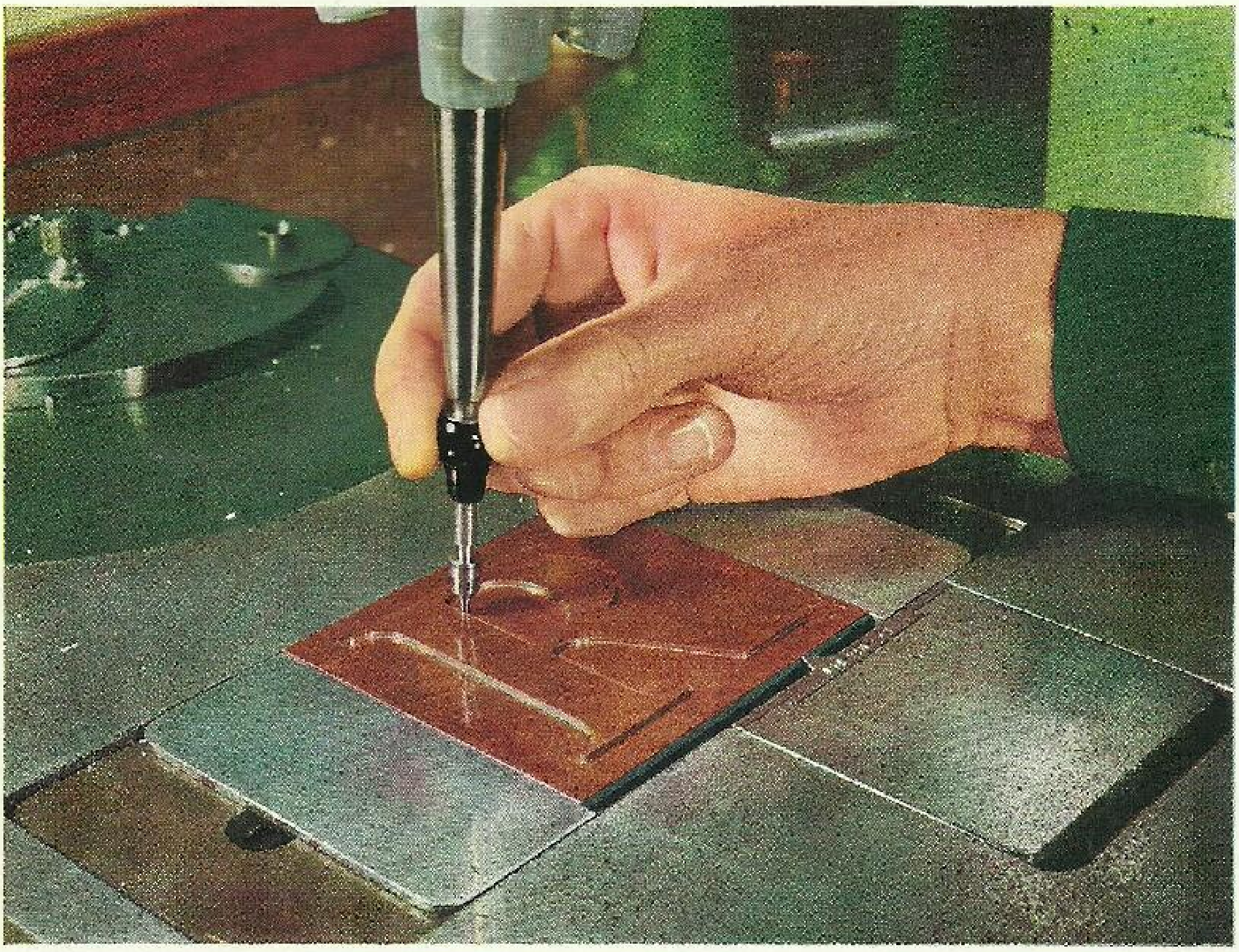
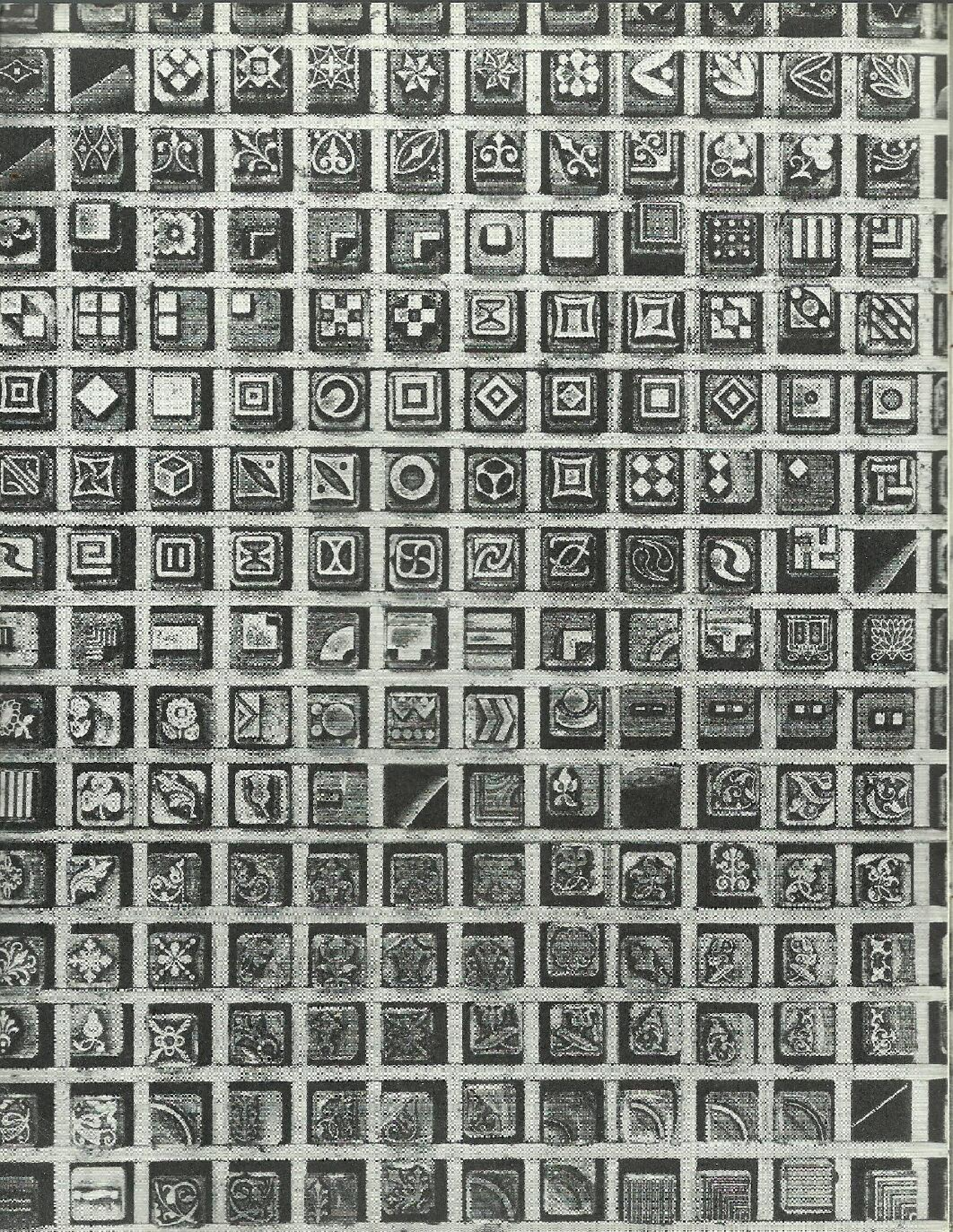
THE MONOTYPE RECORDER

VOLUME XL No. THREE

In which we resume our tour of the Monotype Works to see

'Monotype' matrices and moulds in the making



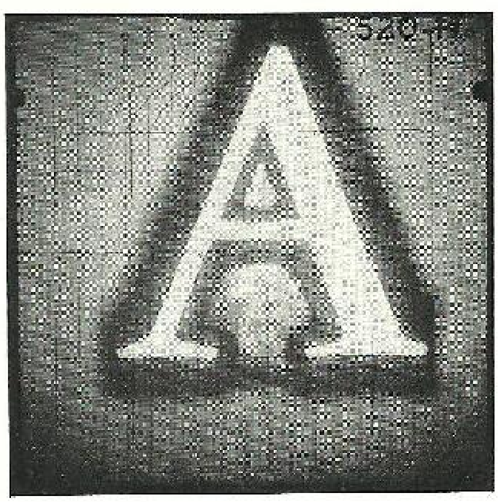


THE MONOTYPE RECORDER

VOLUME 40 AUTUMN 1956 NUMBER 3

'Monotype' matrices and moulds in the making

SHOWING A FURTHER SELECTION OF PHOTOGRAPHS
RECENTLY TAKEN AT THE MONOTYPE WORKS
AT SALFORDS, SURREY



LONDON

THE MONOTYPE CORPORATION LIMITED

1956

Tracing round contours of 10 inch projected image of Eric Gill's original drawings for Perpetua Italic.

'MONOTYPE' MATRICES IN THE MAKING

The medieval goldsmiths who cut the punches for Europe's pioneer typefounder printers were tackling a new replica process which offered a far more complex challenge both to their manual skill and to their critical judgment as designers than any that they had encountered as letter cutters in the Royal Mints. Working direct on soft steel with file and gravers and primitive calipers, and at first without even the aid of a magnifying glass, they produced the relief-cut master letters which were punched or struck into copper or brass to form the female-dies or matrices from which printing types were cast. The leaden types, trimmed and dressed, had then to be combined into another sort of master pattern for another kind of replica process, printing; and it was only then, when the inked impressions of the characters appeared on the paper and formed recognizable word shapes under the reader's eye, that the craftsman punch-cutter was able to see the actual end-product of his skill. What he was making was a set of steel letters-in-reverse, superb examples of hand craftsmanship (Fig. 1); but what he was *designing* was *inked characters on the paper.* That is, he was deciding how those should look; how they should subconsciously reassure the reading eye in its hurrying recognition-work by their subtle consistencies of form and alignment; how they should combine into words so efficiently that the ordinary reader would never have a chance to think of them as individual alphabetic symbols, but would see them simply as meaningful words.

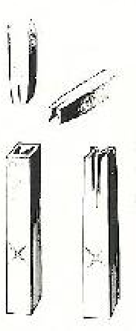


Fig. 1: Stages in the process of hand punch-cutting.

Here, for the first time in human history, the designer was working at two removes — through two groups of intervening mechanical processes — from the actual things whose shape and appearance he was predetermining by sharp imaginative foresight. The fundamental difference between any sort of replica or mass-production process and that of the hand making artist is the difference in mental approach between the sort of "making" in which the maker is free to change his mind as he goes along, as the hand potter or weaver is, and that in which every single decision involving judgment and method has to be made before the actual manufacture starts — since from that moment on there can be no variation save by accident, and no such thing as a "happy" accident.

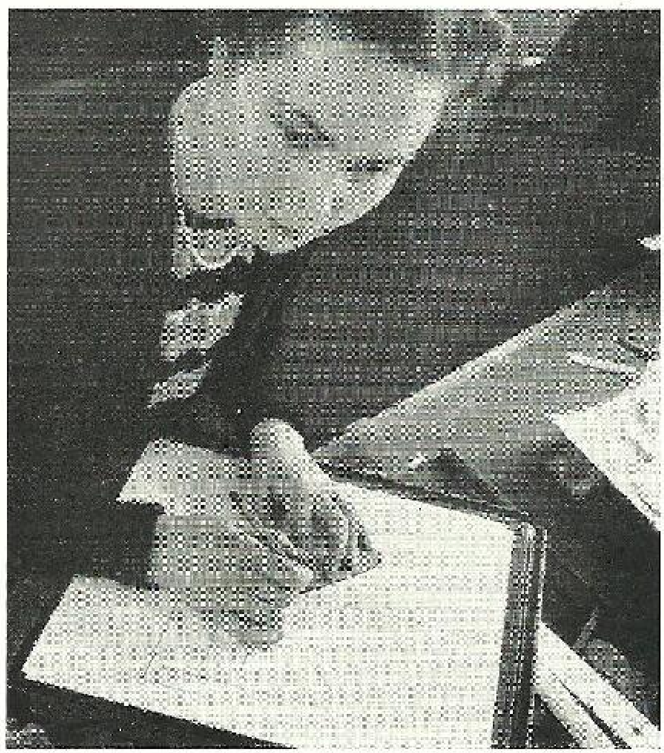


Fig. 2: The enlarged tracing is used in making the 10" finished drawing.

Of the many hundreds of visitors who have already passed through the great new Matrix Factory in the Monotype Works in Surrey, only those who have some knowledge of the earlier history of typecutting can fully appreciate the significance of all the different processes which are today carried out with the help of machines and devices of an almost unimaginable standard of precision. The whole thing is a translation,

Fig. 3: General view of the Type Drawing Office.

into the most advanced terms of modern engineering technique, of the spirit and attitude of mind with which the goldsmiths of Cellini's generation, and the craftsmen who devised the earliest matrices and type moulds, approached their pioneer task of mass-production. The basic principle of cutting letters in relief in steel, and striking and finishing them into a series of aligning matrices, remains the same, though the tools and methods now used are such as to carry forward the original aim — that of making a series of objects indistinguishably alike — into realms in which the hunt for deviation has to be conducted through a microscope.

What the designer calls a type face, the manufacturer calls a "series" (i.e. a recognizable way of treating the alphabet, expressed or envisaged as a series of different "sizes"). When a new series is to be added to the vast range cut by the Monotype Corporation, it may originate in one of three ways.

If it is new in conception — if it represents a new and "original" way of delineating the conventional symbols of the alphabet, or some newly-invented border-unit or symbol, it usually arrives at the Works in the form of inked-in drawings, preferably about two inches high. These are studied and, in some cases tested by photographic reduction to type-size, tried out in combinations, and otherwise examined in terms of the end-product, the printed type-impression. Then, to make assurance doubly sure, certain letters are singled out as those which would most clearly reveal, in combination as words, any weakness in the design: and those go through the entire chain of over a hundred specialized processes which lie in between the "original drawing" and the actual print of metal type on paper which it foreshadowed. The critical study of those actual types, and the opportunity to test them on different paper-surfaces and processes, are part of the creative work of type design.

If the series is to be a "revival" of some ancient design, or a permitted copy of an existing one, then it must be originated either from three-dimensional objects — punches or types if they are available — or

Fig. 4: Preparing to cut the pattern, a flash from the film.

from specimen type-prints on paper.[1] Such "originals" require the use of a different type of projectoscope from that which is used when the alphabet comes from a drawing-board, but the general principle is the same: a ten-inch image of the character is projected on to a screen and accurately traced by hand (Facing page 1). The image of a type-print, so enlarged, reveals irregularities of outline which the naked eye would not perceive; the tracer must follow these faithfully, for no "interpretation" is required at this stage. In certain rare cases (Poliphilus, Ashley Script), where the object is to reproduce in *facsimile*[2], the irregularities are preserved as an element of the design. The tracings are re-drawn in the Type Drawing Office, after much study and the use of critical imagination, by straight-edge and "french curve" (Fig. 2), this time with a most perceptive effort to interpret and to realize the designer's true intention that each letter should be a consistent "member" of its alphabet — e.g.

[1] In between the occasions for their use, the three projectoscopes are "loaded", for the benefit of visitors, with (1) Eric Gill's drawings for Gill Sans 262 l.c. before the improvements he made to it upon consultation with the Type Drawing Office; (2) an actual leaf of the Aldine Hypnerotomachia of 1499 from which Poliphilus was cut in facsimile (ink splash and all); and (3) examples of actual (early hand-cast) type, with flaws in casting and evidences of wear that would be scarcely noticeable to the naked eye.

[2] Several reputable type-critics and designers have betrayed their relative ignorance of type-cutting technique by assuming, in correspondence, that Ashley Script presented special "technical difficulties" and asking how they were met. A "facsimile" cutting of a bold letter that neither links nor kerns presents the very *minimum* of technical challenge to the T.D.O and the punch-cutting side.

Fig. 5: The working drawing is reproduced pantographically in the wax coated glass plate.

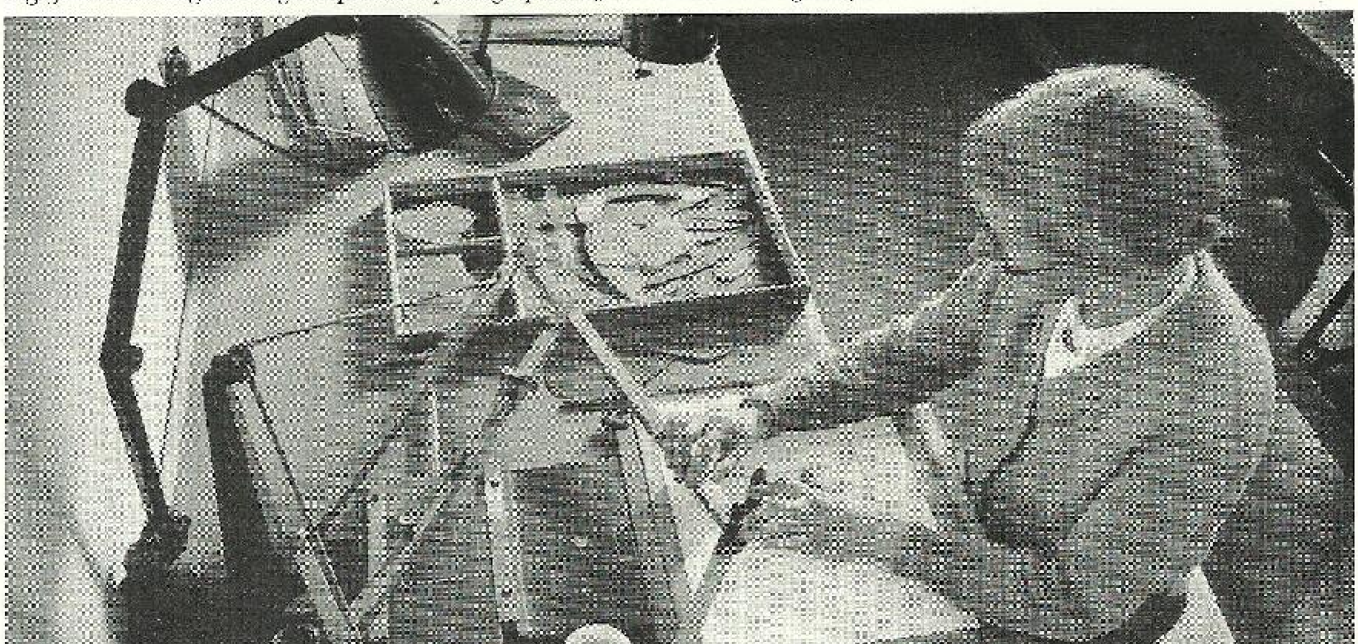
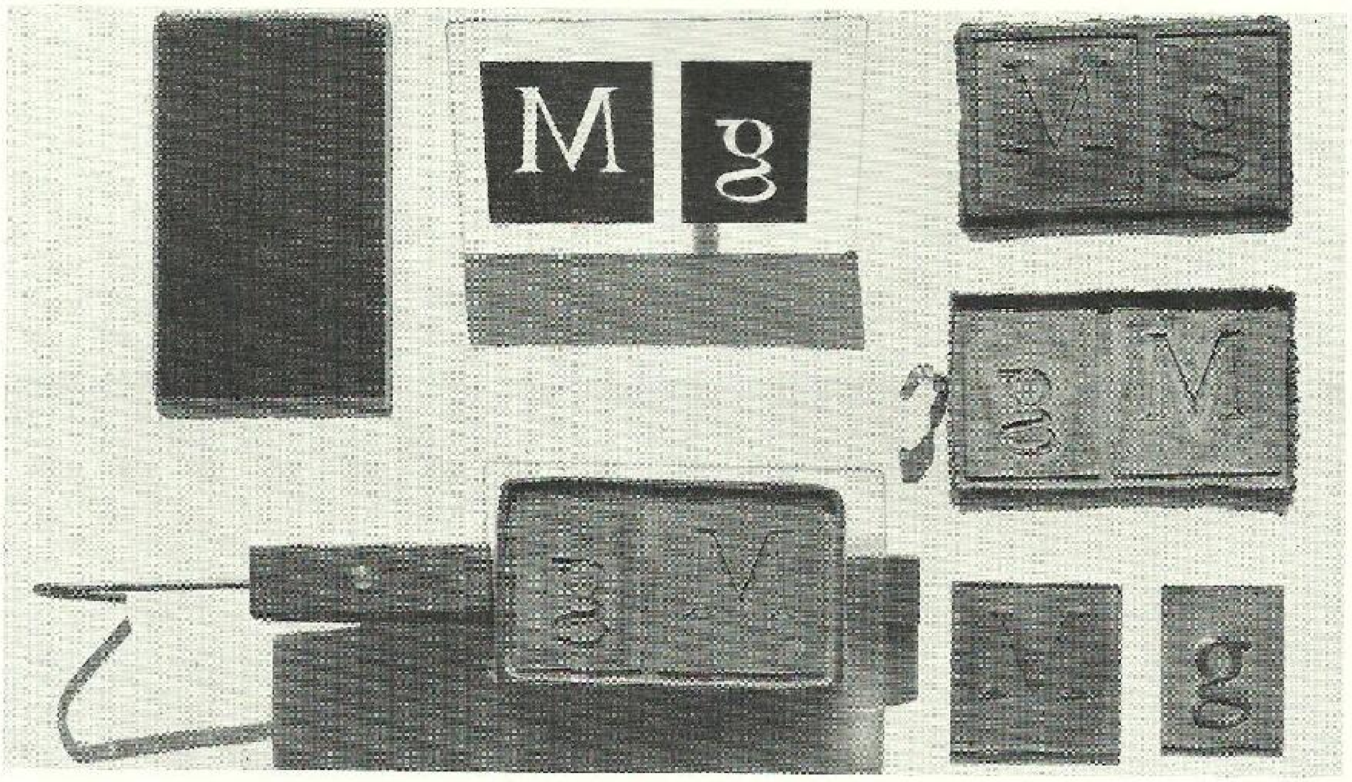


Fig. 6: *The surplus wax and core of the letter has been removed.*

that the verticals of l, k, etc., should be of precisely the same thickness, that no serif or curve should "contradict" that of another letter, and so on. This work of the Type Drawing Office calls not only for very accurate measurement but also for a certain exercise of judgment — and a great deal of accumulated knowledge of type behaviour and the habits of the reading eye. Here the calculations are made, by which a design is subtly adapted to look as right in 12 point as it looks in 8 point. Here, extraneous sorts are designed as required, in harmony with the fount. Measurements are recorded in tenths of a thousandth of an inch, for when the "ten-inch drawings", as they are called, finally go forward to the wax-cutting pantograph, the design stage is closed. Everything thereafter is mechanical work.

Up to this point, all the effort, research and experiment has gone to making sure that the design is a good one: readable (within its "terms of reference" as a book or jobbing face), combinable, consistent. Henceforth, all the amazing resources of mechanical ingenuity and microscopic inspection will be directed to making sure that any two finished matrices resulting from the same master drawing shall be identical, even if one is to be processed thirty years later than the other. The type composing machine manufacturer must be able to provide a dozen or more customers simul-

Fig. 7: *Various stages of pattern preparation.*



taneously with sets of matrices which those customers might all be using in the production of different sections of the same publication. Or, any customer may demand two sets of matrices in a given size of the series for use on two Casters working simultaneously on different sections of (say) an encyclopaedia. Those are the cases in which the machine and the whole mechanical-replica principle triumphs over the hand maker. Once a type punch is broken — and that may happen in the second or third "strike" — no amount of manual skill can ever precisely reproduce it. But the punch cutting machine, in which the whirling tool cuts the letter to a tolerance of two tenths of a thousandth of an inch, makes sure that no such permanent loss need ever occur.

Precision, accuracy, "identical" likeness — these were ideals toward which the goldsmith-punch-cutters bent their efforts proudly, consciously, with no such deprecatory feelings as those of the mass producer of any articles that would be better, more cherishable, for being made singly by hand. That underlying sense that all the precision work is not merely "wonderful" but *admirable*, that it serves ultimately the tremendous purpose of helping meanings to flow from the printed page into the minds of thousands of readers — enables the visitor to understand better why this vast new

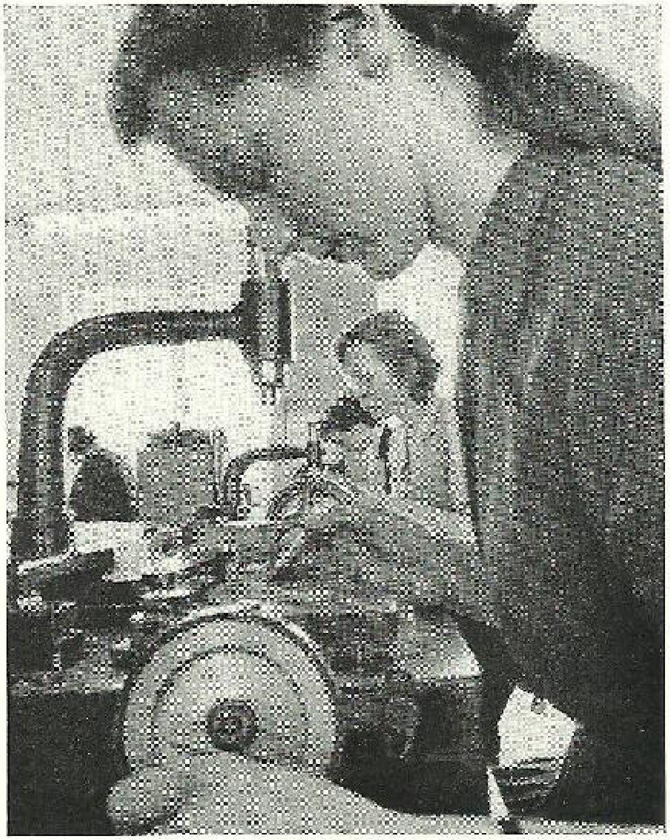


Fig. 9: The copper pattern is measured and checked back to the working drawing.

Fig. 8: Three operations in the preparation of copper patterns.

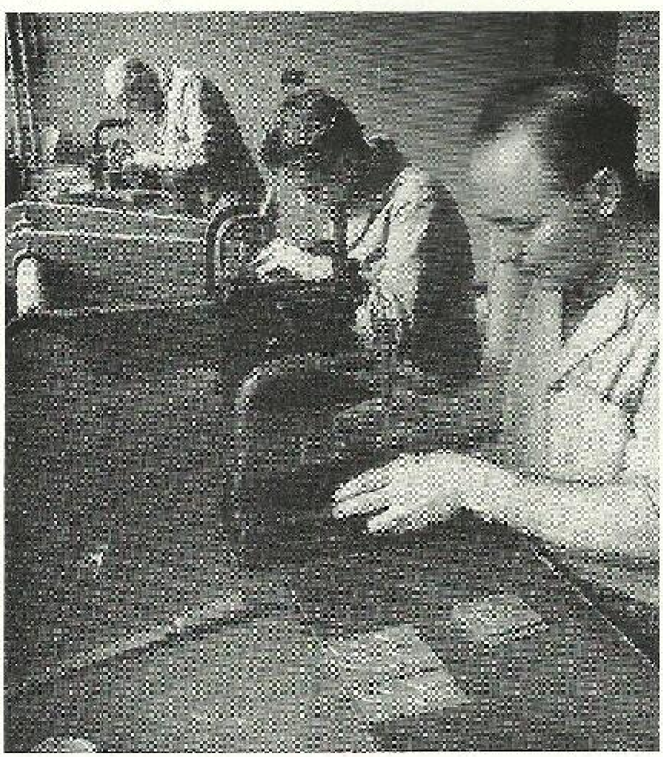
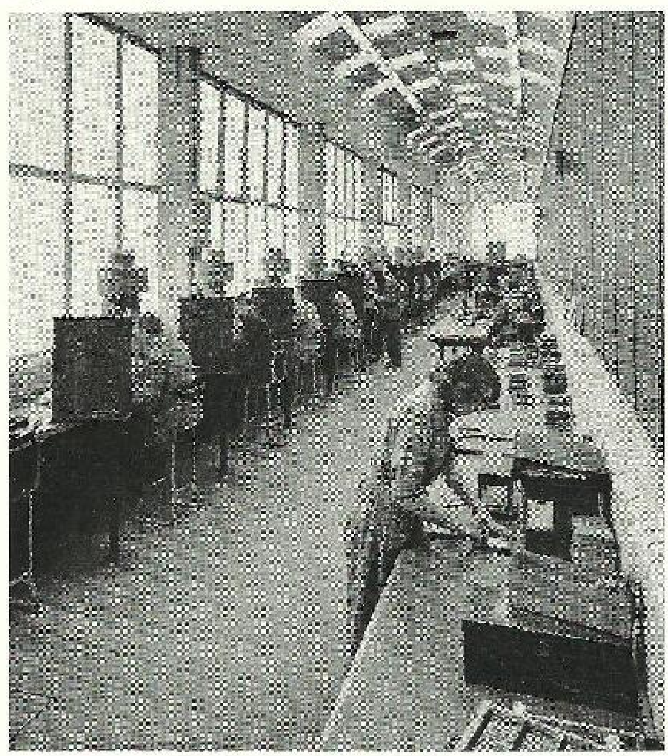
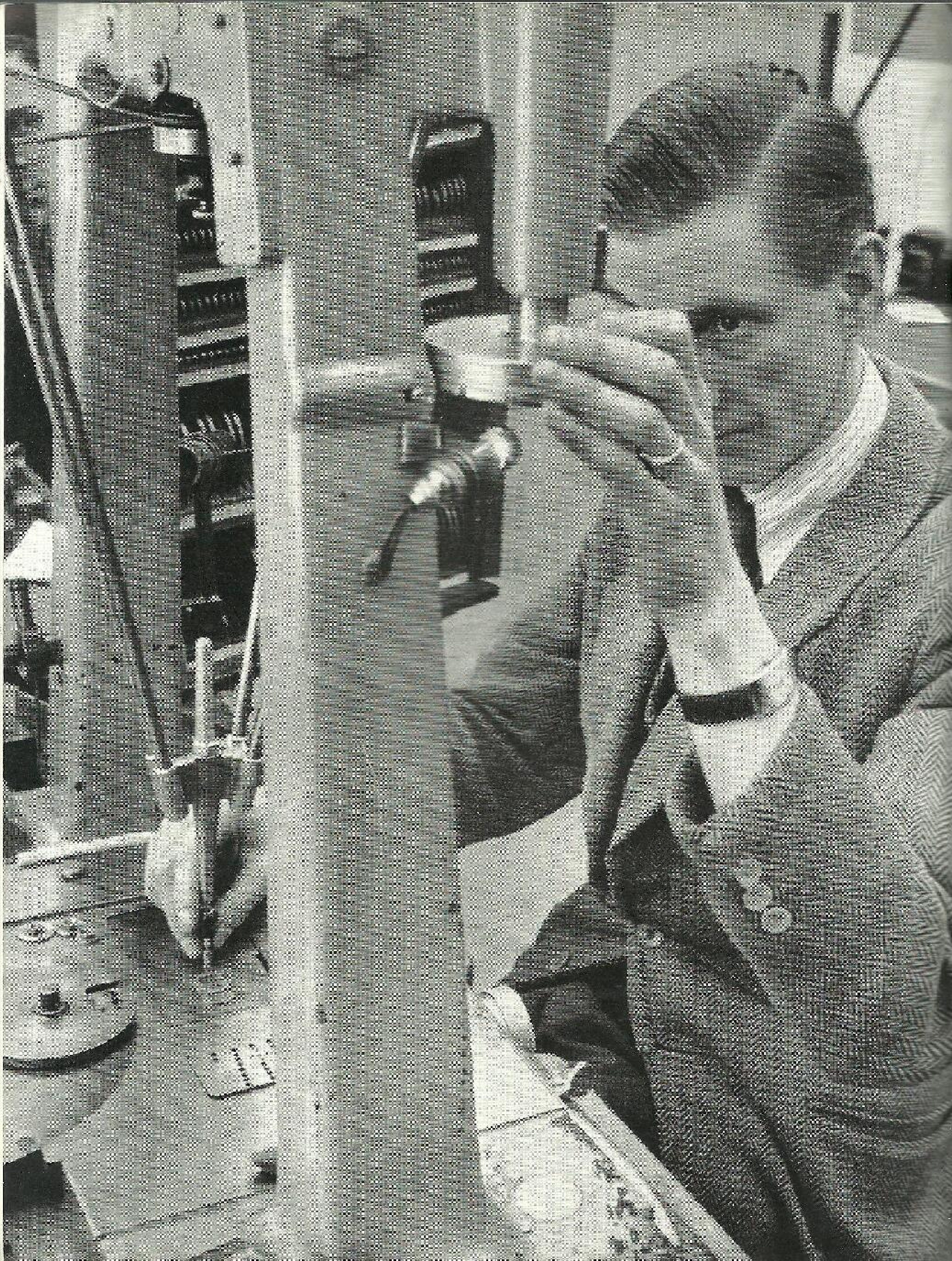


Fig. 10: Part of the Punch Cutting Department.





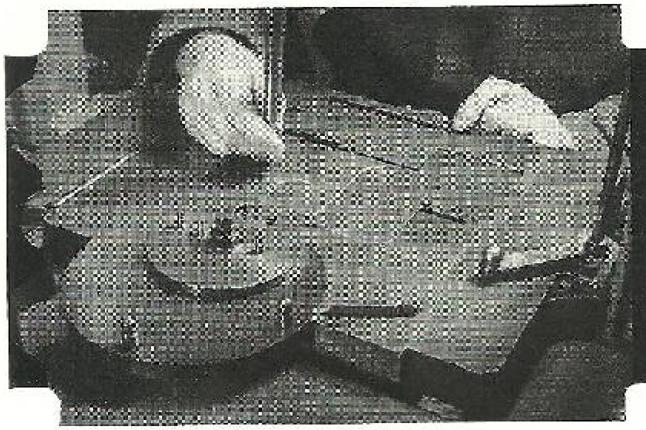


Fig. 12: Stylus meets pattern on the punch cutting machine.

building at the Monotype Works has so little resemblance to the conventional "factory" or "machine shop"; why its architectural design, and the imaginative use of colour on its walls, and the expressions on the faces of its craftsmen and inspectors, all reflect the look of pride.

The foregoing words will help to explain why the title, "Making Sure" was chosen for the colour film which has recently been made of activities at the Monotype Works. The second part of that film, is devoted to the matrix-making side, and this number reproduces, along with the special photographic studies made by Mr. Guy Gravett, a few enlargements of actual "frames" from the film. The narrative which follows is largely drawn from the running commentary which audiences have heard through the well-known voice of Mr. Bob Danvers Walker.

When the design stage is over each final drawing, checked and approved, passes to the wax pattern cutting section and here for the first time takes on three dimensional form.

The drawing is lined up and fixed to the table of a pantograph (Fig. 4) and a glass plate mounted with a sheet of wax, carefully blended to give the cleanest cut and make the strongest pattern, is placed in the holder at the reducing end of the pantograph. With the appropriate curves and rules the operator traces the outline of the drawing with the stylus of the instrument. As the reduced design is cut through the wax surface — line by line and curve by curve (Fig. 5) — it can be seen how important is the correct blend of wax. Too soft, and it would not cut cleanly. Too hard, and it would chip at the edges. Even the temperature is of importance and the plate on which the wax is fixed is heated under thermostatic control. When the cutting of the outline is complete, the surplus wax between the lines must be removed (Fig. 6) — an operation requiring a steady hand and no mean skill.

This wax pattern on its glass support now goes to the plating department. A silver nitrate solution is poured over it and is allowed to stand long enough for a fine film of silver to be deposited on the wax surface. Without this process, it would be impossible to induce a deposit of copper on the wax pattern, as wax and glass will not conduct electricity. The silver coating will conduct the current carrying the copper in solution and enable it to grow a shell conforming in every respect to the original wax pattern. After a thorough washing, the pattern is carefully fitted on to a special holder so that it can be suspended in the electrolytic plating tank. After a night-long immersion, the required thickness of copper is obtained and when the wax foundation is removed the copper shell is seen to be an exact replica in reverse (Fig. 7). To provide a solid pattern for subsequent operations — the hollow back is filled with lead alloy. Even this seemingly simple operation requires preparation if the lead is to adhere solidly to the copper. The pattern is placed on a hotplate, the shell is fluxed, and thin sheets of tinfoil

Fig. 13: Part of the section where composition-size punches are prepared and tested.

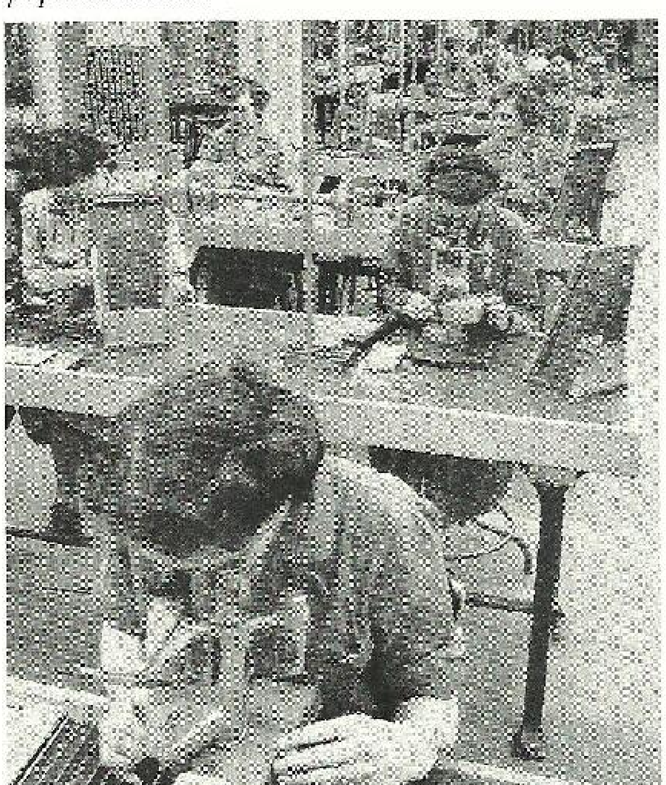


Fig. 11: (Left) An operator cutting a Burmese character.

Fig. 14: Part of the main Matrix Factory.

Fig. 15: Striking ·2 inch composition matrices.

placed in position. In a very short time the tin melts and coats the copper surface ready to receive the molten alloy.

Its rough edges are trimmed by a circular saw and a milling machine removes all surplus lead from the back and brings the thickness of the pattern down to the correct working dimensions. After a few more operations — the pattern returns to the Type Drawing Office for its final check under the microscope (Fig. 9). It was marked, in the wax stage, with a reference number for future identification.

The next stage in its journey is the punch cutting room — where rows of pantographs are at work. The pattern is placed on the bed of the machine while the soft steel blank from which the punch is made is fixed above a tiny rotating cutter meticulously adjusted in its holder. As the tip of the stylus, with its graduated followers, is moved round the pattern it guides the blank so that the rotating cutter makes a smaller replica on its surface (Fig. 12). Progressively smaller followers are used as the stylus is brought closer to the edge of the pattern and in turn the cutter moves nearer the edge of the character. The finished punch with its relief-cut character is removed and the operator examines it through a microscope to check that it is as correct as she is able to make it. Punches for over five hundred type faces and sizes ranging from $4\frac{1}{4}$ to 72 point are cut by this method, though for the larger sizes where much more metal has to be removed a different machine is used.

So far the punches have been cut in "soft" steel. After inspection, they go to the hardening department where precisely timed heating followed by quenching in oil produces the hardness required for the job they have to do. Each punch is machine tested to make certain that uniform hardness — to 'Monotype' Corporation standards — is maintained.

Fig. 16: Removing the burrs from character apertures on ·2 inch matrices.

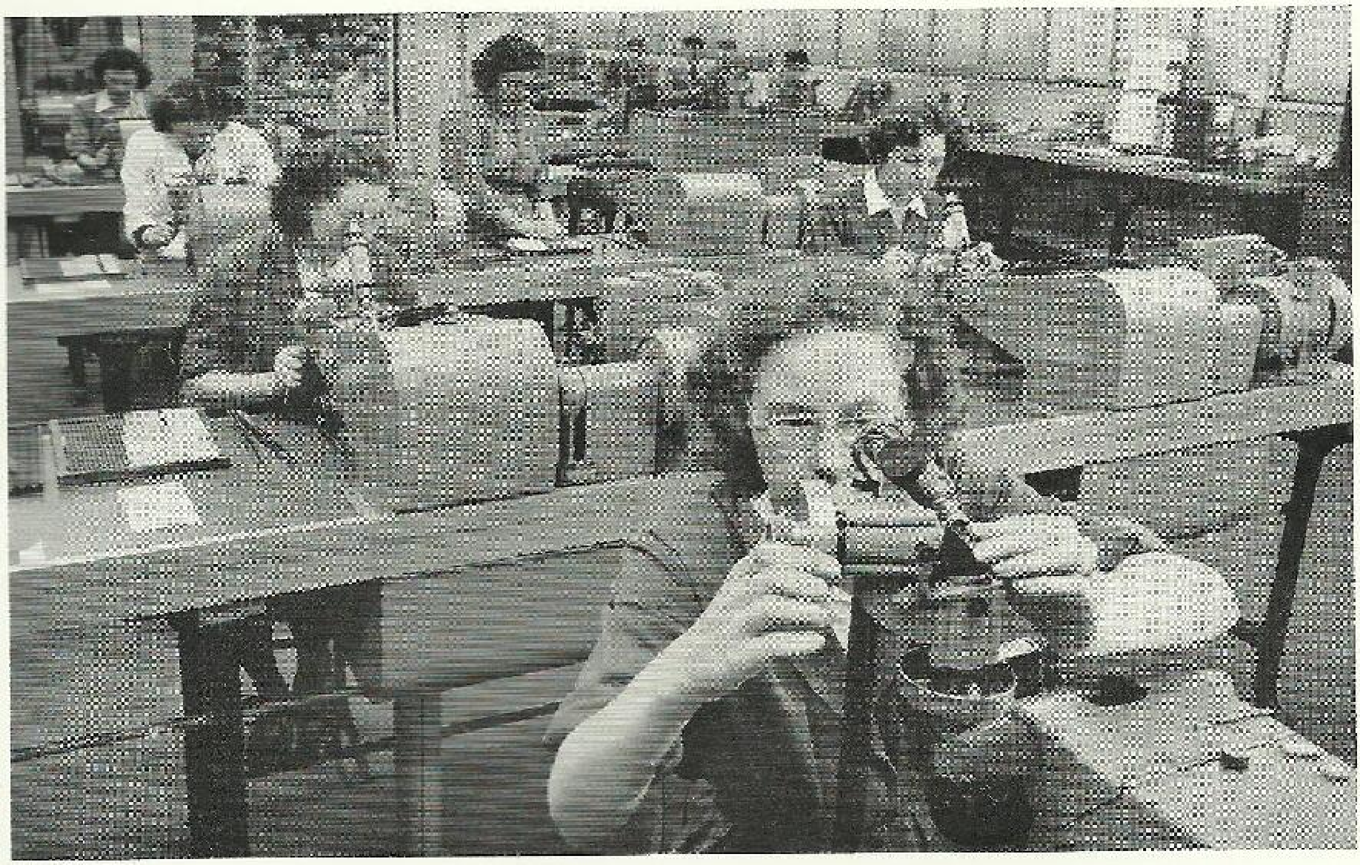


Fig. 17: In the foreground, testing matrices for depth of drive.

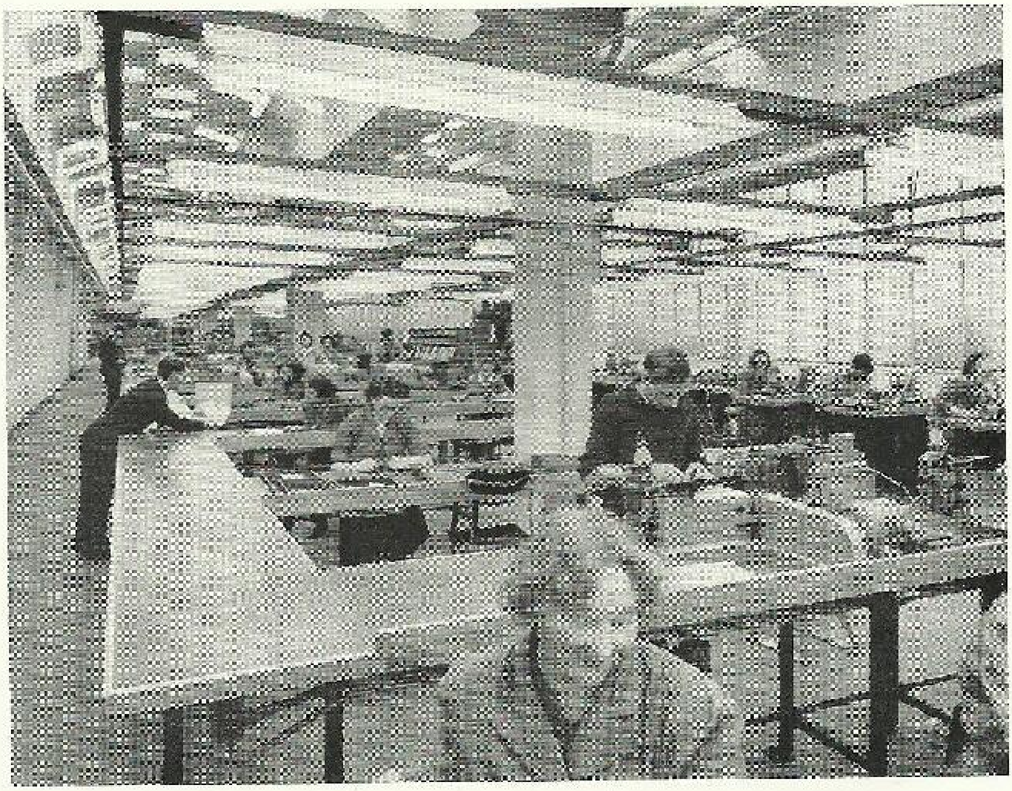


Fig. 18: A section of the ·2 inch Composition Matrix Machining Department.

Fig. 19: A galley of composition matrices about to be lapped to size.

To ensure the correct alignment of the ultimate type, the finished punch must now be justified. And so, with the aid of a microscope, a honing stone and a table of dimensions, the operator puts the finishing touches to the punch (Fig. 13). At last it is ready for use.

A complete fount of punches in one particular point size and special ornamental punches made to customers' requirements sparkle in their cases like collections of jewels (End paper and Fig. 21). Every one of these punches has passed through all the processes described and now is ready for the Matrix Department.

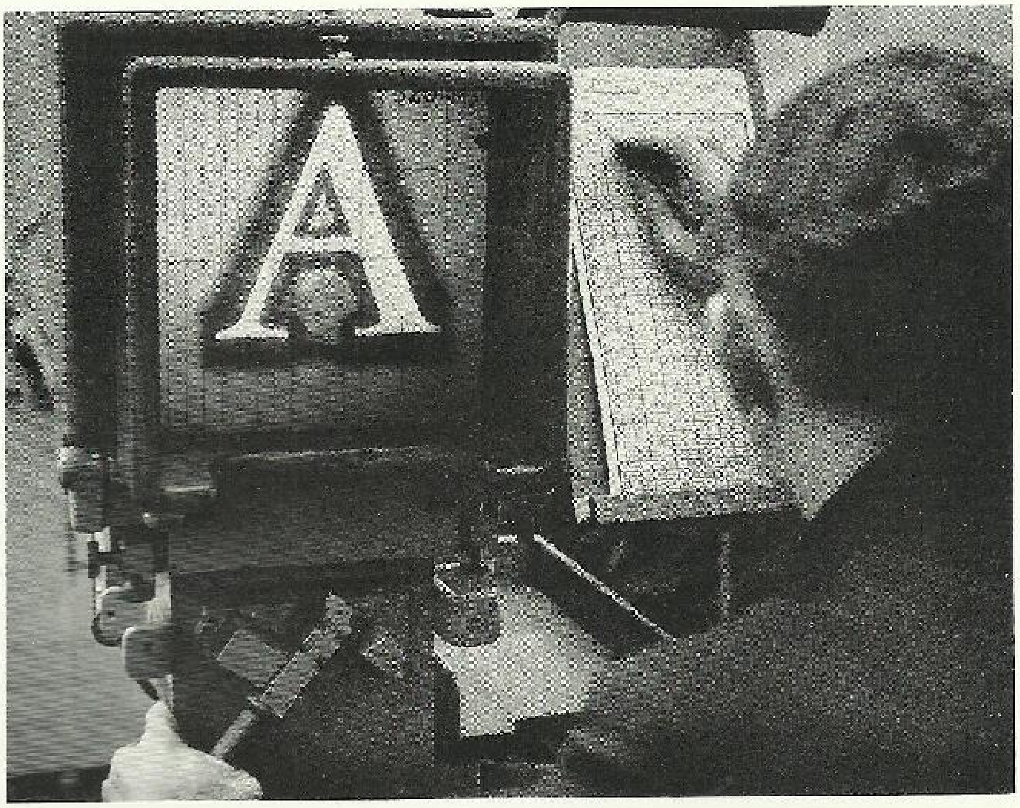
In the new Matrix Factory, spruce and well-lit, the completed punch becomes the tool to strike the matrix.

Display matrices are made on power presses adapted for this special purpose in the Corporation's own tool department. Punch and matrix blank are positioned and pressure of about 100 tons per square inch is applied to force the punch into the blank (Fig. 22). A separating machine draws them apart revealing a perfect impression of the character.

On this matrix many machining operations follow. It has to be sized, faced and checked. A milling operation takes care of the depth of the character in the matrix and the limits are so fine that the setting of the machine has to be checked through the microscope after each cut (Fig. 23).

Every printer knows the importance of perfect type-height throughout the forme. Present day atten-

Fig. 20: A fifty times enlarged image of a composition matrix is scrutinized by trained eyes. The slightest flaw or variance from standard means instant rejection.



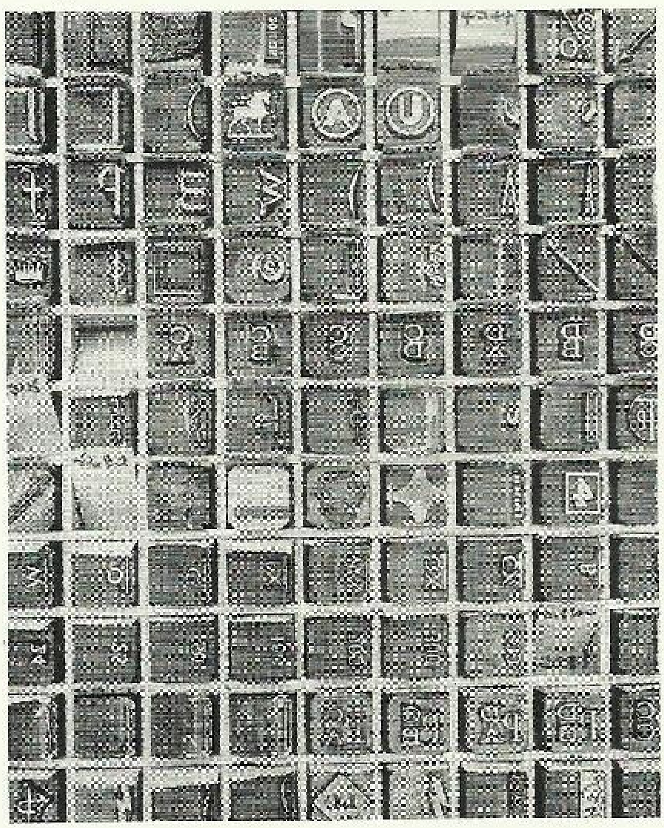


Fig. 21: Method of storing the ·4 inch punches in the Punch Strong-Room.

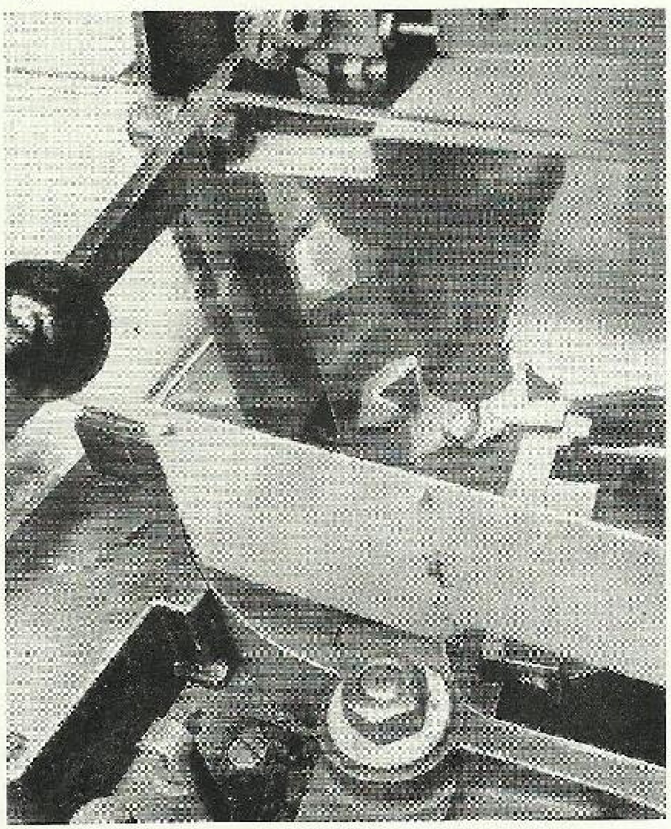
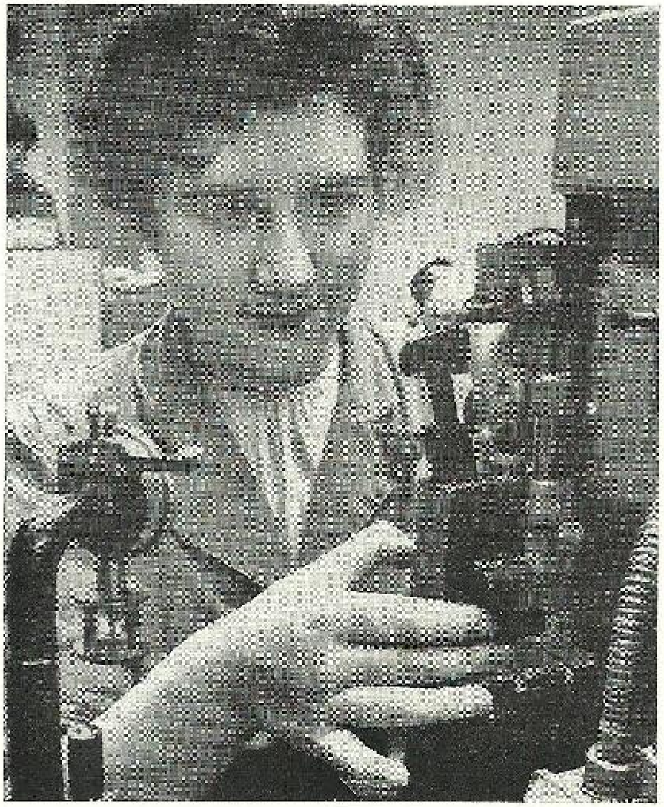


Fig. 22: Display Punch and matrix blank in the pressing unit.



tion to pre-makeready — to increase productive capacity — is evidence of this. The accuracy of the depth of the character in a 'Monotype' matrix plays an essential part in the final height of the type. Very few know how it is achieved, or what scrupulous care must be taken at every stage to make sure that the matrix — mother of many pieces of type — is good and true in every respect. An independent check is applied to the depth of the character so that dimensionally it is perfection itself.

For the ·2 and ·4 composition matrices, blanks are cut off automatically to the correct length from coils of square rod and faced on the end in which the character will be struck. Galleys are used in every case to load and take up the blanks after every operation. Guards prevent some of the machines being opened whilst running. The first process on the blank is the machining of the corners and the stamping of reference numbers.

Composition matrices are struck on specially adapted presses. The galley containing the blanks is inserted side by side with an empty galley which will receive the punched blanks. The punch is inserted by means of

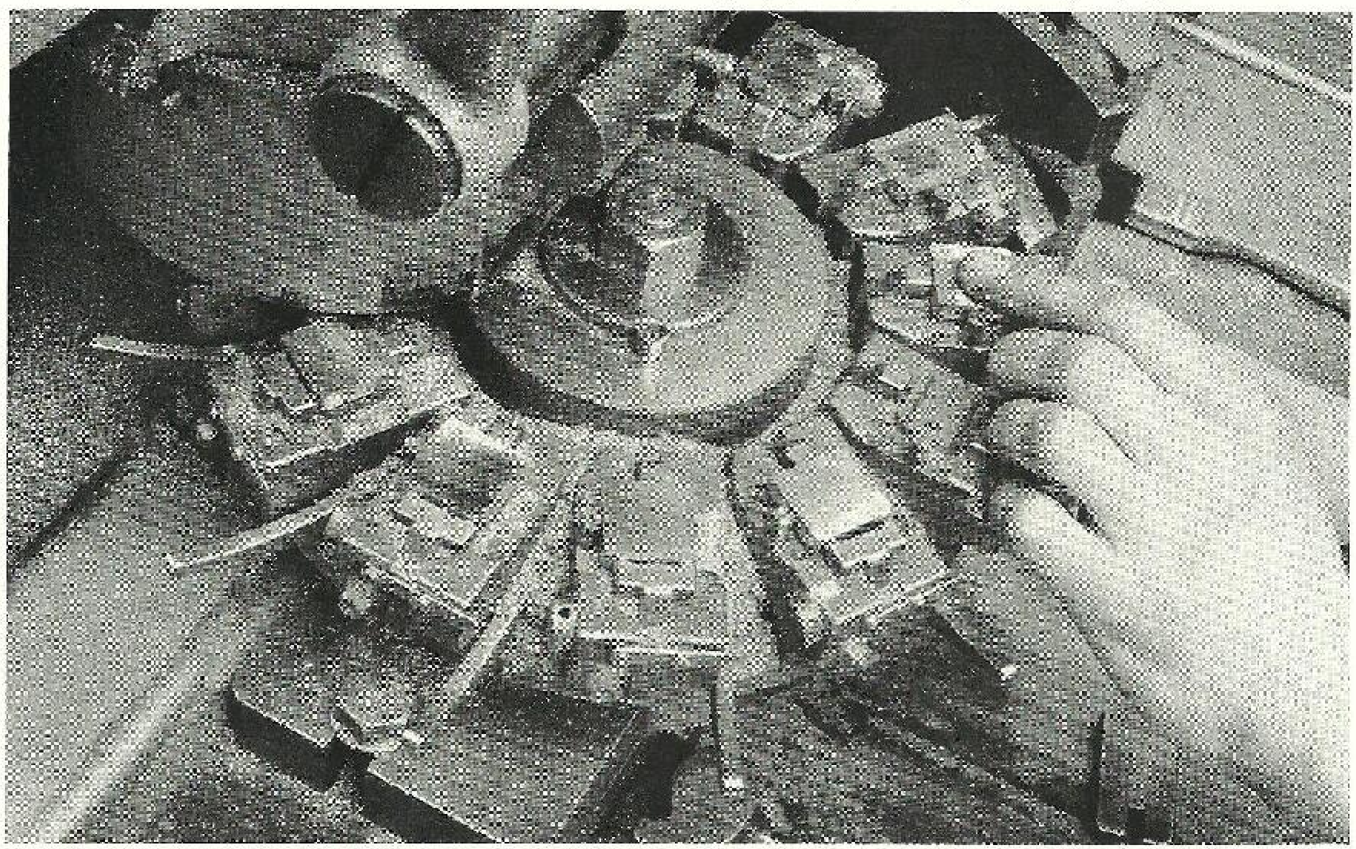


Fig. 23: Testing depth of drive on a Display matrix after milling.
Fig. 24: (Below) Machining the back of Display matrices to size.

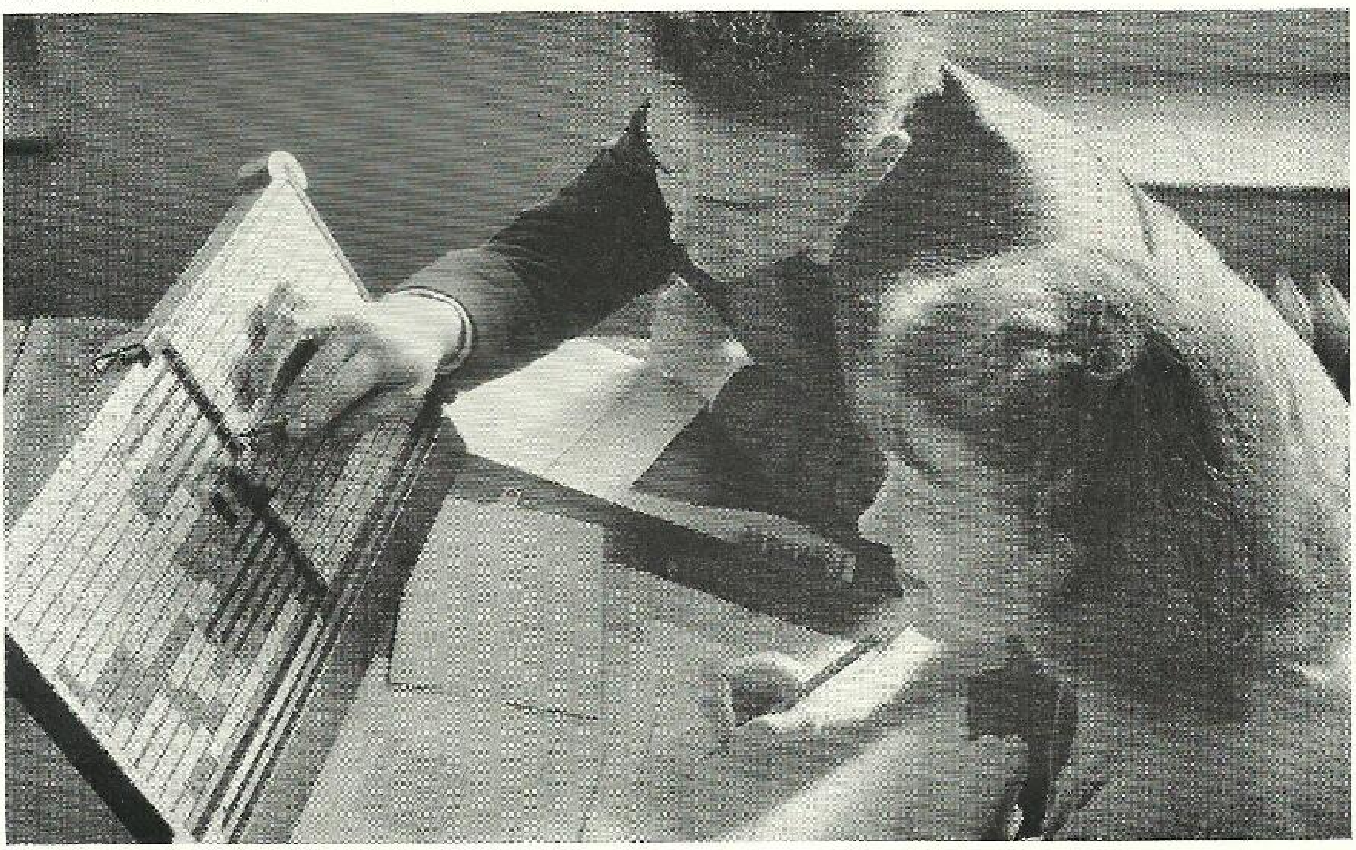
a special holder and the press is started and runs continuously until the first galley is emptied. In addition to the type character this same operation also punches a coned hole in the base of the blank. As with display matrices, so these composition matrices have to be milled for correct depth of the character. An automatic milling machine positions the matrix correctly, clamps it and carries it between a pair of cutters, maintaining correct depth of the character and a constant overall length.

For the purpose of fixing in the Matrix Case, a hole is drilled through each matrix. The correct position and alignment of this hole is assured by drilling it from both sides.

The coned hole which was punched into the base is a very important feature and must now be machined out to its correct dimensions. This hole serves to position the matrix exactly over the mould in the caster where it is engaged by a centring pin at the moment of casting. Its exact positioning is therefore very critical. This machine is automatic and requires no more from the operator than the loading and unloading of the galleys.

Fig. 25: Making up an order of display matrices.

Fig. 26: (Below) Preparing a new arrangement for the matrix case.



As the matrix nears completion several final touches are made. For instance, the milling of the face has burred the metal slightly in the character aperture and these edges must be "deburred" (Fig. 16).

The matrices are then checked with a gauge and carefully examined by eye before passing into the inspection department where the character impression is projected on to a ground glass screen and a dimensional check is made on the enlarged image (Fig. 20).

The finished matrix is passed into the matrix store with the certainty that it is a product of the highest precision and that any replacement matrix years later will be identical.

When an order is received for a fount of matrices with a matrix case, the matrices are taken from the storage trays and sorted into the required arrangement for the case. This arrangement is picked up *en bloc* with a special tool and placed in a jig whilst the spacing bars are inserted. These bars are drilled to accommodate the rods which also help to hold the matrices in alignment. That holes in sixteen bars and seventeen matrices must — and do — line up exactly to accommodate these rods is proof indeed of the standards of precision attained. Now comes an apparently simple operation involving what appears to the visitor's eye to be a hammer and a block of wood; and yet it is in fact as remarkable a demonstration of the validity of modern engineering methods as one could wish. The matrix case is inverted over the assembly of fifteen rows of matrices, seventeen to a row, each a separately machined unit. The rigid steel frame fits around this assembly of units so perfectly as to receive the matrices neither easily nor with any impediment, but with that precision which calls for a few delicate mallet taps on a flat block of shock-absorbing wood as the motive power for settling the matrices into the matrix case. The complete set of matrices is now held securely in the matrix case with no tangible play — yet each matrix can be individually influenced by the pressure of the centring pin whilst casting. A spring retaining clip is fitted and the completed case is ready for use on the casting machine. In the finished case there are 1,024 surfaces which must mate exactly — a fitting climax to the matrix-making story.

'MONOTYPE' MATRICES ARE IN USE THROUGHOUT THE WORLD

HERE ARE EXAMPLES OF MODIFICATIONS AND EXTENSIONS OF A SINGLE SERIES (NO. 327)

A VERSATILE Latin type face, such as Times New Roman, knows no national frontiers, but its over-all appearance will never be quite the same in any two tongues. It will be conditioned partly by the existence of certain accented characters and by the difference in frequency of individual letters, and partly by the national æsthetic approach to character forms.[1]

EINE SO vielseitig verwendbare Brotschrift, wie unsere Times New Roman, kennt keine *Landesgrenzen*. Ihr Schriftbild ist jedoch in den einzelnen Sprachen verschieden. Es wird vor allem bestimmt durch die Anzahl der Akzente und Häufigkeit der Buchstaben, andererseits werden jedoch auch die Buchstabenformen selbst durch die ästethische Geschmacksrichtung des jeweiligen Landes beeinflusst.[2] ABCD ABCD

UN CARACTÈRE de labeur comme notre Times New Roman d'une *versatilité* incontestable, ne connait pas de frontières, mais il n'aura pas nécessairement la même apparence typographique dans les langues différentes. L'apport des lettres accentuées et la fréquence d'emploi de certaines lettres ainsi que la conception esthétique locale contribuent à donner à ce caractère un aspect plus individuel.[3] CGQRÇ CGQRÇ *GQR* g *k*

BELOW: THE NEW CYRILLIC FOR SERIES 327

АаБбВвГгДдЕеЖжЗзИиЙйКкЛлМмНнОоПпРрСс
ТтУуФфХхЦцЧчШшЩщЪъЫыЬьЭэЮюЯя
ЂЖЉЈЉЊЋЏЃЌ ђжђјљњћџѓќ

BELOW: SERIES 565, TIMES GREEK UPRIGHT, CONFORMS WITH SERIES 327 AS REGARDS COMMON CAPITALS

ΑΒΓΔΕΖΗΘΙΚΛΜΝΞΟΠΡΣΤΥΦΧΨΩ αβγδεζηθικλμ

[1]*'Monotype' Times New Roman 327.* [2]*Note substitution of alternative lighter capitals Series 727.*
[3]*Certain alternative characters, notably R g, are here conforming to the style more familiar to French eyes.*

IN THE MOULD DEPARTMENT

The type mould is, and has been since its invention in the fifteenth century, that device by which printing type is most clearly characterized and functionally distinguished from any other kind of stamp by which impressions can be made on paper. If one were trying to print a page literally by hand, pressing each letter-stamp in turn on to the surface of the paper, one would in any case need some kind of shank or handle for the finger and thumb to grip; and it would be a further convenience if the shank had four flat sides to aid in the correct lining-up of the characters. But what Gutenberg introduced to the world was a system of fitting together a whole complex mosaic of relief-cast metal letters to form a composite flat surface from which an impression could be taken off, not by rubbing but by direct mechanical pressure from above. Hence the mould, which ensures a standard "height to paper", is of the very essence of the invention of typography.

Unfortunately for the suppliers of type and type-casting equipment there has never been any international agreement as to the height of a type to paper — the distance between its flat foot and the flat printing surface at the top end which is its "face". In the modern world there are no fewer than *seventy different standard type heights* within a distance which, between minimum and maximum, is only ·099 inch — say, between English height of ·918 inch and the 1·017 inches which is the height of some composition moulds made for 'Monotype' machine users in other countries.

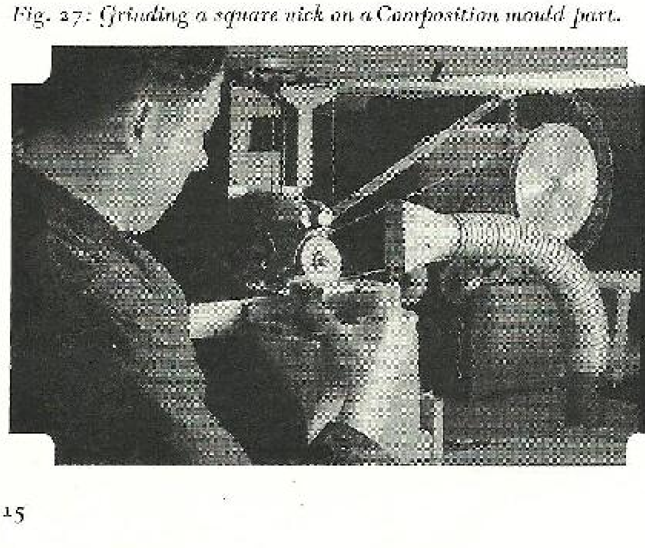
By the ancient method of type casting, the matrix of the required character was clamped to the mould for that body size (pica, brevier, etc.) so as to seal one end of the casting orifice. This orifice was inalterable in what we now call the "point-wise dimension" up and down the page, but adjustable "set-wise", so as to allow for the difference between wide w and narrow l. Molten type metal was poured into the open end from a small ladle, and a deft jerk of the hands drove it, in the instant before it froze solid, into every thinnest part of the intaglio letter. The mould was then broken off, and the resulting type was "dressed" by rubbing so that its foot and sides could be of proper flatness.

But in single type mechanical composition the mould orifice must be adjustable from the width of any one letter in the fount to that of any other in a fraction of a second. The tang must be automatically trimmed off, and the trueness of sides and face must be ensured by the precision of the actual casting process.

So the craftsmen in the Mould Department are occupied, in their several ways, on a task which is certain to fascinate the visiting engineer in that it consists of producing "in the cold state" an intricate mechanism which will function with watchmaker's precision at high speed, for many hours on end, *under high temperatures*. Different alloys of steel are required for different parts of this mechanism: samples of each have been probed by the X-ray eye of the laboratory to reveal the slightest potential weakness in its crystalline structure.

Type-metal cooling as it is pumped into the mould, will undergo a calculably greater shrinkage at the bottom of the type than at the top; the difference must be allowed for by lapping the side-walls of the mould — that is, rubbing them down by hand on a plate of soft cast-iron. To anyone but an engineer it might sound paradoxical to say that this operation is so delicate that it has to be performed by hand. Lapping machines do exist, and some day they may be adapted to serve, with the same degree of accuracy, the task

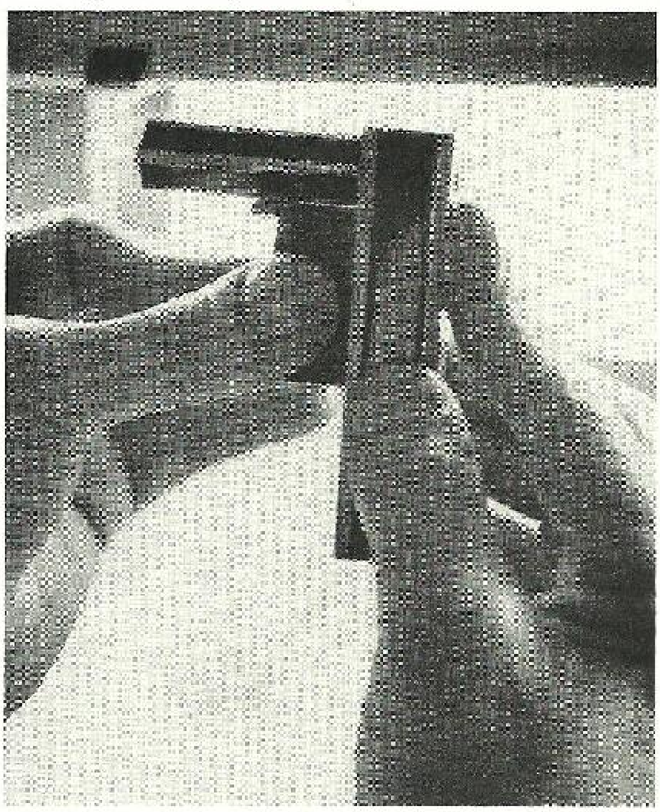
Fig. 27: Grinding a square nick on a Composition mould part.



which is performed here by the combination of intuition and long training. Undoubtedly the day will come when a needle on a dial tells the precise moment when the lapped block will perfectly fit against a testing-gauge which is two-tenths of a thousandth of an inch higher at one end of an inch length than at the other. But to the lay visitors to the Works, and particularly to those who were not entirely in sympathy with our Machine Age, it is comforting to be reminded that the human hand can be an extremely delicate precision instrument in its own right. The visitor is shown how ·0001 inch difference from true-to-gauge would reveal itself at this point. A rejected block is fitted against the gauge and held up before a strong beam of light (Fig. 28): one sees at one end a faint, almost imperceptible crack of light tapering off to darkness. That means "imperfect"; but to the layman visitor it has afforded a chance to see what a tenth of a thousandth of an inch looks like — and, for a moment, to enter into the frame of mind of those who must take that unit of measurement very seriously.

The component parts come from the machine shop with what most industrialists would call a precision finish; but "precision", to the mould makers, is a never-attained ideal to be felt for with the most delicate instruments and "approached" to less than one tenth of a "thou". It is no simple matter of repeating one standard model: there are thirteen different kinds of mould to be made, including those for the Super Caster. One kind alone, the composition mould, can be made as we know, to any of seventy different heights-to-paper, and beyond that there are four major and a number of minor systems of point mensuration. The Anglo-American point system has seventeen mould sizes between 4 and 14 point: the Didot point system used in most parts of the Continent has as many again; there are, in addition, two "body" systems (Pica = ·1667 and Pica = ·1670), and more than one surviving variety of the original Fournier point system.

Fig. 28: A minute crack of light reveals an error of ·0001 inch within one inch of "lap": too great an error to be permitted in a 'Monotype' mould component.

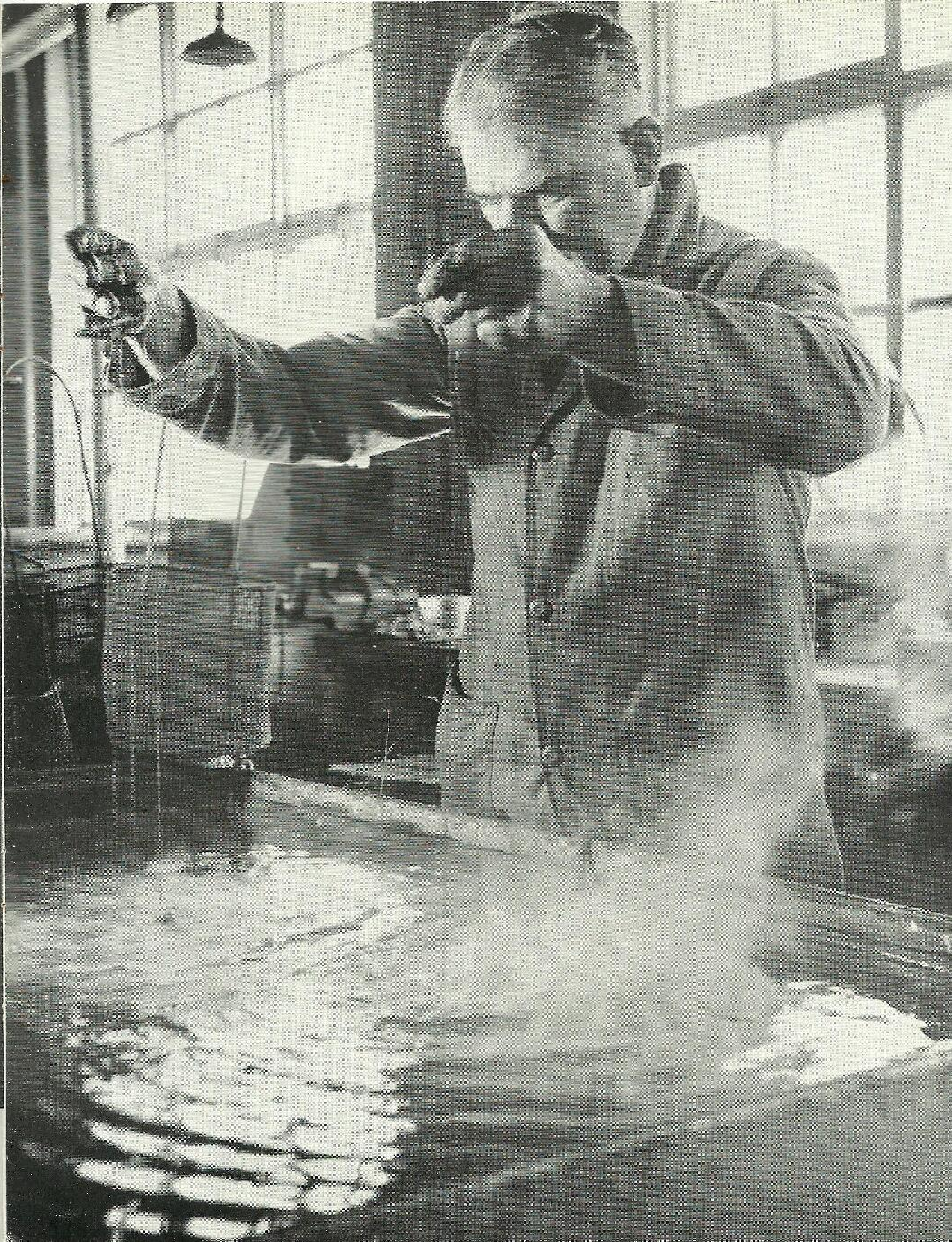


When the component parts have received their finishing and sub-assembly operations and are "married" and assembled, the resulting mould is run-in and subjected to its first scrupulous casting-test. It then undergoes a further independent casting-test. If there is the slightest doubt of its ability to stand up to the high temperatures and fatigues to which it will be subjected, it is rejected.

The layman, looking at a finished mould, may get some hint of the fifty-five-year tradition that went to its making, merely from the silver-satin glint of its composite surfaces; the impression is intensified if he moves the sliding blades, as he can, with his fingers. For there is the very feel of precision in the manner of that reaction to the pressure — neither the lazy slip of metal against oil nor the stubbornness of imperfect fit but that something between which tells of accuracy.

Scrupulous, minute inspection to the Corporation's rigid standards of perfection rules every process in the making of a mould or matrix which must bear as its guarantee of dependability the famous trade mark, MONOTYPE. Every sort of material that arrives at the Works must conform to a quality standard which has been fixed after scientific research and careful experimental tests. The task of "making sure" that each new consignment does in fact strictly conform to standard is undertaken in that Testing Laboratory of which Mr. Gravett's camera shows a glimpse overleaf. It stands here as a symbol of that "eternal vigilance" with which the Monotype Works has been earning, for more than a half century, its proud international reputation.

Fig. 29: (Right) Quenching carburized mould side blocks.



THE MONOTYPE CORPORATION LIMITED

Registered Office: MONOTYPE HOUSE, 43 FETTER LANE, LONDON, E.C.4. *Fleet Street* 8351
Head Office and Works: SALFORDS, REDHILL, SURREY. *Redhill* 4641

BRANCHES

Birmingham	Legal & General Buildings, 8 Waterloo Street. *Midland* 1968
Bristol	West India House, 54 Baldwin Street. *Bristol* 24452
Dublin	39 Lower Ormond Quay. *Dublin* 74667
Edinburgh	45 Hanover Street. *Edinburgh* 32660
Leeds	3 Stansfeld Chambers, Gt. George Street. *Leeds* 21355
Manchester	6 St. Ann's Passage. *Blackfriars* 4880

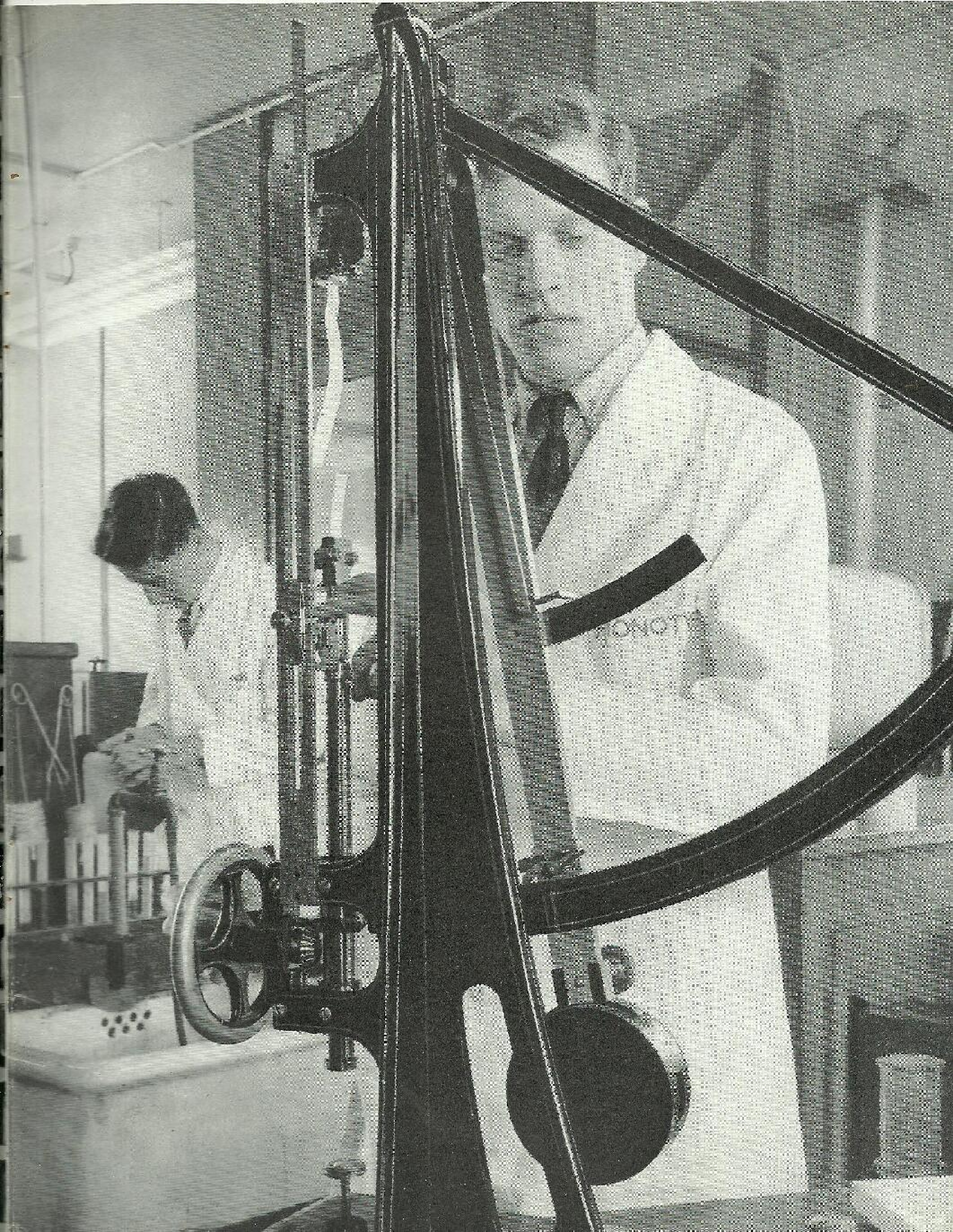
OVERSEAS ADDRESSES

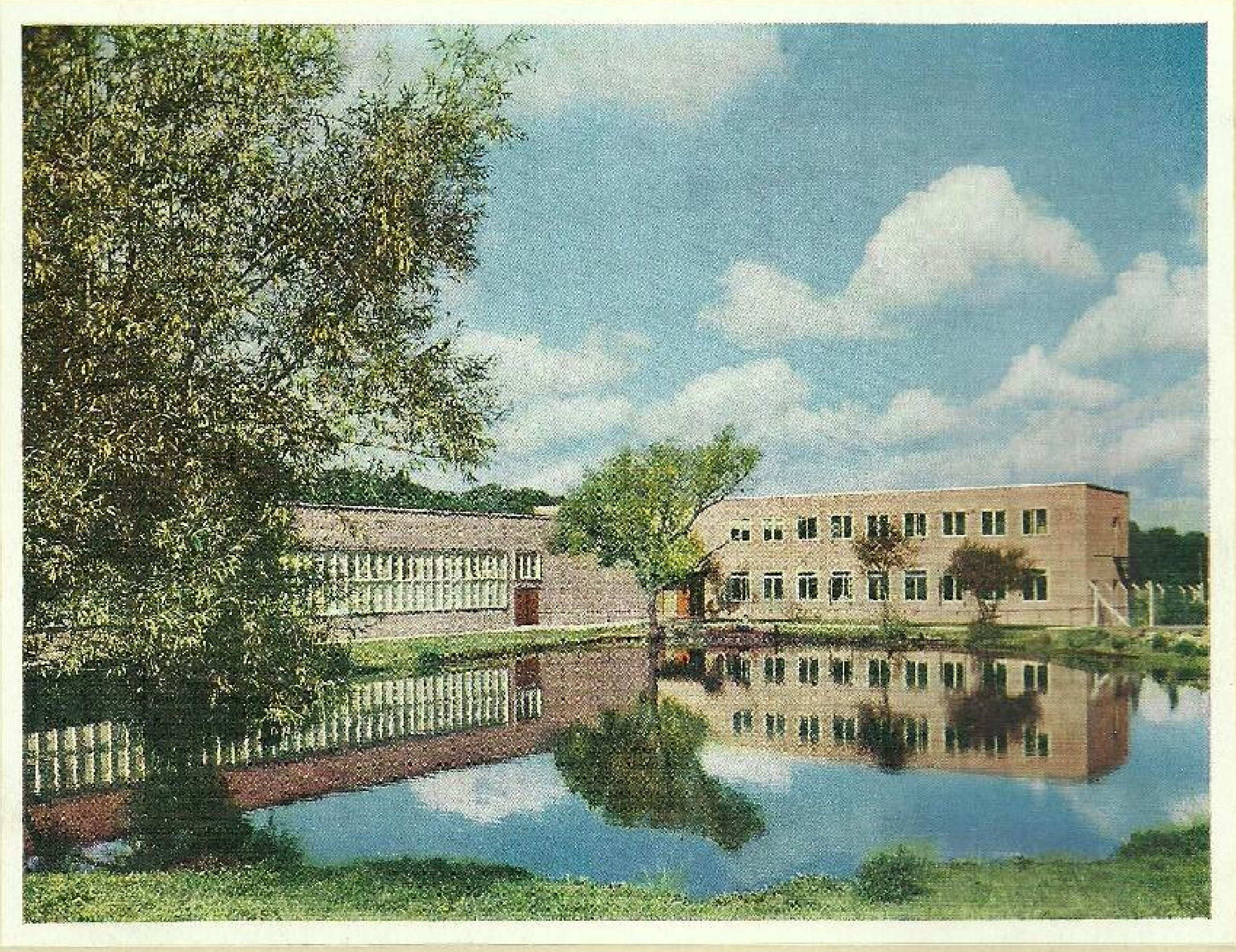
Australia	THE MONOTYPE CORPORATION OF AUSTRALIA (PTY.) LTD	319 Castlereagh Street, Sydney, N.S.W. 473 Bourke Street, Melbourne C.1, Victoria
Burma	S. OPPENHEIMER & CO. LTD	550–2 Merchant Street, Rangoon
Ceylon	THE MONOTYPE CORPORATION LTD	53 Flower Road, Colombo
Egypt	THE JOSEPH LINDELL COMPANY	23 Sh. Abdel Khalek Sarwat, Cairo 4 Rue Colucci, Alexandria
Far East	THE MONOTYPE CORPORATION LTD	54 Kennedy Road, Hong Kong
India	THE MONOTYPE CORPORATION LTD	8 Mission Row Extension, Calcutta 1 India House, Opposite G.P.O., Bombay 1 18 Second Line Beach, Madras 1 Vohra House, 25 Asaf Ali Road, New Delhi 1
Israel	PALEWCO LTD	20 Hamashbir Street, Tel Aviv
Lebanon	R. KACHAN (*Representative*)	B.P. 1119, Beyrouth, Lebanon
New Zealand	MORRISON & MORRISON LTD	208–10 Madras Street, Christchurch
Pakistan	THE MONOTYPE CORPORATION LTD	2 Gulbarg Colony, Lahore Haji Building, Jhadomal Khushal Das Road, Off McLeod Road, Karachi 1 8 Purana Paltan, Dacca
South Africa	MONOTYPE MACHINERY (S.A.) LTD	2 Ussher Street, Selby, Johannesburg 84–6 Buitengracht Street, Cape Town
West Africa	THE MONOTYPE CORPORATION LTD	8 Thanni Olodo Street, Igbobi District, Lagos, Nigeria

CONTINENTAL ADDRESSES

Austria	L. A. RODE	Zentagasse 22, Vienna V
Belgium, Luxembourg	THE MONOTYPE MARKETING CO. LTD	29 Rue du Commerce, Brussels
Denmark	HARRY LØHR	4 Fælledvej, Copenhagen N
Finland	KIRJATEOLLISUUSASIOIMISTO OSAKEYHTIÖ	Kalevankatu 13, Helsinki
France	SOCIÉTÉ ANONYME MONOTYPE	85 Avenue Denfert-Rochereau, Paris 14e
Germany	SETZMASCHINEN-FABRIK MONOTYPE G.m.b.H.	Arnsburgerstrasse 68–70, Frankfurt am Main Lahnstrasse 10, Berlin-Neukölln
Greece	ELECTROTYPE TRADING & TECHNICAL COMPANY LTD	Kanigos Street 6, Athens
Holland	THE MONOTYPE CORPORATION LTD	Keizersgracht 142, Amsterdam C
Iceland	SNÆBJÖRN JÓNSSON	7 Holtsgata, Reykjavik
Italy	AGENZIA GENERALE ITALIANA MACCHINE MONOTYPE	Corso Matteotti 19, Turin Via Labicana 92, Rome
Norway	OLAF GULOWSEN A.S.	Grensen 5–7, Oslo
Portugal	AHLERS, LINDLEY, LDA	Rua do Ferregial de Baixo 33–2°, Lisbon C Palacio Atlantico 408, Praça D. Joaõ I, Oporto
Spain	F. LOZANO NAVARRO	Lagasca 70, Madrid
Sweden	MASKINFIRMAN MONOTYPE (*A. Rydberg*)	Linnégatan 8, Stockholm
Switzerland	THE MONOTYPE CORPORATION LTD	56 Aarbergergasse, Berne
Turkey	BURKHARD GANTENBEIN & CO	Büyük Tünel Han Nos. 23–28 (P.K.1176), Istanbul-Galata

Opposite: Testing tensile strength of Keyboard Paper in the Laboratory.





This number of THE MONOTYPE RECORDER shows you glimpses, recorded by the camera of Mr. Guy Gravett, of 'Monotype' matrices and moulds in the making, with 'stills' from the 'Monotype' film 'Type faces in the making'. The colour photographs on the cover were by staff photographer Mr. Keith Duerden. The text is set in 12 and 10 point 'Monotype' Goudy Modern, Series 249. Printed for The Monotype Corporation Limited, London and Salfords, Surrey, by Balding and Mansell Limited, Wisbech. Printed in England.

The colour photographs on the front and back covers show a 'Monotype' Punch Cutting machine and the new Matrix Factory respectively. The half tone on the front end paper illustrates part of the contents of the storage boxes in the Punch Strong-Room, showing the method of storing the ·2 inch punches—in this case of border units, that on the title page depicts a composition matrix enlarged fifty times for checking purposes.