Article extrait de « The Observatory », juin 1886, volume 9, page 227

Note : D'Abbadie donne son avis sur l'utilisation du temps civil plutôt que du temps moyen (Astronomical Day) qui met le changement de jour à midi. Ce temps moyen est le temps des astronomes et D'Abbadie se prononce en faveur de l'utilisation du temps civil (décalé de 12 heures par rapport au temps moyen de façon à faire commencer le jour à minuit et non midi) pour dater les observations astronomiques. C'est ce que le Temps Universel va instituer pour tous.

The Proposed Change in the Astronomical Day.

GENTLEMEN,—

Will the Editors of the 'Observatory' allow me to state my opinion on the so-called Astronomical Time? Two years ago I asked our *Bureau des Longitudes* what were its advantages. Our learned president, Mons. Faye, answered that he knew of none. Neither do I. It is passing odd to date May 7 merely because I have observed before noon on May 8. Have we not already enough kinds of time, whether mean, apparent, or sidereal, all necessary distinctions, and must we add astronomical time, which is quite artificial?

The other day I asked our two most eminent French astronomers what is their opinion on this vexed question. One of them answered that astronomical time is a cumbrous superfluity, but that when making a change he should advocate also the decimal division of angles on circles and clocks, thus getting rid of our useless distinction, in right ascensions, between time or space, and bettering three computing tools at once. My other colleague withheld his opinion, but informed me that when observing the Sun on the meridian, he took care to write two dates, because apparent noon is

* "The Council shall draw up a Report on the state of the affairs of the Society, to be presented at the Inter-sessional General Meeting. In the Report shall be given an abstract of the proceedings during the preceding year."—*Bye-law* 4.

now before and then after mean noon, the latter being the standard. It therefore appears that astronomical time, though intended to simplify, actually introduces a complication. Your Astronomer Royal has done wisely in advising us to use only our familiar civil time. His position and authority entitle him to be our leader in a most welcome improvement.

When Stephenson, another distinguished Englishman, introduced locomotives, carters and coachmen might have argued as follows :— "Our time-honoured ways are the safest and therefore decidedly the best. Long experience is in their favour; we form an overwhelming majority in the carrying line and ought to be respected; our most eminent waggoners disapprove your new-fangled proposals." In spite of their reluctance to be jerked out of hackneyed ruts, their feelings were discarded because progress means change, and because common sense must be preferred to current opinions, not always better from having lasted long.

I am afraid that some astronomers now reason unconsciously like those waggoners of old. Yet astronomy is inseparable from progress. Our tables of the solar system are changed for improvement several times in a century. It will be easy to adapt new ones to civil time, and until then computers of the 'Nautical Almanac' need not fear to stumble over new traps, for they enjoy their quiet homes, are up to the most intricate work, and astonish us by their ability to wade successfully through long calculations. As for old tables given in astronomical time, astronomers would find little difficulty in adapting their computations to the one simple rule of civil time. The latter would be a boon to amateur astronomers, who are a growing class nowadays, and seldom pretend to much knowledge in theory.

Sailors and travellers are far more numerous than astronomers, and deserve therefore to be cared for in this sore question. They have many other preoccupations, and being obliged to observe and compute off and on are more liable than professionals to make mistakes. When reducing hour-angles often dated in civil time they must calculate the Sun's declination and the equation of time while bearing in mind two different kinds of numbers, some increasing and others decreasing. Moreover they have to compute forward in the afternoon, but backward in the morning. This latter alternative would be avoided by dating all hours from midnight.

Astronomical work is chiefly done in darkness. When an observer begins at the first peep of stars in the evening he can seldom go on after midnight, for his energy is then overtaxed, and when computing he prefers that epoch as nearer to his favourite hours than the more distant time of noon. The Sun is the only pretext for beginning days at noon, *i. e.* after they have really begun. It is strange that this definition, this commencing what is already half over, should have been invented by mathematicians trained in geometry's strict logic. Its only excuse was when tables

were so imperfect that daily observations of the Sun were necessary to ensure accuracy. Perhaps it might be convenient to head the Sun's pages in the N. A., one with the epoch at Greenwich apparent noon, and the other with that of Greenwich mean midnight, the latter being applied also to stars and planets, *i. e.* nearer to the time when they are observed.

While travelling in Africa, where a loss of date would have been a serious hindrance, I employed only civil time, and when training explorers I advised them to use no other. It has been my lot to reduce observations made by absent or deceased travellers whose ways were unknown to me, and I have sometimes been forced to make preliminary computations and investigate extraneous circumstances in order to find out what kind of time had been used. This is at least one of the inconveniences pertaining to the so-called astronomical time. For the sake of those who bow to authority, I may add that Laplace used only civil time in his 'Mécanique Céleste'; Damoiseau's lunar tables and perhaps some others followed that precedent. Can you tell me what astronomers complained of hitch or disadvantage when subsequent tables took up the beginning of day at noon? If the change was then bridged over easily, can we not do as much now?

Faithfully yours,

ANTOINE D'ABBADIE,

de l'Institut et du Bureau des Longitudes.

Paris, 1886, May 7 or 8.