

## **WHITE PAPER ON METRICATION (1972)** **Summary and Conclusions**

### **International trade and metrication**

1. The adoption of the metric system of weights and measurements is spreading rapidly throughout the world. Nearly every country either has already changed or is about to change to it. The continent of Europe uses it exclusively; all the chief Commonwealth countries and South Africa have changed or are at the moment moving over to it. And in the United States of America the Government has recently recommended the change. If we kept to the imperial system we could soon become the only major trading country using it.

2. Between them, the countries which have gone or are shortly to go metric are already taking more than 80 per cent of our exports. To preserve imperial specifications for home orders while an increasing proportion of our exports must be made to metric standards, would add to the cost of manufacture and make more difficult our penetration of overseas markets.

3. It is their recognition of the fact and extent of metrication in countries to which they must sell that has led wide areas of British industry voluntarily to adopt it for the home market as well. The competitive advantages of doing so were appreciated in Europe many years ago. The member countries of the European Economic Community have now decided to regularise and complete the process and for this purpose have recently ratified a directive setting a target date (1 January 1978) after which only a prescribed system of metric units may be used throughout the Communities.

4. In due course, as a member of the enlarged Communities, the terms of the directive will come to be applied here as well. But we shall naturally need a longer period in which to complete the changeover. Arrangements negotiated with the Community will ensure that units used in our legislation are retained until 31 December 1979. Where there are special reasons they may be retained for even longer.

### **Industry and metrication**

5. For the reasons already mentioned, British industry voluntarily has gone a long way towards adopting metric specifications for home production as well as for exports. It was expected that in the main the broad programme for the process would be completed by the end of 1975. This still seems a reasonable aim and it is one which has the support of the Government, but it is recognised that detailed examination of particular industries' problems may make an earlier or later date preferable.

6. Progress to metrication cannot be a haphazard affair, left to individual whim and decision. If that were to happen it could cause confusion throughout industry and would present untold difficulties to the consumer. It is in everybody's interests therefore to ensure that it takes place in a well-ordered and properly regulated manner. To see to this is the job of the Metrication Board. The Board

acts under the authority of Government and will continue to do so, concentrating on its dual role of coordinating the process of changeover in particular sectors of industry and giving general publicity to it.

7. In recent years special programmes have been prepared for the building, engineering and other industries. There is no doubt that these industries consider that the changeover is contributing significantly to their greater efficiency and competitiveness. Discussions with the transport industry and its users, for example, have shown that they would welcome a changeover to metric tariffs for overseas freights, because British goods are increasingly being carried to countries using or changing to the metric system.

8. The present system for showing speed limits and other road signs is unlikely to be changed for a long time to come.

9. The Government acknowledge and support the progress that has already been made. They will not, however, use public purchasing power deliberately to hasten the changeover from imperial to metric units. In their own purchasing they will use metric and international standards only when their discussions with suppliers show that there will be general benefit from doing so.

10. Meanwhile the more industry adopts metric units, the more will the general public become involved in the whole process. The range of products covered will grow and there will be no clear boundary between metric and non-metric parts of the economy. In these circumstances to attempt to keep imperial units for the individual shopper while industry was on metric would be both confusing and costly. It would also deny us the very real savings which stand to be gained when turning over completely to metric.

### **The general public and metrication**

11. There is nothing new about using the metric system in the United Kingdom; it is not some sudden innovation or recent discovery. It has been lawful here for all but a few purposes, at least since the Weights and Measures (Metric System) Act of 1897. So there can be absolutely no question of "metrication by stealth"; nor is there any lack of parliamentary authority for the way it has been becoming more generally adopted. This has been a gradual process, proceeding item by item, and that is the way it will continue.

12. There will be no "M-Day" for metrication. But people will become much more aware of it-and more familiar with it-as foodstuffs and household goods measured in metric sizes and quantities come into our shops from our own manufacturers as well as from the continent and from other metric countries.

13. Some goods, like vegetables, that are sold loose by weight may even now lawfully be sold by the kilogramme. But under the Weights and Measures Act 1963 many items of foodstuff may only be sold here in imperial measures. Steps will have to be taken to allow the wider use of the metric system. The Government will therefore propose legislation to permit the sale of metric packs in addition to the existing imperial sizes.

14. There will also need to be some consequential legislation since our laws include many references to imperial units alone. Exact conversions to metric equivalents may sometimes be impracticable, but in those cases the Government have no doubt that a satisfactory solution can be found.

15. The Government have no wish to discourage the sale of draught beer by the pint, but equally if anyone wants to buy it by the litre or half-litre that too should be lawful. The Government have at present no plans for changing from imperial units for the sale of milk.

### **The changeover to metrication**

16. No matter how carefully-prepared and well-regulated, the changeover to a new system must inevitably cause some difficulties, especially for older people who have throughout their lives known only imperial units of measurement: the younger generation will find it less difficult. The education authorities already give guidance and provide facilities to teachers and others concerned, so that those parts of the curriculum likely to be affected are modified in step with the increasing spread of the metric system.

17. The Government recognise that the period during which some foodstuffs are sold in imperial quantities and some in metric will present problems for many shoppers. The Government intend to take action to ensure that the marking of sizes and quantities is absolutely clear and will consider how best the housewife can be given information to enable her to continue to judge value for money.

18. The move to metrication has been taking place over many years, but the Government believe that the time has now come when they must act to ensure the orderly completion of the process. In doing so they will not hesitate to take whatever steps are necessary to protect the consumer during the period of changeover and to reduce to a minimum any difficulties which the introduction of the new system may cause.

## **II Historical Background**

### **The earlier legislation**

19. It has been the policy of successive British governments for a long time to allow people to use either metric or imperial units of measurement as they wished for the great majority of purposes. An Act of 1864, the Metric Weights and Measures Act, legalised the use of the metric system in "contracts and dealings". The Weights and Measures (Metric System) Act of 1897 legalised the use of the metric system for most purposes,

20. While both the imperial and metric systems of units may be used freely for most trading purposes, there is a legal obligation to use only imperial units for some purposes and only metric units for a few purposes such as the dispensing of drugs. Under the provisions of the Weights and Measures Act 1963 certain prepacked goods may only be made up for sale in prescribed imperial quantities, e.g. multiples of half a pound. There is also other legislation in certain specialised fields, for example, food purity, agriculture, safety in factories, mines and quarries, and various local acts and bye-laws which have produced legal restraints on the adoption of metric units. The implications are discussed further below. However, a great many of the daily transactions involving units of measurement are not subject to legislative control.

### **The tradition of free choice**

21. Successive governments have not dictated to the scientist or engineer what units of measurements he should use. British industry has, throughout this

century, been free for the most part to use either the metric or imperial systems subject only to observance of a statutory discipline in trade, notably retail trade, and some other circumstances where statutes or regulations use units of measurement.

### **III International Acceptance of the Metric System**

#### **The metric system**

22. The metric system was introduced and accepted in France during the revolutionary decade of the 1790s as a logical and scientifically-based replacement for the varied traditional systems then employed in France. Eighteen countries including the USA subscribed to the Convention of the Metre in 1875 to establish and preserve international standards of length and mass. The United Kingdom had an observer at the 1875 conference, acceded to the Convention in 1884, and has participated since that date in the development of the metric system and the definition of units on which it is based. In 1960, the General Conference of Weights and Measures, which meets under the Convention, agreed at its 11th Conference to promulgate an "International System of Units" (frequently described as the "System International- or "SI"). This is the current version of the metric system.

23. The International System is not a radically new system. Its departures from the well-established pattern of previous versions, though important in scientific and technological fields, are not such as to be important-or indeed even perceptible in domestic life or in the bulk of trading activities. Its effect is to simplify the metric units currently used in science and engineering.

24. In terms of everyday use the metre, gramme and litre and their multiples and sub-multiples are the most important parts of the International System. These are long-established units which have been met with at home or on holiday abroad by most people. The established international units used in electricity, such as ampere, volt and watt, are metric and also form part of the System. A comprehensive statement of the International System' (1) designed for the needs of the scientific community is published by HM Stationery Office: a simpler exposition is published by the Metrication Board. (2)

(1) *National Physical Laboratory. S.I.: The International System of Units. HMSO, 1970.*

(2) *Metrication Board. Going-Metric. Metric Units: An International System. HMSO, 1970.*

#### **The spread of the metric system outside the UK**

25. There has been a steadily widening acceptance of the metric system since its introduction by France. By 1900, 35 countries, including most of the leading European states, had adopted the system, and some 78 countries by 1960. Within the last decade most Commonwealth countries which had not already done so, among them Australia, New Zealand and Canada, and also South Africa have decided to adopt metric units. All either have changed or are in the process of changing.

26. Turning to the United States, the case of a change to metric is strongly put in the report of their Metric Study group (3) which was published last July. The report judges that it is inevitable that they "will join the rest of the world in the

use of the metric system as the predominant common language of measurement" and that in the circumstances it is better that the move to metric should be "by plan rather than by no plan at all". In presenting the report to the United States Congress the Secretary for Commerce expressed his agreement with its conclusion and recommended that the United States should adopt the International System deliberately and carefully through a coordinated national programme. He also recommended that they should adopt a firm commitment to a target date of 10 years ahead.

*(3) A Metric America. A decision whose time has come. US Government Printing Office, July 1971.*

27. If the United States follows this course the remaining non-metric countries will be few, and insignificant in world trade.

### **Impact of the Common Market**

28. A major objective of the Common Market is the removal of all barriers to trade within the Community. The member states of the European Economic Community (EEC) were among the pioneer users of the metric system over the last century and all have ratified the International System as agreed by the General Conference of Weights and Measures in 1960. It was thus natural that one of the strands by which the EEC aimed to achieve their common policy was an agreement on the units of measurement; it was also natural that this agreement should be based on the International System.

29. Article 100 of the EEC Treaty empowers the Council of the European Communities, on the proposal of the Commission, to issue directives "for the approximation of such provisions laid down by law, regulation or administrative action in Member States as directly affect the establishment or functioning of the Common Market". The Commission has already prepared a series of directives aimed at eliminating the obstacles to trade within the Community which such provisions create. These directives, when issued by the Council, become binding on the Member States.

30. In October 1971 the Council ratified a directive on units of measurement (4). This provides for the exclusive use by 1 January 1978, of a prescribed system of metric units of measurement over a wide area, including the economic field, the field of public health and safety, and administrative activities. This is firmly based on the International System, though it also includes certain additions and other special arrangements, some temporary and some permanent.

*(4) Not reproduced on the DTI Website*

31. This directive would apply to the United Kingdom as a member of the EEC. But we have reached agreement with the Community on adaptations to take account of our use of imperial units. It has been agreed that a list of imperial units used (5) in our legislation shall be added to the directive and that decisions should be taken by agreement before 31 August 1976 into which chapters of the Annex to the directive these imperial units should go. Those on which no decision is taken by then will automatically remain authorised for use until 31 December 1979. The Community have also agreed that it will be possible to extend the period of use where special considerations justify it.

*(5) Not reproduced on the DTI Website*

32. However, the directive apart, there are compelling economic reasons, which are discussed in the following chapters, why industries exporting to all parts of the world should use metric units. The continued production of imperial sized goods for the home market would not only weaken those industries' competitive power but would also entail higher prices for British consumers. It is on this basis that the voluntary changeover of industry to metric units has gone forward and the progress which has been made shows conclusively that this is a most forceful argument in its own right. To this extent, therefore, the implementation by the United Kingdom of the EEC directive gives legal form to a pattern, already firmly established, which is likely in large measure to be achieved by 1975. The Government in any case regard it as most desirable in the interests of our economic prosperity that the maximum practicable progress towards the metric system should be made within the next few years.

#### **IV The Impact of International Standardisation**

33. Standardisation and metrication are in principle two distinct subjects but in practice are closely related. The recent upsurge of international standards has been one important reason for the acceptance of metric units by so much of industry in the United Kingdom. Compliance with international standards will increasingly be a condition of successful British participation in international trade, particularly by our engineering industries.

34. A great change in the number and status of international standards is in progress. About 2000 international standards have by now been agreed. Over 60 per cent of these have been produced during the last five years and a recent forecast suggests a further increase to perhaps 20,000 world standards in ten years' time. Many purchasers will increasingly find it more convenient to stipulate compliance with the international standards particularly for engineering products.

35. International standardisation offers a further benefit to the manufacturer. In many fields of engineering there has been a proliferation of products with only minor differences and the maintenance of this excessive variety adds to the manufacturer's and the customer's costs. The acceptance of the world code of standards is often the only practicable way of economising in the range of products, and can reduce the costs to all the parties affected. International standardisation also reduces the numbers of documents, including engineering drawings, that have to be produced and filed, and the variety of test procedures and technical and safety regulations that must be observed. Some countries, in particular nations with limited resources of technical expertise, often find it advantageous to adopt international recommendations as national standards.

#### **Standards and metric units**

36. All but a few of these international standards are expressed in metric measures. This is partly a consequence of the well-established dominance of metric units in pure science and advanced technology in all countries and partly because the majority of active members of the international organisations are metric countries. National delegations cannot even participate effectively unless they accept metric units. It is therefore natural that the British Standards Institution was among the first bodies to point to the inevitable acceptance of metrication by British industry.

#### **Standards and the promotion of exports**

37. It is noteworthy that a preliminary report of the United States Metric Study Group was entitled *International Standards* (6) and drew the conclusion that the United States must either participate more actively in producing and using the world code, or maintain a superior technology and offer superior products for international trade to overcome the disadvantages of non-conformity to the code. The report stresses the difficulties of even the United States remaining a "front runner" if it kept to non-metric units.

(6) *US Metric Study, International Standards. National Bureau of Standards SP345-1. US Government Printing Office, 1970.*

38. The United Kingdom exports 19 per cent of its gross national product compared with only 5 per cent for the United States. This shows how much more we depend on world trade than does the United States: our concern to reduce barriers to world trade should be even stronger than theirs. The United Kingdom cannot rely as in former times on a superior technology over a wide front but must export, today, primarily to countries at a similar level of industrial development and with a comparable technological capacity, although often in different fields. Industry in the future will have increasingly to export goods complying with international standards, though there will remain a place for work to a special specification, particularly for the smaller manufacturer. Where international metric standards are in use or in preparation the continued use of imperial measures even in the home market will impair British performance in export markets. As international standards become still more widely used, so would the United Kingdom's handicap become increasingly severe.

## **V Developments in the United Kingdom**

### **Recommendations of the Hodgson Committee**

39. The Hodgson Committee, after a two year review of the existing Weights and Measures legislation, came to the unanimous conclusion, in their Report published in 1951:

that the metric system is, in the broadest sense and in the interests of world uniformity, a 'better' system of weights and measures than the imperial; that a change from imperial to metric for all trade purposes is sooner or later inevitable; that a continuance of the present option to use either the metric or the imperial until the inevitable comes about will cause in the long run more inconvenience than an ordered change within a specified period; and that the long-term advantages which would flow from an organised change in the near future would far outweigh the inconveniences of the change itself (7).

(7) *Report of the Committee on Weights and Measure Legislation. Cmd.8219. HMSO, 1951*

40. This Committee based these recommendations primarily upon the needs of international trade and United Kingdom exports. It emphasised that:

it is in the field of international trade that the benefits of uniformity of measurement come fully into their own

and that

it is obviously illogical for there to be two separate systems in a world which is, from the trading point of view, becoming rapidly smaller; and the advantages of a decimal system are such that it is highly unlikely that any country not now using it would adopt the non-decimal imperial system.

The Hodgson Committee's recommendations were based on the Committee's view of future trends, which have indeed proved to be well-founded. However, influential industrial opinion was divided at that time about the desirability of metrication. The Committee's recommendations were widely regarded as premature.

41. In 1950 43 per cent of United Kingdom exports went to those countries which were then already metric. With the change in our pattern of trade, these same countries now take 58 per cent. A further 25 per cent of our exports in 1970 were to countries that since 1950, either had adopted or were in the course of changing to the metric system. Thus over 83 per cent of UK exports are now to markets that either are or soon will be metric.

### **Industry's approach to Government**

42. It was primarily the steady growth of metric at the expense of imperial markets that influenced the then Federation of British Industries (now the Confederation of British Industry) to inform the Government in 1965, after two polls of its members, that the majority of members, both in number of firms and in total size of business, was in favour of the adoption of the metric system as the primary and ultimately the only method of measurement to be used in the United Kingdom. This advice was offered shortly after an enquiry by the British Standards Institution of its members had produced a similar consensus. The Federation suggested that the time was appropriate for general Government support for the change.

43. Individual industries and the Confederation of British Industry have repeatedly said that the metrication of industry should be "voluntary and evolutionary". The Government were not asked to impose the metric system but to support and encourage a voluntary movement that industry believed to be in the national interest.

### **Government support for the change**

44. The then President of the Board of Trade said in May 1965 that:

The Government consider it desirable that British industries on a broadening front should adopt metric units, sector by sector, until that system can become in time the primary system of weights and measures for the country as a whole (8).

A target date was indicated in the same statement:

The Government hope that within ten years the greater part of the country's industry will have effected the change.

*(8) Hansard (Commons) Vol. 713, Col. 32-33 (W).*

45. In March 1966 the Standing Joint Committee on Metrication was appointed. After an extensive series of consultations it reported in May 1968. On 26 July 1968 (9) in a statement in the House of Commons the then Government indicated



their general acceptance of the report (10). Among the principal points in the statement were that:

(a) the end of 1975 should be accepted as the general target date for all provisional metrication programmes, with the qualification that if the date proved unreasonable for any particular sector the programme might aim at an earlier or later date:

(b) an advisory Metrication Board should be set up to guide, stimulate and coordinate the planning for the transition of the various sectors of the economy:

(c) they accepted the need for legislation but did not adopt a specific date:

(d) there would be no question of compensation: the costs of adopting metric weights and measures must lie where they fell.

*(9) Change to the Metric System in the United Kingdom. Report by the Standing Joint Committee on Metrication. HMSO, 1968.*

*(10) Hansard (Commons) Vol. 769, Col. 1167-1171.*

46. The progress that has been made since 1968 suggests that the target date will be met and that the greater part of the industrial sector will be using the metric system for most purposes by the end of 1975. This would be well within the dates set by the EEC directive.

47. Following the General Election in 1970 the present Government examined the extent to which metric units of measurement had been adopted and accepted that their use by manufacturing industry was necessary for the well-being of the economy. The Chancellor of the Duchy of Lancaster, when he was Minister of Technology, gave the Government's view in a written answer in the House of Commons on 20 July 1970:

The Government have noted the extent of the plans and commitments already made towards the general adoption of the metric system, described in the First Report of the Metrication Board published in May. The Government propose to encourage these voluntary developments, including the use of metric specifications for public purchases as soon as consultation with suppliers shows this to be practicable. (11)

(11) Hansard (Commons) Vol. 804 Col. 19-20 (W).

48. Government Departments are substantial purchasers of industrial products and could by their purchasing policies deliberately hasten or delay the introduction of products conforming to metric standards. The Government have decided to use this purchasing power in step with the progress of metrication. Government Departments are coordinating with other public authorities to promote standardisation and variety reduction in the public sector (12). To this end the Government will wherever practicable purchase to British Standards conforming to international recommendations. But they do not intend to use public purchasing to force the pace of metrication. They will consult suppliers before ordering metric supplies and they will adhere as far as possible to the programmes for metrication evolved by industry itself.

*(12) Hansard (Commons) Vol. 788 Col. 405-410 and Vol. 812 Col. 345-346.*

49. The Ordnance Survey has used metric measurements for surveying for many years. Since 1969 all maps to scales of 1:10,000-approximately six inches to one mile-and larger, have been produced in metric form. Admiralty tide tables from now on will be in metres; and Admiralty charts are being redrawn to show metric units, either individually as they require revision or in regional groups. The Load Line Rules for shipping are already in metric units and stability information for all new ships is required to be provided in this form.

### **The metric system and defence**

50. An important programme covers all Service equipment and stores and is in step with the programmes of industry. Since January 1970, new Service equipment has been designed in metric terms in line with industry's progress. For example, in the aviation field the drawings and documentation for all new designs of military aircraft and new equipment for them are now expressed in metric terms. So also are new guided weapons systems, engines and a number of military electronic systems. Some projects, for example the Anglo-French Jaguar aircraft, are being undertaken in collaboration with countries already using the metric system.

51. The Ministry of Defence is also taking full advantage of the opportunity afforded by metrication to reduce the variety of items in Service inventories, to eliminate unnecessary variation between military and industrial requirements, and to conform with international engineering standards.

### **Industry's commitment to metric measure**

52. The programmes of industry are well advanced. The Confederation of British Industry wrote to the Secretary of State for Trade and Industry towards the end of 1970:

After five years intensive preparation industry is now irrevocably committed to metrication. Millions of pounds worth of the new and replacement equipment purchased by industry in recent years is designed to produce to metric standards; thousands of man hours have gone into planning and implementing conversion programmes. Progress is well up to schedule. The impetus of change is growing rapidly. There can be no turning back.

Metrication provides big advantages, not only to industry but to the economy as a whole. It is simple both to teach and to use. It offers great scope for rationalisation and variety reduction in factory, warehouse and shop. It offers greater export opportunities in an increasingly metric world. It will greatly ease the harmonisation of international standards, increasingly important for the removal of barriers to trade. The sooner these advantages can be realised to offset the inevitable costs of change, the better. To delay is to get the worst of both worlds.

53. The second annual report (13) of the Metrication Board describes the manner and the progress of the voluntary introduction of metric measurements by the various sectors of industry. Careful planning since 1965 has resulted in the publication of metrication programmes in many fields. Many industries now have made substantial progress in implementing their programmes, and the production and sale of goods in metric is steadily increasing.

*(13) Metrication Board. Going Metric: Progress in 1970. HMSO, 1971.*

54. One of the most detailed programmes was that drawn up by the construction industry in 1967. This provided for the changeover to metric being substantially completed by the end of this year. With less than a year to go, the implementation of this programme is already at a very advanced stage; the value of metric projects in design for the public and private sectors totals well over £3,000 million. It has often been suggested that metrication will create particular problems in the maintenance and renewal of existing buildings. According to the trade, this is not being borne out by the experience to date. Problems will arise, but these will not be in any material respect different from those which have arisen in the past as a result of those changes in the design and size of components which have been customary in the industry.

55. In engineering it is now normal practice for new designs to be in metric units. The majority of the engineering trade associations expect that the greater part of production will be metric by the end of 1975.

56. In the textile industries the metric system will help to rationalise practices and procedures, notably the adoption of the internationally accepted 'tex' system which is a standardised method of yarn counting for all natural and synthetic fibres. In some parts of these industries metric working has already begun and many parts are aiming for substantial metric working by the end of 1973. These changes will carry through into the clothing industry.

### **Is partial metrication possible**

57. Some people believe that industry should go metric but that there should be no need to involve the private consumer. This view ignores the fact that more and more of manufacturing industry is devoted to producing consumer goods which it would be uneconomic to have to make to both imperial and metric specifications. Industry has consistently argued that it could not go far down the metric road in isolation from other sectors of the economy without foregoing many of the benefits of the metric system and incurring extra costs. In 1970 the Confederation of British Industry said:

It never made much sense to talk of industry going metric in isolation. All parts of the economy are interdependent, and whilst timing and method must be left to individual decision it is likely to be in the interests of all that the economy should move forward roughly in step together. It was in 1967 that it became apparent that metrication in industry had progressed to the stage where business and the retail sector would soon become involved in the process. Industry's move was gradually extending beyond the process of manufacture to the other parts of the economy, and coordination was obviously necessary; the CBI therefore made a number of approaches to interests concerned with distribution and the retail trades and then suggested, and the Standing Joint Committee agreed, that the Metrication Board should be set up as national coordinator.

### **Agriculture and horticulture**

58. The progress towards a change of system which has already been made in the different sectors of agriculture was outlined in Chapter 6 of the Metrication Board's second annual report (14). This referred to a proposal by the Joint Metrication Group set up by farmers' organisations that most of the changes should take place in 1973. However the Metrication Board and these organisations have now accepted that this date can no longer continue to be

regarded as a feasible target. The farming organisations have undertaken to hold further discussions within the farming community about possible future plans and subsequently to consult Government Departments. The views of the supplying and marketing organisations concerned will also be taken into account.

*(14) Metrication Board. Going Metric: Progress in 1970. HMSO, 1971.*

59. When we become a member of the European Communities our obligations will include the adoption of the Community system of agricultural support. This will involve both the industry and the Agricultural Departments in wide-ranging administrative and procedural changes, and careful coordination of the timing of any plans for the adoption of the metric system will be necessary in this sector during this period of transition.

## **VI The Effects of Metrication on the Consumer**

60. There can never be an "M-day" on which the country, or retail trade as a whole, goes metric. Going metric, quite unlike going decimal, can only be gradual; first one commodity, then another, comes normally to be sold by metric units. Already a large proportion of the goods sold in chemists' shops and by builders' merchants is measured in metric terms. The shopper is in this way slowly and gradually becoming acclimatised to the use of metric quantities.

61. The impact of metric units will inevitably vary greatly from one commodity to another. Many foodstuffs, such as eggs and some fruit, are sold by number. So are very many other standard household purchases. Consumer durables like motor cars, tables and chairs and electric toasters are sold on performance and appearance and the expression of their size in metric units does not in the least alter either their qualities or the amount of room which they occupy. Some textile products like bed-linen are already often marked in both the imperial and metric systems.

62. The housewife will increasingly find goods being sold in metric units. Cookery books and kitchen scales are likely more and more to come onto the market with metric, or both imperial and metric, units, but the continued use of existing equipment should involve only slight changes of practice.

### **Package sizes**

63. There are many goods for which the Weights and Measures Act does not prescribe standard package sizes. Among these are such foodstuffs as sauces, soups, canned fruit and vegetables and canned and bottled drinks, and also other goods like paint and soap. All these commodities when sold prepacked have to have their weight or capacity, as the case may be, marked on them in imperial measure: in many cases the metric equivalent is also shown.

64. The Government would propose to introduce legislation which would require, at least for the next few years, that both metric and the equivalent imperial units should be used in these cases. Some of those commodities, of which paint is the best known, are now sold in a series of round metric sizes in place of the old imperial sizes. The successor to the pint can is the 500ml can which is about 12 per cent smaller, and a can of 1 litre has replaced that of a quart.

65. This is one example of a world-wide trend to internationally agreed metric sizes in tins, bottles and other packages. In the case of solid foodstuffs there is

equally in many countries a trend towards the acceptance of a range of standard metric sizes. So far no one range has gained authoritative approval from the EEC, but none the less it seems likely that an agreed range of sizes will emerge and become accepted throughout most of Europe and in many other countries.

66. The Weights and Measures Act requires that butter, sugar, tea, flour and numerous other groceries are sold, if prepacked, only in standard quantities; at present these quantities are exclusively described in imperial measures. The Government propose, after due consultation with the industry and with consumer interests, to introduce legislation which would permit a range or ranges of round metric quantities also to be used. Orders would be laid before Parliament for its consideration. In due course the imperial sizes may therefore fall into disuse.

67. The outcome of this series of changes should be a simpler and more extensive range of sizes, which will assist the consumer. By facilitating the export of our own products without involving special packaging, this should tend to reduce unit costs and thereby in the long run help to keep prices down. Furthermore, as shoppers become accustomed to metric units, comparison of prices should be much easier.

### **Consumer protection**

68. The provisions of the Weights and Measures Act that certain foodstuffs should be sold only in standard quantities have proved a great help in comparing value for money: and the UK's arrangements are now being adopted elsewhere. But when both metric and imperial measures are in use together it will be more difficult to make comparisons. Although the Government already require the weight of each pack to be clearly marked on it they will additionally require the new metric packs to be distinctively marked. It is hoped that all manufacturers will do this voluntarily but if necessary the Government would use their powers under the Weights and Measures Act to ensure that this is done.

69. The Government will be concerned to ensure that consumers fully understand the system which is in use and are able to continue to judge value for money during the period when both imperial and metric measures are in use. It will be the preoccupation of all concerned to see that consumers do not suffer as a result of the change. The Government will therefore consult trade and consumer interests on the best practicable means of enabling the shopper to compare values in both imperial and metric quantities.

### **Goods sold loose by weight**

70. Goods like meat, fruit and vegetables are usually weighed and wrapped in the shop before the customer's eyes, though the growth of supermarkets is changing shoppers' habits. The law has for many years permitted the retailer to weigh either in grammes and kilogrammes or in ounces and pounds, as he and the customer see fit. The Government expect that normal economic pressures, the change to metric in other foodstuffs, and industrial usage will promote the use of metric weights over the coming years.

### **Beer, cider, spirits and milk**

71. There are no present legal restrictions on the quantity of beer or cider which may be sold in a bottle or can, though the quantity must be marked. But draught beer and cider may be sold retail by law only in certain quantities, namely one third of a pint, half-a-pint or multiples of half-a-pint. The Government have no

wish to discourage the sale of draught beer by the pint. Equally they see no reason to forbid its sale by measures of a litre or its submultiples. To permit this would require subordinate legislation. Similarly, the sale of metric measures of gin, rum, vodka and whisky would be permitted in licensed premises. To avoid the risk of confusion to customers it would probably be undesirable to allow both imperial and metric measures to be used in the same bar.

72. Industry is giving thought to future arrangements for the units of sale for milk but has not yet made firm plans. Any change would require subordinate legislation and the Government have no plans for such changes at present.

## **VII Freight Transport**

73. A very large proportion of bulk freight, both domestic and international, moves on the basis of terms negotiated by contract between the buyer or seller and the haulier. The terms include the units of measurement to be employed. Making contracts in metric for the carriage of this traffic is, therefore, simply a matter of agreement between the parties concerned.

74. The date on which the carriers of smaller parcels switch to metric units is of importance to the many users of their services. The carrier must for convenience have only one tariff, which may have been calculated on the basis of either system of measurement, but he must accept parcels measured under both systems, inconvenient though the recalculation will be. He is therefore rightly anxious to make the change at about the time when this meets the convenience of the majority of his customers. But equally he wants to ensure that his competitors change at the same time, and that he is keeping in step with the wider changes which affect his operations.

75. Two committees of operators and users were set up under the auspices of the Metrication Board to draw up plans for the change, one for inland and one for overseas transport. The work of these committees is described in the second annual report of the Metrication Board.

76. It is obviously desirable to use metric units for overseas freight tariffs. The committee of operators and users which studied overseas transport judged that the date of 1 January 1972 should be selected for the changeover. UK port authorities decided to accept this date for the introduction of metric units as the basis for their freight charging. Major shipping conferences from the UK have been progressively adopting metric tariff structures and aim to have the process virtually completed in the early months of 1972. Discussions are continuing with authorities in USA and Canada.

77. The committee concerned with overseas transport noted that almost all recording both for customs and statistical purposes was in imperial units and this would have to be revised. They judged that, again, the date of 1 January 1972 should be selected for the changeover to metric units. Following consultation, and with general agreement of the industries concerned, metric units were introduced from this date for about one half of the Tariff and Overseas Trade Classification. Discussions are continuing on the programme for completing the change.

78. The committee dealing with inland freight tariffs met under the aegis of the Freight Transport Association. It recognised the advantages of agreeing a common date with the overseas committee but anticipated difficulties in making the change by 1 January 1972; a later date for the change is being canvassed.

## **VIII Education and Industrial Training**

### **Education**

79. The metric system has been taught in schools, colleges and universities for many years. The International System of Units is an indispensable part of higher and further education, and relevant courses in science, engineering and other technical subjects are being modified in step with the progress of metrication in industry.

80. An increasing number of pupils leaving schools from now on will be required to use metric measures in their future occupations, and it is necessary that what they learn at school should be relevant to their experience after leaving school.

81. The increasing use of metric units outside education is reflected within the education system not only in institutions of higher and further education, but also in the schools of the United Kingdom. There is no specific point at which education as a whole "goes metric. Indeed, it is not possible to forecast when the transition will have gone so far that school pupils will no longer need to use imperial units. A working knowledge of those imperial measures used in everyday life will still be needed for some years. Moreover, students in higher and further education will need to know about imperial units if they are to make use of technical and other literature of continuing value that contains data in these units. In general, however, schools and other educational institutions are responding to the view that their pupils and students will increasingly be expected to be familiar with metric units and dimensions. The rate and degree of change at any stage depends on the subject matter and on the evaluation of local needs.

82. As part of its responsibilities, the Metrication Board is charged with keeping all educational interests informed of plans and progress in metrication, so that the educational system can respond in good time to changing needs arising from the progressive adoption of metric weights and measures in industry, commerce and everyday life. The first two annual reports of the Board have summarized the changes in progress within the educational system.

83. The publishing industry has produced text books and other material employing the International System, and a wide range of suitable books is now available at most levels. Other specialist producers have made available metric equipment for use in secondary schools, and that required for primary schools is now being produced.

### **Developments in England and Wales**

84. In the context of education the metric system is a curriculum question and its implementation is therefore a matter not for central Government but for authorities responsible for schools and other educational institutions. The main burden falls, of course, on the teachers in the classroom and there is every reason to believe that they are fully aware of the situation. This is but one of the many changes in society which teachers increasingly have to take into account and which are reflected in curriculum development projects involving hundreds of teachers at both the local and the national level. More than half the local education authorities have organised their own in-service training programmes and for the initial training of teachers the colleges of education are making adjustments to their teaching syllabuses as required. Nearly all local education authorities have made a special allowance to help the schools and establishments of further education meet the needs created by the change to metric. They have

been helped in this by the fact that the settlement for the rate support grant for 1971-72 and 1972-73 includes provision for significant increases in real terms in expenditure per pupil in schools and in establishments of further education for items other than teaching staff salaries.

85. Advice has been given to local authorities in various forms. The Department of Education and Science drew attention, in an Administrative Memorandum of August 1967, to the (1965) Government announcement of the intention to change to the metric system. In a further Administrative Memorandum of October 1969 the Department indicated the progress made in introducing teaching in metric terms in the further education sector, and drew the attention of schools to the need for pupils to become increasingly familiar with metric units. At the same time the Department published a leaflet in its Education Information series giving further guidance and listing useful publications. For the schools, the Schools Council for Curriculum and Examinations (an independent body whose members are representative of all parts of the education service including the Department of Education and Science and the Welsh Office) gave preliminary guidance in its booklet *Change for a Pound* (15) published in 1968. In February 1970 it published a booklet *Measure for Measure: a Guide to Metrication for Workshop Crafts and Technical Studies* (16), and in collaboration with the Metrication Board it has recently published a guidance booklet for teachers in primary schools called *Metres, Litres and Grams* (17). Also, the Council circulated widely in 1969 a paper setting out the arrangements made by the schools examining bodies for the introduction into their examinations of questions in decimal currency and metric units. Representatives of the examining bodies have indicated that the phasing of examinations is continually under review and have emphasised their intention to keep pace in setting examinations with the rate of change towards the metric system in industry, commerce and other sectors.

(15) Schools Council. *Change for a Pound*. HMSO, 1968.

(16) Schools Council. *Measure for Measure: a Guide to Metrication for Workshop Crafts and Technical Studies*. Methuen Educational, 1970.

(17) Schools Council. *Metres, Litres and Grams*. Methuen Educational, 1971.

86. In the further education sector, where courses and examinations are closely linked with the requirements of particular sectors of industry and commerce, clearer indication of phasing can generally be given. In a Circular Letter of March 1968 the Department of Education and Science invited all relevant bodies concerned with examinations and syllabuses in this sector to consider, when each sector-of-industry programme was published, what consequential changes would be needed, how and when these could most appropriately be introduced and to take steps in to form colleges of their intentions. This suggestion has been fully implemented with the result that the necessary information has gone to the colleges, which have been able to act on it.

### **Developments in Scotland**

87. In 1968 the Scottish Education Department published two Curriculum Papers:

No. 4: *Going Metric: Implications for the Primary School* (18)

No. 5: *Going Metric: Implications for Secondary Schools* (19)

The Scottish Certificate of Education Examination Board, for a number of years, has been progressively extending the use of the International System of Units in its examination papers. They are now being exclusively used in Physics



(Alternative Syllabus), Applied Mathematics, Dynamics, Engineering Science and Applied Mechanics, and will be used in virtually all papers on both the Ordinary and Higher grades by 1973. In further education steady progress has been made towards providing for the needs of metrication in step with the appropriate industries. Many examinations and corresponding teaching, especially in science, engineering and construction are now or soon will be, completely converted to the use of the International System. Others are temporarily providing dual questions or alternative papers where necessary.

(18) *Scottish Education Dept. Going Metric: Implications for the Primary School HMSO, 1968.*

(19) *Scottish Education Dept. Going Metric: Implications for Secondary Schools. HMSO, 1968.*

### **Industrial training**

88. Particular industries are adopting metric practice at different rates and it is a task of the Industrial Training Boards to meet and anticipate the needs of their particular sectors. The Standing Joint Committee of Industrial Training Boards, with the help of the Metrication Board, has been responsible for coordinating the work of these Boards. The Committee has initiated a series of training texts: these fall into three categories-Information Documents, Basic Learning Texts and Specialised Learning Texts, and are for general use across industry. There is also the training guidance developed by individual training boards, notably the programmed learning and visual aids of the Construction Industry Training Board and literature such as the Engineering Industry Training Board's *Going Metric-Introducing Common Metric Units* (20). Experience has shown that the main training problems have been in acquiring familiarity with new British Standards at the supervisory and sub-professional levels and in drawing offices. The degree of retraining required will vary from one company to another depending upon their activities and products and the pace at which the industry is changing to metric usage. At lower levels the amount of retraining needed by an individual is usually small.

(20) *Engineering Industry Training Board. Going Metric-Introducing Common Metric Units. EITB.*

### **IX The Metrication Board**

89. The Standing Joint Committee on Metrication reported in May 1968 and recommended that an organisation was needed to coordinate the sector plans for the country as a whole and that only an organisation such as a Metrication Board could fulfil this role (21). In July 1968 the then Government announced their acceptance of the recommendation to establish a Metrication Board:

to guide, stimulate and coordinate the planning for the transition for the various sectors of the economy. Every sector of the economy need not move at the same pace. But there will be unnecessary confusion and expense, and great difficulties for industry, unless there is central machinery for coordinating the programmes of change for the various sectors (22).

Industry, notably the Confederation of British Industry, the Council of Engineering Institutions, the British Standards Institution and the Royal Society had made strong representations on the need for such an organisation.

(21) *Change to the Metric System in the United Kingdom. Report of the Standing Joint Committee on Metrication. HMSO, 1968.*  
(22) *Hansard (Commons) Vol. 769, Col. 1167-1171.*

90. In a written answer, Parliament was informed in April and May 1969 of the appointment of the Chairman, Deputy Chairman, the Director and Members of the Board (23). The first meeting of the Board was held on 28 May 1969. The pattern of organisation developed by the Board has been followed by a number of Commonwealth countries who are now in the process of changing to metric. An account of the Board's work since May 1969 is to be found in its two reports, *Going Metric: the First Five Years 1965-69* published in May 1970 and *Going Metric: Progress in 1970* published in April 1971(24).

(23) *Hansard (Commons) Vol. 782, Col. 215(W) and Vol. 784, Col. 81-82(W).*  
(24) *The Board's membership, terms of reference, staff and costs are set out in Annex I*

91. These reports indicate the complexity and far-reaching character of the changes now in progress. So far they have chiefly been of concern to industry and this has determined what has been the principal objective of the Metrication Board's programmes both in publicity and in coordination. The Confederation of British Industry and the Board are particularly concerned to keep the small businessman informed about the change and its implications. But henceforth the changes will increasingly have an impact on daily life. The Metrication Board has now decided with the Government's approval to set up a Steering Committee for Distribution and Consumer Interests to consider and advise on all aspects of the metric change which will have an effect on the consumer. It will work closely with the Steering Committee for the Consumer Goods Industries. It will be concerned that effective measures are taken by the Board, through the media of publicity, to inform the public of what is happening and why, and the extent to which the changes may be expected to affect the individual in his daily life.

92. The Board has no power to require anybody either to make or to implement programmes. Efficient programming can only be undertaken by individuals who have a comprehensive and detailed knowledge of the trade concerned and who will be responsible for implementing it. The Board's function is to give general help, advice and information to those who have the responsibility; its formal duties are defined in its terms of reference.

93. The Government have reviewed the working of the Metrication Board and have concluded that the reasons which led to its establishment are still valid. The complex nature of the changes taking place make it necessary to have an efficient centre of communication to relate and coordinate the many programmes. No other organisation can take a comprehensive view of the switch to the metric system and relate it to the pace at which people can accept the change.

94. The Board has relied heavily on the voluntary and much valued contribution of many people from many walks of life, to whom the Government are grateful. The efficient conduct by the Board of the difficult tasks of coordination and communication depends upon this public cooperation that is so essential to a change of this character. The Government hope that all organisations will keep the Metrication Board fully informed of all moves that will affect substantial numbers of people.

95. The Board has learned much from other countries' experience, and has been able to offer advice in the light of experience in this country. It will continue to have an important role in ensuring the smooth progress of metrication within the United Kingdom and in maintaining the necessary and close liaison with developments overseas.

### **X Costs and Benefits**

96. The change to metric units in so many parts of industry has gone forward, as other parts of this paper explain, at industry's own inspiration. Industry would not have led the way unless it considered that the changeover would help it in export markets and, through rationalisation, keep costs down. The increasing speed of change therefore can be taken as an indication of industry's assessment of its value.

97. Almost always when a factory or an industry goes metric other related changes are also made, such as rationalisation of the dimensions or of the range of products manufactured, or a substantial redesign or retooling. In some cases, as in a firm producing screws, metrication may be the occasion to rationalise the range of products. In other more complicated lines the need to redesign arises and the opportunity is taken to go metric. Sometimes these related changes may be extensive and costly but they are not undertaken unless they are judged to result in benefits which sufficiently exceed the costs to make the expenditure worthwhile. Much depends on the timing of the change: capital equipment seldom needs to be replaced solely because of changing to the metric system, and the costs of its adaptation to metric should not be high. The change to metric may however prompt a reassessment of the comparative efficiency of different types of machines. How to exploit the metric change so as to incur the lowest costs and secure the maximum benefits is one of the major problems of the changeover for each organisation.

### **Assessing the cost**

98. Partly because going metric is so often just a part of a wider change, and partly because for understandable reasons many firms regard their costings as confidential, there are available very few assessments of costs prepared by individual firms. And the few that are available are not comparable one with another, because different firms have used different criteria. The actual costs depend on a wide range of events and decisions throughout the period of the change, and in many cases these decisions have yet to be taken. There is of course an immense variety of undertakings. It is not possible to aggregate or to make worthwhile generalisations from the few costs for particular undertakings that are known. There have been several unofficial estimates of the global cost of metrication never supported by any statistical evidence. No well founded estimate exists or could exist.

99. None of the countries which has changed to the metric system, or decided to do so in recent years, has made an estimate of the total cost of the change ; doubtless for reasons which are similar to those which make it impossible to do so for the United Kingdom. The United States Metric Study Report states that it

sought estimates of benefits and costs from trade associations, labor unions, business firms, government agencies, educators, importers and exporters and others in a position to have first hand knowledge of their

fields .....

The ideal outcome of this procedure would have been a simple aggregate figure ..... representing the net benefit (or cost) to the nation of going metric under a coordinated national plan .....

This conceptually simple approach was not feasible. First, few of the groups from whom benefit and cost data were solicited were able to furnish them. Second, the benefits and costs are not directly comparable, inasmuch as they would occur at different times. Virtually all the costs would be incurred during the transition period, at a time when benefits were just beginning. Most of the benefits would come after the transition. Third, the majority of benefit and cost items are basically elusive-perhaps even unknowable in dollar terms. As was pointed out above, some are intangible; others cannot be attributed purely to, 'a metric change'. (25)

*(25) A Metric America. A decision whose time has come. US Government Printing Office, July 1971.*

100. Such evidence as is available from individual undertakings in the United Kingdom indicates that the expenditure will not be heavy. Many leading industrial firms have now changed or have planned the change in detail and are in the process of implementing their plans. Only a very few organisations have made their budgets available and they have emphasised that, for some or all of the reasons outlined above, the figures are maxima and are very approximate. The chemical industry expected to be selling 85 per cent of its output in metric terms by the end of 1971, estimates the cost at £6m spread over a period of about seven years. This is approximately 0.25 per cent of the industry's anticipated total capital investment programme on new plant and equipment over the same period. Among those firms who, have made figures available, a group which has an annual turnover of £450m expects the gross costs spread over a period of seven years to be in the region of £1.4m, or approximately 0.04 per cent of turnover. A smaller engineering company with a turnover of £1m per annum has estimated its full costs at £19,500, which even if spent in one year, represents a little less than 2 per cent of turnover. Another major company with an annual turnover of more than £325m, expects the gross cost of a very comprehensive change to be about £1m. Even if spent in one year this represents 0.3 per cent of turnover. The company has found that it is already making annual savings of approximately the same order and that there is the prospect of appreciable recurring annual gains. Another group with a turnover approaching £70m has computed the costs at its major plants at £55,000 or less than 0.1 per cent of turnover.

## **Benefits**

101. The US Metric Study Report in concluding its lengthy section on benefits and costs said:

The analysis of benefits and costs made in this chapter confirms the intuitive judgement of US business and industry that increasing the use of the metric system is in the best interests of the country [the United States] and that this should be done through a coordinated national program.

As indicated above, this view is even more applicable to the United Kingdom. It is the view of organised industry, with which the Government concur, that the acceptance of metric units is a prerequisite for British industry as a whole if it is to continue to compete effectively in world markets in future decades.

102. The nation must also consider the costs of not going metric. These include the cost of continuing to operate two systems. If the United Kingdom were to retain the imperial system, while at the same time having to use metric to an increasing extent for international trade, British industry would be less efficient and less competitive and the higher costs would be cumulative. This would have repercussions on the standard of living and we would have burdened ourselves with an economic handicap.

### **The importance of correct timing**

103. In all industries the actual costs and benefits depend upon the timing of the changeover to metric. The costs of a quick and radical change would be high, as would the costs of a protracted and unplanned change; but direct costs can be reduced, sometimes almost to zero, by a phased introduction of metric equipment, be it machine tools or plastic containers. In any event, the costs are transitory. But once the change is made the benefits last indefinitely. Also the potential losses of staying imperial mount cumulatively in the loss of markets and customer goodwill if the change is unduly delayed.

104. The experience of all firms and industries which have carried out the change is that there is an optimum time for it when the balance of advantage is greatest. However, this optimum varies from firm to firm and depends on many factors, some of them internal, such as the life-span and age of existing plant : some of them external, such as the plans of suppliers and customers.

105. Some guidelines based upon external trends are essential, and to provide these in some detail in conjunction with industry is one of the principal functions of the Metrication Board. Likewise, a broad target date is desirable to promote the coordination of different industries' plans, as emphasised by the Hodgson Committee in 1951 and the Standing Joint Committee on Metrication in 1968. The latter advocated a target date of the end of 1975 (see paragraph 45).

### **Government costs**

106. The immediate costs in Government Departments will be absorbed within the normal provisions for management and staff.

107. The most expensive operation within the field of public administration will be the conversion of all road signs showing miles (or mph) to kilometres (or kph). The cost of conversion of all road speed signs is likely to be about £2m and of all road signs indicating distance appreciably more. Unlike the changing of distance signs, where phasing is practicable, the change of speed limit signs must be done as one major operation. It had previously been proposed that speed limits should be made metric in 1973 but on 9 December 1970 the Minister for Transport Industries announced in Parliament that this would not be done and that the Government had no alternative date in mind (26). The change of speed and distance signs to metric units will need to be considered in detail, but not for some years.

*(26) Hansard (Commons) Vol. 808, Col. 417-418.*

### **XI Legislation**

108. The greater part of our legislation still employs imperial units in cases where reference to weight, length or other dimensions is called for. But the progress of

the metric system within industry, as described in Chapter V, means that those parts of this legislation which have an impact on industry will need, at least by 1975, to have been adapted for use within a metric setting. There is a great deal of statute law, subordinate legislation, and of local and private acts and bye-laws which fall into this category. Some of this legislation is no impediment to going metric. And there are provisions of the Weights and Measures Act 1963 which afford a statutory basis for effecting uniform conversions from most imperial units to metric, which can be employed in some cases.

109. But there is other legislation for which the use of conversion factors is not satisfactory and which constitutes a barrier to the adoption of the metric system in industry, though most of it is of little concern to the general public. For example, some pressure gauges in factories are required by the Factories Act 1961, to indicate pressure in pounds per square inch: the Alkali etc. Works Regulation Act 1906, requires atmospheric pollution to be expressed in grains per cubic foot, and the General Rate Act 1967, uses the therm as the basis of rateable value of certain properties within the gas industries. Similar problems exist in legislation for agriculture and its allied industries. The Government propose to legislate to remove these barriers in public Acts and in the subordinate legislation where necessary. This will only be done after consultation, and taking account of particular difficulties of timing which affect certain of these industries. The precise form which such legislation may take has still to be decided.

110. The purport of the EEC directive on units of measurement issued by the Council of Ministers in October 1971 (27) and an assessment of its effect are given in Chapter III. One of its chief consequences will be that the definitions and descriptions of units contained in it will have to be incorporated in our domestic law where this has not yet been done. It will be necessary, amongst other things, to amend the definition of the litre made under the Weights and Measures Act so that it accords with that internationally recognised (a thousandth of a cubic metre). When the directive is fully implemented in the United Kingdom it will be necessary to ensure that our law relating to trade and industry is properly adapted for the use of metric units, but progress in this field will, as mentioned above, have by then be well advanced as a consequence of the adoption of metric measures by industry.

*(27) Not reproduced on the DTI website*

111. The particular modifications to the Weights and Measures Act 1963 which will be needed to permit the sale of metric size packages are dealt with in Chapter VI. To summarise, subordinate legislation will be needed to provide a suitable alternative range of metric quantities for the sale, when prepacked, of certain groceries. The legal requirements for their sale would be in other respects unaltered. Regulations would also be needed to provide that the metric weight or capacity should be stated alongside the imperial equivalent on those prepacked goods now required to bear a statement of weight or capacity in imperial units. Further subordinate legislation would be introduced if necessary :

(a) to allow, in parallel with the existing imperial units, draught beer, cider, gin, whisky, and the other alcoholic beverages whose sale is regulated by the Weights and Measures Act 1963 to be sold in litres or the appropriate sub-multiples of a litre for consumption on the premises; and

(b) to require clear identification of the metric ranges in cases where the law prescribes alternative metric and imperial ranges of quantities for prepacke,d commodities.

112. The Government will be ready to take any necessary powers to implement any method of protecting consumers which may emerge from the discussions referred to in paragraph 69.

**London, 1972**

End