

BMN

Building Metrication News

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This section appears in the fourth issue of 'Building' each month, and gives current news and information on metrication, as well as providing a forum in which the ramifications of the change to metric can be freely discussed. It is published in association with the Modular Society.

CONTENTS

Metric Month 131

A summary of some of the key tools needed over the next few months as the time for the metric changeover approaches.

News from the Industry 132

MPBW accept that they will have to absorb extra costs of building which may occur with initial switch to metric; the building industry's metric programme could be upset unless a central Metrication Board is established soon to co-ordinate all sectors of industry and commerce according to W. G. Thorpe, president, NFBTE; South Africa likely to complete metric change at the same time as Britain.

Metric Working Party 133

Herbert Cruickshank, chairman of the MPBW's metric working party, discusses the work of this important committee and the recommendations they have put to the Minister.

The Metric Change 134

The current plans of the Metal Window Federation in the change to metric is described.

Publications 137

A review of the MPBW's latest DC document (DC8) on recommended dimensions of spaces allocated for selected components and assemblies used in education, health, housing and office buildings.

Index 138

A guide to the contents of the last 12 issues of Building Metrication News.

METRIC MONTH

Gaining Momentum

Due to the holidays the last two months have seemed to be comparatively quiet as far as preparation for metric change is concerned. But with the approach of one of the key dates, when architects start preparing drawings in metric measure, the momentum is rapidly increasing. Everyone concerned with the organisation of the change is out to ensure that the maximum information will be available on 1 January. As with most programmes it is not the starting date which is so significant as the completion date. The objective in this instance is for the bulk of the metric change to be complete by the end of 1972. For all designers to rush into metric measure at the earliest moment would prove to be of little advantage to them and probably even less to their clients. Small projects, except those intended to test the use of the metric system, will best be executed in imperial measure for some months to come. But at the other extreme larger projects which are not likely to materialise until after the end of 1972 should be designed in metric straight away. Now that the BS on Controlling Dimensions has been published there is sufficient guidance on dimensions for long term projects. But the smaller project will progress more rapidly through the design stages and, if started too soon, specific information on component sizes will be needed before BSI has been able to produce its recommendations.

One of the most important publications being prepared is a revision of the BSI publication PD 6031, which is a guide to the use of the metric system in the construction industry. Events have superseded the original version, in particular the decision of the Decimal Currency Board on the decimal marker has necessitated changes. But a number of other modifications and improvements are being made which will make it an essential reference book not only for every office but for every member of an office not excluding typists. It is expected that it will be republished a little later this year but the fate of another BSI publication is not clear. This is the revision of the British Standard for drawing office practice, which is likely to be of particular value during the transition to metric. This revision has been in the pipeline for years and its completion has been frustrated on more than one occasion. If it is not completed soon it will be too late to be of real value. The purpose of both publications is not only to give guidance but to ensure consistency in the use of the metric system. The transition is likely to be confusing enough without everyone using conflicting symbols and forms of notation.

Of more importance to manufacturers will be the publication of the component lists being prepared by BSI's Functional Group Panels. These lists are primarily a tool for the panels and BSI technical committees but should also be of considerable value to industry. Components are being listed by functional groups and graded in three ways. Firstly, according to whether they are of such significance in terms of dimensional co-ordination that their dimensions need to be considered and determined in relation to other components. If this is so then the panels will prepare further guidance which will then be made available both to technical committees and industry. Secondly, according to whether the components normally need to be dimensionally co-ordinated, but the information given in BS 4011 is sufficient for them to be sized. Lastly, those that do not need to be dimensionally co-ordinated but only to have sensible, that is rounded, metric sizes. The publication of these lists will provide industry with a clear view as to which products can be re-sized straight away and for which it would be advisable to wait for further advice.

Also during the next month or two we may expect new metric design guides from each of the building ministries. The preparation of such guides is no easy task. It is necessary that a balance is struck between guidance and dogmatism. We are at a stage in the development of modular co-ordination when the principles are clear. A fair amount of building has been undertaken to prove the principles but there are alternative interpretations of many of the detailed points. To make the acceptance of a specific dimension, such as 2,600mm. for floor-to-floor heights in housing, mandatory was unfortunate to say the least. It is to be hoped that no more mandatory recommendations will appear in these guides. This is a time to test recommendations in practice and on a national scale not to impose a straitjacket.

NEWS FROM THE INDUSTRY

Ministry to Absorb Costs

One of the first fruits of the metric working party set up in June by the MPBW's National Consultative Council is that the Ministry have recognised their responsibility for any increased costs in building through going metric. Following a full meeting of the council last week under the chairmanship of Robert Mellish, Minister of Public Building and Works, it was announced that if, because of going metric, the cost of building in the public sector (i.e. that with which the MPBW is concerned) was to rise, the Ministry would take up the extra costs by either making adjustments in individual projects or in their overall building programme, without recourse to the taxpayer. What this means in effect since, in the present economic climate, no more money is likely to come from the Treasury, is that each project will be looked at carefully to see what economies can be imposed to make up for the higher metric cost. Failing success along these lines it is likely that starts will be delayed or the building programme extended so that total costs are equalised over a long period. It is emphasised that despite the recognition that costs, initially, may well rise, the MPBW's determination to go metric has in no way been affected.

In June it appeared that the building industry might be going metric almost in isolation, and it was to examine the problems that would arise from this and the effect on the construction industry programme that the metric working party was set up. Ideally a good deal of this might have come within the ambience of a national metrication board. The need for such an overall body was not recognised by the Government, however, until the end of July and since then there has been no news of its formation. Understandably, the working party have pressed the urgency of getting the Metrication Board set up and Mr. Mellish is apparently seeing the Prime Minister and other Ministers involved to communicate this urgency.

Another result of the working party's recommendations is that information will be channelled through three sources: the MPBW itself who will make known the metric programme of the public sector; the RIBA who, through their returns, can make known the projects starting in metric in the private sector; and technical information which will flow from CIRIA and the Building Centres.

Need for Co-ordination

Unless there is quick action at Government level and among other industries, the building industry's programme for the

change to metric could be thrown into jeopardy said W. G. Thorpe, president, NFBTE, at the half yearly general meeting of the north-western region last Friday. A Metrication Board, supported by a strong secretariat, should be at work this autumn to allow the economy as a whole to move towards metric on a broadly similar time scale.

'In building,' said Mr. Thorpe, it is already evident that some important sectors are falling too far behind. It seems that nothing has been done to provide metric text books for schools and colleges, particularly technical colleges teaching building subjects. This is a job for the Department of Education and Science. We are also being held up because a number of official publications in metric measurement—such as designers' handbooks for public sector buildings—are still awaited, and because of delays likely to arise in making available to designers, quantity surveyors and builders a range of dimensionally co-ordinated metric products based on British Standards.'

The more the building industry is held up through delays in the other sections, the greater would be the cost of the changeover to everyone.

MPBW Leaflets

300,000 leaflets giving a synopsis of the metric programme are being issued by the Ministry of Public Building and Works. Their availability is being publicised by a poster campaign whilst various trade associations are also helping to distribute them. The prime function of the leaflet is to encourage an awareness of the change to metric, and accordingly it gives some simple examples of metric measures.

Retraining Clerks of Works

In preparation for the metric changeover, the MPBW is mounting a series of courses for its clerks of works. The purpose of these courses, in general terms, will be to enable them to interpret drawings prepared in metric terms and to supervise the construction of buildings in accordance with these drawings. It is anticipated that the subjects which will receive particular attention will include metric measurements and SI units, notation, material and soil bearing tests, and the use of drawing, surveying and measuring instruments in relation to ordnance survey, architectural and engineering drawings.

It is hoped that the courses will start in mid-1969 and this will ensure that all technical site control staff will be in a position to supervise projects built in metric terms as from 1 January 1970. The detailed subject matter of the courses is now under consideration and the material being produced by the Construction Industry Training Board will be examined to determine the extent to which it can be used in the Ministry's retraining programme.

Appeal to Manufacturers

BSI's Metric Panel in the Construction Industry division has written to 118 trade associations asking them to circulate to members an appeal to publish metric equivalents for all components and materials. The step has been taken in view of the imminence of the starting date—at the beginning of next year—for architects and engineers to plan new projects in metric. Designers will need considerable metric data about building materials and components to specify for these metric projects and, says the BSI, 'to have to convert imperial data to metric for each reference will clearly affect designer's productivity'.

A recent survey of manufacturers has shown that a number are already giving metric equivalents in their literature and these will have a distinct commercial advantage, especially after next January.

Trade associations are being advised of the appropriate BSI publications which will assist manufacturers in revising their technical literature.

Keeping in Step

Although the South African construction industry is twelve months behind Britain's in progress made in changing to metric, it is likely to complete the change about the same time as us says Michael Clarke, BSI's co-ordinator for metrication, who has just returned from South Africa. He was there to give a lecture on the progress of the change during a conference at the South African Building Exhibition held in Johannesburg.

'The construction industry procedures and techniques in South Africa are virtually carbon copies of our own,' said Clarke. 'I think they will probably catch up by benefiting from our experiences here and in largely adopting our methods. Dimensional co-ordination, a key factor in our changeover, is also the main structure of theirs. A feature of the changeover has been the early lead taken by the South African legislature'.

Mr. Clarke was primarily in South Africa under the auspices of the South African Bureau of Standards for the lecture but he also spent some time in discussing the change with senior officials of the Institute of Architects in that country and was invited to speak to the Building Faculty of the Witwatersrand University.

Heating Spaces

A May forum of the Modular Society on Services and Drainage concentrated upon a paper prepared by Denis Miles entitled 'Dimensional performance of components for gas-fired space heating systems.' Agreement was reached on the following points:

1) A range of lengths and breadth metric modular dimensions for preferred sizes for the accommodation of warm air units either in isolation or in association with gas-fired domestic hot water circulators

and hot water cylinders, to include required working spaces and to take account of narrow face and wide face types of appliance.

2) Storey height units should be dealt with on the basis of allowed spaces in modular increments of 100mm. irrespective of the overall case dimensions of the units themselves.

3) Hot water boilers, designed for fitting within runs of low-level kitchen units, should be based on a 600mm. preferred depth dimension.

4) Hot water radiators could usefully be designed in length increments of 100mm. despite expected opposition from heating engineers.

Another paper by Mr. Miles, 'Spaces for the installation of domestic heating equipment,' was discussed at a later meeting.

Emphasis was placed on the importance of allowing sufficient working space around equipment which is to be considered within the definition of 'basic space.' The difference between hollow and solid construction in the matter of accessibility was touched upon and it was considered that 'basic space' should be considered as an enclosure with no access except through the designed aperture.

The relationship of sizes of equipment where located in kitchens was discussed at some length and it was agreed that the principles outlined in Mr. Miles' paper, which sought to define required overall dimensions, should be used as a basis for stimulating manufacturers' comment.

LOOKING FOR THE OBSTACLES

An important metric working party, whose existence so far has been relatively unpublicised, is that set up by Robert Mellish, Minister, Public Building and Works, in June. By then, in the absence of a national metrication board and an overall programme for the country, it had become increasingly evident that the construction industry was going to meet considerable problems if they went metric in isolation.



With the first steps into metric looming up (January 1969), it was important for the MPBW to pinpoint the areas where problems could arise and so a working party on metric was formed from the reconstituted National Consultative Council. The task of chairing the working party was given to Herbert Cruickshank who, as chairman of a building subsidiary of the Bovis Group, Gilbert-Ash Ltd., is himself very much concerned with ensuring a smooth change to metric.

Employed by the Bovis Group since 1931, Cruickshank became managing director of Gilbert-Ash in 1960 and succeeded to the chair in 1964. In 1966 he was appointed joint managing director of Bovis Holdings Ltd. Trained as a structural engineer, he later, because of his occupation, also qualified as a mechanical engineer and became a Fellow of the Institute of Building.

His insistence that the metric working party is 'not just another committee' is given added authority by the fact that he is not an inveterate committee man. He believes that company executives can get bogged down by too much committee work and his policy is to share out these duties as much as possible. Apart from being director of NBA and chairman of the London Business School Association, he has no other involvement outside his own company.

The NCC working party on metrication has 11 members (plus a secretary) all but two coming from the building industry. 'Everyone,' says Cruickshank, 'is an expert in his own right. What is more, we have direct communication with the Minister,' an aspect whose importance, with the need for spotlighting problems and seeing they are recognised by the Government, is self evident.

The initial brief of the working party specified that it was to look into aspects of the change not covered by the BSI, principally, what effects the plans of other industries and commerce would have on the construction industry's changeover. To establish the overall requirements of the construction industry if it is to keep up to date with its programme, the first of three study groups within the working party is drawing up a co-ordinated programme showing where other sectors overlap the construction industry programme. 'It is very complicated,' says Cruickshank. 'What happens, for example, if the steel industry fails to start rolling out reinforcing rods on time? or manufacturers of domestic sanitaryware do not make to fit modular spaces? We have to find out what plans, if any, manufacturing industries have whose customers also extend beyond the construction industry.' This is where the work of a metrication board, still in the gestation period, would have been vital had it been set up earlier. 'Ideally,' says Cruickshank, 'this should have been done a year ago.' As it is the Minister has had no overall programme to co-ordinate with.

The effects of weights and measures, general education, building regulations and the revising of trade literature are other factors that the working party are considering. 'What we do then is to spotlight obstacles and report to the Minister with our recommendations.'

The second study group set up by the working party is looking into the cost implications of the change. On this Cruickshank has strong personal views.

Although building firms and professional practices will meet their own administrative overheads such as the cost of re-training and technical procedures, he thinks it inevitable that the costs of construction at sites will increase in the initial years of change. 'This is because although most products will be slightly smaller (25mm. being less than 1in.) the fixing cost will be the same; in other words, pro rata, there will be extra cost. Exactly how much is not possible to establish but initially Government clients who specify buildings to metric dimensions must look at their yardsticks or cost limits project by project. The Government should regard this increased cost as the initial investment into metrication in order to achieve the advantages that it promises for the future.'

The study group have apparently identified a number of detailed areas of activity of manufacturers, stockists and contractors and are trying to establish what costs will increase and what will remain static.

The third study group set up by the working party is concerned with the dissemination of information. 'There is a lot of literature, standards, and information coming out from BSI, Government departments, professional institutions, etc., from which it is impossible for anyone to see the whole picture.' The study group is recommending a policy to co-ordinate the flow of information through three streams, (a) public sector work through the MPBW, (b) the private sector—the RIBA returns indicating what buildings are to go up in metric is vital information for builders, and (c) technical information through CIRIA and the Building Centres.

At the moment this thinking is tentative and will have to be discussed with the organisations concerned.

Looking at the metric change as it affects his own company, Cruickshank sees the biggest difficulties in teaching staff and operatives to think in the new terms technically and arithmetically, and also to get them to recognise the new quantities and prices. Accordingly, he has appointed a senior executive to carry out training by internal seminars. The company has also produced a booklet for internal circulation identifying all steps in the programme of metric training throughout 1969. This programme has been worked out in co-operation with the CITB.

On the wider aspect, he sees the greatest benefits of the change coming from variety reduction through adopting metric dimensional co-ordination. This, he says, applies to everything, design conception, design detailing, and components. But these advantages are long term. In the short term, the problems look formidable; better co-ordination between all sections of industry and commerce, however, can do a lot to minimise the teething troubles.

The Metric Change

12. THE METAL WINDOW INDUSTRY

The Metal Window Federation of Great Britain Ltd. consists of the Aluminium Window Association, the Steel Window Association and the Patent Glazing Conference. Its current position in the move to going metric is given below.

The change to metric itself will make it necessary for MWF firms to (a) reprint a good deal of literature, (b) replace measuring equipment, (c) modify certain tooling and (d) retrain staff. Although all these will involve considerable expense and much effort, they do not present serious problems; much assistance is anticipated from manufacturers of measuring instruments; with the wide range of training aids now available from the Training Boards and with the present enthusiasm for training, the industry is ready to start training the various strata of staff as soon as metric work begins to flow.

Selecting the Ranges

As is now well known, however, in an effort to reduce the rate of increase of building prices, the industry seized upon metrication as an opportunity to introduce dimensional co-ordination and, in contra-distinction to what is said above, a year's work in this field has unearthed several major problems. According to BS 4011, one of the means of achieving the objectives of dimensional co-ordination is to reduce the manufacture of non-standard units. As about 70% by value of the metal windows produced in this country are purpose-made specifically to customers' requirements, it is clear that the industry can look forward to major changes. Although the industry is fully in agreement with the aim of holding down the rate of increase of building prices, it is not prepared (because of the effect both on customer satisfaction and on profitability) to impose upon its customers a limited range of windows. Manufacturers can survive only by forecasting demand and the only way to do that at present is to analyse demand in the past, i.e. the trend of sales. The MWF, therefore, has taken the co-ordinating dimensions proposed by BSI and Government departments and has drawn up from them matrices of window openings. These then represent a complete range of openings made possible by the preferred dimensions, but a range of windows to fit all the openings would be so large that it would achieve no price benefit whatever over the existing purpose-made range. The MWF then has selected from these matrices those basic spaces nearest to the sizes of windows for which there has been a reasonably large demand in the past;

from this it is putting forward ranges of sizes and types of steel and aluminium windows for housing use and other ranges of sizes and types of steel and aluminium windows for use in buildings other than housing. These ranges have not yet been finalised because obviously they represent a compromise between the architect's desire for infinite flexibility and the objective of dimensional co-ordination, i.e. the economies of standardisation. Discussions are proceeding between the federation and its customers on these proposals, and it is hoped that combinations of a small range of mullions and a relatively wide selection of fixed lights, with a limited range of opening ventilators, will provide an acceptable degree of flexibility.

Long Term Savings Only

The change to metric and dimensional co-ordination involves much planning, design and other expensive administrative work; as metal windows for housing have been standardised for many years little price benefit can be expected; metal windows for buildings other than housing, however, are at present mainly purpose-made so that in the long run, when the above expenditure has been recovered, a significant effect on costs should become apparent.

Tolerances and Joints

In addition to rationalising sizes, dimensional co-ordination has precipitated the impact of other new concepts on building design and construction; these are the application of tolerances to components and the design of joints to accommodate these tolerances. These new concepts present complex problems to everybody in the industry, designers, main contractors, makers of building components, etc., hence a number of BSI and Government departmental committees are studying them. In addition to having representatives on most of these, the MWF has four committees of its own working in parallel.

The purpose of all this work is to provide architects with a basis on which to design, so the MWF hope to publish, by the end of 1968, the recommended ranges of dimensionally co-ordinated steel and aluminium windows for use not only in the design of housing but also in other buildings.

COMING EVENTS

FRIDAY, 11 OCTOBER

The change to metric in the construction industry: a weekend course at Cheltenham, ending on Sunday, for professional and top management levels in which lectures will be given on the implications for the architect, manufacturer, engineer, surveyor and builder of going metric. Discussion groups follow the formal lectures and the meeting concludes with questions and a general discussion. The course fee is 8gns. Applications should be sent to P. J. Lord-Smith, FRIBA, Gloucestershire College of Art, Albert-road, Pittville, Cheltenham Spa.

FRIDAY, 11 OCTOBER

The change to metric in the construction industry: an updating course for those who attended last April's weekend course (similar to the above) at which the previous panel of speakers will be reviewing developments. The course fee is £2 10s. Applications to P. J. Lord-Smith, as above.

THURSDAY, 17 OCTOBER

Metric Symposium: NBA symposium for manufacturers, sponsored by the BSI, held at BSI Conference Centre, Greenstreet, London, W1. Applications to Sylvester F. Bone at NBA House, Arundel House, London, WC2. Cost of ticket, 15gns.

FRIDAY, 1 NOVEMBER

Metrics and Building Control: a one-day conference in which the implications of the BSI Programme on the product manufacturer, the designer, the builder and the building control officer will be discussed. Organised by the Guild of Municipal Building Inspectors (South-Eastern Branch) and the Institution of Municipal Engineers. Held at the King Alfred Centre, Hove, Sussex.

TUESDAY, 5 NOVEMBER

Seminar on metrication: a full day session with lectures in the morning and an open forum in the afternoon at the Café Royal, Regent-street, London, W1. Organised by the National Council of Building Material Producers, attendance is restricted to member associations of the NCBMP and to individual companies who are affiliated to the member associations. The fee is 55s.

SATURDAY, 30 NOVEMBER

Going Metric: a weekend seminar, for engineering production executives. Organised by the British Institute of Engineering Technology at Aldermaston Court, Aldermaston, Berkshire. Fee for the seminar is £30, this includes a short correspondence course prior to the seminar aimed at achieving a common level of understanding among delegates.

PUBLICATIONS

Spaces for Components and Assemblies

'DC8, Recommended dimensions of spaces allocated for selected components and assemblies used in education, health, housing and office buildings, is the eighth in a series of working papers on dimensional co-ordination issued by the MPBW and published by HMSO. It consists of 11 tables, together with an introduction, notes on the recommended dimensions and notes on the tables.

The layout of the 16-page document is so bad that it has taken at least an hour to sort out the contents and try and understand them. It is as if the printer, for there cannot have been a typographer, had maliciously used all his powers to disarrange the information so as to bring about the greatest obscurity and confusion. Typefaces, headings, coding, numbering, paragraphing, rules, and footnotes are used so that they bear little relation to the content and make it appear far more complicated than it really is. What then is the content?

Each table, on a separate A4 page, has diagrams intended to show the space to be provided for a component or assembly. Careful examination reveals that tables 1, 2, 3, 4, 7, 9, 10 and 11 deal with assemblies and tables 5, 6 and 8 concern components. So that, in the final analysis, there are only three components: namely, window, external door set and internal door set. Each table then has two tables, headed respectively 'vertically' and 'horizontally.' In each table the left-hand column has five headings, namely, millimetres, education, health, housing and offices. The second column, usually headed 'Increments of height,' is subdivided with the numerals 50, 100 and 300 and the subsequent columns have other headings and numerals such as Dimension A 00. The body of each table is occupied by circles, filled and unfilled, asterisks, single, double and triple, and notes reading 'No recommendation' or 'Not applicable.'

The make-up of the tables is such that it is not possible to comprehend the information, which is also qualified with exceptions, conditions and variations described in footnotes.

One asks what it is all for and how it differs from what we know already. For example, we know from BS 4011, published two years ago, that the basic metric sizes for components and assemblies are to be chosen, in sequence, from multiples of 300mm, 100mm., 50mm. and 25mm. What do we learn that is new from table 8—internal door set? The recommended heights of spaces are multiples of 300mm. for education, health and office buildings and 50mm. for housing. The recommended widths of spaces

are multiples of 100mm. for all these building types. So the recommendations are selections from the British Standard. Would it not have been simpler to say so, and omit the drawings, tables and footnotes? The section titled 'Notes on recommended dimensions' does in fact contain statements that the recommended sizes of spaces for components are to conform to those in BS 4011.

The producers of this document, whatever the contents are intended to signify, have done a disservice to the efforts being made to bring about a straightforward change to metric modular components. They have made a simple matter appear complex and have, by faulty layout and presentation, prepared the way for misunderstandings and unnecessary errors.

BRUCE MARTIN

Estimating for Builders

The change to the metric system in the construction industry is rapidly approaching and a considerable number of people will be involved in the intricate calculations that will then be necessary. It is indicated that Bills of Quantities will be prepared in metric units late in 1969 and much work has to be undertaken to prepare for this enormous change. In his book, 'Introduction to Estimating for Builders' (London: Geo. Godwin Ltd., price 18s. 6d.), W. Atton has therefore made a careful study of the various problems knowing that members of the construction industry, lecturers and students preparing for examinations, will need to obtain an early appreciation and understanding of what is involved.

Mr. Atton has prepared a pocket sized textbook with simplicity as the keynote. This will prove an invaluable aid to all engaged in the industry. Chapter 1 headed 'The Estimator and His Work' deals in clear language with the function of an estimator and the principal divisions of a Bill of Quantities to be considered when preparing an estimate. Examples are given of the build up of labour rate and the items to be added to the basic rate to cover insurances, holidays with pay, inclement weather, overtime etc. etc. The use of plant and the work allocated to sub contractors are illustrated together with the hazards of submitting firm price tenders.

The book then deals with the innovation of the metric system. The unit of length being the metre (m) the unit of weight the gramme (gm) and capacity the litre (l). A table of general metric equivalents is shown together with a table to illustrate the conversion of inches, yards, pounds etc. to millimetres, metres and kilograms.

The author points out that imperial equivalents have been included in order that an appreciation of metric sizes may be obtained. Reference to imperial units should, he considers, be discontinued at an early stage. On Monday, 15 February,

1971 Britain goes over to the decimal coinage system. All the labour constants in the chapters are given in decimals. When decimal coinage comes into use they will then be in line with the new system. An example is also shown in the use of decimal currency and the author suggests that this example shows that the introduction of metrication and decimalisation will be a great advantage to the construction industry. Explained in Mr. Atton's simple language it would appear to be true but over the next few years there is little doubt that many headaches will occur.

The chapters that follow deal with excavation and earthworks, concrete work including formwork, brickwork and blockwork, carpentry, joinery, drainage, fencing and, lastly, an important subject to the estimator of Preliminaries, reference is made to the conditions of contract and such items as the requirements in respect of nominated sub contractors.

All these subjects are adequately explained using metric units. A typical example showing the simplicity of the calculations is described in Chapter 5, converting timber from the Petrograd Standard to cubic metres and linear metres.

It is an admirable book and demonstrates the wide knowledge of the author.

GEO T. BARKER.

Flooring Folder

A new six page flooring folder, produced by Trent Concrete Ltd., of Colwick, Nottingham, contains technical data in metric units on the company's prestressed flooring system. Details include loading tables and economical clear span limits in metres set out in a series of clearly defined charts, as well as general information about Trent flooring.

Copies of the new folder, which is printed in two colours, can be obtained from the company.

METRICATION INDEX

An index of references to metrication published in 'Building' since Building Metrication News last appeared.

The eighth in a series of bulletins on dimensional co-ordination has been published by the MPBW. Copies from HMSO, price 2s. 6d. (30 August, p. 41.)

Four one-day seminars on the implications for management of the change to metric are being organised by Polycon Building Industry Consultants, 96 Eltham-rd., London, SE12, on 15 October, 13 November, 5 December and 21 January. (20 September, p. 136.)

METRICATION INDEX

An index of the items that have appeared in Building Metrication News over the past 12 months, i.e. September 1967-August 1968.

Appointments

Functional Group Panels: appointments of chairmen (23 February, p. 128).
 MPBW: appointment of metrication officer (28 June, p. 125).

Bibliography

Complete list of metric publications issued by BSI and Government departments (26 July, p. 125).
 Second list of metric publications, issued from non-official sources such as societies, associations and trade journals (23 August, p. 108).

Brick Sizes

Brick Development Association view on future brick sizes and a response by the Modular Society (24 November, p. 189).
 Brick industry's view on brick sizes given by P. D. Edmondson, speaking at a BDA symposium (24 May, p. 173).

British Standards

Controlling Dimensions: the draft British Standard for comment on the controlling dimensions to be adopted for buildings (24 November, p. 183).
 Site Instruments for Linear Measurement: draft BS for comment on building site instruments: part 1, Graduation and Figuring (26 January, p. 118).
 Joints and Jointing: draft BS for comment on joint and jointing terminology to be used (26 April, p. 155).
 Controlling Dimensions: editorial comment on new BS 4330 (26 July, p. 119).
 Glossary of Terms: BS for comment on terms and definitions suggested for dimensional co-ordination in building (26 July, p. 120).
 Controlling Dimensions: Summary of BS 4330 and recommendations for the co-ordination of dimensions in building (26 July, p. 129).

Building Centres, etc.

Metric Exhibits: display at the Engineering and Building Centre, Birmingham (24 November, p. 194).
 Metric Wall Charts: produced by The Building Centre for use in architects' offices (24 November, p. 194).
 Glasgow Display: metric work of Glasgow College of Building (22 December, p. 49).
 Building Centre: five minute film giving introduction to metric change (29 April, p. 159).

Building Centre Pool of Speakers

Volunteer Speakers: Response to BSI—Building Centre scheme to provide volunteer speakers on the metric system (22 September, p. 130).
 Pool of Speakers: Building Centre discuss future plans (28 June, p. 125).

Conferences

Conference on metric components organised by the MPBW (27 October, p. 149).
 International Modular Group: meeting in Zurich (24 May, p. 162).

Contractors' Problems

Some of the problems contractors will have to face in going metric outlined by G. G. Rice, director of Richard Costain (Projects) Ltd. (24 May, p. 169).

Cost of Going Metric

Cost of change: NFBTE memorandum (26 January, p. 132).
 Maintenance costs: use of metric sized components when maintaining older properties (24 May, p. 173).
 Planning to reduce costs of change: address by G. A. Oscroft, technical adviser, Standing Joint Committee on Metrication (28 June, p. 122).
 Cost implication for builders: warning by G. A. Britton, chairman of NFBTE's metric sub-committee (28 June, p. 122).
 Compensation for exceptional costs in switching to decimal currency turned down by Decimal Currency Board (28 June, p. 125).

Education and Training

Survey of preparatory work undertaken on education and training by construction industry to meet metric change (22 March, p. 122).
 Requirements of retraining within the profession—editorial comment (26 April, p. 149).
 Working in metric: account of a practical example of metric working at the Portsmouth School of Architecture (24 May, p. 165).
 CITB training plans (28 June, p. 125).

Manufacturers' Problems

A questionnaire prepared by B. E. Keay, to provide a useful checklist for manufacturers when changing to metric. It is designed to give some indication of costs, demand, timing, etc. (23 February, p. 123).

The Metric Change

A series of articles describing the way in which various Government departments and industrial associations are organising for metric.
 The Ministry of Public Building and Works (22 September, p. 129).
 The Educational Building Consortia (27 October, p. 154).
 Ministry of Housing and Local Government (24 November, p. 180).
 The National Building Agency (22 December, p. 48).
 The Steel Industry (26 January, p. 131).
 The Ministry of Health (23 February, p. 118).
 The Scottish Office (22 March, p. 120).
 The Gypsum Plasterboard Development Association (26 April, p. 156).
 The Metal Fixing Association for Ceiling Systems (24 May, p. 160).
 The Timber Trade Federation (28 June, p. 120).
 The Steel Reinforcement Industry (28 June, p. 120).

Metric Expression

Point or comma: a BSI inquiry (22 September, p. 126).
 SI units: an explanation of the units of the rationalised metric system we shall be adopting, by Philip Dunstone (27 October, p. 144).
 Metric Gauge: suggested method of expressing the thicknesses of thin materials, by Philip Dunstone (23 February, p. 119).
 Point or comma: editorial comment on Decimal Currency Board's decision to use stop as decimal marker (22 March, p. 119).
 Decimal currency: Decimal Currency Board's booklet on written and printed forms (22 March, p. 121).
 SI calculations: practical example of use of SI units (24 May, p. 173).

Metric Instruments

Lists of metric items for the drawing office as they become available.
 Drawing Boards, Drawing Board Assemblies, Plan Files (27 October, p. 157).
 Levelling Staves, Ranging Poles (24 November, p. 194).
 Cloth and Paper (22 December, p. 50).
 Film (26 January, p. 128).
 Conversion scales for heat and light (23 February, p. 127).
 RIBA scales (23 February, p. 127).
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Grid Drafting: a review of the factors which influence choice in selecting gridded papers for drafting purposes (23 August, p. 102).

Overseas Countries

Australia: support for metric change (22 December, p. 49).
 Northern Ireland: action on metric change (23 February, p. 128).
 USA: debate on merits of going metric (23 February, p. 128).
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 Australia: findings of committee investigating metric change (28 June, p. 122).
 Canada: possibility of conversion to metric (28 June, p. 125).
 South Africa: industries beginning to use metric (28 June, p. 125).
 Australia: overwhelming support for metric adoption (26 July, p. 133).
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Personalities

Anthony Williams, consultant editor, Building Metrication News (22 September, p. 125).
 Kenneth Wood, chairman of the BSI's metric panel for the construction industry (27 October, p. 146).
 P. A. Denison, sales director of Cape Building Products (24 November, p. 193).
 Gordon Wigglesworth, director of building development, MPBW (23 February, p. 120).
 Hugh Clamp, chairman of the BSI functional group panel on external envelope (24 May, p. 170).
 Thomas Sibthorp, chairman of the BSI functional group panel on fixtures, furniture and equipment (28 June, p. 121).
 Bruce Martin, chairman of BSI sub-committee B/9411 (26 July, p. 121).

Programme towards Metrication

BSI's Programme Chart for the construction industry (22 September, p. 127).
 Dimensional co-ordination in Building: timetable for work of six Functional Group Panels established by BSI (27 October, p. 145).
 M'G circular on modular housing, requiring all authorities to submit metric schemes at tender stage after 1 January 1972—editorial comment (26 January, p. 117).
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 NFBTE: A. W. Rickard appointed metrication consultant (22 September, p. 130).
 Aluminium Federation: special metric panel set up (22 September, p. 130).
 BRS: Impact of metrication on the station (27 October, p. 157).
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 Gloucestershire Architectural Association: formation of metric committee (23 February, p. 128).
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Metric House Shells: proposals by the NBA to limit the range of house shells to 22 (26 April, p. 150).