offers a plotting speed of up to 5 m/min and a line thickness of 0·1–0·15 mm. The system consists of a digitiser (reader), an operation control section, and a plotter. The digitiser has a table measuring 750 × 1 000 mm, to which is attached a cursor. The operation control unit has a 12 kW memory, which stores straight-line, rectangular, repeated-rectangular lattice, and parallel-line patterns. If a 16 kW memory is used then the storage of circles, arcs, repeated circles, and round-cornered squares becomes possible.

Typographic metrication

Ernest Hoch

The technical committee on graphic technology within the International Standards Organisation (ISO/TC 130) held its second meeting in Paris in November 1975. A Swedish working draft and a French draft proposal concerning metric typographic measurement were on its agenda. The draft for BS 4786:1972 had been before ISO/TC 130 since its inaugural meeting in 1971 when the decision to set up a working group was taken.[1] It was implemented at the second meeting: by unanimous decision a working group was set up with Ernest Hoch (United Kingdom) as convener, and with the task of preparing a draft proposal in time for the next plenary meeting of TC 130. Work on the relevant terminology was referred to a working group with Arvid Åhlin (Sweden) as convener. To ensure full co-ordination between all related spheres of work, the two conveners and Maurice Goldring (UK), convener of the working group on proof correction symbols, serve on each other's working groups.

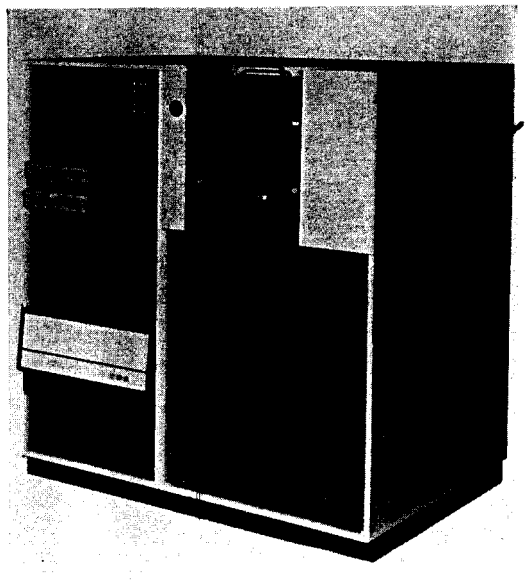
The typographic point systems, mutually incompatible, imprecise, sharing only the fact that they are duodecimal and unrelated to the metre, measure the size of the type *body* and relate to the size of the face only in approximating the dimension which least affects the appearing size, namely from cap line to descender line. The equation 10pt Plantin = 10pt Centaur = 10pt Times = 10pt Perpetua is absurd if one takes into account differences in appearing size, *ie* those dimensional variations which characterise these typefaces. It loses its absurdity only if these distinguishing variables are eliminated, that is, the equation is reduced to the tautology 10 = 10 = 10 = 10.

The increasing ascendancy of character-generating technologies in which the image is unconnected with any kind of body made sense of measuring *image* size; the relevance of *body* size can now be clearly seen to be limited to one particular technology, namely typecasting, foundry or machine-cast.

The Système Internationale d'Unités (SI) recognises for simple linear measurement exclusively the metre and its regular decimal sub-multiples and multiples. Duodecimal systems are of course incompatible with the SI. So are units whose size was determined in one case by being based on the pied du roi and in the other by being the point size of one foundry which after a series of mergers produced 85 per cent of the total US output. In the EEC, by a directive of the Council of Ministers of 26 June 1971, the SI will acquire full legal sanction.

In the years since 1971, many key people in the industry have preferred to go on looking the other way and hoping that the problem will go away. This was notably the case in Germany; paradoxically so, as the EEC directive was based on the German Units of Measurement Act of 2 July 1969. Totally ignoring the fact that this Act anchored the SI in law, unaware of the very existence of the SI, first the German typefounders and then the Bundesverband Druck (printing federation) fought the new law and its bearing on the Didot point as a misguided, if not mischievous, aberration of their own government and engaged in a hopeless national action in defence of the point.

The Order of 26 June 1970, under the 1969 Act, set 31 December 1977 (later amended to April 1978) as the latest date by which all units



[1] See Penrose Survey vol 62 1969; *Penrose Annual* vol 65 1972, p 212

of measurement in conflict with the SI were to cease being legal. Psychological resistance led to five of the seven years allocated for preparation and implementation of the changeover being wasted. Until the working group was set up at the ISO/TC 130 meeting November 1975, no attempt was made by either the printing federation or the German standards institution (DIN) to convene the DIN committee or to take any steps at all.

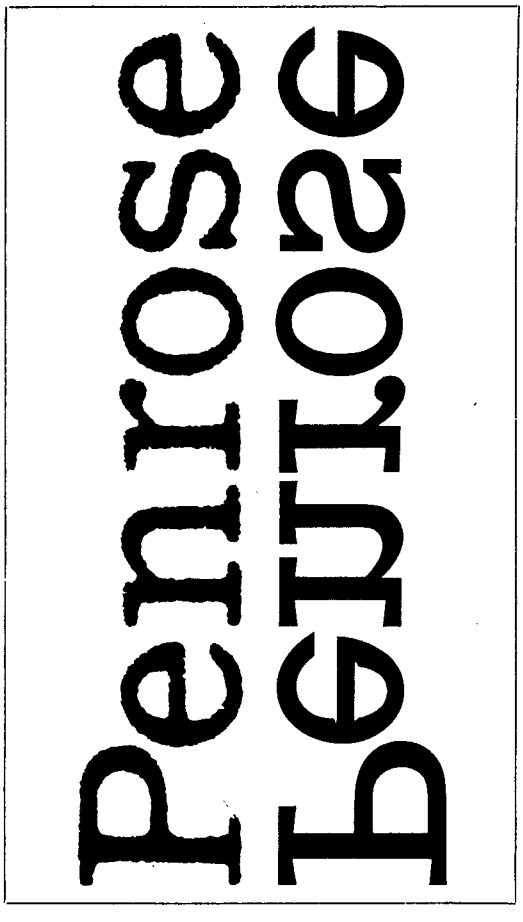
During 1976, the declared policy of the printing federation was to win Eurograf support for the newly-invented 'fictitious type body' as the basis of typographic measurement in photocomposition. All invitations to join in the work of the ISO working group, or at least to meet the convener and enter into a dialogue, were either left unanswered or declined. The plan, as published, was to base urgent revision of the relevant DIN standards on the fictitious body concept, and make contact with ISO only afterwards. That policy remained unchanged until December 1976 when the first meeting took place between one of the experts later to be designated by DIN for the ISO working group and the convener.

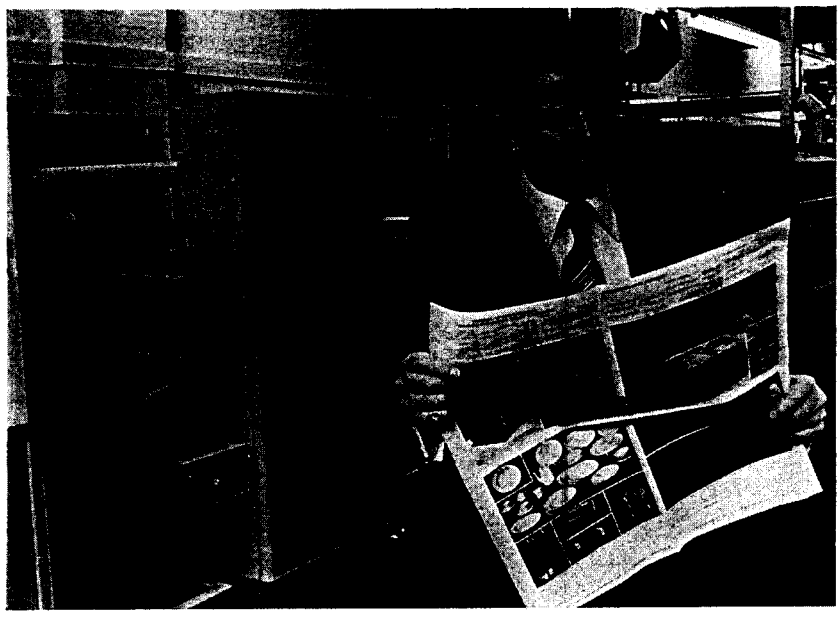
In other countries, notably in the UK and Sweden, the industry was more ready to face the need for change and supported the necessary studies. Indeed, in the UK the BSI work was started at the request of the British Federation of Master Printers. In both countries revision of the relevant national standards has been held over while resources are being put into the work at ISO level.

There is on the whole a consensus about the need to treat metal composition and photocomposition separately. In the thinking of the ISO working group this means separate international standards, treating each according to the constraints inherent in the particular technology but always involving measurement of the image as well as specification of minimum line-feed.

In December 1976 a vigorous debate started in the *Deutscher Drucker*. The main issues were at one pole the desire to effect as little change as possible and to interpret the law requiring merely the conversion of Didot point measurements into millimetric terms, without any alteration at all to the current system and practice: and at the other pole the new approach to photocomposition by commitment to measuring the image. In the latter context the debate turns around the question which image parameter should be used for nominal type-size designation; in the former context, the Bundesverband Druck has rediscovered last century's 'Meterkonkordanz' (the reduction in size of the Didot point from 0·376 mm to 0·375 mm) and advocates 0·25 mm as the smallest common increment for line-feed.

One striking characteristic of the debate around typographic metrication has been all along the large number of non-problems that are carried into it and bedevil the chances of joint work on real issues. Earlier debates and past history tend to be forgotten. Some of the arguments are seemingly directed against metrication proposals but have no basis in reality. Others are spectres born in anxious imaginations, and still others are criticisms which are apparently absurd but quite logical if an explanation is sought for them in the psychological rather than the technical sphere. The alleged 'prohibitive costs involved in redrawing all existing typefaces' exemplifies the first kind of objection and no amount of repetition will drive home the message that no such measure is envisaged. Those who are in





Far Left: Monotype Lasercomp – 1000 lines per inch resolution.
Left centre: Enlarged sample setting of draft text typeface specially designed to cope with the production variables associated with computerised photocomposition of newspapers shown alongside the post-production result. (See page 189.)
Below: Weather Oak Press became the first company in the UK to install a Harris M–110 web-offset press.

fear of it seem unable to grasp that they themselves invented the monster. An example of the other sort of objection is the 'unacceptable restriction on type design if a standard range of preferred cap heights were adopted'. Such criticisms appear quite illogical until one understands that the real proposal has been coupled with the critic's own commitment to the 'fictitious type body' concept. A standard range of preferred cap heights, combined with increments in line-feed as subtle as the equipment in question will permit, does not of course restrict type design at all; it would certainly do so if the potential of the equipment for very fine increments in feed were thwarted by standardising on 0·25 mm or for that matter on *any* coarse 'smallest feed unit'. If, that is, the typographic flexibility of one technology were restricted by forcing upon it the characteristic constraint of another.

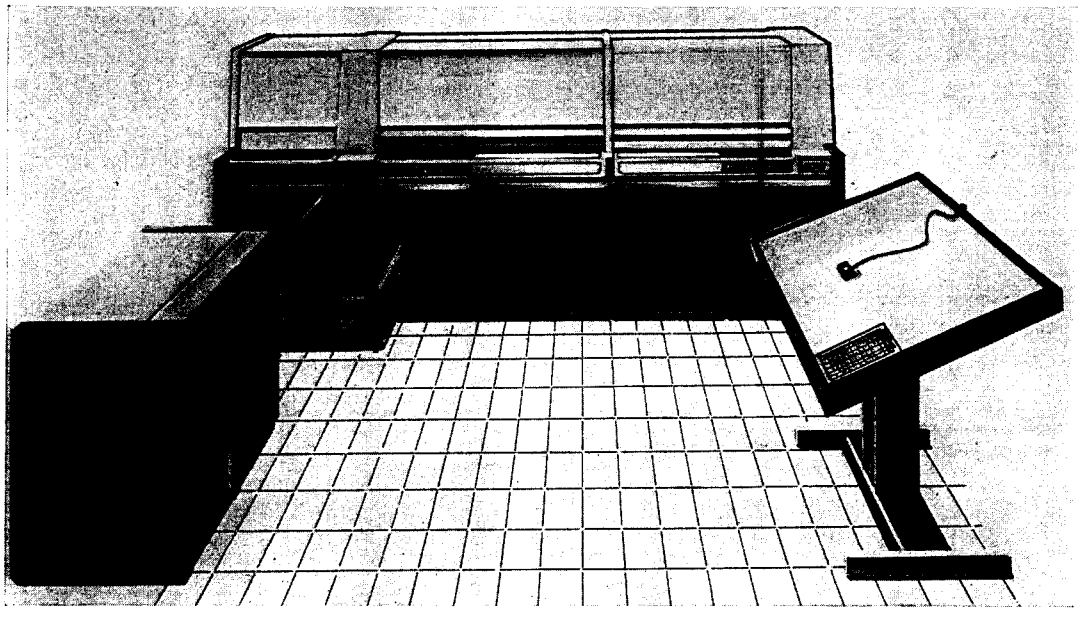
On the question of the size of the increment, the ISO working group favours 0·1 mm, as a result of international consultations with technical experts from manufacturing firms as well as printers. An increment size of 0·25 mm is most often supported on the technically irrelevant ground that this is of the same order of magnitude as the old point. The simple arithmetical issue involved is that the decimal notations of halves and quarters as 0·5 and 0·25 are not regular decimal sub-multiples of 1 but negative powers of 2. This results in mutually exclusive series of sub-multiples and multiples, whereas sub-multiples and multiples of 0·1 belong to one single coherent series of values which can accommodate machine internal units (of the order of microns) on the one hand and coarser line feed increments for cheaper equipment on the other. In other words: the consistently decimal, therefore coherent, series is development oriented, whereas any one of the mutually exclusive series based on negative powers of 2 is static at the stage of technical development reached when selected.

Drupa '77– the greatest electronics show on Earth

Clive Goodacre

Drupa brought home in no uncertain terms the impact of electronics on the graphic arts industry. While in the past we had been told about all the possibilities, this time we were shown production equipment in action bearing price tags that in many cases put it within the reach of a large proportion of the industry. To see the combined developments of five years and over 1 000 firms at one exhibition was a unique experience. Nothing was missing; equipment that had formerly only existed for the majority in trade magazines and sales literature, became solid reality. There were no shortage of visitors to see all these marvels either, with over 300 000 people passing through the turnstiles and a figure of 30 000 recorded on the busiest day.

Nowhere were the crowds thickest than round the colour scanners. Hell, Crosfield and Linotype-Paul all launched scanners aimed at the middle user, making them competitive with the top end of the camera market. Lowest in price by far is Linotype's Linoscan 3040 at £39 500. (It is also the smallest occupying a floor space of only 737 × 1625 mm which is less than many office copiers.) The most noticeable feature is its



Crosfield 570 colour composition system.