

"My darling, try and believe I will bring them safely."

He felt the light pressure of her hand, and saw the soft light of love in her eyes; and in this fashion, in the moment of suspense and anxiety, their troth was plighted.

Eric Gottorp found his task was no light one, and, accustomed as he was to brave all weathers, he wished he had sought help before starting, as the path across the downs was impossible to trace, and he could only guess its whereabouts from the distance he remembered it to be from the edge of the cliff. He battled on, however, as quickly as was practicable, giving a call now and then that carried far in spite of the dense atmosphere, and, as he paused to listen, he fancied, far away to his left, he heard a faint reply. Continuing his shouts, and following the direction of the answering sounds, he came at length on a pitiable spectacle. Mr. Tregage, in his persistent endeavours to reach his home, had wandered from the path; and in attempting to regain it—burdened as he was with Tommy—had tried to make his way over a fence, against which the snow had drifted to a thickness of more than four feet. He had fallen, and—still clasping the little boy in his arms—was lying well-nigh frozen and in severe

pain, when Gottorp's welcome cry came to give him hope of rescue. Eric found to his dismay that the poor man's leg was broken, and Tommy's condition demanded immediate care, so he was obliged to leave the unlucky schoolmaster while he carried the child to his home. He first, with all a sailor's handiness, contrived a temporary splint with his walking-stick and a long scarf, and, covering the sufferer with a wrap, he went to seek help to convey him to St. Juliotts.

The day of the snow-storm became almost as memorable in the village as the night of the wreck, and Barbara speedily forgot the anxiety and suspense she had endured, in the new and happy life that soon opened before her.

During his enforced absence from his duties, Mr. Tregage had many opportunities of discovering that foreigners are not all alike, and his gratitude for the Dane's kindly help ripened into respect and affection, so that when the flush of spring brightened St. Juliotts, it was with no half-hearted consent he gave his daughter to Eric Gottorp. Barbara has told her new sisters many tales of her native village; but she and her husband share between them the little history of "Somebody's Secret."

M. R. L.

OUR CLOCKS.

"Like a clock worn out with eating time."



HERE was a practical illustration of the difference of time in various parts of the world in the Colonial and Indian Exhibition. Overhead, beneath an effigy of Britannia, it was shown, by means of several dials, that when it was 7 p.m. by Greenwich time in England, at Capetown it was 8.14—1 hour and 14 minutes faster; at Ottawa 4 minutes to 2—5 hours and 4 minutes slower; in Calcutta, 5 minutes to 1—5 hours and 55 minutes faster; and at Sydney, 5.5—10 hours and 5 minutes faster.

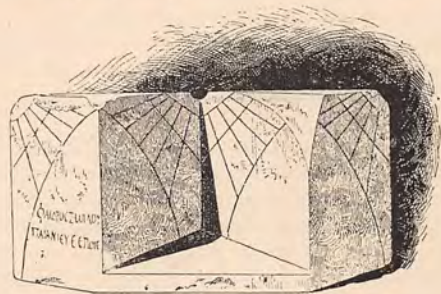
In the Great Exhibition of 1851, a Uniformity of Time Clock, invented by the civil engineer, Francis Whishaw, regulated the time between distant places to the hundredth part of a minute; all which shows that our computation of time in this nineteenth century of ours is very perfect indeed.

It has not always been so, and from the period when human beings first strove to have a faithful record of the divisions of night and day before them, many and various have been the means employed.

They began, as far as we can glean, with the sundial, described as "a column raised above the earth towards the sun," and alluded to in the 20th chapter

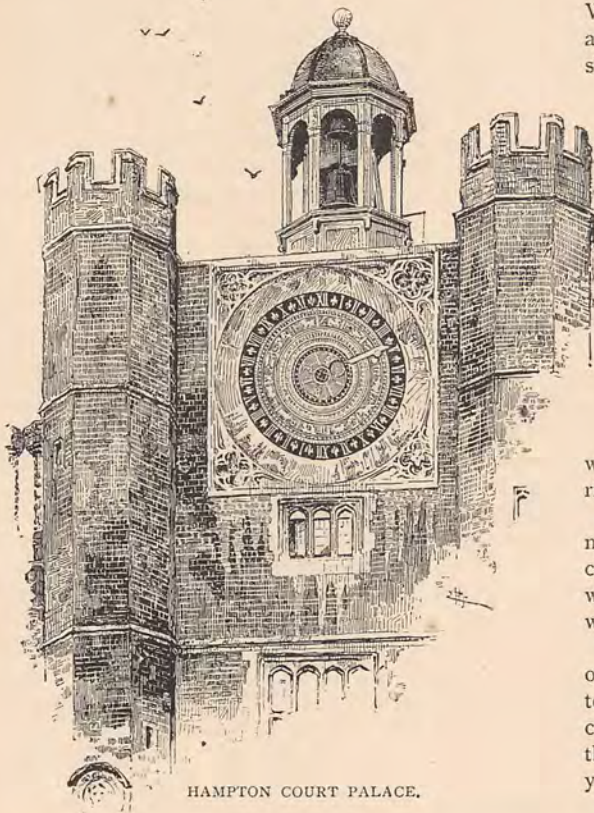
of 2 Kings, v. 11, where we read that the dial of Ahaz was brought back ten degrees.

But these sun-clocks could only serve in the daylight, and, after various forms of stone and metal sundials had come and gone, man's inventive genius next led him to the production of water-clocks—"Clepsydræ," as they were called, and sometimes "night clocks." At first they had to be set every evening. The principle of their construction was for the liquid to issue drop by drop, some floating body denoting



ANCIENT GREEK SUN-DIAL, FOUND AT ATHENS.

the height of the water which rose in a given time. Some were like hour-glasses; some like an egg-shaped vase, or a cylindrical vessel. They wonderfully improved



HAMPTON COURT PALACE.

as time went on, and some showed, as well as the time, the quarters of the moon, the Zodiacal signs, and other wonderful things.

It was only when the flight of time came to be recorded by mechanical means that the hours were each divided into sixty minutes, and the day and night equally into twelve hours each.

Exactly when this first came about no faithful or reliable chronicle tells us. Indeed, throughout the history of clocks, interesting as it is, there is a great lack of accurate history on many important points.

In the eleventh century, clocks moved by weights and wheels were found in certain monasteries.

It is easy to understand that, as we reckon time by the sun's meridian, it cannot be the same all over the world at the identical period, for the great luminary travels onwards.

Now we begin to calculate the day from midnight. At first, in many countries, it was from sunrise to sunset, and as these varied summer and winter, there came to be more hours in a summer than in a winter day.

This is the case now in Japan; the clocks are altered to suit the seasons, for the six night hours are longest in winter, and the day hours in summer.

When once wheel-clocks came into use, improvements followed closely on each other. Not content with an accurate measurement of time, some audible reminder of its passage was necessary, hence the striking of the hours, first heard of in Italy.

Perhaps the oldest English striking clock is that at Wells Cathedral, which did its duty for five centuries, and then had new mechanism. It still, however, shows the four knights tilting, and the armour-clad figures of Henry VI. and Edward IV.'s time, which strike the bell exteriorly. The first clock was placed at St. Paul's in 1280, and was one of the earliest with wheels in the kingdom. For many years the hours were struck by automaton figures, which used to be called Jacks; we read frequently in Shakespeare of "Jack o' the clock."

This St. Paul's clock was the means of saving a soldier in William and Mary's reign from punishment, for falling asleep when on duty at the Terrace, Windsor. To prove his wakefulness, he declared that he had heard the City clock strike thirteen at midnight, which turned out to be the case; and he lived to the ripe old age of 102.

Another of our earliest clocks was set up at Westminster, but it is not to be confounded with the turret-clock, Big Ben, which was made by Dent, goes for a week, and strikes the hours on a bell many tons in weight—a triumph of modern horology.

Chimes—a notable part of most cathedral and many other clocks—originated in the Netherlands. Visitors to Bruges and other Belgian towns know how never-ceasing is this music of the bells, which has fallen on the ears of generation after generation for full 500 years.

Longfellow devotes many lines to them.

"Most musical and solemn, bringing back the olden times
With their strange, unearthly changes, rang the melancholy chimes,"

is how he describes them.

Edward III. invited some Dutch clock-makers to England, but the wooden clocks with which Holland is associated in most minds are only about 200 years old, and are now being superseded by cheaper ones from America; and, indeed, many of the so-called Dutch clocks latterly were made in the Black Forest, where there is still a great industry of the kind, as also in Switzerland; those from the latter, however, are wooden clocks principally.

There are a number of mechanical clocks scattered all over the world, most of them famous.

The old one at St. Albans went for centuries, and we hear of it in Henry VIII.'s time telling the course of the sun and moon and the rising of the tide. It was made by Richard de Wallingford, a blacksmith's son, who became an abbot.

Perhaps the most world-famous is the one at Strasburg, twenty feet high; it succeeds a very wonderful one of much older date. The cock that crows and spreads its wings when the chimes announce the hour alone remains of the original one. The present clock dates from 1574, and its maker finished it after he had been struck blind. It shows the signs of the Zodiac, the motions of the heavenly bodies, as well as a series of pictures; and the events which happen at the striking are too wonderful to detail. A similar one at

Ratisbon marks the hours by the appearance of the three kings, who pay their adoration to the Virgin.

At Lubeck, in the old church, there is a wonderful clock, which at twelve shows automaton figures of the Electors of Germany, who inaugurate the Emperor, Christ giving the benediction as a choir of angels send forth a flourish of trumpets. Germany boasts of many other famous clocks, given by well-known envoys from foreign countries.

England has her share of curiosities in horology. Horace Walpole had one at Strawberry Hill, given by Henry VIII. to Ann Boleyn in 1532, which was subsequently bought by Queen Victoria, and is now at Windsor Castle. On the weights are the initials of Henry and his second wife, united by a true lovers' knot, on one, the royal motto on the other, and the words, "The most happy."

Lord Leicester placed a striking clock in Cæsar's Tower at Kenilworth. It had two faces—one south, one east—but from some unexplained reason, when the Queen paid her celebrated visit, nothing could induce it to go.

It was good Queen Bess who maintained in her service not only a clock-keeper, but a clock-maker, and possessed at Whitehall a wonderful clock, with an Ethiopian riding a rhinoceros, accompanied by four attendants, who made obeisance when the hours struck.

This recalls a curious story in clock-lore. In 1696 one Burdeau made a clock, where Louis XIV. was seen seated on a throne, surrounded by foreign princes, all of whom did him homage. The inventor

was persuaded in an evil hour to make a public exhibition of his work; but, unfortunately, when the effigy of William III. made his obeisance, some of the machinery gave way, and threw the French king prostrate at the feet of the English one. This, being noised abroad, reached the ears of Louis XIV., who had the unlucky clock-maker thrown into the Bastille.

At Berne there is a party of wooden bears dressed in uniform of old days, who, when the hours strike, march out of a little tower, nod their heads, and return; and this same clock has pantaloons, clown, an Indian juggler, and a cock to add to its capabilities for amusing.

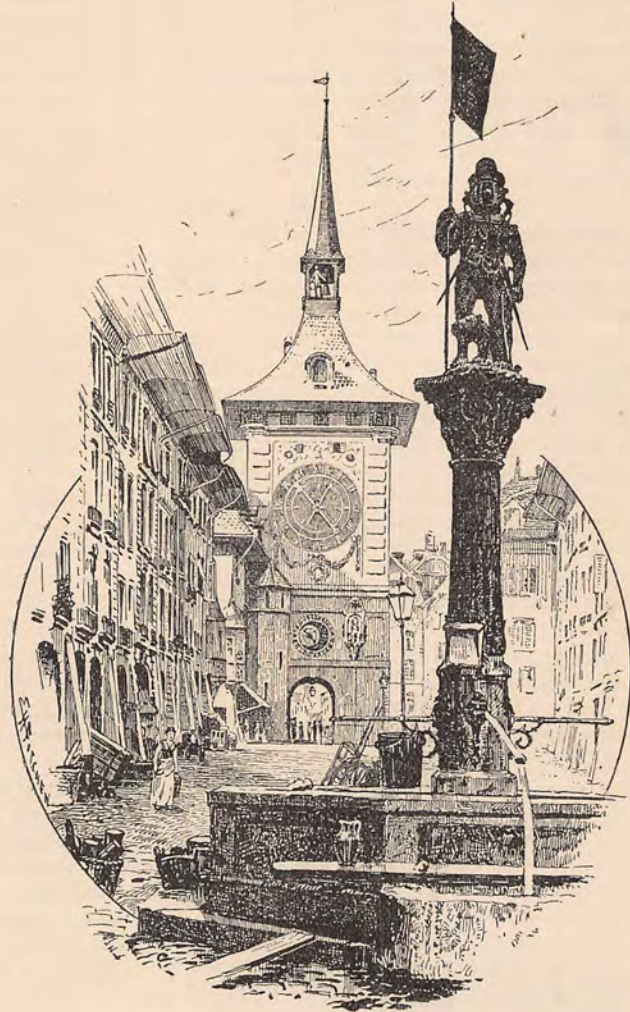
There is no conceit too quaint and curious, it would seem, for a clock. Sometimes it is a griffin bearing an escutcheon with the dial, and rolling its eyes and opening its mouth when the hours strike; sometimes it is a turret, and sometimes a crucifix, in which the works are concealed.

Electric clocks are among the most noted modern improvements in the way of horology. They were introduced to the Royal Society in 1841 by Professor Wheatstone. One of these can communicate the time to a number of skeleton dials far away. Shepherd's electric clock in the 1851 Exhibition excited, perhaps, more interest than anything else shown at the world's fair.

It was in the French Exhibition of 1878 that pneumatic clocks were first brought to the notice of the public, and they are now in use in Paris in public and private buildings. They require metal reservoirs to serve as storage-places for compressed air, driven in by steam-pumps, and this air is the motive-power of the clocks; pipes or ducts lead to them, giving a pulsation produced at the same instant in all the clock-towers. No winding is necessary.



THE CLOCK AT THE HORSE GUARDS.



CLOCK-TOWER AND BEAR FOUNTAIN, BERNE.

Portable clocks were never heard of till after the sixteenth century had commenced, and no one then would have dreamed it was possible to make a clock the size of a shilling; but in the nineteenth century such things exist.

The Clockmakers' Company—which has no hall, but claims Cowper's Court, Cornhill, as its headquarters—possesses a valuable history of clocks and clock-making, well worthy the attention of those interested in the subject.

Illuminated clocks find favour in our day, and one which Londoners most pride themselves upon is that at the Horse Guards; it owes its glory to a reflected light, and not, as usual, to gas behind the dial.

Among the curiosities of clock-making is a time-

piece at Copenhagen which shows the temperature of the last twenty-four hours. The atmospheric clock, like a thermometer in appearance, is a modern invention.

Many have been the attempts at perpetual motion in clock-making. Gainsborough's brother introduced one which was intended to tell the hour by a bell, set in motion by a bullet, which was sent continuously to and fro. It did not answer, nor have any attempts since.

There is much more to learn as to the mechanism of timekeepers of the future, and much more as to the past; but this account of some of the most famous timekeepers will suffice to show where to begin to seek the story of the great clocks of time.

