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Pass the parcel

A key tactic of the metric lobby is to distance itself from its schemes by laying responsibility elsewhere. For example, the European Commission says that metric conversion is a matter for the British government; the British government says metrication is a response to demands by businesses; businesses say their hands are tied by the European Commission, and so on.

This tactic is used by the Office of Nuclear Regulation in its reply to BWMA regarding its instruction to Westinghouse Electric Company to use metric units (letter inside). The ONR states at the beginning of its reply that it "... *expect[s] any plant built in the UK to be essentially metric*"; yet, goes on to declare that they had nothing to do with Westinghouse being compelled to use metric: "... *it was Westinghouse that made the decision to undertake the revision of their documentation and changes to their designs to reflect our expectations*".

Elsewhere, the ONR says its Generic Design Assessment (GDA) "*is a voluntary process*"; but then it says that the GDA "... *will be taken into account if and when a proposed new nuclear power plant reaches the licensing process*". The ONR also expresses concern at both metric and imperial units being used; yet, this concern was never an issue when the government wanted to introduce metric units into the nuclear power sector when based on imperial.

Last orders for Andrea Schutz

Ten years ago, Andrea Schutz, Austrian landlady of the Cardinal's Hat in Worcester, defied trading standards by selling Austrian beer in litre flutes. BWMA supported Andrea's stance, as did Steven Thoburn and Neil Herron, and she and her partner Anton Limlei won their battle.

Anton returned to Austria in 2004 and Andrea continued to run the business. This year, however, Andrea has decided to give up the Cardinal's Hat to focus on her family. She was reported by the *The Worcester Standard* (25 June 2012) as saying: "I've got mixed emotions really. I'm very relieved not to have this financial pressure anymore but it's very sad having to say goodbye to a lot of good customers, some of whom have become very good friends. The stuff with the Metric Martyrs was good fun and I enjoyed every minute. I never thought you could be a criminal serving draft beer in metric measurements. But the English people as a nation are very kind when they see something is not fair". Andrea's last evening at the Cardinal's Hat was Saturday 23 June 2012, and we wish her well in her new life in Suffolk with her partner and son.

Members' subscriptions

BWMA has operated previously a 'rolling' membership renewal system. To reduce administrative work, we intend to have only *one* renewal date annually: the first *Yardstick* after the May AGM (around August). Renewal notices will be sent out then. Members expecting to renew between now and then, please wait.

John Gardner, Director

BWMA is a non-profit body that exists to promote parity in law between British and metric units. It enjoys support from across Britain's political spectrum, from all manner of businesses and the general public. BWMA is financed by member subscriptions and donations.

Membership is £12 per year. Cheques or postal orders payable to "BWMA", 98 Eastney Road, Croydon, Surrey CR0 3TE

Statement by Racing for Change: “London Racecourses Go Metric”, 24 July 2012

This summer, three London racecourses – Sandown Park, Kempton Park and Epsom Downs - plan to trial the use of metric weights and distances as a way of making the sport more accessible to overseas visitors and younger adults.

With an aim to make Britain's £10 billion horseracing industry more appealing to the widest possible audience, it is believed that the use of imperial measures leaves many younger adults confused, with the vast majority of the UK population and much of the world now using metric measures exclusively.

In UK racing, the furlong is used along with miles to describe race distances, even though this archaic medieval unit is not used in any other sport or industry. The word ‘*furlong*’ derives from the Old English words *furh* (furrow) and *lang* (long) and, in Anglo-Saxon times, referred to the length of the furrow in one acre of a ploughed field.

Imperial units are also the norm in British racing, when the allotted weights of jockeys are described on race cards, with stones and pounds shown instead of kilos.

However, this is all about to change this summer when the three main London racecourses – Epsom Downs, Kempton Park and Sandown Park – will be trialling the side-by-side usage of metric and imperial measures.

According to Frankie Dettori: “This is a great idea when so many tourists will be visiting Britain for the Olympics. In Italy, I grew up with metrics so it's second nature to me, as well as to my kids, but I can understand why they're running them side-by-side since many racegoers are happier with Britain's Imperial measures.”

The first to go metric will be Sandown Park at their evening fixture on 25th July, which also features a post-racing performance from Opera and musical superstar, Alfie Boe, who has recently recorded the official Olympic song. The furlong markers will also be adorned with large metre markers, while racecards will carry both race distances and jockey weights in imperial and metric units.

Rod Street, Chief Executive of Racing for Change, comments on the trial, “Racing's unique language is an asset and part of its heritage and appeal, but we do think that the use of both metric and imperial measures will help us to explain the sport better to our international visitors and younger adults”.

“Imperial measures don't mean a great deal to kids and tourists, so it makes sense to trial the use of metric information. This summer, our London racecourses are expecting a significant number of overseas visitors, as well as British families taking advantage of free entry for U16s at most racedays”.

If these dual displays prove popular with racegoers, then their wider introduction will be considered in the autumn.

Letter by Warwick Cairns to 60 racecourses, 17 September 2012

[BWMA] campaigns for the continued use of imperial weights and measures which are central to British culture, commerce and sport - featuring prominently, of course, in racing - not only for the sake of heritage and tradition, but also by virtue of their popularity and practical convenience.

We are concerned at the recent introduction of metric weights and distances at three racecourses, Sandown Park, Kempton Park and Epsom Downs, alongside imperial units, on distance markers and racecards. According to Racing for Change, the body behind the move, this trial may be extended more widely in the autumn.

We are writing to all 60 racecourses to respond to assertions made by Racing for Change in favour of metric units, and to put points in favour of the existing imperial measurements.

Racing for Change state:

“Imperial measures leaves many younger adults confused ... Imperial measures don't mean a great deal to kids”. We wonder whether Racing for Change have tested this assertion by asking, for example, young people how tall they are. Like anything else, young people learn imperial units where they are used. In the home, children learn from their parents their height in feet and inches, and weight in stones and pounds. Imperial units are used in children's literature, such as the Harry Potter books. Inches are known to teenagers and young adults via bicycle sizes, skate boards and clothing, to mention just a few examples. The pint is well known from buying milk and beer, and miles and yards are familiar from road signs.

“... the vast majority of the UK population [are] now using metric measures exclusively”. This is untrue; the vast majority of the UK population use units from both imperial and metric systems, depending on circumstances and context; see the previous paragraph for examples of imperial.

“Imperial measures don't mean a great deal to ... tourists”. A whole host of things will be different for tourists when they visit Britain, the biggest of which is language. If difficulties for tourists were a serious complaint, then multilingual racecards and announcements would be needed long before metric measurements. In any event, British tourists do not need to see imperial units to enjoy racing on the Continent, so there is no reason to expect that tourists from the Continent need metric units at British racecourses. Tourists from the United States, Ireland and Canada will, of course, be familiar with imperial units in racing.

“This archaic medieval unit ... the length of the furrow in one acre of a ploughed field”. This historic definition of the furlong no longer applies; the modern furlong is an eighth of a mile, or 220 yards, making it capable of accurate measure. That the furlong exists from medieval times is not a point against it, but one to be celebrated.

“[The furlong] is not used in any other sport or industry”. Neither is the rugby ball, tennis-racket or cricket-bat. Every sport has its own features; should we standardise bats and balls across all sports from golf to tennis? It is right and proper that every sport has the properties that suit it best. The furlong is suitable for the speed of a horse and enables distance signs to be marked in bold, single digits that produce a countdown to the finishing line. By contrast, the metre is too small, with the result that metric distances have to be expressed in hundreds or thousands.

We make three further points:

- The reason offered by Racing for Change for metric is one of explanation: to “explain the sport better”. We respectfully suggest that the adoption of metric represents a *failure* to explain imperial units (if, indeed, they need explaining).
- Imperial units convey information to the racing public not just on signs and printed matter at racecourses, but via websites, television and betting shops. We presume that imperial units are also used within the industry for handicapping and rankings, and the systems that support these functions. Dual indications risk creating an alternative system that will cause barriers to communication.
- The dual signs and racecards are being trialled on the back of the Olympics, but what is the expected position five years from now? Ultimately, dual displays are only useful as a transition to metric, yet no-one is proposing the removal of imperial units. So, unless dual indications are expected to remain forever, they will have to be removed sooner or later; in which case, what is the point?

We hope that your racecourse elects to stay with imperial units only, and would be interested to hear your comments.

Yours faithfully, etc

Letter by José O'Ware to Edmund King, President of the Automobile Association, regarding miles per gallon (see *Yardstick 50*)

Dear Mr King

I read about the AA/Auto Express survey some time ago and only had the figures [from the Auto Express article] to go on. I was however puzzled by the results, as everyone of my acquaintance with a car, has no preference for neither litres nor kilometres. I am now in possession of the figures for the whole of the survey, and can tell you had I seen these results six weeks ago, I would not have renewed my membership with the AA. The fact that you hid from the public the true results of a 51% majority preferring to keep Miles Per Gallon is nothing short of deceitful. [*Editor's note: 33% supported miles per litre*]

What the public actually find “outmoded, confusing and irrelevant” is the imposition of the alien measurement of litres that NO ONE asked for, or wanted. Every one knew how much fuel their tank would take and how much it would cost in gallons. Once the unwarranted introduction of litres at the pumps was forced on us, very few of the public understood what they were buying. Hence the reason the majority went over to buying by £'s sterling e.g. £5, £10, instead of the known amount in gallons. This move, as with the completely unnecessary decimalisation of our coinage, was brought in to confuse the public and ensure certain organisations and groups in society were able to enrich themselves from this very confusion.

Your survey when seen in the cold light of day is dishonest propaganda and you, as President of the AA, should be ashamed of yourself for promoting such falsehoods. I also note that you have not replied to the letter from the British

Weights & Measures Association; I hope you will not be so discourteous as to refuse to tell me why you felt justified in promoting such a distorted version of this poll.

Reply from AA, 30 August 2012 (our emphasis)

Dear Mrs O'Ware

Thank you for getting in touch regarding the AA/Populus survey and Auto Express article. Far from concealing the survey results, the Auto Express article pointed out that (only) "one in three motorists would prefer their car's fuel economy figures to be measured in miles per litre.....". **Our own press release stated; "51% of AA members want to keep the mpg measurement"**. We did suggest that with strong support for change from those aged 18-34 years we may well see a change to the way fuel consumption is measured in the future. I appreciate that this is an emotive subject upon which there are strong views but can assure you that the AA has no reason to hide or misrepresent any of the data from the poll. Auto Express's report of the survey and position on the matter was entirely theirs and we had no editorial control.

Edmund King, President of AA; Director, AA Charitable Trust for Road Safety and the Environment; Visiting Professor of Transport - Newcastle University

José O'Ware consulted the AA's press release web page and, despite going through 56 press releases from the date of the miles per gallon poll, did not find any referring to it. José wrote to Mr King on 12 September 2012, asking that he confirm that the AA sent out a press release, and for a copy to be provided to her. Having received no reply, José wrote a reminder on 22 October, and again on 12 November. At time of going to press (late-November), José has still received no reply.

Reply from the Office for Nuclear Regulation (ONR), 26 January 2012, to BWMA letter (see *Yardstick 50*)

1. May I first of all apologise that you do not feel that we adequately responded to your letters of 5 October and 15 December. I hope you will find this response more helpful ...

2. *October 5, 2011. paragraph 6: Relating to Paragraph 39 of our document 'New nuclear power stations Generic Design Assessment (GDA): Guidance to Requesting Parties'*

In isolation, I take your point that Paragraph 39 could be taken as ONR (Office for Nuclear Regulation) requiring the Requesting Party (RP), namely Westinghouse, to write documentation using SI units, rather than requiring SI units for manufacture. However, in addition to the guidance, **we also discussed our expectations with Westinghouse, and clarified that we expect any plant built in the UK to be essentially metric.** Furthermore, in an engineering environment, the units system for documentation, and that used for product design and manufacture, are essentially linked. It is a reasonable statement to say that it is a corollary that one leads to the other.

3. *October 5, 2011. paragraph 7: Relating to Government policy on units of measurement*

ONR's approach is based upon our expectation that relevant good practice will be adopted for new international reactor designs. This is cited as an expectation within the Health and Safety Executive's (HSE) Enforcement Policy Statement, the document which forms the basis of regulation within the HSE. Paragraph 15 states: "The authorities will expect relevant good practice to be followed. Where relevant good practice in particular cases is not clearly established, health and safety law

effectively requires duty-holders to establish explicitly the significance of the risks to determine what action needs to be taken. Ultimately, the courts determine what is reasonably practicable in particular cases."

I believe that relevant good practice within this area is established and hence addresses the first section of paragraph 15. Specifically, there is the potential challenge to safety due to the risks associated with mixing metric and imperial-dimensioned components. **There is experience of events where imperial and metric fittings have been incorrectly mixed together and while the resulting joints have been strong enough to hold the initial loading, they have ultimately failed due to a mismatch in the thread form when the full load was applied. Given the potential for such events, this reinforces our expectations of relevant good practice as described within our enforcement guidance.**

Within GDA (Generic Design Assessment), we expect the requesting parties to demonstrate that they have taken all reasonably practicable steps to avoid these types of problems. **Given that the AP1000 is designed to operate for 60 years, and in an engineering environment that adopted the metric system some time ago, it is necessary for Westinghouse to justify how its design controls the risks from mixed measurement units.**

December 15, 2011. paragraph 1: How ONR is entitled to tell private companies to change physical components when the guidance cited as its authority contains no such requirement.

The legal requirement on licensees is that they should do all that is reasonably practicable to ensure health and safety. This is part of their responsibility under both the Health and Safety at Work etc Act 1974 and under a nuclear site licence granted under the Nuclear Installations Act 1965 (as amended). Even though GDA falls outside of the nuclear licensing legal process, we apply equivalent standards. **GDA is a voluntary process** through which requesting parties submit their designs to ONR (and the Environment Agency) and request our assessment. The purpose of GDA is to form an early view on the acceptability of the design, well ahead of construction, so that any issues of safety, security and environmental protection can be addressed effectively and efficiently. Where reasonably practicable, safety improvements to the plant are identified by the requesting party, it is more efficient for them to make these changes during the design stage. The GDA process has thus been welcomed by the nuclear industry because it provides greater clarity and certainty in developing and building new nuclear reactors.

GDA will be taken into account if and when a proposed new nuclear power plant reaches the licensing process, so the judgements we make in GDA reflect the requirements of the legal licensing system and the principles set out for the regulation of health and safety. To ensure we take a consistent approach to what is considered reasonably practicable ONR produces guidance, e.g. Safety Assessment Principles^{vi} and Technical Assessment Guides^{vii}. ONR also employs experienced technical experts who are in a position to make sound judgements about what constitutes good engineering practice. Our views on the dangers of mixing metric and imperial dimensioned components are part of our views on good engineering practice. **This is more than just a quality control issue. This is about removing the problem by design, i.e. by avoiding the possibility of having mixed components where it is reasonably practicable.**

5. December 15, 2011, paragraph 2: "We wonder whether this lack of co-operation is normal for ONR or whether it arises from a realization that its officials have been less than honest with private companies as to the meaning of Paragraph 39"; and December 15, 2011, paragraph 3: "If ONR has been giving out advice wrongly...please have the good grace to acknowledge the mistake".

Rather than relying solely on high-level guidance produced at the outset of GDA, we cooperated closely with the requesting parties to **ensure that they fully understood our expectations across a range of technical areas.** In line with our policy of openness and transparency, these discussions are reflected in our GDA quarterly reports, Step 4 and other reports published on our website. We consider this to be a sensible and pragmatic approach to reducing the possibility of misunderstandings and wasted technical effort.

Operating in an environment of openness and transparency, both requesting parties, have been free to comment on the GDA process and have regularly expressed publicly their opinions and support for this process.

6. December 15, 2011. paragraph 4, point i: "Please provide... the name and position of the person responsible for the decision to tell private companies that Paragraph 39 meant they had to change physical parts."

The requesting parties were not prescriptively told that they had to change physical parts; rather we simply stated the expectations of relevant good practice described as part of our Enforcement Policy Statement. The GDA Issue on metrication confirms this expectation and, in addition, provides Westinghouse with an opportunity to approach ONR with alternative suggestions for our agreement. Through our GDA interactions Westinghouse has agreed to revise documentation and make some design changes to reflect the guidance provided by ONR. **Therefore, it was Westinghouse that made the decision to undertake the revision of their documentation and changes to their designs to reflect our expectations,** rather than any one individual within ONR. However, this matter at present remains as a GDA Issue.

7. December 15, 2011, paragraph 4, point ii: "Please provide... a copy of the research undertaken by ONR that led to this belief."

The issue of mismatching imperial and metric-dimensioned components is a widely acknowledged engineering issue, evidenced across a wide range of operating experience. This was taken into account by the ONR inspectors assessing the requesting parties' submitted design safety cases. We also consider this matter to be self evident, and hence **no specific research was considered necessary.**

8. December 15, 2011. paragraph 4, points iii and iv: "Please provide minutes of meetings, emails, memos, etc relating to ONR's deliberations and decision to tell private companies that they are obliged to remove imperial components."

We have not told private companies (in this instance Westinghouse) that they are obliged to remove imperial components. However, where the use of metric components is a reasonably practicable measure to ensure safety, then we expect that metric units and products will be used.

As we have not told Westinghouse that it is obliged to remove imperial components, the information you have requested does not exist. Therefore, under Part 3, 12(4)(a) of The Environmental Information Regulations 2004, we are not in a position to release the information. However, our regulatory expectations regarding metrication, and the associated discussions with Westinghouse, are described in our Step 4 Mechanical Engineering and Civil Engineering reports, which are available on our website.

9. December 15, 2011, paragraph 4, point v: "Please confirm that ONR does not have a statutory mandate for metrication of the private sector."

I can confirm that ONR does not have a statutory mandate for the metrication of the private sector. However, it does have a mandate to ensure that the nuclear industry achieves nuclear safety in line with our mission, which is securing the protection of people and society from the hazards of the nuclear industry.

10. December 15, 2011, paragraph 4, point vi: "Please provide... A list of the companies regulated by ONR.

I can confirm that this information is available on our website.

I hope you agree that that this letter adequately addresses your questions. In addition, you might find it helpful to review our GDA Step 4 Technical Assessment Reports, which were published in December 2011. These, coupled with the extensive information already available on our website, will provide further details of the assessment undertaken within this area. The reports can be found at:
www.hse.gov.uk/newreactors/reports

... If you are unhappy with the decisions made by HSE you may ask for an internal review within two calendar months of the date of this letter by writing to us. If you are not content with the outcome of the internal review you have the right to apply directly to the Information Commissioner for a decision ...

Dave Watson, HM Superintending Inspector Office for Nuclear Regulation An agency of the Health and Safety Executive

To be continued ...

Milligram/microgram mix-up: "Patient died after junior doctor prescribed overdose", *Chichester Observer*, 13 September 2012

A FINDON woman died after a junior doctor mistakenly prescribed her a large overdose of heart medication. A week-long inquest that began on Tuesday heard how Joan Dixon, 77, of High Street, died on Ashling ward at St Richard's Hospital in Chichester, after Dr Prashen Pillay prescribed her with Digoxin for an irregular heartbeat. The inquest, held at Park House in Horsham, heard how Dr Pillay had meant to prescribe 250 micrograms of the heart-slowing drug, but instead wrote mg, which stands for milligrams and would have resulted in a dosage of 1,000 times the correct amount. Dr Pillay, who had been working at the hospital for about eight weeks, said: "*Somewhere between my brain and my right hand it got turned from micrograms into milligrams*".

Milking the Customer, by Vivian Linacre; a letter to *The Courier*, 1 August 2012

Each announcement of an addition to the successive families occupying 10 Downing Street – Blairs, Browns and Camerons – has quoted its weight at birth in pounds and ounces. Yet their respective fathers as Prime Minister have introduced, enforced and upheld the EU law – with no popular mandate – which made use of these units for trade a criminal offence. The same hypocrisy was displayed by your Farming Editor, Ewan Pate, on July 25 ("Let's stop milking the customer and ditch pints"), who conceals the fact that by urging total metrication of weights and measures he is by implication advocating criminal enforcement; for that is the only means of achieving abolition of customary units, requiring prosecution of thousands of pub licensees who all sell pints of beer, and honest traders selling pounds of fruit and veg – as well as expenditure of vast sums of public money scrapping millions of speed and distance road signs and finger posts.

His argument that public confusion over the price of a pint of milk can only be remedied by eliminating the use of the pint in favour of the litre is ludicrously perverse. For that confusion arises solely from imposition of the litre which

most people do not understand; likewise confusion over the price of petrol at filling stations. So long as milk was sold by the pint and petrol by the gallon there was never any confusion.

Similarly, customers were well protected when everyday groceries like tins of baked beans or jars of jam always contained one pound net; but with metrication the 454 grams equivalent soon rounded down to 450, then in most cases reducing by stages to 425 or even lower. Cutting the contents without cutting the price is a stealthy way of increasing the price without the customer realizing it. If you examine a dozen competing brands of these two products on supermarket shelves you will see the chaotic range of sizes. It's a free-for-all and to blazes with customer protection. That is what Mr Pate advocates for all merchandise – again with no popular mandate. Predictably, compulsory metrication coincided with the explosion in growth of supermarkets.

A pint is the right size and a litre too big; a pound is the right size and a kilo too big; a foot is the right size and a metre too big; an acre the right size and a hectare too big. Mr Pate's suggestion that only "those with exceptional arithmetical gifts" know the ratios is absurd: the arithmetic paper in the grammar school entrance exams which I sat at the age of ten included questions of conversion between metric and imperial which were already familiar to us and presented no difficulty – but metrication is another means of dumbing children down, reducing them to zombies who can only shift decimal points on a calculator, incapable of mental arithmetic.

The French Revolution's Reign of Terror decimalized everything, including months of the year and hours of the day, but soon the calendar and the clock had to be restored to their natural duodecimal basis – for the whole of nature is based on twos and threes – so we were left with this wretched relic of a decimal system for weights and measures that relate to nothing whatever.

The imposition of compulsory metrication is like a lodger who moves into a household, is treated as one of the family and everybody is happy until suddenly he complains: "This has become too confusing and the only solution is for you all to move out." Well, Mr Pate, we are not moving out. The Bible, Shakespeare and everyday language are full of customary measures, which will last for another thousand years. The USA will never convert from "English units" – pounds and gallons and miles were good enough to take the first men to the moon – and nor shall we. Compulsory metrication has nothing to do with the merits of either system but is purely political, dictated by the EU's loathing and envy of the commercial and cultural bond between the UK and USA by virtue of a common language and common system of customary weights and measures. An Act of Parliament in 1897 legalized optional use of metric units in Britain for all trade purposes, so the two systems co-existed in perfect harmony for just a century until the EU, realizing that Britain will never convert voluntarily, decided to impose a metric monopoly. It cannot tolerate freedom of choice.

Imperial Huzza!

By Nikolas Lloyd

The imperial system of weights and measures is on the wane. It is being replaced gradually by metric. Some of this change may be for the better, but much of it isn't. The imperial system did not spring into existence in one moment of concerted creation, but gradually developed over many centuries. Though it may be associated with the British, who standardised it and spread it across the world, it was not a British invention, but was instead an amalgam of measures from across the world and the centuries. It has had a lot of testing, and if it were rubbish, it would have been replaced millennia ago.

In my experience, people who argue against the imperial system do so from a position of ignorance. They do not understand the beauty of imperial, nor the deep flaws of metric. They have an idea that imperial is out-dated, and metric is modern and therefore good, and they support changes to metric. Change is not progress. Change is just change, and it can be very expensive. In Britain today, we buy fuel from petrol stations in litres, but once we did this in gallons. When the change was enforced, every petrol pump, every price sign, every fuel-measuring device, and every accounting system used for fuel, had to be changed. I shudder to think how many millions this cost, and how many hospital operations these might have paid for. What value was got for this money? It was of course massively inconvenient for everyone in Britain who had to get used to a new measure, and petrol stations did of course take the opportunity to raise prices, and almost nobody in Britain welcomed the change, so the down-side of the change was very obvious. What was the up-side? Did cars run any better?

Until recently, Britain had given an undertaking to the European Union to stop selling beer in pints; it had already stopped virtually every other use of the pint. Are the people of Britain harmed in any way whatsoever by being sold pints? The pint is a very simple convenient unit. The experience of centuries has gone into settling on this unit. There is nothing wrong with a pint. The only argument seems to be that it is different from the units used elsewhere in the EU. When I go abroad, I *want* things to be different. If everything in Poland is the same as in Britain, what is the point of going there? Foreigners like the exoticism of Britain. They *like* our red telephone boxes, our tall policemen's helmets, and our beefeaters, and they go to some trouble to photograph them. When I go to Greece, I want to see big tough guardsmen wearing tutus and pom-poms, and I photograph them. Part of the novelty and interest in visiting Britain is that you can buy a proper pint of beer in a pub. Why deprive foreigners of this fun? How do they or anyone else benefit from beer and milk sold in litres? Do we think that they are too stupid to understand that units other than litres are possible?

One massive misunderstanding about the metric system is the widespread and inaccurate belief that it is based on a uniquely convenient number. In base thirty-seven, thirty-seven is a very convenient number. I've lost count of the number of times I've heard someone say that base ten is good because it is easy to multiply something by ten in it - you just add a nought. This is a completely stupid argument. To multiply any number by the base number, you add a nought. In base six, to multiply something by six, you add a nought. Indeed, base six has many more convenient numbers in it - every sixth number is round, whereas in base ten only every tenth number is round.

What makes a good base? What is actually a good convenient number? Well, sub-multiples are good. It is very easy to deal in these. In base ten, there are two: 2 and 5, and these are both 'prime' (generally inconvenient) numbers. In base ten, multiply-

ing and dividing by 2 and 5 is reasonably easy. Let us compare this with base twelve. Twelve divides by 2 as well, it also divides by the extremely useful number 3, it also divides by 4 (which in turn divides by 2), and it divides by 6 (which in turn divides in to both 2 and 3). So twelve has *eight* sub-multiples to base ten's two. This means that at least four times as many sums in base twelve will involve convenient numbers as in base ten. What about base twenty-four? Here are its sub-multiples:

12 (6 (3, 2), 4 (2), 3, 2)
8 (4 (2), 2)
6 (3, 2)
4 (2)
3
2

That's *nineteen* sub-multiples. Another useful thing that bases can help us with is geometric progression. Base sixteen is very convenient for halving or doubling. Think of the sequence 1, 2, 4, 8, 16. Mathematicians use base sixteen (they call it "hexadecimal") not because they want to appear clever, but because it is an easier base to work in than grotty old base ten. Something of the insignificance of the number ten is preserved in the fact that languages have unique words for numbers beyond ten. Almost every language is like English in having words for eleven and twelve. Twelve is a very common number of sub-divisions for a unit (e.g. inches to a foot, pennies to a shilling). We say 'twelve', not 'twoteen' or 'onety-two'. You may argue that metric is based not on the number ten, but more on the number one hundred. There are one hundred centimetres in a metre and so forth. Perhaps most importantly, there are one hundred sub-parts to most currencies (cents to a dollar, for example). Well, actually 100 doesn't rate too highly as a number, either. Let's look at its sub-multiples:

50 (25 (5), 10 (5, 2), 5, 2)
25 (5)
20 (10 (5, 2), 5, 4 (2), 2)
10 (5, 2)
5
4 (2)
2

That's a very poor haul of sub-multiples for such a high number. The fact that it doesn't divide nicely by three is a major drawback. In the old British pound, there were 240 pence. Some people laugh today when they hear this, thinking quite wrongly that this is a difficult number. No it isn't. There were 240 pence in an old pound for a very good reason. 240 is a *very* convenient number. Brace yourself for its sub-multiples:

120 (60 (30 (15 (5, 3) 10 (5, 2) 6 (3, 2) 5, 4 (2), 3, 2), 20 (10 (5, 2), 5, 4 (2), 2), 15 (5, 3), 12 (6 (3, 2), 4, (2), 3, 2), 10 (5, 2), 6 (3, 2) 5, 4 (2), 3, 2), 40 (20 (10 (5, 2) 5, 4 (2), 2), 10 (5, 2), 8 (4, 2), 6 (3, 2), 5, 4 (2), 2), 30 (15 (5, 3) 10 (5, 2) 6 (3, 2) 5, 4 (2), 3, 2), 24 (12 (6 (3, 2), 4 (2) 3, 2), 8 (4, 2), 6 (3, 2), 4 (2), 3, 2), 20 (10 (5, 2), 5, 4 (2), 2), 15 (5, 3), 12 (6 (3, 2), 4 (2) 3, 2), 10 (5, 2), 8 (4, 2), 6 (3, 2), 5, 4 (2), 3, 2)
80 (40 (20 (10 (5, 2) 5, 4 (2), 2), 10 (5, 2), 8 (4, 2), 6 (3, 2), 5, 4 (2), 2), 20 (10 (5, 2), 5, 4 (2), 2), 16 (8 (4, 2), 4 (2), 2), 10 (5, 2), 8 (4 (2), 2) 5, 4(2), 2) 60 (30 (15 (5, 3) 10 (5, 2) 6 (3, 2) 5, 4 (2), 3, 2), 20 (10 (5, 2), 5, 4 (2), 2), 15 (5, 3), 12 (6 (3, 2), 4, (2), 3, 2), 10 (5, 2), 6 (3, 2) 5, 4 (2), 3, 2)
48 (24 (12 (6 (3, 2), 4 (2) 3, 2), 8 (4, 2), 6 (3, 2), 4 (2), 3, 2), 16 (8 (4, 2), 4 (2), 2), 12 (6 (3, 2), 4 (2) 3, 2), 8 (4 (2), 2), 6 (3, 2), 4 (2), 2)
40 (20 (10 (5, 2) 5, 4 (2), 2), 10 (5, 2), 8 (4, 2), 6 (3, 2), 5, 4 (2), 2)
30 (15 (5, 3) 10 (5, 2) 6 (3, 2) 5, 4 (2), 3, 2)
24 (12 (6 (3, 2), 4 (2) 3, 2), 8 (4, 2), 6 (3, 2), 4 (2), 3, 2)
20 (10 (5, 2), 5, 4 (2), 2)
16 (8 (4, 2), 4 (2), 2)
15 (5, 3)
12 (6 (3, 2), 4 (2) 3, 2)
10 (5, 2)
8 (4, 2)
6 (3, 2)
5
4 (2)
3
2

There were very few money transactions that did not involve convenient numbers. Items could be sold in packets of a lot of

different convenient numbers too, like eight or twelve. Notice that out of the basic numerals 1-10, only 7 and 9 do not divide into the pound. What is a tenth of a pound? Easy: 24 pence, which was one florin, or two shillings, and these could be subdivided many easy ways. Dealing with the number ten was easy with old pounds just as it is with new ones. Programming a modern pocket calculator to deal in imperial units would be easy too, and would be done today if the demand were there. People today are not experienced in using the number 240, and so don't know how great it is. Europeans, long-blighted by the metric system, say that 100 is convenient out of sheer ignorance. However, it is possible to make them understand how good some numbers other than 10 and 100 are by pointing out that not everything is metricated. A European circle still has 360 degrees, and a European day still has 24 hours, each of 60 minutes.

360 is another excellent number; like 240 it has a vast number of convenient sub-multiples. Anyone who has done geometry will know that sub-dividing a circle is greatly eased by the number 360. Anyone who has ever had to draw up a time-table knows that both 60 and 24 are very convenient numbers. Would you really like days to have ten hours, made up of ten decihours, or one hundred centihours? Almost any way you divided up a school day would involve awkward fractions or lessons of differing lengths. The Babylonians spotted the virtue of 360, and it is thanks to them that we have this number of degrees in a circle. In parts of the Middle East today, people are still using base six. Base six has a number of convenient features, one of which is that a person can count on one hand to a very high number, using the hand's five digits as the numerical digits, and indicating various joints in the fingers etc. to show the sixes.

Errors in calculations using metric are virtually untraceable, and easy to make. You could quite easily make one slip in a calculation, and be out by a factor of 100, and if common sense will not tell you that you must be wrong, then you may not notice your error, and if you try to trace where it crept in, you will fail and have to start again. With imperial, however, you will think, "That's odd, I seem to be out by a factor of twelve. Ah, of course - I forgot to convert inches to feet." Yes, for some scientific calculations involving units measuring different things, such as time, mass and velocity, a system that involves all units having the same base is convenient, although the days of that convenience may have passed, since today computers could very easily be programmed with the different units, and this would force people to think of each part of a calculation, and would if anything reduce errors. I doubt such calculations are done by hand very often today. I wonder if it is a coincidence that America, the only country still consistently using imperial measures, is so technologically and economically successful.

The imperial system has much to recommend it. Linguistically it is pleasant. Rather than everything starting with *deci-*, *kilo-*, or *centi-*, and ending in *-er*, there are many different old words, that tell of times past. In metric all distances end in *-metre*, but imperial has *inch*, *foot*, *yard*, *chain*, *pole*, *furlong*, *mile*, and *league*. The numbers these divide into are nice convenient ones, like 3, 12, 16, 36, 220, and 1760. The sizes of these units are convenient too. Estate agents still prefer to measure rooms in feet, because this is the right size of unit for the job. My shoes happen to be one foot long, so I can pace out a room very accurately, and someone with slightly larger or smaller feet can soon learn how much gap to allow for the difference. In metres, rooms tend to seem exaggeratedly different or similar in size, because there is so little variation in the first numbers. For this reason, architects and set designers in Britain and I believe elsewhere in the world have adopted a metric foot (one third of a metre) for working in. Similarly, a person's height is conven-

iently measured in feet and inches. Less than five foot is short, over six foot is tall, and there are twelve gradations in between, which makes estimating height very easy. In metres, everyone is one-metre-something. The British climate suits Fahrenheit more than centigrade, because there is not much variation in the latter.

Navigation all round the world is in imperial units. Headings are in degrees, and distances in nautical miles. This is unlikely to change because, unlike metric, imperial units tend to refer to actual physical things, rather than an abstract concept, and the nautical mile is a convenient fraction of the distance around the Earth, and relates to degrees of longitude and latitude.

The metric system is based on a false and rather useless measurement. The *metre*, from which everything is derived, is supposedly one ten-millionth of the distance between the equator and pole. The distance used for this calculation was based on a Napoleonic French estimate which has since proven inaccurate. This distance was also nearly one yard, but rather than adopt the yard (a unit well-known to everyone) and relate everything to that, the revolutionary French wanted change for the sake of change. It was a political statement: they were starting anew. It is for this reason (and to impose change to show their power) that they forced everyone to drive on the wrong side of the road. Today, there are plenty of figures to show that people's natural inclination is to drive on the left, and countries that drive on the left have *far* lower accident rates.

One item of praise for the metric system is that there is cross-over between capacity and weight, in that one litre of distilled water at sea level weighs one kilogram. This is very convenient when estimating the weight of distilled water from a known volume, and seldom otherwise. Anyway, one gallon of water weighs ten pounds, so the imperial system crosses over too.

The width of my thumb is one inch, the width of my hand is four inches, my feet are a foot long, my arm span is one fathom, I can pace a yard, my fist and forearm are one cubit long. I live in a world in which I can measure and estimate in imperial very easily. I was interested to learn that even the French did cel animation and rostrum camerawork using inches, because halving distances in imperial is so much easier. Is the imperial system flawless? Of course not; a stone divides into fourteen pounds, and fourteen is not a convenient number, as it is not easy to divide or multiply by it, and it only subdivides into two and seven, which are both prime numbers, making it is only slightly better than ten (by having more gradations).

Let us preserve the imperial system. It needn't be frozen in time. It has changed many times in the past, and more changes can be made to it. It is a good system, made up of convenient measures. Jam and honey in Britain are still sold in one-pound jars, but now they have to be called 454g jars. It is actually *illegal* to sell people a jar described as weighing a pound. Why? Who benefits from this law? It is easy to see who suffers. The only people I can think of who benefit are the people whose job it is to enforce this.

It isn't just that imperial is a good system. It isn't just that it will make people think more. It isn't just that changing from it is pointlessly expensive. It isn't just that it's *our system* (now that most foreigners have ditched it). It's also that it is *characterful*. Life is made more worthwhile if the characters in it are interesting and different rather than bland, predictable, and ugly. The metric system does not relate to the real world and is utterly characterless.

<http://www.lloydianaspects.co.uk>

Why a Warwickshire metric distance sign was removed by A.R.M.

By Tony Bennett, Secretary, A.R.M.

Tony Bennett, Secretary of Active Resistance to Metrication, replies to Jonathan Simkins, Group Manager for Traffic Projects at Warwickshire County Council who, in Yardstick 50, explained why Warwickshire County Council erected an unauthorised metric sign, and failed to remove it when residents pointed out their error.

Metric road signs are unlawful by virtue of the Traffic Signs Regulations and General Directions (2002). Distances must be in miles and yards, and bridge height and road width restriction signs must have imperial, with metric only as an option. A point not often emphasised sufficiently is that it is more sensible, and safer, to have one system of measurement on highways: no country in the world apart from the U.K. allows dual measurement systems on road signs, and a recent survey found that 98% of people said they understood Imperial distances. In February 2006 the then Transport Minister Alistair Darling announced on Question Time, to loud cheers from the audience, that he had abandoned plans to metrify two million road and footpath signs in the country.

What was the sequence of events in Warwickshire? Jonathan Simkins and his staff were faced with the problem of lorries turning back from a low bridge on a narrow main road. His response was to erect an unlawful sign, warning of the bridge 550 metres ahead. It was a complex sign with two sets of measurements on it, both metric and Imperial heights and distances. He did not adopt the solution of erecting signs further back on the road, warning drivers of high vehicles to find another route.

Letters followed from BWMA member Mike Parker and UKIP candidate Martin Green who recognised the sign was unlawful; Mr Simkins responded: "*Many of the drivers are from European countries and the drivers understand neither feet and inches or yards*". This is absurd; the idea that foreign drivers cannot understand 'London 25 miles' or 'Give Way 150 yds' is risible. Anecdotal evidence suggests that there are as many bridge strikes on bridges that are dual marked, as those that are imperial-only.

Mr Simkins says the Warwickshire Traffic Department had been pressed by local people to prevent lorries getting stuck at the low bridge: "*We were caring for local people's well-being*". But Mr Simkins had a narrow mindset of changing signs from yards to metres, rather than other, more obvious ways of addressing the problem. Mr Simkins admits that when the unlawful sign was pointed out, Warwickshire C.C. accepted that "... *the inclusion of a small '550m' distance plate on the sign did not conform to the Traffic Signs Regulations*".

When it became clear that Warwickshire C.C. would not budge, Mr Green contacted A.R.M, which warned the Council that the sign would be removed, using the provisions of Section 131(2) of the Highways Act 1980, which authorises anyone to the 'pull down or obliterate' any sign 'unlawfully placed' on the highway. We gave reasonable warning, but Warwickshire C.C. took no notice. Instead, official Craig Jones wrote: "... *as the TSRGD are presently under review, no changes will be made until the results of this consultation have been published*". Consequently, two A.R.M. operatives removed the sign, and reported its removal to Warwickshire C.C. In removing it, we observed that there were ample other legal signs warning of the low bridge ahead. Days later, a sign in Imperial units only was erected by the council.

Mr Simkins' explanation for not removing the sign, that new regulations might allow metric distance signs, is a poor excuse. Four years previously, the Department for Transport had ruled out metric distance signs. In any case, his legal duty was to erect signs that conformed with *existing* Regulations. Mr Simkins also says that the removal of the sign caused Warwickshire C.C. to pay £436 for a new one. He says: "*Council Tax-payers' money was wasted by those who needlessly took down the entire sign. Amending the sign would have been simple - using grey spray paint or applying a small metal patch with adhesive would cover the small area containing the '550m'. This would have cost only a few pounds*". Precisely! So why didn't he do that in the first place?

After removing the sign, I received this from Mr Green: "... *thank you for your support and professionalism in regard to the issue which we have now brought to a close. I, like yourself, am tired of our heritage and our British ways being totally thrown in the bin, like some poor relation. The Imperial measures are superior for our road system. The folly of this and previous governments of trying to 'Eurofy' everything to fit one big superstate has gone too far - and it's nice to see the British sticking up for themselves, especially when the local authority is clearly in the wrong*".

To sum up: metric distance signs are illegal. When any are found, we advise the local authority to remove or replace them. Where councils refuse, we remove them. The shock of having a sign removed usually means that the authority concerned won't make the same mistake twice.

*BWMA gratefully records the Patronage of the late The Hon. Mrs Gwyneth Dunwoody, MP, Lord Shore, Vice-Admiral Sir Louis Le Bailly, KBE, CB, and Lord Monson
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