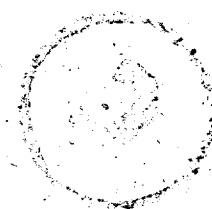


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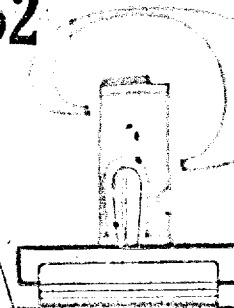
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OF THE INDIAN FEDERATION OF PRINTING TECHNOLOGISTS - MADRAS

Vol. II

MAY 1955

No. 10

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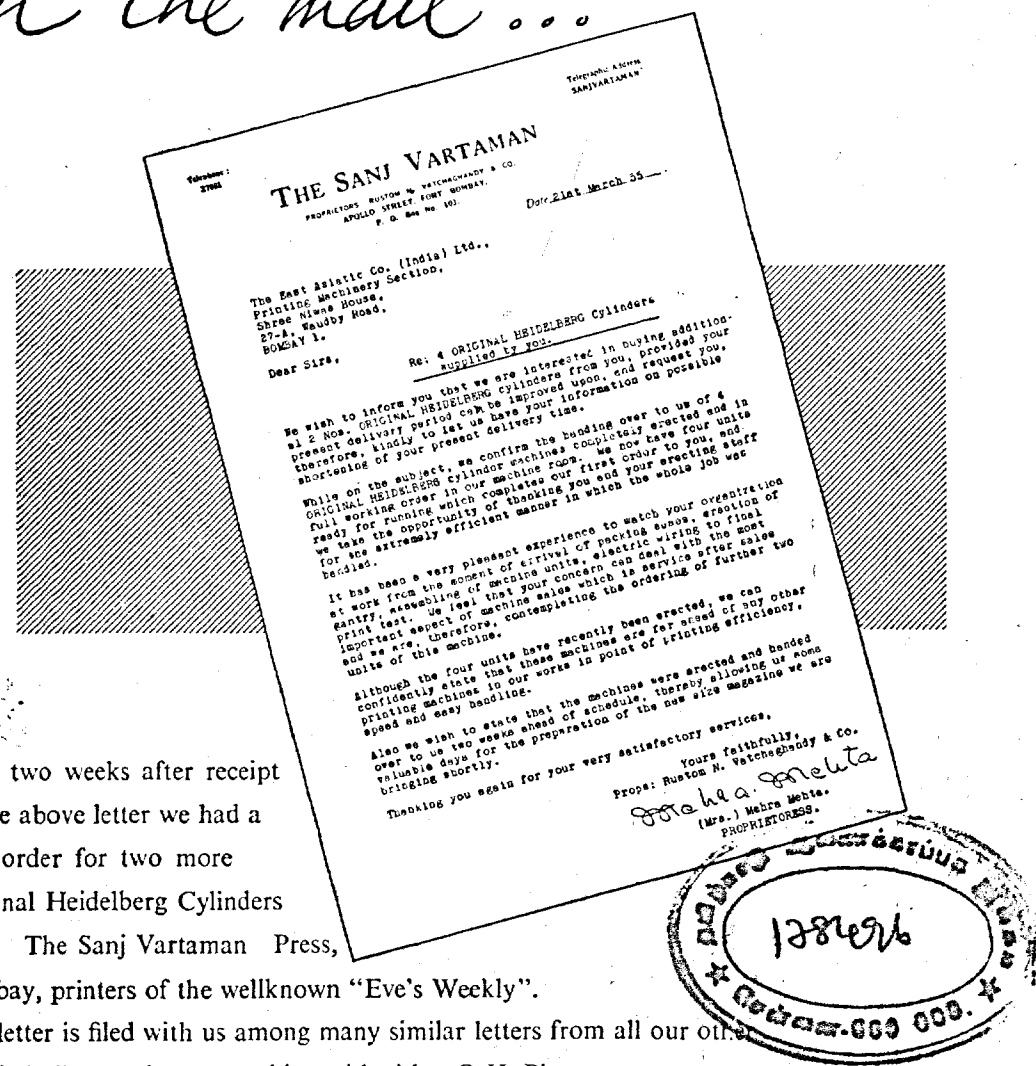
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SOME THOUGHTS ON

Regional School of Printing, Madras

It is with pleasure we learn that the Regional School of Printing at Madras will start functioning from July. The School comes into being with a substantial contribution from the Government of India towards building, equipment and materials, the balance being shared by the Government of Madras.

It is in the fitness of things that the existing Printing Section of the Central Polytechnic—the first Institute in India to have a full-fledged course in Printing Technology—will form the nucleus of the proposed Regional School of Printing. This arrangement will, we hope, help the authorities to spend the amount for essential additional equipment. This arrangement should also help the school in another direction. The Electrical, Mechanical and other Workshops of the Central Polytechnic will be an essential auxiliary, because of the increasing mechanisation and the increasing importance of electricity in the printing industry. They will benefit the printing students considerably—an opportunity that cannot be offered by other printing schools. In these respects, the students of the Southern Region are luckier than their counterparts in other regions, where the Printing Schools are to be started from scratch. And only Bengal has succeeded so far in starting it from this session, because the Master Printers of Bengal themselves have taken the initiative and have been very enthusiastic about it, contributing a large share of the expenditure.

Regarding the expansion of the Printing Section of the Central Polytechnic at Madras, there is apprehension in some

quarters that an additional block within the Polytechnic will not be sufficient to house the Regional School of Printing and it will hamper further progress. We feel the fear is not justifiable.

We learn that the building to be constructed is to be an addition to the already existing portion of the Printing Department. Together, these blocks should be quite sufficient for the purpose. If a separate building is to be constructed elsewhere exclusively for the Regional School of Printing, a spacious building with land and all other conveniences will cost much higher than the funds sanctioned and the major portion of the allotted sum will be taken up by the buildings, leaving a very small sum for equipment.

The Regional School of Printing at Madras, to begin with, will train only craftsmen in different departments of the trade and will conduct part-time certificate courses only. There is already a complaint in the trade that there are not as many trained craftsmen as there are trained executives. The present step will satisfy this want. We are glad to learn that the present Diploma course—which has produced many executives serving the industry in all parts of the country with credit—will continue. If the Regional School of Printing is to be set up separately, the entire equipment is to be duplicated and purchased again. The Government grant will be insufficient for such a step.

The A.I.F.M.P. has every reason to be proud that their efforts in bringing about the opening of the Regional Schools

have borne fruit in so short a time. But we would like to point out that only now their real intentions will be put to test and the opportunity to fulfil their responsibility will be offered.

It is gratifying to note that the Madras Printers have taken up the question of Apprenticeship in right earnest and that they will be tackling the problem jointly and collectively. It is indeed a good augury. They should not be satisfied in merely taking up the apprentices into their presses but should show the same keenness in affording them opportunities to get proper training there. They must treat them with sympathy and understanding and should, wherever possible, give some financial aid.

We should also like to appeal to the authorities to take in members of the Printers' organisations and form an Advisory Board to tackle every problem of training at the Regional School of Printing. Unless there is close co-operation and understanding between the Industry and the School Authorities the training of technical personnel will be a waste of effort and money.

In the Western countries, all the printers' organisations are associated in the conduct of the institutes' affairs, besides individuals of extremely high merit with decades of service to and experience in one or more branches of the industry. They have all one common aim—service to the industry first and last. Unfortunately in our country there are not many organisations for the printing industry but there are many individuals, who have suddenly risen from nowhere and proclaim from housetops that they are the saviours of this industry now. These self-appointed leaders, as could be expected of every new convert, have evinced unusual interest in the Regional School of Printing that is started in Madras and have made criticisms which reveal a total absence of any knowledge of printing, much less the aims of the Regional School of Printing. We hope the leaders of the industry—the A.I.F.M.P.—will weed out such mischief-mongers interested only in self-publicity

who hamper the growth of the industry. The authorities in their turn should only heed to the voice of the organisations which have the backing of the active participants of the industry and not those who choose to give advice from their easy-chairs.

To our knowledge there are only two organisations at present which can fulfil this onerous task. They are the A.I.F.M.P. which represents the Managing Printers having a financial interest in the industry and the I.F.P.T. which represents the technical personnel who have entered this trade after due training and education.

We, the Printing Technologists, though young in years, will play our part in a true spirit of service. Consolidation is the first requisite of our organisation and we appeal to members of this Federation to take more active interest in the affairs of the industry and our organisation and come forward with constructive suggestions to tackle these problems.

Hony. Secretary.

SOUTH KANARA PRINTERS' PARTY TO A I F M P PRESIDENT

ON 9th April, the South Kanara Printers' Association gave a party to Mr. S. Viswanathan. There was a very large gathering of printers present and Mr. S. Viswanathan congratulated the Association on having members who are so enthusiastic. Detailing what the All-India Federation of Master Printers had done for the trade, Mr. S. Viswanathan drew pointed attention to the fact that the Regional School of Printing that would be started in Madras would cater to South Kanara also and that printers should take full advantage of this. He also told them how the Federation was trying to teach the Indian printer of the costing system which very many are not aware of. The Secretary of the Association handed over to Mr. S. Viswanathan his Association's subscription and entrance fee for affiliation to the Federation.

MADRAS PRINTERS DISCUSS APPRENTICE QUESTION

THE Principal, Central Polytechnic, Madras, had sent out a request to all the printers in the City asking them how many apprentices they would be prepared to take in their presses, as students applying to the Regional School of Printing will have to be apprentices in recognised presses. This appeal by the Principal was taken up by the Madras Printers' and Lithographers' Association who in their turn appealed to all the printers in the City to give the maximum possible co-operation to the Principal and requested all printing presses to inform the Secretary of the Association as to the probable number of apprentices they would be able to take. In the course of their discussion, it is learnt that the members pre-

sent spoke very well of the progress made in the starting of the Regional School of Printing in the City and expressed the view that it would be advantageous to all the printers if the Regional School is at present situated within the compound of the Central Polytechnic, especially as the equipment, machinery and the trained personnel of the Central Polytechnic would be at the disposal of the Regional School.

We understand that the printers in the City have taken their Association's appeal in this respect very enthusiastically and have written to the Secretary of the Association that they would be happy to take up apprentices.

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PRINTECH

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Printers' Week to be Observed by AIFMP

THE Governing Council of the All-India Federation of Master Printers met at Delhi on 23rd and 24th April with Mr. S. Viswanathan in the chair. There was a good gathering of members from all parts of the country and among the resolutions passed was one appealing to all printers to observe the Printers' Week and to give 6½% of their collections towards the funds of the Federation. A committee consisting of

Sri P. Mallikarjun (Hyderabad)
Sri Veda Vrat (Delhi)
Sri S. Ramu (Bombay)
Sri D. D. Gangal (Poona)
Sri B. P. Rawat (Ahmedabad)
Sri H. Ghose (Allahabad)
Sri V. S. Narayana Rao (Mysore)

was elected with Mr. S. Viswanathan, President of the Federation and Mr. S. N. Guha Ray, Secretary, as Ex-Officio members. This Committee would take steps for organising the Printers' Week.

The difficulties experienced in importing printers' materials and the non-availability of art-boards as well as card-boards of indigenous manufacture was discussed and it was resolved that a deputation should wait on the Minister of Industries and place before him a Memorandum drawing his attention to the non-availability of card-boards, the after-effects of 10% increase in tax on Indian made paper and the removal of newsprint from the O.G.L.

COSTING COMMITTEE

The Governing Council also appointed a committee consisting of Mr. S. Ramu of the Commercial Printing Press Ltd., Bombay and Mr. H. K. Doss of the Eagle Lithographic Co. Ltd., Calcutta, to evolve a costing system and to have it published through the journal which the Federation is bringing out from July onwards.

The deputation that waited on the Hon'ble Sri T. T. Krishnamachari, Minister for Industries & Commerce, Government of India, were told by him that the 10% tax on the Indian paper had come

to stay and that if the Federation would place before him further data regarding the quantity of newsprint that the printers would want for use in their presses, he would make arrangements for their import easily. He also assured them that he would see that Indian made card-boards are easily available in all parts of the country. The deputation had a discussion with the respective Secretaries who, we understand, have taken up the matter to see that Indian-made board is available to all printers in the country more easily than hitherto.

NEXT PRINTERS' EXHIBITION AT ALLAHABAD

We understand that the next meeting of the Governing Council of the All-India Federation of Master Printers would be held on 5th November 1955 at Hyderabad and the All-India Printers' Conference and Exhibition, Fourth Session, would be held at Allahabad during the first week of February 1956.

CALICUT PRINTERS' ASSOCIATION FORMED

THE printers of Calicut met on the 6th April at the premises of Matrubhumi Printing & Publishing Co. Ltd., when Mr. S. Viswanathan, President of the All-India Federation of Master Printers, addressed them drawing their attention to the advantages of having an Association of their own. The printers present immediately passed a resolution forming an Association and elected office bearers.

A.I.F.M.P. PRESIDENT AT CALCUTTA

ON 4th May, the Calcutta Printing Press Owners' Association, entertained Mr. S. Viswanathan, President of the All-India Federation of Master Printers, to tea and on 5th May, Sri Bimal Chatterjee of the Amrita Bazaar Patrika, gave him a lunch which was attended by all the prominent printers of Calcutta.

MAY 1955

PRINTECH

7

Selection and Training of Apprentices

The selection and training of apprentices are problems which should be given careful thought by the people in the Industry and the authorities conducting technical schools. With the opening of the Regional Schools of Printing in our country, the problem gains greater importance. We are publishing in these pages details of the Apprenticeship Scheme as worked by the Britishers. Two men—one Master Printer and one Trade Union leader—explain the many problems that arose in working the scheme and the methods adopted to tackle them successfully. They have an important lesson to us. By a proper understanding of these problems we can avoid many of the pitfalls. It is with this hope we are publishing these speeches though they were made in 1953.

THE following are extracts from the speech made by G. G. Eastwood, Asst. Secretary, Printing & Kindred Trade Federation, made at the Joint Industrial Council's Annual Convention, in a review of the apprentice selection and training scheme:

Let us look, first of all, at the ways by which apprentices have presented themselves for examination and assessment. Coincident with the launching of the scheme, Charles Batey, Printer to the University of Oxford, wrote and produced an admirable illustrated booklet for the JIC entitled *Careers and Prospects in the Printing Industry* and thousands of copies were printed and circulated. A considerable number were supplied to the Youth Employment Officers of the Ministry of Labour and the booklets have found their way into the hands of school-leavers through various channels. Some district committees have stimulated interest by arranging for parties of boys during their last months at school to

visit local printing offices to see for themselves something of what the industry had to offer. In others, schools have been visited and talks have been given to school-leavers, whilst in some areas headmasters are notified of the date of examinations and asked to submit boys through the local youth employment officer. These officers have played a most valuable part in the success of the scheme in many areas, sometimes attending the meetings of the local apprenticeship committee. Some districts have all the applicants they require without resort to publicity, whilst press advertisements, circulars to employers and schools, and film shows are amongst the methods adopted to publicise the scheme where interest has needed to be stimulated.

In seven areas all the boys presenting themselves to the committee are sponsored by particular firms. A boy is promised an apprenticeship by a firm provided he is approved by the local committee. This policy may have its advantages, but it means in practice, that unless a boy can

find an employer to sponsor him he is debarred from consideration by the local committee, however suitable and enthusiastic he may be. In nine other areas practically all boys apply direct to the committee of their own initiative or are submitted through the local youth employment officer. In between these two extremes of practice there are all sorts of proportions, varying according to local policy. In London from July 1949 to June 1953, 1,349 boys sponsored by employers have been examined. During the same period 6,301 boys who were not sponsored, indicated a desire to be considered for the industry, but only 976 were able to be examined. Whilst every boy sponsored by an employer in London is examined, a boy who cannot get a firm to sponsor him has less than one chance in six of being considered for the printing industry. In the country generally, the number of districts where the majority of the boys make direct application, outnumbers the others by well over two to one. These varying arrangements effectively answer those who criticise the scheme, arguing that it takes away from an employer all freedom to choose his own apprentices. He can give a lad his "blessing" and, provided he is considered suitable by the impartial local committee, he can apprentice him. Or he can ask the committee to send him a number of boys who have passed the tests and he can himself select one for his own office.

OFFICIAL FORMS

Local apprenticeship committees are supplied with the necessary official forms by the apprenticeship authority. They consist of a form of application which the boy completes; a school report to be completed by the headmaster; a brief medical history of the candidate, completed by his parent; and a doctor's certificate of medical examination. So far as the medical examination is concerned, the authority suggested that the boys should not be sent haphazard to any doctor, but that some particular medical man should be appointed in each area to carry out

this work and that he should be given the opportunity of making himself familiar with the physical requirements of the various occupations in our industry. Whilst 28 of the 44 local committees have adopted this or some variant of this policy, others have either decided, as time has gone on, to dispense with medical examination or have never provided for one, with the result that today there is no medical examination as intended by the apprenticeship authority in 16 of the 44 districts, including several provincial cities. In the light of experience, some committees have deferred the medical examination until after the result of the written tests are known and only boys who show themselves satisfactory in these tests are submitted to the doctor.

INTELLIGENCE TESTS

In the majority of districts the educational and intelligence tests are carried out by members of the local committee, sometimes with the co-operation of the Youth Employment Officer. In others, a schoolmaster undertakes this work, whilst in a few areas there is assistance from interested bodies associated with the industry. The head of the printing department of the technical college co-operates in one city, for example, whilst in another, a well-known firm with a wide experience in the selection of staff assists the committee and places facilities at its service. One committee reports that it holds the examinations in the printing department of the local technical college, feeling that this gives them "atmosphere."

It has been recognised all along that the interview is an important stage in the procedure of selection and, here again, both the apprenticeship authority and the local committees have learned a great deal from experience. At first, in some areas, the full committee did the interviewing and I remember being present on one occasion when the boys came into the room to be faced by six or seven men, all of whom understandably, took an interest in each boy and put questions

in the course of the interview. I will not say that you could actually hear the boys' knees knocking, but it was obvious that they were to some extent overawed by the occasion. Later the apprenticeship authority prepared a special memorandum on the conduct of the interview, recommending that a committee of three, consisting of a chairman and two assessors was a suitable and convenient arrangement. The suggestion was made that the interview should be conducted by the chairman alone and the assessors should confine themselves to observations. This advice has proved most helpful and the conversational way in which experienced chairmen interview boys and put them at ease has helped towards a better assessment of their abilities and personality. In London the interview is conducted by an employer and a representative of the union associated with that section of the industry for which selections are being made.

When the scheme was launched, the importance of intelligence tests was stressed and local committees were given advice as to where sets of papers could be obtained to test clearness of thought and powers of deduction, rather than actual knowledge. Many committees are applying these or similar tests, but in some areas little is as yet being done along the lines of intelligence tests (as different from educational tests) or to find out the aptitude of a particular boy and whether or not, for instance, he is of a mechanical turn of mind. Recognising the importance of this, the London Book-binders Committee send their would-be apprentices to the National Institute of Industrial Psychology for examination and report and they are highly satisfied with the results. Psychological and vocational tests have for long been included in the Glasgow scheme.

I think we might well look into the operation of adoption of intelligence tests and see if we cannot give further guidance and advice. There seems, too, to be a wide variation in the methods of assessing educational standards.

SOURCE OF DISSATISFACTION

Where the scheme has been adopted, it has been generally recognised by employers as the medium from which apprentices are drawn. There have, however, been occasions, three reported recently, of employers engaging an apprentice who had been rejected by the local committee. This, as you would expect, is a great source of dissatisfaction. In another area difficulty has been experienced through employers engaging boys and not arranging for them to be examined and interviewed until some time afterwards. But these, of course, are exceptions, for it is one of the basic principles of the scheme that an employer should not engage as an apprentice a boy who has not been approved by the local committee. Employers have always hitherto had the unquestioned right to engage whoever they pleased and this readiness to be guided by an impartial committee has been appreciated by the workers' side and has been a great factor in their enthusiasm for the scheme. But this willingness to accept such views has not been altogether a one-sided affair. There is sometimes a tradition of son following father in a department, and where the son has been rejected by the committee there has been disappointment in the family, but the decision has been loyally accepted and members of our unions have seen vacancies filled by strangers which they would dearly have liked for their own sons.

Another recommendation which has helped to give a status to the local committees, is the inclusion in the model indenture form of provision for the reporting to the local committee of cases of neglect of duty on the part of an apprentice and the committee's right to make representations to the party concerned. And it is provided that if the difficulty is not resolved, the circumstances are to be reported to the national apprenticeship authority which has the power, if everything else fails, to cancel the indenture. This last drastic action has been used on only very few occasions and only then when the interests concerned have

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been satisfied that nothing else could be done. There have been occasions where boys have been called before district committees and where a frank talk has had the desired effect.

PROGRESSIVE TRAINING

And now I would like to turn to the operation of that section of the scheme which provides for the training of apprentices once they have been selected. It was appreciated all along that it was no use carefully choosing apprentices and then not caring whether or not they were taught their trade properly in the years which followed. And so syllabuses of workshop training were prepared (following close co-operation with representatives of both sides of the various sections of the industry) giving a brief outline of the work upon which, year by year, apprentices should be engaged to ensure progressive training. They cover composing, letterpress machining, stereotyping and electrotyping, book-binding, machine-ruling, warehouse work and the Monotype caster, and it was made clear in the booklet that the suggestions should not be regarded as restricting or limiting in any way craft instruction according to the circumstances or practice of a particular office. JIC official inquiries have so far been restricted to the operation of the selection scheme and so in order to find out something of how far the suggested programmes of workshop training had been introduced into offices, I consulted a number of local committees of varying size and received replies from 22.

Four of the 22 committees report that the workshop training scheme is in operation. One committee says that training is planned on a "chapel" basis. In five other areas the scheme is "not generally applied." A further three have no information other than that the programmes were circulated when the scheme was launched. In respect of the remaining nine areas, it is stated definitely that the scheme is not in operation. I got the impression that only odd offices are operating the scheme where it is reported

that the programmes are "not generally applied," and it does not seem to me to be encouraging in respect of the areas where it is reported that the local committees have no information as to practice.

I also inquired about the recommendation in the workshop training booklet "that each apprentice should, from the commencement of his apprenticeship, be placed under the guidance of a journeyman selected as much for his understanding and patience as for his craft knowledge." Six of the 22 local committees I asked told me that the suggestion had not been adopted, whilst a further two had no information on the subject. In 11 areas it is reported as being adopted in some offices, and in only one place did it seem to me that the recommendation had been adopted to the extent intended.

ATTENDANCE AT CLASSES

I also sought information as to attendance of apprentices at evening and day-time trade classes in technical colleges, and whilst I found some variation in practice generally and a good attendance at evening classes was reported, being almost 100 per cent in some cases. So far as attendance at day-time classes is concerned, the figures were also very encouraging, although it was reported that in a few places the employers were not as co-operative as they might be in granting the facilities for attendance.

My inquiry on these three points was, as I said, a limited one, made for the purpose of this address, but I took a cross-section of the towns and cities of the country. Apart from my inquiries on workshop training, apprentices being placed under the care of a journeyman, and attendance at trade classes, inquiries on all other matters were made of all committees.

Less than 25 per cent of the 44 local committees operating schemes are supplied with periodic progress reports during a boy's apprenticeship as recommended by JIC. Here again practice varies widely. Whilst one committee, for

instance, arranges for a yearly interview with the apprentice, another has every boy card-indexed and is able to check on him throughout his apprenticeship, whilst in some other areas the committee only hears more about a boy once he has been indentured if difficulties are reported, but in 75 per cent of the districts no periodic reports are made.

ABSENCE OF SCHEME

There does not seem to be any immediate prospect of schemes in a number of areas, but schemes should be possible in the majority of areas not now co-operating.

"Not favoured by employers," "employers wish to reserve the right of choice themselves," "scheme too involved," and "only limited number of apprentices," are phrases used to indicate the reasons for the absence of a scheme.

It is not possible to give anything like an accurate figure of candidates examined or found suitable since the schemes were started. The number examined is certainly well in excess of 11,000, but some committees do not keep records and others are only able to supply approximate figures. The number found suitable varies very considerably; whilst Northampton, for example, reports 48 out of 49, Liverpool reports only 380 out of 795. In between these kind of figures there are all sorts of proportions. In London, 2,732 boys have been examined since their scheme was started in 1948 and of these 1,411 were found suitable.

LEARNERS' SCHEME PREPARED

Keen disappointment is also being expressed on the employees' side at the long delay in the introduction of a scheme for the recruitment and training of boy and girl learners in non-craft occupations. There is a feeling that while much is being done for those who are fortunate enough to secure apprenticeships, other young people, no less important to the future of our industry, are left "out in the cold." The disappointment is all the more keen when it is known that an admirable learners' scheme has been pre-

pared and has, indeed, been approved by the employees' side of the council.

From talks with boys who have entered the industry through the scheme, one learns that at least some of them are impressed by the fact that an apprenticeship is not automatic, and that they have to prove their suitability. I am assured, too, that some of them at least, show something of a sense of responsibility because of their selection, and this encourages them to prove worthy.

Good progress has certainly been made in very many areas towards what the council had in mind when the scheme was launched, but unfortunately, like so many other things, the pace is settled in the localities by the speed of the slowest, and the reluctance of a minority of employers to co-operate is, I am sure, disappointing to us all. I am not saying that there are no faults on the trade union side in this matter, but by the very nature of the set-up of the industry, so much depends for the success of the scheme on the goodwill of employers, and little indeed can be done without it. Very many employers have wholeheartedly welcomed the scheme and worked hard to make it a success, and we on the trade union side greatly appreciate their co-operation. Working together in the localities for a common purpose, both sides have often learned something of each other's problems and points of view on matters beyond the confines of this scheme, and this better understanding is bound to be beneficial to the industry.

SPIRIT OF CO-OPERATION

I venture to suggest, too, that the operation of the scheme has brought many employers in the districts closer together, sometimes perhaps only in small matters, but it shows a spirit of co-operation that means so much.

Uncertainties, misunderstandings and difficulties were only to be expected during these formative years, and there is much ground for solid satisfaction, although I think the time is near for a more comprehensive and detailed official review of the scheme's working by the

apprenticeship authority, than has yet been carried out. We should by now, after six years, be able to form some idea of where, in actual practice, our plans have materialised or in what respects they have not developed as we would have liked.

A RIGHT TO BE PROUD

What I have had to say is, perhaps, not an exciting story, but it surely reviews the beginnings of something which, as the years go by, is bound to have an increasingly beneficial effect on the well-

being of our trade and thus, in turn, make a contribution towards maintaining and improving the industrial efficiency of the nation. And those who have made this result possible are the men in the highways and by-ways of our industry who have given so freely of their time and experience. Many of them, both employers and workers' representatives, have considerable calls on their time, but they have co-operated splendidly in laying the foundations of a scheme built on principles of which we have a right to be proud.

A Master Printer on Recruitment and Training of Personnel

SPEAKING on "Recruitment and Training of Personnel" to the Joint Industrial Council's Annual Convention, T. B. Morland, Managing Director, Kalamazoo Ltd., Birmingham, President of the Midland Alliance of Master Printers, told his listeners of the background to Birmingham's experience in apprenticeship selection.

He said that Birmingham Association had 140 members, and that the printers in the area were a very good cross-section of the printing industry as a whole, and that they covered to a greater or lesser degree every branch of the craft.

The Apprenticeship Scheme was set up in 1948.

It was based on the national scheme but modified to suit local conditions. At that time there was a severe shortage of juvenile labour in Birmingham—and that made the task more difficult. Birmingham is the home of many trades; the motor car trade and its ancillaries, with the aeroplane industry, is the one which tends to offer a competitive wage (a more than competitive wage) to young people without the necessity and labour of learning a craft with the application of mind and hand which that calls for. It is difficult for the young person to take the long view; he or she sees the big money easily earned and does not value the craft that will stand him or her in good stead in the future.

Thus, in the early days, we could place more boys than were available, and we had the dual job of selling our industry to the juvenile employment bureau and to the parents of youngsters leaving school.

NO DEFINITE TRADE BIAS

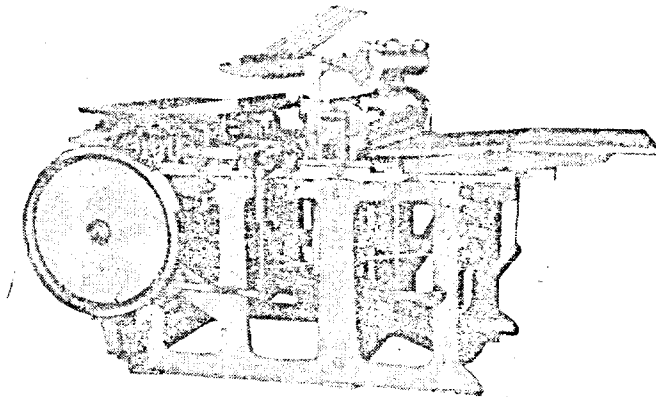
The booklet *A Career in Printing* circulated to the schools was a great help, and we advertised in the local press, and gradually the prestige of the industry was built up so that before very long there were more boys wishing to enter the industry than could be absorbed. There was one special condition in Birmingham when we started the scheme which helped provide recruits for the composing room. For many years there had been at the School of Printing a pre-apprenticeship class; this had been most successful. Boys from this class were in demand and, in most cases, proved above average. However, since the 1944 Education Act, this has been amended and now there is no definite trade bias and boys are not necessarily expected to come into the industry—in fact few of them do, so this source of recruitment which was so valuable to us in the early days has virtually dried up.

Today, we work in happy co-operation with the Youth Employment Bureau which we now find very helpful though still somewhat limited in knowledge of

"Morikawa" STOP CYLINDER PRESS

(Demy-Size—Japan Make)

This machine is simple in construction and easy for operation. For accurate printing and colour work this machine is best suited. The simple mechanism of the machine enables easy dismantling and erection.



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SPECIFICATION

Maximum Print area	24½" x 18½"
Floor Space	50" x 34"
Height	45"
Revolutions per min.	160
Impressions per hour	2400
Horse Power required	1 H.P.
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the industry. To overcome this we have been able to arrange for their inspectors to look round printing works.

Since the commencement of the scheme we have tested some 760 boys, of whom just over 400 have been placed in employment; of the remainder, just under half have been deemed unsuitable for employment in the industry, and the balance, though suitable, have not been placed as there were insufficient vacancies.

Failures to pass the test are immediately advised. Those who pass but cannot be placed due to lack of vacancies are told that there are no immediate vacancies, and put on a waiting list. They are quickly absorbed into other trades, however.

CASES FOR RE-INTERVIEW

We find that approximately 50 per cent of the boys wish to be compositors so that the standard demanded for composing apprentices is necessarily high. Usually, too, there is an over plus of boys for lithographic and artists sections. Often we offer to re-interview boys, who would otherwise be put on a composing waiting list, for the machine-room but more often than not they are not interested in machinery.

Normally, a boy does not get a second chance, but we have not been rigid on this point. Sometimes a boy is keen enough, having failed as a compositor, to find himself a job as a machine minder. Then we have interviewed him a second time.

Recently, we had a case of a boy failing in the written test, and we received a strong protest from the schoolmaster—the boy was a perfect and near the top of his form. At the request of the Youth Employment Department, the joint secretaries submitted the boy to the interviewing panel without saying a word to them of what had happened. Again he failed, so all were satisfied that he had received more than a fair chance.

When we come to the actual placing of the boys we are often up against a geographical problem. Earlier I mention-

ed the large sprawling nature of our city, and it may happen that we have a good boy at one side of the city and a good firm at the other, but we cannot bring them together, so the firm may have to be content with a second best, as it were. The JIC decides which firm the boy should be recommended to, and advises the firm direct, but the actual placing is done by the Youth Employment Service.

A record of each boy's progress is kept, and it is interesting to find that the wastage is comparatively small. Occasionally there is a misfit, but these are almost every time discovered before the trial period is up.

TRAINING PROBLEMS

Now to turn to training. In the workshop it is left to each firm to make its own arrangements for training. Some follow the minimum requirements laid down in the JIC pamphlet on *Workshop Training of Apprentices*, others perhaps have more haphazard methods. I previously referred to the record kept of each boy's progress, and we do endeavour to get regular reports of how they are doing from their employers.

It is left to the printing schools to make a big contribution to training. Fortunately, the industry has realised their value and releases apprentices for half or a whole day each week. Birmingham has a record second to no other provincial town for day release and invariably there is a waiting list at the commencement of each session in some sections of the industry.

Given adequate facilities, the printing school should develop in the apprentice (a) a skill in the various processes; (b) an appreciation of fine work and good design; (c) a natural understanding of the problems of other sections of the industry; and (d) will bring out the possibilities of commercial development of art.

Technical training at its best supplements workshop practice. Neither makes up for the other, both are invaluable to the apprentice and to the employer.

The training of apprentices is quite as important as their selection and every facility should be given for their careful education in the factory and in printing schools throughout the country.

SELECTION PROBLEMS

Now, what have we learnt from our experience of the working of the scheme which might be of value in the future? What are the lessons for the future, and here I can only give you a personal viewpoint.

Perhaps the greatest need is to improve the standard of interviewing. The art of interviewing is a craft to which it is just as important to serve an apprenticeship as any of the crafts in the printing trade. Our panels of two spend about twenty minutes with each boy; we are enthusiastic amateurs, but we are certainly not capable interviewers. If we take the compositors, where we have three panels, we naturally get three very different standards of evaluation, and at our three school-leaving dates, March, July and December, some of these panels are probably made up of different personnel, so that in the year we may get as many as five or six variants.

There is no doubt that the best interview to get to know a boy and his capabilities is an interview carried out by one person who is an expert in this sort of thing, and I am sure if that were possible, we would be able to maintain a much more reliable standard.

SCHOOL-SHOP CO-ORDINATION

There is also, I think, a need for more co-ordination between school and workshop training, at the same time recognising that one is supplementary to the other. For instance, it might be valuable for each boy to have a detailed copy of his personal workshop training programme, this is to be discussed with the school so that the school can properly supplement it. This sort of thing is becoming increasingly important with the spread of specialisation in the industry.

It is over thirty years since the apprenticeship committee of the JIC was

set up, and one of the early suggestions was to include in the indentures that, where facilities were available, day release for technical education of two half-days or one whole day a week should be incumbent on the employer, while the apprentice must also attend evening classes on at least two evenings a week during the school session. I think we might do well to reconsider these suggestions in the light of the present situation.

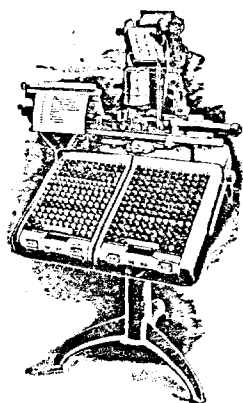
I think, in Birmingham, despite its short-comings, we feel that the working of the scheme has been a success, and certainly been a great help to some of the smaller firms.

It would probably not be untrue to say that, since the war, it has meant that we have attracted a higher grade of lad to the industry as a whole than would have been the case without it.

There are district committees all over the country doing similar and probably better work than ours. I have studied a number of schemes that are working in the Midland Alliance, and there is a general similarity with our work but many variations.

For instance, the after-care in Derby, another big centre of printing in the Midland Alliance, is better than ours for there, when everything is duly settled and satisfactory, their secretary calls periodically upon the firm to which the boys are allocated, sees the management and obtains permission to see the boy as well, to ask how he is getting on and many other questions. They insist that the boy shall attend evening classes, and, in short, everything that can be done is done, to keep in close touch with the boys right through their apprenticeship and here, in Nottingham, they are able to make use of a specialist in the selection of juveniles at the interviewing stage. This, I am sure, is a great advantage.

We all of us have, I think, something to learn from each other, and, as the years go on, will improve our schemes—but they will not all be to one set pattern—local condition will always give us variety.

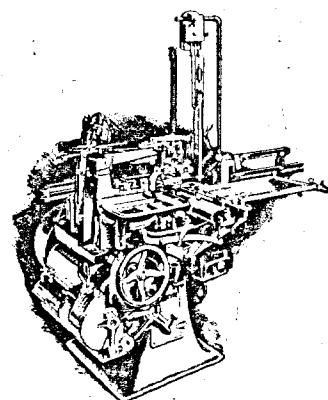


MONOTYPE

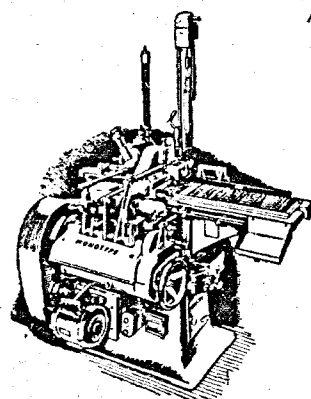
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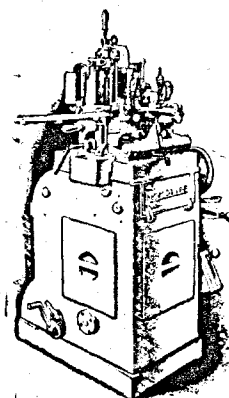
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A TYPOGRAPHICALLY FAMOUS ADDRESS

"43 Fetter Lane" is an address known in many parts of the world to printers in general and to Monotype users in particular. The old office of the Monotype Corporation there was destroyed 14 years ago in the Nazi Raid and a new office was opened this month in the same place. We give here a brief account of the steady progress of the Monotype Corporation and the part it has played in the world of typography.

THE new London Office of the Monotype Corporation Ltd., Monotype House, 43 Fetter Lane, was opened on May 10th, 1955. Brigadier Sir George Harvie-Watt, Bart., Chairman of the Corporation, unveiled a plaque in the entrance hall commemorating the event, which took place on the 14th anniversary of the destruction of the old premises during the last and worst Nazi raid on London.

When the Monotype Corporation first moved its office to 43 Fetter Lane in 1904, the whole notion of mechanical composition was still relatively new in men's minds, and the fact that single type could be set by machine was by no means as calmly taken for granted by the average printer as it is today. But the great printer-publishers of Britain and the Continent and all the Government and University Presses of the world had realised what Monotype machines must signify to them.

It was in 1908 and in the following years, at 43 Fetter Lane, that the Corporation introduced the adaptable "D" Keyboard and other improvements which were to make it possible, for the first time in history, to compose texts of outstanding typographic beauty by mechanical means. In 1911, J. M. Dent commissioned from the Monotype Corporation a type face, influenced by the Arts and Crafts movement, for use in the famous Everyman's Library series. In 1912 Gerard Meynell commissioned the now renowned "Imprint" Roman and Italic—the first original contribution made by a composing machine company to the history of type design.

The end of the First World War brought the Corporation an opportunity of manufacturing the entire machine in England, and also of extending the display casting side of its function, which was to have so profound an effect on the technique of advertising typography. But what animated the late Harold Malcolm Duncan, the Managing Director, and his assistant and successor the late William Isaac Burch, was more than the normal commercial desire to exploit the possibilities of what amounted to a monopoly—the manufacture of the only composing machine capable of achieving the quality and versatility of single type composition. They were fully aware of the responsibility implied by such a position. Duncan saw it as a challenge to lead rather than to follow the taste and standards of the day.

MOST DISTINGUISHED REPORTORY

In 1922, Mr. Stanley Morison was called in as typographic adviser and empowered to plan and supervise the production of what was to prove the most distinguished reportory of classic book and periodical faces ever made available to the trade. For more than a decade, this policy of reviving the greatest type faces of the past and creating great new ones remained one of faith and high principles rather than one which bore any obvious financial incentive. It was not until the great paper shortage following the Second World War, with the emphasis which that put upon making the most of available space, that the classic designs of which the Corporation was most

proud ousted the commonplace ones from their position as best sellers. But throughout the 1920's and thereafter, 43 Fetter Lane was earning its world-wide reputation as a centre of typographic inspiration and technical progress.

Throughout the 14 years during which the site has lain vacant correspondence has been arriving from the far corners of the earth addressed to that "43 Fetter Lane" which was the address printed on so many typographic broadsheets which hang framed on the walls of typographic enthusiasts. Some of these early broadsheets, now collector's items, are displayed in the lecture room of the new building.

THE GREAT DESTRUCTION

In December 1940 watchers from the roof of 43 Fetter Lane saw the flames of Paternoster Row where 6,000,000 books were being destroyed by enemy action. The adjoining shelter was destroyed by a high explosive bomb. So many of the members of the Forces still dropped in at "43" during precious hours of leave to refresh themselves with a little shop talk that a special club room was improvised there for their convenience.

Then came the last and most destructive of all the Nazi onslaughts on London. On the night of the 10th of May 1941 bombs fell on Westminster Abbey, on the Houses of Parliament and on the British Museum. Tons of incendiaries fell on the City. 44 Fetter Lane, where the Monotype School was housed went up in a blaze, and as the flames licked across narrow Dean Lane through the shattered windows of "43", the firemen knew that that building was doomed, for the water lines had been destroyed.

By the following day the fire had penetrated to the basement and 20 tons of molten metal was all that remained of £50,000 worth of matrices in the loan library.

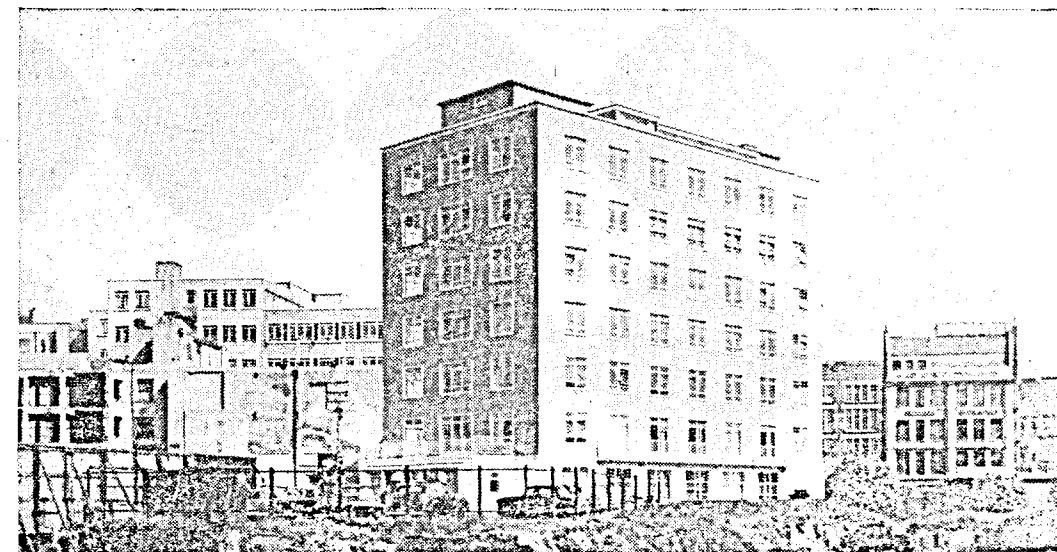
With the destruction of No. 43 there began the fourteen-year interval which

happily ends today. The Corporation had to depend throughout this period, to a most unusual extent, upon the *esprit de corps* and sense of common purpose which characterises its executives and staff. Many a crisis came, particularly during the immediate postwar period of shortages and readjustments, when decisions had to be made by this or that department without benefit of due consultation with colleagues, simply in the light of understanding of the Company's basic attitude to the Trade, to the publishers, to technical education, and to the reading public here and abroad. Now, as the different departments at last move in under a common roof, their members are rejoicing that their achievement of good teamwork will no longer exact such a price of nervous strain and conscious exercise of patience as has been required of them during fourteen troubled years.

DESIGNERS' RESORT

To the printing trade at large, and to all in the world who know and care anything for the printed word, there will be excitement in the news that the Monotype Corporation is "back to 43 Fetter Lane." At the Works, a great new matrix factory has risen, and is working by day and by night to keep pace with the unprecedented demands which every part of the world floods upon it. The machine manufacturing facilities, too, have had to be more than doubled in recent years. Now, on the fourteenth anniversary of the destruction of the old building, there is once again a "43 Fetter Lane," with all that the phrase signifies as a world centre of typographic initiative.

Today, with the greater facilities now available, it will once more become a place to which major designers will resort for those learned conferences and critical researches out of which the truly great type faces are evolved—and a centre where forward-looking printers and publishers will be sure of an understanding and cordial reception for their ideas, queries and suggestions.



The new building of the Monotype Corporation Ltd. at 43, Fetter Lane, London, opened on 16th May, 1955.

THIS ESTIMATOR IS CLAIMED TO GIVE ON-THE-SPOT PRICES

A rule-of-thumb method used in the United States allows two minutes per square inch for setting display. This would give 56 minutes for setting a job 42 ems deep by 24 ems wide, a total area of 1,008 square ems.

The Lightning Estimator approaches the problem in a similar, though far more efficient way, 1,000 square ems of 12 point, Class A, Open Composition, being charged at one hour.

There are, however, seven other classes, each class being charged at a greater number of hours per 1,000 ems according to the size of type used for the main body matter.

The method of using the system is as follows: First, one classifies the job according to the information given in the chart. Then measure the area of the job in 12 point ems and charge a specified

number of hours per 1,000 square ems of 12 point at one's own hourly rate.

Provision is made for extra, such as multiple rule borders, mitring and trimming initials, setting in foreign languages, etc.

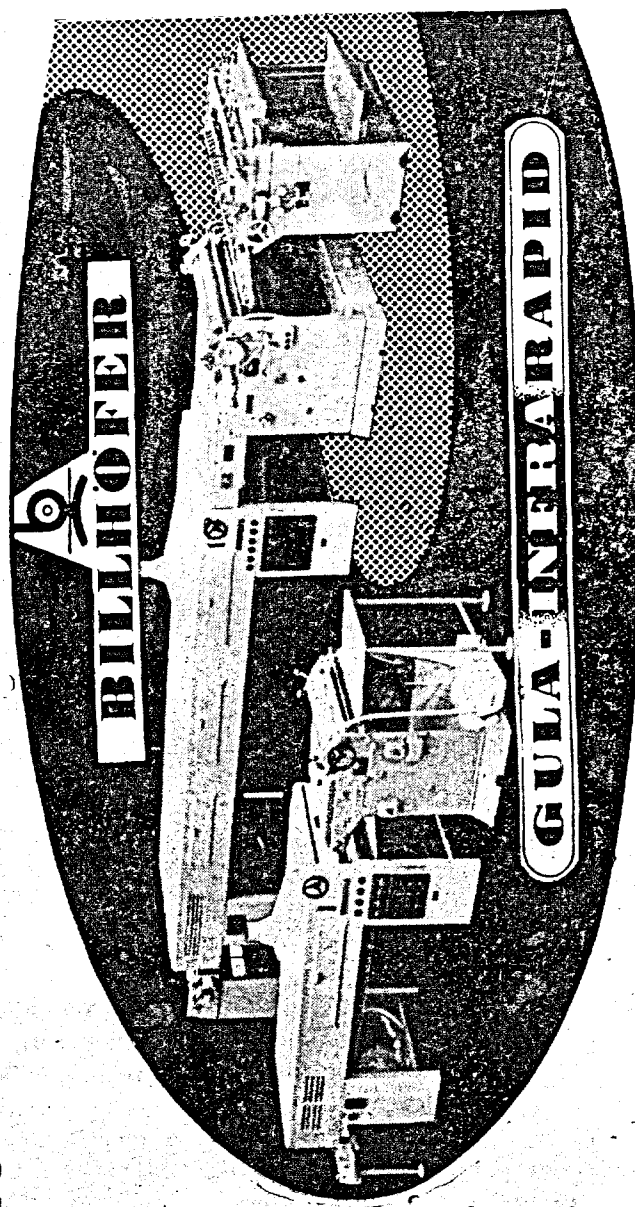
Chargeable Time

Though the chart (size 13 $\frac{3}{4}$ " $\times$ 9 $\frac{3}{4}$ ") does not pretend to tell the exact time to the minute it will take to set any one of the 42 kinds of jobs covered, it does get very close to the right chargeable time.

It enables one to give on-the-spot prices in a matter of minutes, and if a customer queries one's charges, the Lightning Estimator will back these up firmly with its conclusive findings.

The Lightning Estimator, with full instructions for its use, may be obtained from Vincent Steer, 30 The Ridge, Orpington, Kent, price 21s post free.

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"UNIPRINT" SYSTEM

A new method of preparation of rubber cylinders for gravure printing to print on paper, film, foil and board materials.

A new method of gravure printing from rubber-covered cylinders which has recently aroused widespread interest among experts has been developed in Germany. The system, which is strikingly simple, involves the covering of a cylinder sleeve with a special quality rubber plate into whose smooth, non-porous surface the design is moulded during a vulcanizing process. This method, developed and perfected by UNIPRINT G. m. b. H., of Munich, Germany, is to be made available in this country by M/s Indo-European Machinery Co. Ltd., Delhi, Bombay, Calcutta and Madras.

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

a matrix for the subsequent vulcanising process.

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

Advantages of the Uniprint Method

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

their own processing equipment, which costs only a fraction of the outlay required for the manufacture of copper cylinders.

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

Good for Most Packaging Materials

Very good quality prints have been obtained on most types of packaging material, including hard-sized and heavily calendered papers, chromo paper and carton boards, vegetable parchment, cellu-

lose film, cellulose acetate, foil, etc., type and pictorial matter—including fine gradations of tone values—being cleanly and faithfully reproduced. The quality of the print will depend largely on the original copy. Exact duplicate cylinders can be made and the depth of the cells held constant provided the photographic work is done with care, so that uniform printing results are assured.

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



R. Aravamudham (left) and S. Parthasarathy, (right) students of the Printing Section, Central Polytechnic (Members of the IFPT) who were awarded the Gold Medal and Rs. 101, respectively by Messrs. Rainbow Ink and Varnish Manufacturing Co., Ltd., Bombay, for attaining First rank in their respective classes.

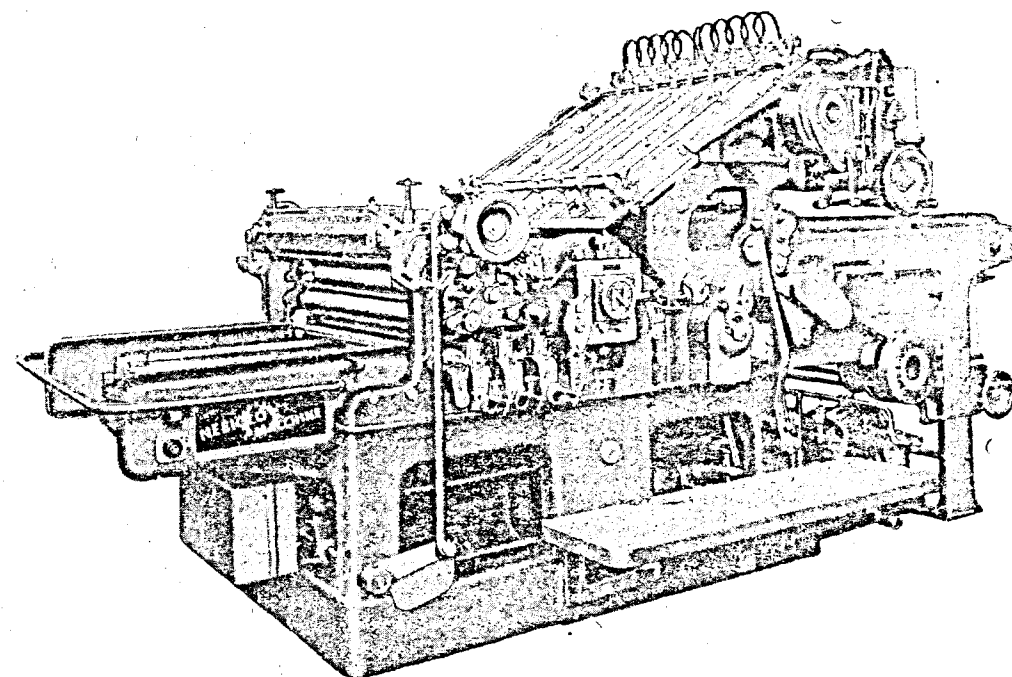
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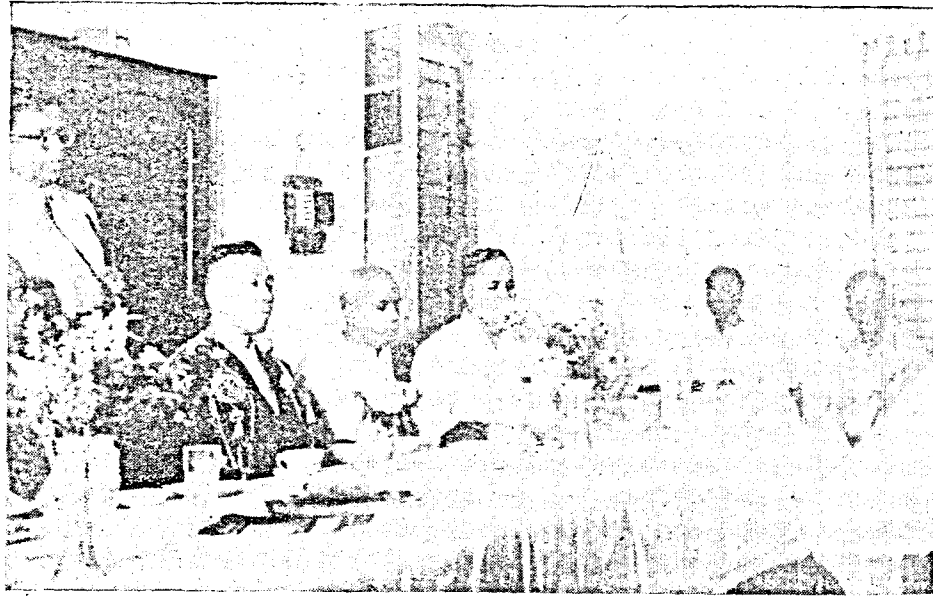
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Japanese Printing Machine Manufacturer Tours India



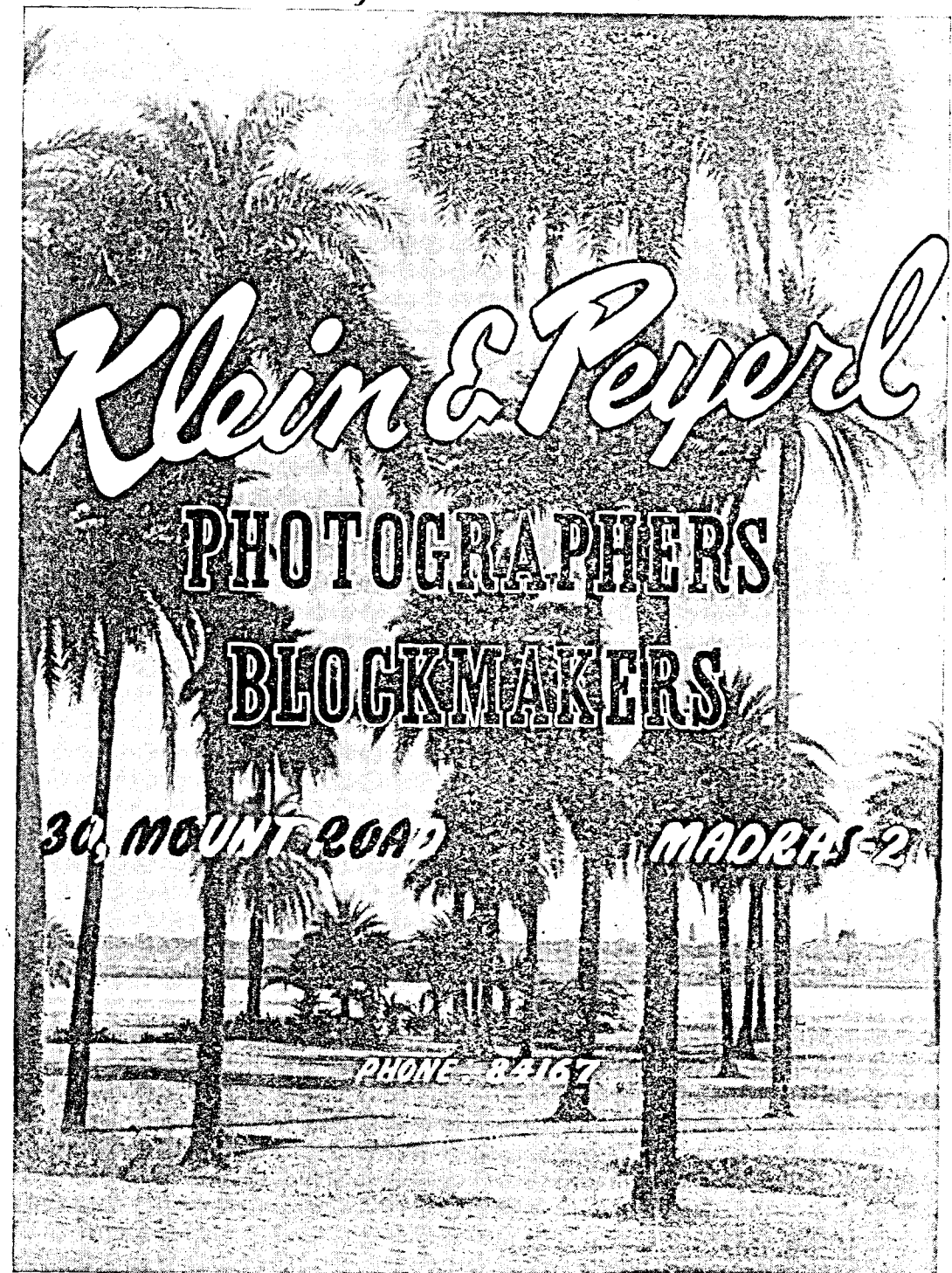
Mr. R. Venkateswaran (standing-extreme left) introducing Mr. Chuma, of Messrs. Chuma Iron Works, Tokyo, (seated to his left) at the Tea Party got up in honour of the visitor at Madras.

Mr. K. CHUMA, President of M/s Chuma Iron Works, Tokyo, Japan, visited the City during the second week of May '55. He visited the leading presses in the City and also the Central Polytechnic. He came to India to gain personal knowledge of the working of the various machines supplied by them and after visiting Calcutta, Delhi and Bombay he arrived in the City and stayed for a short time.

M/s Chuma Iron Works started manufacturing printing machinery in Japan as early as 1907, their main products being platen presses, stop cylinder and two revolution presses. Due to heavy internal demand in their home country export of these machines was limited but their steady expansion of business now has resulted in catering to the needs of the other countries.

Their representatives in South India, M/s United Printers' Syndicate Ltd., and Mr. S. Viswanathan, Proprietor of Central Art Press, (who has the privilege of installing and running the first "Chuma" cylinder machine) got up a tea party in honour of Mr. Chuma at the "Acton Lodge" on Monday 26th May '55. Despite inclement weather, the party was attended by leading printers of the City. Mr. R. Venkateswaran, L.P.T., introduced Mr. Chuma. Mr. Chuma while thanking for the hospitality shown to him extended invitation to those present to visit Japan to see for themselves the great strides they have made in Printing industry.

Mr. S. Viswanathan proposed a vote of thanks.



THE STORY OF ARABIC FIGURES

STRANGE as it may seem, Arabic figures did not originate in Arabia. Their source has been traced to India, and to discover how and when they came to England we must retrace our steps and go back many centuries. There appears to have been several systems of numerals used by the Hindus, probably at different times and in different places. At first the stroke method which, as we have seen, was favoured by other peoples, was in common use. By the second century B.C. symbols had taken the place of the strokes. Markings on a wall of a cave near Poona, recording gifts, include symbols which experts recognise as figures.

In addition to using symbols, the Hindus had a system of notation consisting of letters of the alphabet and sometimes of words. This method is very important, for in it we find the first sign of the cipher, or as we should call it the nullo (nulla or nullah, as you will). It is curious that, notwithstanding the military prowess of the early civilisations and the intelligence shown by Greek and Roman philosophers, not one of these systems of notation included a sign or symbol for the zero or for expressing nothingness. This is more strange because of the universal use of the Abacus, which we have already described. In making calculations by the Abacus, when a counter was moved from the unit section to that of the tens it should have been clear that a blank remained and needed a symbol to identify it.

Another big development made in India

about this time was the recognition of the value created by the place the figure occupied in a given total. Again, the Abacus provided the hint. A counter representing, say, the figure 1, being moved from the unit section to the left multiplied it by ten. Hence it should have been appreciated that the position of the figure in the group gave to it a special and particular value. These points did not occur to any of the Near Eastern or Western merchants. It was a Hindu who introduced a symbol for *sunya* meaning void. By the sixth century A.D. the word was in accepted use by writers on arithmetic. Two hundred years later the Hindu figures assumed shapes very similar to those we use today. An inscription at Gwalior of A.D. 870 gives figures, with the nullo, we should easily recognise.

The route of the journey of the Arabic figures from India to Europe is disputed. Some think that the Arabs in their trade with India found the native form better than their own and adopted it, even to the extent of making it read from left to right instead of adopting their own order from right to left. Others think that occupation of Spain by the Moors gave this figure form to Europe. But however it was introduced, its adoption took a long time, and it was not generally adopted before the sixteenth century. English coins issued in 1551 are among the earliest instances of the use of the Arabic figures in Great Britain.—By courtesy of *London Typographical Journal*.

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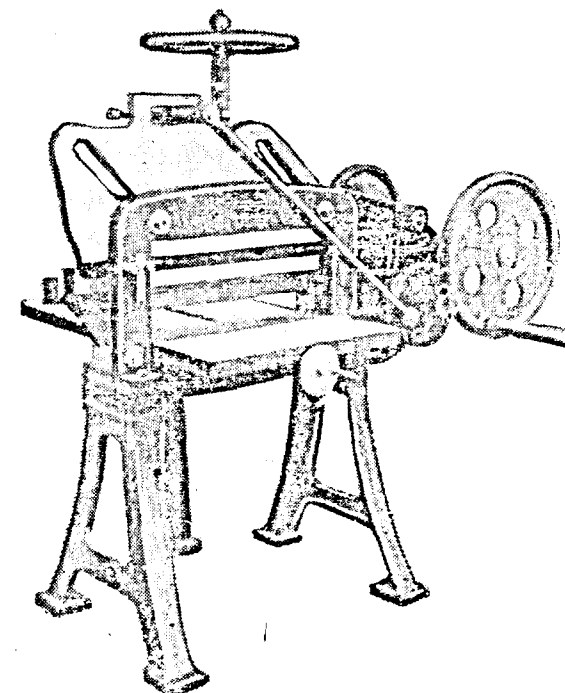
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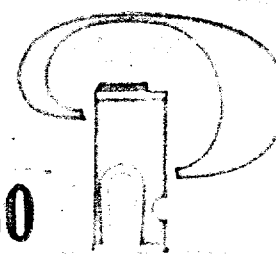
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JUNE 1955

No. 11

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Vol. II

JUNE 1955

No. 11

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Articles of technical interest
on printing and Allied Trades
are invited for publication
from Master Printers, Techno-
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with the industry.

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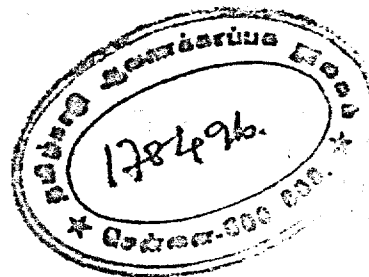
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SOUTHERN REGIONAL SCHOOL OF PRINTING

We wish to draw the attention of Master Printers to the notification of the Department of Industries & Commerce in the dailies of Madras, dated 18th July, 1955, calling for applications for admission to the All-India Certificate Courses in Printing & Allied Technology at the Southern Regional School of Printing, Central Polytechnic, Madras, from the candidates belonging to the States of Madras, Andhra, Travancore-Cochin, Mysore, Hyderabad and Coorg.

For the benefit of the Printing Trade, we are furnishing below the full details of the notification. We trust that the Press Proprietors will avail of this opportunity by sending as many of the journeymen working in their presses as possible and also to entertain apprentices and make the Regional School a success.

The following courses are offered :

1. Hand Composition.
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7. Camera Operation.

Qualification for admission: The course is open to apprentices engaged in Industry and junior journeymen employed in

Industry. The candidates should possess sufficient knowledge of English to follow lectures.

The Department will help for obtaining apprenticeship in presses in respect of students belonging to the States of Andhra, Travancore-Cochin, Mysore, Hyderabad and Coorg.

Duration of the courses: The duration of each of the above courses is three years—part-time. Only one course can be taken up at a time.

Tuition fee: Rs. 36/- per annum payable in two equal instalments.

The courses will commence on 8-8-55. Prescribed application forms can be had on remittance of annas eight by Money Order to or on payment of the amount at Southern Regional School of Printing Technology, Central Polytechnic, Madras-1. The last date for the receipt of applications by the Principal, Southern Regional School of Printing Technology, Central Polytechnic, Madras is 30-7-55.

Candidates called for interview should be prepared to come at their own cost.

Candidates belonging to the States of Andhra, Travancore-Cochin, Mysore, Hyderabad and Coorg should submit their applications through their respective State Governments, (Secretary to Government, Industries Department).

ONE of the most comprehensive surveys of problems facing the printing industry was given recently by Sir James Waterlow, Bt., M.B.E., T.D., M.A., to a crowded meeting of London Master Printers. The title of Sir James's address was 'IN SEARCH OF PROGRESS' and the occasion was a combined meeting of the London District Associations of the London Master Printers Association. The speaker ranged over printing techniques, including filmsetting, magnesium plates, auto-engraving, colour scanning, web-fed offset, gravure, binding and warehousing, research, apprenticeship selection and labour relations. In a highly stimulating speech, Sir James has made a masterly analysis of the progress that has been made recently in printing techniques and has expressed his own thought-provoking conclusions. Every printer—whatever be his sta-

SIR JAMES began: The more I look about me the more I am convinced that the printing trade as a whole seems to be moving forward without a specific object in view—without an aim—and without knowing precisely where it is going to find itself even in 20 years' time. The reason for this must partly be the speed of scientific development. In the years between the wars, if a new invention were put on the market it could be installed with a reasonable certainty of its being a sound proposition for 20 years. Now one can never be sure that a new method will not be outmoded in five or even three years' time.

I think we are all agreed that by com-

IN SEARCH OF PROGRESS

The First Part of a Speech

BY SIR JAMES WATERLOW

tus in the industry and whatever country he belongs to—will benefit by a study of this speech. As the speaker himself has said, he has addressed these remarks to create "the desire to progress" and "to think the right way." It is with the same end in view we are publishing this speech. To the progressive-minded Indian printers particularly, who have yet to see many of these techniques in person, the speech will greatly help to arrive at proper decisions.

parison with progress made in other industries the printing trade moved forward very slowly in the 50 years before 1946 and now it is suddenly making rapid strides. It was not to be wondered at that after the Second Great War the more progressive men in our trade realised that printing techniques were not keeping pace with other industrial enterprise, and, consequently, they looked for ways and means by which our product could reach a much higher level of perfection and our output a greatly increased figure.

What is Progress?

Progress is not easy to define—does it mean increased output, does it mean

higher quality, does it mean a cheaper product, or are we progressing when we provide our employees with improved working conditions and a higher standard of living? Ralph Waldo Emerson has summed up the answer in his famous quotation "if a man can make a better mousetrap, although he builds his house in the woods, the world will make a beaten path to his door." The operative word is "better", and, essentially, that is what progress means to us as printers—better quality, better output, better value and better conditions.

The first and most important step for an employer is to think the right way, for as great a part of progress as any is the desire to progress. It is with a view to directing your thoughts towards this end, I am proposing to address my remarks.

On technical matters it is relatively easy to progress. A new machine may be examined for its efficiency, speed and quality of the product: the economics of a new system of handling can be put down on paper and simple arithmetic will provide the answer. Even when the cash balance is unfavourable, it may suit our book to proceed, but it is easy for us to appreciate the position and to know the gamble which we intend to take. Only too often, however, what everyone calls progress is merely the exchange of one well tried but clumsy method for another.

Photo-composition: Before time?

In this connection I would cite photo-composition. Having discussed the subject with manufacturers and potential users, I find that the wide divergence of opinions on the value of this mode of type-setting is remarkable. The protagonists claim it as the development which the composing room has been waiting for, with untold benefits for the enthusiastic user.

It is admitted that the basic product of any of the existing systems is perfect, and photolitho and photogravure houses are well placed for giving serious consideration to this medium, but the letterpress printers cannot hope to produce

economical composition so long as blocks have to be made after the mechanical setting operation has been carried out. Neither is the problem of corrections satisfactorily settled and the methods so far demonstrated are not by any means perfect. Until these two features of type-setting are reduced to the simplicity we expect and need, then the whole subject is not an investment, but an adventure. Again photocomposition may be very suitable for book work, but general and magazine printers do not find that editors and copy writers can be sufficiently precise in their requirements mainly because the demands of topicality in periodicals prevent the making of a perfect layout. It is because of all this that I concur with many American printers in saying that photo-composition is before its time.

Dow process: The answer?

Another development which is claiming much attention among American process engravers and which, indeed, has received publicity in Britain is the Dow etching process using magnesium. Although we Master Printers are not concerned with the method of making blocks but only with the end product, this process may well affect the printing trade in more ways than one in the next few years. It is normal practice in engraving to use an acid-resist like dragon's blood or a special ink to protect the sides of the image during etching. This is time-consuming and adds to the cost of a block, but it is vital to the process.

In the Dow process, the etching fluid is nitric acid with certain added chemicals which have the special property of coating the sides of the image as etching proceeds. It is evident, particularly in the making of line blocks, that the Dow process shortens the making time to about one-sixth. On the face of it the cost of the product should show a heavy reduction and it must be admitted that it gives a better line block than anything previously seen. but in view of the heavy

(Continued on page 23)

THE "PRICE" OF THE SECOND COLOUR

In every up-to-date class in typographic design (as distinct from the mere mechanics of layout) the question of the second colour is now being approached as something more than a matter of "taste." It is introduced first from the economist's, then from the functionalist's, point of view. The one most important thing to realize when one is considering the use of a second colour is that it adds "x" per cent to the cost of the job. Having "found x" in a particular case—let us call it 20 per cent to have a specific figure—the designer escapes the danger of being hustled away from the very idea of a second colour, as he often is, on the ground that it adds "a lot" to the cost. He now has the right to go ahead and demonstrate (if he can) that his extra 20 per cent expenditure may buy an extra 25 per cent "effectiveness," in which case he is proposing a very sound investment. If the job is not meant to persuade and impress people psychologically, then of course the question does not arise; but if it is (for example) an advertising blotter or brochure, it is just as stupid to wave aside the second colour "on principle" as it would be to eliminate illustrations because blocks cost too much. The point is that one knows what the blocks will cost, and what they will be there for: illustrations are not put in or thrown out simply as a "matter of taste"; and the second colour deserves just as serious consideration. Too often its use is taken for granted by the fledgling designer, and too often on the other hand, it is thought of by practical printers as a mere "ribbon round the parcel."

White is the real "Second Colour."

Before the use of red is considered, one has to be quite sure that one has made ample use of the real "second" colour to black, which is white—white space. Is it scattered about ineffectively, or is it massed with dramatic effect? Are the margins sufficient, and is there ample leading between lines and paragraphs? If not, the business of putting in more white may necessitate extra pages or a larger format, or more expense of layout time, or a revision of the copy. At least it is obvious that until "the colour white" has been properly allowed for, the designer has not given the estimator the full facts on which the customer can be told how much more the job will cost in black and red. A percentage of "x" is a very unsatisfactory figure in any event, and to the customer "x" always means more than "the cost of printing the job in black." It means "the cost of securing the maximum possible money's worth of black and white printed sheets that convey a message."

When a designer says "black" he is speaking of something over which he (as a designer) may have very little control: namely, the effect of covering new type evenly with high grade ink, after enough unhurried makeready and trial proofing to assure perfect justice for half-tones and type, and then printing it on the right paper with studied skill.

That is what "black" means, or should mean, to the designer. And if he has any say at all beyond the layout stage, he has the right to emphasize the difference between "black"—in his sense—and the "dapple grey" which results from covering printing type (worn or new) and

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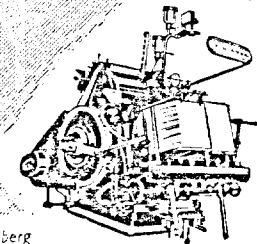
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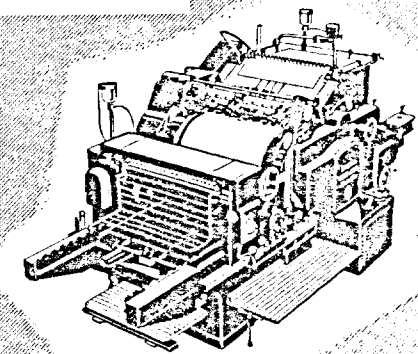
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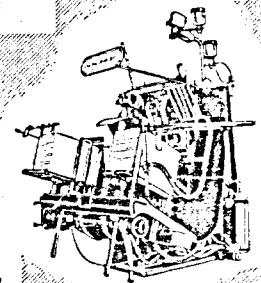
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blocks with the cheapest ink, after allowing them insufficient make ready, and then hurriedly printing upon the cheapest variety of the specified kind of paper.

The practical printer often cannot afford to split hairs that way. He knows that the difference between cheap and high grade ink can be as much as Rs. 5 a pound; he knows (in minutes) the difference between perfunctory and assiduous makeready and nothing gratifies him more than to work for a customer who appreciates the extra value of good machining, on paper that is "fair to the job." But he also knows that if he estimates for every job on the understanding that the black forme is to have absolutely "fair treatment," he must either lose or revise a considerable number of estimates.

It is morally wrong, the printer says, to revise his estimate by simply knocking off the profit because it is not his profit (as an individual) that he would sacrifice: he would be robbing his firm and endangering its health as a firm. Price-cutting, in that sense, is morally wrong because it connives with the customer to rob the firm of its fair profit. But (the printer goes on to say) no reproach whatever is attached to the straightforward Re-statement of a Bargain: so much less value for so much less price. It need not be stated so brutally, either, for the rule caveat emptor applies to any such bargain.

There is always a point at which the customer perceives the absurdity of saving any more penn'orths of tar, and faces the logical question, whether he should not save the entire cost of the job by simply abandoning it. Unfortunately it is not to the printer's interests to instil

logic to that effect. The nearest that proud printer can come to it is to say "Really, you know, you're looking for a cheap jack house. We can't afford to use the dirt cheap materials you want, and we can't afford to let our craftsmen imagine that there are two standards of workmanship under our roof. We don't buy our labour in the lowest market, and we shouldn't be able to retain our highly skilled machine minders very long if we stifled them in the 'price cutter's atmosphere,' in which scrupulousness is considered a luxury." The proud printer can, and does, imply all that in the very few words in which he turns down certain kinds of requests for estimates. But it is a pity that he does not often trouble to say it out loud, and to go on and show why his own customers are very content indeed that he should make a principle of treating his workmen fairly (by not breaking their pride on shoddy materials) and treating every job fairly, by giving it impeccable presswork.

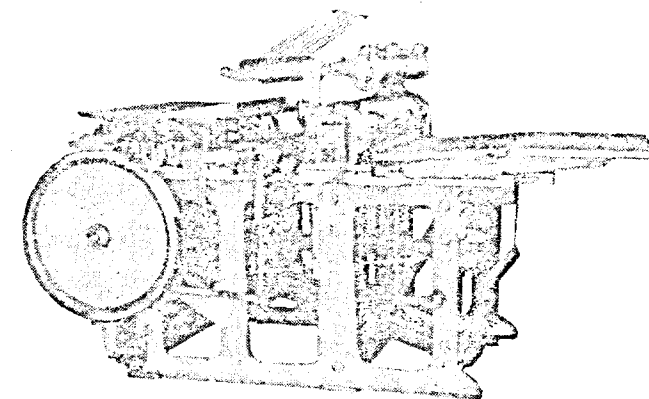
But the independent typographic designer often has no way of telling in advance, while he is making his layout, whether the job is to be handed to a proud printer to be produced on his own fair terms, or whether it is to go to a house which has become bitterly cynical about the customer's ability to see anything wrong with a cheap job, short of a glaring misprint, or a penny on the bill that was not on the estimate.

Yet until that fact is ascertained, the designer is unable to find out whether the customer is willing to pay, in the whole, realistic sense, for the first colour. If he is not, he has no moral right whatever to a second colour. Any sort of robbery is wrong, including the robbery of Peter to

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pay Paul, and this one would be particularly stupid, for the job, instead of looking like a modest failure, would look like an extravagant and pretentious failure. The page that has a milky or spotty black impression is bound to be overprinted with a thin, feeble red or blue—and opacity and vivacity make all the difference in the world to the second colour.

This is, of course, none of the layout man's business. He is paid to arrange ("layout") words and pictures in effective order and style. But that is precisely where a mere layout man differs from, or falls short of being, a designer.

To design means to intend: to have or perceive certain definite intentions, and to "realize" those intentions. A bad design is one in which it is difficult to spot the precise intention; it has been befogged or dissipated at some stage. Hence the first and unending responsibility of the true designer is to make quite clear what the payer-of-the-bill really intends. If he finds a swarm of vague, half-hearted, contradictory intentions, it is his duty to ask leading questions and even to preach and satirize. If he finds that the strongest single intention is to save money, he naturally recommends saving all the money, except the Advisory Fee which he charges to bring people to their senses and make them value his advice. He has the right to do this questioning and following-up because he is a designer, a carrier out of intentions, and he has not earned his money until the whole intention has been finally carried out. In typography that means, until the printed copies are in the hands of the readers whom they were intended to reach. Anything that goes wrong in between, from

a flimsy envelope that delivers the job crumpled back, through bad presswork, careless reading and badly spaced composition back to his own choice of type faces, paper, etc., can be laid at his door so long as he has engaged to design a piece of printing, and not merely to "make a layout." Awareness of that makes him a realist. He learns to cut his coat according to the cloth and above all to take the blame, and take it eagerly, for any disaster. For the man who cannot be blamed cannot be thanked, and where no thanks will be due, no designer is needed—the job can "go through on its own."

Realizing these things, the student of typographic design will take vastly more interest in presswork than he has generally shown in the past. And he will not hesitate for a moment to point out that when one must deal with a "dis-spirited" printing office, where a low general standard of presswork obtains, it is best to offer the "price" of the second colour by informing that startled and incredulous house that its estimate for the job should be based on the finest possible machining, the finest ink, ample time for make-ready, and paper worth printing on. Alternatively (he will point out) one may choose a proud printer, accept his fair price, and take the machining, etc., for granted.

In that way the customer is prevented from getting his second colour by cheating. It is the misfortune (and glory) of good designers that they cannot keep morality out of their work, and that it paralyses their wits, their source of livelihood, to connive at cheating. Incidentally, it breaks their hearts to see the in-

(Continued on page 13)

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PRACTICAL APPLICATION OF AIR CONDITIONING IN LITHOGRAPHY

At a recent meeting of the lithographic section of the London Master Printers Association, A. C. Poulter, B.Sc., a member of the research staff of the Printing, Packaging and Allied Trades Research Association, gave a talk entitled 'The practical application of air conditioning in lithography.'

From the photographic point of view, said Mr. Poulter, the main need for air conditioning was to prevent cut-film changing in dimensions and giving mis-register between plates in multicolour printing. In plate-making, both with albumen and gum deep-etch, the control of temperature and humidity helped to ensure reproducible coating thicknesses and exposure and development times.

Difficulties resulting from too high humidities such as the non-drying of the gum, the dark reaction resulting in chemical hardening without light, and weakening of the developing solutions were avoided.

There were two factors when considering optimum conditions. The first was the overall temperature and humidity range under which the processes concerned could be successfully operated. The second was the permissible variations on the conditions selected within the range to ensure that the reproducibility of the processes was not affected by temperature and humidity.

The conditions suggested for plate-making, said Mr. Poulter, were: relative humidity range 40-70 per cent differen-

tial $\pm 2\frac{1}{2}$ per cent; temperature 60-75°F differential $\pm 2\frac{1}{2}$ °F.

This meant, for example, that if one decided to operate at 55 per cent r.h. and 70°F one would aim at keeping the conditions between 52½ and 57½ per cent r.h. and 67½ and 72½°F. It was generally considered that air conditioning in the process department was of greater importance than in the printing shops.

Dealing with printing aspects, Mr. Poulter said that the main reason for air conditioning was to prevent changes in paper dimensions due to the moisture content of paper varying with the ambient humidity.

In general terms, a humidity change of 10 per cent resulted in a moisture content change in the paper of the order of one per cent and a dimensional change of the order of .1 per cent. The actual dimensional change would depend upon the make-up of the paper, whether one was considering the machine or cross direction and the values of the humidity and temperature.

The effect of humidity on paper dimensions was generally less over the centre of the range than for very high or low conditions.

Dimensional Changes

Where a stack of paper was exposed to a humidity with which it was not in moisture equilibrium, the dimensional changes were mainly confined to the edges of the sheet resulting in wavy

edges or buckling of the paper with consequent feeding troubles.

Where the whole sheet was exposed, as during printing, changes might occur in the overall dimensions of the sheet causing mis-register between printings. The presence of moisture on the blanket from the damping rollers was an added complication in lithography.

Feeder troubles, due to static electricity, which might occur under dry conditions (below about 45 per cent r.h.) were eliminated by air conditioning.

From the printing aspect, humidity control was more important than temperature control. Suggested conditions were: relative humidity range 45-65 per cent differential ± 3 per cent; temperature 55-80°F differential ± 5 °F.

In practice, a closer temperature differential was needed to maintain the relative humidity but this was a matter for engineer designing the plant.

Mr. Poulter then went on to describe the six ways in which it might be necessary to treat air when conditioning. These were: heating, cooling, humidification, de-humidification, filtering, and adding a proportion of fresh air.

Paper supplied from mills, said Mr. Poulter, was usually in equilibrium with a lower humidity to that of conditioning plant. It was therefore necessary to pre-condition the paper to the control conditions before leaving it in unprotected stacks or using it for multicolour printing.

Uniform exposure

Paper was conditioned by hanging in bundles of say 30 sheets. This could be

done either in a paper conditioning unit where a forced draught enabled the seasoning to be completed in one to two hours or in the print shop for periods of up to a day. To ensure a more uniform exposure the bundles should be unclipped and hung from the opposite edge during the conditioning. After conditioning and between printings the paper stacks should be kept in the conditioned atmosphere.

Mr. Poulter dealt with other considerations such as condensation and the control of air conditioning plant.

He concluded that air conditioning would remove some of the variable from plate-making and some of the feed and register problems in multicolour printing.

Each plant should be considered on its own merits, and those contemplating air conditioning were advised to ask for tenders from several companies and, if necessary, to employ an independent consultant. The conditions required should be carefully specified and the differential in the working area stated, as well as the anticipated heat loads. The possibility of condensation should be discussed.

THE "PRICE" OF THE SECOND COLOUR

(Continued from page 10)

tention of the job wrecked by bad craftsmanship. Hence we shall have better and more dependable designers when all of them are taught to feel as "responsible" for the quality of presswork as for the layout—and when they all refuse to talk about a second colour to a man who is not prepared to pay what his Black and White deserves.—*Monotype Recorder*.

MAKEREADY

*—a levelling of the forme
and supplying of pressure*

THE executive, who lacks practical experience in the craft must have something on the ball to justify his position of responsibility. If he doesn't understand the marks, spots, hand-cut or mechanical overlays used by the pressman, he is likely to seek the answers to questions that come to his mind, such as:

What is the pressman doing? Why? Is it necessary?

Three Sections

We want to consider that part of makeready which is generally broken down into three subdivisions: underlaying, interlaying, and overlaying. Briefly stated, the part of the makeready which includes underlaying, interlaying and overlaying, is necessary for two specific reasons: first, to level the impression; second, to supply extra pressure as needed to any part of the forme to obtain a proper transfer of ink from forme to stock.

We accomplish the levelling of the forme through underlaying, interlaying and simple levelling overlays.

We supply the extra pressure required through the use of carefully prepared spot sheets, hand-cut overlays, mechanical overlays or through the use of McKee or Bishop treated plates.

Underlaying is necessary because plates are not supplied at the exact height essential to a proper print.

The first requirement when considering underlaying is to know the approximate height at which the normal plate should be run.

The next step is to measure the plate with a gauge or micrometer and place underneath plain sheets of paper (not spots) to bring it up to approximately the correct height. In most cases this is an operation that is satisfactorily and most economically performed before the forme or plates go to press.

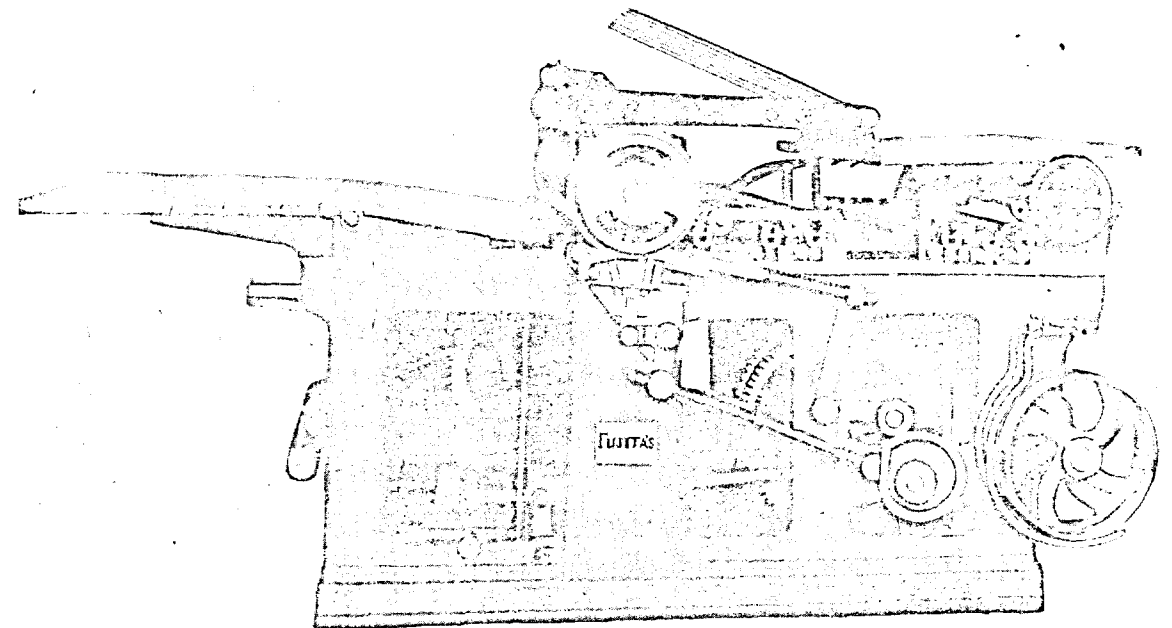
After all plates are underlaid, the packing is adjusted to the correct height and a sheet is printed to determine whether or not additional underlaying is required.

Sometimes, as makeready progresses, there will be observed a tendency of the plate to give excessively under pressure and additional underlaying may be necessary to compensate.

Why is interlaying necessary and what do we accomplish by interlaying?

An interlay is a spot sheet placed between the printing plate and the base to bring up low areas and to relieve the vignette and other light edges. In a true sense every spot sheet placed under a plate on a rotary press or under a plate on a flat-bed press is an interlay. We frequently hear these referred to as underlays, but we make this distinction

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so that we can definitely distinguish between a spot sheet between the plate and base, and a plain sheet of paper with no spots used to bring the plate to proper height.

Interlays should seldom be used on flat-bed presses. When a plate mounted on wood base is badly warped, or low in the centre from previous runs, the proper procedure is to remount it on a level base which will generally take care of the low areas; however, in some shops block-levelling equipment is not available and the low area is sometimes present in the electrotypes, and the only practical solution is to mark out and spot up an interlay sheet and then mount this between the electrotypes and the wood base.

Use of Electrotypes

Where electrotypes are used on patent bases or grooved cylinders the interlay should be employed for most or all of the makeready necessary to obtain level impression.

On rotary presses where two or more cylinders print on the same packing it is impossible to use an overlay of any kind in the packing cylinder because the plates on the several plate cylinders do not all require identical makeready. On such presses quality printing is produced by using the best possible electrotypes and placing all spot sheets under the plates, or by using plates that have been treated so that the tones requiring extra pressure will be higher than the lighter tones.

What is overlay? Why is it used in trying to obtain a level impression?

The overlay, in a broad sense, is anything placed in the packing for the purpose of levelling the forme.

Wood-mounted Electros

On many formes mounted on wood we can underlay as carefully as possible—we can even interlay some cuts—and there will still remain much levelling to be done in the packing to obtain an even impression. This is especially true when wood-mounted electros are supplied from a variety sources and when cuts mounted on wood bases have been stored.

Why is it necessary to supply extra pressure to certain parts of the forme?

Perhaps we should explain here at the start that a large and constantly increasing volume of work is produced without supplying extra pressure to any part of the forme. This is true on multi-colour presses where multiple cylinders print against the same packing surface and where treated plates are not used. This practice is employed mainly in the magazine and label fields. It does not mean that the need for extra pressure does not exist, but, rather, than on a certain narrow range of work it is possible to get by with a flat impression.

This is not possible on a great majority of the work produced and, even in the magazine and label fields, the evidence of the need of supplying extra pressure to certain portions of the formes is present in the use of McKee-treated and Bishop-treated electrotypes. By such plate treatment the extra pressure is supplied by producing plates with different tonal values at different heights. The extra pressure is supplied in the plate.

Extra Pressure

With the foregoing exception the extra pressure is supplied to different areas of the forme in the following ways: first, spot sheet overlays; second, hand-cut overlays; third, mechanical overlays.

The spot sheet overlay is growing in popularity and is the most common method of supplying whatever pressure is required.

The hand-cut overlay, which was in rather common use in the past, is not so generally used today. More accurate results can be obtained with a spot sheet overlay in less time.

The mechanical overlays are of different kinds and possess varying degrees of merit. The chalk overlay is, perhaps, the most accurate of all overlays, but has been discontinued in many plants, partly because, in the past, chalk overlays were too extreme, having as much as .006 or more pressure on the solids and dark tones than on the highlights. Later, when chalk overlays stock was made in thinner gauges to produce a maximum relief of .003 or .004, there was still the constant danger of overlays slipping and the common practice of not having them buried at the right depth, and then using excessive pressure which brought on surface travel problems. The chalk overlay is still used to some extent and, we repeat, it is the most accurate overlay when properly made.

Another type of mechanical overlay is the powder overlay, of which there are many kinds, ranging from a dusted print

that is sprayed with shellac to a print dusted with thermographic powder and heated to produce a result similar to a virkotype print.

Spot sheet Overlays

This type of overlay is used in some plants, but more and more pressmen are resorting to spot sheet overlays to supply the extra pressure needed for the simple reason that they have found the spot sheet overlay satisfactory in all respects and preferable to other types of overlays on much work. With the spot sheet overlay satisfactory results can be obtained, the time required to prepare them is not excessive, the danger of over-packing a cylinder and bringing on surface travel problems is reduced to a minimum and the difficulty in handling type areas is eliminated.

Such is makeready—a levelling of the forme and supplying additional pressure as needed.—By Courtesy of *The American Pressmen*, Official Organ of Printing Pressmen and Assistants Union, U.S.A.

GOLD INK PRINTING

(Continued from page 20)

compensated for by this rubber blanket and ink smudging is thereby prevented.

New rollers should never be used. It is best to use rollers that are run in and which may be adjusted precisely and easily.

The run should be piled in small stacks as set-off might occur when printing with bronze inks.—By Courtesy of *Heidelberg News*.



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PRINTER AND HIS RESPONSIBILITIES

M. S. KRISHNAMURTI, B.A., L.P.T.

Chief Instructor for Printing, Kala Niketan, Jabalpur

THE public at large knows who is a printer and it seldom appreciates the responsibilities of a printer. This article tries to explain what everyone knows about the printer's responsibilities which have, for some reason or other, not been fully recognised. The word printer is used in the same meaning as the term 'Occu-pier' of the Factory Act.

The Press Registration Act defines a Printer as one who keeps a Press. The press may be a small one or a big one. It may have only one treadle printing machine worked by leg power or it may be a huge concern with a battery of printing machines running on power and various departments like composing, machine, binding, block making, lithography, etc. All the same it is a press and a keeper of that press is the printer. The following informations are found at the end in all magazines, periodicals and many other products: (1) Where it is printed—the name and address of the Press, (2) Who is the Printer—the name and address of the printer. These are technically known as Imprint. These are essential. Any omission to give these particulars will make the printer liable for prosecution and the printer may be fined Rs. 500/- or imprisoned for six months (simple imprisonment) or both.

From these it will be seen that the printer has certain obligations and responsibilities which may be considered and studied as one interested in the art of printing. The printer has three-fold

duties to perform. He has to satisfy the public who feeds him with work; as per law of the land he must fulfil the Government rules and regulations and lastly he must work and bring high dividends or returns to the financier who gives capital to run the business. In short, he is responsible to the public, the Government and the financier or capitalist.

The printer cannot accept all the work that the public offers though it is primarily his chief paymaster. The Government have passed various Acts and made various rules controlling the activities of the printer, recognising the power the printer weilds. The main Acts concerning the printer are: (1) Factories Act and Rules, (2) The Workmen's Compensation Act, (3) Press Registration Act, (4) Payment of Wages Act, (5) Partnership Act, (6) Contract Act, (7) Act for the conduct of Principal and Agent, and (8) Indian Company's Act.

Functions and purposes of these Acts may be briefly summarised as hereunder: The Press Registration Act controls the activities of the printer. The Factories Act and Rules regulate how the factory (Press) must be maintained and lays down the sanctions and penalties to which the offender will be liable. The Workmen's Compensation Act and Payment of Wages Act regulate and entail the printer to provide for and give relief as and when occasion arises. The remaining four Acts are for the successful con-

(Continued on opposite page)

OUR LIBRARY

THE Monotype Corporation Ltd., England, have sent us their publications for our library in response to our appeal. We acknowledge this kind gift with grateful thanks and we take this opportunity to appeal to other firms and individuals to send in their contributions. *Financial contributions should be in cheques only drawn in favour of the Indian Federation of Printing Technologists, Madras.*

When we receive sufficient number of books we will announce the opening of the library with the rules and regulations.

The following are the Monotype publications received for our library:

- The Monotype Book of Information.
- General Instructions for Operating & Maintaining a Standard Monotype Thompson Caster.
- Attachment and Accessories for use with Monotype Composing & Casting Machine.
- Monotype Display Machine Instruction Book.
- Monotype Keyboard Adjustment Book.
- A Monotype Keyboard Explanation & Diagrams.
- Monotype Quadding & Centring Attachment.
- A Monotype Composing Machine Described.
- Scientific Copyfitting for Composing on the Monotype.
- Monotype Equivalent Measures.
- Monotype Boston Stitcher No. 7.
- Monotype Keyboard Operators Manual.
- Monotype Casting Machine Manual.
- Monotype Super Caster Manual.

- Monotype Keyboard Operators Exercise Cards.
- Book of Parts of Monotype Keyboard.
- Book of Parts of Monotype Casting Machine.
- Book of Parts of Monotype Super Caster.

PRINTER & HIS RESPONSIBILITIES (Continued from page 18)

duct of the business—the commercial aspect of the printing trade.

Having summarised the duties with respect to the public and to the Government it can now be concluded after saying a word on the printer's responsibilities to the financier or the capitalist. The printer has to be very careful in all his dealings and has to see that he takes no wrong step that will bring him a loss. That is he must be a pucca businessman, more than his master for whom he works. As the financier is not worried how the printer struggles within the limits, and as he is interested only in the return on his investment, the printer must count and think a number of times before he could spend a pie. Spending a pie now must bring him at least two pies—that must always be borne in mind by the printer.

To sum up, the duties of a printer are varied and hazardous. He is not only a printer, he must be a financier, must be a lawyer to a limited extent and also an educator and seller of good art productions to the public. The Printing Trade is a peculiar one: it is both a Business and an Art.

GOLD INK PRINTING

THE printing of gold or metal boards, speaking generally, and the use of gold or silver bronze ink is a field of letterpress printing that often causes difficulties. If a few fundamental points are taken into consideration, very good results may be obtained and disappointment avoided. When printing with bronze ink, two working methods should be differentiated. One of the working methods—it is the older one—refers to the use of powder bronze. This is subsequently applied to parts of the paper upon which a colour has been imprinted. This metal powder is distributed over the inked areas either manually with a wad of cotton wool or with a special bronzing machine.

The new working method refers to the direct use of bronze printing inks which have to be prepared by the printer with a mixture of metal powder and special varnish. These bronze inks dry very quickly, and it is therefore advisable to prepare only such an amount of ink as is required for the printjob or for the day.

Bronze printing inks have been improved considerably during the last few years and a good bronze print can be hardly distinguished nowadays from the bronzed prints made by hand or with bronzing machine. However, the choice of paper is primarily important for turning out a good bronze print. Only papers having a completely smooth surface are suitable for satisfactory results. These should be glossy coated art or chrome paper and chrome cardboards and, in some cases, enamel coloured papers, cellophane, celluloid, tin-foil or smooth

glassine papers. For direct bronze printing, natural papers, such as dull or half-dull finish art papers are not suitable. If these papers, however, are imprinted with a base colour, good results can also be obtained. The ink factories can supply special bronze printing inks for printing on such papers. In most cases a good chrome yellow ink can be used for this purpose. When using dull-finish art papers it will be necessary, in some cases, to superimpose the bronze printing inks twice or even three times in order to achieve a good coverage. In view of the fact that the bronze printing inks dry very quickly, the second or third superimposition should follow in succession. Do not wait until the first bronze ink has dried or else the prints may become somewhat smudged.

When using coated art papers care should be taken that there are no other base colours underneath the bronze printing ink. Due to the fact that the base inks have already been absorbed by the coating of the paper, such areas will tend to take less bronze ink than the blank paper. It may happen that the bronze printing inks on these areas may not take on at all.

As is the case with all other printjobs it is important to ensure that the type-height of the blocks is correct and that the rollers are properly adjusted. The packing should not be hard but rather soft. Best results may be accomplished with a rubber blanket which lies under the cover sheet and a few fill-ins. Any hard areas in the makeready are com-

(Continued on page 17)



MORE ABOUT FIGURES

ONE or two queries on figures may arise following our account of their development. The first that will perhaps come to mind is the spelling of the word we use in printing for the cipher or figure 0. It is usually written nulla or nullah, but Collins in "The Authors' and Printers' Dictionary" gives "nullo (typ.), the 0 or zero." This spelling was in the first edition in 1905 and has been repeated ever since. Nulla or nullah, by the way, is an Indian word meaning a ravine or a stream.

A diplomatic incident stresses the importance of this symbol meaning (by itself) nothing. A year or two before the war when the British and Canadian governments were negotiating about bacon, an agreement was reached giving Canada the option to send us up to 250,000 cwt. in any twelve months. In preparing the draft the typist by mistake added a 0—and no one noticed the error. The document was signed and when later the extra nullo was discovered, the tables had a busy time. But Canada held to the document, although everyone knew it was impossible for her to send us such a large amount.

Another query may be why IIII instead of IV is used on clocks and watches. At least two explanations agree that it came from France. One story attributes it to Charles V (1337-80), who appears to have been always ready to find fault. In 1370 he was presented with a clock and at once complained that the figure 4 should have been shown as IIII. The watchmaker politely protested, maintaining that IV was correct, but he was ordered to make the change.

In a book "Curious Survivals," Dr. G. C. Williamson says that the IIII on clocks arose in the time of Louis XIV

(1638-1715). The king complained that on his watch he confused the IV with the VI, and sent it back to be altered. To be in the fashion, his courtiers decided to copy the king's example. Of course, it does not matter today what figures are used on our clocks and watches. We tell the time by the position of the hands, especially in the early morning when we want to know by the light from our luminous alarm clock how much longer we can stay in bed.

In the old days before superstition had been overcome by common sense, certain figures were held to have magical or mystical powers. The figure 3 was accepted as the perfect number, expressing the beginning, middle and end. From classical times we have the three Fates, and the three Furies, whilst the Muses are three times three—in fact, Brewer's "Reader's Handbook" has over nine columns of references from mythology and literature to this number. The same book has a lot to say about the number 7, and again mythology provides many examples. The Champions of Christianity, Mortal Sins, Virtues, Senses. Sleepers, Wise Men, Wonders of the World with many others are grouped in sevens.

The superstition that figures and numbers had strange powers finds an expression in a belief of the magic and mystery of numbers, called Cosmology, and it may be the strange way in which figures act when multiplied which provides for certain people grounds for belief that "there is something in it." Try multiplying the number 987,654,321 by 45. You will find the answer to be composed entirely of the figure 4, except the final digit which is a 5. There are many other examples of this strange behaviour.—By Courtesy of *London Typographical Journal*.

IN SEARCH OF PROGRESS

(Continued from page 5)

cost of the materials, particularly the magnesium, little or no saving can at present be effected. No doubt as time goes on these costs will be reduced and if this process can ever be linked automatically with photo-composition, it may be the answer to the letterpress printers' desire to adopt this method of typesetting.

Electronic engravers: Drawbacks

Now I am not proposing to give you a long catalogue of developments in the technical field which I noted when I was in the United States but I would like to give you a general picture of the main lines on which they are working, particularly in the magazine field. On the process engraving side, electronic engraving machines are coming into their own just as they are here. It is difficult for me to say whether the Fairchild has greater possibilities than the Klischograph or vice versa and if I were contemplating investing in one of these machines, I would hesitate long before selecting one or the other. They are both progressing far beyond anything that has yet been published.

The engraving of colour blocks by this method will be upon us in the near future and certainly the Klischograph has made great strides towards a good line block. But neither are yet capable of engraving on a material which can stand up to hot moulding in stereotyping, so that, whereas they may be suitable for newspaper work, they cannot as yet be recommended for higher-class reproduction.

The Swiss machine made by Elgramma can engrave on copper and zinc, but in this instance the halftone effect is produced by a series of fine lines, not dots, and the quality of the product from this machine leaves much to be desired.

I know of three types of colour scanner which are intended to eliminate any retouching in offset and gravure work and, although they are beyond the laboratory stage, I cannot see their becoming a commercial proposition owing to their high

price. At present the results are crude and only about 40 per cent of the retouching work is eliminated. Quite apart from this, these equipments require an electronic engineer to operate them, rather than an artist. Personally I think that they will go into cold storage for many years to come.

Web-fed offset: The hurdles

When I was in America in 1946 there was great potential interest in web-fed offset. In fact, it was most evident that responsible companies viewed this method of printing with the greatest favour. In eight years there has been hardly any progress in this field. "Time-Life" have a research group responsible for developing any new idea which promotes the cheaper production or improvement in quality of its two main publications *Time* and *Life*. It cost the company £800,000 to discover that with all the known methods, web-fed offset machines cannot run at a speed approaching that of four-colour letterpress. At speeds over 30,000 copies per hour the water film is uncontrollable and the quality of printing quite hopeless.

At the same time there are some large concerns in the United States which are still experimenting in this direction, mainly for newspaper production, and energetic efforts continue to be made in Australia and Sweden to make web-fed offset work in this field. The guiding idea, excellent in itself, is to give the newspaper reader the same brilliant colour hitherto only available in a magazine.

Letterpress has held its own in the newspaper industry, mainly because of its flexibility, particularly so far as quick changes of editions are concerned and because of the immense amount of money that is invested in it. Offset has a promise of higher speeds of production and of easier four-colour reproduction if these technical problems can be overcome. So long as there is a chance of success, experiments will continue, because newspapers are sensitive of the fact that they are faced with competition for advertisement revenue from commercial TV.

which, although only in black now, will probably be in colour in a few years' time.

I think you would all like me to express my views on photogravure printing and compare that process with letterpress. The newest gravure plants in America are most impressive in their cleanliness and appearance. No expense has been spared on quipment, buildings or methods and the high quality of workmanship is most marked. Even with all this there is no better photogravure printing produced than in this country (Britain), often under adverse conditions and unlike those available in American plants.

High-class letterpress four-colour work can now run at 45,000 copies per hour and experiments are nearing completion which will enable this figure to be raised to 72,000. But to achieve this a long make-ready is required, the job must be printed on a good quality paper, and it has to be duplicated by the electrotyping method. Much of this work can be eliminated in photogravure, a cheap paper can be used and similar speeds can be achieved. Yet the American photogravure printer is uneasy because of the acute competition that he has to face from letterpress. Why? Simply because he cannot absolutely guarantee to publishers and advertisers a consistently accurate colour reproduction throughout the run.

In America, therefore, letterpress holds the magazine field, for in spite of the heavy capital expenditure involved in installing colour rotary machines capable of printing five colours on both sides of the web at a cost of perhaps \$600,000 each, the length of run of, perhaps, a three-, four- or five million weekly will enable the machine to pay for itself in a very short space of time. In England it would appear that photogravure has a much better chance of capturing this field because the presses are cheaper and our much shorter runs do not warrant the heavy capital outlay, or the long making-ready time.

As I think you are aware, four- and five-colour letterpress printing is

based on the Cottrell method of all colours printing on one common impression cylinder. In the main the drying system is by circulation of hot air at about 500°F in a chamber through which the web passes, and this is assisted by either gas or electric burners with which the web comes in contact as it enters the chamber. The use of the one impression cylinder calls for much of the make-ready being put into the electros in the foundry and although a high state of perfection has now been achieved in this direction no major change in method has been adopted in the last ten years. On the Vinylite mould is grown the electro shell and the only marked improvement in foundry methods is that the shell is now backed up by centrifugal casting instead of by the slabbing procedure. This gives a more accurate and even plate.

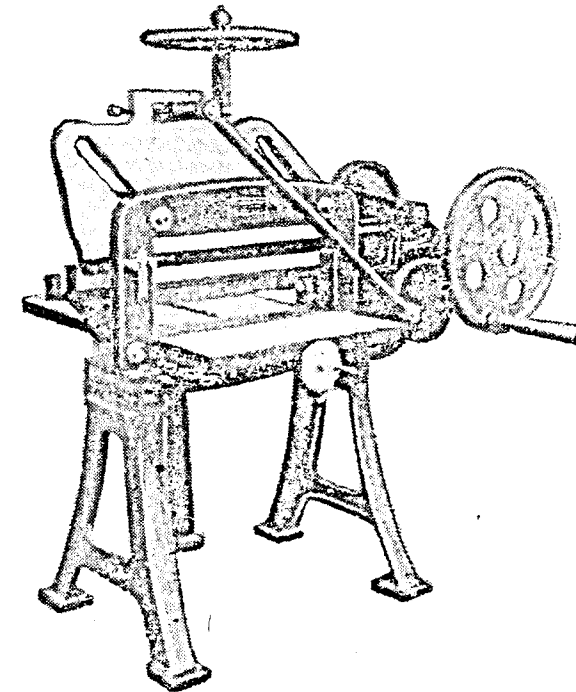
Binding Methods—Great Strides

Before leaving the technical field I would like to remark briefly on both binding and warehousing methods. American bookbinders have certainly achieved a standard of mechanical handling unequalled elsewhere in the world. In the mass production plants rounding, backing, lining and headbanding are all carried out on one machine and the books are automatically passed to a casing-in machine at the end of which they are pressed and, if necessary, cartoned and labelled. It is a process which appeals to the firm which is producing perhaps upwards of 54,000 books a day.

Similarly in the warehouse of a magazine printing business conveyers form a main feature. In one plant sections of magazines never touched the floor from the time that they were placed in the gathering machine until the magazines were despatched from the building in bales. Four- and five-knife trimmers are attached to the gathering machines, which enable a two-up job to be trimmed on three sides, split, and if a clean split through is not possible owing to flush pages the fifth knife is there to take an extra trim.

[To be continued]

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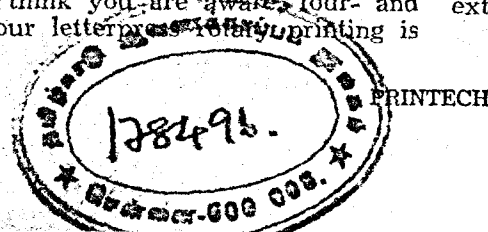
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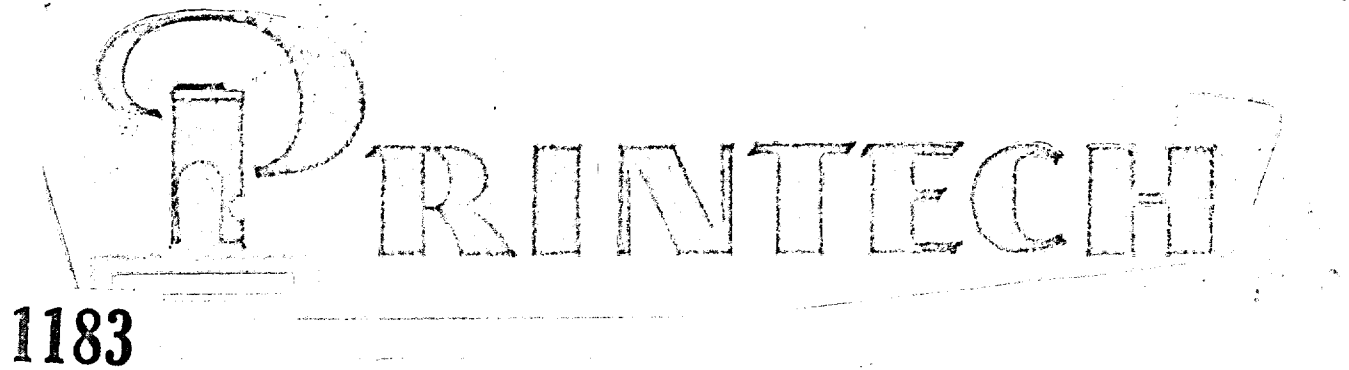
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Vol. II

JULY 1955

No. 12 (6/6)

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OF THE INDIAN FEDERATION OF PRINTING TECHNOLOGISTS - MADRAS

Vol. II

JULY 1955

No. 12

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Articles of technical interest
on printing and Allied Trades
are invited for publication
from Master Printers, Techno-
logists and others connected
with the industry.

All correspondence regarding
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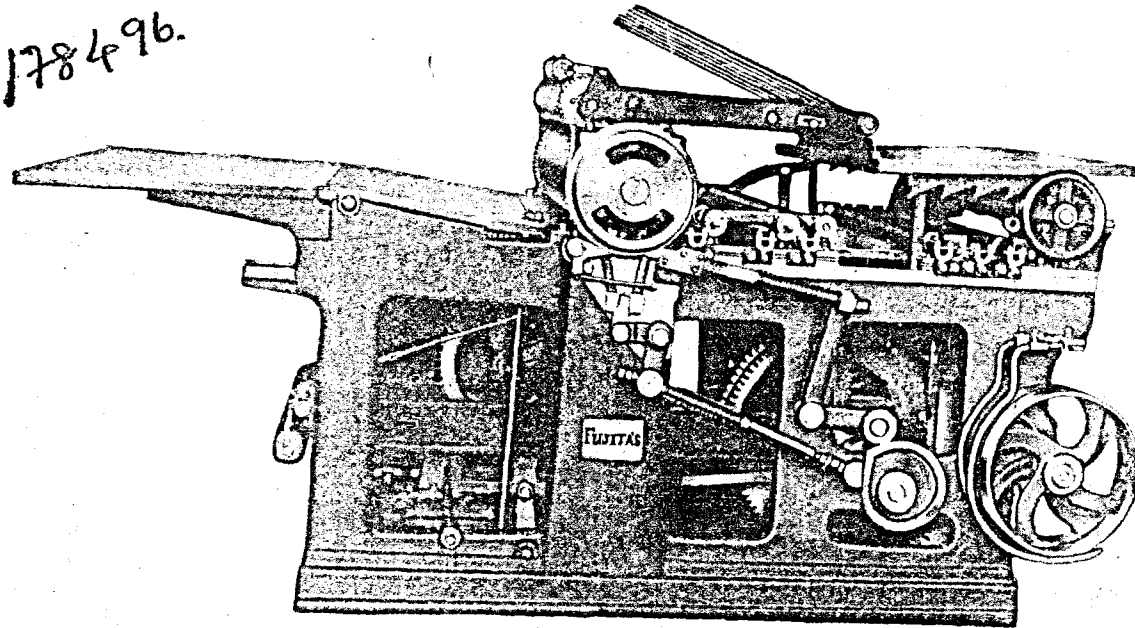
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"PIONEERS IN SUPPLIES FOR THE GRAPHIC TRADE"

IN SEARCH OF PROGRESS

WE reproduce below the second and concluding part of Sir James Waterlow's stimulating address to the London Master Printers' Association delivered recently. In a comparative study of the British and American methods, he points out the differences in standards, working conditions, research, apprentice selection and labour relations between them. The relentless search for progress and the quest for quality pursued by the American printers must be an object lesson to the Indian printers as well.

It is interesting to note that in the larger printing firms in the United States the proportion of non-productive staff to productive staff is infinitely higher than in this country. This amounts in some cases to as much as 30 per cent and compares in my own business with 14 per cent. It is, I think, brought about by two factors. Firstly the output per man is generally higher than over here and secondly very much greater care is taken in the checking of materials and the maintenance of equipment.

Quest for Quality

It is easy to be critical of their methods in this particular direction because they tend to overdo it, but in certain respects it is very necessary. Prices of equipment and materials, as in this country, are

about 500 per cent higher than before the war. In order to compete it is necessary to spend enormous sums of money, which under our conditions would not show adequate return. By working shifts, wages for which are 10 per cent more than day work for the evening shift and plus 20 per cent for the night shift, and by keeping machinery turning over for 24 hours a day, most overhead costs are divided by three; by getting the highest standard of maintenance, efficiency is kept at a high level and by ensuring that materials, such as rubber rollers and process blocks, are perfect, delays are reduced to a minimum. For instance, I came across one firm which sets out a specification for rubber rollers and if they fall short of this specification or if it can be claimed that the rollers have too short a working life, then the printer claims compensation from the roller manufacturer. This is a mutual arrangement, and this particular firm have had rebates amounting to many thousands of dollars in a year. Again engravings, such as those for advertisements, are passed through many hands for inspection and improvement. Nation-wide standards of engravings, such as those propounded by Printing Industry of America Inc., have given printers a reasonable yardstick in assessing the quality of blocks and have added a measure of authority to any complaints which the engraving companies may receive. Notwithstanding these standards, most large printing companies employ a few first-class engravers who spend all their time inspecting, correcting, vignetting, adding dead metal, repairing, engraving and burnishing. This quest for quality is carried to inordinate lengths in one American magazine house

where they even go to the point of dot-etching nickel-faced electros when they want to reduce colour on a plate which is found on the press to carry too much.

Before leaving this matter of overheads I think it would interest you to know that one large firm of printers in Chicago, employing about 6,000 people, keep three full-time doctors and 13 nurses on their staff. They claim that this is a paying proposition, which I would doubt. But personally I was able to make use of this service and for a mildly sore throat I was attended by two of these doctors and three of the nurses.

Private Research in U.S.

Our system of working is so different in this country that I do not think we need disturb ourselves too much with these American ways of getting quality at a price, but we might well examine the results obtained from considerable research expenditure in which most large firms indulge. Up to the present, America has not an integrated research group like our own PATRA. Research is performed by various separate institutes connected either with individual firms or with particular branches of the trade. The greater proportion of applied research, and almost all original research, is done by private companies. The leader in this field is Time-Life which runs its own laboratory at a cost of about £1,000,000 per annum, and indulged in the web-fed offset experiment, which I mentioned earlier. To indicate the importance that the publisher attaches to this subject I should add that this particular company do not do any of their own printing. Funds for research whether privately or by institutions are lavishly supplied, a

lot of very useful work is done for the good of the trade as a whole. The Dow process, the development of colour scanners, the Fairchild Scan-a-graver, Photon and Fotosetter photo-composing machines, Du Pont Rotofilm and the Alco photogravure process represent but a few of the major products of private and institutional research in America, and in the end, of course, the general trade benefits from all these developments.

Yet the PATRA and the system on which it operates are held in high esteem by our opposite numbers over there. They see, perhaps better than we do, that all progressive firms making contributions, according to their means, towards the upkeep of a communal research establishment is a fine principle, and ensures that the immediate benefits of scientific thought are shared by large and small. If we do not recognise the application of science to our industry we can hardly call ourselves progressive, and it is the fact that printers in this country are over-anxious to see an immediate return for their contributions to PATRA that involves that organisation in a great deal of criticism. We must think in terms of much higher expenditure on research if we intend to lead the world in printing. Neither is it enough only to give financial support; if PATRA is to be a lively body it must be fed with ideas and advice to ensure that the work carried out bears a direct relationship to the future needs of its members.

As I have said, the tangible problems of machinery resolve themselves with little difficulty. To improve one's plant is one thing but to improve the people in it including ourselves is quite a different story.

Apprentice Selection

By means of our modern methods of apprenticeship selection we are now taking into the industry boys of an infinitely higher educational standard than in the past and this must lead to greater problems because a higher standard of education automatically means that there is more ambition among our apprentices. And yet apart from enlarging and expanding the work of our technical schools we have not varied the system of training apprentices for over half a century. I cannot believe, for instance, that it is right that any body at the age of 16 should have to decide finally and inevitably what his future should be. Some boys develop early and recognise their aptitudes; other boys develop much later and may not know their *metier* until after their National Service. In consequence of this we do get a large proportion of journeymen who are neither suited to their trades nor interested in their own handiwork. I am bound to ask myself whether the present apprenticeship system is not out of date. It should be quite possible to work out a scheme whereby a boy can receive a general education for the printing trade, including some engineering, which is now a basic requirement in almost all departments, before going into the Services. Then after completion of his National Service, which is unlikely to be relaxed in the foreseeable future, he should be apprenticed to the department of his choice for a much shorter time. In these changing times employers and trade unions alike must adjust their ideas to meet modern conditions. This is one of the problems of the age which could bear detailed examination.

Personal Contact

Even master printers themselves are not immune from change. There is an ever-decreasing number of master printers as such; heavy taxation and overwhelming death duties have caused many firms to be absorbed into groups and many of us now are not master printers in the accepted sense. We are part of a company structure which is in itself an impersonal thing and causes us to be masters of our craft no longer, but rather to be specialists in one section of our trade, whether it be accountancy, production or labour relations.

As the status of the employer has changed from master to director so has the immediate personal touch between employer and employee become less and less. In the past, personal contact with the boss has spelt greater security and if that contact is becoming less, those of us who are engaged in large concerns must organise our businesses in such a way as to ensure that our staffs are fully aware that their individual qualities will be recognised, when such recognition is merited. The only way to deal with this is to promote from within one's own organisation whenever it is possible to do so, and in order to have a variety of choice we should take great trouble with the training of potential overseers and foremen, and we should go out of our way to broaden the outlook of those who already hold some responsibility but for whom the future holds greater promise.

Labour Relations

And now I come to our most difficult problem, namely, labour relations. How is progress to be made, we may well ask ourselves, if we do not have the fullest

co-operation of our employees? With the best will in the world we can improve our plant, we can improve our working conditions and we can give our staff every opportunity for educating themselves, but without a ready willingness to give higher production, where it can be given without increased effort, all these are valueless.

To some extent we are the victim of circumstances. Our own predecessors, for instance, did not look forward; the trade union set-up in the industry is too complicated, as a large number of unions exist, catering for a comparatively small number of workers and tending to overlap their functions. Thirdly, the conflicting interests of various unions are becoming more and more pronounced and these can often only be resolved at the employers' expense. Lastly, the great variety and types of businesses for which our own Federation caters makes it difficult for the Federation to adopt a policy which will satisfy all its members. All these add up to make the employers' position in the trade complex and uneasy.

If I were to speak of labour conditions in the United States I would merely be reiterating what has appeared in the reports of the various productivity teams, but there the trade unionist recognises that his own prosperity is bound up with that of his company. He wants to work for a firm which is efficient and which is making good profits because he realises that these are essential to his own livelihood. Profits are the yardstick against which he measures his own standard of living, and if he is working for a firm pays him well he does not go out of his way to encourage workers in other firms to attain his rate of pay.

Negotiations between employers and employees are not on a national basis, but sometimes on a city basis and more usually on an individual house basis. If a firm is faced with paying a higher wages bill than a competitor it must recoup that difference by making better use of its labour, and by using more efficient machines and methods. Thus comes the relentless search for progress, which labour recognises and in which it is prepared to play its part. It was interesting to talk to union men who were proud of the high speeds their presses attained and who were constantly thinking up new ideas for getting still more out of them.

Profits Earned Jointly

To a large extent the attitude towards profits accounts for the differences in outlook between the workers of the two countries. In Britain the operatives tend to regard profits as somewhat immoral because they are obtained by capital out of labour. The American worker thinks of profits as having been earned jointly by capital and labour and the bigger they are the better will be the standard of living for all, but apart from this, profits must be made to keep our plants up-to-date and to enable us to be competitive, but if prices are forced higher and higher by ever-increasing wage demands, without a corresponding increase in production, then these profits will be dissipated into thin air and the security for which everyone is striving will become no more than an idle dream.

I have tried in this talk to convey to you a sense of the magnitude of the task which lies before us. Technical progress is at hand; the education of our employees is a permanent responsibility;

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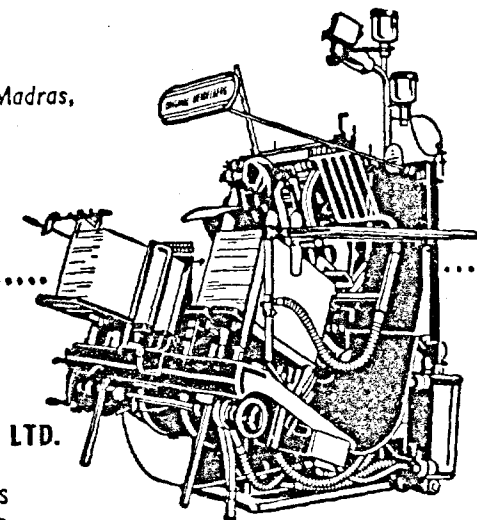
If so, the answer is an



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and labour relations are beset with difficulties which must be resolved. All three of these features of management too, have interdependent problems that do not make our task easier. I cannot offer any ready-made solutions but I should like to leave you with the thought that although our trade is not in any worse position than other industries, we are all of us, employers and employees, in this together and our responsibilities are inseparable and indivisible. We dare not leave our future to resolve itself for this is the very negation of progress and without progress our business decline, we cease to be competitive and we fail in our duty to the public.

Questions Follow

Many questions followed Sir James's stimulating talk. He was asked whether he thought it would be possible in the future to produce a magnesium plate direct from keyboarding. He thought the idea of eliminating film an idle dream, but thought there might be possibilities of automatically printing the film on to the plate. He could not see how, himself, but was sure that the photo-composing experts would work on those lines.

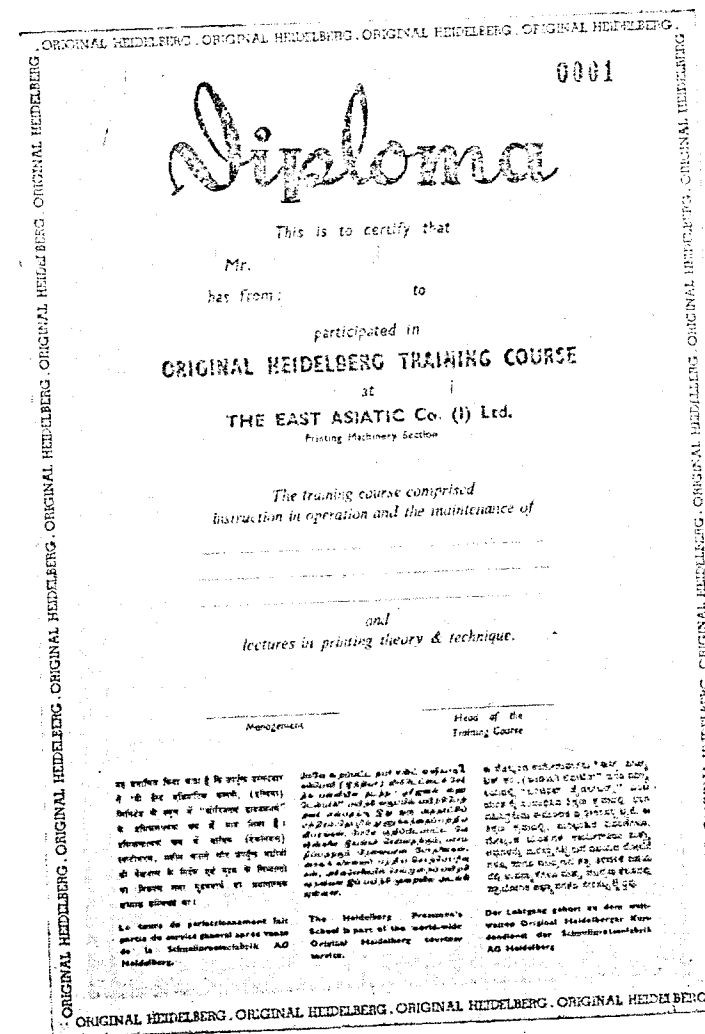
He was asked whether American printers were better equipped than their British counterparts. 'On the whole, yes,' Sir James replied. Their equipment was more up-to-date. They regarded 15 years or less as the life of a machine. But as some worked three shifts, that would equal 30 years in this country. He was talking, of course, of the larger plants. He agreed that because of the attitude of American labour the American printers got a better output.

Another questioner asked how long it would be before colour work could be produced by the Dow process. Sir James said he did not see why colour should not be developed. The halftone results were not as good as the line, but it was only a matter of time before this was perfected. He thought colour would come in about five years.

What was the reaction of the American printer to Commercial TV, he was asked. He could not say what the reaction of the printer was, but he could say that the magazine publishing business was going through a bad time. The publishers could not agree on causes. Very few would admit that it was due to TV, but he had a feeling that TV was at the root of the trouble. Advertising was going to TV but he did not think this would be a permanent feature because of the high cost of TV advertising. TV would affect magazine printing for a time—colour TV in particular. The TV experts, in their turn, were having a 'graphic arts' problem in balancing colour to obtain a fair representation on the screen of the products advertised—the same problem, in fact, as printers had. Colour TV would develop, he thought.

Sir James was asked about American methods of apprenticeship. He said that labour was generally obtained through an apprenticeship system, but that this could be taken up to the age of 30 in some cases. This meant that an unskilled man could eventually be promoted to craft status. American trade unions took more interest in ensuring that their members were really good craftsmen. They ran their own printing schools to which they sent their apprentices.

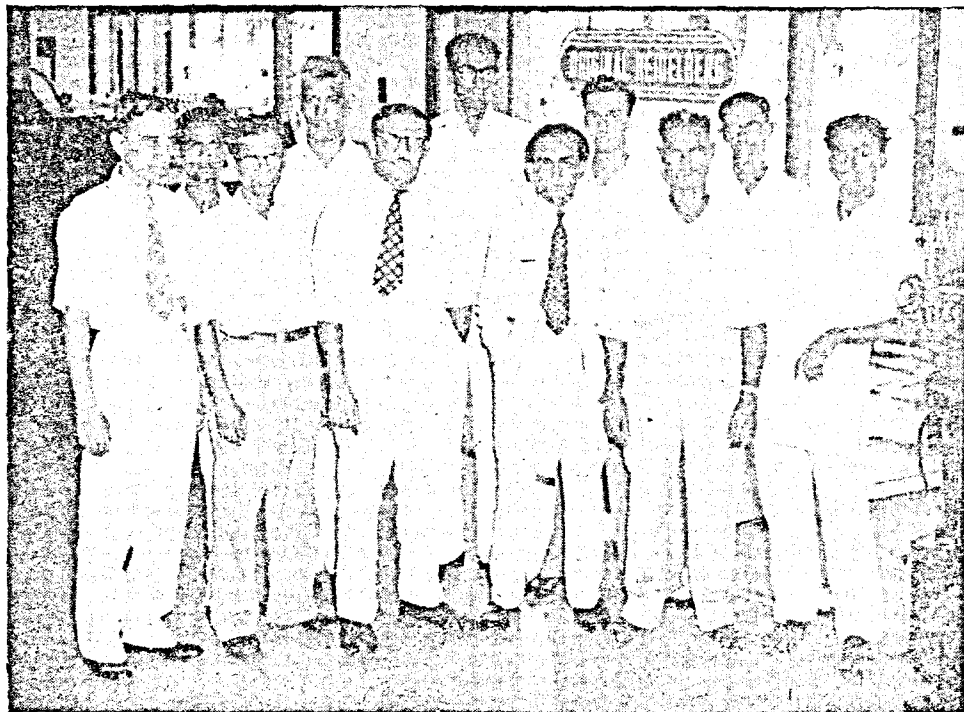
PRINTING COURSE ON HEIDELBERG



For the first time in the history of printing in India the Agents of a printing machine manufacturers have started a training course for the benefit of the owners of the existing machines and prospective buyers and operatives. The firm who is conducting the course is The East Asiatic Co. (India) Ltd.

The course will offer a unique opportunity to every one who possesses or operates the machine to know first-hand

The "Diploma" reproduced here to half the original size. We feel that the word "Certificate" will be more appropriate than the word "Diploma".



the full capabilities of the Heidelberg machines thereby enabling them to get the maximum benefit. This is no doubt a first class service to the Printing Industry and we congratulate the Company for the pioneering work done in this direction.

The training courses are offered both in Bombay and Madras. The course is in two categories, one for the platen machine and the other for the cylinder machine. The training covers the care and maintenance of the machine, mechanical adjustments, handling of anti-set-off equipment, printing of colour jobs, die-cutting and embossing. The duration of the course is one week for each machine, working from 10 a.m. to 5 p.m. daily. So far three batches have been given the training at the Madras Centre.

TOP PICTURE :

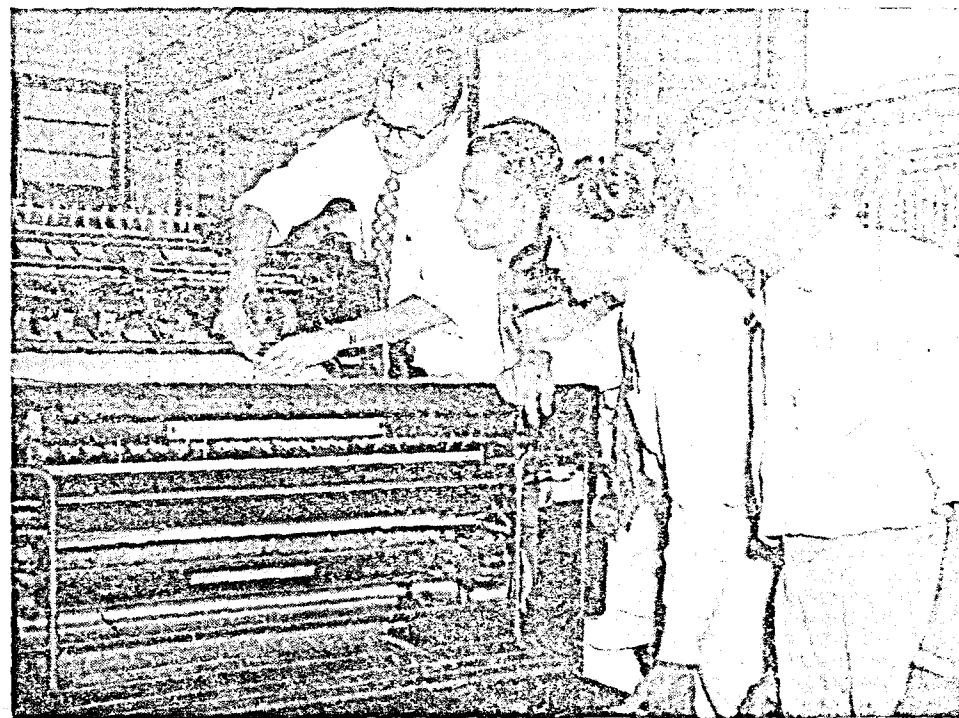
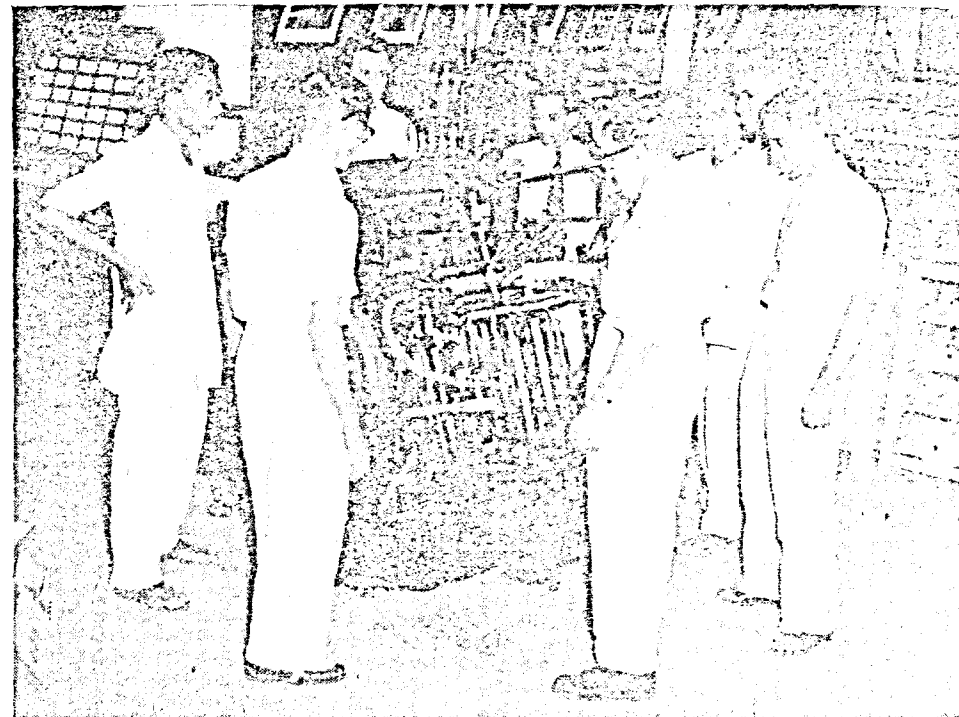
The third batch of trainees at the Heidelberg School with the Instructor Mr. Pillai (5th from left.) Next to him on his left is Mr. R. Narayanan, a Full Member of our Federation, who has recently joined the Staff of Printing Section, Central Polytechnic, Madras.

OPPOSITE TOP :

The trainees keenly watching a part of the Heidelberg Platen being explained by the Instructor.

OPPOSITE BOTTOM :

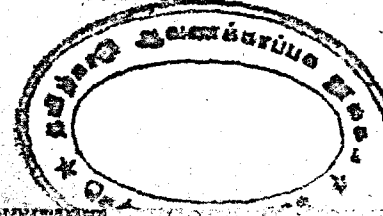
The trainees and the Instructor are seen at the Cylinder machine. Loose neckties are a source of machine-room accidents. We hope the students are also taught the precautions for the avoidance of accidents at the beginning of the course itself.



JULY 1955

PRINTECH

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COLOUR

and

COLOUR MIXING

DISCRIMINATION must be used in deciding a colour scheme as well as a close study of colour harmony. In selecting colours we must always keep in mind that the secondary colours orange, purple, and green are complementary to the primary colours; for instance, yellow (primary) and purple (secondary) form a complementary harmony. Another point we must remember is that all warm colours appear brighter when surrounded by their complementary colour; red or orange, for example, will appear much brighter if placed on or surrounded by green.

A study of the phenomena of colour should be of special interest to all who are engaged in printing. Colour is a sensation which affects a set of nerves in the retina of the eye, and may be cultivated by people with normal colour vision and a close study of the three and four-colour process together with the practice of colour mixing.

A careful study of pictures printed in colours will show that an infinite variety of hues can be obtained by the superimposition of the three primary colours. This does not necessarily mean that these same colours can be obtained by the admixture of the three; for example, it is possible to get a near black by superimposition, but not possible by mixture. However, for normal requirements and

for printers interested in mixing their colours a whole field of experiment is wide open.

PRIMARY REQUIREMENTS

Let us, then, take a survey of the materials we shall require. The primaries (yellow, red, and blue) must be as pure as possible, and the British Standard three-colour inks obtain this purity up to a point. It must be realized that modern pigments still depart appreciably from the theoretical ideal, and we are still waiting for three primaries that will reproduce a colour range in its full brilliance. It is not possible with the present blue to get both purples and greens in full brilliance, therefore it is necessary to employ two—cyan, which will give brilliance in the greens, and azure, which will give brilliant purples.

Let us assume, then, that we shall require yellow, red (magenta), two blues (cyan and azure), tinting medium, flake white, and black.

Before we venture into actual colour mixing, let us review the terms used in the process. Hue refers to the colour, shade refers to a tone of the colour (either lighter or darker), tint refers to a tone of colour very much lighter than normal, such as cream or grey. So we have, as it were, a chromatic scale with hues, tones, and tints.

MIXING TINTS FROM PRIMARIES

It is probable that the colour mixer will have the greatest call for (and, incidentally, the most interesting experiments in) the mixing of tints from the primaries, but great care must be used in selecting the proportion of the three colours. For instance, the following would be a good ratio for a grey: 32 of tint

medium, 4 of flake white, 6 of blue, 3 of yellow, and 1 of red. Mix with sufficient thin varnish to suit the stock in hand; if this should be a coated paper add boiled oil to prevent picking or pulling of surface.

It will be noticed that a small amount of red is needed; it is advisable to add this last, and even then only a small amount at a time, as it takes very little to "sadden" the green (yellow and blue).

VARIATION IN STRENGTH OF COLOURS

Should a yellowish green be desired, the proportion would be 4 of yellow and 1 of blue. As more blue is added the deeper the green becomes; should this be too pure, add a small amount of crimson.

For an orange, take 6 of yellow and 1 of red. As the red is increased all shades of orange to scarlet will take place. For purple the proportions are 6 of red and 2 of blue. If more blue is added a violet is obtained.

The proportions here mentioned are only approximate, as different makes of ink vary in body or strength.

When about to mix, remember to put the lightest colour on the slab first, and add the darker or stronger colour gradually. For a mixing surface there is nothing better than a polished litho stone or plate glass slab, which will not affect the colours chemically as metal is liable to do.

A knowledge of complementary harmony is of great value to the printer when using coloured stock, such as tinted art, and especially cover papers.

COLOUR OF STOCK

This must be considered in the colour scheme, and also the fact that the colour of the stock will alter the colour printed on it. For instance, if blue is worked on yellow paper it will appear as green, and if green is worked on red paper it will appear as very dark brown or near black. If green ink is to appear in its true shade on red paper, first print the green forme in white.

The appearance of three colours in two workings can be obtained by printing green and white on red stock, those parts to appear green being printed first in white; where there is no white the result will be black. Should the stock be green, white and red inks can be used, and working on the same principle would give white, red, and dark brown. But with all coloured stock harmony should be aimed at.

Take, for instance, brown stock, which varies considerably in shade: if it is a yellow-brown, use violet ink, if red-brown use green ink, and if an orange-brown use blue ink, first working in white the forme to appear in the colours mentioned. What are known as cover inks can be used, but being opaque they do not give the same results either in working or appearance.

With white stock there is no difficulty, as it shows the exact shade printed on it. A bright, pleasing combination on white stock is dark green and a small amount of red. If a softer tone is desired, good combinations are violet and citron, orange and olive, or green and russet, all of which give a soft and pleasant result.

By Courtesy of L & M News.

IFPT Notes

MEMBERS would be happy to note that the IFPT is entering into the third year. With your continued support and interest I am sure we would progress. May I request all the members to send their Membership Fee for the year 1955-56 (commencing from July 1955) at an early date. Kindly remit the Membership Fee by Crossed Postal Order or Cheque, made payable to the Indian Federation of Printing Technologists, Madras. Please avoid Money Orders.

I would be happy if members would take a keener interest and put forth their view and suggestions for increasing the activities of our Federation.

Members are requested to contribute liberally towards our Library Fund.

OUR PRESIDENT

We are very happy to welcome home Mr. R. Siddique, DIP (LOND), MIPTGM (LOND), our President after his successful world tour.

—Hony. Secretary

OUR LIBRARY

FURTHER ADDITIONS

Following books are contributed by a Full Member :

The Country Printer (New York State) 1785-1830—by Milton H. Hamilton

Advertising Production—by Ben Dalgin

Books (From the Ms. to the Bookseller)—by John L. Young

Practical Typography—by Alfred J. Bas-tein

Posters & Showcards—by Compton Ben-net

Decorative Designing—by T. R. Grayson

Ticket & Sign Writing—by Scripto

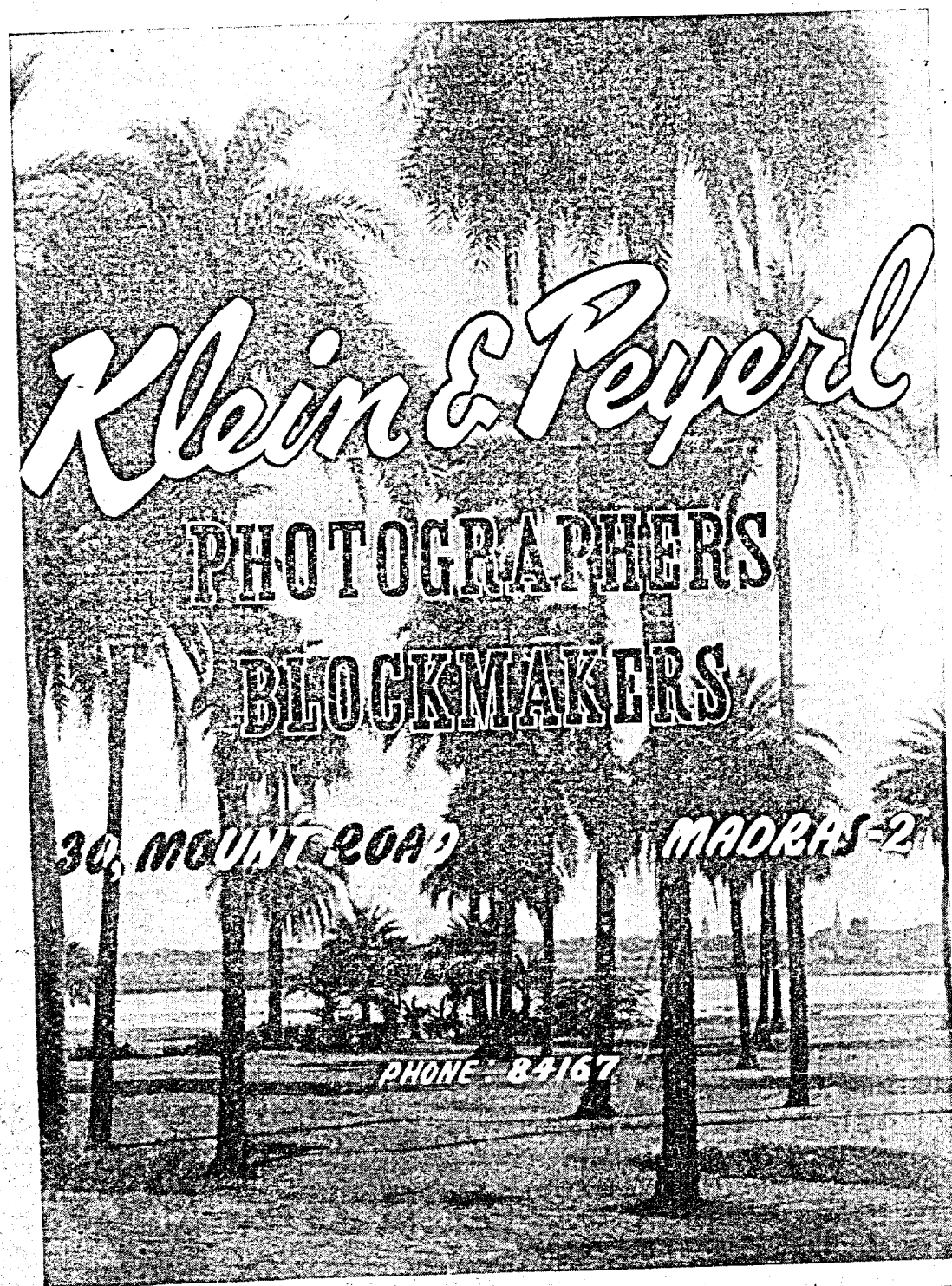
Beginner's Guide to Typographical Lay-out—by S. K. Thamba and V. S. Krishnamurthy.

NEW ENGRAVING INKS SAVE DOLLARS

THE Bureau of Engraving in Washington has developed new non-offset green and black engraving inks which permit the wet-inked surfaces of sheets of currency, bonds, etc., to be stacked in piles without the need of inserting blank sheets. The new inks are expected to result in an annual saving of about 5 million dollars in operational costs, as the non-drying characteristics of the inks used for currency printing in the United States—particularly the green ink—has posed a problem at the Bureau of Engraving for many years.

HYDERABAD STATE PRINTERS ASSOCIATION

To meet the Managing Committee Members of the Hyderabad State Printers' Association, Shri C. G. Raman, Manager, Linotype & Machinery Ltd., Bombay, gave a Dinner Party, on Friday 29th July 1955, at 8 p.m., at the Neo Mysore Cafe, Hyderabad.



GUARDING OF PRINTING MACHINERY

A Lecture By E. W. NODGSON

HM Engineering Inspector of Factories, London

I would like to go back to fundamentals for a moment if I may. It can be said that there are two root causes for machinery accidents. They are: (1) the use of machinery capable of inflicting injury; and (2) the failure to provide means to prevent operators coming into contact with the dangerous parts of machines.

It follows then that there are only two ways of making a dangerous part of a machine safe. They are: (a) design it so that no one can possibly be injured by it, or (b) enclose it so that it cannot be touched while it is in motion.

The first method, known as "Safety by Design," is by far the better method of the two and I am pleased to say that machine makers are now making use of it more and more. Typical examples of "Safety by Design" are the disced pulley, reciprocating parts designed with a clearance or overlap so as to eliminate any scissors or chopping action, and the use of a disc inserted of a crank so that there are no traps between the connecting rod and the crank.

Unfortunately with printing machinery designing for safety does not solve all our problems. There is a mass of different parts which must be guarded without interfering to any serious extent with the skilled and complex work of the machine operator and his assistants.

With printing machinery every accident-producing part must be separately studied and a guard designed with great

care. The guards must be neat and well tailored so as not to obstruct the process. Much has been done in this direction.

ACCIDENT ANALYSIS

I want to say just a word or two about accident analysis. Investigation and analysis of accidents is very valuable in the problem of guarding printing machinery as it is with all machinery. The parts causing the injury and the events leading up to the accident are brought to light and it is when the circumstances of many similar accidents are revealed by analysis that steps can be taken to evolve practicable methods of guarding.

All the reportable accidents occurring in the printing and allied trades are analysed in the Engineering Branch of the Factory Department. Accidents on practically all the machines used in the trade are broken down to show the part causing the injury.

FLAT-BED MACHINES

The flat-bed cylinder machine is still the backbone of the industry, and both the stop cylinder and two-revolution forms of it are full of guarding problems. The guarding of six most dangerous points on these machines are: (1) cylinder grippers at the feed point, (2) forme rollers, (3) distributor rollers, (4) bed and cylinder under the feed board, (5) trap between slab and duct, and (6) deliveries.

During the run of printing flat-bed machines can and should be guarded

fairly completely, but I think we must accept a lower standard of guarding while the machine is only being "inched" for "making ready." This means that all parts, such as gearwheels and sprockets, which are dangerous at any speed must be encased in fixed or hinged guards at all times, but inking rollers and cylinders, which our records show are not really dangerous at inching speeds, may have to be exposed during "make-ready."

The guards developed for one make of modern Wharfedale machine have been very successful. The cylinder gearwheels, rack and inker gearwheels and so on are encased in fixed guards which need not be disturbed, but the inking rollers are guarded by hinged transparent side screens which can be left open during "make-ready." A suitable method of interlocking the side guards to prevent their being left open during running has not been found, but as a substitute the guards are balanced so that they tend to fall into the closed position, and the catches to hold the guards open disengage automatically when the machine is run with the delivery down, thus the guards will close automatically if left open when the machine starts to print. The "Perfection" delivery on this machine is very difficult to guard at the delivery end but good protection is given by a hinged transparent guard which will lift if the fingers are trapped against it. Little cheek plates are fitted to the inside of the end sprockets.

One small line shaft-driven Wharfedale has side guards fixed to the delivery which is interlocked mechanically with the belt striking gear so that the machine cannot be run under power with the

guards open. Small machines like this can, of course, be turned by hand for "making ready" or "washing up."

The guards developed for the two-revolution machine have followed the same principles. The gearwheels and racks are well encased and the guards for the inking rollers are hinged and electrically interlocked with the drive. The new transparent plastic hinged guard for the cylinder grippers at the feed point of the hand-fed Miehles can be lifted easily for "make-ready," but it is linked to the front lays so that the machine cannot be fed until the guard has been closed.

Another guard on the Miehle machine is for the run-out of the bed under the feed board. The board on which the minder kneels to "patch-up" the cylinder is used as part of the guard, the outer positions being hinged to it. The whole is interlocked electrically by means of two cams and bell crank levers so as to make the guard foolproof. The controls can be arranged so that the machine can be inched with the guard open.

A special problem on many two-revolution machines is the trap where the slab passes over the duct roller. An enclosure right round the duct, with a hinged gate electrically interlocked with the driving motor, is the only satisfactory safeguard so far found. This is now being fitted on some two-revolution machines. A slot should be provided in the guard to allow the entry of the pallet knife for stirring the ink. Some mechanical method of stirring the ink has been suggested, but there are objections to this with some inks. The real solution on new machines is to redesign the parts so as to eliminate the danger.

On Wharfedales and some two-revolution machines the duct is above the slab; in that case the trap can be guarded effectively by a simple apron under the duct, without affecting the necessary freedom of access.

ROTARY OFFSET LITHO MACHINES

On rotary offset lithographic machines the most serious injuries are caused by the intakes between the cylinders. The six main points on these machines are as follows:

(i) Plate cylinder gaps must be filled in by cover plates, of which there are three types—(a) fixed, (b) detachable, and (c) partly fixed and partly pivoted or telescopic. With (a) special care, and modification of the clamping arrangements, is necessary to reduce the small gaps at the clamping bars to a minimum. Type (b) is the most suitable for existing machines, but it may be easily left off. One maker has produced a built-in bell warning which makes an awful noise if the machine is run with the cover off. Type (c) is perhaps the best, but it is expensive and difficult to fit to existing machines.

(ii) On some machines there is serious nip between the up running side of the plate cylinder and the inking rollers or damping rollers. This point must be guarded to prevent fingers reaching the nip. A gap cover must be fitted and it must be stressed that the nip guard and gap cover are complementary; neither can be effective without the other. The nip guard must in effect be a bar, with a cushioned edge, fixed very close to the

cylinder surface. A patented guard is now on the market; it is being fitted as standard on one famous machine. It is a trip guard which when moved slightly opens a micro-switch which stops the machine and applies the brake.

(iii) The nips between the blanket cylinder and any other accessible cylinder must be fenced by a fixed bar set within $\frac{1}{8}$ in. of the cylinder surface.

(iv) The nip between the upper damping roller and adjacent rollers should be fenced by a bar guard carried on radius arms so as not to be removable from the machine.

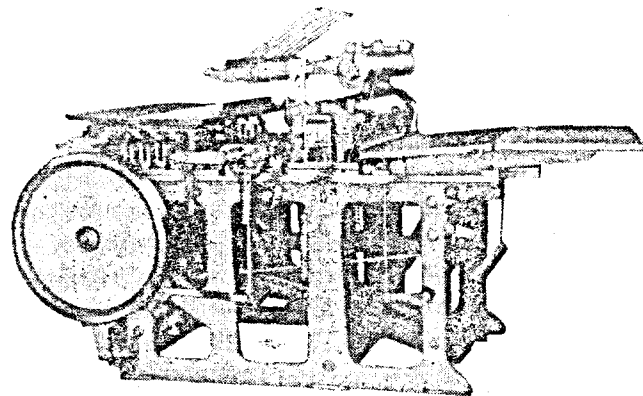
(v) Inking rollers must be guarded if they are in a position where anyone may fall against them when on any of the machine platforms; hinged perforated metal guards are usually quite satisfactory.

(vi) Guarding of the chain gripper bar deliveries of rotary offset and gravure machines has caused many arguments because the minder likes to see the printed sheets as they are delivered, but some form of fixed guard is essential. Built-in local lighting under the guard would eliminate many of the complaints. For real quality inspection, however, a sheet must be brought right out into the hand, and I hope on new machines a mechanical ejection system which throws out a sheet when required will be fitted. Such a device is fitted on some German machines; it makes fixed enclosure of all the dangerous parts of the delivery easily practicable.—By Courtesy of *Managing Printer*.

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RUBBER PRINTING PLATES

RUBBER plates have been used widely in the paper bag industry for many years and, with the development of oil-resisting synthetic rubber suitable for moulding into stereotypes, there has been a call by printers for rubber plates impervious to the action of oil-based letterpress inks.

There is, indeed, a future for rubber printing plates for letterpress, as the advantages of a flexible plate, the saving of make-ready time, and the immense reduction in the weight of the type, make a considerable appeal to printers who have given thought to these possibilities.

There are already rotary letterpress machines made to use both rubber and metal printing plates. It is doubtful, however, whether the scope of rubber is fully appreciated, as printers have formed an impression concerning the limitations of rubber, based on their experiences with standard rubber qualities designed primarily for aniline bag printing.

Yet rubber can be made by the manufacturer to reproduce much finer detail than most people realise, and this without distortion or slurring of the final print. It is due to this development that book printers are taking to rubber plates: in this branch of printing, rubber has an additional attraction in that the storage of plates for second and subsequent editions is greatly simplified.

Rubber stereotypes used for book printing are, as already intimated, very different from those used by bag printers. The Avon India Rubber Company Limited have carried out considerable pioneer work in this field and will be glad to co-

operate with any printer who may be interested.

The most important characteristics of all stereo rubbers, whether they have been designed for aniline bag printing or letterpress printing are: (a) perfect moulding properties; (b) good abrasion resistance; (c) highly accelerated vulcanisation; (d) resistance to ink.

Stereo rubbers are so compounded that they can be easily vulcanised over a comparatively wide range of temperatures and so that the rubber will flow, under pressure, smoothly into all corners of the mould before being actually vulcanised. These are vital features if air is to be prevented from being trapped in the mould whilst pressure is being applied.

MOST SUITABLE TEMPERATURE

At the same time, and for economy's sake, it is important that the rubber can be vulcanised quickly.

The most suitable temperature for the hydraulic press is that which will allow the rubber to become plasticised and flow into all corners of the mould before 'setting-up,' and yet which will fully vulcanise the rubber very rapidly when this process has been completed. A range of times and temperatures for vulcanising is shown below:

(a) 8-10 min. 307°F, 153°C, 60 lb. saturated steam per square inch.

(b) 15 min. 295°F, 148°C, 48 lb. saturated steam per square inch.

(c) 30 min. 280°F, 138°C, 34.5 lb. saturated steam per square inch.

The size of the press platens depends upon the kind of stereo to be produced, but a 16½" platen press meets the needs of most stereotypers.

It is generally accepted that a pressure of 1,000-1,200 lb. per sq. inch on a 9" ram is sufficient to mould rubber stereos successfully. This will mean that the total pressure exerted by the ram on the bottom press platen is the indicated lb.-sq. inch figure multiplied by the area of the ram; in the example given above, a total load of approximately 28-34 tons. Naturally, as the size of the ram increases, the lb. per sq. inch pressure needed to give this total load becomes progressively less.

A FURTHER FACTOR

It is worth emphasising, however, that in the example we have given the total load on the press is rather low. If a hydraulic press will supply greater pressures than this, so much the better, as it will reduce the danger of porosity—a fine cellular appearance in the rubber caused by lack of moulding pressure.

There is a further factor to be taken into account when considering moulding pressure; because a definite statement on this subject can be misleading if it is not viewed in relation to the size of the stereo being moulded. In the final analysis the important thing is the total pressure applied to each square inch of rubber, i.e., the total press load divided by the area of the rubber stereo.

Now let us consider briefly the manufacture of rubber printing plates. After a mould has been made from the original, the rubber is cut to cover up to the edges of the matrix. If the roll of uncured rubber has been stored for a long time it may be advisable to trim the

edges of the roll in order to avoid dirt and oxidised rubber.

To prevent any possibility of the rubber sticking to the matrix, the face of the rubber and of the matrix should be dusted very lightly with french chalk. Superfluous chalk should, however, be brushed away with the utmost care and on no account should chalk be allowed to form a deposit in the matrix. A very good way to prevent sulphur deposit forming in the matrix is to use a fine mist silicone spray on either matrix or unvulcanised rubber.

PYROMETER TEST

The rubber is placed squarely on the matrix and the press platen is then raised until the whole pressure is applied. At this point it is advisable to release the pressure momentarily and then re-apply as speedily as possible in order to ensure the exodus of any air that might be trapped between rubber and platen. Should moulding problems be encountered that still cannot be eliminated when the suggestions made so far have been followed, the platens of the vulcanising press should be tested with a pyrometer to determine whether any heat is being lost.

The length of vulcanisation depends upon the temperature available, and immediately this period has elapsed the pressure should be released and the matrix withdrawn from the press. The stereo is pulled from the matrix, allowed to cool, the edges are trimmed, the reverse side of the rubber can be buffed to obtain closer dimensional accuracy and the rubber printing plate is ready.

There are specialists in the craft of plate-making who contend that it is pos-

sible to hold tolerances of within .002" on a mould 18" × 12". To achieve these limits it is essential to work with a mirror finished platen and the mould must not be over-loaded with rubber. It is, without question, better to mould to close tolerances rather than attempt to achieve the result by buffing the backs.

The effect upon uncured rubber when it is stored at a fairly high temperature is that a slow vulcanising process takes place. This is accompanied, fortunately, by a physical change in the rubber that is easy to observe, as it stiffens, losing its plasticity, and often changes colour slightly. The result of storing rubber at fairly high temperatures is that it becomes semi-vulcanised and no longer suitable for moulding. Provided that

stereo rubber is properly stored, however, it will keep for several months without any deterioration.

It is also much better to mount a rubber printing plate on to a rubber mounting roller, because it is possible that if a steel mounting roller is used that has been imperfectly ground, the grinding marks will show through the rubber. This can be particularly noticeable if a fine screen is being printed.

Storage of stereo rubber is a very important point. Rubber should be stored in a cool place, away from radiators, steam pipes and vulcanising presses. The storage temperature should not exceed 80°F.—By courtesy of *Electrotypers' & Stereotypers' Journal*.

Plastic Plates From France

SICOPLAST is a thermoplastic material made by Debernay & Peignot, Paris, for the production of hard, medium hard and flexible letterpress printing plates. Sico-plast plates can be produced in conventional moulding presses and are said to guarantee better and more faithful reproductions than can be obtained from either electros or stereos. Finest screen or line details are retained and the makers report that several French firms who employ these plates have used them for printing runs of over a million (in one or two cases exceeding 4½ million) without experiencing any register difficulties or undue wear and tear.

Sicoplast is unaffected by chemicals or solvents and the plates can be re-used by grinding them into powder and using new and old powder for the production of new plates in the moulding press.

By using Sicoplast of the soft flexible type, which is normally used for rotary printing, the material can also be successfully employed for flexographic (aniline) printing. The production of such a plate takes only 6 minutes, while a standard rubber plate can usually only be made within about 20-25 minutes. Sicoplast plates also have the advantage that they can be stored without becoming brittle or distorted by shrinkage or stretching. Sico-plast flexible plates can withstand runs of up to 2½ million copies.

By mixing Sicoplast powders of the standard types it is possible to obtain a wider range of hardness degrees, and the firm is already supplying these powders mixed readily for use.

Extremely hard Sicoplast is used for embossing. Some of the Continental engraving machines will be able to engrave directly on to Sicoplast flat plates.

HISTORY OF BASKERVILLE'S FOUNDRY

SOME time back Monsieur Charles Peignot, head of the French typefoundry of Deberny and Peignot, presented to Cambridge University Press some punches made by Baskerville and used for casting the types from which his Bible (finished in 1763) and Book of Common Prayer (of 1760) were printed. The Bible was said to be "one of the most beautiful printed books in the world," and of the Prayer Book Baskerville himself said that it was "as perfect as I can make it." The punches, of which there are 2,750, have been in France for many years, M. Peignot acquiring them in 1936.

The history of Baskerville's foundry after his death is not without interest. Four years after he died on January 8th, 1775, his widow sold the equipment to the French dramatist Beaumarchais, who was acting for the Societe Litteraire Typographique. It was proposed to print an edition of Voltaire, but the venture failed. Tradition has it that some of the type was later melted down for bullets during the disturbances in France; another story being that type cast from the Baskerville matrices was used to print the *Gazette Nationale*, the official journal of the French Republic during the Revolution. They then passed into the hands of the Didots and, later still, to Henri Plon, of Paris.

Mr. John C. Tarr has traced the use of Baskerville types. After detailing the efforts made to sell the foundry in France, Russia, Denmark and to the British Government to start a National Printing Office, he says: "In 1895 they were purchased by the Bertrand Foundry, which used this material. Jacob, who bought

Baskerville's material from Birmingham for Beaumarchais, later started his own foundry and cut types on the Baskerville model. Some of this material was eventually bought by the Decker foundry of Berlin."

The whereabouts of the original matrices, however, were not known until 1929. The *L & M News* told the story. It recalls that "Baskerville's matrices were taken to France about the time of the French Revolution and disappeared during the disorders of the period. From time to time typefounders tried to recut the letter, but with indifferent success... and the types that circulated under the name of 'Baskerville' shed little glory on the great Baskerville tradition. Then, in 1929, a complete fount of the lost Baskerville matrices was dramatically rediscovered in Paris. It was Mr. W. E. Rudge who carried them to London in a suitcase that he never allowed out of his sight. It was Mr. G. W. Jones, designer of Granjon and Estienne, who supervised the Linotype cutting from these original matrices."

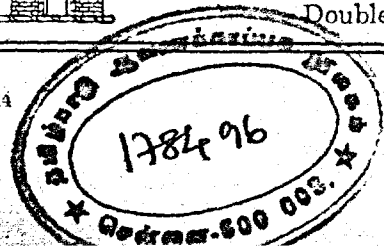
Mr. Rudge, it may be added, was the European representative of International Mergenthaler Company of the United States and is the author of two or three extremely interesting books on his travels for the Linotype. Mr. Jones, who died in 1942, was known the world over as the head of "The Sign of the Dolphin," the printing business in Gough Square, near Fleet Street.

The punches from which these matrices were made now rest at Cambridge, of the Press of which Baskerville was Printer for a period.—By Courtesy of *London Typographical Journal*.

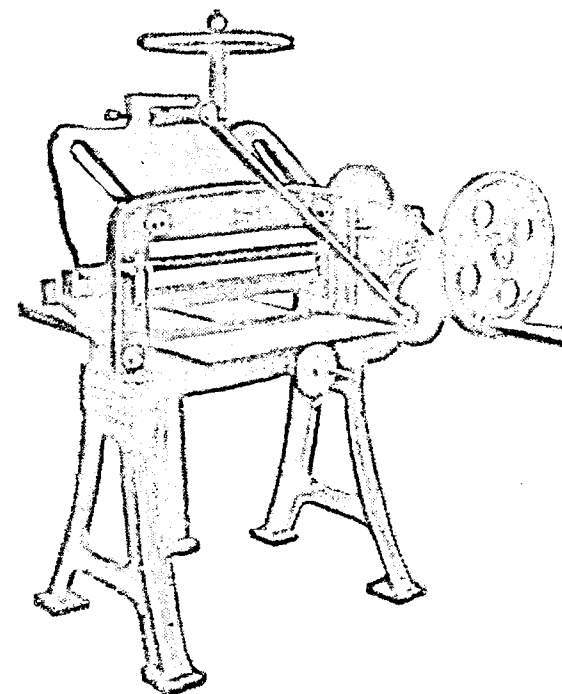


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