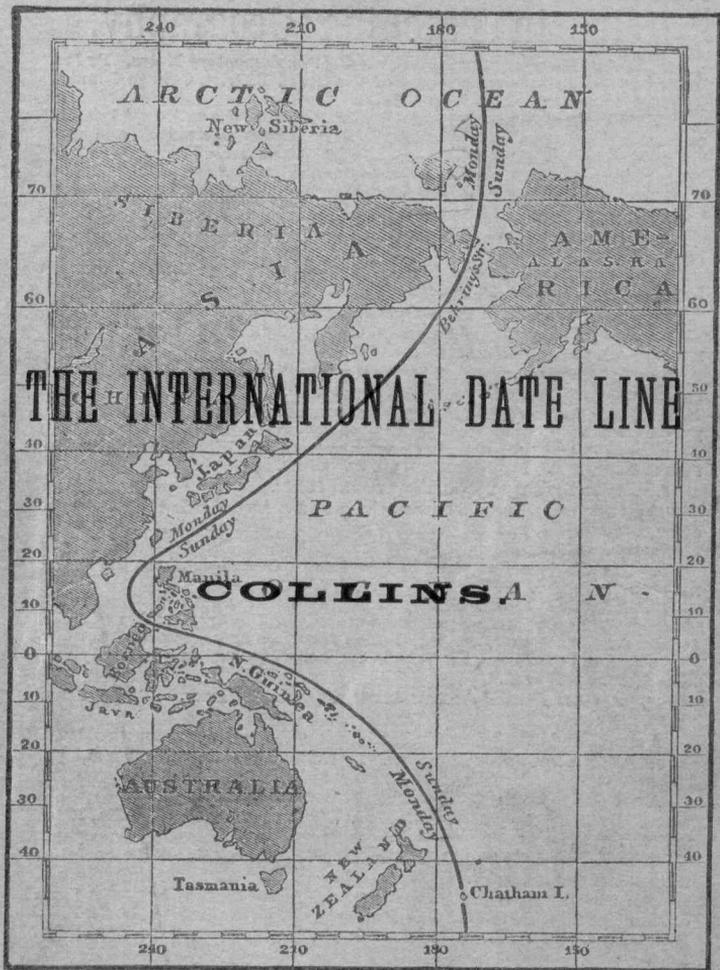


CE 73
.C 68



Helps in Teaching Geography.

1. *Topical Geography*, with Methods and Supplementary Notes. By **IDA L. GRIFFIN**, School Commissioner for the Third District, Oswego County, N. Y. Leatherette, 12mo, pp. 142. 50 cts.

This is a complete manual of geography, covering the entire subject. It outlines in detail what should be taught, when it should be taught, and how it should be taught. In addition to this a large number of Supplementary Notes are given, which are invaluable to the teacher. * * * It is the most complete and helpful guide in teaching the subject that has ever been written.—*A. P. Chapin, editor Educational Gazette.*

2. *Oral Instruction in Geography*. By **EMMA L. PARDON**, Paper, 16mo, pp. 29. 15 cts.

3. *Conversational Lessons leading to Geography*. By **H. C. NORTHAM**. Lewis County Edition. Paper, 16mo, pp. 43. 25 cts.

4. *The same*. Oneida County Edition. Pp. 46. 25 cts.

5. *A Brief Geography of Onondaga County*. By **C. W. BARDEEN**. Paper, 16mo, pp. 48, with Map. 25 cts.

The last three are prepared for local use in the State of New-York and have general interest only by way of suggestion.

6. *Keble Outlines of Geography*. By **JOSEPHINE K. BROWN**. Paper, 16mo, pp. 59. 25 cts.

7. *The Regents' Questions in Geography from the First Examination to that of June, 1882*. Manila, 16mo, pp. 70. 25 cts.

8. *Key to the above*. Manila, pp. 36. 25 cts.

These 1987 questions and answers have had a larger sale than those in any other subject, and are generally recognized as the best general review attainable.

9. *The Uniform Examination Questions in Geography, from the beginning to March, 1889*. Paper, 16mo, pp. 30. 10 cts.

10. *Key to the above*. Paper, 16mo, pp. 34. 10 cts.

These 709 questions and answers served for the examination of 30,000 teachers in the State of New York. The fact that the Key contains more pages than the Questions, shows how carefully the answers, officially furnished, were prepared.

11. *A Globe Manual for Schools*. By **FLAVIUS J. CHENEY**. Paper, 16mo, pp. 95. 25 cts.

A simple and comprehensive hand-book with illustrations and problems.

12. *The International Date Line*. By **HENRY COLLINS**. Paper, 16mo, pp. 15. 15 cts.

A conclusive treatment of a subject often debated.

13. *Latitude, Longitude, and Time*. By **J. A. BASSETT**. Manila, 16mo, pp. 42. 25 cts.

Though especially intended for arithmetic classes, this will be useful to the teacher of geography.

14. *Dissected Maps* as follows: *a.* Of the United States. *b.* Of the State of New York. *c.* Of the State of Michigan. *d.* Of the States of N. Y., N. J., Del., Md. *e.* Of New England. *f.* Of Ia., Mo., Ks., Nev., Col., Dak., Wyo., Mont.

Price of each, in box, 75 cts. Those from *c* to *f* are from maps several years old. The others are new and fresh. The peculiar use of these maps in teaching geography is now commonly recognized.

C. W. BARDEEN, Publisher, Syracuse, N. Y.

TO THE EDITOR.

This book is sent you for review, with my compliments. Please send a marked copy of the number containing such notice as you may choose to give it, to

C. W. BARDEEN,

SYRACUSE, N. Y.

Please state that the price is

15 cts.

THE
INTERNATIONAL DATE LINE

BY

HENRY COLLINS, A. M.

NEW EDITION, REVISED BY C. W. BARDEEN



THE LIBRARY
OF CONGRESS

SYRACUSE, N. Y.:

C. W. BARDEEN, PUBLISHER

1891

COPYRIGHT, 1891, by C. W. BARDEEN



Mar. 8, 1882

M.M. 16-7-03

THE INTERNATIONAL DATE LINE

If a person should start at midday, that is, when the sun was shining perpendicularly on the meridian passing through the place of starting, and could by any means travel westward, keeping pace with the sun, thus keeping the sun directly over the meridian of the place at which he might be, he would make a complete journey around the globe in twenty-four hours, and arrive at the place of starting at noon the next day. Twenty-four hours of time have passed, but to the traveler the sun has been shining perpendicularly all the time, and the question arises: When or at what point did the traveler change from noon one day to noon the next? For instance, if he should start at Sunday noon and keep the sun in the zenith, he would arrive at the place of starting Monday noon: when did the change take place? It has been

noon-day to the traveler during the whole journey of twenty-four hours, and to him it is yet Sunday noon; he has apparently lost a day and to obtain the correct date he must drop a day.

The reason for dropping a day can be more fully shown as follows:—Remembering that the earth makes one complete revolution on its axis in twenty-four hours, and thus the sun in its apparent diurnal revolution moves over 360 degrees of space in twenty-four hours, it thus moves over 15 degrees of space in one hour; from which it is evident that the difference in longitude which causes the difference in the relative time, may be estimated in time, allowing 15 degrees to an hour, or one degree to four minutes. Therefore, suppose, starting from any given point, you travel one degree West, your watch, instead of marking twelve o'clock at noon, according to the correct time at that place, would mark four minutes after twelve. Travel West 15 degrees, and you will find that one o'clock by your watch will be noon-day by the sun. Go on to 120 degrees, and when the

sun is in the zenith your watch will indicate eight o'clock, P.M. Complete your journey around the globe and you will have gained, in this same manner, twenty-four hours. From this it will be seen that in order to obtain the correct time twenty-four hours must be subtracted from your time.

On the other hand, if a person could travel eastward at the same speed with which the sun apparently travels westward (the same rate of speed with which the sun revolves on its axis), if he should start at noon-day he would meet the sun when exactly on the opposite side of the earth from the place of starting, and continuing the journey would again meet the sun at the place of starting, thus seeing three noon-days within twenty-four hours, or apparently gaining a day. This we know to be impossible, since only twenty-four of time have passed, while in reality an extra period of light has been gained, and thus to obtain the correct local date a day must be added to your time. By traveling two degrees East you will lose

eight minutes of time, as the sun-dial marks noon at fifty-two minutes past eleven by your watch. Going on to 120 degrees, it will be noon at four o'clock A. M. by your watch; complete the journey and you will have lost twenty-four hours.

To show farther what might happen I quote from an excellent article on the subject by the late W. D. Henkle, published in the *Ohio Educational Monthly*:

“If a traveler should leave Columbus, Ohio, at noon on Saturday and go westward, keeping pace with the sun, he would arrive at Columbus at noon on Sunday. His noon would continue for twenty-four hours, and Saturday noon would change to Sunday noon without an intervening night. Where would the change occur? If a man should start from Columbus on Saturday and travel one degree East he would delay the first noon after his arrival four minutes.

“Now if two men should start from Columbus and travel around the earth, one going East and the other going West, and should meet each other at any point,

whether half way around or not, it would be found that one would have set the hands of his watch forward four minutes for every degree that he had traveled East, and the other would have set the hands of his watch backward four minutes for every degree he had traveled West. There being 360 degrees of travel, the sum of the minutes of change in the two watches would be exactly twenty-four hours. But the watches at the meeting-place would indicate the same hour of the day, and hence the travelers would agree as to the time of the day, but they would differ just one day of the week, the eastward traveler being a day ahead.

“Every 360 degrees traveled jointly by the travelers would make another day's difference in the week, until they should travel jointly seven times 360 degrees, when they would not only agree as to the time of the day, but as to the day of the week. They would, however, disagree seven days as to the day of the month.

“If they should travel jointly 28 times 360 degrees and meet on some day in Feb-

ruary in a common year according to the count of the westward traveler, they would agree as to the time of the day, the day of week, and the day of the month, but not as to the name of the month, the eastward traveler calling it March.

“If they should travel 91 times 360 degrees and meet on the same day of April according to the westward traveler, they would agree, except as to the month, the eastward traveler calling it July.

“If they should travel jointly 245 times 360 degrees and meet according to the westward traveler in May, they would agree as before, except that the eastward traveler would call it January of the following year.

“Such discrepancies might occur in common years in a dozen other ways. For instance, for 91½ times 360 degrees, we might also have the months of September and December. In leap years about sixteen such instances might be given not going beyond 236 times 360 degrees. If they should travel 2,191 times 360 degrees, they would agree as to the time of the day,

the day of the week, the day of the month, and the name of the month, but they would differ six years as to the number of the year of the century, provided there should be one intercalary day between their dates.

“To bring about such results, there need be no restriction as to the time of starting or rate of travel. If the two supposed travelers should not live to carry out the plan, there would be the same results if the travel is finally completed by any of their immediate or remote descendants, provided they should retain the same mode of counting.”

From this we see that for every time a person travels around the earth in either direction there is a difference in time of one day, and the result is the same, regardless of the rate of speed. In order to avoid the confusion of dates which must necessarily result from this constant gain on one side and loss on the other, it has been proposed to determine upon some line at which eastern bound travelers shall add a day, and westward bound travelers shall drop a day from their reckoning, and thus

prevent a disagreement in regard to the day of the week. The line at which this addition or subtraction shall be made is what is meant by the Date Line.

The fact and necessity of such a date line may be shown in a way with which we are all familiar. Take a simple problem in arithmetic on 'Longitude and Time.' "When it is 9 o'clock A.M., May 1, at Singapore, lon. 104 E., what time is it at Manilla, lon. 121 degrees 30 minutes, E.?" The difference of longitude estimated *eastward* from Singapore is 17 degrees 30 minutes. The application of the ordinary rules of arithmetic gives for an answer 10 hr., 10 min., May 1. But the difference of longitude estimated *westward* from Singapore is 342 degrees 30 minutes, giving for an answer 10:10 A. M., April 30. This shows that when the time of day at one place is known, and the longitudes of both places are known, the time of day at the other may be obtained in two ways, viz.: by using the difference of longitude estimated West, or estimated East. But the dates thus obtained differ by one

day; which is correct? Sometimes the one and sometimes the other. In the problem just considered the latter result is correct. In such problems the difference of longitude must be taken in such a direction as not to come across the Date Line; or if the Date Line is crossed, the dates must be changed in accordance with the following definition:

The Date Line is the line at which dates must be made later by one day when crossing it from East to West, and earlier by one day when crossing it from West to East.

The popular idea seems to be that 180° East or West of Greenwich is the point at which this change of date occurs. This is not the fact, although sometimes the case. In general terms it may be defined as a very irregular line, located mostly in the Pacific Ocean, and extending from pole to pole. Let us consider where it is, and why it is placed where it is.

The calendars in general use throughout the civilized world originated in Rome. The one most generally adopted is the Gregorian. Russia, and all other coun-

tries of the Greek Church, still use the Julian calendar. The two calendars differ as to the day of the month, but agree as to the day of the week.

But which ever calendar is used, all places received their date from Rome. Places receiving dates by westward communication from Rome would naturally be considered earlier in time, at the same instant, and those places receiving dates by eastward communication would be considered later in time at the same instant, and date lines would naturally occur where these directions of communications met.

Such is the fact. The western part of Europe, the islands of the Atlantic Ocean, the whole of South America, and the greater part of North America, have received civilization by westward communication from Rome. Therefore there is no Date Line in the Atlantic, or in America (since the occupation of Alaska by the United States, which will be explained hereafter). The eastern part of Europe and Asia, received civilization by eastward

communication from Rome. Date lines, therefore, occur in the Pacific Ocean between islands that have received dates by eastward, and by westward communication. By connecting these lines we have an irregular line whose general direction is North and South, and which may properly be called the Date Line, though not always, and perhaps not usually, the line where vessels change dates.

Beginning, therefore, at the North Pole let us trace its course. The northwestern part of British America, otherwise known as Russian America, now Alaska, received civilization by eastward communication, therefore their dates would correspond with those of Asia; but the northwestern part of British America received civilization by westward communication, thus the dates there would correspond with those of eastern America and Europe. From this we see that two neighbors, one living in Russian America and one in British America, might differ as to the day of the week. This was often the case before Alaska (R. A.) was purchased by the

United States in 1867. On this point we find the following on page 19, of Clark's Geographical Reader:

"At the town of Sitka, in Alaska, half the population are Russians, who have arrived from Russia across Asia; half of the population are Americans, who have arrived *via* the United States. Hence, when it is Sunday with the Russians it is Saturday with the Americans; the Russians are busy on Monday while the Americans are in church on Sunday, to the great interruption of business."

Mr. Henkle suspected the inaccuracy of this statement, and wrote to his friend, Marcus Baker, of the Coast Survey at Washington, to consult Mr. Dall (who has visited Alaska and written much about it), upon the subject. He received the following reply, dated April 12, 1879:

"Mr. Dall is not in the office to-day, and I take the liberty therefore to say that the Russians now in Alaska all conform to *our* calendar. They conform both in respect to the *style* (not reckoned by the *Old Style* as formerly, but *New Style*), and

they conform also with the time as brought from San Francisco, and not as brought from Siberia. A few Russians remain in Alaska, and church service is held in many small settlements, and always on the same Sunday that we use in the United States. I think that the American time is also used at one station in Siberia, viz.; Plover Bay."

By this we see that since the United States has come into possession of Alaska the dating there has been put back to conform to the rest of the United States. The date line then must pass through Behring Strait, or according to some authorities just West of the Strait, and if the above remark be true in regard to the station at Plover Bay, then it must pass across the eastern point of Asia.

North of the Strait some authorities claim that it passes between Plover and Herald Islands, which holds, as the former was discovered from the eastern continent and the latter from the western.

South of the Strait it passes West of Clark's or St. Lawrence Island. This

island was discovered by Capt. Cook in 1777. Thence it passes west of Goers Island; thence southwesterly between the Aleutian Islands and Asia. This group is in the Northern Pacific Ocean extending in a westerly direction from the peninsular promontory of Alaska in North America to the peninsula of Kamtschatka, in Asiatic Russia. According to the practice of most recent American Geographers, we have comprehended this archipelago under one general name, although Russian Geographers usually divide the chain into three several groups. Those nearest the eastern coast of Kamtschatka including Behring and Mednoi or Copper Island, being properly called Aleutian; the central group, the Andreanofskie or Andrenovian; and those nearest the American coast, the Fox Islands. If the inhabitants of all these several groups of Islands have changed their dating to correspond with that used on the American continent, then the line should pass West of them all, but if all have not changed, then it should pass between those which have and those which

have not changed. Most authorities locate it as given above, others placing it East of Behring Island.

It thence passes southwesterly some degrees East of Cape Lopatka and the group of Kurile Islands, thence just East of the Japan Islands, Jesso and Nippon, keeping West of Guadalupa and Margaret's Islands, but East of Bonin, Loo Choo and Patchoo Islands, and southeast of Formosa.

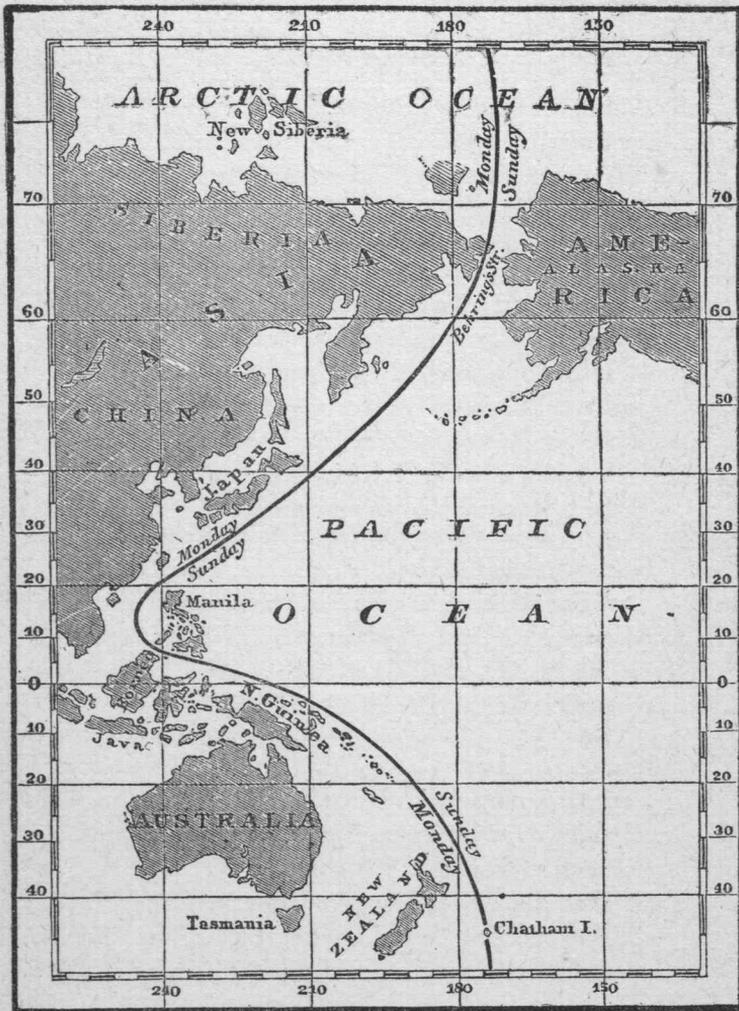
This island was unknown to the Chinese until about 1403. About 1634 the Dutch established themselves here, and built Fort Zeland on a small island commanding the harbor of the capital Taeman. After retaining possession for twenty-eight years, they were expelled by Coxigina, a famous Chinese rebel, whose successors ruled until 1683, when it was taken by the Chinese. It thus retains the same dating as the Chinese nation proper.

The line then passes through Bashee Channel, just North of the Bashee Islands. It enters the China Sea, East of Hong Kong. It then passes South just West of

the Philippine Islands, but keeps East of Palawan Island.

It is here that it reaches its most western point, being about 116 degrees East longitude.

It then takes a southwesterly course, passing through the Sooloo Islands, South of Mindanao and North of Gilolo. Thence it passes East nearly parallel with, but just North of, the equator to a point about 165 degrees just North of Schank Island; thence southeasterly, leaving High Island, Gilbert Archipelago, Taswell Islands, and the De Peyster Group on the northeast; thence to a point Navigator or Samoan Islands to longitude about 268 West; thence it turns south, keeping East of the Navigator, Friendly, Tonga, Vasquez, Kermadec, and Curtis Islands, and West of the Society Islands, and Cook's or Harvey Islands; thence it continues South, bearing a little to the West, so as to cross, according to some authorities, Chatham Islands; thence to the South Pole. By following this description the line can be traced with a pencil on a map of the world. The accompanying map shows the line as laid



down in Schedler's Manual for the use of Globes.

We have now briefly in theory, sketched the line, let us study its practical history farther.

As far as Alaska is concerned, that has been settled. The Philippine Islands were discovered by Magellan in 1521, and named in honor of Philip II. of Spain. We have no evidence that the dating has been changed, and as they were discovered from the East, they have the later dating. In giving the history of the dating of islands in the South Pacific, I quote again from Mr. Henkle's article:

"The first persons who settled Botany Bay in 1788 were ordered to sail thither by way of Cape Horn, but tempestuous weather compelled them to sail by the way of the Cape of Good Hope. This circumstance caused the beginning of Sunday to be twenty-four hours earlier in Australia than it would have been if the original orders had been complied with. A few years later a missionary expedition to Tahiti, one of the Society Islands, in

longitude 149 degrees 29 minutes West from Greenwich, was given a like order, but was also compelled by tempestuous weather to sail by the way of the Cape of Good Hope, thus giving the earlier dating in the Society Islands, or fourteen hours in advance of that at London or Greenwich. The French took possession of Tahiti in 1846 and the authorities adopted the later dating observing Sunday and festival days one day later than the resident English missionaries."

It therefore should be, as above described, on the East side of the line.

"If the mutineers of the ship *Bounty* took, in 1790, to Pitcairn's Island in longitude 130 degrees 8 minutes West, Tahiti dating with the Tahiti men and women whom they took, then Sunday began in Pitcairn Island *very* nearly as soon in absolute time as it (formerly) did on the eastern boundary of Russian America. In 1856 the descendants of the mutineers, 194 in number, were removed to Norfolk Island, in longitude 168 degrees 68 minutes East. This island had been used as a



British penal colony for the most heavily sentenced convicts from 1787 to 1810, and again from 1825 to 1856, it having been abandoned from 1810 to 1825. The penal colony was finally broken up in 1856 to receive the Pitcairn Islanders. If the Pitcairn Islanders used the earlier dating in Pitcairn Island, then the dating at Norfolk Island suited them, because it was the same as that in Australia. If, however, they used the later dating in Pitcairn Island, on their arrival at Norfolk Island they would be a day behind; but if all the former inhabitants had left there would have been no need of a change. Indeed, we have a faint recollection that a gentleman born on the Island of St. Helena who had traveled in that part of the world once told us that the datings in Australia and Norfolk Island were different. If this is so, the above suggestions furnish an explanation."

Last year the Rev. S. J. Whitmee, who had been a resident of Samoa, facetiously showed in *Nature* the impracticability of 180 degrees West or East longitude the



date line, because it passed through the northeast point of Vanaw Levu, Taviuni, and another small island of the Fiji group. He also stated that the earliest dating is still used in the Tongan and Samoan (Navigator's) Islands, the chief commercial intercourse of the people being with Australia and New Zeland. He considered these islands as leading the world in matter of time, although the change to later dating had been advocated in Samoa more than once. The eastern part of the Samoan Islands is in longitude 160 degrees West, which is probably about that of the westernmost part of Alaska. Mr. Whitmee may be right as to the Samoans leading the world if the English missionaries have abandoned Tahiti (longitude of flagstaff on Point Venus $149^{\circ} 29' W.$, latitude $17^{\circ} 29' 15'' S.$), or have changed their dating to suit the French.

In an article published in THE SCHOOL BULLETIN for Feb., 1876, and accompanying the map given here on page 19, Prof. Haldemann, the vice-president of Cornell University, said:

"Finally it may be remarked that, as our date-line is identical with no one meridian, there must be a point at its extreme eastern projection which first receives the sun's rays, and where consequently the New Year begins. This point might be called New Year's Point. The place which corresponds to this point is Chatham Island."

Chatham Island in longitude about 177° W. was discovered by Broughton in 1791 (named Chatham for his vessel), by westward travel, and this is doubtless the reason that Schedler has placed it on his partly traced international date-line. On the other hand, J. P. Maclear, writing May 13, 1878 (see *Nature*, May 16, 1878), says that the Fiji Islands, Friendly Islands, Sunday Islands and *Chatham* Island, have the same dating as Australia, New Zeland, and Asia, but that he had forgotten which dating was used in the Navigator's (Samoa) Islands. He asserts also, that the Society Islands had this later dating, the same as the Hawaiian (Sandwich) Islands."

Mr. E. I. Layard, at the British Consulate, Noumea, New Caledonia, writes as follows:

"If it is such a deadly sin to work on Sunday, one of the other of Mr. A—, and Mr. B—, coming, one from the East, the other from the West of the 180th meridian must, if he continues his daily avocations, be in a bad way. Some of our people in Fiji are in this unenviable position, as the line 180 degrees passes through Loma-Loma. I went from Fiji to Tonga in Her Majesty's ship *Nymph* and arrived at our destination on *Sunday* according to our reckoning from Fiji, but on *Saturday*, according to the proper computation West from Greenwich. We, however, found the natives all keeping Sunday. On my asking the missionaries about it they told me that the missions to that group and the Navigator's, having come from the westward, had determined to observe their Sabbath day, as usual, so as not to subject the natives to any puzzle, and agreed to put the dividing line further off, between them and Hawaii, somewhere in the broad ocean,

where no metaphysical natives or 'intelligent Zulus' could cross-question them."

The facts in the case as to the dating used in different settlements in and bordering on the Pacific Ocean and the changes therein, have been given.

The popular idea seems to be that 180 degrees East or West of Greenwich is the point at which the change occurs; but Mr. Henkle has shown that as regards permanent settlements this is not true and very probably never will be true. National pride is not likely to give to England the right to consider the 180th degree West of Greenwich as having any special advantage over the 180 degree West of Berlin, Paris, Vienna, Rome, Madrid, St. Petersburg, or even Washington, D. C. "A vessel sailing from San Francisco to Samoa would reach its destination before reaching 180° W. of Greenwich, and would find itself a day behind the Samoans in date. Other illustrations might be given to show that the 180 degree fiction does not remove the difficulty; for instance if the Spaniards on the Philippine Islands do

still use the latest dating (Schedler's map so represents them), a navigator sailing from San Francisco to these islands, who had changed his date at 180° , would find himself a day ahead on his arrival. This would not be the case if he had sailed to Yokohama or Hong Kong, which have the advance dating. In making a round trip from San Francisco to Yokohama, a navigator might keep his dating unchanged and thus be right on his return, or he might make two changes, skipping a day on his outward voyage at any time or place on the way, and dropping a day at any time or place on his return.

"Cruising vessels are said not to regard the 180th degree in their dates, as they might in some cases have to change their dating very frequently. In 1855 the English Pacific Squadron was ordered to cooperate with the China fleet. On meeting, their dates differed one day, one having gone by the Cape of Good Hope and the other by Cape Horn. It is said that for a short time these fleets, side by side, counted different days of the week. It has also been

asserted that steamers from San Francisco to Japan alter their dates temporarily while in Japan and enter both dates in the log. The truth seems to be that navigators do as they please in this matter."

On this I quote from Wm. H. Seward's *Travels around the World* (page 34):

"Sept. 16, 1870.—It was a mistake to pronounce our meeting with the Steamer *America*, on the 6th, the event of the voyage. A greater one has just occurred. Our last date is the 14th. This note is written on the 16th. The former entry was certainly made yesterday. The chronometer marked eight o'clock at night at Greenwich, at the very hour when our clock, which keeps the running time, marked eight o'clock in the morning. We are half way around the world from Greenwich, and have lost just half a day. It is quite clear that if we should continue onward making the same discrepancy of time, we should have lost a whole day on arriving at Greenwich. We might postpone the re-adjustment of our ship's time until we reach Greenwich, but the scien-

tific world has wisely decided that this re-adjustment shall be made in every case by compromise on the 180th meridian, and therefore, instead of striking out half a day here, we strike out a whole one."

The statement as to what the scientific world has done is hardly yet a fixed fact and may never be true except approximately or in theory. It, however, shows that the author (Olive Risley Seward) was laboring under what Mr. Henkle is pleased to call the "180th-degree fiction."

Dr. T. C. Mendenhall, formerly U. S. Consul at Tokio, Japan, says that the rule with Commodore Maury, Commander of the Pacific Mail Steamship "City of Tokio," in which he voyaged from San Francisco, is, in going West, to drop the date of a day providing the 180th degree be passed between midnight and noon, but if between noon and midnight to drop the succeeding day. He gives the bulletin of two succeeding days posted in the smoking room as follows:

"Wednesday, Sept. 11, Lat. 34 degrees 40 minutes N., Long. 170 degrees 14 minutes W.."

"Friday, Sept. 13, Lat. 34 degrees 33 minutes N., Long. 179 degrees 4 minutes E."

Technically, he says, Thursday was dropped, but practically they had half of Thursday, and called the last half of it Friday afternoon. He says that it is so managed that Sunday is neither dropped nor doubled, but that one commander is said to double Sunday whenever it is possible, and to have the cabin service on both days.

From this we see, that for settlements the beginning of Sunday, or any other day, follows a very irregular line, in which changes have been made, growing out of change of allegiance, and that for those afloat, changes are made, if at all, when or where the commanders or voyagers please.

Numerous proposals have been made for an initial meridian for all nations, in order to get rid of the many now in use, but no satisfactory proposition has yet been made. M. de Beaumont suggests one running through Behring Strait. Rome has also been suggested for various reasons, among them the fact that it was the home

of Old and New Style, and need not offend national pride, and because it is nearly on the meridian of Copenhagen, Uraniburg, Leipsig, Munich, Padua, Venice, Christiana, Gotha, Nerona, and Modena, and not far W. of those of Berlin, Prague, Naples, and Palermo. This meridian band has been called the great street of the world's observatories. With this suggestion there has been coupled the one that Rome be made 180° , and that 0° be left unmarked, passing somewhere along Behring Strait, and that East and West as applied to longitude be dispensed with.

Another point may be both interesting and instructive. Taking the line as described, its most western point on the Phillippine Islands is 117° E., and the most eastern point is 168° W. Using these limits, from the time any given time or day begins to the time it ends is 53 hours. Or taking the eastern part of Alaska, as was formerly done, which is 130° E. and a day remains on the face of the earth for 55 hours and 32 seconds. Taking the former, we can see, that for 5 hours each

day, by the same calendar, there are three different dates in different parts of the world. These hours in Washington, D.C., and all places on or near that meridian, are from 6:10 A.M. to 11:10 A.M. For instance, during these hours of to-day, Jan. 1, 1881, with us the Navigator Islands are in the early part of Jan 2, and the Philippine Islands are finishing Dec. 31, 1880.

These facts are curious and interesting, and possess sufficient practical importance to justify their study. Every intelligent person, with the aid of a globe, may and should become familiar with them. If this essay has enabled anyone to better understand the subject, the object of the author has been attained, in the hope that it will lead to original investigation on the part of the reader.

Helps in Teaching History.

1. *A Thousand Questions in American History.* Cloth, 16mo, pp. 247. Price \$1.00.

This work shows rare breadth of view and discrimination, dealing not merely with events but with causes, and with the side-issues that have so much to do with determining the destiny of a nation.

2. *Helps in Fixing the Facts of American History.* By HENRY C. NORTHAM. Cloth, 16mo, pp. 298. Price \$1.00.

Here all facts are presented in groups. The key-word to the Revolution, for instance, is LIBERTY, as shown in the accompanying table of *Key-Words*; and in like manner the events of the late civil war are kept chronologically distinct by the key-words SLAVES FREED. Chart No. 1 indicates by stars the years in each decade from 1492 to 1789, in which the most remarkable events occurred, while the colored chart No. 2 arranges the events in 12 groups.

3. *A Chart of United States History.* By NOAH T. CLARKE, Ph.D. One page, 9x12. Each 5 cts; per dozen 50 cts.

This chart gives a birdseye view of the entire history of our country. No more practically helpful review has ever been published.

4. *Topics and References in American History*, with numerous Search Questions. By GEO. A. WILLIAMS. Leatherette, 16mo, pp. 50. 50 cts.

The references are, largely to the lighter and more interesting illustrations of history, of a kind to arouse the thought of pupils by giving vivid conceptions of the events narrated. By dividing these references among the members of a class, the history recitation may be made the most delightful of the day.

5. *Brief Views of United States History.* By ANNA M. JULIAND. Leatherette, 16mo, pp. 68, 35 cts.

It contains the leading facts chronologically arranged under the various administrations, leaving the story to be filled out from reference-books by the pupils.

6. *Outlines and Questions in United States History.* By C. B. VAN WIE. Paper, 16mo, pp. 40, and folding Map. 15 cts.

The outgrowth of four years' practical work in the school-room, with map prepared by a pupil as a suggestive model.

7. *Dime Question Books, No. 5, General History, and No. 6, United States History and Civil Government.* By ALBERT P. SOUTHWICK. Paper, 16mo, pp. 37, 32. 10 cts. each.

8. *Conspectus of United States History to the time of Garfield.* Cloth, 81x96 inches, on rollers. \$2.00.

9. *Conspectus of the History of Political Parties and the Federal Government to 1880.* By WALTER R. HOUGHTON. Cloth, 4to, pp. 85, with colored charts, \$5.00. Or the chart alone, mounted on rollers, \$1.00.

10. *Syllabuses of American History.* By WELLAND HENDRICK. Paper, 8vo, pp. 4. Each 5 cts. Per dozen 50 cts.

Published four times a year for the Regents' Examinations.

11. *A Brief History of the Empire State.* By WELLAND HENDRICK. Cloth, 12mo, pp. 203. 75 cts.

Books of Reference.

The distinctive feature of a scholar's library is the large proportion of its books of reference. Education does not fill up a man with information: it teaches him where to go for information when he wants it, and gives him the habit of going for it when he wants it. This requires that he have at hand the books he will most frequently refer to. After the dictionary, among those most important to the teacher are the following:

1. *The Cyclopædia of Education*. Cloth, 8vo, pp. 562, \$3.75.

This compares with other books on education as the dictionary compares with the spelling-book. The latter is useful, but the former is indispensable. In the latter you *may* find the word you want; in the former you are sure to. This is a day when teachers must be well informed. Here are some of the topics you may be asked questions about, or may want to inform yourself about: *Pestalozzi, Comenius, Object Teaching, Ascham, Froebel, Thomas Arnold, The Kindergarten, Horace Mann, School Management, Industrial Education, School Economy, German Schools, School Law, Stojd, etc., etc.* You may be sure you can find all of these topics and scores more like them in this book. It is the Pedagogical Unabridged Dictionary, and every energetic teacher must have it.

2. *The Ready Reference Law Manual*. By E. E. KNOTT. Cloth, 8vo, pp. 381, \$2.00.

IT IS NOT MEANT FOR LAWYERS, but for those who are not lawyers. It gives clearly and simply the provisions of the law that concern every man, and of which it sometimes costs a man a good deal to be ignorant. Capitalists often make their sons regularly admitted lawyers, not with any view to practice, but that they may be able to protect the property they will inherit. Even the man of little property, or dependent on a salary from which he can not save much, should know the most important features of the law. The little needs protection even more than the much, for loss is more disastrous.

3. *Thesaurus of English Words and Phrases*. By PETER MARK ROGET. Cloth, 12mo, pp. 710, \$2.00.

For acquiring an extensive vocabulary that will enable one to use *just* the right word in the right place, this work has no equal. For illustration of its usefulness, see Bardeen's *Complete Rhetoric*, pp. 401-403.

4. *Verbal Pitfalls: a manual of 1500 words commonly Misused*. By C. W. BARDEEN. Cloth, 16mo, pp. 223. 75 cts.

"In these days of slang and careless speech there is great use for a book of this kind, and teachers should have a copy lying on their desk in the school-room, ready for constant reference. The writer for the press, public speakers, and all people generally will find this little manual exceedingly valuable."—*No. Carolina Teacher*.

"I am very much pleased with it, and shall have it at once placed on our library list and made one of the requisites for the teacher's desk."—*Supt. C. T. Meredith, Ventura Co., Cal.*

C. W. BARDEEN, Publisher, Syracuse, N. Y.