A permanent departure from GMT? by Douglas Bateman FBHI

The letter headed 'Double dose of March madness' in Horological Journal, April 2011, by George Thomas, has prompted me to update an essay I wrote for a sundial group. For the latter I was spurred into action by some ridiculous and thoroughly unscientific remarks on this subject. I should add that I have no political brief nor am I a member of any campaign to make the change to double summer time. However, once the many cases for the change are examined, it is difficult to come up with strong economic reasons for not making the change. But first a definition. What is being debated, now at parliamentary level, (since abandoned) is to have our current summer time all the year round, and in March and October the clocks are changed again to give double summer time. The official title is Single Double Summer Time (SDST).

Referring back to Mr Thomas's letter, if he doesn't mind, I will use some of his comments to lead into various points. For example he has used the word 'madness' and later "Am I alone in thinking that the whole business is a nonsense?" In the sundial group some even wilder statements were made and this is where there was a lack of objectivity. There were comments about myths, folklore and personal prejudices, and these are often repeated in the popular press. I quote the eminent scientist James Lovelock "We live at a time when emotions and feelings count more than the truth, and there is vast ignorance about science."

Historically, society as a whole (at least in the UK, most of Europe and other countries) understands the benefits of the one hour summer time change, and indeed is happy to make the change as it has done so for over 100 years. In fact some organizations, such as the BHI, even plan events to take place on "spring forward" or "fall back" days, and during the winter months, most of us look forward to the longer summer evenings, which could be even longer with double summer time! Furthermore, during the two world wars various countries had continuous summer time and then double summer time for the simple and glaringly obvious reason that the latter is to make the maximum use of an *free resource*, (by a trick of timing the day) and conserve strategically important reserves of coal and oil.

Mr Thomas says that his own understanding is that noon is when the sun is at its zenith. We can all agree on this as a nominal starting point. This gives noon as midday (in daylight terms, but not for society as whole, as we shall see), "or at least around 12 o'clock plus or minus a little latitude for one's own exact longitude." And herein lies the first practical 'discrepancy'. As soon as we decided to work to one uniform time zone, legally adopted in 1880, we disconnected our daily lives from knowing the exact moment of apparent solar noon at our own location. In other words, working to local noon in Yarmouth and local noon at Land's End would give practical problems in trying to agree time when citizens on one location are trying to telephone another location. For example, the good people of Penzance have sacrificed slavish attachment to local noon by the sun for the convenience of uniform time across the British Isles. The point I am making here is that one can be flexible in agreeing the time of day. It is only a small logical extension to define the time in a time zone of any reasonable size and shape. Some time zones are now very large such as Central European Time that extends from Estonia (25°E) to Spain (9°W). Note that west Spain is further west than the most westerly part of the UK, and Spain is effectively on SDST. China on an official level operates on Beijing time extending from 135°E to 75°E, over 4 time zones. Think what that does for the appearance of the sun and its nominal noon!

Another serious issue is the lack of symmetry of the *effective day*. Let us say that on average we rise between 7 and 8am, work "9 to 5", have evening leisure, and go to bed at 10 - 11pm. It is obvious that the middle of the effective day is about 3 in the afternoon. The opponents of SDST often make smart comments about setting our alarm clocks an hour or so earlier, which may suit the self employed or retired, but the fact is that modern society likes many activities to start at agreed times, such a shopping, commerce, industry, travel, etc. Note that the extra summer hour shift still leaves the middle of the effective day at about 2pm. This was reinforced by a colleague who said that the problem with all the 'no' arguments is that they assume that all hours of the day are equally useful, and obviously they are not. It is a fact that most people today have more waking hours after noon than before noon. In my earlier writing on this subject I introduced another concept to consider, such as the *end of the day*. Most theatres, cinemas and other public events start closing about 10pm, and most of the nation watches the 10pm news prior to bedtime, and the end of the day, may I suggest, is more sharply defined than noon (much more so, for most of the population). The effect of this is shown by our energy demands where in the UK the electricity consumption falls sharply during the evening and shifting the hour spreads the load and reduces consumption.¹ It is more convenient for society as a whole to flick a switch, as it were, and all change by an hour at once to synchronize social events, at the very least.

Turning now to various reports and studies. The entry in Wikipedia is very informative and wide ranging, although it appears to suffer by trying to be all things to all men. It must be realized that data from one country or economic or climatic region does not necessarily apply to another.

A three year experiment on SDST was carried out in the UK from 1968 to 1971, but this was unpopular with MPs and parliament discontinued the trial. I recall that Scottish Highland farmers were vociferous about the extended darker mornings, quietly forgetting their wonderful long summer days. Following this experiment a study was carried out by Mayer Hillman of the Policy Studies Institute under Nuffield funding, entitled "Time for Change, Setting clocks forward throughout the year, a new review of the evidence", dated 1993.² I have a copy of this edition and an updated version does exist on line. Road accidents studies feature prominently and I quote: "In 1992 the Transport Research Laboratory carried out a detailed analysis of of the likely effects of year round single and double summer time. (Overall) ... a reduction of 140 fatalities, 520 serious injuries and 1300 slight injuries... Three guarters of the reduction would accrue during the 22 weeks during winter and a guarter when the clocks were on the summertime setting." Hillman regrets that some of the 'reasons' for abandoning the experiment were close to deliberate mis-representation of accident statistics by some newspapers, since debunked in Hillman's report and others. To give a more recent example, in one of our leading newspapers a correspondent lamented the idea of a change with the hypothesis that in the earlier darker mornings in winter the roads would still be icv leading to an increase in accidents. A perfectly reasonable case, but he and the letters editor ignored the further thought that in the evenings children would be going home in daylight and there could be a net reduction in accidents. This did happen during the experiment and a careful analysis showed a reduction of 8.6%, and this was in Scotland where the greatest fuss had been made! Across the country the reduction was still a life saving 3%.

More recently a study was conducted by the Engineering Department, University of Cambridge ³ and from their study I quote: "Analysis of the data showed that had the clocks not been put back to GMT in winter, electricity savings of 885 GWhs of electricity could have been achieved. GB average daily demand for electricity could have been lower, with a reduction in peak demand for electricity of up to 4.3% during periods of high demand. The electricity wasted on GMT could have supplied 200,000 households and around 447,000 tonnes of CO₂ emissions could have been avoided." A potential saving of a power station or many wind farms.

The Royal Society for the Prevention of Accidents (RoSPA) concentrates on road accidents, but also has a comprehensive review of the history of DST and quotes studies from many other countries.⁴ It has a truly astonishing analysis that in the 1968-71 experiment: "Overall, about 2,500 fewer people were killed and seriously injured during the first two winters of the experiment."

Both the comprehensive studies by RoSPA and the Policy Studies Institute's consider different ways of achieving a better match between daylight and waking hours, giving at least 10 reasons in support of a move to SDST:-

• An overall reduction of about 600 road traffic fatalities and serious injuries in the winter months

· A major saving in energy and fuel costs due to the better matching of waking hours with daylight hours

Opportunities for making journeys for social and recreational purposes in daylight are considerably extended which is a major advantage for all groups in the population who are apprehensive about going out in the dark
An overall increase of well over one quarter in the number of hours for daylight-dependent leisure activities in the evening

- · Improvement in general health and well-being
- Small reduction in burglaries and assault carried out in the evenings due to the extra hour of daylight
- · Extension of the tourist season and a boost of 4% in tourist related earnings
- Additional annual earnings of £150 million for the leisure industry as a result of the increase in leisure activity
- · Improved convenience of travel and goods transport to and from Europe
- Matching time with Europe would benefit trade and communications.

A new group has appeared called 10:10 Lighter Later (https://1010uk.org/lighterlater/) that is actively campaigning for the change and its website reports on the progress through parliament and how to lobby your MP. In fact MPs voted by a large majority in December 2010 to support a new Daylight Saving Bill. Very many organizations such as the AA, FA, sports societies, business and tourism support the change, and I believe the Scottish highland farmers are objecting less strongly this time, presumably by recognizing the importance of tourism to their economy. (Since abandoned.)

There are disadvantages of SDST to the construction industry, some farmers, and those whose jobs start very early in day. Over the years driving, social, environmental (some countries use more air conditioning, etc), worldwide trade and other factors have changed, etc. Mr Thomas also notes the trend towards a more 24 hour life style, hence the validity of another trial.

Those who oppose single and double summer time may be chastened by Hillman's remark that "... many of the objections to SDST are weak or ill founded." We shall have to wait and see if James Lovelock's view prevails where "...emotions and feelings count more than the truth..."

References

1. UK daily and weekly electricity demand, see www.nationalgrid.com/uk/Electricity/Data/Realtime/Demand/ Demand8.htm Note the nearly 50% drop between about 8.30pm and 11pm.

2. *Time for Change*, Mayer Hillman, Publisher PSI, £5.95, 1993, pp40. Summary: It is over 25 years since the UK discontinued the three-year experiment of setting clocks one hour ahead of GMT in the winter, thereby maintaining British Standard Time throughout the year. In 1988 PSI published Making the Most of Daylight Hours, based on the findings of a study aimed at establishing the consequences of achieving a better match of waking hours and daylight hours by putting clocks one hour ahead of their current setting in both summer and winter. The conclusions - that the benefits would far outweigh the costs - were widely welcomed in the media. Subsequent public opinion polls have shown a 3 to 1 majority in favour of the reform. This review updates and summarises the findings of Making the Most of Daylight Hours, and incorporates additional evidence previously unavailable. It explores all the key issues relating to the theme: accidents and security; leisure activity; health; work and industry; domestic tourism; overseas travel; trade and communication; fuel consumption; Scotland; and political issues. Downloadable as a single pdf file.

3. Daylight Saving, Electricity Demand and Emissions; Exploratory Studies from Great Britain, Yu-Foong Chong, Elizabeth Garnsey, Simon Hill and Frederick Desobry. Department of Engineering, University of Cambridge, 27 October 2007. Can be viewed at www.ifm.eng.cam.ac.uk/people/ewg/091022_dst.pdf (No longer available on line.)

4. *Single/Double Summer Time Position Paper,* Royal Society for the Prevention of Accidents, May 2003, Revised September 2004, Updated October 2005. Probably the most useful 20 page report, which lists 40 organisations which responded to questionnaires, and with 27 references. <u>www.rospa.com/roadsafety/info/</u> <u>summertime_paper.pdf</u> (site at 2016 <u>http://www.rospa.com/campaigns-fundraising/current/lighter-evenings/</u>)