. Glass marbles break too often while porcelain have a tendency to flatten.



LAYOUT FOR A GRAINING ROOM

Silicon carbide has one serious drawback. The sharp particles get embedded in the grain and are hard to remove. These have a nasty habit of catching ink on the machine. Aluminium oxide even though not as hard as silicon carbide, has the advantage of a nearly ideal grain structure much the same as natural sands. However it is much harder than the sands and will break up more slowly It can be obtained in grades covering a range from coarse poster work to the finest grain.

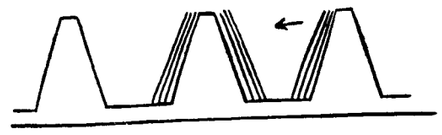


Fig. 2

For storing the grained plates the conical stand is most convenient as plates can be removed without scratching and selecting the correct size merely by turning over the plates as leaves in a book. The only disadvantage is the space required for such a stand. Only disadvantage is that it would occupy more floor area. (Fig 2) ★

Appeal to Publishers

Copies of publications in Printing and Allied Subjects are welcomed by the Editor for reviewing in the pages of PRINTECH for the benefit of the members of the Indian Federation of Printing Technologists.

Manufacturers

Please Note: Manufacturers of printing machinery, equipment and material are invited to contribute news of their new equipment with complete technical specifications, illustrations to be submitted in the form of blocks of 85 to 120 screens to the Hony. Editor for publication.

SHANGHAIED

I'M talented, modest, adept at display,
And blushed when I heard our works manager say:
"This Chinese report must be set up today—
Just leave it to Jellybrain Jack."

A convoy of coolies brought bundles of bricks
With ideographic designs—and no nicks;
But knowing a few slick Confucian tricks,
I dumped them in heaps on the rack.

Deciding that Chinese is vertically read,
I held my stick downwards, with fingers outspread,
And piling the bricklets like small leaves of bread,
I quickly diminished the stack.

The huge Chines puzzle was ready for press,
And lest you are thinking it turned out a mess,
It was, philologically, crowned with success—
A triumph for Jellybrain Jack.

But, grasping a vertical stick caused me pain,
My finger-joints rigidly locked with the strain;
And when the time comes to set English again
I'll have to work flat on my back.

IVOR M. LUPIN

Courtesy : The London Typographical Journal

HINTS on paper testing and its characteristics

By I. H. MITCHELL, Branch Manager, Charles Morgan & Co. Ltd., Madras

In these days of specialised printing, it is natural that a large number of types of paper have been produced with qualities and characteristics to suit the special purpose or the particular process in mind.

There are a great many instruments now in general use in paper mill laboratories to ensure that the paper manufactured is equal to the specified requirements for any particular use, but for the most part the printer cannot avail himself of these. It is surprising, however, just how much can be learned about a particular paper by the use of the senses of touch, taste, hearing and sight alone.

By handling a sheet the printer can with practice judge the weight and thickness. He can also test a coated paper by moistening his thumb and working it into the surface of the sheet. He must then remove it quickly and if the base paper is weak the coating may come away on his thumb. If he wants to ascertain whether a paper is an imitation art or a real art paper then a silver coin or a piece of silver should be drawn across the surface. This should leave a black line if the paper is real art, whereas in the case of imitation art only a scratch is shown.

Tearing the paper also gives a number of indications of its characteristics. If one tears the sheet in both the machine and the cross directions, one can establish the type of fibre used in manufacture of the paper. If the fibres protruding from the tears are fairly long, this denotes rag fibres, while wood and esparto fibres are very short. In addition, grain direction can also be ascertained by the tear-method. It will be observed that the fibres protruding from one edge are longer than those appearing from the other. The edge from which the longer fibres protrude will be the cross direction. The importance of this knowledge will be shown later in this article, and a further method of determining grain direction is to cut a circle from the paper and float it in water. The machine direction is that of the axis of the curl.

Another important characteristic of paper is its sizing. Unless papers contain a certain amount of sizing, they would not take either writing or printing ink, but would absorb it like blotting paper. To overcome this, either a resin emulsion is added to the stock or the paper is later passed through a bath of gelatine. The first process is known as engine-sizing (E.S.) and the second as tub sizing (T.S.). Sizing is frequently judged by wetting paper with the tongue. Well sized E.S. papers (known as hard sized papers) stand up to a good deal of moistening before beginning to fall apart, while Tub Sized papers show no immediate reaction. Another test for sizing is the ink test, whereby the sheet is marked with several heavy strokes with a pen in one direction and these strokes are crossed by similar marks in the other direction. If the ink remains firm on the surface and does not feather then the paper is hard-sized.

This question of sizing is however a very complicated one, and it must be realised that the tests mentioned above are elementary. A paper may need to be sized against writing inks or oil-based printing inks. Some treatments which might give good resistance against a little water might be of no use at all against prolonged contact with water; resin-sized papers resist water, but not oil, while starch sized papers have the opposite characteristics.

An important point to be watched in paper for litho and colour printing is dimensional stretch. It is well-known that paper absorbs moisture from the atmosphere, and is therefore affected by varying atmospheric conditions. This is particularly true in the humid conditions of the tropics. Usually the greater effect is on the cross direction, and for this reason the test mentioned earlier on this subject are important. Paper for Offset litho should have the machine direction the long way of the sheet, as this is most stable. There is no easy way of compensating for dimensional changes parallel to the axis of the printing press cylinder, while they can be attended to in the cross direction by adjusting the packing of the blanket.

There are frequent occasions when the printer has to match the paper he is using for shade, as he may require two lots to complete one job. With practice this can be judged by eye. The two sheets should be folded the same number of times—say two or four times with the top side uppermost. They should be held in such a way that the light comes over his shoulder. One paper should overlap the other for the first inspection and then the positions should be changed over. If there appears to be a difference in shade on the first inspection and this difference is reversed when the papers are changed over, then a match has been achieved. Matching should not, of course, be attempted under ordinary electric light.

Opacity is also an important factor in paper as for most purposes it is essential that as little of the printed matter as possible should show through the sheet. The simple and natural method of testing is to place two papers side by side on a printed sheet, and it is preferable that this should be done on bold black type. It is obvious that thicker papers have a better opacity and even small differences in bulk can affect it. However, some thin papers often contain materials which improve the opacity.

In a similar manner, the finish of the paper can be tested. The sheet should be held horizontally at eye level towards the light, so that an estimation of the smoothness and gloss can be made.

Having discussed these elementary methods of testing paper, we now turn to the types of paper best suited to specific processes. Naturally there are various economic considerations which enter into this field, but we shall concentrate on the question from the point of view of good printing results.

LETTERPRESS—TYPE AND SOLID PRINTING: It is essential that the surface should be smooth and the sheet should be the same thickness throughout. It should be firm enough to give a solid impression without 'embossing' and it should be slightly absorbent to allow the ink to penetrate a little way into it.

The furnish or fibre content of the paper has some importance. Rag fibres are soft and take ink well. Esparto is slightly elastic and this means that an esparto paper tends to give a little under pressure, and this helps to produce a sound impression. Both mechanical and chemical wood pulp fibres are hard and there is often a tendency to produce a broken impression. In general a short fibre produces better printing but of course paper made from short fibres has a much decreased strength.

As mentioned earlier, soft-sized papers are slightly absorbent, and are also yielding, as the fibres have not been bound together so much by the sizing agent. They accept ink very well, but there may also be some tendency to 'embossing', with the result that the image is not always very sharp. Hard-sized papers are sometimes so firm that to produce a solid impression too much pressure is required and this causes ink squash.

Calendering has the effect of making the paper more compact and firm This has rather the same characteristics as hard-sizing, in that the sheet becomes unyielding. However, if the fibre conditions are favourable, clear results may still be achieved. For type printing, an M.F. printing is usually most suitable.

LETTERPRESS—LINE BLOCKS: Open line work may be printed on any paper suitable for type

printing. Fine line blocks should be printed on smooth or coated papers. On art paper fine lines show up sharply and the areas between are not dirtied in any way. This is largely due to the fact that the coating absorbs the ink quickly, so that it is held in position for the time required for it to set. The ink should not be too thin, however, nor should the pressure be excessive, otherwise the ink will spread and cause thicker lines.

For printing a job which incorporates both type matter and line blocks, a fairly absorbent M.F. paper should be used, as while the smooth surface of a calendered paper, which produces fine lines, also tends to cause ink spread

LETTERPRESS—HALFTONES BLOCKS: In this type of printing it is essential to avoid ink spread, as this means that shadows become solids Smooth paper is required and the best quality art paper is to be preferred. Art paper with an esparto base is the most suitable, as the elastic quality of this fibre helps good printing without over impression. The quality of the coating is important, and care should be taken to make certain that the best is chosen. If the coating is too hard, the ink does not penetrate satisfactorily, and if it is too soft there is the tendency to 'pluck' or 'pick'.

OFFSET LITHO: Two requirements for good litho printing paper are ink absorbency and a well-knit make up. Offset ink is usually thicker than that used for letterpress, so that it is important that the paper is capable of absorbing it fairly quickly. This stiffer ink also exerts a considerable strain on the sheet, and if the surface is not firm then there is a tendency to 'picking' with a build up of loose fibres on the blanket and consequent loss of time and paper.

The most suitable papers are offset cartridges, as these usually are well bonded and are at the same time resilient and absorbent. Their slightly rough surface is better for line and type work, but a calendered surface is better for litho halftones as it produces less dot distortion Where the paper is to be printed on both sides, a twin-wire cartridge is ideal.

For printing posters by litho, M.G papers are very suitable. The work should be printed on the smooth side, and the rough side is an aid to the later pasting.

For label printing the paper used should also have a smooth side for printing and a rough side for pasting, and for this purpose a one-sided coated paper is satisfactory. When coated papers are used for litho, care should be taken to ensure that the coating is water-resistant.

PHOTOGRAVURE: For this process, the paper selected should be fairly soft and have a smooth surface. For good results an absorbent esparto paper is best. For commercial photogravure a soft-sized M. F. printing can be used, but hard sized papers usually produce broken impression. For cheaper periodicals a paper with a relatively high mechanical wood content produces quite satisfactory results, as long as it has a smooth finish.

CONSIDERATIONS OUTSIDE THE ACTUAL PROCESSES: As mentioned earlier considerations other than the actual process must also be considered. The nature of the job often requires a special appearance or presentation, and in many cases economics also enter into the final decision.

For book printing antique papers are frequently used because they handle well, have a pleasing colour and surface, and at the same time are free from gloss, which is harmful to the eyesight. For technical and scientific books and publications a calendered paper is suitable, as this enables the matter to be presented clearly, particularly in the case of tabulations, etc., and at the same time allows the type to be printed clearly. The smoother quality of the paper stands up to repeated handling and does not become soiled and 'dog-eared'.

When work must be produced cheaply and in large quantities, then mechanical wood paper must be used. This type of paper is usually used for stores catalogues, magazines and similar work ★

The Weakest Link in a Printing Plant

By H. GHOSH
President
All India Federation of Master Printers

During the long period of my association with my Printing House I can make bold to say that the proofreading department is the weakest link in a printing press.

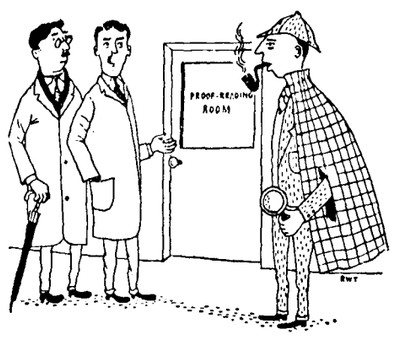
If proofreading does not make an impossible call upon one's intelligence or learning, it still cannot be dismissed as a mere rule of thumb practice to which any one should be equal. In the first place it requires the training of the eye to almost meticulous and microscopic observations of every letter, every punctuation mark, every space and other minute of the proof with the copy beside the reader for comparison or verification. That a proofreader must be a failure where spelling is weak goes without saying. He should also be strong in grammar and perhaps in idiom. He should acquire a fairly extensive knowledge of proper names with their correct spelling. He should never despise the aid of a dictionary.

Paradoxical as it may sound, knowledge of language or subject as well as a capacity and a habit of quick work may prove a handicap as often as an advantage in proofreading. For, then the person is apt to be impatient to finish the task in hand preening himself upon his superior knowledge and capacity and in the process, miss many a mistake of spelling, of punctuation, of spacing and wrong font, etc.

I have known friends who would never make any allowance for a mistake made in proofreading by another but who themselves when put to the test have been found to be deplorably defective in examining proofs of their own manuscript. In a word, a proofreader cannot be too careful as he can never afford to be negligent or even indifferent.

In our country, the calibre of the average professional proofreader is not particularly high. Due to extensive unemployment even graduates are now thankful for a proofreader's place, but they are exceptions which prove the rule. The majority of men engaged as proofreaders on the salaries that printing presses can afford to pay, do require guidance in their work, and require it badly. Extensive use of any good manual of such information, instruction and explanation must be made to become a good proofreader. The printer cannot shirk the responsibility of allowing mistakes to pass in the printed matter. The quality of the work produced depends on his producing a correct and presentable printed matter. It is good for the printing industry and the reputation of the printer's business that his work should be as free from mistake as possible.

Good proofreaders are assets in a printing press. ★



'This is our new proof-reader'

Courtesy Printing World

Letterpress Process Work on Uncoated Stock

By V. R. SIVARAM, L.P.T.
Foreman, C. N. T. Institute Press, Madras

The polished coated paper proved the best surface to reproduce high class halftones. However there are certain occasions when it is desirable to print halftones on uncoated papers. The first reason being is to minimise the cost. Because an uncoated board or paper can be obtained more cheaply than a coated board or paper. It is common to select a cheaper variety of paper for jobs which do not require to be of highest nature. There are two other good reasons also why the letterpress printer has to face this kind of work occasionally. When the finished print is going to be subjected to considerable handling an uncoated variety of paper is preferred. The stouter qualities of this kind of paper resist some wear and tear. And thirdly these varieties are free from any odour which is present in some of the coated papers. So far, the reasons are good; but the letterpress man has to satisfy his customer who, forgetting that his primary object of selecting the uncoated paper is for want of economy, complains that the finished job is not satisfactory. Here are some practical hints for a letterpress printer which if faithfully carried out there is no reason why he should not obtain satisfactory results.

Selection of Paper: When selecting of paper the aim should be to obtain uncoated papers with as smooth a surface as possible. Soft, spongy and fluffy stock such as antique should be avoided as they would cause screen-filling. Further the tub-sized bonds and water-marked papers make it difficult to obtain a satisfactory result without a heavy impression. The impression in turn causes difficulty in keeping the highlights nice and clean. The water-marked papers due to the difference of thickness at the water-marks are doubly difficult. Unless the water-marks are kept in the same position through out the run in the sized paper the print at the particular place will be weak and broken. As a rule arrange the printing on the top side (the smoother side) of the paper. Examine the wire side and if it is deep pitted it is advisable to select another stock. To avoid the trouble of printing on the wire side of the paper a twin-wire paper can be chosen.

Twin-wire Paper: Twin-wire papers are made thus: Two wet web of fibres are taken from two wet ends of paper making machines. The under side of each web pitted by the wire mesh are joined together while still wet and passed on to the drying cylinders as a single sheet of paper. The result is surface perfection, i e., two top sides the wire side completely enclosed.

Uncoated boards of better type are suitable for providing halftones, but it is advisable that all stock required for particular job, be it paper or board, is from the same making. Different makings should not be mixed for one particular job. Despite the precaution taken

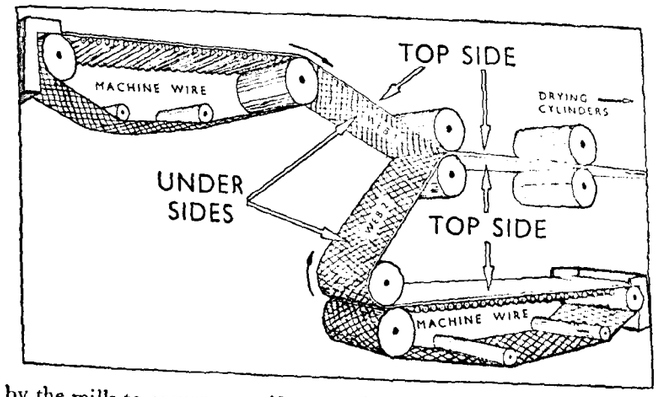


Diagram Shows how twin-wire papers are made from two wet ends, each machine wire forming a separate web of paper. The under sides, pitted by the mesh of the machine wires (the wire-mark is exaggerated in the diagram) are joined together while still wet and passed on to the drying cylinders *as a single sheet of paper.*

by the mills to ensure a uniform surface and consistant thickness, it is quite possible that there may be slight variations in the different makings. If large sheets of different makings are cut to smaller size suitable for the machine and not kept separately, variations are likely to occur in the printed result. This is because, if the work is started with enough impression for the block the half-tones will be coming out satisfactorily until a different paper is reached. If the subsequent paper happens to be only very slightly thinner the solids would not come out smoothly or if the paper happens to be thicker a muddy highlights would be the result.

SELECTION OF SCREEN: Having selected the paper, blocks can be ordered to suit it. Though it is possible to use a screen as high as 120 for paper like super calendered printing, it is safer to order a coarser screen for many other uncoated papers, as this would create considerable trouble on the machine. If you are in doubt about using a 100 or 85 screen, the best procedure then is to select the coarser one. Almost all the problems that are confronted by the machine man when halftones are printed on uncoated paper can be averted if only all the steps leading to actual printing of the job is done methodically. Here a few words about the photographic original will be fitting.

The photograph should be of a high standard with well separated tones. Too many intermediate tones will create trouble later on the machine. It would be difficult to prevent these areas filling in during running. Better results are obtained from originals than duplicate plates. Blocks should be invariably deep etched.

INSTRUCTION TO THE BLOCK-MAKER: It is advisable to send the sample paper to the block maker and instruct him to produce proofs on the sample sheet with correct amount of inking. It is generally seen that some block provers apply heavy film of ink in order to make the proof look much better. But the press man would not be able to supply to this forme such a heavy film of ink without aggravating other troubles like increased drying time, setting off, ink filling, etc. This kind of proofs are also misleading in the customer point of view who having seen already the darker proof of this block-maker, would be dissatisfied with the final result.

TYPE MATTER AND THE BLOCK: Halftone blocks require greater impression and heavier film of ink when printing on uncoated paper for the same reason some times type matter especially small types adjacent to the blocks become a troublesome combination. It is very difficult to control the ink for the type page coming right under the block in the direction of ink flow, for the ink supplied to the block happens to be always more than what is normally required by the adjacent type matter. Finally when the forme is folded and cut the different pages show varying density of ink. So, it is better to run the

captions in second colour. If it is not possible the only alternative is to run the type matter in a separate forme from the halftones. (with the consent of the customer, that too if time and cost permit).

PRINTING INK: The ink selected have the maximum covering quality and good density of colour to cut short the tendency of running too heavy a film of ink. This kind of ink is not cheap but the time lost and the problems they prevent on the press makes it well worth while. On the other hand a cheaper ink will not resist the impression but will be squeezed out on impression. No "doctoring" of the ink by adding reducers and driers is advisable and if necessary the ink-makers may be consulted. If it is a large order he can be able to supply inks made specially to your requirement. The workability of the ink can be tested by arranging the job in such a way so as to print a few copies and leaving it over night and examining them in the morning.

CYLINDER PACKING: A typical hard packing which will not yield to the impression is best suited. The danger of over packing of the cylinder is prevelent always. A over-packed cylinder deranges the synchronization of the movement of the forme and the cylinder. Generally slurring and much wear on the type are resulted. In extreme cases the plates are dragged out of the base towards the gripper edge. A hard packing consists of the following: four manila sheets (bottom sh et oiled) and a glazed linen reeled round the first drawbar forming the permanent packing, four super calendered paper with a manila draw sheet making the temporary packing.

ROLLER SETTING: The importance of setting the rollers correctly cannot be stressed too much here, as it would be clearly seen that all the preparatory works carried out properly will be easily made futile by improper setting of the inking rollers. Proper setting of rollers require some experience. The inkers and the distributors should be adjusted so as to touch upon the table or type forme lightly. The streak across the ink table made by a roller can be taken as a guiding factor. The streak should be not more than $\frac{1}{4}$ of an inch uniformly throughout its length. The rider also should be made to bear upon the rollers uniformly throughout. A play between the composition rollers and the rider is due to a bent roller stalk or improper adjustment of the rider. The rider if set too tightly on the composition rollers cause excessive friction and the composition gets softened. This effect is also experienced during summer in our part of the country due to the heat, creating machine stoppages. Continuous run of the machines can be achieved during this season by having another set of rollers and using them alternately.

DELIVERY: If the machine is fitted with a a spray unit, a dry spray system has a definite advantage over the liquid spray system. When printing on uncoated papers a larger quantity of spray is needed to prevent set-off and when it is a liquid spray, there is a greater risk of the spray liquid touching the sheet in a wet condition and causing the sheets stick together.

If the machine is not fitted with a spray unit, a bottomless wooden box, slightly larger than the sheet on either side is very useful. The sheets without being jogged settle lightly one upon another and they are removed frequently.

The aforesaid points if properly carried out are bound to lead any one to good result. But there is more in a good print than that meets the eye. Near-perfection in setting and equipment, of course, is meaningless without the man who can put them to work to produce the outstanding result. He is the technical personnel.

★

WEST GERMANY: "Der Polygraph", a West German leading printing journal, suggests the standardisation of newspaper advertisements. It suggests that four sizes of advertisements should be generally accepted, based on uniform columns. This would result in considerable savings in the costs of stocks and would enable publishers and advertisers to use the savings for other improvements in printing and reproduction.

ROTOMATON simplified offset

ROTOMATON MACHINES are precision-made simplified lithographic offset printing machines—designed and built to meet the exacting requirements of the Printing Trade and in strict conformity with established orthodox lithographic machine practice. They operate fully automatically with little or no attention from operator, who does not need to have any technical knowledge of lithographic printing, and produce in the simplest possible manner from inexpensive master printing plates perfect quality print in precision register —plainly at costs which cannot possibly be approached by any other printing method.

The big appeal of Rotomaton Simplified Offset arises mainly from two considerations, viz., firstly, the extremely low starting cost or first copy cost of any NEW job, and secondly, the complete absence of makeready. These two features combine to provide extremely low all-in production costs both on NEW jobs and on repeat runs.

The medium of reproduction on the Rotomaton is a finely and deeply-grained lithographic printing plate on to which the work to be printed is transferred by a simple and uncostly photo-mechanical process.

The method is for line or half-tone negatives to be made from the copy and from such negatives the work is photomechanically transferred to the plate. The cost of the Rotomaton negative and master printing plate of any job is only a fraction of the corresponding block cost of the same work.

The same low plate cost or first-copy cost also applies to other classes of work. For example, when dealing with a new ruled form, with Rotomaton it is only necessary to set the type for the heading of the form and the colum headings and then to draw the rules by hand on a pull of this typeset matter, thus making the final copy available for the preparation of the printing plate as outlined above. Plainly, the all-in first-copy cost of a ruled form job from a plate prepared in this way is considerably less than the first-copy cost would be if the setting of rules and makeready were involved thus, on any new job Rotomaton offers an extremely low first-copy cost.

When it is desired to produce work from a Rotomation plate, the plate is put on the machine and is in production in two or three minutes at fast automatic speed and at the conclusion of the required run the plate is taken off the machine and filed away until later a further run is required. Then in another two or three minutes the next plate can be on the machine and in production. constant production is thus ensured.

It is the low cost of the Rotomaton master printing plate, the complete absence of makeready, the consequent low first copy cost of the work and the constant production achieved which combine to ensure that the all-in cost of production by Rotomaton of any new job is substantially below the cost of production of the work by other printing methods -whilst on repeat runs work is executed from existing master plates without makeready being involved little more than bare paper cost.

It is of the utmost importance to appreciate that the work produced on the Rotomaton is first-quality print printed in precision register and comparable in evey way to the production of the most expensive litho presses.

Photomechanically prepared printing plates will give runs of many thousands before requiring replacement. Replacement of plates

(*Continued on page 40*)

ABC's

of public relations

by FRANK STAFFORD

When it comes to public relations, do you know your ABC's? A knowledge of the fundamentals of public relations practice is virtually essential to business success to-day. Check yourself against the following ABC's of public relations :

Advertising is a tool which should be constantly employed to help carry your public relations load. Let advertising help keep the public "sold" on your firm.

Building Maintenance must always be adequate if the well-rounded public relations job is to be done. People judge a business by its building; in your case, make sure that judgment is favourable.

Courtesy is a primary rule of good public relations. Be certain your customers and your business associates always receive courteous treatment at the hands of those who represent you.

Dependability must be included in every public relations program. So be ever-ready to stand behind your business activities. Be sure all your customer services are quite reliable.

Employe Relations must be top-notch if the program is to be complete All public relations begin at home, and only satisfied employes can perform a satisfactory, all-round public relations job for you. Keep them happy!

Fair Treatment is an axiom which must be kept constantly in mind. Treat customers, associates, and employes right, and it will pay off in the long run. See to it that a *friendly* attitude is prevailing in your organization at all times.

Goodwill between business and customer must be striven for at all times. Good will is the very stuff from which adequate public relations are made.

Human Relations must be good if public relations are to be satisfactory In all dealings, never forget that you are working with human beings Strive to treat each person as an individual-and not as a "type".

Institution is an important word in the public relations program. Never let up trying to sell yours to the public by constantly playing up the good points of your organization in advertising, publicity, and promotional efforts.

Janitor Work is important to consider in all public relations Sloppy custodial activity on the part of any business tends to bring public disfavour upon it. Cleanliness and neatness, on ther other hand, automatically breed the desirable public attitude,

Knowledge is definitely power so far as public relations is concerned. Know your associates thoroughly and you will at once know how to develop in them favourable attitudes toward your business. Learn to know customer likes and dislikes. And know what makes the human being tick.

Letter Writing is one place where many business fall down in their public relations programs. Too often business letters are cold and impersonal to the point of being offensive. Make certain all letters which leave your establishment are friendly and reflect a cheeeful attitude.

Management should be striving constantly to improve its public relations efforts. Good MANNERS on the part of everyone connected with a business (from the boss on down!) are the very life blood of good public relations.

Names are important in public relations. Promote good feeling by knowing the names and interests of as many imployes and customers as possible. Personalize your business relations, and improve your public relations in the doing.

Observation can show you places where public relations policies and methods in your business can be improved. Keep your eyes open constantly for ways of doing a better public relations job. You'll be surprised at the possibilities that will occur to you.

Publicity is essential to public relations. So is business promotion. Use both to improve your relations with the public. Keep your name before the public by publicizing in print, on the radio, and by letter all the important activities of your business. Let not a day go by without performing some definite publicity activity desigred to call favourable attention to your firm. An adequate publicity program is hard to maintain but one will pay off in the long run through the good will aquired and the additional dollars earned. Printers, who live from advertising, should demonstrate that they believe in it.

Quick Action is required to plug any "holes" in the program. When damage to human relations has been done, act immediately to make amends. In this way, injured feelings will be soothed and the human relations would be allowed to heal. On the other hand, damaged human relations which are not treated with public relations ointment often develop into fostering sores which poison public attitude-and result in business being forever lost for your firm.

Right—that's what the customer always is. Strive constantly to see the customer's point of view. Even if he is wrong or somewhat unreasonable in his demands, try not to let him leave harbouring ill feeling toward your firm. One satisfied customer tooting your horn for you is worth ten public relations men on yeur staff

Service to the customer should always be maintained at a high level A ready smile is the most important public relations tool known to business. *Satisfaction* should be handed out in large doses.

Telephone technique is one phase of pubic relations to often overlooked in many businesses. Adequate "telephone relations" is a special study in itself. If you aren't *sure* of the telephone manners of those who represent your business, for public relations' sake see to it a quick brush-up course is given.

Utilize all the facilities at your command to improve the public relations program. Study books and magazine articles on the subject.

CREATIVE SELLING

Timing is one of the basic factors contributing to success in any line of endeavour. This is just as true in business competition as it is in sports. To do the right thing at the right time makes it immeasurably more effective than the same thing done at an inopportune time.

Creative selling, particularly needs good timing; without it half its effectiyeness it lost. The salesman who adequately plans what his customer needs and wants, and when, will undoubtedly increase his sales and by the same token, his planning will enrble the plant executive to schedule plant operations so as to get the most out of machines, materials and men.

—*News Letter*, Master Printers Association, Newark, New Jersey.

Become genuinely public relations conscious-and be sure the members of your staff are too!

VITALITY is essential to good public relations. Let the world at large know your business is alive and breathing. Instill within yourself and your employes a definite zest for doing business. Make business a game which you genuinely like to play–and let the public at large see you reflecting this attitude. Always show that you enjoy your work.

WRONG that's what the customer always isn't. Never tell a customer or business associate that he is wrong, and expect to maintain his good will. If a business friend is incorrect about some matter and must be made to understand, soften the blow for him by giving an "indirect" explanation. To tell a person "you are wrong!" is one sure way to create bad will.

EXTRA EFFORT toward maintainng good public relations should always be applied during times of stress. At the end of the day when most people are tired and inclined to be curt and "Snappy" Strive harder to keep everything running smoothly. During the rush periods when things are strained, apply the public relations ointment in largest quantities.

A "YOU" ATTITUDE is essential to good public relations. Strive always to think from the other fellow's point of view. Attempt to see any problem through his eyes. Develop a genuine "you" attitude, and public relations will pretty much take care of itself

ZEALOUSTESS should be the watchword where public relations is concerned. Keep constantly on the job. Don't let up for a minute. Good public relations canit be turned on and off like a faucet, but must be maintained at all times.

Courtesy: The Inland Printer.

From Tree to Newspaper: Three Hours

A Spanish firm recently decided to find out how quickly a tree could be converted into a newspaper. At 7-15 a.m. the trees were cut, trimmed and transported to the mill. By 10-45 a.m. the first sheet was being printed. The trees, however, took longer than three hours to grow. They were planted in 1893.

Printing News.

NEWS

PRINTECH Diary Page:
News of people, production and events in the Printing, Paper and Publishing World.

PRINTING CONTEST FOR STATE AWARDS

The annual competition for the State awards for excellence in printing and designing will be held this year in November.

Sponsored by the Ministry of Information and Broadcasting, the awards were instituted in 1955 to encourage higher standards in printing and designing of books and display publications.

The 1956 awards, says a Ministry of Information and Broadcasting Press note, will be given for the best produced material in the following categories:

Books for children below 10 years;
Books for children over 10 years;
Illustrated books;
Art books;
Books on Indian-made paper;
Books in English;
Books in any Indian Language;
Daily newspapers in English;
Daily newspapers in any Indian language;
Art magazines;
House journals;
Periodicals;
Posters;
Folders (offset or photogravure)
Folders (letterpress);
Calendars (offset or photogravure)
Calenders (letterpress);
Diaries:
Devanagri type faces;
Publicity booklets;
Labels, and the best bound books.

There will be two awards in each category; one for the publishers or the designer and the other for the printer. There will also be certificates of merit for each category.

This year's competition is limited to items produced in India after Aug. 15, 1955.

A board of judges, consisting of eminent artists, scholars and representatives of trade, will be constituted for selecting the winners.

Entries have been invited from publishers, printers business houses, advertisers, advertising agencies and commercial art studios.

It is also proposed to have an exhibition of the entries at New Delhi during the second and third weeks of November concurrently with the UNESCO Session in India, the press note added.

LOCATION OF GOVT. OF INDIA PRESS IN SOUTH INDIA

The Government of India are expected to take a final decision very shortly regarding the location of their Printing Press in South India. The Press will be located either at Coimbatore or at Trichur, it is learnt.

The Central Government, it may be mentioned, have a proposal to establish a Press in a suitable place in South India, under the Second Five-Year Plan. The project, it is understood, will cost about Rs. 1½ crores and, when ready, it will provide employment to about 1,000 persons.

The Press, which will be equipped with modern machinery, will lay stress, besides undertaking printing work of general nature, on "qualtiy" printing. The climate of the place selected for the erection of the Press should be moderate and equable.

The Government appointed a high power committee to suggest a suitable centre for its location, and deputed Mr. M. R. Sachdev, Secretary to the Ministry of Works, Housing and Supply, and Mr. C. A. Subramaniam, Deputy Secretary in the same Ministry, to go into this question.

Accompanied by Messrs. L. G. Selvam, Superintending Engineer, Central P.W.D. (Madras), and K. B. Menon, Executive Engineer (South) C.P.W.D. Messrs. Sachdev and Subramaniam visited Coimbatore and Trichur last week to make a detailed study of the availability of electricity for the Press, water supply, etc. The total area is also required to be more than 100 acres.

At Coimbatore, the officials inspected a 120-acre site on the Mettupalayam road. They also inspected another site at Koratti, about 20 miles from Trichur. The members later met Mr. P. S. Rau, Adviser to the Rajpramukh of Travancore-Cochin, and had discussions with him in this regard.

A report is expected to be submitted to the Government of India on the suitability of these two places. Besides the Press proper, it is proposed to build quarters for the staff also so that the entire project might be self-contained. If the final announcement is made early, it is hoped that preliminary work will start commencing before the end of this year.

TIBET GETS ITS FIRST 'DAILY'

Tibet is to have its first daily newspaper, which will be published both in Chinese and Tibetan. A printing plant is now being set up in Lhasa where the New China News Agency has now opened a bureau.

The newspaper is part of a new Chinese-assisted literary drive launched in Tibet three years ago.

PERSHKE INSTALL 1,000th GLOCKNER AUTOMATIC CYLINDER PRESS

Frank F. Pershke Ltd. announce that they have recently installed their thousandth Glockner automatic cylinder press in the printing office of the Eclipse Office Supplies Co. Ltd., Birmingham. The first Glockner was installed in February, 1950.

AMHARIC SCRIPT ON THE LINOTYPE KEYBOARD FOR THE FIRST TIME

Until the beginning of this year Amharic script, used for the Ethiopian language, had never been mechanically composed. One of the main reasons for this is because the traditional form of Amharic script consists of syllabic rather than alphabetic characters, and there are 231 of them. Now, by an ingenious system of separate vowel and character elements, the whole fount has been accommodated on the Linotype keyboard.

This work of adaptation was carried out in closest collaboration with Mr. G. Djerrahian, Director of the Artistic Printing Press of Addis Ababa, whose intimate knowledge of the script and his understanding of the mechanical problems involved made the achievement possible.

The Model 48 SM Linotype supplied to the firm has been equipped to compose Arabic and English as well as Amharic. Thus any one key on the keyboard might have to indicate as many as five or six different characters. Since there is insufficient space on the key buttons to mark that number of characters a supplemental keyboard was devised. This keyboard, bearing Amharic signs, is placed over, the existing keyboard, marked in Arabic and English. Pressure on a button on the supplemental keyboard is transmitted to the corresponding key on the permanent board beneath it. When the operator wishes to compose in Arabic or English, he merely removes the supplemental keyboard and uses the normal permanent one. This supplemental keyboard is operative only on the main section, the side section being standard.

በመጀመሪያው ቃል ነበረ ቃልም በእግዚ ፩፤
አብሔር ዘንድ ነበረ ቃልም አግዚአ
ብሔር ነበረ። ይህ በመጀመሪያው በእግዚ ፪፤

This specimen of composition in the Linotype Amharic matrix fount is reproduced from an edition of *The Gospel According to St John*, the first work to be mechanically composed in the Ethiopian language. An unusual characteristic of the script is the colon-like sign which indicates the end of a word.

C.W.G. PAULSON, MONOTYPE SALES DIRECTOR, OPENS NEW MONOTYPE SCHOOL

Mr. C. W. G. Paulson, Sales Director of the Monotype Corportion, opened the new Monotype School at 19 Cursitor Street, London, on 10th of May '56. The school replaces the one destroyed by German bombing 15 years ago.

Among the many former students and staff members gathered for the opening were two former headmasters, W. Wigg, who is now 82 years old and was the school's first principal from 1911-1940, and J. Worth, who was principal from 1940-1955.

Mr. Paulson paid tribute to the two former principals, Mr. Wigg and Mr. Worth, 'who had such a big hand in the laying down of the foundations of the school', and said that P. H. C. Humby, the present principal, had a great tradition to carry on.

After the formalities parties were conducted round the new premises.

PRINT WORKERS MAY MERGE INTO ONE MAMMOTH UNION

Two of the U. K's largest printing unions, the 158,000 strong National Union of Printing, Bookbinding and Paper Workers and the 44,000 strong National Society of Operative Printers and Assistants are planning to merge in to one all-embracing print union of over 200,000 members. The proposed title of the new union is the Nation Union of Printing and Allied Trades Workers.

Members of the new union will be engaged in printing, bookbinding, paper-making, ink and roller manufacturing and allied trades. It will cover all grades of workers from craftsmen down and membership of the London branches alone will be 76,000.

The New union may become even more embracing. All members of the Printing and Kindred Trades Federation have been asked to join.

In a joint statement the two general secretaries state that developments in the printing industry emphasise the necessity of an urgent renewal of efforts towards the amalgamation of the two unions and others who might join with them in the formation of a new union in the printing industry.

The decisive ballot on the proposals for the new union and the acceptance of its rule will be taken not later than January next year. The new union will be established immediately after the declaration of the ballot-providing the outcome is in favour of the merger.

"THE EVERYMAN'S LIBRARY" GOLDEN JUBILEE EXHIBITION

A part of the celebrations to mark the double event of the Golden Jubilee of The Everyman's Library and of the issue of the 1,000th Volume in this series, the Monotype Corporation Ltd., in association with J. M. Dent & Sons Ltd., has arranged a small and informal exhibition, dealing with certain typographical and historical aspects of this notable publishing achievement.

Among the exhibits will be examples of the various changes in format and style of the Library over the past fifty years, a display illustrating the production of an Everyman book from manuscript to finished copy, and prints of wood engravings specially commissioned for the Library from Eric Ravilious.

FIRST PAPER MADE FROM SYNTHETIC FIBERS

Paper with up to 10 times the strength and 200 times the folding resistance of conventional paper has been produced for the first time in the United States from nylon and other synthetic fibers.

The paper, which tests show could be produced commercially, is also resistant to corrosive chemicals, bacteria, light and moisture. These properties would make it ideal for such purposes as heavy duty paper bags, packages to contain chemicals, file cards and records. The new paper was developed by the Textile Fibers Department of the Da Pont Company of Wilmington, Delaware.

AUSTRIA

At the end of 1955 there were some 700 printing works in Austria, of which 400 were in Vienna. Twenty-five of the printing works had a staff of more than 100, while 119 works employed from 20 to 100 and 554 enterprises employed less than 20 workers. The total printers included 417 firms using letterpress only (of which 30 had rotary press), 88 offset printing works and about 200 mixed printing works. The labour force of the Austrian printing industry totals some 15,500 workers (12,000 men; 3,500 women), of which about 8,000 are fully skilled.

* * *

The Austrian Printing School and Research Institute in Vienna has opened a new reference library with 20,000 volumes, covering the whole field of printing processes. The library is open not only to students, but to all those who take an interest in printing, photography and reproduction. About 70 foreign trade periodicals are available to the readers.

* * *

Anton Proksch, Austria's Minister of Social Wefare, is a former typesetter. While after the war he devoted all his time to his activities in the Austrian Socialist Party, he always kept in touch with his former colleagues and is still chairman of the Gutenberg Book League, a book club sponsored by the trade unions.

BELGIUM

The firm of Arcts, of Antwerp, produces a powder called 'Avanti' which stops printing inks from drying. Sprayed on the rollers, this power forms a protective layer between the surrounding air and the film of ink, thus effectively preventing its hardening. Thus it becomes unnecessary to wash the rollers every morning. After a few turns the rollers are cleansed and can be put to full use. The powder is sold in spraying bottles which can be worked by finger pressure.

BULGARIA

A series of seven stamps commemorating the 1100th anniversary of the Cyrillic alphabet has been published in Bulgaria. One of the stamps shows the first printing press in the country and operated by Bulgaria's first master printer, Karastoyanov, and another, the State Printing Works in Sofia.

FRANCE

Some 94 tons of printing machinery were scrapped in France under the Government-sponsored replacement scheme. Printers replacing the obsolete machinery were paid 13·50 francs compensation per kilo. Italian printing quarters are pressing for the introduction of a similar scheme in their country.

* * *

The highest selling book in France last year was a novel by Andre Dhotel which sold 165,000 copies. This was followed by another novel by Roger Ikor with 155,000 copies.

EAST GERMANY

A new Institute for Printing Technology has been set up in Leipzig. It consists of sections for all printing processes, special research and laboratory divisions and a standardisation section. An advice service and an archive is attached to the Institute, which will investigate the practical and scientific aspects of the printing industry and will also promote vocational training. It will be controlled and directed in its work by a board of trustees appointed by the East German Ministry of Light Industry.

* * *

Increasing use is being made of Perlon thread in East Germany for the Stitching of books. There are, a report says, many advantages and no disadvantages, when this synthetic thread is used. It does not form loops and the books need not be pressed down.

* * *

A Giant rotary photogravure machine for eight colours is now being assembled in a Leipzig printing works. Its length is about 100' and it occupies two floors of a building. Its output is scheduled at 8,000 prints per hour but can be increased to 12,000 prints.

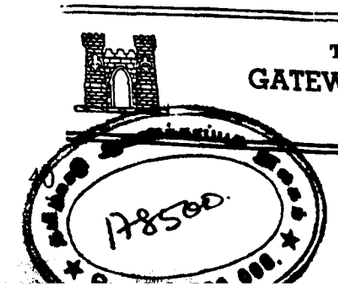
ROTOMATON SIMPLIFIED OFFSET

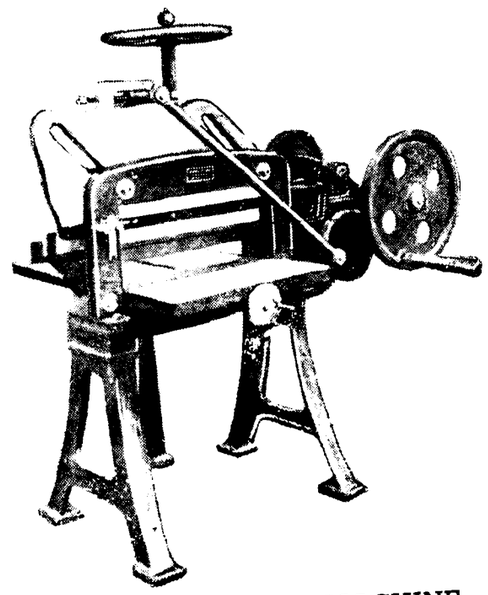
(*Continued from page 32*)

can be made from the existing negative when the original plate does eventually show signs of wear.

As an alternative to photomechanically prepared printing plates described above, a special plastic paper plate which costs only a few annas is available for short-run work not exceeding between 5,000 and 10,000 copies, and on to this plastic paper plate you can print from type, typewrite, draw rulings with an ordinary ruling pen, write, draw with pen, pencil or crayon, etc. direct, exactly as on to a piece of paper. These plates are recommended, however, only for short-run work.

We do here wish to emphasise that in the matter of inks and automatic damping system, Rotomaton machines follow the same established and proven practice as is common to *all* orthodox lithographic printing presses *without exception* throughout the world. Finally, we would like to make it clear that Rotomaton machines are designed and built to Printing Trade standards.





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PRINTECH

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ifpt NOTES

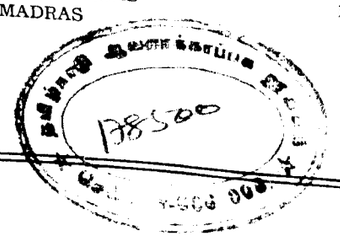
Compilation of Technical Personnel Register in India

The Federation is compiling a register of technical personnel in the graphic arts in India. The Honorary Secretary requests all those who have undergone technical training in any of the branches of the printing and allied industry within India and Abroad to furnish the following particulars immediately :

Name, permanent address, and temporary address if any, Age, General Educational qualifications, experience and details of apprenticeship, present employment (if unemployed, nature of the job the candidate wishes to obtain), any other information the candidate wishes to offer.

Employment Exchange

Honorary Secretary further requests all the unemployed qualified technical personnel to furnish full particulars regarding the educational technical qualifications, experience and training, nature of the job the candidates is capable of handling.



A MODERN
PRINTING PROCESS :

Photogravure

By S. B. WINCOTE

KARL KLIC
—pioneer in photogravure

As one who has graduated from letterpress printing, a process which is relatively versatile in performance and yields in its finest halftone and process work a satisfying range of tone and colour, it is now convinced that it is to photogravure that artist and printer must turn for a reproduction process which will produce at high speed a completeness of tonal range and colour density.

To do full justice to this subject would require many more pages than can be spared in a publication of this size. Quite simply this article is intended for the less critical attention of those interested in the rudiments and potentialities of photogravure rather than its complexities.

How did it all begin? Rotary intaglio printing from engraved copper cylinders had been in existence since 1785 for the printing of fabrics, and the production of wallpaper. With the advent of the photographic era came one Karl Klic, the son of a chemist who owned a photographic studio in Brunn, Moravia. With photographic blood in his veins, Klic was also an artist of great merit, a combination which was to prove a momentous one. From the early preparation of his drawings on litho stone and chemigraph paper, Klic went on to zinc etching and later to Aquatint as mediums for his artistic expression, and it was the application of his photographic knowledge to the hitherto artistic principles of Aquatint that played so large a part in the foundation of photogravure.

Having prepared his copper plate with molten bitumen dust as a grain in the usual way, Klic squeegeed on this ground a carbon negative. This was developed with warm water, and the plate after drying was etched through the resultant colloid resist.

Without resting on his early laurels, his lifetime was devoted to further development of the process, in the course of which the aquatint grain was superseded by the use of a crossline screen. In 1890, Klic settled in Lancaster, England, where in company with Messrs. Storey Brothers, who had already been engaged in similar experimental work, the process for machine rotary gravure printing was evolved.

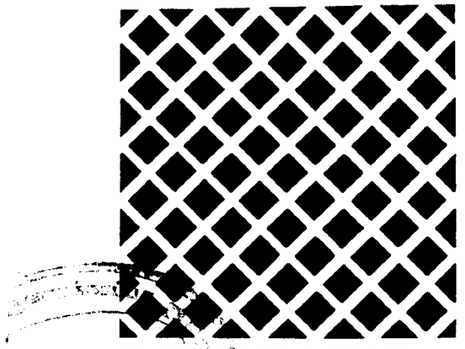
It is interesting to note that the knife or blade with which the calico printers of 1785 scraped the surplus ink from the surface of their cylinders remains an integral part of

modern photogravure practice, while the particular artistic merits of Klic's original methods of 1875 still find a small commercial market.

So now to plunge into the practical theory of present day gravure, briefly, and again in simple terms. First and foremost it must be understood that normally it is (*a*) an intaglio process (i.e. the design to be printed is below the printing surface) and (*b*) it is basically a photographic process.

Negatives are made on paper, film or glass; in continuous tone or line, according to the nature of the original; and colour-separated through the camera in the case of colour work. Retouching preserves detail, tonal ranges and colour balance prior to the fixing of the positivies on master glass "formes". Making due allowance for trimming and folding, these formes are so planned that the printed result will appear in its correct sequence.

The assembled positives are then "carbon-printed"; i.e. exposed to light in contact with carbon tissue which has previously been sensitized and screened. The tissue must now be squeegeed firmly in its correct position to the printing surface—either a copper plate or a copper cylinder. In the latter case this is usually effected by running the tissue through a mangle-like "transfer press", the upper roller being of hard rubber, and the lower roller the dampened cylinder itself.



GRAVURE SCREEN 150 LINES TO 1 IN.
Ratio 2.5 to 1

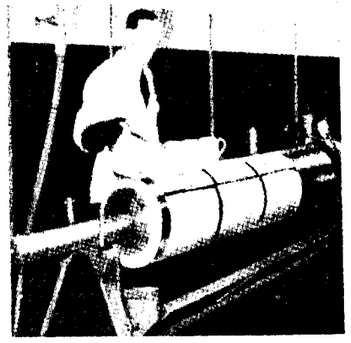
Actual Screen Measurements.
Dot width .00475 in. approx.
Dot area .0000 225625 sq. in. approx.
Line widh .0019 in approx.

Diagram shows gelatine on copper surface and etched cells. A: Tone Exposure. B: Screen Exposure. C: Copper Surface. D: Etched Cells of varying depths to hold ink in printing.

So far, so good, but before going on to the actual etching of the copper, some explanation is required of what has gone before, for within "the sensitized and screened carbon tissue" beats the heart of the photogravure process.

Carbon tissue is red pigmented gelatine on a paper base (the pigment making details visible, and carbon having been the original pigment used) which becomes sensitive to light (sensitized following immersion in a solution of potassium bichromate. The sensitized tissue is dried, and arc-light-exposed to a screen (see illustration) consisting of thousands of tiny square cells, upon which will be superimposed the exposure of the positives. (There are several standard screens in use, varying from 22,500 cells to the square inch to 160,000 cells to the square inch). The action of light upon sensitized gelatine has a hardening effect, and it will be readily appreciated that the tonal ranges of the positive govern the degrees of this hardening.

Before etching; the copper with the tissue firmly adhering, is "developed" in hot water. This (1) enables the paper backing to be removed and (2) enables the gelatine that has not been exposed to light (and which is therefore soft and soluble) to be dissolved. The resultant "acid resist", i.e. the print from the positives, is left, being an image in gelatine varying in degrees of thickness. Over the whole image appears the screen, which by reason of its additional penetration, forms the walls of cells on the etched printing surface. Etching is effected by differing strengths of ferric chloride, all those portions of the copper not requiring to be etched having been painted out with an acid-resisting varnish.



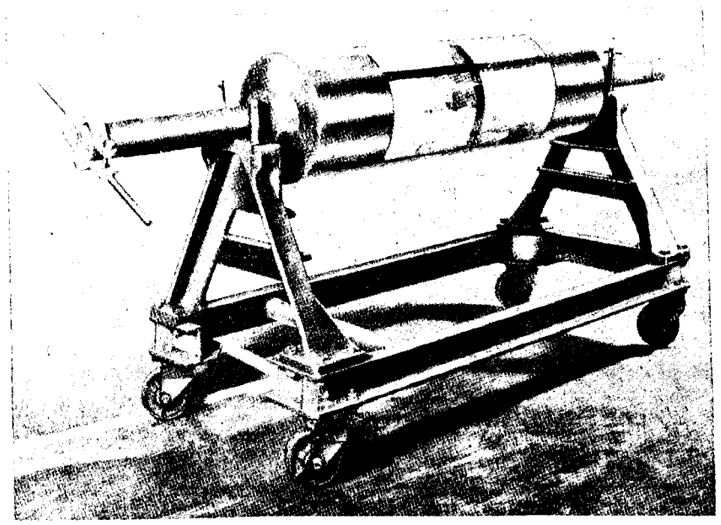
Etching the Cylinder

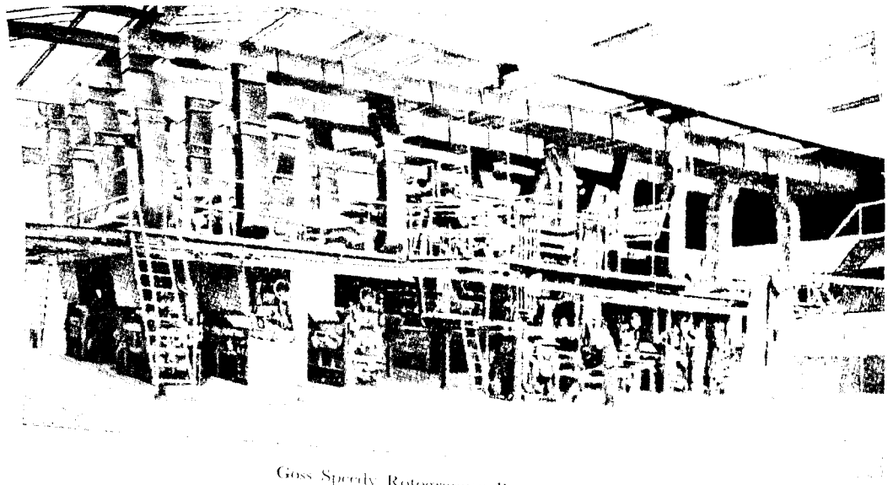
The differing strengths of ferric chloride solution are necessary to control the relative depths of etching, and thereby the contrast range. Very dense solutions will only penetrate the thinnest areas of the resist and less dense solutions are progressively used to etch through the thicker portions of the resist. If etching was carried out only with a very dense bath, only the darkest shadows would etch, irrespective of the time taken. The etching time and bath changes are usually so adjusted that the maximum depth of cell is some five times that of the lightest tone.

The cylinder, or plate, after cleaning and revision is ready for the printing machine. During machining, the printing surface having been flooded with ink; a scraper blade (the "doctor"), in close contact, scrapes all ink away except that contained in the etched cells. The paper, under great pressure, takes this remaining ink away, obliterating the cell appearance with a microscopical "splodge" effect. It is from this procedure that gravure attains much of its subtle quality.

Both sheet fed and rotary machines are used, varying in size and numbers of units It is not generally realized that a tremendous bulk of small packagings and security work is printed on machines each no larger than can be delivered complete on a single lorry, while any one of the giant presses which turn out many thousands of tons of periodicals each week could hardly be accommodated in an average size town hall! To visualize the capability of the former, it need only be said that one such small machine keeps the nation entirely supplied with its National Savings stamps of both values, and a battery of these tiny - cylindered machines engaged on work of a like security nature is backed by a process department of only three men. On the other

The finished cylinder ready for machining





Goss Speedy Rotogravure Press 16 units

hand, the giant presses quoted must be seen to be believed. It is hardly sufficient to say that these machines produce the national gravure weeklies with which we are all familiar in their millions direct from the reel, complete with many of their pages in two and four colours, wire-stitched, counted and ready for packing, at speeds around 30,000 copies per hour!

On these fast rotaries, drying of the ink must be a major consideration. As the paper travels through the machine, warm air is blown over the paper web under hoods, and then removed by suction. This air, laden with the highly volatile spirit used as the ink solvent, is drawn through a trunking system to a plant where the spirit is recovered for re-use. This system combines excellent drying with good press room ventilation—a very important factor—and effects great economy in the use of solvent.

Ultimately reaching the folder, the paper is slit into strips, which are led in their correct sequence over rollers and turner bars to a cylinder that cuts, folds and wire-stitches the finished article. These machines are manned by "crews" of upwards of 16 men, while the process staff backing their cylinder production is necessarily quite large.

Work of an intermediate nature, particularly on sheet fed machines, covers a range of every conceivable type from high-class commercial and art to "pools", while the ever popular sepia gravure is so familiar as to go without saying

Notable among the variations of the process (in which may be included the invert halftone method and others designed to eliminate the tissue stage by the preparation of sensitized copper) is that in which by a combination of continuous-tone positives and the halftone screen a much longer gradation of tone values is achieved, particularly in the higher tones. Such refinements are securely covered by patent rights.

Similarly, the technical details of the expanding use of gravure in waxed paper and "Cellophane" printing are frequently conserved to those who develop them. It is an odd feature of gravure that secrets can be jealously held; almost traditionally so in fact, for as more than one text-book points out, Klic's early inventions were closely guarded secrets for years, until the technical experts in the trade ultimately laid them bare. Nevertheless, although the use of photogravure in this field has as yet been barely noticed in the face of the section's other commitments, there are

indications from an ever-increasing demand that gravure is going to play a very big part in the packaging business.

A visit to the Process Department of a gravure establishment may give an outward impression of almost leisurely production, and to prevent the visitor making an unpopular observation on such lines, it must be pointed out that the process lends itself to the very minimum of correction of the finished printing surface, as compared for instance with a type forme which will take plenty of juggling. Plate and cylinder production in gravure, therefore, demands meticulous attention to accuracy throughout, and steady efficiency succeeds where "bashing" fails

The departments staffed by Society craftsmen may be briefly sketched as follows:—

1. Cylinder Preparation. This entails the depositing of, and grinding and polishing of the virgin copper, requiring knowledge of chemistry and mathematical exactitude.

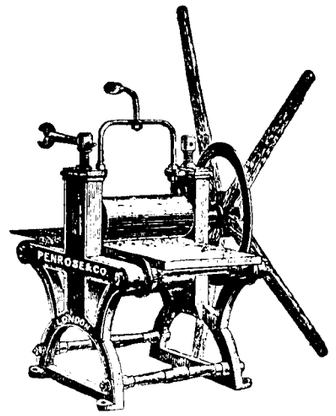
2 The Studio. At one time suitable types of "originals" were considered to be limited in number, but modern operators handle every possible kind, from line work to colour-transparencies with notable success.

3. Retouching Department. Here are restored the subtleties of tone lost in the camera in the case of monochrome, together with a standardization of tone values in the case of mixed mono originals. With an increasing demand for colour work, this department tends to be a king-pin of the section, and is the subject of research for improved methods. In co-operation with the Studio, "colour-masking" is on the increase.

3. Planning. A knowledge of imposition and layout, and a general appreciation of the

RECORD SIZE GRAVURE PRESS

A Swedish firm is buying the largest rotogravure machine ever built in Germany. Made by Koenig & Bauer, it is 117 feet long, 25 feet high, and has a printing width of 56 inches. It weighs 270 tons and is driven by 100 electric motors. It is to produce 32,000 ready-bound 48 pages brochures an hour, with 16 of the pages in two colours. —*Printing News*



Photogravure Hand Printing Press, 1895

whole process is necessary for this department. Strict attention to precision, particularly with regard to the "register" of colour work is essential

4 Carbon Printing Intimate acquaintance is required here in dealing with the vagarities of gelatine, chemicals and light.

5 Etching The men who produce the final (and therefore most expensive) part of the production line must know the "feel" of their work, and deliver the goods as near correct as is humanly possible.

6 Revision. It has previously been stated that correction to the finished article is down to the minimum. This is particularly the case with "skin" deposits of copper, where hand engraving is limited to surfaces of no more than six-thousands of an inch. Revision of etched work therefore demands the highest skill that engravers can achieve.

All departments are closely linked, and, particularly where work goes through at "news" speed, efficiency is vital. May it be said, in conclusion, that the men who produce your photogravure are a grand bunch of chaps, and without the willing assistance of some of these, this article might have been quite incorrect in parts and unintelligable in others! ★

Courtesy: The Process Journal

concerning modern MAKE-READY (1)

By A PRESSROOM OVERSEER

Fifty years ago the machine minder's job was considered to be the easiest of all. Little skill was required, and often the less intelligent boys entering the printing trade were sent to the machine room. Nowadays, however, with the manufacture of faster and more accurate machines, the minder must be both artistically and mechanically minded. On his shoulders lies the responsibility for the perfection of the finished job, and his making-ready plays a large part in the success of any job.

Most people imagine that the term "making-ready" applies to patching sheets for a uniform impression. This, of course, is only part of the process Making-ready is the term applied to all the operations and adjustments to the machine preparatory to running on. Nowadays a large proportion of this is carried out in another department and is known as "pre-make-ready." This operation is completed before the forme reaches the machine (more on this subject in a later article); therefore the first job of the machine minder is to set the machine.

Machines of to-day are the result of many years of research, and with modern engineering science and technique they have become instruments of precision Machine minders must use these machines to their best advantage, and be taught to realize that an hour spent setting up the machine before putting on the job will save perhaps two hours on the run. Efficient minders always position the job to suit the machine. It should be emphasized that the setting of some parts of the machine (especially a new one) is a skilled mechanic's job and, apart from the general setting referred to in this article, should not be touched by the minder.

Cylinder Setting: One of the most important things to bear in mind is that it is essential for a modern cylinder machine to have its cylinder in correct contact with the type bed bearers. The cylinder must never be lowered or raised to increase or decrease the amount of impression on a job. The cylinder must be set on the bearers and checked from time to time.

If it is suspected that the cylinder is not running correctly on the bearers, remove the type bed bearers and caliper them for correct height. If they are under the required height pack them with brass shim of required thickness until the correct height is reached. For the time being do not replace them. Lower the cylinder on to impression and insert the cylinder-setting gauge (Fig. 1) between the cylinder bearers and the type bed. The gauge should only just go in for a correct setting. Replace type bed bearers To test the setting obtain a full-out forme of type, dress the cylinder, and pull an impression on a sheet of M.F. The impression on the back of the sheet will show by evenness of indentation if the cylinder is correctly set on both sides of the machine.

Cylinder Dressing: The cylinder should then be packed. To determine the correct packing required, proceed in the following manner:

Lay a steel straight edge across the cylinder bearers. Fill in the space between the straight edge and printing surface of the cylinder with strips of paper, until the top strip is just held by the straight edge (Fig 2). The number of strips should then be calipered up or, if no micrometer is available, counted, and the same number of sheets used to pack the cylinder. For general information super-calendered cylinder sheets usually caliper up to ·003".

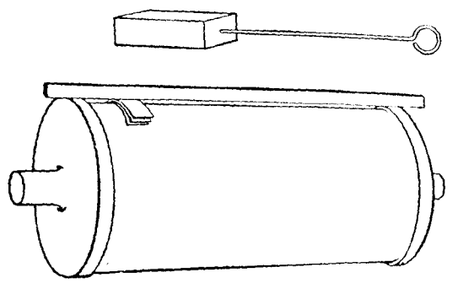


Fig. 1 (Above): Cylinder-Seting Gauge
Fig. 2 (Bottom): Shows how to find the correct amount of packing.

It must be remembered that the periphery speed of the cylinder must be the same as the type bed, the two running in unison. If they are not synchronized all manner of trouble will arise, not the least being undue wear of the forme. It is therefore imperative that the cylinder is packed to the correct thickness.

If the packing calipers up to ·07" the cylinder should be packed as follows: Oil a manila sheet calipering ·006" and crease an inch strip over at the top. Place it over the lip of the cylinder. Then prepare five more manilas in a similar way, omitting the oiling on the last two sheets. Then stretch a sheet of calico over these and fasten back on the first draw-bar of the machine, making sure there are no buckles or creases. This will then form the base packing and need only be changed when indentation shows on the calico.

Assuming the calico calipers up to ·011", place five cylinder sheets and a top sheet of malina over the calico, the top manila being drawn tight by the second draw-bar. Should more cylinder sheets be required remove one manila from the base packing and replace with the cylinder sheets above the calico.

This packing above the calico is the temporary packing and must be changed for every job, and can be varied to suit the job in hand. When a quick "get-away" is required it is preferable to use a packing consisting of a very soft newsprint. It will, however, allow indentation to show on the back of the printed sheet, especially if the stock is hard and rough.

It needs a firm impression to bottom the grain of a hard paper and to impress the ink into it. A soft packing will yield under pressure whereas a harder one consisting of super-calendered or art will not yield half as much and will not show such heavy indentation. The harder the packing the more perfect the job, as much more care must be taken with the make-ready.

Each job should be treated on its merits so far as packing is concerned. A good normal packing is a combination of both hard and soft sheets with which a good, even impression can be obtained, without showing too much indentation. ★

Courtesy: L. & M. News

New Extension Delivery-table to Three Knife Trimmer A D N

The Polygraph Perfecta Factory of Germany have brought out a new extension delivery-table for their Three-Knife Trimmer ADN, maximum trimmed size 11-3/4" x 16-1/2" x 4-3/4" height. This is an optional device and can be fitted as an extension to the standard delivery-table, which is at the rear end of the machine, opposite the feeding-end. It allows trimmed piles to be laid out automatically one after another, for convenient lifting at high-speed, instead of picking up each pile close to cutting immediately after each cut. With this device, feeding need not be slowed down, to synchronise with lifting of each pile, and the assistant at delivery-end is not tired out so much.

The extended pile-delivery is available in two lengths, i. e., 2 metres (approx. 6 ft. 6 in) and 3 metres (approx. 9 ft. 9 in). Sole Agents are Indo European Machinery Company Private, Ltd., Bombay, Delhi, Calcutta and Madras.

...NITION OF BOOK

THOUGH over sixty countries throughout the world publish books, there is no agreement as to what constitutes a book, according to an expert. He says that even the chief producing countries have failed to adopt a common definition.

The United Kingdom considers that a publication can be termed a "book" if it is priced at least six pence, while Ireland and Italy say that a book to be a "book" must have at least 100 pages.

Hungary lays down a minimum of 54 pages, Denmark 60, South Africa 50, Canada 49, Czechoslovakia 32 and Iceland 17.

A number of countries, such as India, Indonesia and the USSR, do not distinguish between books and pamphlets and classify them all as "books".

By way of compromise, United Nations Educational, Scientific and Cultural Organizations has recommended that a book be defined as "a non-periodical publication containing 49 or more pages" and has asked all countries to accept its definition.

This and many other aspects of publishing are dealt with in "Books for all", a world survey of the book trade just published by UNESCO. It was prepared by Mr. R. E Barker, Deputy Secretary of the Publishers Association of Great Britain, the country which is itself the world's largest exporter of books.

According to Mr. Barker some 5,000 million copies of books are published annualy all over the world, representing about 258,000 titles. But this flood of books is very unevenly distributed between continents and countries. In fact, it represents only two books for every person, and most of the world's books are used in schools or housed in libraries.

Book production is also highly concentrated and the author points out that nine-tenths of the world's literature is the product of only eight languages English, Russian, French, German, Japanese, Italian, Spanish and Chinese. No Indian language figures in the "top ten" list.

In the field of translation concentration is even more highly marked: Seventy per cent of all translations are the product of only four languages English, Russian, French and German.

RAPID GROWTH IN CHINA AND RUSSIA: Mr. Barker draws attention to the rapid growth of publishing in the USSR and China and notes that Peking is now issuing translations of Western classics. Among the first in this series are the plays of Shakespeare and Moliere. However, as things stand at present, only a minority of the world's population have ready access to books. Three quarters of the world's book production is concentrated in ten countries - China, France, the German Federal Republic, India, Italy, Japan, the Netherlands, the USSR, the United Kingdom and the United States.

To meet the growing demand, the author urges that the less developed countries of Africa, Asia and Latin America, be helped to develop book publishing and to found public libraries.

(A National Book Trust incidentally is to be created by the Government of India to encourage the production of good literature and make the books available at moderate prices to libraries, educational institutions and to the general public.)

Mr. Barker also stressed the complexity of trade barriers to books, pointing out that 12 per cent of all countries levy import duties and 70 per cent impose currency restrictions on books.

Transport charges are a further obstacle. Although more books are sent by post than by any other means, less than half the world's postal administrations apply a provision of the Universal Postal Convention permitting books to be mailed at half the oridinary rate for printed matter.

In the field of copyright, the main obstacle is the incompleteness of international projection, with some countries supporting conventions covering part of the world, while others adhere to none at all. Complicated and costly registration formalities are another problem.

UNESCO, the author states, has worked successfully to overcome these obstacles A grant, now applied by twenty two countries, grants duty-free entry to books, newspapers, periodicals and many other informant materials. The Universal Copyright Convention, also sponsored by UNESCO, fills in the gaps in the world copyright pattern and minimises formalities. Nineteen countries are now parties to it. In the field of transport, UNESCO is co-operating with the Universal Postal Union and the International Publishers Association to obtain lower postal and other charges for books.

In a foreword to the survey UNESCO expresses the hope that "publication of this study will help to stimulate support for the effort to make 'books for all' a reality." ★

ONLY 30 BOOKSHOPS IN CANADA

Publishing in Canada is just as precarious a trade as it is in India. A UNESCO feature quoted Morley Callaghan, one of Canada's most accomplished authors, as saying that it is still impossible for a Canadian publisher to sell 1,000 copies of a novel. But the publishers, on the other hand, claim that to break even on a novel, they must sell 3,000 copies or 4,000 in the case of a French-Canadian publisher. This is very similar to the situation in India where few books get an initial first printing order of more than 3,000 copies.

The feature said that surprisingly, there were only 30 bookshops in all Canada that deal exclusively in books. Canadian authors who want to get a good start usually sell their works to American publishers.

INKS FOR MODERN WRAPPINGS

This article discusses some aspects of the very wide subject of printed wrappings, particularly those produced on the thinner, more flexible materials. The use of printed wrappings, in great variety, has increased remarkably during the past few years. It shows every sign of further growth. Many printers will therefore be facing problems of attaining increased output, possibly on unfamiliar materials. A few words from the ink maker's point of view may be of assistance to them in deciding which of the various courses to adopt.

When embarking upon a new printing process, many factors naturally demand consideration. Several of them have, at first sight, little to do with printing ink. It should be realised, however, that once the choice of process and materials, (paper, film, foil, etc.) has been made, the printer's choice of ink is usually restricted to one or possibly two types.

He needs, accordingly, to know at the outset what types of inks are available, with their advantages and disadvantages, and to bear these in mind when selecting the process in relation to printing surface and end-use.

Important considerations include:

1. Will the print be web-fed or sheet-fed?
2. If web-fed, will it be re-reeled or sheeted off?
3. What quality is required (especially with respect to reproduction of fine detail)?
4. Is the wrapping required completely odour-free?
5. Are the runs long or short?
6. Are frequent changes in the size of repeat pattern required?

Whilst these are but six questions out of many, the answers will go far towards determining the most suitable process.

DRYING: A fundamental question is the drying process for the ink. Of the four basic methods,

1. penetration
2. chemical action (oxidation)
3. evaporation
4. precipitation

the first, penetration, is by itself unsuitable for most printed wrappings, since it depends upon the use of very absorbent, and usually porous and mechanically weak, papers. It is quite unsuitable, of course, for nonabsorbent surfaces such as films and foils.

The second process, oxidation, suffers from the drawback of slow drying which rules it out for most web-fed work, especially if re-reeled. Oxidation in conjunction with penetration is sometimes used on re-reeling machines, on rather absorbent papers, but there would seem to be little point in installing fresh machinery of this type. Oxidation drying inks are, however, used almost exclusively in printing butter and margarine wrappers, where it is otherwise difficult to obtain proper resistance to fats and moisture, on greaseproof papers.

ODOUR-FREE: Most modern wrappings are dried by either precipitation or evaporation. The inks can be made to dry comparatively rapidly (from fractions of a second to a few minutes, according to circumstances), and since they can be made far more odour-free than oxidation type inks, they are more suitable for food packages.

Inks drying by precipitation are used on ordinary-type letterpress machines, flat-bed or rotary. The inks absorb moisture and precipitate (or throw down) a solid resin-pigment film. In other words, they dry by the action of moisture. This moisture can come from the paper (if fairly absorbent) or may be added in the form of steam blown on the print. The first method is simpler, but takes a few minutes to complete: it is thus less suitable for rotary work (especially re-wound work) but normally satisfactory for work fed or delivered in sheets. Using steam reduces drying time to a matter of seconds, and is also the most satisfactory way of dealing with surfaces having little or no moisture content, such as foil.

BREAD-WRAPPERS: Precipitation (moisture-setting) inks are limited in their gloss, chemical and abrasion resistance, but have the advantages of being usuable on normal letterpress machinery (with rubber or synthetic rollers), of drying rapidly, and of being virtually odourless. They are very suitable for waxing. Where their low finish and resistance properties are masked, and a large proportion of bread-wrappers are so printed.

Evaporation drying inks include both aniline and gravure. Most modern wrappings are printed by one or the other, each having its particular field. Both, of course, are well adapted to dealing with foils and films in web form, with necessary rapid drying. The technical choice between them depends primarily upon the quality required and the length of individual run.

Aniline (flexographic) printing, using rubber stereos and alcohol-based inks, is satisfactory for paper bags, bread and sweet wrappers, where the design comprises lines, solids and large type: it is not capable of good reproduction of finely detailed or half-tone work. Another advantage for aniline printing is that the rubber stereos are cheaply produced and can be changed rapidly.

MISLEADING NAME: The word *flexographic* has been coined because the name aniline, widely used to describe the printing of alcohol-based inks from rubber stereos, is now misleading. Originally, all inks for this process were made by dissolving bright, but rather fugitive, dyes made from aniline in methylated spirit. Such inks are still satisfactory for much paper bag work. Where some opacity is desirable, as on transparent films, and a higher degree of lightfastness required, pigments rather than dyestuffs are used. On non-absorbent surfaces, synthetic resin binders are also necessary: special types have been evolved for different printing surfaces.

FLEXOGRAPHIC FAMILIES: There are three distinct 'families' of flexographic inks:

Dyestuff ("Dysol"): transparent, comparatively fugitive.

Dyestuff plus pigment ("Solibrite"): more opaque.

Wholly pigmented ("Britefast"): good opacity and lightfastness.

Each may be formulated to suit a particular film or foil by the choice of appropriate binding resin.

Gravure printing from recessed copper cylinders, is much superior to aniline for high-quality printing of fine work, halftones, etc., and is applicable to almost any printing surface. But the initial cost of cylinders is high, and the work involved in changing them makes this process less suitable for short runs.

Most gravure inks use hydrocarbons, especially toluole and xylole, as the evaporating solvents. Cheaper qualities of these materials have unpleasant smells, which are apt to be retained by absorbent papers. The problem is less acute on non-absorbent papers, and can be partly overcome by using the purer grades of solvent. Even chemically pure toluole and xylole have characteristic odours, however, and for food-wrappers it is desirable to use odourless inks based on alcohol.

POLYETHYLENE: One of the most interesting new packaging materials is polyethylene. This raises some difficulty: polyethylene's merits spring largely from its high impermeability to a very wide range of substances, including those used in inks. Whilst printing on polyethylene is not difficult, it *is* difficult to make the print adhere well, especially when it is stretched or scratched. Attempts, in Britain and elsewhere, to solve this problem by using special resins and solvents, have won only limited success. The best answer at present

lies in pretreating the polyethylene, and it is inadvisable to attempt printing on samples of this material which have not been so treated by the manfacturer. Treated polyethylene films include *Visqueen*, *B. C. L. "K"*, and *Diothene*.

Gravure is excellent for applying gold and silver inks to wrappings, the difference between the printing properties of normal and metallic inks being much less serious than in letterpress or litho.

Recent gravure development exhibited at IPEX included a method of producing gravure cylinders in hardened rubber. This may well lead to cheaper and less fragile cylinders, and to even wider use of this versatile and rapidly-growing process.

This brief survey would be incomplete if it did not point out the very great part that has been played by research and development, especially in synthetic resins, in devising inks which will not only suit the high speed of modern presses but will print and adhere satisfactorily to the very wide range of modern wrapping materials.

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Printer's Error Resulted in WICKED BIBLE

It was revealed recently that through an error in translation, devout Christians in the Negro republic of Liberia had been given a "wrong angle" on the Lord's Prayer. The phrase "Lead us not into temptation" was translated for the Liberian people as "do not catch us when we sin."

The error was cited by the National Bible Society of Scotland as an example of pitfalls facing translators of the Bible.

Although the most rigid search is made for errors in the text of every newly-printed Bible, the task of translating from one tongue to another is often extremely difficult. Many languages have a notable poverty of expression which makes it practically impossible to find synonyms for the original text.

A certain Chinese tribe, for instance, has never heard of the word "treasure," and their language has no word that corresponds to it. Consequently, the Bible in the language of this tribe, contains the passsage: "The Kingdom of heaven is like a musk deer"—a musk deer being a valuable possession in the eyes of the tribe."

Because of errors in translation and unauthorised changes in the text, Bibles of certain editions figure among the world's most valuable books.

One of the most famous of these odd editions is the "Breeches Bible." It acquired its title because it contained a statement that Adam and Eve "sewed fig leaves together and made themeselves breeches."

The word "breeches" was substituted for "aprons." Similarly the "Beer Bible" derived its name from the fact that "beer" was substituted for "strong drink" in Isaiah xxiv, 9.

Worst of all is the "Wicked Bible," printed in 1631, in which the word "not" is omitted from the Seventh Commandment, so that it reads: "Thou shalt commit adultery."

Then there is the "Unrighteous Bible," in which a passage in the first book of Corinthians reads: "Know ye not that the unrighteous shall inherit the Kingdom of God."

It is suspected that not a few errors in the Bible were made purposely by printers and translators many years ago, who wished to create authentic proof of their own pet beliefs.

An edition which appeared in 1551, for instance, might easily have been printed by a henpecked husband for the benefit of his wife. A verse in the first epistle of St. Peter reads: "And if she be not obedient and helpful unto him endeavour to beat the fear of God into her head."

Courtesy: "Sunday Standard" India

NEWS

PRINTECH Diary Page:
News of people, production and events in the Printing, Paper and Publishing World.

Mr. P. R. Ramakrishnan, President of the Coimbatore Master Printers' Association visits Heidelberg Printing Machinery Plant in West Germany.

Mr. P. R. Ramakrishnan, M.Sc. (M.I.T.) recently visited the birthplace of the world-famous ORIGINAL HEIDELBERG printing machines. Mr. Ramakrishnan, who was accompanied by his wife, spent two days in Heidelberg, West Germany where the factory is located.

Mr. Ramakrishnan previously visited the Scandinavian countries as a delegate to an Industrial Mission headed by the Secretary of Industries and Commerce of the Government of India. He has been travelling extensively throughout Europe to conduct trade talks in connection with various new Indian development projects.

Born in Coimbatore on 11 October 1917, Mr. Ramakrishnan graduated from the Massachusetts Institute of Technology with a Master's degree in electrical engineering. During the last war he served as an engineer in the General Electric Company in U.S.A.

In 1947-48, he was awarded the Sloan Fellowship and studied industrial organisation at M.I.T. It was then that he received a Master of Science degree again in Industrial Management.

Mr. Ramakrishnan is now serving on the directorate of 12 companies, manufacturing different products ranging from textiles over cement to sugar.

Picture shows Mr. & Mrs. P. R. Ramakrishnan listening to explanations given by Mr. Fritz Niepert of the Heidelberg Company in the cylinder assembly line department

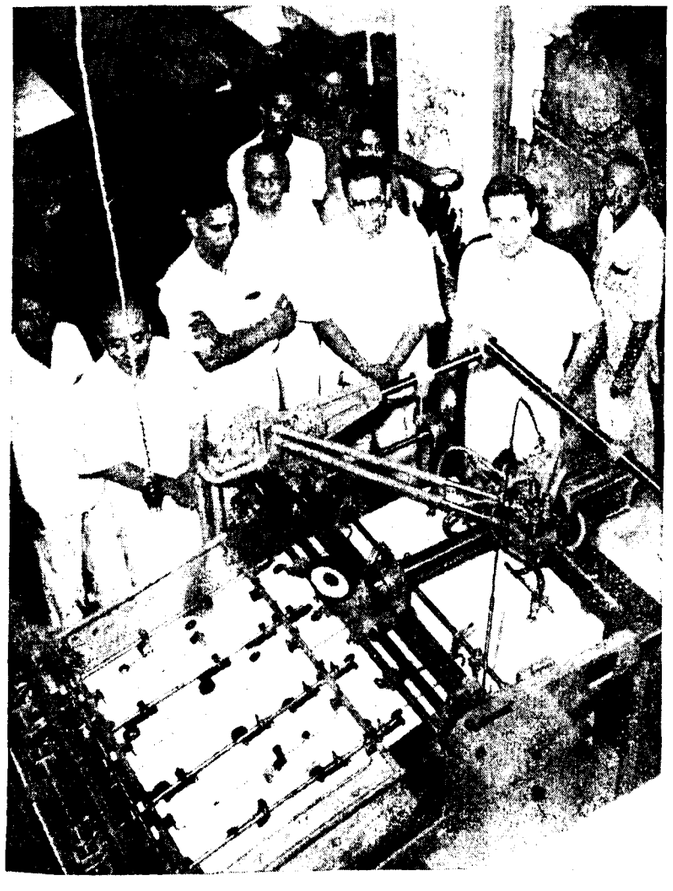
He is also a publisher and editor of a popular daily, "Nava India", published simultaneously at Madras and Coimbatore. This Tamil daily is enjoying a wide circulation in the Southern part of India. The printing establishment recently installed a 12 x 18" Original Heidelberg automatic platen press, and Mr. Ramakrishnan is now contemplating the installation of a 21x28" Original Heidelberg cylinder.

With the assistance of the Heidelberg Company, Mr. and Mrs. Ramakrishnan also visited one of the Heidelberg University Clinical Hospitals where they were shown the entire operations in a two-hours' tour. Mr. Ramakrishnan is particularly interested in receiving full details on modern hospitals since he belongs to a trust that has been recently formed for erecting schools, hospitals, training centres, etc. in connection with the Madras State development plan.

FIRST ROLAND IN DELHI

The distinction of having the first new Roland Offset in Delhi goes to Capital Offset Printers, a press started with a humble beginning in 1954, and now ranking among the leading offset presses of Delhi. The machine was supplied and erected by Halo European Machinery Co. Private Limited, and trial run on the 9th Augus, was attended by Mr. A.C. Sen, Controller of Printingt Government of India, accompanied by Mr. A.N. Sen Deputy Controller of Stationery and Mr. Sharma of Government of India Press, Faridabad.

A unique feature of the organisation of Messrs. Capital Offset Printers is that it is a kind of expert workers' cooperative, with all partners working in the Press as experts of different departments-one partner is Machine-Operator, another Erector, another Cameraman, another Platemaker, another Manager, and so on. The set-up



Picture shows in the front row from right to left: Mr. Fischvoight (Roland Engineer); Mr. A. C. Sen, Controller of Printing, Govt. of India; Mr. G. R. Sharma, Asst. Manager (Tech), Govt. of India, Fairdabad; and Mr. A. N. Sen, Dy. Controller (Tech.).

enables them to work with full initiative at less cost and without any labour troubles. With a Roland now installed, they are sure of greater success still, and deserve it.

LINOTYPE IN ACTION AT DAMASCUS FAIR

The British Linotype line-composing machine will be on view at the Third Damascus International Fair which is being held this month (From September 1st to 30th).

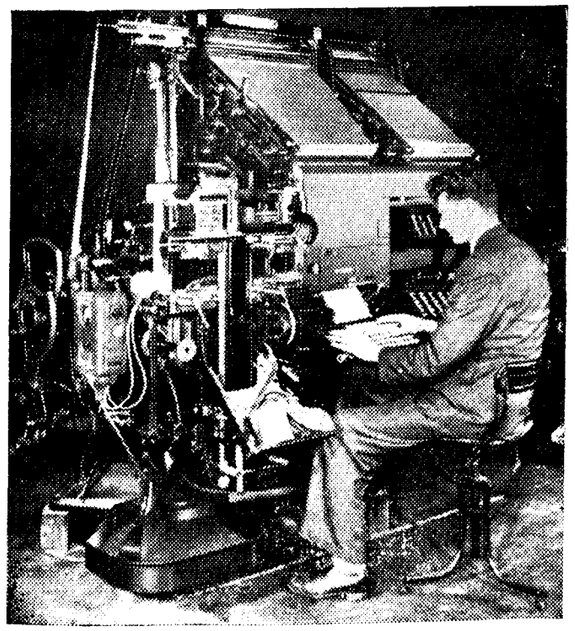
The particular model chosen for this exhibition by the manufacturers, Linotype & Machinery Ltd. is the 48 sm which is the model generally favoured for Arabic composition. It is equipped with four main and four side magazines. It will also have "Arabic/French" key bound with bilingual keys, and will be fitted with the Arabic reversible galley which automatically arranges the slugs for Arabic right to left reading.

During the Fair the machine will be composing lines of type in Arabic and French for use in newspaper, periodical, book or general printing.

It will also show the range of Arabic type faces in which linotype matrices are made.

L & M machinery is in regular use in most of the Government and newspaper offices in the Middle East, and throughout the world.

By Courtesy British Information Services, Madras.



This British Linotype line composing machine, Model 48 SM, will be on view at the Third Damascus International Fair in September. It composes lines of types for news papers, book periodical or general printing in Arabic and Roman characters. To the left of the keyboard is the Arabic reversible galley (arrowed) which automatically arranges the cast lines for Arabic right to left reading.

AMERICA'S 50 BEST BOOKS FOR 1956 37 ARE SET IN LINOTYPE FACES

Selections for the 39th Annual Exhibition of the American Institute of Graphic Arts were made from more than 650 books submitted from all parts of the U. S. A.

No less than 37 of the 50 Best for 1956 were set in Linotype faces Six in Electra, five each in Caledonia, Baskerville and Scotch No. 2, three in Janson, two each in Times Roman, Granjon, Fairfield and Bodoni Book and the remaining five in miscellaneous Linotype bookwork faces.

WORLD PRODUCTION AND CONSUMPTION OF NEWSPRINT FIGURES

An overall picture of the situation in regard to world production and consumption of newsprint is provided in the *United Nations Statistical Yearbook for 1955* which assembles figures not easily obtainable elsewhere.

So far as wood pulp is concerned it is clear, as indeed would be expected, that North America is easily the world's biggest supplier, accounting in 1954 (the latest year for which strictly comparable figures are available) for 9,344,000 metric tons out of a total world production of 13,700,000 metric tons. In comparison, the next two largest producers in 1954 were Finland (848,000 tons(

and Sweden 800,000 tons. Soviet Russia's contribution was estimated at 750,000 tons.

These figures are for mechanical pulp, the same situation being repeated in the case of chemical pulp in which North America accounted for 15,865,000 metric tons out of a total of 25,000,000 metric tons. In this case, Sweden (2,841,000 tons) pushed Finland (1,572,000 tons) into third place.

North America also dominated the world newsprint position, for Canada (5,455,000 tons) and the United States (1,041,000 tons contributed well over half of the world total of 10,130,000 metric tons. The United Kingdom, with 622,000 metric tons, occupied second place after North America.

Half The Total: In the case of paper other than newsprint, the United States, with an output of 10,685,000 metric tons, was responsible for almost half the total world production of 21,700,000 metric tons, with the United Kingdom occupying second place with 1,634,000 tons and Western Germany next with 1,485,000 tons.

Turning to newsprint consumption, the *Yearbook* reveals that the world's most avid readers (if consumption of newsprint per head of population is any guide) are found in the United States, with an annual consumption of 33·8 kilo-grammes per inhabitant. English-speaking countries occupy the next four places with Canada 26·8 kilogrammes per head, Australia 24·1, New Zealand 18·2, and the United Kingdom 16·4.

But if the circulation of daily newspapers per 1,000 inhabitants is taken as the criterion, the United Kingdom jumps into the lead with a figure of 570 per 1,000 inhabitants, followed by Luxembourg (482) and Sweden (459). The United States (339) is well down the list, below Japan (400) and others.

Output of books throughout the world in 1954 generally showed an upward trend, with Japan just in the lead with 19,837 titles (11,004 new editions), followed by the United Kingdom with 19,188 titles (13,342 new editions), Western Germany 16,240 titles, and the United States 11,901 titles.

P. K. T. F. CONFERENCE

Total membership of the affiliated unions of the Printing & kindred Trades Federation has now reached the record figure of 320,525, reported R. T. Williams, giving his presidential address at the fifty-fifth annual conference of the P. K. T. F. held at Edinburgh recently.

[Will ever this figure be reached be the All India Federation of Master Printers or the Indian Federation of Printing Technologists. We wonder ! —Ed.]

LONDON SCHOOL OF PRINTING ENHANCES ITS DESIGN INSTRUCTION

Since 1950 the range of the Design Department at the London School of Printing and Graphic Arts has extended enormously and there are now 90 full-time students. The head of the department, William Stobbs, M.A., M.S.I.A. has under him a staff of 11 full time teachers and 36 part time.

Basically the curriculum is divided into three sections: Commercial Design; Typographic Design, and Photographic Design. This last aspect was only incorporated in the department last September; before that it had been in a section of its own and was largely concerned with the technique of photography.

Non-photographic students are taught how to compose a picture and the general function of photography in modern graphic arts design.

The whole aspect of the full-time course in design is a practical one. When he was a student Mr. Stobbs noted the shortcomings of his training and determined that if he ever got into a position of authority he would organise the teaching on practical, as well as theoretic lines.

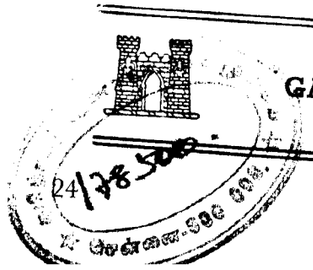
Accordingly all the teachers in the department are practising free lance designers with a great deal of first hand experience of the field.

This means, the school is providing the trade with the type of designers it needs and wants. Students can go from here and be of immediate use to any employer.

All jobs done by students in the design department have a close relation to printing of all types. ***Typos***, the school magazine, embraces all methods of printing taught in the school and the designers work in conjunction with the technicians at every stage.

No matter in what branch of design they may wish to specialise, be it Typograhic, Commercial or Photographic, every student is taught something of each so that he can integrate the separate into the whole. It is this insistence on a full, practical training by teachers who know their market as well as their design that has accounted for the growing success and scope of the whole department.

[Will there be any chance of the Schools of Printing in our country offer such facilities to the students and staff ? —Ed.]



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EDITOR'S VIEW POINT

Fluorescent Inks :

Elsewhere in this issue is a fairly exhaustive article concerning Fluorescent Inks. Until recently the capacity this kind of ink is not clearly known to the printers and the possibilities and its advantages are practically kept in dark. Fortunately Mr. T. Bredrup of M/s Ganges Printing Ink Factory has agreed to write an article on this kind of ink. Mr. T. Bredrub is the chief chemist of M/s G. P. F. who has an extensive knowledge about printing inks.

Ayudha Pooja Celebration :

Ayudha Pooja Celebration would now be over. This is the only celebration in which the employers as well as the employees take interest. Here is an idea that this same function may be utilised with best success to blend the employer employee relation.

LINO FILM :

M/s Lino Type and Machinery Co.'s I. P. E. X wonder LINO FILM is released for field test recently after being still further perfected. Particulars about this photo composing machine will appear in these columns of November issue.

Calendars of 1957 :

Calendar season has been started. Presses are busy in convasing orders while others have actually started the work. With all the price cutting prevelent in the market and scarcity of good paper etc. we saw some of the finest work done last year. While all the printing processes all applicable for this kind of work we find Silk Screen Printing has not much impressed our print shop owners. Here it is worth mentioning that some of the best eye catching advertising matters can be produced by this process.

Plate-making

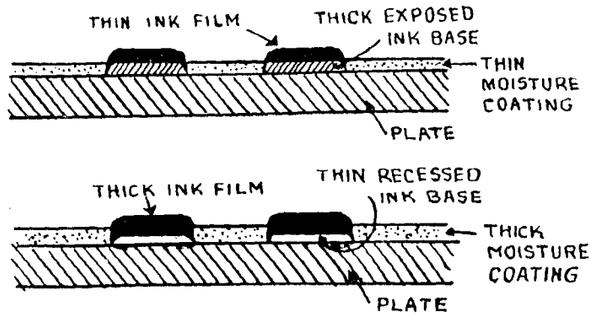
By K. V. MURTHY
Asst. Production Manager, Associated Printers Private Ltd. Madras

WE may divide plate-making into three main classes depending on the cost and longevity of the plates, and the quality expected of them. First and foremost, the simplest of the three processes is albumen plate-making where the image lies on the surface of the grained plate. This determines its life, which is a little longer than chromo-litho plates. Average run expected is about 5,000 copies from a plate. Negatives are used to print down. The second process is the most common method, used, for making plates, as the run expected from these deep-etch plates is within the average requirements of most jobs about 85,000–1,00,000. Here the basic image is protected to some extent from the friction of dampers and rollers as it lies below the surface of the plate. This is another factor which improves the quality of the printing over albumen plates. The halftone dots do not thicken as quickly resulting in sharper prints. Further, it is possible to carry more ink with deep-etch plates and with the help of modern inks are able to compete with advantage over direct lithography. Synthetic deep-etch coatings have now been evolved which eliminate completely the use of bichromates. which all lithographers know, cause the serious skin disease called dermatitis. Lastly, we have the very costly methods of platemaking which work out economical only on very long runs, namely, the bi-metal and trimetal plates, anodised plates, and dry offset.

ALBUMEN PROCESS

MATERIALS AND CHEMICALS USED.—Albumen scales used for making the coating is manufactured by breaking fresh eggs separating the whites and yolk, the latter being of no use; adding ammonia to the white part or albumen to prevent decay and allowing the solution to stand for some time so that the suspended impurities settle down to the bottom. The mass is then skimmed and kept in pans for drying when scales are formed which are stored in bottles for use in making the coating. Fresh albumen are also used to make the coating but these contain insoluble parts of albumen which cause breaks in the dry coating on the plate. Another disadvantage is that albumen in liquid form will not keep long, and fresh solutions will have to be prepared often. Albumen scales have just got to be dissolved in water before use.

Ammonium dichromate is a salt made by adding ammonia to chromic acid and crystals formed by evaporating the solution. All dichromates when combined with a colloid like gum, glue, gelatine, albumen, etc., produce solutions which are sensitive to light. Ammonium dichromate is more satisfactory to lithographers than potassium or sodium dichromates as it is more easily soluble in water, but in countries where humidity is very high, sodium or potassium dichromate is preferable as a slow acting solution becomes necessary. Colloids mixed and dried with dichromate and exposed to actinic light become hard and insoluble in water. This hardening to actinic light (light rich in the ultra—Violet end of the spectrum) is accelerated or retarded by the moisture content in the coating, which in turn depends



Accentuated diagram indicating essential differences between albumen (top) and deep-etch plates (below)

on the humidity of the place. When humidity is high the reaction to light is rapid, the speed of light hardening being almost doubled with an increase of 30 degrees in relative humidity.

Ammonium hydroxide is added to the coating to make it alkaline. This is necessary as ammonium dichromate which is acidic, will precipitate albumen out of solution. The pH value of the coating should be 7.2 to 7.6 on addition of ammonia. A stock solution of ammonia should be kept handy as concentrated ammonia is very volatile and would quickly lose its strength when the bottle is opened often.

COUNTER-ETCHING.—Washing the plate alone does not clean it well, so a mild acid is used which forms a salt soluble in water and when the plate is washed under water a thin film of the plate is removed. A 5% solution of acetic acid is universally used for counter-etching. A small amount of the solution is poured over the plate and brushed with a round movement so that all the grit gathered in the graining operation is completely removed. The plate must then be washed thoroughly. Some firms then carry out a second counter-etching operation the advisability of which is a matter of opinion. The chemical used is a solution of alum and nitric acid in water. This must not be too strong to attack the grain on the plate. Alum-nitric solution forms a layer of insoluble oxide which is very receptive to the coating solutions or ink. In other words the plate is now sensitised. Now this means that once the image is formed we have got to desensitise the non-printing areas of the plate. That is, break through the layer of oxide with a strong etch. But this strong etch we have got to take care does not also harm the image itself. Two ounces of alum with one liquid ounce of nitric acid in 100 ounces of water should work well. Another method called the 'Cronac' treatment is quite commonly used to give the zinc plate a surface that is easier to desensitise than bare zinc. Desenstisation is the factor that largely determines the life of the plate. The cronac solution consists of two common chemicals and the treatment is easy to carry out Make a solution of ammonium bichromate (12 oz), sulphuric acid (2 oz.), water (5 gallons). After counter etching the plate immerse it in the above solution contained in a tray or trough, for about a minute After this rinse the plate with a gentle stream of water and dry plate with blower. When a plate is treated thus, it can be stored for a long time till it is taken up for coating.

COATING THE PLATE.—The plate is fixed in position in the whirler and the position of the lever controlling the speed of revolution is adjusted. The whirler is then started and a jet of water is directed on to the plate. The coating is then filtered through a moist cloth and poured on to the plate without causing any bubbles to form on the plate. The heater is then started and the plate allowed to revolve till coating is perfectly dry.

At this stage let us consider what factors control the thickness of the coating, and this

is very important. Thick coatings extend beyond the grain and so are easily destroyed by abrasions on the press. Moreover thick coatings on the press would swell as they will absorb moisture and acids more quickly than thin coatings thus putting up a poor resistance to fountain solutions resulting in a short life for the plate. Further a thick coating does not present a good surface for anchoring the ink The coating should be as thin as is consistent with good development. When a plate develops out too quickly it is very likely that the coating is too thick and this forebodes danger. The thickness of the coating may be controlled by following the principle of standardisation. The plate should be coated with the same quantity of the coating solution for the same size of plate. For change in size of plate quantity of coating is changed proportionately. The whirler speed also affects the coating thickness. Faster the speed of the whirler thinner will be the coating and vice versa. The plate should be dried in the whirler within a standard time. The last and not the least in importance is maintaining the density of the coating. Coarse grained plates will require thicker coatings to cover up the peaks of the grains. When coating is dry the plate is removed from the whirler the edges cleaned of all collected coating, the back dried and placed on the printing down frame with coating facing the arc lamps. There are two types of whirlers used for coating the plates. The horizontal type is easier to coat but occupies lot of space and there is more chance of the dried scales of coating falling on to the plate and causing specks in the coating. The vertical type occupies very little space and is preferable for various reasons.

Coating for albumen plates can be mixed easily and very quickly if albumen scales are readily available. Dissolve 3 oz of albumen scales in 40 oz of water. Add about $\frac{3}{4}$ oz. of ammonium bichromate (15° Be') to the solution and filler. Also add ammonia, about $\frac{3}{4}$ oz. for preserving the coating.

Perhaps it would not be out of place if I try to explain further what meant by pH of a solution. pH value is a measure of the degree of acidity or alkalinity of a solution. Strong acid values decrease towards one or in other words strong acids have the value 1 while at 6 the solution is almost neutral and after 7 the alkalinity increases. Thus 10 would mean the solution is quite a strong alkaline solution; water and neutral salts read from 6 to 8. The strength of an acid depends upon the amount of dissociation of the hydrogen ions from the acid when dissolved in water. The concentration of hydrogen ions in a solution is expressed by the symbol pH. Hydrochloric acid for example in a 1% solution will show a pH reading of 1.0 while Acetic acid of the same concentration will show only 2.8. This is because acetic acid (CH^3COOH) though it contains more hydrogen than hydrochloric acid (Hcl) dissociates less than the latter in water.

pH can be measured in a number of ways, Certain organic dyes like bromcresol green. chlorophenol red, etc. vary in colour according to their pH value on addition of the solution to be tested. These colours are graded and by comparitive study pH values of solutions may be determined. Another method is to moisten pH test papers in the solution to be measured and note the resulting colour. This when compared to colour charts also supplied with the test papers offer an easy method of measuring appproximately the pH of offset chemicals.

Fountain solution should not be above pH 4.6, while albumen coatings with ammonia must be about 7.4—7.6 or 5.6 without it. pH readings help the offset printer in standardisation of the chemicals used. ★

Believe it or not, but it's true

A printer who in error supplied a job printed in green instead of brown as ordered, tried to pacify his irate customer with this:

'Because of the labour shortage I have to employ West Indians. Their religion forbids them to print in brown and so I feel sure you will not expect me to be responsible for the error.'

—Paper & Print.

FLUORSCENT PIGMENTS

and their use in printing inks

By T. BREDRUP

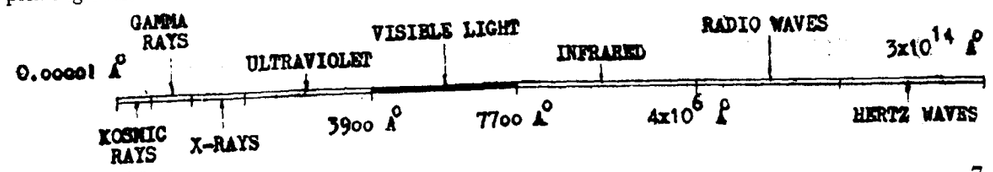
Ganges Printing Ink Factory Private Ltd

DURING the last few years a completely new type of colours has experienced an increasing popularity, almost unrivalled in the history of colours and pigments Not since the discovery of the phthalocyanines, with all their important and valuable properties, has anything similar been seen in the colour world. Whereas, however, the phthalocyanine pigments, strictly speaking, only meant an improvement of properties which were found in already existing pigments, i.e., properties like lightfastness, fastness to acids and alkalies, heat-resistance etc., – the new *fluorescent pigments* are something entirely new in principle, and differs fundamentally from any other known pigments. The new colours, which are being marketed under a variety of trade-names, like for example "Day-Glo" "Lumigraphic" "Fluoresco" and others, are incredibly much brighter and more brilliant than any of the "old" conventional colours. We can see them every day in advertisements, cinema-posters, in plastic articles, clothes and so on. They are literally used for hundreds of various purposes, and new ways of utilising them are found every day. In this article however we are mainly interested in the use of fluorescent colours in printing inks.

We have all seen cinema posters lately, which seem to be glowing and emitting light of their own. Particularly on dull, overcast days the effect is really striking. It might perhaps be of some interest to the readers to get some idea about these new, shining colours, the physical and chemical principles they are based on, and what actually makes them so much brighter than ordinary colours.

We know that light is a form of energy, actually it consists of electro-magnetic waves. All electro-magnetic waves are classified and indentified through their wave-length. As a measuring stick for wave-length we are using a unit called Angstrom, (A). As the wave-lengths of electro magnetic waves are incredibly small, A is a very small unit, i e. *1A.* is approximately 0.000000004". There are known electro-magnetic waves of a wide range of wave-lengths, from radio-waves and the so called Hertz waves with wave-lengths up to 20-25 miles, and down to cosmic rays with wave-lengths of as little as 0.00001 A. In Fig. 1 an approximate scale of the known electro-magnetic waves is shown:

From the scale will be seen, that visible light, or in other words, those electro-magnetic waves which can be seen by the human eye



covers only a very small part of the wave-scale, roughly in the range from 3900 A - 7700 A. By using a glass prism, we can split up sunlight in its various components and we find that sunlight is a mixture of several colours. These colours are approximately: Red, Orange, Yellow, Green, Blue, Indigo, Violet. Each of these colours has its own specific wave-length. Red is the longest with about 7700 A, and Violet the shortest with about 3900 A.

Let us now look at for instance a red colour print, and find out why the colour appears to be red. Through experiments we can show that the red print, when exposed to sunlight and emits or sends out again the *red,* and consequently it looks red to us. Or in other words: it absorbs all the other wave-lengths in the sunlight, and sends out again only one particular wave length, i e. that of the red colour. Through other experiments we can also show, that several colour and pigments will absorb waves with wave-lengths outside the visible range, such as ultra-violet rays or infra-red waves.

Now the question arises: what happens to the waves which are absorbed in the pigment and which are not emitted again? We know that these waves represent a form of energy, and we know that energy cannot disappear just like that. Again we can show through experiments, that the absorbed waves are transformed to another form of energy, i. e. to *heat.* Very small quantities of heat, no doubt, is enough to enable us to measure them.

It has been found that a few organic and inorganic compounds have the extraordinary property, that they can absorb waves from the ultra-violet range, change these waves to longer wave-lengths, which are within the range of *visible light,* and send them out again. This phenomenon is called *luminescence,* and we say that the compound in question is *luminescent.* We know several pigments which have this peculiar property. The additional visible waves which these pigments emit can either be sent out *simultaneously,* and only as long as the pigment is being exposed to the ultra-violet rays — or the pigment might continue to send out extra light even *after* the ultra-violet source of energy has been removed. In the first case we call this *fluorescence,* in the second we are calling it *phosphorescence.* A *fluorescent pigment* will therefore glow with extra intensity only as long as it is exposed to ultra-violet, whereas a *phosphorescent pigment* will continue to glow even when it is not subjected to ultra-violet, for instance even in total darkness. This "after-glow" can last for a few minutes only, sometimes for a few hours, or in some cases even for several days.

Let us study for a moment a *fluorescent red pigment* which is being used in an advertising poster. When exposed to the daylight, it absorbs, as we have already explained, all wave-lengths, and sends out again the wave-length corresponding to its red colour. *In addition to* this, it transforms the ultra-violet waves in the daylight to the wave-length *corresponding to the same red colour,* and adds this to the first emittance, thus appearing much stronger and more brilliant. Whereas the strongest conventional organic pigments will reflect about 60% of the amount of light of their own particular wave-length which they absorb, a good fluorescent pigment will emit twice as much, the source of the extra colour being transformed ultra-violet. In other words, a fluorescent pigment will appear twice as strong as the best pigment of conventional type.

Luminescence has been known for many years, but it was only during and after the last war one started to work on the problem of producing and utilising pigments showing luminescence *in printing.* Especially the *fluorescent* pigments have become of importance in this connection. Many problems had to be solved, and many are in fact still unsolved. Even today fluorescent pigments are avilable in a limited range of colours only, and they are still very costly compared to ordinary pigments. Also, the methods of printing which can be used are still rather limited. The two most important printing processes are: (1) Silk screen and (2) Dusting with fluorescent dusting powders

after printing of a special size.

Many people wonder why other ways of printing cannot be used. First of all, the fluorescent pigment are rather weak in tinctorial strength compared to conventional colours. It is therefore necessary to apply a much thicker film than can normally be achieved in letterpress or offset, in order to obtain maximum strength of the colour. Secondly, to get maximum fluorescent effect a heavy film is necessary. A thick film will at the same time prolong the useful life of the print when exposed to sunlight, as, generally speaking, the fluorescent pigments have rather poor lightfastness properties.

To produce a good fluorescence, it is necessary that the particle size of the pigment is several times larger than the size of the particles in normal printing inks for letterpress or offset. This is yet another reason why these pigments do not lend themselves easily to these printing processes. The grinding on a big ink mill would break down the particles to such an extent, that much of the fluorescence would be lost. There are available however, in the market, fluorescent inks for letterpress, yes, even for lithographic printing, but for reasons given above, these inks do not show such a brilliant and intense fluorescence as do silk screen prints or dusted prints.

Fluorescent pigments are gradually finding new and important ways of utilisation. That they are effective and "eye-catching" when used in advertising displays is something that every one of us can see each day. This is by far the most important field for their use. But, they are also being used more and more in cloth and cloth printing. They are used in the entertainment world in fluorescent reviews and shows. They improve road safety when used in roadsigns which glow with intense colours when they come within the reach of the headlights of a car, and they are used to mark dangerous corners, rear bumpers of cars etc. They are used extensively for military purposes. They are used more and more for interior decoration and in household articles made from plastics

But as already mentioned their main use is for printed posters and advertisements. And beyond any doubt, the importance of fluorescent printing inks is increasing day by day. In the laboratories of the big producers of colours and pigments, scientists are working to improve the quality of the fluorescent pigments available, and to produce new colours to be added to the present range. This work will sooner or later result in pigments which are more brilliant, more lightfast and with better printing properties. That day might not be far away, when a fluorescent letterpress or offset ink will be just as familiar to the printer as the colours he is using today. ★

NEW PAPER CONTROL DEVICE

A NEW Swedish device, the "Nivetron," which automatically controls the passage of the paper in sheet-fed printing presses has recently been put on the market by the Stockholm firm of AB Inventing. It is claimed that this invention is the first one to solve satisfactorily this old problem of the printing trade.

Designed by the experts of the Swedish firm, the apparatus performs six essential control functions in the course of the printing process. Its controls ensure that only one sheet at a time is fed into the press; that sheets with folded corners cannot pass; that the sheets receive their correct position laterally; that no sheet fails to pass through or accidentally gets below the front lay and, finally, that the sheets do not become mis-shapen on their way between the cylinder and the stripper fingers.

Should one of these faults occur, the "Nivetorn" automatically stops the printing. Both an optical and an acoustic signal system tells the operator the exact position of the fault. The apparatus immediately reacts on register faults lengthwise and sideways or down to 0.0005 mm, thus eliminating congestion in the press and the subsequent loss of time in restarting the press. It is reported to be adaptable for all automatic presses and sheet sizes.

—Printing World.

concerning modern MAKE-READY (2)

By A PRESSROOM OVERSEER

In the first article of this series the author explained the setting and dressing of the cylinder. The second article deals with the setting of the auxiliary parts of the machine.

Gripper Setting.—The grippers should be uniform in size and spaced evenly along the cylinder; on most machines they overlap the cylinder lip by about a quarter of an inch. See that they are not bent out of their correct shape, because if one gripper touches the sheet before the others, bad register will result, due to false movement of the sheet before it is held correctly.

The cylinder must be properly dressed before setting the grippers. Turn the machine until the cylinder is on the delivery stroke and the grippers are at the highest part of the cylinder. Place a strip of manila, together with a strip of the stock to be printed, between the gripper tumbler and tumbler stop which is located on the offside of the cylinder, using the tommy bar to lift the tumbler. Loosen the grippers and place a strip of the stock under each of them. Proceed from the centre grippers and lightly tighten them on the bar so that the strip of stock is just held. Alternate from the centre until all the grippers are set. Test the strips again, make adjustment as necessary, and tighten the grippers with a full turn of the nuts. Remove the stock from under the grippers, the manila from under the tumbler, and a firm, even grip will have been obtained. Before moving the machine, make sure the grippers do not foul any of the stripper fingers or sheet bands.

The correct setting of the grippers maintains constant register, and it is good policy to reset them for every new job which is put on the machine. When printing three or four colour work, all the machines engaged should have their grippers in the same relative position along the sheet.

Shoo-Flies and Strippers.—The shoo-fly fingers should also be set evenly along the cylinder, as far as is possible about $\frac{1}{2}$" from the grippers. To set them for a full lift (about 5/16") loosen the shoo flies along the bar, lift the shoo-fly handle, and release it quickly. (The shoo-fly handle is located inside the cylinder on the feed side.) Set the shoo-fly fingers on to the cylinder packing and tighten them on the bar. Make sure they do not foul any sheet bands or strippers.

The stripper fingers should be set along the upper tape pulley shaft when the cylinder is on the delivery stroke and just as the grippers are releasing the sheet. They must be set in between grippers and shoo-flies. A good setting is to leave a four-point clearance between the stripper fingers and the dressed cylinder.

See that the stripper fingers have a good, clean surface, as dried ink tends to accumulate on them and arrests the progress of the sheet.

Cylinder Bands.—The cylinder bands must only be set when the cylinder is down on impression. Their function is to assist the brush

in holding the sheet taut on the cylinder and preventing it falling on to the rollers or the forme. Set in the margins lightly against the cylinder, making sure they do not foul any grippers or shoo-flies. When two or more machines are being used for the job the bands must be set in the same relative position.

Many printers line the inside of the cylinder bands with felt, so as to obtain greater pressure against the cylinder. This gives an additional advantage when the brush has to be dispensed with on following colours.

CYLINDER BRUSH.—The adjustment of the brush should also be carried out when the cylinder is down on impression. Place a sheet of the stock into the grippers and turn the machine until the sheet is held by the brush. Unlock the nuts holding the brush and adjust up or down as required by means of the small screw at the top. Then tighten the holding nuts, release the sheet from the grippers by means of the tumbler bar, and pull the sheet through the brush. If this is set correctly the sheet should slowly yield to the pull. Apart from its primary function of smoothing the sheet on the cylinder, the brush also cleans the sheet, and therefore should be taken out after every job and thoroughly cleaned with a stiff brush.

FEED BOARD.—This should be examined periodically for any tendency of the apron to sag. If necessary increase the tension of the feed board stretcher rod located beneath the front part of the board. The height of the feed board can be altered by means of the feed board adjusting screws situated on each side of the machine. It should only be necessary to have it high enough to clear one sheet of stock between the front guide rest blades and the cylinder when the cylinder is in its highest position.

FRONT GUIDES.—The front feed guides should be set at the same distance from each end of the sheet, and should be well clear of the grippers and shoo-flies. The usual setting is to place them one-sixth of the width of the sheet from the edges. When setting the front guides on to the guide rest blades do not lean across the board, otherwise the blades will rise slightly when the weight is taken off and the guides will force them down, resulting eventually in bad register. To ensure that the front feed guides lift at the correct time, the feed guide lifting finger (located on off side of machine) should be loosened. Move the machine round until the grippers have approximately nine points to travel before they close on to the sheet. Set the feed guide lifting finger firmly on to the lifting stud and tighten the screw.

Make sure both front guides are level along the sheet. A good test is to place a sheet in the guides, crease it on the edge of the feed board apron on both sides, and then fold the sheet to check. Allow about a two-em bite of the grippers on the sheet. Apart from obvious troubles, any less grip would allow the shoo-flies to miss the sheet and result in bad delivery.

DROP GUIDES.—Some printers do not use drop guides, which is a bad policy as the drop guides greatly assist the front guides by holding the sheet steady during the momentary period when the guides are lifting and the grippers are closing on the sheet. They are essential for close-register work.

The drop guide stop on the feeder side should be set firmly against the stop pin. By means of the secondary adjustment on the drop guides they can be set lightly on the sheet, and the timing adjusted by lowering the outer adjusting screw on the end of the drop guide lever until it touches the inner end of feed guide lever. When using wire drop guides over the front guides make sure that both bends in the wire rest evenly on the sheet. ★

Courtesy: L. &. M. News

Work-Horse Letters

Of the 26 letters in the alphabet, 13 of the most frequently-used letters do approximately 86 per cent of the work, while the remaining half of the letters do only 14 per cent.

—*Inland Printer*

Print Inspection by STROBOSCOPE

A STROBOSCOPE is a lamp which does not burn steadily but is constantly flashing. The number of flashes per second can be varied within a wide range. If a stroboscope is directed at a rotating part, say a white spot on a wheel, and is arranged to flash once with every revolution of the wheel, the flash will light up the white spot in the same position of every cycle. In a dimly lit room the wheel will therefore appear to stand still—its motion is said to have been "frozen."

Reciprocating parts, such as pistons and various parts of machinery, can be similarly frozen if the stroboscope is set to flash every time they are in the same position. To ensure that the lamp flashes at the right time, it can be "triggered" by the machinery under observation by means of suitable contacts. The resulting flash will then come at exactly the same point in each cycle.

By running the lamp at a slightly slower speed than that of the machine observed, this can be made to appear to run in slow motion, which is often very useful for the detailed examination of its method of operation.

In the past, the use of stroboscopes in the printing industry has been confined almost entirely to the examination of the working of printing presses and similar equipment, because stroboscopes can easily be "triggered" by printing presses, so that they appear to be stationary. On the other hand, by lengthening the period between flashes very slightly, by means of a speed control unit forming part of the stroboscope, the press can be made to run in slow motion so that the action of controls, paper pick-up, etc., can be studied in detail while working at normal operating speeds.

A most interesting development of the triggering technique has recently been introduced by Griffith and Diggens Ltd., for flexographic printing at their works at the Palace of Industry, Wembley. In this process, type made of plastic or rubber is used instead of the usual metal type, in conjunction with very free-flowing ink. The essential feature of flexographic printing is the light contact between type roller and paper, and the method is therefore descriptively known as "kiss impression." Presses can be run at very high speeds, but the setting is critical. If the pressure is too heavy it tends to distort the type, while even a slight under-pressure will give thin printing or no impression at all.

Among the advantages of this method of printing are that thin or sensitive paper can be printed without fear o the type tearing it, and that the quick-drying properties of the special inks used enable several colours to be printed in quick succession, even at the high speed of 700-750 ft. per minute.

High-speed printing, and especially printing of the reel, introduces a number of difficulties which call for constant and close inspection. For instance, after passing through the printing rollers, the paper is wound on to the take-up roller. This is provided with a slipping clutch to apply a constant tension as paper builds up on it. Any failure of this clutch will vary the tension on the paper coming through the press and will thus vary the amount of stretch. This will alter the register of one or more of the colours and at these high operating speeds may lead to the scrapping of hundreds of yards of printing before it is discovered.

A skilled operator can check for register on paper moving at comparatively high speed, by "following" a pattern with his eye. A speed of 700 ft. per min, however, is too high even for the most skilled eye. Another point in this connection is that the pattern being printed may repeat several times on the type roller and

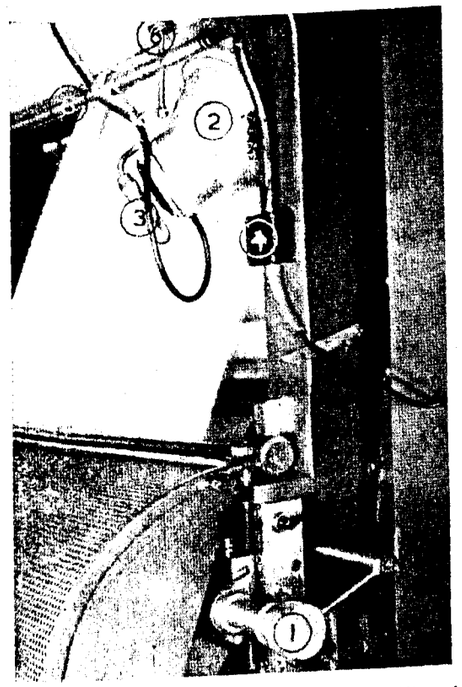


Fig. 1.—The stroboscope contacts (1), the lamp (2) and the bar (5) on which it slides across the press do not interfere with operation in any way. The lamp is not switched on; note the blurred-image of the paper.

the operator can never be sure, without some aid, that he has inspected all the patterns. This is important, because the ink is very thin and dries very quickly. It may easily clog one pattern, while the others may remain unaffected. Unless all the patterns printed by the roller in one revolution are inspected, the operator cannot be certain that the roller is clean.

This careful and constant inspection would seem to be a difficult problem at the speeds involved, but it can be solved with ease by the use of a modern stroboscope.

The Dawe Stroboflood manufactured by Dawe Instruments Ltd., London, is excellent for this purpose. It is triggered by a pair of contacts (1) driven from the end of one of the rollers on the press shown in Fig. 1. Also seen in this illustration is the stroboscope lamp (2) which has been swung aside into the rest position. The lamp is mounted on a bar (5) running the entire width of the machine and is provided with a handle (3) for closer inspection of any point of the printed pattern. The switch (4) enables the stroboscope to be switched off when not in use. It is then clipped under the hook (6).

Before leaving this illustration, it is worth noting that the picture gives a true indication of how the flying paper looks to the unaided eye without the stroboscope in operation. All that can be seen is a dull blur.

Fig. 2 gives a general view of a Victory-Kidder press with the stroboscope. The stroboscope control unit is shown at (1) and the stroboscope lamp at (2).

In Fig. 2 the equipment is switched on and it will be seen that although the press is run-

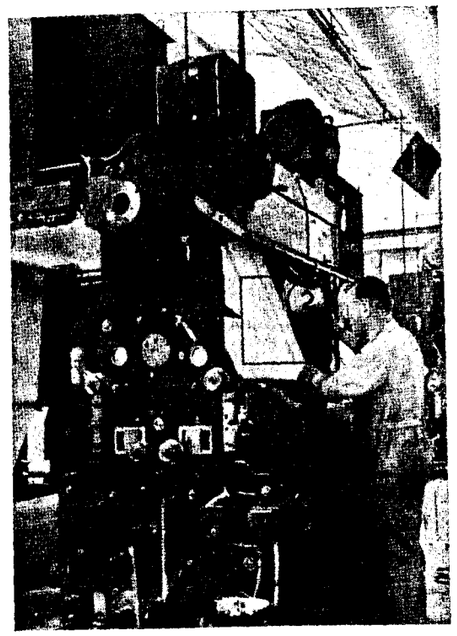


Fig. 2.—General view of the Victory-Kidder press with the stroboscopic lamp (2) switched on. The control unit (1) is mounted out of the way. Although running at high speed, the impression (3) has been "frozen."

Fig. 3.—Close-up of paper running at about 650 ft./min., "frozen" by a stroboscope. The slight multiple image towards the top is caused by flutter of the paper where it is no longer sufficiently supported by the rollers.

ning at full speed, the printing has been "frozen." A close-up view of the area (3) is seen in Fig. 3. This is a completely unretouched photograph and was taken with a relatively long exposure during which there were four flashes of the lamp. The four successive impressions photographed with these flashes are therefore blended into a single image on the photograph. In the same way, a a stationary picture is seen by the human eye by virtue of the phenomenon known as the "persistence of vision." The picture is sharp because of the extremely short duration of each of the flashes so that the paper hardly moves during the time of the flash. Under the conditions shown, the duration of the flash from a Dawe Stroboflood is only about 15 microseconds (0·000015 seconds). During this time, the paper will only move a distance of 0.0021 in. This distance is so small that it cannot be observed by the human eye under the circumstances. Since the photograph represents a further reduction of perhaps 7:1, the movement on the photograph would be about 0.0003 in, which is detectable only by a microscope.

These remarks apply to the bright area immediately in front of the lamp. Higher up, the paper is insufficiently supported by guide rollers for stroboscopic purposes, because a slight flutter occurs which can be recognised in the picture as unsharpness. This unsharpness is due not to the movement of the paper through the press, but to the fact that it was not moving in the same plane at that point during all four successive exposures.

The operator can therefore inspect the printing at any time to make sure that the colours register, that the impression is even over the full width of the paper, that the rollers are not clogged and that the type is not damaged. To do this, he need not stop, or even slow down the press, so that production is not held up.

Adjusting the heaviness of the impression, which is especially critical in the case of "kiss impression" printing, is rendered easier since final adjustments can be carried out and checked while the press is running at speed.

Any faults which may develop during operation immediately become apparent and corrective action can be taken before a lot of paper has been wasted. The savings from this alone will pay for the modest cost of the stroboscope in a very short time. ★

Courtesy: The Managing Printer

ON CHOOSING BOOKS

Different people have different ways of noting books they wish to buy or borrow.

Harrap's, the British publishers, recently conducted a survey to discover what methods were used by readers in selecting their books.

An analysis of the first batch of replies gave the following results in terms of percentages: Personal recommendation, 19.60: Literature from publisher, 19.45; Reviews, 15.00; Literature from bookseller, 11.80; Advertiesments, 6.20; Browsing, 2.05; Public Libraries, 1.70; Radio and TV, 1.40.

These main reasons were followed by a long list among which were included: works by the same author, information on books-wrapper, book clubs, mobile libraries, exhibitions and bookseller's displays. 'Other methods' listed were: "Just hearing about them"; "Using own eyes"; "Listening to other people's conversation"; "Private prejudice" and from a girl in New Zealand, the brief comment: "Parents".

Random samples taken from the replies showed that of every 100 book-buyers 64 were men and 36 were women.

So far as the categories of books were concerned, the order of the first seven were as follows: Fiction (46.6%), Travel (44.95%), Biography (44.35%), History (31.2%) Juvenile (23.32%), Natural History (21.4%), Sport (19.1%).

PRINTERS' ASSOCIATIONS — WHY NOT ASSOCIATE DEALERS ALSO WITH THEM?

READERS will recall that one of the largest printing machinery dealers in this country, The East Asiatic Company (India) Private Limited, launched a nation-wide scheme for the training of printers in their Printers' Finishing Schools. Though such Schools are a familiar feature with many printing machinery manufacturers on the Continent, as far as India is concerned, this was a novel idea at the time.

The same dealer, we now understand has under consideration a scheme for the offer of financial support to the many Printers' Associations in the different parts of the country. The offer, of course, is not without strings of any sort, and in this case the East Asiatic have tied it up with the sales of the ORIGINAL HEIDELBERG printing machines for which they are agents for the major part of India. Considering the fame these excellent machines enjoy with the trade, it can be assumed that a sizeable amount will come the way of the various associations as donation.

Our informant tells us that the East Asiatic propose contributing an amount of Rs. 100/- for each platen press and Rs. 200/- for each cylinder press sold by them to the association the customer in question belongs or wishes the donation to go. The date as well as fuller details of the scheme are expected to be announced before the end of the year.

We consider this as a hopeful sign for the future of the printing industry There are a number of firms, large and small, doing a substantial amount of business in printing machinery and if all, or at least some of them, come forward and emulate the example set by East Asiatic, the associations can do many things which they are now unable to do for want of necessary funds. In fact, it would be worth trying to bring also these dealers into the fold of the printers' associations.

REVIEWS

CHAPAI KALA (July-Aug. Issue) Editors: Messrs. Bankatlal Ojha and Vasant Devkule, Published by Sri Vasant Devkule, B.Sc., Post Box 634, Poona-2.

This is a Magazine in Hindi devoted to the art and science of printing as the name itself signifies. The issue carries articles written on allied subjects like Nepa Paper Mills, Provident Fund Scheme, etc., besides interesting features on Hindi Photo-Setter evolved by Sri Govil, letterpress colour inks, etc. The editors deserve to be congratulated on their attempt to give representation to every aspect of the Industry. It is published every two months. If it is priced a little lower, it has every prospect of reaching Hindi knowing workers of even moderate means thus increasing its circulation.

GOVIND AVASTHE, *Manager, Hindi Prachar Press, Madras-17*

THE MANAGER (Volume 1 No. 4–August 1956–Price Re. 1/– published from 36-A Jatindas Rd , Calcutta 29).

This journal is devoted to the progress of Industry and Commerce through scientific management. The technique of scientific production and management is a new study in our country, although, in the past we have had quite a few distinguished and successful managers of industrial enterprises. However, in view of the rapid industrialisation of the country, both current and projected the formal study of production management as a subject has to be taken up as early as possible. In this context journals of the above type can play a very valuable part.

The subject of production management of industrial concerns has developed to a very advanced extent in countries such as Britain, U.S.A., Germany and Japan and the results of their studies and experiences are no doubt available to us in many of their publications. However, since each country has to study its own lessons in this respect, it is essential that the subject of industrial management under conditions existing in India should receive deep attention at the hands of the State which is a major journal in the industrialisation of the country as well as private enterprenurs.

This new venture in Indian journal promises well. There are very valuable and interesting contributions on such subjects as "Automation," "Managerial control," "Cost control," etc. There are also sections devoted to industrial and technical progress, Inventors' Gallery Industrial Services, Enquiry Bureau, etc. There is also an interesting study of the life and work of Sir William Rootes the eminent British Automobile Magnate.

Finally there is a very instructive supplement on the Metal Aluminium—its production, potentialities and uses in India.

The printing and get up of the magazine are in the best traditions of the Statesman Press, Calcutta, where it is printed We wish the Journal a long and useful career.

—R. SIVARAMAKRISHNAN, B.E., A.M.I.E.
Principal, C.N.T. Institute, Madras–7

NEWS

PRINTECH Diary Page :
News of people, production and events in the Printing, Paper and Publishing World.

CALCUTTA PRINTING PRESS OWNERS ASSOCIATION

The Annual General Meeting of the Calcutta Association of Master Printers (formerly Calcutta Printing Press owners Association) was held under the Presidentship of of Shri D. N. Dhar on Saturday the 8th September 1956 at the premises of Messrs Raghunath Dutta & Sons. The Executive Committee for the current year was formed as follows :

President :
Shri D. N. Dhar - Imperial Art Cottage

Vice-Presidents:
Shri A. P. Bhargava - Calcutta Phototype Co.
,, H. K. Dass - Eagle Lithographing Co. Private Ltd.
,, A. K. Sen Gupta - Bengal Autotype Co.
,, N. K. Gossain - Gossain & Co. (Printers) Private Ltd.

Hony. Secretary :
Shri S. N. Guha Ray - Sree Saraswaty Press Ltd.

Asst. Secretaries :
Shri D. P. Chatterji - Dipti Printing & Binding Wks.
,, N. Lahiri - Loyal Art Press Private Ltd.

Hony. Treasurer:
Shri A. K. Roy - Art Union Printing Wks. Private Ltd.

Mr. K. P. R. Menon, a former Superintendent of the Madras Government Press and now Assistant Rresident Representative of United Nations Technical Assistance Board at Cairo, at a "Dinner" given by Sri T. A. Subramania Mudaliar, Proprietor, Swadesi Type Foundry, Madras.

Ex. Members :
Shri S. C. Ghose - Calcutta Press Private Ltd.
,, G. C. Ray - Navana Printing Works Private Ltd.
,, N. B. Dutta - N. B. Dutta & Co.
,, K. Pal - Nabajiban Press
,, K. D. Munshi - Pooran Press
,, S. N. Mukherji - Clive Press
,, S. K. Banerji - Glasgow Printing Works Private Ltd.
,, K. C. Chatterji - Eton Press Private Ltd.
,, Monoranjan Chakrabarty - Kalika Type Foundry
,, Sambhunath Dutta - Paramount Press
,, J. N. Sharma - Janabani Printers & Pub. Private Ltd.
,, P. C. Mitra - Venus Printing Works
,, S. N. Banerji - Lotus Press
,, P. L. Dey - Kidderpore Press
,, B. D. Sen - Nabamudran Private Ltd.

At the outset the Secretary placed the Annual Report before the meeting. In his report the Secretary said that barring the Association of Poona and Delhi the Calcutta Association is the oldest Master Printers Association in India. Its services for the past twenty years have been well-appreciated at home and abroad. The efforts of the Association for a School of Printing have materialised and Calcutta School of Printing Technology, has already started its session. The Association has also been able to impress upon the Union Finance Ministry the necessity of extending State Financial Aid to the Printing Industry and amending the relevant acts accordingly. The Printing Industry is not considered eligible for the purpose at present. The Ministry have appreciated the Association's views and before the Lok Sabha a Bill has been placed which would enable the Printing Industry to get the much needed aid. The Association has been trying to solve the problems of the printers in every sphere. The printers who had been so long doing the printing work for the Insurance Companies were apprehending loss of business due to the Nationalisation of the Insurance Companies. The Association took up the matter with the authorities and the Government has assured them of their sympathetic consideration. The Employees' State Insurance Scheme was implemented in Calcutta and Howrah since 1955. The Scheme would confer a real boon on the workers and the industry if the Regional Corporation was truely representative in its composition. The Association has been co-operating with the Government in their attempt at manufacturing printing machines in India. At the request of the Government it had prepared a detailed questionnaire on the subject and the Development Wing has now completed collecting statistical data. At a recent meeting of the importers, manufacturers, printing and other interests convened by the Ministry the preliminary arrangements for the purpose were discussed. The Association is represented on the Paper Sizes Committee of the Indian Standard Institution. This Committee has recently suggested to revise the present Indian sizes of paper following the International Standard. The revised sizes would not necessitate dicarding the existing machines while they would enable import of machines from other parts of the world besides U.K. The Secretary then referred to the excellent craftsmanship of the local printers and hoped they would do better still in the ensuing State Award for excellence in printing and designing and All India Printers Conference and Exhibition.

The Secretary also recalled the services of the Association towards the formation of the All India Federation of Master Printers and the smooth running of the Federation Office while at Calcutta for the last two years. The Association had convened the first West Bengal Printers Conference in Calcutta in 1955 when the printers all over the State met together and acknowledged the services of the Association as for the best interest of the Printing Industry of the State. Soon after, the Association had helped the formation of the District Association of Master Printers, Nadia 1955. The second West Bengal Printers Conference has been invited by the District Association of Master Printers, Nadia this year at Krishnagar. The Association has decided to celebrate its twentieth anniversary this year. A souvenir brochure will be published on this occasion. The brochure will contain among other things an up-to-date history of the member presses as also of the oldest printing presses in Calcutta. The Secretary drew the attention of the members to the pressing needs of the Association having its own building. He said that a Building Committee has already been set up for the preliminary work and hoped the members would help the project to their utmost. He appealed to the printers to strengthen the Association in every possible away.

At the request of the President, the meeting then observed a one minute silence as a mark of respect to the memory of Dr. H. C. Mookerjee, Governor of West Bengal and patron of this Association and of the departed members and well wishers. A number of resolutions regarding the reformation of Bengali Alphabets, the representation of the Association on the Regional Board of the Employees' State Insurance Corporation, Standardisation of Type metal etc were adopted. The President in his address thanked the members for their cooperation with the Association and appealed for their continued support. He announced that the 20th Anniversary of the Association would be celebrated this year when a Souvenir Volume would be published. He hoped the members would make this a complete success.

Shri Manick Lal Dutta and his brothers entertained the members.

With a vote of thanks to the hosts and to the Chair the meeting dissolved.

BOOK INDUSTRY COUNCIL OF SOUTH INDIA

SCRUTINY of ballot papers and counting of votes for the election of Directors by members of the Book Industry Council of South India were completed on Wednesday, September 12, 1956 in the office of the Southern Languages Book Trust, with Mr. Ravi Varma, Registrar of the Madras University as Returning Officer.

The following were declared elected as Directors :

Tamil Area :

1. Sri V. Subramaniam, (Higginbothams Ltd., Madras)

2. Sri S. M. Palaniappa Chettiar, (M/s. Palaniappa Bros., Madras & Tiruchirapalli)

Malayalam Area :

3. Sri C. K. Mani, (Sahitya Pravarthaka, Kottayam)

4. Sri K. P. Ittyerah (Book-A-Month Club, Ernakulam)

Andhra Area :

5. Sri D. V. Subba Rao, (Visalandhra Publishing House, Vijayawada)

6. Sri M. Seshachalam (M/s. M. Seshachalam & Co., Masulipatam)

Karnataka Area :

7. Sri M. H. Kaujalgi, (Kaujalgi Hanumantha Rao, Smarak Nidhi, Hubli)

8. Sri M. S. Chintamani, (Vauhini Prakashana, Bangalore)

Out of 264 members, 252 exercised their franchise Of the 252 ballot papers, one was received late. Of the remaining 251, only 4 were declared invalid.

Members of the Board are expected to meet on September 30. The Council will be duly registered shortly under the Societies Registration Act.

One of the main objectives of the proposed Council will be the methodical improvement of book sales, so that books may become more readily available to potential readers everywhere. The plan envisages the opening of depots where books can be stocked, show-rooms where they can be displayed by booksellers and methods of getting books to villagers.

The Board of Directors consists of 12 Members. The Chairman of the Southern Languages Book Trust or his nominee and the General Manager of the Southern Languages Book Trust are ex-officio members. Two others from outside the industry are expected to be coopted shortly.

The Printing section of East Asiatic Co. (India) Private Ltd., Bombay arranged a send off party for Mr. Vincent D'Silva prior to his departure to Germany. He will be receiving specialised training in the factories of Heidelberg Printing Presses and Solar Paper Cutters.

I. S. I. STANDARD FOR PAPER

A meeting of the Madras Printers' and Lithographers' Association was held on October 3rd when the recommendation made by the Indian Standards Institution for adoption of a Size of 23.39 in. x 33.11 in. as the standard for papers was considered.

It was pointed out that the adoption of this size would materially affect the machinery at present in use in the country, as the census collected by the Government of India recently show that more than 50 per cent of the machinery are of Crown size. These machines would be subject to double work and also to greater wear and tear on account of a particular small size being printed on them continually. It was, therefore, decided to draw the attention of the Indian Standard Institution to this fact and to request them to adopt two standard sizes instead of one, viz., the Crown and Demy sizes.

Shakespeare goes to Sweden by arrangement with the British Council

In response to requests from many countries, the British Council has assembled a comprehensive exhibition on Shakespeare. It was shown first in Stockholm and will be sent to Japan and India. An identical version will tour Europe. Special exhibits include a model reconstruction of a typical Elizabethan playhouse and early editions of Shakespeare's plays, among them a Third Folio of 1664.

A selection of about 90 books, illustrating the scholar's approach to Shakespeare includes standard and special editions of the texts of the plays, recent works of textual and literary criticism and interpretation, reference books and books on stage production. Special exhibits include, as well as the Third Folio of 1664, a facimile of the First Folio of 1623 in a fine modern binding by Sangorski and Sutcliffe, and two volumes from an eighteen-century edition of the plays printed for Jacob Tonson in 1709.

New Magazine devoted to Rubber Plate Printing

A new magazine, *Flexography* devoted to all forms of rubber plate printing, will be launched soon by Graphic Magazines, Inc., New York. First issue will be in September, and initially the publication will be issued every other month, with controlled circulation of 3,000.

Tudor School Books sold for £ 1,300

A set of eight early Tudor school books bound in one quarto volume was bought for £ 1,300 at a recent sale at Sotheby's by Howard Samuel. The set is extremely rare, particularly in good original condition.

Seven of the eight Latin grammatical treatises by Robert Whittinton were printed by Wynkyn de Worde between 1515 and 1521. The eighth was printed by Robert Coplade in 1522. The set was sold for an anonymous owner.

The sum of £ 340 was paid for a Book on Birds by Audeberl, published in Paris in 1802, and £ 300 for a work on American flowers, by Jacquein, published in Vienna in 1763.

Austria

This year's Viennese telephone directory was set in six days, from November 2 to 8, 1955. Proofreading and correcting, however, took from November 8, 1955, to the middle of February 1956. Some 15 proofreaders read the galley proofs in shifts of two hours. Altogether 174,000 copies were printed for which some 60 lorry-loads of paper were required.

Belgium

It is interesting to note that the first German periodical on silkscreen printing, *Der Siebdruck*, is being published and printed in Belgium. No German publisher was daring enough to invest funds in this venture. The same publisher also produces similar periodicals in French and Flemish.

West Germany

The Frankenthal printing machinery works which early this year lost an assembly with two almost completed rotary presses through fire are now building a new and larger assembly hall. The new assembly hall covers an area of 3,000 square metres. There are four assembly spaces, each suitable for three rotary presses of a length of some 60 feet. The hall is also equipped with four cranes. It is believed that this is the biggest assembly hall of this type in Europe.

West Germany

Stempel, the West German typeface cutters are offering a new version of Garamond in roman and italics. Roman typefaces range from 6 to 72 points and italics from 6 to 48 points. The roman version is also supplied in semi-bold.

Exhibition of Newspaper

The Director, International Newspapers and Journals Exhibition writes :

The Y.M.I.A Madura has proposed to conduct the International Exhibition of Newspapers and Journals at Madura during the month of December, 1956. It has also been decided to display all the journals and periodicals printed and published all over the world and bearing the date of October 2, 1956. The International Exhibition invites all the publishers and the journalist concerns to participate in the Exhibition by sending 2 copies of their journals and periodicals bearing the date of October 2, 1956. In the case of monthlies and weeklies, the October or nearest issues may kindly be sent to the following address before the end of November 1. The Director, International Newspapers and Journals Exhibition, 92, South Masi Street, Madura (South India).

Edited and Published by V. R. Sivaram, L. P. T., for the Indian Federation of Printing Technologists, Madras-1
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