APPENDIX IV.

THE PRESENT STATUS
OF THE
USE OF STANDARD TIME

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THE PRESENT STATUS OF THE USE OF STANDARD TIME.

STANDARD TIME.

Standard time may be defined as time based upon a certain definite meridian that is adopted by law or usage as the time meridian for a more or less wide extent of country, in place of the various meridians upon which local mean time is based. Its advantage is that neighboring places then keep exactly the same time, instead of differing by a few minutes or seconds according to their differences of longitude, a matter of especial importance in connection with the operation of railroads and telegraphs, or the transaction of any business wherein contracts involve any definite time limits.

In the selection of standard time meridians it is of course desirable not to have them so far apart as to cause any very marked variation from true local mean time at any point, and the plan usually adopted is to have them exactly one hour of time, or 15 degrees of longitude, apart. It is also desirable, for the sake of international convenience and harmony, to base them upon the prime meridian that is in most common use throughout the world, namely, that of Greenwich, England.

The United States adopted standard time in 1883, on the initiative of the American Railway Association, and at noon of November 18 of that year the telegraphic time signals sent out daily from the Naval Observatory at Washington were changed to the new system, according to which the meridians of 75°, 90°, 105°, and 120° west from Greenwich became the time meridians of Eastern, Central, Mountain, and Pacific standard time, respectively. When it is noon at Washington, Baltimore, Philadelphia, New York, and Boston it is precisely 11 a. m. at Chicago, Minneapolis, St. Louis, and New Orleans; 10 a. m. from Dakota to Arizona and New Mexico, and 9 a. m. at all points on the Pacific coast. The same system has been extended to our remotest possessions, and has spread over the greater portion of the civilized world, although a few nations still use their own prime meridians instead of that of Greenwich.

THE INTERNATIONAL DATE LINE.

The meridian, 180° east and west from Greenwich, which crosses the Pacific Ocean from the Aleutian to the Fiji islands, is called the international date line. Here each new day has its birth at the instant when it is exactly noon of *the preceding date* at Greenwich; 7 a. m. at Washington; 4 a. m. at San Francisco, and 1.30 a. m.

Note.—In order that this appendix might be ready for distribution at the meeting of the International Railway Congress to be held at Washington in May, 1905, it has been necessary to hurry it through the press. Whatever inaccuracies may occur, it is hoped to remove in a future edition, and it is requested that notice of any corrections or additions be reported promptly to the Superintendent of the Naval Observatory.

at Honolulu. It is thus evident that if a vessel west bound across the Pacific were to continue her old calendar, without change, she would find upon arrival in Japan, Australia, or New Zealand, that she was one day behind in the day of the week and month. To avoid this it is customary, upon crossing the one hundred and eightieth meridian, to drop a day when bound west; to repeat a day when bound east. For instance, in the first case, Monday, October 24, would be followed in the log book by Wednesday, October 26, and in the second case, Monday, October 24, would be followed by another Monday, October 24.

The date line does not coincide with the one hundred and eightieth meridian everywhere, because as a mere matter of convenience it is better for all of eastern Siberia to have the same date, for all of the extreme Aleutian and Hawaiian islands to have the same date as the other islands of those groups and as the United States, and for all of the Fiji and Chatham islands to have the same date as Australia and New Zealand, with which they are closely connected politically and geographically. The date line is thus slightly irregular, but follows very closely the one hundred and eightieth meridian. The following ordinance was enacted in order to insure the use of the same day of the week and month in the Fiji Islands, through which the one hundred and eightieth meridian passes:

Fiji, No. XIV, 1879: An ordinance enacted by the governor of the colony of Fiji, with the advice and consent of the legislative council thereof, to provide for a universal day throughout the colony.

Whereas according to the ordinary rule of noting time, any given time would in that part of the colony lying to the east of the meridian of 180 degrees from Greenwich be noted as of a day of the week and month different from the day by which the same time would be noted in the part of the colony lying to the west of such meridian; and

Whereas, by custom the ordinary rule has been set aside and time has been noted throughout the colony as though the whole were situated to the west of such meridian; and

Whereas in order to preclude uncertainty for the future it is expedient that the above custom should be legalized; *Therefore*

Be it enacted by the governor, with the advice and consent of the legislative council, as follows:

1. Time in this colony shall be noted as if the whole colony were situated to the west of the meridian of 180 degrees from Greenwich.

(Exempli gratia—To-day, which according to the ordinary rule for noting time is on the island of Ovalau the 5th day of June, and on the island of Vanua-Balevu the 4th day of June, would by this ordinance be deemed as the 5th day of June, 1879, in the whole colony.)

11. This ordinance may be cited as the "Uniform date ordinance, 1879."

Passed in council this 5th day of June in the year of our Lord 1879.

A curious thing brought out by a consideration of this date line is the fact that the total duration or life of each day, if you consider the entire globe and not merely a single locality, is 48 instead of 24 hours. For example, imagine yourself close to but west of this line, near the equator, at midnight, when the new day begins. Remain there until noon and the day will then have lasted 12 hours. Now suppose that you move west, with the Sun overhead all the time, until you return close to, but east of, the date line. During this rapid trip of 900 knots (nautical miles) per hour, you will have passed 24 hours, all the time at noon of the same day, making 36 hours in all. Finally, if you wait there until the day ends, at midnight, it will add 12 hours more, making 48 hours for the total duration of that single day.

THE CONVERSION OF THE TIME OF ONE COUNTRY INTO THAT OF ANOTHER.

The following table is arranged for use in converting the time of one country into that of another, without any confusion regarding the proper date. It gives the hours, minutes, and seconds earlier or later than Washington or eastern standard time, which is in use everywhere from Maine to South Carolina, and also the same data for Greenwich time. Thus, when it is noon at Washington it is also noon at New York, Philadelphia, and Boston; one hour earlier, or 11 a. m., at Chicago, St. Louis, and New Orleans; 10 a. m. at Denver; 9 a. m. at San Francisco; 6.30 a. m. at Honolulu; and thirteen hours later, or 1 a. m. the next day, at Manila.

One more example will serve to make the use of the table still clearer. When it is 6 p. m. at Chicago, what time is it at Manila? The table shows that Chicago is one hour earlier (—) than Washington, so that it is then 7 p. m. at Washington, and as Manila is thirteen hours later (+) than Washington it must then be 8 a. m. the next day at Manila. In other words, to convert Chicago time into Manila time add 14 hours, and to convert Manila time into Chicago time subtract 14 hours.

Table for the Conversion of Time.

[To the nearest second.]

Place.	Earlier (—) or Later (+) than,					
	Washington			Greenwich		
	<i>h</i>	<i>m</i>	<i>s</i>	<i>h</i>	<i>m</i>	<i>s</i>
United States—						
From Maine to South Carolina	0	0	0	— 5	0	0
From Dakota and Michigan to Texas and Florida	— 1	0	0	— 6	0	0
From Montana to Arizona and New Mexico	— 2	0	0	— 7	0	0
Pacific Coast States and Nevada	— 3	0	0	— 8	0	0
Sitka, Alaska	— 4	0	0	— 9	0	0
Hawaiian Islands	— 5	30	0	— 10	30	0
Tutuila, Samoa	— 6	30	0	— 11	30	0
Guam	+ 14	30	0	+ 9	30	0
Philippine Islands	+ 13	0	0	+ 8	0	0
Porto Rico	+ 1	0	0	— 4	0	0
Panama Canal Zone	0	0	0	— 5	0	0
Algeria	+ 5	9	21	+ 0	9	21
Argentina	+ 0	43	12	— 4	16	48
Australia, western	+ 13	0	0	+ 8	0	0
Australia, central	+ 14	30	0	+ 9	30	0
Australia, eastern	+ 15	0	0	+ 10	0	0
Austria-Hungary	+ 6	0	0	+ 1	0	0
Belgium	+ 5	0	0	0	0	0
Borneo (British North) and Labuan	+ 13	0	0	+ 8	0	0
Brazil (Rio Janeiro)	+ 2	7	19	— 2	52	41
British Columbia	— 3	0	0	— 8	0	0
Canada, eastern	0	0	0	— 5	0	0
Canada, central	— 1	0	0	— 6	0	0
Chile	+ 0	17	14	— 4	42	46
China (Shanghai)	+ 13	5	43	+ 8	5	43
China (Saigon)	+ 12	6	49	+ 7	6	49
Colombia	+ 0	3	6	— 4	56	54
Costa Rica	— 0	36	17	— 5	36	17
Cuba	— 0	29	26	— 5	29	26
Denmark	+ 6	0	0	+ 1	0	0
Ecuador	— 0	14	7	— 5	14	7
Egypt	+ 7	0	0	+ 2	0	0
England	+ 5	0	0	0	0	0
Fiji Islands (Suva)	+ 16	53	44	+ 11	53	44
France	+ 5	9	21	+ 0	9	21
Germany	+ 6	0	0	+ 1	0	0
Gibraltar	+ 5	0	0	0	0	0

Table for the Conversion of Time—Continued.

Place.	Earlier (—) or Later (+) than,					
	Washington			Greenwich		
	<i>h</i>	<i>m</i>	<i>s</i>	<i>h</i>	<i>m</i>	<i>s</i>
Greece.....	+ 6	34	53	+ 1	34	53
Holland.....	+ 5	0	0	0	0	0
Honduras.....	— 1	0	0	— 6	0	0
Hongkong.....	+ 13	0	0	+ 8	0	0
India (Madras).....	+ 10	20	59	+ 5	20	59
Ireland.....	+ 4	34	39	— 0	25	21
Italy.....	+ 6	0	0	+ 1	0	0
Jamaica (Kingston).....	— 0	7	11	— 5	7	11
Japan.....	+ 14	0	0	+ 9	0	0
Java.....	+ 12	7	14	+ 7	7	14
Kiaochau.....	+ 13	0	0	+ 8	0	0
Korea.....	+ 14	0	0	+ 9	0	0
Madagascar (Tananarivo).....	+ 8	10	7	+ 3	10	7
Malta.....	+ 6	0	0	+ 1	0	0
Mauritius.....	+ 8	50	13	+ 3	50	13
Mexico.....	— 1	36	27	— 6	36	27
Newfoundland (St. Johns).....	+ 1	29	16	— 3	30	44
New Zealand.....	+ 16	30	0	+ 11	30	0
Nicaragua.....	— 0	45	10	— 5	45	10
Norway.....	+ 6	0	0	+ 1	0	0
Nova Scotia.....	+ 1	0	0	— 4	0	0
Panama (Colon).....	— 0	19	39	— 5	19	39
Peru.....	— 0	9	3	— 5	9	3
Portugal.....	+ 4	23	40	— 0	36	20
Russia (Pulkowa).....	+ 7	1	19	+ 2	1	19
Russia (Irkutsk).....	+ 11	57	5	+ 6	57	5
Russia (Vladivostok).....	+ 13	47	31	+ 8	47	31
Salvador.....	— 0	56	32	— 5	56	32
Servia.....	+ 6	0	0	+ 1	0	0
Singapore.....	+ 11	55	25	+ 6	55	25
South Africa (British).....	+ 7	0	0	+ 2	0	0
Spain.....	+ 5	0	0	0	0	0
Sweden.....	+ 6	0	0	+ 1	0	0
Switzerland.....	+ 6	0	0	+ 1	0	0
Tunis.....	+ 5	9	21	+ 0	9	21
Turkey.....	+ 7	0	0	+ 2	0	0
Uruguay.....	+ 1	15	11	— 3	44	49
Venezuela.....	+ 0	32	16	— 4	27	44

It may be added that England proposes to adopt for India and Ceylon the time meridian of $10^h 30^m 0^s$ later than Washington ($5^h 30^m 0^s$ later than Greenwich), and for Burma $11^h 30^m 0^s$ later than Washington ($6^h 30^m 0^s$ later than Greenwich); thus adding that vast region to the long list of countries that use standard time based upon the meridian of Greenwich.

THE UNIVERSAL TIME SYSTEM.

The need of a common and harmonious international system of time becomes greater every year by reason of the rapid extension of railroads, telegraphs, and cables, and the increase of international, diplomatic, and business relations that are conducted by telegraph. When a telegram is sent it is of course important to know the corresponding date and time of day at its destination, and confusion and errors may be avoided if the difference of time is only a question of hours or half hours, instead of hours, minutes, and seconds. Moreover, this question of the best common standard of time is merely part of the still more important question of the best

common standard of longitude, as longitude and time are practically the same. By far the greater part of all the charts and maps are based upon the prime meridian of Greenwich, and it is of great importance in navigation and geographic work for all charts, maps, sailing directions and notices to mariners to reckon longitudes from the same prime meridian, exactly as they already reckon latitudes from the equator.

The following quotation from The Observatory for November, 1904, supplies a graphic illustration of how this universal time system is spreading over the world by reason of the same self-evident advantages that induced the American people to accept it by common consent when it was first adopted and sent out from the United States Naval Observatory at noon of November 18, 1883:

Gradually, and without any public notification, the standard time 8 hours fast on Greenwich has crept into use along the coast of China from Newchwang, in the north, to Swatow, nearly the southernmost point; also up the Yangtsekiang as far as Hankau, and at Wei-hai-Wei and Tsingtau. It will be noted that, with the exception of Wei-hai-Wei, this territory is all non-British. There is an observatory at Hongkong, under the colonial government, in longitude $7^{\text{h}} 37^{\text{m}}$ east of Greenwich, and this local time is used in the colony; but it seemed good to the Hongkong Chamber of Commerce that the port, and consequently the west river ports and Canton, who use the same time, should fall into line with the rest of the country and adopt the times of the 8-hour zone. The main reason urged for the adoption was that the railway systems in China are now being developed, and that it is better that the change should be made now, before the Hongkong lines are connected with those of the rest of China. Another point, perhaps a minor one, in favor of the change is that, if the business time-tables remain the same, there will be more daylight after office hours than at present. The authorities at the colonial office, having been approached by the governor of Hongkong, gave their consent to the change of time system, which will therefore soon be made. The court of directors of the British North Borneo Company, having been communicated with, expressed their willingness to join the scheme, and gave instructions for the adoption of the 8-hour zone time in British North Borneo and the island of Labuan.

DAILY TELEGRAPHIC TIME SIGNALS.

Some philosopher has said that the appreciation of the value of correct time is a good index to the civilization of a nation, and in this respect the United States is among the very foremost. Since August, 1865, telegraphic time signals have been sent out daily from the Naval Observatory, and they now reach every part of the country, as well as Habana and Panama. The Pacific coast states and Alaska receive their time signals from the observatory at the Mare Island Navy-Yard, and it is proposed soon to extend them to Honolulu. Nineteen time-balls are dropped by these signals in the principal ports of our Atlantic, Pacific, Gulf of Mexico, and Great Lake coasts, and probably in no other country do any such signals cover such a large extent of territory or render such great service to both water-borne and inland commerce. They have, in fact, become an essential part of our everyday life, as transmitted by the voluntary cooperation of the Western Union Telegraph Company, the Postal Telegraph Company, and the American Telephone and Telegraph Company, all of whom receive the signals over special wires connected directly with the transmitting clock at the Naval Observatory.

The series of noon signals sent out daily is shown graphically in the accompanying diagram. This represents the signals as they would be recorded on a chronograph, where a pen draws a line upon a sheet of paper moving along at a

uniform rate, and is actuated by an electro-magnet so as to make a jog at every tick of the transmitting clock. The electric connections of the clock are such as to omit certain seconds, as shown by the breaks in the record. These breaks enable anyone who is listening to a sounder in a telegraph or telephone office to recognize the middle and end of each minute, especially the end of the last minute, when there is a longer interval followed by the noon signal. During this last long interval, or 10-second break, those who are in charge of time-balls and of clocks that are corrected electrically at noon throw their local lines into circuit so that the noon signal drops the time-balls and corrects the clocks.

This series of noon signals is sent continuously over the wires all over the United States for an interval of five minutes immediately preceding noon. For the country east of the Rocky Mountains the signals are sent out by the Naval Observatory at Washington and end at noon of the seventy-fifth meridian, standard time, corresponding to 11 a. m. of the ninetieth meridian and 10 a. m. of the one hundred and fifth meridian. For the country west of the Rocky Mountains they are sent out by the observatory at the Mare Island Navy-Yard, and end at noon of the one hundred and twentieth meridian, the standard time meridian of the Pacific coast. The transmitting clock that sends out the signals is corrected very accurately, shortly before noon, from the mean of three standard clocks that are rated by star sights with a meridian transit instrument. The noon signal is seldom in error to an amount greater than one or two tenths of a second, although a tenth more may be added by the relays in use on long telegraph lines. Electric transmission over a continuous wire is practically instantaneous. At other times than noon, similar signals can be sent out by telegraph or telephone from the same clock that sends out the noon signal.

SPECIAL TELEGRAPHIC TIME SIGNALS.

A plan that was inaugurated on December 31, 1902, of sending out a special series of midnight New Year's Eve time signals to mark the exact instant of the beginning of the new year for each of the four great standard time belts of the United States met with such great success that it has become a regular feature of the time service, and bids fair to have an important influence toward the universal adoption of the Greenwich meridian as the international basis of longitude and time.

The plan referred to has been taken up so energetically by telegraph and cable companies, not only on New Year's Eve, but whenever similar special series of midnight signals are sent out, that upon such occasions our standard clock may fairly be said to be heard in "the remotest ends of the earth," thus anticipating the day when wireless telegraphy will perhaps allow of a daily international time signal that will reach every continent and ocean in a small fraction of a second.

These midnight signals have reached such distant points as Madras, Mauritius, Cape Town, Pulkowa, Rome, Lisbon, Madrid, Sitka, Buenos Ayres, Wellington, Sydney, and Guam. Upon one occasion they extended from Greenwich to Adelaide, and from Sitka to Buenos Ayres, thus covering about three-quarters of the civilized world, and at Adelaide they have met from the east and from the west, thus compassing the entire globe, all within a very few seconds. They have been reported as having been received at the Lick Observatory in $0^s.05$; Montreal, $0^s.10$; City of Mexico, $0^s.11$; Manila, $0^s.37$; Greenwich, $1^s.33$; Sydney, $2^s.25$; Wellington, New Zealand, $4^s.00$; and Cordoba, Argentina, $7^s.70$.

The voluntary cooperation required to transmit, note, and report such signals proves the widespread interest and public attention that they elicit, while the fact that they are based on Greenwich standard time involves its use in calculating intervals occupied by their transmission and thus emphasizes the value of a common standard.

It may be explained that to measure accurately such brief differences of time requires exact astronomical observations for time at the observatories at each end of the line and the use of fine clocks and chronographs. It also involves, of course, an exact knowledge of the longitude of each observatory, as any error in the longitude enters directly into the determination of the time of transmission of the signal. This will be readily understood by remembering the fact that the best method of determining differences of longitude is by exchanging telegraphic time signals in connection with accurate astronomical star sights at each station. The object then is to eliminate the delay in transmission of the signals and thus find the exact difference of time, which at once gives the difference of longitude—four seconds of time being equal to one minute of longitude.

In the present case, where the object is to observe the exact delay in transmission of the signals from Washington to another observatory, the details are briefly as follows:

First, the exact error of the clock at each observatory is ascertained, usually by comparing its time with sidereal or star time, obtained by observing the meridian transit of one or more stars. This involves the use of a meridian transit instrument, a sidereal clock, and usually a chronograph. The observer starts the chronograph, adjusts the pen and ink, and closes the clock circuit. The pen then begins to mark seconds (clock time) on the moving chronograph cylinder, making a record somewhat as shown by the diagram on page G 10. The observer then sets his telescope, which swings in the plane of the meridian, and waits, with electric key in hand, until the expected star enters the field. As soon as he sees it he gives a rattle on the key, followed by a quick tap as the star crosses each of the transit wires, or fine spider threads, and then a rattle again as it passes out of the field. He can then easily read on the chronograph sheet the *clock time* of the star's transit over each wire, reduce these

to the middle wire and then to the meridian, get the *star time*, or right ascension, from the Almanac, and the difference between the two is the *error of the clock*. By making a mark on the diagram, page G 10, between any two of the seconds, and reading the corresponding clock time from the scale, it will be readily seen how the clock time of a star's transit can be marked and read with an accuracy within even less than a tenth of a second.

Next, it remains only to convert this accurate sidereal time into mean solar and finally into standard time, and to arrange for the accurate transmission and receipt of the midnight signals, which are due in Chicago at precisely 11 p. m., Denver at 10 p. m., San Francisco at 9 p. m., and so on around the world.

THE PRESENT STATUS OF STANDARD TIME.

It is gratifying to note that the following resolution, proposed by the writer, was adopted at a recent meeting of the Eighth International Geographic Congress, in whose honor a special midnight time signal was sent out on the occasion of a reception to that distinguished body by the Superintendent of the Naval Observatory, Rear-Admiral C. M. Chester, U. S. Navy, on September 8, 1904:

Resolved, in view of the fact that a large majority of the nations of the world have already adopted systems of standard time based upon the meridian of Greenwich as prime meridian, that this Congress is in favor of the universal adoption of the meridian of Greenwich as the basis of all systems of standard time.

The following table gives a list of the nations that have adopted and now use standard time. It shows also the meridian that is used as the basis of each system and the number of hours, minutes, and seconds earlier or later than the Washington standard, or seventy-fifth meridian time, and the same data for Greenwich standard time.

The table shows that 36 nations have adopted standard time; that 20 of these, including a very large majority as regards population and extent of territory, use systems based on the meridian of Greenwich; and that no two other nations agree. This table is thus conclusive in showing the strength of the argument in favor of what is appropriately called the Universal Time System, which may fairly be said to have as much in its favor as the Gregorian calendar itself.

Summary of Nations that use Standard Time.

Nation.	Basis of System.	Earlier (—) or Later (+) than,					
		Washington			Greenwich		
		<i>h</i>	<i>m</i>	<i>s</i>	<i>h</i>	<i>m</i>	<i>s</i>
Argentina.....	Cordoba.....	+ 0	43	11.8	— 4	16	48.2
Austria-Hungary.....	Greenwich.....	+ 6	0	0	+ 1	0	0
Belgium.....	Greenwich.....	+ 5	0	0	0	0	0
British Empire:							
Ireland.....	Dublin.....	+ 4	34	38.9	— 0	25	21.1
England and Scotland.....	Greenwich.....	+ 5	0	0	0	0	0
Cape Colony, Transvaal, Orange River Colony, Rhodesia, Natal.	Greenwich.....	+ 7	0	0	+ 2	0	0
India and Ceylon.....	Madras.....	+ 10	20	59.1	+ 5	20	59.1
Straits Settlements.....	Singapore.....	+ 11	55	25	+ 6	55	25

THE PRESENT STATUS OF THE USE OF STANDARD TIME.

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Summary of Nations that use Standard Time—Continued.

Nation.	Basis of System.	Earlier (—) or Later (+) than,					
		Washington			Greenwich		
		<i>h</i>	<i>m</i>	<i>s</i>	<i>h</i>	<i>m</i>	<i>s</i>
British Empire—Continued.							
Hongkong	Greenwich	+13	0	0	+8	0	0
West Australia, British North Borneo, and Labuan.	Greenwich	+13	0	0	+8	0	0
South Australia	Greenwich	+14	30	0	+9	30	0
New South Wales, Queensland, Tas- mania, Victoria.	Greenwich	+15	0	0	+10	0	0
New Zealand	Greenwich	+16	30	0	+11	30	0
Newfoundland	St. Johns	+1	29	16.4	—3	30	43.6
Nova Scotia and Prince Edward Island.	Greenwich	+1	0	0	—4	0	0
New Brunswick, Ontario, Quebec	Greenwich	0	0	0	—5	0	0
Keewatin, Manitoba	Greenwich	—1	0	0	—6	0	0
Alberta, Assiniboia, Athabasca	Greenwich	—2	0	0	—7	0	0
British Columbia	Greenwich	—3	0	0	—8	0	0
Chile (except Valparaiso)	Santiago	+0	17	13.9	—4	42	46.1
China (east coast)	Greenwich	+13	0	0	+8	0	0
Colombia	Bogotá	+0	3	5.8	—4	56	54.2
Costa Rica	San José	—0	36	16.9	—5	36	16.9
Cuba	Habana	—0	29	26.0	—5	29	26.0
Denmark	Greenwich	+6	0	0	+1	0	0
Ecuador	Quito	—0	14	6.7	—5	14	6.7
Egypt	Greenwich	+7	0	0	+2	0	0
France, including Algeria and Tunis	Paris	+5	9	21.0	+0	9	21.0
German Empire:							
Germany	Greenwich	+6	0	0	+1	0	0
Southwest Africa (German)	Greenwich	+6	0	0	+1	0	0
Kiaochau	Greenwich	+13	0	0	+8	0	0
Greece	Athens	+6	34	52.9	+1	34	52.9
Holland	Greenwich	+5	0	0	0	0	0
Grand Duchy of Luxembourg	Greenwich	+6	0	0	+1	0	0
Honduras	Greenwich	—1	0	0	—6	0	0
Italy	Greenwich	+6	0	0	+1	0	0
Japan	Greenwich	+14	0	0	+9	0	0
Formosa, Pescadores, etc	Greenwich	+13	0	0	+8	0	0
Korea	Greenwich	+14	0	0	+9	0	0
Mexico	City of Mexico	—1	36	26.7	—6	36	26.7
Nicaragua	Managua	—0	45	10.0	—5	45	10.0
Norway	Greenwich	+6	0	0	+1	0	0
Panama	Greenwich	0	0	0	—5	0	0
Peru	Callao	—0	9	3.0	—5	9	3.0
Portugal	Lisbon	+4	23	39.5	—0	36	20.5
Russia (western)	Pulkowa	+7	1	18.6	+2	1	18.6
Salvador	San Salvador	—0	56	32.0	—5	56	32.0
Servia	Greenwich	+6	0	0	+1	0	0
Spain	Greenwich	+5	0	0	0	0	0
Sweden	Greenwich	+6	0	0	+1	0	0
Switzerland	Greenwich	+6	0	0	+1	0	0
Turkey	Greenwich	+7	0	0	+2	0	0
United States:							
Eastern standard time	Greenwich	0	0	0	—5	0	0
Central standard time	Greenwich	—1	0	0	—6	0	0
Mountain standard time	Greenwich	—2	0	0	—7	0	0
Pacific standard time	Greenwich	—3	0	0	—8	0	0
Alaska standard time	Greenwich	—4	0	0	—9	0	0
Hawaiian standard time	Greenwich	—5	30	0	—10	30	0
Samoan standard time	Greenwich	—6	30	0	—11	30	0
Porto Rico standard time	Greenwich	+1	0	0	—4	0	0
Philippine standard time	Greenwich	+13	0	0	+8	0	0
Guam standard time	Greenwich	+14	30	0	+9	30	0
Uruguay	Montevideo	+1	15	11.1	—3	44	48.9
Venezuela	Caracas	+0	32	16.4	—4	27	43.6

LEGAL ACTS, DECREES, AND DECISIONS.

The legal use of standard or other kind of time is a question partly of statute and partly of common law, or custom. In some countries the legal standard is defined explicitly by statute law or by royal decree, either for the entire country or for certain definite parts thereof, but in other countries or parts of countries no statute law has as yet been adopted and there is only custom, supported by occasional precedents, consisting of legal decisions made in certain specific cases.

The following are good examples of statute laws, ordinances, and decrees:

[Great Britain, act of 1880.]

A BILL to remove doubts as to the meaning of expressions relative to time occurring in acts of Parliament, deeds, and other legal instruments.

Whereas it is expedient to remove certain doubts as to whether expressions of time occurring in acts of Parliament, deeds, and other legal instruments relate in England and Scotland to Greenwich time, and in Ireland to Dublin time, or to the mean astronomical time in each locality:

Be it therefore enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords, spiritual and temporal, and Commons, in the present Parliament assembled, and by the authority of the same, as follows (that is to say):

1. That whenever any expression of time occurs in any act of Parliament, deed, or other legal instrument, the time referred shall, unless it is otherwise specifically stated, be held in the case of Great Britain to be Greenwich mean time and in the case of Ireland Dublin mean time.

2. This act may be cited as the statutes (definition of time) act, 1880.

AN ACT to establish a standard of time in the District of Columbia.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the legal standard of time in the District of Columbia shall hereafter be the mean time of the seventy-fifth meridian of longitude west from Greenwich.

SECTION 2. That this act shall not be so construed as to affect existing contracts.

Approved, March 13, 1884.

AN ACT to declare the time known as "standard central time" the legal time within and for the State of Minnesota for all public and private purposes.

Be it enacted by the legislature of the State of Minnesota:

SECTION 1. That the time known as "standard central time," the same being the mean solar time of 90° longitude west of Greenwich is hereby declared to be the legal time within and for the State of Minnesota for all public and private purposes.

SECTION 2. This act shall take effect and be in force from and after its passage.

Approved, February 26, 1901.

[Empire of Japan. Imperial ordinance No. 51 of 1886.]

The meridian that passes through the observatory at Greenwich, England, shall be the zero (0) meridian.

Longitudes shall be counted from the above meridian east and west up to 180 degrees, the east being positive and the west negative.

From January 1, 1888, the time of the one hundred and thirty-fifth degree east longitude shall be the standard time of Japan.

[Imperial ordinance No. 167 of 1895.]

ARTICLE I. The standard time hitherto used in Japan shall henceforth be called central standard time.

ARTICLE II. The time of 120° east longitude shall be the standard time of Formosa, the Pescadores, the Yaeyama, and the Miyako groups, and shall be called western standard time.

ARTICLE III. This ordinance shall take effect from the 1st of January, 1896.

[Empire of Germany. Imperial decree of March 12, 1893.]

We, Wilhelm, by the grace of God German Emperor, King of Prussia, decree in the name of the Empire, the Bundesrath and Reichstag concurring, as follows:

The legal time in Germany is the mean solar time of longitude 15° east from Greenwich.

Although such statutes seem and are intended to be clear and mandatory, yet, like other written laws, they are subject to official interpretation by the courts. For example, the British statutory definition, quoted above, is limited to the word "time" in any act of Parliament, deed, or other legal instrument, and a subsequent decision is referred to as follows:

In the case of *Curtis v. March*, reported in volume 3 of Hurlestone and Norman's Exchequer Reports, page 866 (1858), it was held that the time appointed for the sitting of a court must be understood as the mean time at the place where the court sits, and not Greenwich time, unless it be so expressed, and a new trial was granted to a defendant who arrived at the local (Carlisle) time appointed by the court to sit, but found that the court had met by Greenwich time, and the case had been decided against him.

Similarly, in a decision by a court in the State of Georgia, U. S. A., in 1889, the following opinion was rendered:

The only standard of time in computation of a day, or hours of a day, recognized by the laws of Georgia is the meridian of the sun; and a legal day begins and ends at midnight, the mean time between meridian and meridian, or 12 o'clock *post meridiem*. An arbitrary and artificial standard of time, fixed by persons in a certain line of business, can not be substituted at will in a certain locality for the standard recognized by the law.

These laws and decisions will serve to illustrate that it is desirable, for many reasons, to fix a legal standard of time everywhere, and it seems evident that such standard should in every case be based upon Greenwich as the prime meridian. The nearest hour meridian, 15 degrees of longitude or multiple thereof, east or west from Greenwich, should be adopted as the standard time meridian of each wide adjacent region, the exact limits to be defined accurately by law. The result would then be, with the universal adoption of this system, that the minute and second hands of all chronometers, clocks, and watches set to ordinary solar, not sidereal, time would be exactly the same all over the world, only the hour differing, so that a single international noon signal by wireless telegraphy would be due at an exact hour on board of every vessel and at every city, town and village in the world.

ABSTRACTS OF OFFICIAL REPORTS OF THE KINDS OF TIME IN USE BY VARIOUS NATIONS.

The following abstracts have been prepared from official reports collected and forwarded to the Superintendent of the United States Naval Observatory by the Department of State, through the Diplomatic and Consular Service, and the Department of the Navy, through the Bureau of Navigation and the Office of Naval Intelligence:

Country.	System of Time in Actual Use.	Earlier (—) or Later (+) than,		Author- ity.
		Washington	Greenwich	
Alaska	See United States.	<i>h m s</i>	<i>h m s</i>	
Algeria	See France.			
Anam	See France.			
Argentina	The official time in use throughout Argentina is referred to the meridian of Cordoba, 4 ^h 16 ^m 48 ^s .2 west from Greenwich. At 11 a. m. a daily signal is telegraphed from the Cordoba Observatory. The greatest deviation of local mean time from the official time would not exceed 26 minutes. La Plata is 25 ^m 45 ^s east from Cordoba, and Mendoza, the most western town of importance, is 18 ^m 32 ^s west from Cordoba.	+ 0 43 11.8	— 4 16 48.2	A. E. ^a
Australia	See British Empire.			
Austria-Hungary.	Standard time does not exist in Austria except for the service of the railroads. Central European time, 15° east from Greenwich, is required to be used by all the railways. This is not a matter of law, but is in force by order of the proper authorities.	+ 6 0 0	+ 1 0 0	
Bahamas	See British Empire.			
Belgium	Official time in Belgium is calculated from 0 to 24 hours, zero corresponding to mean midnight at Greenwich. The Royal Observatory at Brussels communicates daily the precise hour to the Central Telegraphic Administration and Government offices; also to important corporations. The Telegraphic Administration transmits it to the towns in Belgium.	+ 5 0 0	0 0 0	
Bermudas	See British Empire.			
Bismarck Archipelago.	See German Empire.			
Borneo	See British Empire.			
British Empire	Great Britain: The meridian of Greenwich is the standard time meridian for— England, Isle of Man, Orkneys, Shetland Islands, Scotland. Ireland: The meridian of Dublin 0 ^h 25 ^m 21 ^s .1 west from Greenwich is the standard time meridian. Colonies: Africa: The meridian of longitude 30° east from Greenwich is the standard time meridian for— Cape Colony, Natal, Orange River Colony, Rhodesia, Transvaal. Australia: The standard time meridian is for— New South Wales, } longitude 150° east from Queensland, } Greenwich. South Australia, including Northern Territory, longitude 142° .5 east from Greenwich. Tasmania, } longitude 150° east from Greenwich. Victoria, } West Australia, longitude 120° east from Greenwich.	+ 5 0 0	0 0 0	
		+ 4 34 38.9	— 0 25 21.1	A. E.
		+ 7 0 0	+ 2 0 0	
		+ 15 0 0	+ 10 0 0	
		+ 14 30 0	+ 9 30 0	
		+ 15 0 0	+ 10 0 0	
		+ 13 0 0	+ 8 0 0	

^a American Ephemeris.

Abstracts of Official Reports of the Kinds of Time in Use by Various Nations—Continued.

Country.	System of Time in Actual Use.	Earlier (—) or Later (+) than,						Author- ity.
		Washington			Greenwich			
		<i>h</i>	<i>m</i>	<i>s</i>	<i>h</i>	<i>m</i>	<i>s</i>	
British Empire	Colonies—Continued.							
	Canada: The standard time meridian is for—							
	Alberta, } longitude 105° west from Green-	— 2	0	0	— 7	0	0	
	Assiniboia, } wick.							
	Athabasca, }							
	British Columbia, longitude 120° west from	— 3	0	0	— 8	0	0	
	Greenwich.							
	Keewatin, } longitude 90° west from Green-	— 1	0	0	— 6	0	0	
	Manitoba, } wick.							
	New Brunswick, longitude 75° west from	0	0	0	— 5	0	0	
	Greenwich.							
	Nova Scotia, longitude 60° west from Green-	+ 1	0	0	— 4	0	0	
	wick.							
	Ontario, longitude 75° west from Greenwich.	0	0	0	— 5	0	0	
	Prince Edward Island, longitude 60° west	+ 1	0	0	— 4	0	0	
	from Greenwich.							
	Quebec, longitude 75° west from Greenwich.	0	0	0	— 5	0	0	
	Chatham Island, longitude 172°.5 east from Green-	+16	30	0	+11	30	0	
	wick.							
	Gibraltar, longitude of Greenwich.....	+ 5	0	0	0	0	0	
	Hongkong, longitude 120° east from Greenwich..	+13	0	0	+ 8	0	0	
	Malta, longitude 15° east from Greenwich.....	+ 6	0	0	+ 1	0	0	
	New Zealand, longitude 172°.5 east from Green-	+16	30	0	+11	30	0	
	wick.							
	Straits Settlements, longitude of Fort Fullerton,	+11	55	25.0	+ 6	55	25.0	B. ^a
	Singapore, 6 ^h 55 ^m 25 ^s east from Greenwich.							
	Assuming local mean time for other British colonies							
	gives the following results:							
	Antigua (St. John).....	+ 0	52	38.1	— 4	7	21.9	B.
	Arabia (Aden).....	+ 7	59	55.9	+ 2	59	55.9	B.
	Bahamas (Nassau).....	— 0	9	27.9	— 5	9	27.9	B.
	Barbados (Bridgetown).....	+ 1	1	30.8	— 3	58	29.2	C. T. ^b
	Bermudas (Hamilton).....	+ 0	40	33.6	— 4	19	26.4	B.
	Borneo (Labuan).....	+12	41	1.0	+ 7	41	1.0	B.
	NOTE.—It is reported unofficially that stand-	+13	0	0	+ 8	0	0	
	ard time has been adopted in British North							
Borneo and Labuan.								
Falkland Islands (Port Stanley).....	+ 1	8	34.0	— 3	51	26.0	B.	
Fiji Islands (Suva).....	+16	53	44.3	+11	53	44.3	B.	
Guiana (Demerara).....	+ 1	7	14.0	— 3	52	46.0	B.	
Honduras (Belize).....	— 0	52	46.7	— 5	52	46.7	B.	
India (Madras).....	+10	20	59.1	+ 5	20	59.1	A. E.	
India (Calcutta).....	+10	53	20.8	+ 5	53	20.8	B.	
India (Bombay).....	+ 9	51	15.7	+ 4	51	15.7	A. E.	
NOTE.—Local mean time of the Madras Ob-								
servatory is practically used as standard time								
for India and Ceylon, being telegraphed daily								
all over the country; but for strictly local use								
it is generally converted into local mean time.								
It is proposed soon to adopt the standard time								
meridian of 5 ^h 30 ^m 0 ^s east from Greenwich for								
India and Ceylon and the standard time meri-								
dian of 6 ^h 30 ^m 0 ^s east from Greenwich for Burma.								
Jamaica (Kingston).....	— 0	7	10.7	— 5	7	10.7	B.	
Mauritius (Royal Alfred Observatory).....	+ 8	50	12.6	+ 3	50	12.6	A. E.	
Newfoundland (St. Johns).....	+ 1	29	16.4	— 3	30	43.6	B.	
NOTE.—Local mean time of St. Johns is								
practically used as standard time for the entire								
island.								
Trinidad (Port of Spain).....	+ 0	53	57.5	— 4	6	2.5	C. T.	
Cambodia	See France.							
Canada	See British Empire.							
Carolines	See German Empire.							
Chatham Is-	See British Empire.							
land.								

^a Bowditch's American Practical Navigator.^b Connaissance des Temps.

Abstracts of Official Reports of the Kinds of Time in Use by Various Nations—Continued.

Country.	System of Time in Actual Use.	Earlier (—) or Later (+) than,		Author- ity.
		Washington	Greenwich	
Chile.....	The official railroad time is that of the meridian of Santiago furnished the central railway station in that city by the Santiago Observatory. This time is telegraphed over the country daily at 7 a. m. The city of Valparaiso uses local time furnished by the observatory at the Naval School located there.	$\begin{smallmatrix} h & m & s \\ + & 0 & 17 & 13.9 \end{smallmatrix}$	$\begin{smallmatrix} h & m & s \\ - & 4 & 42 & 46.1 \end{smallmatrix}$	A. E.
China.....	An observatory is maintained by the Jesuit mission at Zikawei near Shanghai, and a time-ball suspended from a mast on the French Bund in Shanghai is dropped electrically precisely at noon each day. This furnishes the local time at the port of Shanghai, which is adopted by the railway and telegraph companies represented there, as well as by the coastwise shipping. From Shanghai the time is telegraphed to other ports. The cable companies represented in Peking receive this time from Chefoo; the Imperial Chinese Telegraphs from the office of that company at Tientsin. The Imperial Railways of North China use the same time, taking it from the British gun at Tientsin and passing it on to the stations of the railway twice each day, at 8 a. m. and 8 p. m. No information yet from the Peking-Hankau Railway.	$\begin{smallmatrix} + & 0 & 13 & 25.9 \\ + & 13 & 5 & 43.3 \end{smallmatrix}$	$\begin{smallmatrix} - & 4 & 46 & 34.1 \\ + & 8 & 5 & 43.3 \end{smallmatrix}$	C. T. C. T.
	NOTE.—Standard time is coming into use all along the east coast of China, from Newchwang to Hongkong, and in the interior as far as Hankau.	$\begin{smallmatrix} + & 13 & 0 & 0 \end{smallmatrix}$	$\begin{smallmatrix} + & 8 & 0 & 0 \end{smallmatrix}$	
Cochin-China.	See France.			
Colombia.....	At Bogotá the time used is that of the meridian of Bogotá. This time is taken every day at noon in the observatory, but there is no method employed in correcting it daily by signal from a central observatory. Some few people, such as jewelers, go to the observatory daily, but the great mass of business men, railroad officials, etc., let their timepieces run sometimes for weeks without correcting them, until the inconveniences caused thereby compel them to make the necessary corrections. So far as communicating the time as corrected in Bogotá to other parts of the country is concerned, this is rendered impossible by the very poor telegraphic service, it frequently taking 4 and 5 days to send messages a distance of from 50 to 100 miles.	$\begin{smallmatrix} + & 0 & 3 & 5.8 \end{smallmatrix}$	$\begin{smallmatrix} - & 4 & 56 & 54.2 \end{smallmatrix}$	A. E.
Costa Rica....	The Government has established an observatory at the capital, San José, in latitude 9° 56' north, longitude 84° 4' 14" west from Greenwich; altitude 3,800 feet above sea level. The Greenwich meridian is used exclusively to regulate observatory time, which is corrected by observation and reduced to mean time. This time is issued to public offices, railway and telegraph offices, churches, and to all residents whose occupations necessitate correct time. There is no method employed to correct time by signal from the observatory, the corrected time being taken by applicants from the standard chronometer at the observatory.	$\begin{smallmatrix} - & 0 & 36 & 16.9 \end{smallmatrix}$	$\begin{smallmatrix} - & 5 & 36 & 16.9 \end{smallmatrix}$	
Cuba.....	The official time of the Republic is civil mean time of the meridian of Habana and is used by the railroads and telegraphic lines of the government. The Central Meteorological Station gives the time daily to the port and city of Habana as well as to all the telegraph offices of the Republic.	$\begin{smallmatrix} - & 0 & 29 & 26.0 \end{smallmatrix}$	$\begin{smallmatrix} - & 5 & 29 & 26.0 \end{smallmatrix}$	B.
Danish West Indies.	See Denmark.			
Denmark.....	"Standard time is fixed at one hour earlier than that of Greenwich, corresponding to mean solar time of the 15th degree of longitude east from Greenwich." In Iceland, the Faroe Islands, and the Danish West Indies, local mean time is used.	$\begin{smallmatrix} + & 6 & 0 & 0 \end{smallmatrix}$	$\begin{smallmatrix} + & 1 & 0 & 0 \end{smallmatrix}$	
	Local mean time for the Danish West Indies gives			
	Curacao.....	$\begin{smallmatrix} + & 0 & 24 & 13.1 \end{smallmatrix}$	$\begin{smallmatrix} - & 4 & 35 & 46.9 \end{smallmatrix}$	B.
	St. Thomas.....	$\begin{smallmatrix} + & 0 & 40 & 16.5 \end{smallmatrix}$	$\begin{smallmatrix} - & 4 & 19 & 43.5 \end{smallmatrix}$	B.
	Local mean time for Iceland gives for Reikiavik..	$\begin{smallmatrix} + & 3 & 32 & 20.0 \end{smallmatrix}$	$\begin{smallmatrix} - & 1 & 27 & 40.0 \end{smallmatrix}$	B.

Abstracts of Official Reports of the Kinds of Time in Use by Various Nations—Continued.

Country.	System of Time in Actual Use.	Earlier (−) or Later (+) than,						Author- ity.
		Washington			Greenwich			
		<i>h</i>	<i>m</i>	<i>s</i>	<i>h</i>	<i>m</i>	<i>s</i>	
Ecuador.....	The official time is that of the meridian of Quito. It is corrected daily from the National Observatory of Quito.	− 0	14	6.7	− 5	14	6.7	A. E.
Egypt.....	Standard time is that of the 30th degree of longitude east from Greenwich, eastern European time, and is therefore 2 hours fast of Greenwich or western European time. It is sent out electrically by the standard clock of the observatory to the citadel at Cairo, to Alexandria, Port Said, and Wady-Halfa.	+ 7	0	0	+ 2	0	0	
England.....	See British Empire.							
Faroe Islands.	See Denmark.							
Fiji Islands...	See British Empire.							
Formosa.....	See Japan.							
France.....	Legal time in France, Algeria, and Tunis, is local mean time of the Paris Observatory. Local mean time is considered as legal in other French colonies. This gives the following results:	+ 5	9	20.9	+ 0	9	20.9	C. T.
	Cochin-China, Cambodia, and Anam (Saigon)...	+12	6	48.2	+ 7	6	48.2	C. T.
	Corsica (Ajaccio)	+ 5	34	57.3	+ 0	34	57.3	B.
	Guadaloupe (Basse-Terre)	+ 0	53	3.4	− 4	6	56.6	C. T.
	Madagascar (Tananarivo)	+ 8	10	7.0	+ 3	10	7.0	C. T.
	Marquesas Islands (Port Resolution)	− 4	16	36.0	− 9	16	36.0	B.
	Martinique (St. Pierre)	+ 0	55	15.2	− 4	4	44.8	C. T.
	Miquelon (St. Pierre)	+ 1	15	17.5	− 3	44	42.5	C. T.
	New Caledonia (Nouméa)	+16	5	48.4	+11	5	48.4	C. T.
	Paumotu Archipelago (Pitcairn Island)	− 3	40	23.2	− 8	40	23.2	C. T.
	Senegal (Port Dakar)	+ 3	50	18.0	− 1	9	42.0	B.
	Tongking (Hai-Phong)	+12	6	39.5	+ 7	6	39.5	C. T.
German Em- pire.	Germany: The standard time is the mean solar time of the meridian of longitude 15° east from Greenwich. Colonies: Mean solar time has been adopted for the following— Kiaochau, based on the meridian of longitude 120° east from Greenwich. Southwest Africa (German), based on the meridian of longitude 15° east from Greenwich. It is proposed to adopt standard time for the following: Bismarck Archipelago, } based on the meridian Carolines, } of longitude 150° east } from Greenwich. East Africa (German), based on the meridian of longitude 30° east or possibly 37° 5 east from Greenwich. Kamerun, based on the meridian of longitude 15° east from Greenwich. Mariane Islands, } based on the meridian of longi- New Guinea, } tude 150° east from Greenwich. Samoa, based on the meridian of longitude 180° east from Greenwich, but only after an understanding with the Government at Washington. Toga, based on the meridian of Greenwich	+ 6	0	0	+ 1	0	0	
		+13	0	0	+ 8	0	0	
		+ 6	0	0	+ 1	0	0	
		+15	0	0	+10	0	0	
		+ 7	0	0	+ 2	0	0	
		+ 7	30	0	+ 2	30	0	
		+ 6	0	0	+ 1	0	0	
		+15	0	0	+10	0	0	
		+17	0	0	+12	0	0	
		+ 5	0	0	0	0	0	
Gibraltar.....	See British Empire.							
Greece.....	By royal decree of September 14, 1895, the time in common use is that of the mean time of Athens, which is transmitted every day from the observatory by telegraph to the towns of the Kingdom.	+ 6	34	52.9	+ 1	34	52.9	A. E.
Hawaiian Is- lands.	See United States.							
Holland.....	The local time of Amsterdam is generally used, but Greenwich time is used by the post and telegraph administration and the railways and other transportation companies. The observatory at Leyden communicates the time twice a week to Amsterdam, The Hague, Rotterdam, and other cities, and the telegraph bureau at Amsterdam signals the time to all the other telegraph bureaus every morning. In the Grand Duchy of Luxembourg central European time is the legal and uniform time.	+ 5	19	32.3	+ 0	19	32.3	B.
		+ 5	0	0	0	0	0	
		+ 6	0	0	+ 1	0	0	

Abstracts of Official Reports of the Kinds of Time in Use by Various Nations—Continued.

Country.	System of Time in Actual Use.	Earlier (—) or Later (+) than,						Author- ity.
		Washington			Greenwich			
		<i>h</i>	<i>m</i>	<i>s</i>	<i>h</i>	<i>m</i>	<i>s</i>	
Holland	Local mean time for the colonies gives—							
	Java (Batavia)	+12	7	13.7	+7	7	13.7	B. B.
	Sumatra (Padang)	+11	41	20.9	+6	41	20.9	
Honduras	"In Honduras the half hour nearest to the meridian of Tegucigalpa, longitude 87° 12' west from Greenwich, is generally used. Said hour is frequently determined at the National Institute by means of a solar chronometer and communicated by telephone to the Industrial School, where in turn it is indicated to the public by a steam whistle. The central telegraph office communicates it to the various sub-offices of the Republic, whose clocks generally serve as a basis for the time of the villages, and in this manner an approximately uniform time is established throughout the Republic." Belize. See British Empire.	—1	0	0	—6	0	0	
Hongkong ...	See British Empire.							
Iceland	See Denmark.							
India	See British Empire.							
Italy	Mean solar time of the meridian of longitude 15° east from Greenwich is the standard time adopted by royal decree of August 10, 1893, for the Kingdom of Italy. This time is to be kept in all government establishments, offices, dockyards, and is to be used by all ships of the Italian Navy in the ports of or doing duty on the coast of Italy. All railroads, post and telegraph offices, and Italian coasting steamers, are to use this time and regulate their business and time-tables in accordance therewith. The hours run from midnight to midnight—that is to say, in Italy 1 p. m. is 13 hours, 5 p. m. is 17 hours, etc.	+6	0	0	+1	0	0	
Jamaica	See British Empire.							
Japan	Imperial ordinance No. 51, of 1886: The meridian that passes through the observatory at Greenwich, England, shall be the zero (0) meridian. Longitude shall be counted from the above meridian east and west up to 180 degrees, the east being positive and the west negative. From January 1, 1888, the time of the 135th degree east longitude shall be the standard time of Japan.	+14	0	0	+9	0	0	
	Imperial ordinance No. 167, of 1895: The standard time hitherto used in Japan shall henceforth be called Central Standard time. The time of the 120th degree east longitude shall be the standard time of Formosa, the Pescadores, the Yaeyama, and the Miyako groups, and shall be called western standard time. This ordinance shall take effect from the 1st of January, 1896.	+14	0	0	+9	0	0	
		+13	0	0	+8	0	0	
Java	See Holland.							
Kamerun	See German Empire.							
Kiaochau	See German Empire.							
Korea	Tokyo time, 135° east from Greenwich, is telegraphed daily to the Imperial Japanese Post and Telegraph Office at Seoul. Before December 1, 1904, this was corrected by subtracting 30 minutes, which nearly represents the difference in longitude, and was then used by the railroads, street railways, and post and telegraph offices, and most of the better classes. Since December 1, 1904, the Japanese post-offices and railways in Korea have begun to use Tokyo time. In the country districts the people use sun dials to some extent.	+13	30	0	+8	30	0	
		+14	0	0	+9	0	0	
Madagascar...	See France.							
Malta	See British Empire.							
Marquesas Islands.	See France.							

Abstracts of Official Reports of the Kinds of Time in Use by Various Nations—Continued.

Country.	System of Time in Actual Use.	Earlier (—) or Later (+) than,		Author- ity.
		Washington	Greenwich	
		<i>h m s</i>	<i>h m s</i>	
Mariane Is- lands.	See German Empire.			
Mauritius	See British Empire.			
Mexico.....	The National Astronomical Observatory of Tacubaya regulates a clock twice a day which marks the local mean time of the City of Mexico, 6 ^h 36 ^m 26 ^s .7 west from Greenwich, and a signal is raised twice a week at noon upon the roof of the national palace, such signal being used to regulate the city's public clocks. This signal, the clock at the central telegraph office, and the public clock on the cathedral, serve as a basis for the time used commonly by the people. The general telegraph office transmits this time daily to all of its branch offices. Not every city in the country uses this time, however, since a local time, very imperfectly determined, is more commonly observed. The following railroad companies use standard City of Mexico time corrected daily by telegraph: Central, Hidalgo, Xico and San Rafael, National and Mexican. The Central and National railroads correct their clocks to City of Mexico time daily by means of the noon signal sent out from the Naval Observatory at Washington, and by a similar signal from the observatory at St. Louis, Mo.	— 1 36 26.7	—6 36 26.7	A. E.
Miquelon.....	See France.			
New Caledo- nia.	See France.			
Newfoundland	See British Empire.			
New Guinea..	See German Empire.			
New Zealand..	See British Empire.			
Nicaragua....	Managua time is issued to all public offices, railways, telegraph offices, and churches, in a zone that extends from San Juan del Sur, latitude 11° 15' 44" north, to El Ocotal, latitude 12° 46' north, and from El Castillo, longitude 84° 22' 37" west from Greenwich, to Corinto, longitude 87° 12' 31" west from Greenwich. The time of the Atlantic ports is usually obtained from the captains of ships.	— 0 45 10.0	—5 45 10.0	
Norway.....	Central European time, longitude 15° east from Greenwich, is the standard and, as far as known, is used everywhere in the country. Telegraphic time signals are sent out once a week to the telegraph stations throughout the country from the observatory of the Christiania University.	+ 6 0 0	+1 0 0	
Panama.....	The railroad company uses the local mean time of Colon, 5 ^h 19 ^m 39 ^s west from Greenwich. This time is obtained from the chronometers of the company's New York steamers. The Central and South American Cable Co. now cables 75th meridian time, 5 ^h west from Greenwich, daily from Washington, and this will probably be adopted as the standard.	— 0 19 39.0	—5 19 39.0	B.
		0 0 0	—5 0 0	
Panama Canal Zone.	See United States.			
Paumotu Ar- chipelago.	See France.			
Peru.....	There is no official time. The railroad from Callao to Oroya takes its time by telegraph from the noon signal at the naval school at Callao, which may be said to be the standard time for Callao, Lima, and the whole of Central Peru. The railroad from Mollendo to Lake Titicaca, in southern Peru, takes its time from ships in the Bay of Mollendo.	— 0 9 3.0	—5 9 3.0	B.
Pescadores....	See Japan.			
Philippine Is- lands.	See United States.			
Porto Rico....	See United States.			

Abstracts of Official Reports of the Kinds of Time in Use by Various Nations—Continued.

Country.	System of Time in Actual Use.	Earlier (—) or Later (+) than,		Author- ity.
		Washington	Greenwich	
Portugal	Standard time is in use throughout Portugal, and is based upon the meridian of Lisbon ($9^{\circ} 5' 7''$). It is established by the Naval Observatory in the Royal Gardens at Lisbon, and from there sent by telegraph to every railway station throughout Portugal having telegraphic communication. Clocks on railway station platforms are 5 minutes behind, while clocks outside of stations are 2 minutes ahead of standard time.	$\begin{smallmatrix} h & m & s \\ + & 4 & 23 & 39.5 \end{smallmatrix}$	$\begin{smallmatrix} h & m & s \\ - & 0 & 36 & 20.5 \end{smallmatrix}$	
Russia	All telegraph stations use the time of Pulkowa (St. Petersburg). At railroad stations both local and Pulkowa time are given, from which it is to be inferred that for all local purposes local time is used. Local mean time gives for—	$\begin{smallmatrix} + & 7 & 1 & 18.6 \end{smallmatrix}$	$\begin{smallmatrix} + & 2 & 1 & 18.6 \end{smallmatrix}$	A. E.
	Nicolaeff	$\begin{smallmatrix} + & 7 & 7 & 53.8 \end{smallmatrix}$	$\begin{smallmatrix} + & 2 & 7 & 53.8 \end{smallmatrix}$	A. E.
	Riga	$\begin{smallmatrix} + & 6 & 36 & 28.2 \end{smallmatrix}$	$\begin{smallmatrix} + & 1 & 36 & 28.2 \end{smallmatrix}$	A. E.
	Irkutsk	$\begin{smallmatrix} + & 10 & 57 & 4.7 \end{smallmatrix}$	$\begin{smallmatrix} + & 5 & 57 & 4.7 \end{smallmatrix}$	C. T.
	Vladivostok	$\begin{smallmatrix} + & 13 & 47 & 30.9 \end{smallmatrix}$	$\begin{smallmatrix} + & 8 & 47 & 30.9 \end{smallmatrix}$	C. T.
Salvador	The Government has established a national observatory at San Salvador which issues time on Wednesdays and Saturdays, at noon, to all public offices, telegraph offices, railways, etc., throughout the Republic.	$\begin{smallmatrix} - & 0 & 56 & 32.0 \end{smallmatrix}$	$\begin{smallmatrix} - & 5 & 56 & 32.0 \end{smallmatrix}$	
Samoa	See German Empire and United States.			
Santo Domingo.	Local mean time is used, but there is no central observatory and no means of correcting the time. The time differs from that of naval vessels in these waters by about 30 minutes.			
Senegal	Local mean time gives, for Santo Domingo City..... See France.	$\begin{smallmatrix} + & 0 & 20 & 28.0 \end{smallmatrix}$	$\begin{smallmatrix} - & 4 & 39 & 32.0 \end{smallmatrix}$	C. T.
Servia	Central European time, longitude 15° east from Greenwich, is used by the railroad, telegraph companies, and the people generally. Clocks are regulated by telegraph from Budapest every day at noon.	$\begin{smallmatrix} + & 6 & 0 & 0 \end{smallmatrix}$	$\begin{smallmatrix} + & 1 & 0 & 0 \end{smallmatrix}$	
Siberia (Irkutsk and Vladivostok).	See Russia.			
Singapore	See British Empire.			
South Africa..	See British Empire.			
Spain	Official time is the mean time of the meridian of Greenwich, obtained from the Madrid Observatory. It is used by the railroad and telegraph companies and the people of Madrid and provinces generally, in some of which, however, local time is still used for private matters.	$\begin{smallmatrix} + & 5 & 0 & 0 \end{smallmatrix}$	$\begin{smallmatrix} 0 & 0 & 0 \end{smallmatrix}$	
Straits Settlements.	See British Empire.			
Sumatra	See Holland.			
Sweden	Central European time, 15° east from Greenwich, is the standard. It is sent out every week by telegraph from the Stockholm Observatory.	$\begin{smallmatrix} + & 6 & 0 & 0 \end{smallmatrix}$	$\begin{smallmatrix} + & 1 & 0 & 0 \end{smallmatrix}$	
Switzerland ..	Central European time is at present the only legal time. It is sent out daily by telegraph from the Cantonal Observatory at Neuchâtel.	$\begin{smallmatrix} + & 6 & 0 & 0 \end{smallmatrix}$	$\begin{smallmatrix} + & 1 & 0 & 0 \end{smallmatrix}$	
Toga	See German Empire.			
Tongking	See France.			
Trinidad	See British Empire.			
Tunis	See France.			

Abstracts of Official Reports of the Kinds of Time in Use by Various Nations—Continued.

Country.	System of Time in Actual Use.	Earlier (—) or Later (+) than,		Author- ity.
		Washington	Greenwich	
Turkey	Two kinds of time are used, i. e., Turkish and eastern European time, the former for the natives and the latter for Europeans. The railroads generally use both, the latter for the actual running of trains and Turkish time-tables for the benefit of the natives. Standard Turkish time is used generally by the people, sunset being the base and 12 hours being added for a theoretical sunrise. The official clocks are set daily so as to read 12 o'clock at the theoretical sunrise, but the tower clocks are set only two or three times a week. The Government telegraph lines use Turkish time throughout the Empire and St. Sophia time, 1 ^h 47 ^m 32 ^s ahead of Paris, for telegrams sent out of the country.	$\begin{matrix} h & m & s \\ + & 7 & 0 & 0 \end{matrix}$	$\begin{matrix} h & m & s \\ + & 2 & 0 & 0 \end{matrix}$	
United States .	Standard time based on the meridian of Greenwich is universally used and is sent out daily by telegraph to most of the country and to Habana and Panama from the Naval Observatory at Washington; and to the Pacific coast, from the observatory at Mare Island Navy-Yard, California. Standard times used are as follows: Porto Rico, Atlantic standard time, meridian of longitude 60° west from Greenwich. Atlantic coast and Panama Canal Zone, eastern standard time, meridian of longitude 75° west from Greenwich. Mississippi Valley, central standard time, meridian of longitude 90° west from Greenwich. Rocky Mountain Region, mountain standard time, meridian of longitude 105° west from Greenwich. Pacific coast, Pacific standard time, meridian of longitude 120° west from Greenwich. Sitka, Alaska standard time, meridian of longitude 135° west from Greenwich. Hawaiian Islands, Hawaiian standard time, meridian of longitude 157°.5 west from Greenwich. Tutuila, Samoa, Samoan standard time, meridian of longitude 172°.5 west from Greenwich. Guam, Guam standard time, meridian of longitude 142°.5 east from Greenwich. Philippine Islands, Philippine standard time, meridian of longitude 120° east from Greenwich.	$\begin{matrix} h & m & s \\ + & 6 & 56 & 53.0 \end{matrix}$	$\begin{matrix} h & m & s \\ + & 1 & 56 & 53.0 \end{matrix}$	
Uruguay	The time in common use for railways, telegraph companies, and the public in general, is mean time of the meridian of the dome of the Metropolitan Church of Montevideo. The correct time is indicated by a striking clock in the tower of that church. An astronomical geodetic observatory, with meridian telescope and chronometers, has now been established and will in the future furnish the time. It is proposed to install a time-ball for the benefit of navigators at the port of Montevideo. An electric time service will be extended throughout the country, using at first the meridian of the church and afterwards that of the national observatory, when constructed.	$\begin{matrix} h & m & s \\ + & 1 & 0 & 0 \end{matrix}$ $\begin{matrix} h & m & s \\ 0 & 0 & 0 \end{matrix}$ $\begin{matrix} h & m & s \\ - & 1 & 0 & 0 \end{matrix}$ $\begin{matrix} h & m & s \\ - & 2 & 0 & 0 \end{matrix}$ $\begin{matrix} h & m & s \\ - & 3 & 0 & 0 \end{matrix}$ $\begin{matrix} h & m & s \\ - & 4 & 0 & 0 \end{matrix}$ $\begin{matrix} h & m & s \\ - & 5 & 30 & 0 \end{matrix}$ $\begin{matrix} h & m & s \\ - & 6 & 30 & 0 \end{matrix}$ $\begin{matrix} h & m & s \\ + & 14 & 30 & 0 \end{matrix}$ $\begin{matrix} h & m & s \\ + & 13 & 0 & 0 \end{matrix}$	$\begin{matrix} h & m & s \\ - & 4 & 0 & 0 \end{matrix}$ $\begin{matrix} h & m & s \\ - & 5 & 0 & 0 \end{matrix}$ $\begin{matrix} h & m & s \\ - & 6 & 0 & 0 \end{matrix}$ $\begin{matrix} h & m & s \\ - & 7 & 0 & 0 \end{matrix}$ $\begin{matrix} h & m & s \\ - & 8 & 0 & 0 \end{matrix}$ $\begin{matrix} h & m & s \\ - & 9 & 0 & 0 \end{matrix}$ $\begin{matrix} h & m & s \\ - & 10 & 30 & 0 \end{matrix}$ $\begin{matrix} h & m & s \\ - & 11 & 30 & 0 \end{matrix}$ $\begin{matrix} h & m & s \\ + & 9 & 30 & 0 \end{matrix}$ $\begin{matrix} h & m & s \\ + & 8 & 0 & 0 \end{matrix}$	C. T.
Venezuela . . .	The time is computed daily at the Caracas Observatory, longitude 66° 55' 53.6" west from Greenwich, from observations of the sun and is occasionally telegraphed to other parts of Venezuela. The cathedral clock at Caracas is corrected by means of these observations. Railway time is at least 5 minutes later than that indicated by the cathedral clock, which is accepted as standard by the entire people. Some people take time from the observatory flag, which always falls at noon.	$\begin{matrix} h & m & s \\ + & 0 & 32 & 16.4 \end{matrix}$	$\begin{matrix} h & m & s \\ - & 4 & 27 & 43.6 \end{matrix}$	C. T.

List of the Dividing Points, North American Standard Time Sections, with the Time in Use at Each, as Adopted by the American Railway Association.

BETWEEN ATLANTIC OR INTERCOLONIAL AND EASTERN SECTIONS.

CAMPBELLTON, N. B.	VANCEBORO, ME.
<i>Atlantic time.</i> —Intercolonial Railway (east of Campbellton).	<i>Atlantic time.</i> —Canadian Pacific Railway (east of Vanceboro).
<i>Eastern time.</i> —Intercolonial Railway (west of Campbellton).	<i>Eastern time.</i> —Canadian Pacific Railway (west of Vanceboro). Maine Central Railway.

BETWEEN EASTERN AND CENTRAL SECTIONS.

ASHEVILLE, N. C.	BUFFALO, N. Y.
(Eastern time is used locally.)	(The city uses Eastern time.)
<i>Eastern time.</i> —Southern (except Asheville and Morristown Line).	<i>Eastern time.</i> —Buffalo, Rochester and Pittsburg.
<i>Central time.</i> —Southern (Asheville and Morristown Line).	Delaware, Lackawanna and Western.
	Erie.
	Grand Trunk.
	Lehigh Valley.
	New York Central and Hudson River.
	Pennsylvania.
	Wabash.
	West Shore.
	<i>Central time.</i> —Lake Shore and Michigan Southern.
	Michigan Central.
	New York, Chicago and St. Louis.
ATHENS, GA.	CARTIER, ONT.
(The city uses Central time.)	(Central time is used locally.)
<i>Eastern time.</i> —Southern.	<i>Eastern time.</i> —Canadian Pacific (east of Cartier).
Seaboard Air Line.	<i>Central time.</i> —Canadian Pacific (west of Cartier).
<i>Central time.</i> —Georgia.	
Central of Georgia.	
ATLANTA, GA.	CENTRAL JUNCTION, GA.
(The city uses Central time.)	<i>Eastern time.</i> —Atlantic Coast Line (north of Junction).
<i>Eastern time.</i> —Seaboard Air Line.	<i>Central time.</i> —Atlantic Coast Line (south of Junction).
Southern, main line (east of Atlanta).	
<i>Central time.</i> —Atlanta and West Point.	
Central of Georgia.	
Georgia.	
Southern (west and south of Atlanta).	
Western and Atlantic.	
AUGUSTA, GA.	CLIFTON FORGE, VA.
(The city uses Eastern time.)	(See also West Clifton Forge.)
<i>Eastern time.</i> —Atlantic Coast Line.	(Eastern time is used locally.)
Charleston and Western Carolina.	<i>Eastern time.</i> —Chesapeake and Ohio (east of Clifton Forge).
Southern.	<i>Central time.</i> —Chesapeake and Ohio (west of Clifton Forge).
<i>Central time.</i> —Central of Georgia.	
Georgia.	
BENWOOD, W. VA.	COLUMBIA, S. C.
(Eastern time is used locally.)	(Eastern time is used locally.)
<i>Eastern time.</i> —Baltimore and Ohio (east of Benwood).	<i>Eastern time.</i> —Atlantic Coast Line.
<i>Central time.</i> —Baltimore and Ohio (west of Benwood).	Columbia, Newberry and Laurens.
	Seaboard Air Line (north of Columbia).
	Southern.
	<i>Central time.</i> —Seaboard Air Line (south of Columbia).
BRISTOL, TENN.	CORRY, PA.
(Eastern time is used locally.)	(Eastern time is used locally.)
<i>Eastern time.</i> —Norfolk and Western.	<i>Eastern time.</i> —Pennsylvania.
Virginia and Southwestern.	<i>Central time.</i> —Erie.
<i>Central time.</i> —Southern.	

THE PRESENT STATUS OF THE USE OF STANDARD TIME.

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List of the Dividing Points, North American Standard Time Sections, etc.—Continued.

BETWEEN EASTERN AND CENTRAL SECTIONS—Continued.

<p>DETROIT, MICH. (See Windsor.) (Central time is legal time for the State of Michigan, but local time, twenty-eight minutes faster than Central time, is also used in the city of Detroit.) <i>Eastern time.</i>—Canadian Pacific. Grand Trunk (in Canada). <i>Central time.</i>—Grand Trunk (in Michigan). Lake Shore and Michigan Southern. Michigan Central. Pere Marquette. Wabash.</p> <p>DUNKIRK, N. Y. (The city uses Eastern time.) <i>Eastern time.</i>—Erie. Pennsylvania. <i>Central time.</i>—Dunkirk, Allegheny Valley and Pittsburgh. Lake Shore and Michigan Southern. New York, Chicago and St. Louis.</p> <p>ERIE, PA. (The city uses Eastern time.) <i>Eastern time.</i>—Pennsylvania (P. and E. Div.). Bessemer and Lake Erie. <i>Central time.</i>—Pennsylvania Company. Lake Shore and Michigan Southern. New York, Chicago and St. Louis.</p> <p>FRANKLIN, PA. (Eastern time is used locally.) <i>Eastern time.</i>—Pennsylvania. <i>Central time.</i>—Erie. Lake Shore and Michigan Southern.</p> <p>GAINESVILLE, GA. (The city uses local mean time.) <i>Eastern time.</i>—Southern. <i>Central time.</i>—Georgia.</p> <p>JAMESTOWN, N. Y. (Eastern time is used locally.) <i>Eastern time.</i>—Erie (B. and S. W. Div.). Jamestown and Chautauqua. <i>Central time.</i>—Erie (main line).</p> <p>KENOVA, W. VA. (Central time is used locally.) <i>Eastern time.</i>—Baltimore and Ohio. <i>Central time.</i>—Chesapeake and Ohio. Norfolk and Western.</p> <p>NEW CASTLE JUNCTION, PA. <i>Eastern time.</i>—Baltimore and Ohio (east of New Castle Junction). <i>Central time.</i>—Baltimore and Ohio (west of New Castle Junction).</p>	<p>NORTON, VA. <i>Eastern time.</i>—Norfolk and Western. <i>Central time.</i>—Louisville and Nashville.</p> <p>OIL CITY, PA. (Eastern time is used locally.) <i>Eastern time.</i>—Pennsylvania. <i>Central time.</i>—Erie. Lake Shore and Michigan Southern.</p> <p>PARKERSBURG, W. VA. (The city uses Eastern time.) <i>Eastern time.</i>—Baltimore and Ohio. <i>Central time.</i>—Baltimore and Ohio Southwestern.</p> <p>PITTSBURG, PA. (The city uses Eastern time.) <i>Eastern time.</i>—Baltimore and Ohio. Buffalo, Rochester and Pittsburgh. Pennsylvania. Pittsburg and Castle Shannon. Pittsburg and Western. <i>Central time.</i>—Pennsylvania Company. Pittsburg, Chartiers and Youghiogheny. Pittsburg and Lake Erie. Pittsburg, Cincinnati, Chicago and St. Louis.</p> <p>PORT HURON, MICH. (The city uses Central time.) <i>Eastern time.</i>—Grand Trunk (in Canada). <i>Central time.</i>—Grand Trunk (in Michigan). Pere Marquette.</p> <p>ST. THOMAS, ONT. (The city uses Eastern time.) <i>Eastern time.</i>—Canadian Pacific. Grand Trunk. <i>Central time.</i>—Michigan Central.</p> <p>SALAMANCA, N. Y. (Eastern time is used locally.) <i>Eastern time.</i>—Buffalo, Rochester and Pittsburgh. Erie (east of Salamanca). Pennsylvania. <i>Central time.</i>—Erie (west of Salamanca).</p> <p>SARNIA, ONT. (See Port Huron.) (The city uses Eastern time.)</p> <p>SAULT STE. MARIE, MICH. (Central time is used locally.) <i>Central time.</i>—Duluth, South Shore and Atlantic. Minneapolis, St. Paul and Sault Ste. Marie.</p>
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List of the Dividing Points, North American Standard Time Sections, etc.—Continued.

BETWEEN EASTERN AND CENTRAL SECTIONS—Continued.

<p>SAULT STE. MARIE, ONT. (Eastern time is used locally.) <i>Eastern time.</i>—Algoma Central and Hudson Bay Canadian Pacific.</p> <p>TITUSVILLE, PA. (Eastern time is used locally.) <i>Eastern time.</i>—Pennsylvania. <i>Central time.</i>—Dunkirk, Allegheny Valley and Pittsburgh.</p> <p>UNION CITY, PA. (Eastern time is used locally.) <i>Eastern time.</i>—Pennsylvania. <i>Central time.</i>—Erie.</p> <p>WASHINGTON (WASHINGTON COUNTY), PA. (The city uses Eastern time.) <i>Eastern time.</i>—Baltimore and Ohio. <i>Central time.</i>—Pennsylvania Company. Pittsburg, Cincinnati, Chicago and St. Louis. Waynesburg and Washington.</p> <p>WELLAND, ONT. <i>Eastern time.</i>—Grand Trunk. Wabash. <i>Central time.</i>—Michigan Central. Toronto, Hamilton and Buffalo.</p>	<p>WEST CLIFTON FORGE, VA. (See also Clifton Forge.) (Eastern time is used locally.) <i>Eastern time.</i>—Chesapeake and Ohio (east of West Clifton Forge). <i>Central time.</i>—Chesapeake and Ohio (west of West Clifton Forge).</p> <p>WESTFIELD, N. Y. <i>Eastern time.</i>—Jamestown, Chautauqua and Lake Erie. <i>Central time.</i>—Lake Shore and Michigan Southern.</p> <p>WHEELING, W. VA. (The city uses Eastern time.) <i>Eastern time.</i>—Baltimore and Ohio. <i>Central time.</i>—Cleveland, Lorain and Wheeling. Pittsburg, Cincinnati, Chicago and St. Louis. Wheeling and Lake Erie.</p> <p>WILLIAMSON, W. VA. (Central time is used locally.) <i>Eastern time.</i>—Norfolk and Western (east of Williamson). <i>Central time.</i>—Norfolk and Western (west of Williamson).</p> <p>WINDSOR, ONT. (See Detroit.) <i>Eastern time.</i>—Canadian Pacific. Grand Trunk (in Canada). <i>Central time.</i>—Michigan Central.</p>
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BETWEEN CENTRAL AND MOUNTAIN SECTIONS.

<p>ALLIANCE, NEB. (Mountain time is used locally.) <i>Central time.</i>—Chicago, Burlington and Quincy. Lines west of the Missouri River (east of Alliance). <i>Mountain time.</i>—Chicago, Burlington and Quincy. Lines west of the Missouri River (west of Alliance).</p> <p>BROADVIEW, ASSINIBOIA. (Central time is used locally.) <i>Central time.</i>—Canadian Pacific (east of Broadview). <i>Mountain time.</i>—Canadian Pacific (west of Broadview).</p> <p>DODGE CITY, KAN. (The city uses Central time.) <i>Central time.</i>—Atchison, Topeka and Santa Fé (east of Dodge City). Chicago, Rock Island and Pacific. <i>Mountain time.</i>—Atchison, Topeka and Santa Fé (west of Dodge City).</p>	<p>ELLIS, KAN. (Central time is used locally.) <i>Central time.</i>—Union Pacific, Kansas Division (east of Ellis). <i>Mountain time.</i>—Union Pacific, Colorado Division (west of Ellis).</p> <p>EL PASO, TEX. (Mountain time is used locally.) <i>Central time.</i>—Galveston, Harrisburg and San Antonio, Texas and Pacific. <i>Mountain time.</i>—Atchison, Topeka and Santa Fé. El Paso and Northeastern. <i>City of Mexico time.</i>—Mexican Central.</p> <p>HOLYOKE, COLO. (Central time is used locally.) <i>Central time.</i>—Chicago, Burlington and Quincy. Lines west of the Missouri River (east of Holyoke). <i>Mountain time.</i>—Chicago, Burlington and Quincy. Lines west of the Missouri River (west of Holyoke).</p>
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List of the Dividing Points, North American Standard Time Sections, etc.—Continued.

BETWEEN CENTRAL AND MOUNTAIN SECTIONS—Continued.

<p>HOISINGTON, KAN. (Central time is used locally.) <i>Central time.</i>—Missouri Pacific (east of Hoisington). <i>Mountain time.</i>—Missouri Pacific (west of Hoisington).</p> <p>LONG PINE, NEB. (Central time is used locally.) <i>Central time.</i>—Fremont, Elkhorn and Missouri Valley (east of Long Pine). <i>Mountain time.</i>—Fremont, Elkhorn and Missouri Valley (west of Long Pine).</p> <p>MANDAN, N. DAK. (Mountain time is used locally.) <i>Central time.</i>—Northern Pacific (east of Mandan). <i>Mountain time.</i>—Northern Pacific (west of Mandan).</p> <p>MCCOOK, NEB. (Mountain time is used locally.) <i>Central time.</i>—Chicago, Burlington and Quincy. Lines west of the Missouri River (east of McCook). <i>Mountain time.</i>—Chicago, Burlington and Quincy. Lines west of the Missouri River (west of McCook).</p> <p>MINOT, N. DAK. (Central time is used locally.) <i>Central time.</i>—Great Northern (east of Minot). Minnesota, St. Paul and Sault Ste. Marie. <i>Mountain time.</i>—Great Northern (west of Minot).</p>	<p>NORTH PLATTE, NEB. (Central time is used locally.) <i>Central time.</i>—Union Pacific (east of North Platte). <i>Mountain time.</i>—Union Pacific (west of North Platte).</p> <p>PORTAL, N. DAK. (Central time is used locally.) <i>Central time.</i>—Minneapolis, St. Paul and Sault Ste. Marie. <i>Mountain time.</i>—Canadian Pacific.</p> <p>PHILLIPSBURG, KAN. (Central time is used locally.) <i>Central time.</i>—Chicago, Rock Island and Pacific (east of Phillipsburg). <i>Mountain time.</i>—Chicago, Rock Island and Pacific (west of Phillipsburg).</p> <p>PLAINVILLE, KAN. <i>Central time.</i>—Union Pacific, Oakley Branch (east of Plainville). <i>Mountain time.</i>—Union Pacific, Oakley Branch (west of Plainville).</p> <p>RIO GRANDE, TEX. <i>Central time.</i>—Galveston, Harrisburg and San Antonio. <i>Pacific time.</i>—Southern Pacific.</p> <p>SANTA ROSA, N. MEX. (Central time is used locally.) <i>Central time.</i>—Chicago, Rock Island and El Paso. <i>Mountain time.</i>—El Paso and Rock Island Railway.</p> <p>TEXLINE, TEX. (Mountain time is used locally.) <i>Central time.</i>—Fort Worth and Denver City. <i>Mountain time.</i>—Colorado and Southern.</p>
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BETWEEN MOUNTAIN AND PACIFIC SECTIONS.

<p>DEMING, N. MEX. (Mountain time is used locally.) <i>Mountain time.</i>—Atchison, Topeka and Santa Fé. <i>Pacific time.</i>—Southern Pacific.</p> <p>HUNTINGTON, ORE. (Pacific time is used locally.) <i>Mountain time.</i>—Oregon Short Line. <i>Pacific time.</i>—Oregon Railroad and Navigation Company.</p> <p>LAGGAN, BRITISH COLUMBIA. (Pacific time is used locally.) <i>Mountain time.</i>—Canadian Pacific (east of Laggan). <i>Pacific time.</i>—Canadian Pacific (west of Laggan).</p> <p>RIO GRANDE, TEX. <i>Central time.</i>—Galveston, Harrisburg and San Antonio. <i>Pacific time.</i>—Southern Pacific.</p>	<p>SELIGMAN, ARIZ. (Mountain time is used locally.) <i>Mountain time.</i>—Santa Fé Route (east of Seligman). <i>Pacific time.</i>—Santa Fé Route (west of Seligman).</p> <p>SPARKS, NEV. (Mountain time is used locally.) <i>Mountain time.</i>—Southern Pacific (east of Sparks). <i>Pacific time.</i>—Southern Pacific (west of Sparks).</p> <p>TROUT CREEK, MONT. (Mountain time is used locally.) <i>Mountain time.</i>—Northern Pacific (east of Trout Creek). <i>Pacific time.</i>—Northern Pacific (west of Trout Creek).</p> <p>TROY, MONT. (Mountain time is used locally.) <i>Mountain time.</i>—Great Northern (east of Troy). <i>Pacific time.</i>—Great Northern (west of Troy).</p>
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NOTICE OF A SPECIAL SERIES OF MIDNIGHT TELEGRAPHIC TIME SIGNALS, MAY 3, 1905, IN HONOR OF THE INTERNATIONAL RAILWAY CONGRESS.

As this Appendix is going to press, the following notice has been issued of a special series of midnight telegraphic time signals in honor of the International Railway Congress, which is about to meet in Washington:

NAVY DEPARTMENT, BUREAU OF EQUIPMENT,
U. S. NAVAL OBSERVATORY,
Washington, D. C., March 31, 1905.

NOTICE OF A SPECIAL SERIES OF MIDNIGHT TELEGRAPHIC TIME SIGNALS TO BE SENT OUT BY THE U. S. NAVAL OBSERVATORY ON MAY 3, 1905.

It is proposed to send out a special series of telegraphic time signals beginning at 11.55 p. m., United States Eastern Standard Time (mean time of the 75th meridian west from Greenwich), May 3, 1905, and ending at midnight, according to the plan followed daily at noon, as shown by the accompanying text and diagram. [*See text and diagram, page 610.*]

These special time signals will be sent out by request of the American Railway Association, with the cordial approval of the Secretary of the Navy, in honor of the International Railway Congress, which is to meet in the Capital of the United States on the following day.

It is hoped to obtain such complete voluntary cooperation on the part of all telegraph, cable, and telephone companies as to secure for the signals quick, accurate, world-wide distribution, as far as electricity can carry them, and possibly to make the circuit of the globe.

It is hoped also that the principal observatories of the world will make efforts to receive and time these signals accurately, and reports of such observations may be made at once, without expense, through the courtesy of the various telegraph and cable companies. This has been done already in the case of the international New Year's-Eve time signals from this Observatory, which are reported to have reached the Toronto Observatory in 0^s.00; Lick Observatory, 0^s.05; City of Mexico, 0^s.11; Manila, 0^s.37; Greenwich, 1^s.33; Sydney, Australia, 2^s.25; Wellington, New Zealand, 4^s.00, and Cordoba, Argentina, 7^s.70.

From the rapidity and accuracy with which these time signals are transmitted over connecting land lines, as a result of long experience in transmitting the daily noon signals, it seems very probable, if the telegraph companies will take especial care in their transmission and not interpose any secondary clocks or human relays, that they may serve to give fairly accurate determinations of longitude at any telegraph station on this continent where they can be noted exactly and compared with accurate local time. For this purpose also, as a check on such observations, it is very desirable for their exact time of receipt to be noted and reported at all observatories in North America whose longitudes are already accurately known.

It is understood that the members of the International Railway Congress regard this feature of their meeting with great interest, both by reason of the close affiliations between railroads and telegraphs and because of the practical importance of accurate standard time, and this Observatory is anxious to secure the widest possible cooperation in making the experiment successful.

It is respectfully requested that all who are interested and willing to cooperate in this plan will take up the matter with the telegraph or cable companies and arrange the necessary details, in order that they may be able to receive the signals and report the results.

C. M. CHESTER,
Rear-Admiral, U. S. N., Superintendent Naval Observatory.

It is proposed to publish, as soon as practicable, the results of the plan outlined in the above notice, and to send a copy of such publication to all those who may have cooperated in carrying it out.