Time Records for Physiology, Ecology and Climatology.*

By

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In almost all cases, whether of practical life or scientific study, we are accustomed to use standard time for recording time relations. But this method of measuring time is artificial and unnatural, since it has no direct meaning as regards the time relations between the sun and natural phenomena on the earth's surface. By using this artificial method of measuring time many practical difficulties are avoided. Many places have the same time by this system, even when situated on different meridians. This is of great practical value, especially in the preparation and use of railway and steamship schedules, but standard time is unsuited to such physiological studies as those dealing with the daily march of plant transpiration, etc.

Moreover, several European nations and the United States of America have recently employed a so-called daylight-saving plan, setting their clocks one hour faster than standard time for the warmer half of the year. The result of such an arrangement is to introduce still more confusion than is brought about by the use of standard time. No matter what artificial arrangements for time records may be used for practical human affairs, solar time is the natural one to use in connection with physiological and climatological studies.

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Plant physiologists frequently have to deal with the time relations of natural processes that are related to sunrise, sunset, etc.; e. g., we study the daily march of the transpiration or photosynthesis of the plant. An artificial time schedule is often used without the realization that difficulties are introduced. It would be better if sun time were used in such cases.

Solar time is easily determined by the use of the primitive sun-dial, and an investigator's watch may be set by that instrument. A simpler way to make time records in terms of solar time would be for the investigator to leave his watch set for standard time and to correct his notes according to the constant difference between sun time and standard time. Thus, if his standard time is 20 minutes ahead of the solar time of his station, he would subtract 20 minutes from each time record, thus translating it from standard into solar time.

Attention to this matter might save considerable trouble in connection with detailed studies of daily fluctuations in physiological processes and in environmental conditions.

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