MISCELLANEOUS.

THIS WONDERFUL CENTURY.

ALFRED RUSSELL WALLACE, who cooperated with Darwin in formulating the doctrine of the survival of the fittest, and who is conspicuous in the foremost rank of writers on natural history, may be accepted as an observer eminently qualified to review from the vantage-ground of science the procession of the passing century, and to record with understanding and with conscientiousness the achievements emblazoned on its banners.

The task he has set himself has been to trace, in compact and forcible sketches, the great material and intellectual results which especially distinguish the nineteenth century from any or all of its predecessors, and to show how fundamental is the change they have effected in our civilization; for the passing century must be held to constitute the beginning of a new era of human progress, and in order to estimate its full importance and its grandeur we must compare it, he declares, not with any preceding century, or even with the last millennium, but with the whole historic period—perhaps even with the whole period that has elapsed since the Stone Age.

"The one step in material progress that seems to be really comparable in importance with several of the steps we have just made, was when fire first became the servant and the friend of man." Without fire there could have been neither a bronze nor an iron age, and without these there could have been no effective tools or weapons—with the long succession of mechanical discoveries and refinements that have come of them. Without fire there could be no rudiment even of chemistry; with our fire much of the earth's surface would be uninhabitable by man, and much of what is now wholesome food would be impossible to him.

By the magic of fire we are led to the locomotive and the ocean-steamer, those overpowering glories of our century. An ancient Greek or Roman, Egyptian or Assyrian, could travel as rapidly and as comfortably as could an Englishman, down to the latter part of the eighteenth century. It was mainly a question of roads; and until the beginning of the nineteenth century, English roads were commonly far inferior to those of the Romans. It is not improbable that during the occupation of Britain by the Romans, the journey from London to York could have been made in less time than in 1750.

And so of ocean-steamers. Five hundred years ago Vasco de Gama sailed from Portugal, round the Cape of Good Hope, to India, and in the next century Columbus crossed the Atlantic, in its widest part, to the West Indies and Mexico. From that time sailing-ships were gradually improved, until they culminated in formidable frigates of war, and the swift clipper ships of the China and California trades. But during all that period of development there was no change in principle, and the grandest three-decker on the full-rigged clipper was but an inevitable growth from the rudest canoe that ever a primeval savage paddled.

Now we have the bicycle, and the principle is old enough. But in the last century it would not have been possible to construct a first-class bicycle at less cost than seven or eight hundred dollars. And all this wonderful advance in the means and methods of locomotion has been achieved within the memory of a man of threescore and ten.

Then came the sewing-machine, which at first was for embroidering only. About 1790, one was made for stitching shoes; a crocheting-machine was patented in 1834, one for rough basting somewhat later; but it was not until 1846 that the first effective lock-stitch machine was produced by Elias Howe of Massachusetts.

Then followed the typewriter, and the wonderful harvesting-machine—reaping, threshing, winnowing, and sacking, ready for
the granary or the market. And these were all conceived in the first half, and brought to perfection in the last half, of this wonderful century. Nor must we forget the Jacquard loom, the revolver, the machine-gun, the iron ship, and the screw-propeller.

The invention of writing superseded the slow functions of the messenger, the herald, the ambassador. Henceforth the progress of communication was inseparable from that of locomotion.

Even with good roads and mail-coaches the actual time taken in the despatch of a letter to a distant place was hardly less than that required by the runner or the mounted courier. With railways and steamships came activity, regularity, economy to the postal service—Rowland Hill and penny postage, and the money order.

It was not until 1837 that the efforts of many workers, striving to the same end, overcame the practical difficulties, and the electric telegraph was set up. The first submarine line was laid from Dover to Calais in 1851; and in 1856 a company was formed to lay a cable across the Atlantic; another, more successful, was completed in 1866, and now all the seas are electrically bridged.

And then came the telephone, with its vibrating disks, culminating in a line of a thousand miles, bringing the ear of Chicago to the lips of New York. At Budapest they have a telegraphic newspaper:

“At certain hours throughout the day a good reader is employed to send definite classes of news along the wires, which are laid to subscribers' houses and offices, so that each person may read the news supplied to subscribers at little more than the cost of a daily paper.”

In such facilities of communication the advance made in the present century is not only amazingly greater, but is even more solemnly impressive in its bearing upon human destiny than all that was achieved in the whole preceding period of history.

About 1827, Mr. John Walker, a chemist of Stockton-on-Tees, invented friction matches, by dipping splints of wood in chlorate of potash and sulfur, mixed with gum; phosphorus was added in 1850, and by 1856 these matches became so cheap as to popularly supersede the old flint and steel; and thus, by a new departure, the three modes of obtaining illumination for domestic purposes was in 1813, when Westminster bridge was illuminated. The news is supplied to subscribers to little more than the cost of a daily paper.”

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