A Selection of Readings and Problems

Including Excerpts from

Language Through Nature, 1919
Everyday Life in the Colonies, 1915
and Everyday Arithmetic, 1919

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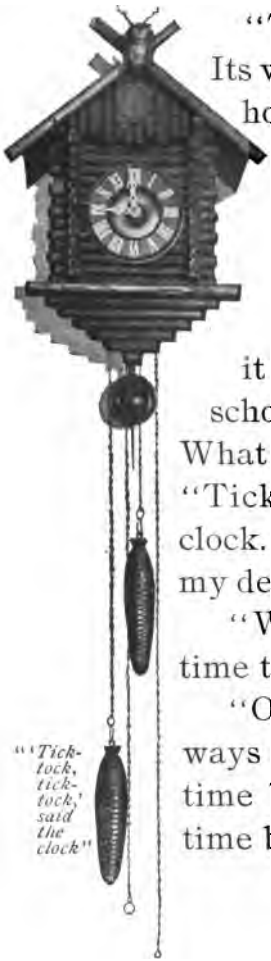
Lesson 81

TELLING TIME

KATE sat in her father's great armchair. She was all alone and the house seemed very still.



"'Tick-tock, tick-tock,' said the clock"

"Tick-tock, tick-tock," said the clock. Its voice seemed very loud in the quiet house.

Kate looked at the clock and listened to its steady ticking for awhile; then she said aloud: "We could not do without a clock. It tells us when it is time to get up; it tells us when it is time to go to school; it tells us when to eat dinner. What would people do without clocks?"

"Tick-tock, tick-tock," answered the clock. "Long ago people had no clocks, my dear little Kate."

"Why," said Kate, "how did they tell time then?"

"Oh," said the clock, "they had many ways of doing that. First of all, they told time by the sun. Then they measured time by shadows."

"How could they measure time by shadows?" asked Kate in surprise.

"I'll tell you," said the clock, "and then you can do it yourself. On the next sunny morning set a stick in the ground. Watch its shadow. Notice in which direction the shadow points and how long it is in the early morning. Look again in the forenoon and again at noon. See in which direction the shadow points in the afternoon and notice its length as night comes on. The shadow-stick was one way of telling time. Then some one made a sundial."

A sundial

"Please tell me about that," said Kate.

"Well," said the clock, "a sundial looks somewhat like a small square table made of stone or wood with a three-cornered piece of metal standing in the center. On the table top, or dial, there were figures showing the length of the shadow which this piece of metal cast at different hours of the day."

"That was a very nice way," said Kate, "only I don't see how people could tell time by the shadow-stick or sundial on cloudy days or at night."

"They couldn't," said the clock, "so some one invented the water clock. With this, time was measured by the flowing of water through a small opening in a globe or tube. Then the hourglass was made. In it sand was used instead of water."

"Oh," said Kate, "I've seen an hourglass. Grandma has one. She often lets me use it."

"Sometimes people forget to turn the hourglass over," said the clock, "and then they lose track of the time. But about a thousand years ago a great king invented a way of telling time by candles."

An hour-glass

"Oh, yes, I have read about that," cried Kate; "that was King Alfred. I think his way was very good, indeed."

"It was," said the clock, "but at last a man made the first clock, and I think that is the best way of all; don't you?"

What word in the first sentence of this story shows ownership?

Find examples of divided quotations in this story, and what is the method of punctuating them?

What contractions do you find, and what does each mean?

You will find words in this story, such as shadow-stick, which are made by putting two words together.

Words made by putting two words together are called compound words. The parts of a compound word are connected by a hyphen.

Of what other use of the hyphen do you know? Find an example of such use in this story.

Write this story in your own words.

Use capital letters correctly in the title.

If you use the words I or O, write them in capital letters.

Use quotation marks, hyphen, and all other necessary punctuation marks correctly.

Arrange your story in paragraphs.

"Take care of the minutes; they come and are gone;
Yet in each there is space for some good to be done.
Our time is a talent we hold from above;
May each hour have us richer in wisdom and love!"

SUGGESTED WORK

1. Fasten an upright piece of wood or cardboard to a foundation. Place this in the window so that the upright casts a shadow, and mark the place where the shadow falls at a certain hour. With the stick in the same position repeat this each day and see if the shadow falls at the same place and hour.

Do you think this is a good way to tell time?

2. Take a large bottle, fill it with water and put in a tight cork. Through the cork make a small hole so that the water will slowly drop out when the bottle is inverted or held upside down. Remove the top and bottom of a chalk box and make a hole in one end, into which the neck of the inverted bottle may be put. Place an empty cup under the cork and see how much water drops into it in one hour. Measure the water that the bottle will hold to see how many such quantities it contains.

How many hours of time will this measure?

3. Take two empty ink or mucilage bottles; fit them with corks. In the center of each cork make a small hole. See that the corks are even with the tops of the bottles. Put a handful of fine dry sand into one bottle. Invert it and see how much sand runs out in a minute. Put this quantity into the second bottle and empty all the sand out of the first one. Invert one bottle over the other so that the holes in the corks are opposite each other and fasten the necks together. Sealing wax may be used for this. See if you can use this to measure time.

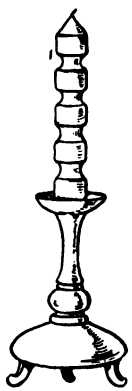
How could you change it so that it would measure five minutes?

4. Measure a new candle. Light it and let it burn for one hour. At the end of the hour measure it again to see how much has burned away. How many hours could this candle measure? Mark it by notches or bands of colored thread to show the number of hours.

95. Old Ways of Telling Time

[Without pencil.]

Clocks were not used until about 600 years ago. How do you think people told time before clocks were made?



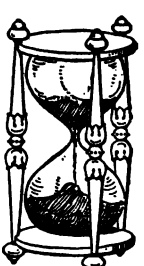
Notched Candle

One way of telling time in olden days was by a notched candle. When the candle had burned to the first notch, the people knew that an hour had passed. How many hours could be told by the candle in the picture?

1. How could the people tell when 3 hours had passed? How could they tell when half an hour had passed?

2. If a candle were lighted at 5 o'clock in the afternoon, how could children in olden days tell when it was their bedtime, 7 o'clock?

An hour glass is so made that it takes an hour for all the sand or the liquid to fall from the upper part into the lower part.



Hour Glass

3. How many times must an hour glass be turned between 9 o'clock in the morning and 12 o'clock at noon?

4. Make a problem about the number of times an hour glass must be turned between 3 o'clock in the afternoon and 11 o'clock at night.

5. Make another problem about the hour glass and then make a problem about the notched candle.

96. Roman Numbers

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
1	2	3	4	5	6	7	8	9	10	11	12

1. What are the figures called that are commonly used to mark the hours on a clock face?

2. Name other places where Roman numbers are used.

3. What letter stands for one? For five? For ten?

In reading Roman numbers in which the figure at the left has the same value as the one at the right, or is greater in value, the figures are *added.*

II = 1 + 1 VI = 5 + 1 XII = 10 + 1 + 1

4. Complete:

III = ?	XI = ?	XV = ?	XX = ?	XXX = ?
VI = ?	XII = ?	XVII = ?	XXI = ?	XXXV = ?
VIII = ?	XIII = ?	XVIII = ?	XXV = ?	XXXVI = ?

When the figure at the left is less in value than the one at the right, the figures are *subtracted.*

IV = 1 from 5. IX = 1 from 10.

5. Complete:

XIV = 10 + ?	XXIV = 20 + ?	XXXIV = ?
XIX = 10 + ?	XXIX = 20 + ?	XXXIX = ?

6. Write in Roman numerals:

2	11	19	25	31
5	16	22	26	37
7	17	24	29	34

L = 50

7. Read:

LI	LVII	XL	XLV	XLIV
LV	LX	XLI	XLVI	XLIX

8. Write in Roman numerals:

42 43 46 44 49 50 55

97. Telling the Hour by a Clock

[Without pencil.]

1. How many hours are marked on the clock face? Name them.

2. Which hand marks the hours? Which one marks the minutes?

3. Where is the hour hand when it is 9 o'clock in the morning — time for school to begin?

4. Where is the hour hand at 12 o'clock — time for the morning session to close?

5. Robert has his supper at 6 o'clock. Where is the hour hand at that time?

6. Helen goes to bed at 8 o'clock. How can Helen tell from the clock when it is time for her to go?

7. With the minute hand at XII, what time is it when the hour hand is at I? At III? At VII? At XI?

8. Set the hands of a clock to show that it is 7 o'clock — time to get up in the morning.

9. Set the hands at 8 o'clock — time for breakfast.

10. Set the hands at 12 o'clock — noon.

11. Set the hands at 4 o'clock — time in the afternoon for play.

12. Make of heavy paper a clock face 2 inches across. Write the Roman numerals on the face and use a bent pin for the hour hand. Then practice setting the hour hand to show different hours of the day.

98. The Hour and the Day

[Without pencil.]

1. How many times a day does the hour hand go around the clock face?

2. How many hours are there in one day, counting the night as part of the day?

24 hours = 1 day.

3. How many hours of daylight in a summer day when the night is 8 hours long?

4. In winter, the hours of daylight are fewer than in summer. How many hours of daylight in a winter's day when the night is 14 hours long?

5. Tom goes to sleep at 8 o'clock in the evening and wakens at 6 o'clock in the morning. How many hours out of each 24 is Tom asleep? How many hours is he awake?

6. Margaret spends 10 hours each night in sleep, 5 hours each day at school, and 1 hour eating her meals. How many hours has she left, out of each 24 hours, for work and play?

7. Margaret's father works from 8 o'clock in the morning

until 12 o'clock at noon, and from 1 o'clock until 5 o'clock. How many hours does he work each day?

Find how many hours there are:

8. From 7 o'clock in the morning until 12 o'clock noon.

9. From 6 o'clock in the morning until 11 o'clock in the morning.

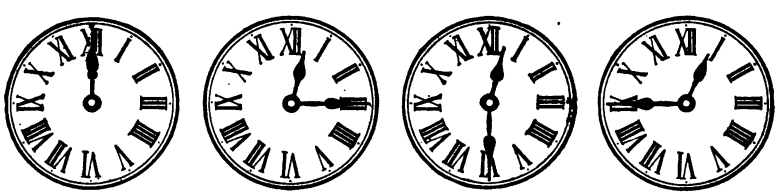
10. From 11 o'clock in the morning until 2 o'clock in the afternoon.

11. From 11 o'clock in the morning until 7 o'clock in the afternoon.

12. From 10 o'clock in the morning until 3 o'clock in the afternoon.

13. From 8 o'clock in the morning until 5 o'clock in the afternoon.

99. The Half-Hour and the Quarter-Hour



12 o'clock | Quarter past 12 o'clock | Half past 12 o'clock | Quarter to 1 o'clock

[Without pencil.]

1. How far around the clock face does the minute hand travel while the hour hand is passing from XII to I?

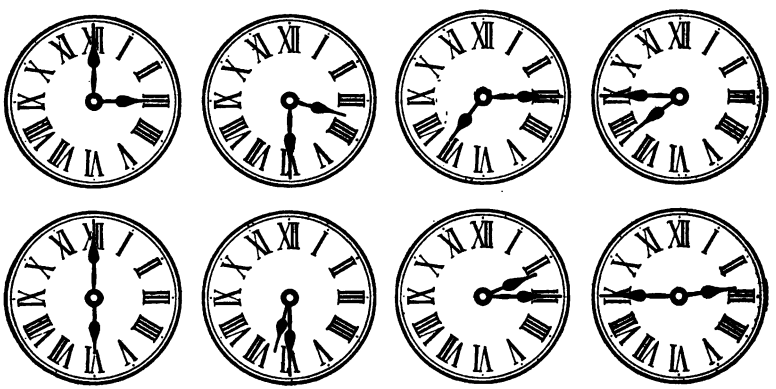
2. Where is the minute or long hand when one hour is over and another is about to begin?

3. Where is the minute hand when the hour is half over? When it is a quarter over?

4. Where is the minute hand at a quarter before the hour?

5. What part of an hour has passed when the minute hand is at III? When it is at VI? When it is at IX?

6. Tell the time by these clocks:



100. The Hour and the Minute

[Without pencil.]

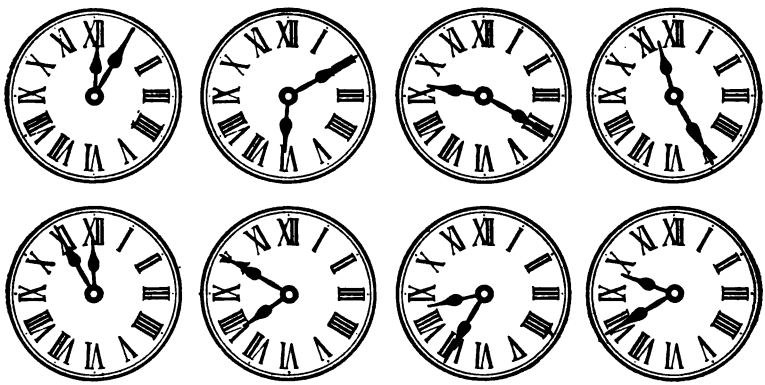
1. How many minutes are marked off by the minute hand in passing from XII to I? From I to II? From II to III?

2. Count the minutes around the clock face by fives. By tens.

3. How many minutes in an hour? In a half-hour? In a quarter of an hour?

4. How many minutes past the hour is it when the minute hand is at II? When it is at IV? When it is at V?

5. How many minutes before the hour is it when the minute hand is at XI? When it is at X? When it is at VII? When it is at VIII?



6. Tell the time by the clocks above.

Set the hands of a clock:

7. At 10 minutes past 12 o'clock.
8. At 25 minutes past 11 o'clock.
9. At 5 minutes before 2 o'clock.
10. At 15 minutes before 4 o'clock.
11. At 25 minutes before 7 o'clock.

12. Set the minute hand of a clock at 7 minutes past the hour. At 12 minutes past. At 23 minutes past. At 30 minutes past.

How many minutes in the same hour:

13. Between 10 and 20 minutes past?
14. Between 3 and 12 minutes past?

15. Between 8 and 15 minutes past?

16. Between 5 and 25 minutes past?

17. Between 15 and 30 minutes past?

18. Between 15 and 22 minutes past?

19. Between 7 and 24 minutes past?

20. Set the hands of the clock at 7 minutes before the hour. At 12 minutes before. At 22 minutes before. At 27 minutes before.

How many minutes in the same hour:

21. Between 15 minutes before the hour and 10 minutes before?

22. Between 20 minutes before and 5 minutes before?

23. Between 25 minutes before and 10 minutes before?

24. Between 22 minutes before and 12 minutes before?

25. Between 27 minutes before and 7 minutes before?

26. Set the hands of the clock at 25 minutes after one hour, and then at 15 minutes before the next hour.

27. How many minutes between 25 minutes after 2 o'clock and 15 minutes before 3 o'clock?

28. Set the hands of the clock at 20 minutes after one hour, and then at 20 minutes before the next hour.

29. How many minutes between 20 minutes after four o'clock and 20 minutes before 5 o'clock?

30. Ask and answer other questions about the number of minutes taken by the long hand to go from one space on the clock face to another.

101. Time at Play

[Without pencil.]

1. John went to play with Walter for a half-hour. He reached Walter's house at 15 minutes past 4 o'clock. When was it time for him to leave?

2. Nellie reached Carrie's house at 5 minutes past 10, for a visit of 20 minutes. When was it time for her to go?

3. Frank was to play with Robert an hour and a quarter. When was his time up, if he reached Robert's house at 4 o'clock?

4. Kate played with her dolls from 5 minutes past 3 o'clock until 25 minutes past 3. She played — minutes.

5. Fred played ball from 10 minutes past 4 o'clock until half past 4 o'clock. Find how long he played.

6. Grace and Alice played house from quarter past 4 o'clock until quarter before 5 o'clock. How long did they play?

7. Fred and Henry played marbles from quarter past 4 o'clock until half past 5 o'clock. How much longer than an hour did the game last?

102. Writing Dates

ORDER NAMES

1st	first	8th	eighth	15th	fifteenth
2d	second	9th	ninth	16th	sixteenth
3d	third	10th	tenth	17th	seventeenth
4th	fourth	11th	eleventh	18th	eighteenth
5th	fifth	12th	twelfth	19th	nineteenth
6th	sixth	13th	thirteenth	20th	twentieth
7th	seventh	14th	fourteenth	21st	twenty-first

22d	twenty-second	25th	twenty-fifth	28th	twenty-eight
23d	twenty-third	26th	twenty-sixth	29th	twenty-ninth
24th	twenty-fourth	27th	twenty-seventh	30th	thirtieth

[Without pencil.]

1. Name the days of your present month by order, beginning: "First, second, third."

2. Use a calendar [1] and ask your classmates questions like these: "On what day of the week is the first of the month?" "On what day of the week is the eleventh?"

3. Find on what day of the week your birthday comes this year.

[With pencil.]

4. The following records were made by the children in a third-grade class. Write each date in another form:

September seventh, we had the first frost of the season.
November twenty-second, we had our first snowfall.
February twenty-first was the coldest day of the year.
March twenty-third, we had our first thunderstorm.
March 6th, the first frog was heard.
March 9th, the first pussy-willows were brought to school.
March 10th, the first robin was seen.
April 11th, the first dandelion was brought to school.
May 1st, the first white violet was found.

5. Write each of these dates in another form:

Oct. 3d	June 17	October first
Dec. 25th	July 4	November second
Feb. 22d	Aug. 2	December third
May 1st	Sept. 3	January twenty-fifth

[1] A large calendar of the current month should be used for this exercise.

103. The Calendar for a Year

	Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
Jan.	..	..	..	..	..	1	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30
	31	..	..	..	..	..	..
Feb.	..	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	..	..	..	..	..	..
Mar.	..	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	31	..	..	..
April.	..	..	..	..	1	2	3
	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	..
	..	..	..	..	..	..	..
May.	..	..	..	..	..	..	1
	2	3	4	5	6	7	8
	9	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30	31	..	..	..	..	..
June.	..	..	1	2	3	4	5
	6	7	8	9	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	..	..	..

	Sun.	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.
July.	..	..	..	..	1	2	3
	4	5	6	7	8	9	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	31
	..	..	..	..	..	..	..
Aug.	1	2	3	4	5	6	7
	8	9	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	31	..	..	..	..
Sept.	..	..	..	1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	..	..
Oct.	..	..	..	..	..	1	2
	3	4	5	6	7	8	9
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30
	31	..	..	..	..	..	..
Nov.	..	1	2	3	4	5	6
	7	8	9	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	..	..	..	..
	..	..	..	..	..	..	..
Dec.	..	..	..	1	2	3	4
	5	6	7	8	9	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	31	..

[Without pencil.]

1. How many months are there in the year?

2. Which is the first month? Which the second?

3. Name the months by their order names, beginning: "January is the first month."

4. Which months have 30 days? Learn them by heart.

5. What month has 28 days except in leap year, when it has 29?

6. How many days are there in July after the Fourth?

7. How many days are there in June after Flag Day (the 14th)?

8. Find the number of days in August after the 15th. In November after the 19th.

9. How many days are there in December after Christmas?

How many days:

10. From the 12th of February to the 22d?

11. From the 5th of March to the 18th?

12. From the 7th of April to the 30th?

13. From the 4th of July to the 25th?

14. From the 3d of October to the 21st?

15. From April 28th to May 5th?

16. From June 28th to July 4th?

17. From August 25th to September 10th?

18. From September 27th to October 18th?

19. From November 24th to December 24th?

[With pencil.]

20. Find the number of days in a common year by adding the number of days in all the months. (See page 126.)

21. How many days in a leap year?

22. Find the number of weeks in a common year by dividing the number of days in a year by 7.

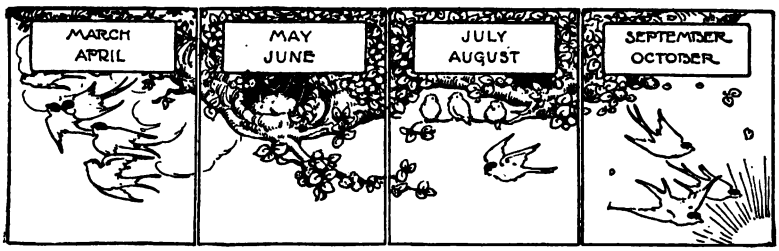
23. Learn this table:

60 seconds make 1 minute.
60 minutes make one hour.
24 hours make 1 day.
7 days make 1 week.
365 days make 1 common year.
366 days make 1 leap year.

24. A month containing 30 or 31 days (28 or 29 in February) is called a **calendar month**; one containing 4 weeks is called a **lunar month**. Find, with your teacher's help, the reasons for these names.

25. Divide 52 weeks by 4 weeks, to find how many lunar months there are in a year.

104. A Bird Calendar [1]



Flying North | Nesting | Young Learning to Fly | Flying South

[Use pencil only when needed.]

1. A pair of bobolinks began to build their nest on May 15th, and finished it May 29th. How many days did it take?

2. Baby robins hatched out May 13th were ready to leave the nest in 11 days. On what date were they ready to leave?

3. Baby blue jays, hatched out June 14th, left their nest June 30th. How much older were they when they left their nest than the robins were when they left theirs?

Some birds spend many weeks north; other birds only a few weeks. Find how many weeks these birds were north.

4. A pair of robins came north the middle of March and stayed 239 days.

5. A pair of bobolinks came north the middle of May and stayed 108 days.

6. A pair of whip-poor-wills came the last of April and stayed 123 days.

7. A pair of meadowlarks came the first of April and stayed 212 days.

[1] These facts were furnished by Mr. John Burroughs and other naturalists.

TELLING TIME WITHOUT A CLOCK

I

"Now we are ready to start!" said Mistress Biddle cheerily, as her husband led the horse to the horse block on which she stood. "But let us know first what time in the morning it is."

Mr. Biddle did not take out his watch nor did William or Edward, who were waiting to see their father and mother depart, go to look at a clock. The fact is, there was not a watch or a clock to be found on the great Biddle estate. Instead, William went to look at the top of a square stone post and came back to say that it was nearly six o'clock.

"When the chores are done, you may both play until noon," said Mistress Biddle, with a smile. "Be good boys. Do just as Hannah bids you. We shall be back by dinner time day after to-morrow."

Then she stepped from the block to her place on the sleek black horse, and turned to say good-bye as the impatient animal cantered away with his double burden.

There was not a train or an electric car, not even a stage-coach, to take Mr. and Mistress Biddle to Philadelphia. They must go in their own carriage or on horseback; and as the roads were very poor two hundred years ago, people usually chose to go on horseback.

This morning, because the other horses were needed for the farm work, both Mr. and Mistress Biddle rode on the same horse.

Strange as it would seem to-day, it was not strange to William and Edward to see their father in the saddle and their mother on the pillion, or cushion, placed behind the saddle. Women rode that way so often that it seemed as natural as it does to-day to see a little girl riding a bicycle.

The little boys watched until the travelers were out of sight, then started for the barn to finish the chores. On their way they peeped into the kitchen to make sure that Hannah was there,—for when their mother was away it was not so lonesome if they knew just where Hannah could be found. Hannah was ironing and happened to be standing on some of the noon marks. William noticed this and it suggested a delightful plan to him.

"Edward!" he exclaimed, "why not make

some noon marks on the barn floor? Then we should know when it is dinner time, and Hannah would not have to blow the horn."

Edward agreed. He was only six and he found most of William's plans very attractive.

"When the chores are done, we'll make the marks," said William eagerly.

Accordingly, when their promised play-time came, they set to work on the marks. They opened wide the big barn doors so that the sun shone in almost half-way across the barn floor.

"Shall we make a mark there?" asked Edward, pointing to the spot where the sunlight stopped.

"Oh, no, it is not much after eight. We want our mark just where the sun reaches at noon. Do you see?"

Edward understood, but it was plain that he did not think it great fun to wait until noon and then cut a single mark in the barn floor. He was turning away to find some other play, when William said coaxingly, "I'll tell you what we can do. We'll measure the marks on the kitchen floor and make them just the same down here; then as soon as that is done we'll play Indians!"

This plan pleased Edward and they ran to

the house. Hannah was busy cooking in the buttery, and so did not see the little boys toiling over the measurements. She might have saved them some play-time if she had known what they were about.

When the boys returned to the barn, they very carefully measured straight back from the door-sill and made a mark at just the same distance from the sill as was the mark in the kitchen. This was the midsummer mark, for the sun is so high at noon in midsummer that it can shine in only a little way. The next mark was a little farther from the door, and the next a little farther still, until the midwinter mark was made the farthest back of all, because, in midwinter, the sun is so low at noon that it can shine into a building for some distance.

At last the boys finished the marks and could begin to play Indians. It seemed as if they had been playing about five minutes when the dinner horn sounded. In surprise they looked at the noon mark. It was not noon according to that; but as it would not do to risk losing dinner, they scampered to the house. It was just noon by the kitchen mark! What could be the matter with the marks in the barn?

The boys told Hannah of their perplexity, for Hannah was too kindly ever to laugh at a boy's questions.

"I think I know what the trouble is," she said. "The barn door is higher than the kitchen door, so that the sunshine can reach in farther at the same time of day."

William understood. "I shall have to make a whole new set," he said thoughtfully.

"Yes, you will," replied Hannah, "but it won't be hard. You can make one mark a day, just at noontime by the sundial."

That was like Hannah; she always helped when she could. William saw that he should only have to watch the sundial, and when it was noon, to run as fast as he could to mark that spot on the floor which the sun reached.

"To-morrow is midsummer's day," said Hannah, "a good day to make your first mark."

It did not prove, however, to be a good day, for it rained from the time the boys got up until they went to bed. The sundial was of no use without the sun; and the noon marks on the kitchen floor were no better. So there was nothing by which to tell time except the hour-glass. The boys turned that several times to help the day go faster, and they made some

wooden knives to use in the Indian attack they would have the next day if it should be pleasant; but it was a long, dreary day and they were not sorry when bedtime came.

II

THE day on which Mr. and Mistress Biddle were to come home was warm and sunny. The boys did their chores early and had an exciting Indian game. Then, as they knew William was to have some new Ozenbridge trousers and Edward a new waistcoat—and as there might be some surprise from Grandmother Biddle—the two boys began to feel impatient to see their father and mother riding up the long, straight road that stretched toward Philadelphia.

"There will not be a spear of grass left between the kitchen door and the sundial!" laughed Hannah, as the boys ran for the fifth or sixth time in an hour to see what time it was.

"You would better stay next time long enough to teach Edward how to tell the time of day, and then you can take turns running to look at the dial."

"Come!" cried William, and off they raced to the dial.

TELLING TIME WITH THE SUNDIAL.

Edward looked very wise while William told the time, declaring it almost eleven.

"Almost eleven," repeated Edward. "How do you know?"

William was very ready to tell. "I will show you," he said.

Edward looked hard at the metal plate about a foot square, which he knew was called the dial-plate. This was fastened firmly to the top of a stone post, about four feet high, by which the boys were standing. The figures which Edward saw along the edges of the plate were like the figures on the face of a clock, but they formed a square instead of a circle as they do on clocks and watches. Edward could not see anything to tell him it was eleven o'clock.

"You look and see where the shadow falls, and that tells you what time it is," said William, impressively.

That was not much help to poor little Edward. "What shadow?" he puzzled.

"Why, this one," answered William, pointing to a shadow formed by a piece of metal that stood up almost in the middle of the plate.

Edward had often wondered why that piece of iron was standing on the dial; but if there must be a shadow, why, it might as well come

from that ugly old right triangle as from anything else.

"See, the shadow from the down-hill side of the triangle lies close to the line that runs from the bottom of the hill to the figure XI."

Edward nodded.

"That says it is eleven o'clock," continued the older brother.

Edward nodded more solemnly.

"And when the shadow from that same side of the gnomon ——"

"The what?" interrupted Edward.

"The gnomon, the triangle," answered William. "When the shadow lies close to the line that runs out to XII, why, then it is noon. Do you see?"

Edward was sure that he did.

"If the shadow is half-way between the two lines, it is half-past eleven, you see," went on William.

Edward agreed, but his eyes were fixed on an object moving far down the road. "They are coming!" he shouted.

True enough, they were coming—almost an hour before Mistress Biddle had said they would arrive.

Soon the boys were eagerly eyeing the pack-

ages that were taken from the saddle-bags. There was a soft bundle that might contain the trousers and the waistcoat, and there was a hard one that might hold a surprise. The boys were wrong, however; the soft bundle contained the surprises. There was a lace collar for each boy, a present from his grandmother.

"I saw one thing at your grandmother's," said Mistress Biddle, as she put away her purchases, "that pleased me greatly. Indeed, I hope we may have one here before very long. It is a machine for telling time,—a clock, they call it. Your grandmother has just had one brought over from England. It stands in the corner of the room and is taller than William. Think of it, William, the clock tells time both day and night!"

His mother's story reminded William to tell about the noon marks he was planning to make on the barn floor. Edward was also reminded of what he had learned, and the little lad proudly explained to his mother that he could tell time by the sundial.

"I am glad to hear both pieces of news," she said, smiling at the boys. "What time is it now, Edward?"

Edward quickly ran out to the sundial. It

was not eleven; it was not half-past eleven. What time was it?

He went back ruefully. "It is almost exactly some time, but it is not eleven and ——"

William laughed. "I forgot to teach him the figures. We did not have time before you came."

"That gives you something to do in play-time to-morrow," said his mother. "If you know those figures it will be easy for you to tell time by your grandmother's clock when you go to Philadelphia, as your father and I are planning that you both shall do before the summer is over; but now it must be time for William to run to the barn to cut his first noon mark."

LEARN :—

My days are as a shadow, and there is none abiding.

—On the sundial in the yard of a Friends' Meeting House, Germantown, Pennsylvania.

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