

he we will be for the discharge of his duties, and the higher he will stand in the estimation of his employer.

A good salesman is always to be found at his post, he has no bad habits such as running around the corner "to see a fellow," or wasting his time in idle gossip with idlers who drop in to the store merely to pass away their time. If he has any private business to do, he does it after or before business hours, or if it is impossible to manage it at such times he selects his opportunity more with a view of accommodating the business than himself.

In short the good salesman is a good, square, level headed, gentlemanly fellow, who thoroughly understands his business, and is not ashamed to work at it, and honest enough to try and give his employer full value for the salary he draws. Whatever salary his employer allows him he tries to make himself worthy of, and to do double the amount if necessary. Such a man as we have endeavored to describe (and there are plenty of them in Canada) is a treasure to any employer, and should be encouraged in every possible way.

Selected Matter.

JOHN HARRISON, THE CHRONOMETER MAKER.

Continued from last month.

Not satisfied with his two machines, Harrison proceeded to make a third. This was of an improved construction, and occupied still less space, the whole of the machine and its apparatus standing on an area of only four square feet. It was in such forwardness in January, 1741, that it was exhibited before the Royal Society, and twelve of the most prominent members signed a certificate of "its great and excellent use, as well for determining the longitude at sea as for correcting the charts of the coasts." The testimonials concluded: "We do recommend Mr. Harrison to the favor of the Commissioners appointed by Act of Parliament as a person highly deserving of such further encouragement and assistance as they shall judge proper and sufficient to finish his third machine." The Commissioners granted him a further sum of 500*l.* accordingly. Harrison was now reduced to necessitous circumstances by his continuous application to the improvement of the time-

keepers. He had also got into debt, and required further assistance to enable him to proceed with their construction.

Although Harrison had promised that the third machine would be ready for trial on August 1, 1748, it was not finished for some years after. In June, 1746, we find him again appearing before the board, asking for further assistance. While proceeding with his work he found it necessary to add a new spring, "having spent much time and thought in tempering them." Another 500*l.* was voted to enable him to pay his debts, to maintain himself and family, and to complete his machine.

Three years later he exhibited his third machine to the Royal Society, when he was awarded the Gold Medal for the year. In presenting it Mr. Folkes, the President, said to Mr. Harrison, "I do here, by the authority and in the name of the Royal Society of London for the improving of natural knowledge, present you with this small but faithful token of their regard and esteem. I do, in their name, congratulate you upon the successes you have already had, and I most sincerely wish that all your future trials may in every way prove answerable to these beginnings, and that the full accomplishment of your great undertaking may at last be crowned with all the reputation and advantage to yourself that your warmest wishes may suggest, and to which so many years so laudably and so diligently spent in the improvement of those talents which God Almighty has bestowed upon you, will so justly entitle your constant and unwearied perseverance."

Mr. Folkes, in his speech, spoke of Mr. Harrison as "one of the most modest persons he had ever known." In speaking of his own performances he has assured me that, from the immense number of diligent and accurate experiments he has made, and from the severe tests to which he has in many ways put his instruments, he expects he shall be able with sufficient certainty, through all the greatest variety of seasons and the most irregular motions of the sea, to keep time constantly, without the variation of so much as *three seconds in a week*, a degree of exactness that is astonishing and even stupendous, considering the immense number of difficulties, and those of very different sorts, which the author of these inven-

tions must have had to encounter and struggle withal."

Although it is common enough now to make first-rate chronometers—sufficient to determine the longitude with almost perfect accuracy in every clime of the world—it was very different then, at the time that Harrison was occupied with his laborious experiments. Although he considered his third machine to be the *ne plus ultra* of scientific mechanism, he nevertheless proceeded to construct a fourth time piece, in the form of a pocket watch about five inches in diameter. He found the principles which he had adopted in his larger machines to apply equally well in the smaller; and the performance of the last surpassed his utmost expectations, but in the meantime, as his *third* timekeeper was, in his opinion, sufficient to supply the requirements of the Board of Longitude as respected the highest reward offered, he applied to the Commissioners for leave to try that instrument on board a royal ship to some port in the West Indies, as directed by the statute of Queen Anne.

It was not until March 12, 1761, that he received orders for his son William to proceed to Portsmouth, and go on board the "Dorsetshire" man-of-war to proceed to Jamaica. But another tedious delay occurred. The ship was ordered elsewhere, and William Harrison, after remaining five months at Portsmouth, returned to London. By this time John Harrison has finished his *fourth* timepiece—the small one—in the form of a watch. At length William Harrison set sail with this timekeeper from Portsmouth for Jamaica in the "Deptford" man-of-war, on November 18, 1761, and returned to England on March 26, 1762. On the arrival of the ship at Port Royal the timekeeper was found to be only five and one-tenth seconds in error, and during the voyage of over four months, on its return to Portsmouth in the "Merlin," it had only erred one minute fifty-four and a half seconds. In the latitude of Portsmouth this only amounted to eighteen geographical miles, whereas the Act requires that it should only come within the distance of thirty miles or minutes of a great circle. One would have thought that Harrison was now clearly entitled to his reward of 20,000*l.*

But the delays interposed by government are long and tedious. Harrison