

# COUNCIL OF EUROPE CONSEIL DE L'EUROPE

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## CONSULTATIVE ASSEMBLY

ECONOMIC COMMITTEE



Euroclock

Proposal for Clock Reform  
in Western Europe

Memorandum by the  
Secretariat General prepared  
by the Economic  
Division

### Euroclock

The Euroclock Association was established at Amsterdam in 1958 with the object of stimulating a clock reform on the basis of a system worked out by Professor G. van den Bergh, who is also the President of the Committee of the Association. The reasons for and the system of the clock reform are set out in Professor van den Bergh's book "The Euroclock".

#### An outline of the proposed clock-reform.

The purpose of the proposed clock reform is to introduce a time regulation of human activities closely adjusted to the shifts in the beginning and end of the period of daylight. It is thus essentially designed to remedy what are considered to be the drawbacks of the present time regulation, based on the solar day, which does not take account of this factor.

Although there are several references to "the whole of Europe, west of the Iron Curtain", the countries to which it is proposed to apply the clock reform are listed on page 50 as being "the three Scandinavian countries (perhaps also Finland) Great Britain and Ireland, the Benelux countries, Western Germany, Switzerland, Austria, France, Spain, Portugal and Italy". Three Council of Europe countries Greece, Iceland and Turkey thus appear to be left out.

The principal drawbacks of the present time regulation that would be remedied by the clock reform are the following.

In spring and summer when the sun rises earlier and sets later and the temperature is higher, the urban population sleeps away the cool morning hours that are more suitable for work than the warmer hours later in the day and also gets its leisure-time late in the day in the south only soon before sunset. As a result, efficiency in work is said to be lower than it would otherwise be and out-of-door exercise in daylight is shorter, and leisure spent in artificial light longer, than need be the case.

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For the rural population whose activities are already more closely adapted to the seasonal shifts in the length of day-time, the advantages of the proposed clock reform, although mainly indirect, would be equally important. The main benefit claimed is that the time regulation of activities in the rural and urban communities would be brought into harmony whereas they are now at variance. It is also stated that the Euroclock system would spare the rural Community in countries that apply summertime (at present the United Kingdom, Ireland and Portugal) the difficulties connected with the two yearly time jumps of one hour.

One aspect of the advantages claimed for clock reform is thus that the community would derive economic gains from it. As a result of higher production per man-hour in the warm season Gross National Product would be increased and considerable savings would be made in electric current for lighting purposes. However, the most important aspect of clock reform, in Professor van den Bergh's own view, is the increased physical and mental well-being it would produce by making work less fatiguing, by increasing out-of-door life in daylight, and, in general, by restoring a more natural rhythm in human activities.

Professor van den Bergh points out that the summer-time system applied in the United Kingdom, Ireland and Portugal is an attempt to solve the same problem. It is, however, unsatisfactory, in his view, on two counts. Firstly, it involves a brutal time-jump of one hour twice a year, and secondly, it does not lend itself to a uniform application in a geographic area with a considerable east-west span and hence - as is the case at present - disrupts international unity of time during part of the year.

The proposed system attempts to counter these two difficulties by spreading the shifts in clock-time almost unnoticeably over six months instead of proceeding by time-jumps. In order to distribute the beneficial effects as fairly as possible throughout the area it is proposed to base the system on the Greenwich meridian (Western European time) and on daylight conditions halfway between the extreme north and south of the area.

The gist of the proposed clock reform is to shorten the solar 24-hour day by 50 seconds per day in the period from 21st December to 21st June - thus gradually advancing "getting-up time" by as much - and conversely to lengthen the solar day by 50 seconds per day during the other half of the year. The total

advance of clock-time from 21st December to 21st June is about 2 1/2 hours. This advance is then compensated by a corresponding retardation of clock-time in the following six months, so that at the end of a year advance and retardation balance out. While the clock-reform would manipulate the solar hour (by about 2 seconds either way) and the solar day (by 50 seconds either way) all the year round, it would not affect the duration of the solar year.

The proposed reform is thus not a time-reform but as it is quite appropriately called a clock-reform, since it hinges on the seemingly simple device of quickening respectively slowing the running of all watches and clocks by  $\frac{1}{1728}$  (50 seconds being  $\frac{1}{1728}$  of the solar day's 86,400 seconds).  $\frac{1}{1728}$

#### An evaluation of the clock reform

In evaluating the proposed clock reform (to determine whether the Economic Committee should support it) one may first ask whether it is feasible. The answer is that it is. Practically all watches and clocks have a mechanism whereby their movement can be quickened or slowed. Until a perfected mechanism were introduced which automatically slowed the running of clocks and watches on 21st December and again quickened it on 21st June there would obviously remain the inconvenience of regulating the movement on these two dates. The installation of an automatic change-over mechanism in clocks would of course entail expenditure and to introduce it in old watches might prove impractical.

Next one may enquire whether the advantages claimed for the clock reform are real and solidly established.

The claim that human productivity in urban occupations would increase is difficult to prove or disprove, the lowering of the average temperature during working hours in which it would result being no more than a fraction of a degree according to Professor van den Bergh's own calculations. Professor van den Bergh also recognises that the estimates given in his book regarding the measurement of the eventual productivity gain in money terms are far from conclusive. The fact that American industrialists have stated that the productivity gains resulting from the introduction of air-conditioning in factories and offices are probably considerable, is hardly relevant, since the temperature improvement obtained in this way is usually very substantial. This claim must therefore be disregarded.

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As regards the claim that the reform would save electric current for lighting purposes this is undoubtedly true. The figures produced by Professor van den Bergh, 15 million florins in Western Europe (1958), tends to show that the saving to be expected is not very important.

The increased physical and mental well-being resulting from longer leisure time in daylight is again extremely difficult to evaluate by any objective standards, although on general common-sense grounds one might be inclined to give Professor van den Bergh's theory the benefit of doubt. In this connection it should be observed, however, that for northern Europe daylight and twilight give adequate scope for out-of-door leisure in the summer, even under the present time regulations. Nor can one ignore that the change would disrupt many existing social habits, creating at least temporary problems of adjustment in family life and otherwise. On the other hand it must be recognised that the closer synchronisation of activities in town and country which the clock-reform would undoubtedly achieve would meet a long-standing grievance of the rural community.

Having examined very summarily the most important of the arguments for clock-reform one may now ask whether the reform would not have drawbacks of its own.

One grave objection immediately springs to mind and this is that although unity of time could be realised in this way in the larger part of Western Europe, the wider international unity of time regulation maintained throughout the world would be disrupted. This international time-regulation is based on the solar day, and the system advocated by Professor van den Bergh cannot be extended by definition beyond a geographic area of the size envisaged. Even Western Europe has rather too large an East-West and North-South span, as witness the fact that three countries on its fringes, Greece, Turkey and Iceland, have had to be left out. Indeed, in the Southern Hemisphere, as shown by the example of Pitcairn Island mentioned in the book, the acceleration and retardation of time would have to be the reverse of that on the Northern Hemisphere.

The result of introducing the reform would therefore be that time in Western Europe would be at variance with time elsewhere not as a matter of a fixed number of whole hours as now, but by a continuously increasing or decreasing number of seconds and minutes. As a consequence, the time schedules of all air, sea and rail communications of the area with the outside world would have to be established on a daily basis, and complications might arise in this respect also in intra-area communications. In modern conditions such a state of affairs would hardly be acceptable.

Another drawback of introducing Euroclock time - recognised by Professor van den Bergh - is that for scientific purposes and also for sports events solar time would still have to be applied.

Finally, one may observe that in some of our countries some of the features of the proposed time regulation are achieved by simpler means and without disrupting the international solar time system. Thus, as pointed out the United Kingdom, Iceland and Portugal apply summer-time and in some member countries, notably Norway and Sweden, the administration and many private firms and offices apply a different schedule of working hours in winter and summer, and/or have only a short lunch break. In Italy the lunch-break is often entirely suppressed, the work-day lasting uninterruptedly from 8 a.m. to 2 p.m.

To sum up, it would appear that the certain drawbacks of the proposed clock reform are greater than its uncertain advantages.