The adoption of the system of standard time has already made considerable progress. In North America, standard time was first introduced in railway economy: it has since been generally accepted by the mass of the community. In Asia the same system has been legally established throughout the Japanese Empire. In Europe a general interest has been awakened on the subject; and at the present moment it attracts special attention in Austria-Hungary, Germany, and Belgium. Late advices give expression to the belief that standard time will be adopted by the railway service of these countries before many months. It is already observed in Sweden and Great Britain.

Thus, at the present day, standard time has been fully accepted in Asia by not less than forty millions of people, in Europe by almost an equal number, in America by more than sixty millions; and there is scarcely a doubt that in no long period it will be in use throughout the greater part of central Europe, making a total number of probably two hundred and thirty millions of the most progressive peoples in the three continents who will have accepted the principles of reckoning based on a common unit. Without taking into account central Europe, where the reform is on the eve of adoption, the unification of time-reckoning has so far advanced, that in Japan, Belgium, Sweden, England, Scotland, Canada, and the United States, all well regulated clocks strike the hours at the same moment (although locally the hours are distinguished by different numbers), and the minutes and seconds in all these countries are absolutely synchronous.

The unit of measurement authoritatively established by the resolutions of the international conference of 1384 is the basis of the system by which these results have been obtained; and we must regard this new system as the one which shall hereafter be observed by the great mass of the civilized inhabitants of the world in their daily reckonings and in their chronology. It is of first importance, therefore, that no doubt or ambiguity should exist in connection with it. By the resolutions of the conference of 1884, the unit measure may be defined as the interval of duration extending from one mean solar passage on the anti-meridian of Greenwich to the next succeeding passage. This standard unit has been variously designated as follows; viz., 1. A Universal Day, 2. A Terrestrial Day, 3. A Non-Local Day, 4. A Cosmopolitan Day, 5. A World Day, 6. A Cosmic Day.

It requires no argument to show that no one of these six terms is appropriate. The unit of time is not a day in the ordinary sense: it is, indeed, much more than an ordinary day. According to our habit of thought, a day is invariably associated with alternations of light and darkness; and each day, moreover, has a definite relationship to some locality on the surface of the earth. The day, as we commonly understand it, is essentially local; and during each rotation of the globe on its axis, occupying a period of twenty-four hours, there are as many days as there are spots on sea and on land differing in longitude. These numberless days are separate and distinct, each having its noon and midnight, its sunrise and sunset. The time-unit is an entirely different conception: it is equal in length to a day, and must, from its nature, be synchronous with some one of the infinite number of local days. By the resolutions of the Washington conference, it is identified with the civil day of Greenwich. But while the latter is simply a local division of time, limited to the Greenwich meridian, the unit measure is, on the other hand, not so limited: it is equally related to all points on the earth's surface in every latitude and longitude. Under this aspect, the wider functions and general character of the unit measure remove it from the category of ordinary days, as we understand the familiar expression; and, to obviate all doubt and uncertainty regarding it, it is in the highest degree desirable that the universal time-unit should be distinguished by some appellation by which, apart from its local relationship, it may always be indisputably known.

It was Lord Chief Justice Coke who said that "error is the parent of confusion." As the primary object of time-reform is to obviate confusion, we should take every precaution to preclude error. Is it not, therefore, expedient that we should adopt means to secure a proper and appropriate designation for the unit measure, and abandon as misnomers each one of the terms which have hitherto been applied to it? In a paper on the subject of time-reckoning, published in the "Transactions" of this society in 1886, the unit measure is defined, its uses described, and it is likewise pointed out that its distinctive appellation remains undetermined. I consider it to be my duty to draw attention to the want; and, while it would be an act of presumption on my part to propose a name, I will venture the remark that in the general interests of science an effort should be made to supply it. It has been found expedient to derive technical terms from a classical etymology, and I beg leave to suggest that the same rule might be followed in this case with obvious advantage. Whatever name be chosen, if derived from a Greek or Latin root, the word would in all countries have the same definite meaning, and could readily be incorporated into all languages. If such a word be adopted as will clearly express "a unit measure of time," it will gradually come into general use, as in the parallel cases of "telegram," "telegraph," "photograph," "lithograph," etc.; and by this means all nationalities will be enabled to give expression to one and the same meaning when they refer to time-reckoning in its broad significance.

I humbly submit that the Royal Society of Canada will confer a general benefit, and act becomingly, by taking the initiative in obtaining an appropriate designation for the unit measure of time.

If that view be concurred in by this section of the society, I respectfully suggest that a special committee be appointed to consider the subject, with instructions to report during the present session.[1]

NOTES AND NEWS.

A LABORATORY for plant-biology has been recently opened at Fontainebleau, says *Nature* of Sept. 11. It is under the direction of M. Bonnier, professor of botany at the Sorbonne in Paris, to whom application should be made by any contemplating research there.

—In the London *Times* for Sept. 9 we read the following note on how to keep salt dry: "The Dutch Indian Government offers a prize of 10,000 fl. for the best practical answer to the question 'In what manner should the salt which is sold in Dutch India in small packets be packed up so as to keep dry?' "

—The fifty-ninth annual exhibition of the American Institute of this city will open on Oct. 1, and continue until the end of November. The institute's exhibition building covers the large block of ground between Second and Third Avenues and 63d and 64th Streets, affording ample space for a display which is looked forward to with increasing interest from year to year.

—A wonderful example of erosion may be seen in the illustration to Professor Michie Smith's article on the eruption of Bandaisan in the *Proceedings of the Royal Society of Edinburgh*, vol. xvii. p. 70. The valley there depicted was produced by the erosive power of a small stream within the short space of ten months. Its depth, when Professor Smith visited the neighborhood, was 80 feet, and in some places little short of 150 feet.

—It is a fact known to few, that Russia has taken a place among the quicksilver-producing countries. We note in *The Scottish Geographical Magazine* that this metal is at present extracted at two places,—near the village of Kurush in Dagestan: and near the village of Saizef, in the district of Bachmut in Ekaterinoslav. At the former place the ore is said to contain the enormous proportion of 74.7 per cent of quicksilver. At Saizef, where the ore contains only 0.32 to 4.5 per cent, the pure metal extracted in 1889 weighed 164½ tons. Diamond-boring has lately been adopted, and a fairly rich lode of cinnabar has been struck at a depth of 260 feet.

—The special committee of Section III. of the Royal Society of Canada, to whom the expediency of suggesting an appropriate name for the unit measure of time was referred, reported as follows at the general meeting of the society held May 29, 1890: "The committee recognizes the advisability of obtaining a suitable nomenclature, and concurs in the views expressed in the address of the president of the section as to the expediency of

[1] This report is given elsewhere as a note.

some steps being taken by the society; the committee is likewise of opinion that we must seek in the classical languages for the material to construct an appropriate word, which will command the acceptance of every nationality. The committee conceives, that, whatever may be the individual opinions of members of this society, it is not at present expedient to do more than draw attention to the requirement. Your committee therefore recommends, that, in the name of the Royal Society of Canada, correspondence be opened with sister societies in other parts of the world with the view of bringing the subject to their notice, asking the favor of an expression of opinion regarding it. The committee recommends that the council be requested to take such steps as may be deemed expedient to bring the subject to the attention of sister societies."

— At a special meeting of the Geographical Society of Paris held on the 28th of June, M. Fernand Foureau gave an account of his journey to In-Salah, undertaken in pursuance of a mission intrusted to him by the ministers of public instruction and commerce. As related in the "Proceedings of the Royal Geographical Society," London, the traveller started from Biskra. At Aïn-Taïba he crossed the route of M. Leon Say in 1878, and of the first expedition of Col. Flatters. Continuing to the south-west, he traversed the region of the Erg. The chains of sand-dunes here attain an elevation of 1,200 feet, and are separated by "gassis" 20 to 30 miles in length, and ¾ to 1½ miles in breadth, which broaden farther in the interior. Vegetation at the foot of the dunes is green and abundant. A species of tamarisk is found on the summits. At the Ued Auleggui, M. Foureau struck the route of the second Flatters mission. Ascending an affluent of this Ued, he reached the watershed (about 1,200 feet high) between the basins of the Igharghar and the Ued Massin. The next range of importance, that of the Baten, running in a north-east and south-west direction, forms the edge of a deeply eroded plateau. The traveller here turned to the north east, and skirted the region of the Erg, exploring the estuaries of the numerous streams which descend from the Tademayt. These estuaries are covered with small shrubs and plants; but the expedition found their beds completely dried up, owing to the absence of rain for the last two years. The principal geographical results of this expedition are as follows: M. Foureau has determined the latitudes and longitudes of thirty-five points, and taken barometrical observations along the entire route. The length of his itinerary was over 1,500 miles, 600 of which were beyond the frontier of South Algeria. M. Foureau has shown that between Uargla and In-Salah there is a practicable route for a railway, on a firm soil, without a dune along it.

—Professor Klossovsky of Odessa has been investigating the physical characteristics of the Black Sea, as we learn from *The Scottish Geographical Magazine*. He finds its area, including the Sea of Azov, to be 147,100 square miles. Its greatest depth lies between Sevastopol and Constantinople, and is considerable for an inland sea, being 1,166 fathoms. The salinity on the north-west coast is 1.43 per cent, in the open sea 1.76, and at great depths 1.9, whereas in the Mediterranean and in the Atlantic, in the region of the trade-winds, it is 3.7 per cent. The temperature of the air over the surface of the sea is in summer about 72°. In the winter months it rises towards the southern shore, varying in January from 35½° on the northern shore, to 43° on the coast of Asia Minor. In summer the prevailing winds blow from the land towards the sea; in winter, in the opposite direction. The Black Sea is restless and stormy, for strong winds and gales blow over its shores on ninety days in the year. Professor Klossovsky gives full details concerning the variations of the level of the sea, having obtained records of observations made at nineteen stations during seventeen years. In the summer months the water near the shores stands above, in the winter months below, the mean level. The monthly mean of these variations is only one foot, but the absolute differences of level are very great,—in Taganrog nearly 14 feet 4 inches. The mean level for the year is nearly constant. Professor Klossovsky considers that these variations are independent of the rainfall, and are due to variations of atmospheric pressure, winds blowing from the land depressing the surface of the sea. It might, then, be expected that a rise of the water on one side of the sea would be accompanied by a sinking on the other side, and observations prove that such is the case. In summer the water is subject to sudden changes of temperature, sometimes amounting to fourteen or fifteen degrees in a day. This may be caused, partly by the action of the waves in mingling together the upper and lower strata, and partly by the winds, which, blowing off shore, sweep away the warmer surface water.

—The Rev. Dr. Norman has just returned from a dredging expedition in the Varanger Fiord and Sydvaranger, says *Nature* of Sept. 11. He has been absent nine weeks, and has brought home extensive collections in all branches of marine *Invertebrata*. The fiords of Sydvaranger were found to possess a rich fauna, with depths descending to 120 fathoms. These fiords had never before been scientifically investigated, though Baron de Guerne took a few hauls of the dredge there in 1881, when on board the French vessel "Coligny" as a member of the Mission Scientifique en Laponie, and published a list of the *Mollusca* obtained.

— A new method of measuring the inductive power and conductivity of dielectrics has been described by M. Curie in the *Annales de Chimie et de Physique*. It is based on the use of an apparatus he calls the piezo-electric quartz. He has studied with it, as we learn from *Nature* of Sept. 11, those qualities in various crystalline dielectrics; and he enunciates a law of superposition, which shows the independence of the effects produced by different variations of electro-motive force. Quartz shows a difference of conductivity in the direction of the optic axis (where it is strong), and at right angles (where it is insensible); and this gives rise to striking phenomena. Plates parallel to the axis, and with the extremities of the axis communicating with the earth, behave, beyond 120°, as dielectrics of zero inductive power. With prolonged heating, the conductivity along the axis quite disappears. Water plays a capital *rôle* in the conductivity of a great many dielectrics, possibly in all. With plates of baked porcelain kept moist, the various types of conductivity could be reproduced. The electro-motive forces of polarization of moist porous bodies may attain several hundred volts.

—The United States consul at Mannheim, Germany, says that in Mannheim and the neighborhood there are several large factories worked by steam, with enormous machines employing hundreds of hands, engaged in preparing feathers for market. The feathers, says the London *Journal of the Society of Arts*, come in great quantities from Russia, Austria, and other parts of Europe, and also Asia, China especially sending vast quantities in a very dirty condition. The feathers come into the factory in large bales. These are opened near a kind of gin or breaker, which separates the feathers from a lumpy or bunchy form, and flings them around in an air-filled chamber, through which a constant current is blowing. From this machine they go to another, in which, by means of ventilators, a separation of the short and light feathers from the long and heavy is made. Stage after stage, through machines arranged and shaped much like cotton-gins, the feathers fly, each machine separating the lighter from the heavier, until the most delicate, flaky snow-down is flung out into a large chamber. In one stage of the process the feathers are cleansed. This is done by placing them in a large steam-heated boiler, into which steam is projected, and made to cleanse every particle of dirt from the feathers. Long before the feathers get time to be wet through by the steam, dry air is injected from one side, while suction currents draw off every particle of dust or dirt loosened by the steam. The largest feathers, those which on account of the long quills are unfitted for use, are sent to the State prisons, where for very small sums the "wings" are carefully torn from the quills and returned to the factory, where they are cleansed and prepared for market. Most of the factories endeavor to get out of the feathers as much as possible of the down. A very fine quality of this article, that of the eider duck, fetches about $3.50 a pound. The machines are very simple in character and construction, and require in their working no special skill. They consist of breakers and ventilators. Contrivances for catching dust have been invented, but never any so skilfully contrived as to keep the fine particles from finding their way into the open rooms, and thence into the lungs of the work-people.