

66 FIRST IN WAR; FIRST IN PEACE; FIRST IN THE HEARTS OF HIS COUNTRYMEN. 69

PROGRESS OF THE PASSING CENTURY.

The Slow and Tedious Steps Which Led Toward the Establishment of the Telegraph and the Cable.

When one gives a moment to the contemplation of the wonders that have been achieved by human inventors during the hundred years that have constituted the nineteenth century, the mind naturally reverts to the telephone and telegraph, for, of all the inventions few have been of more importance to the world. The progress in the matter of material speed has been immense, but how much greater has been the increase in the speed in thought!

One hundred years ago the means of communication between persons was limited to the crudest form of mail service. Even pony postage was not invented until the year 1840, when Rowland Hill introduced that system in England, and prior to that time the charge for postage was so large as practically to restrict letter writing. Suddenly, however, man discovered that there were wonderful uses to which electricity could be put, and from that day the art of communication has progressed by leaps and bounds.

It was in 1837 that Morse gave his first model of the present-day telegraph instrument to the world. It was a clumsy affair enough. The electro-magnets used in its operation weighed more than one hundred and eighty pounds, the inventor being under the delusion that the wire used in winding them must be of the same size as that of the line itself.

The story of the difficulties that beset Morse in his efforts to persuade Congress to appropriate \$30,000 to enable him to construct a trial line is a matter of national history. People laughed at the invention and they declared the inventor crazy. The idea that space could be annihilated in such a way was too preposterous to be credited for an instant. In all these discouragements, however, the inventor persevered in his work, and in 1844 the first message, "What hath God wrought?" was flashed over the wire from Baltimore to Washington. The inventor had triumphed and this advancement of the human race was made possible.

THE TELEGRAPH. Although the first telegraph instrument was, comparatively speaking, a success, the present fine-wired, compact and portable electro-magnets, weighing less than a pound, had not been dreamed of. When the first line was opened it was with a primitive system of combined circuits, but in 1846 the idea of short circuits and relays began to be developed.

Some idea of the immense growth of the telegraphic industry during the past half century can be gathered from the fact that the receipts of the first line for the year 1846 were \$4,238.77, whereas to-day the Western Union Company alone does a business of some twenty-three million dollars annually, and the Postal Company does nearly as much, this representing a business of more than one hundred million messages.

The thought that poles might possibly be dispensed with and that insulated wire might be laid along the floor of the ocean was slow in suggesting itself, but finally it did come. In 1858 a submarine cable was laid from Dover to Calais.

It was at this time that Cyrus Field evolved the idea that has given us the great ocean cable system of to-day. "If thirty miles can be bridged in this

manner," he asked, "why not the width of the Atlantic?" At first the idea was regarded as an idle dream, but Field was eloquent and in 1857 the cable had been laid from Newfoundland to Ireland. It was the beginning of the greatest of modern achievements, for to-day scores of these cables stretch for tens of thousands of miles under the oceans of all hemispheres.

HOOK'S INSTRUMENT. The consideration of the telegraph and cable naturally suggests their younger brother, the telephone. As far back as 1877 Robert Hook was experimenting in the belief that it would be possible for him to discover some means of conveying sounds by the use of wires and wooden rods, but it was not until 1876 that the telephone in a useful form was evolved. The first apparatus of a fairly useful telephone was introduced to the Patent Office by Alexander Graham Bell, and this was the telephone of to-day minus the improved transmitter and with the chief parts somewhat differently arranged.

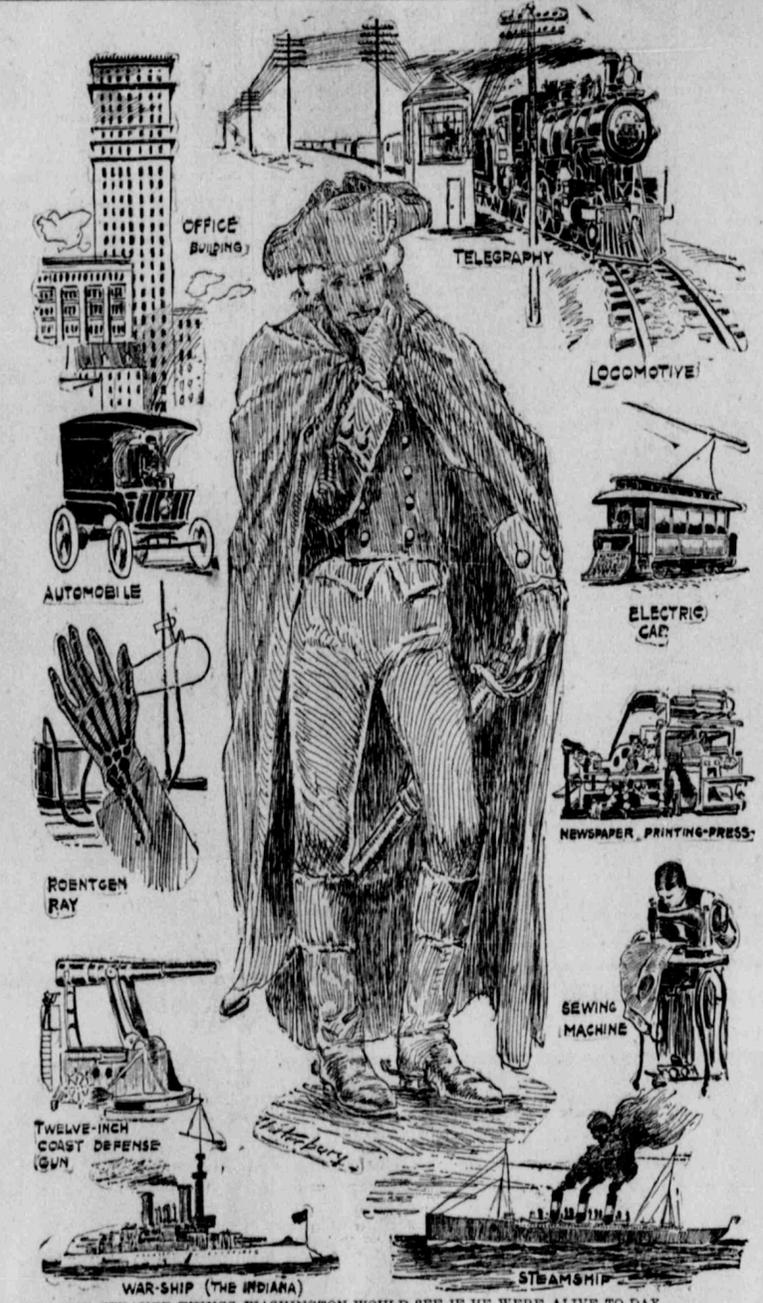
In 1821 Wheatstone succeeded in showing that Hook had been correct in his principle that sound waves could be transmitted from one place to another, to a moderate distance, by means of wooden rods, and afterwards he conveyed to the ear by the vibrations given to the air at the end of the rod. All these experiments, however interesting they may have been, were not practical, but when Bell and Edison appeared the problem of voice communication was solved.

To describe the steps by which this invention has been improved or to dilate upon its commercial advantages would be useless. The advent of the long distance telephone alone has been an inestimable advantage, but all these achievements have been of such recent date that the successes are matters of current knowledge.

WIRELESS MESSAGES. Such have been the results of nineteenth century achievement alone, the lines of long distance communication; but, great as they have been, there is every reason to believe that the next quarter of a century will witness inventions so radical and improvements so great that the methods of communication of to-day, great as they may seem to us, will sink into insignificance.

When Marconi, a short time ago, established the fact that wireless telegraphy was within the realm of probability the world entered upon a new era of invention, and the solution of the problems of rapid telegraphy and the transmission of pictures by wire will be two of the great inventions that will make the dawn of the twentieth century memorable.

Let no word of mine be taken to imply that these results have not yet been attained. Of course there can be no question but that there are already machines that make rapid telegraphy possible, and there are already instruments by means of which pictures and drawings of all kinds may be transmitted long distances. At the present time, however, these inventions are more or less in the experimental stage. The results promising as they are can scarcely be regarded as more than successful trials of the new inventions, and it will remain for the twentieth century to witness the development that will make them of incalculable value to the world.



AMERICA'S GREAT EXHIBIT AT PARIS IN 1900.

Magnificent Display of Native Products to be Shown by American Manufacturers at the Paris Exposition.

Although a large amount of space has been set apart for the use of the United States at the Paris Exposition, nearly all of it has already been taken up by prominent American manufacturers. At present there is every indication that the number of exhibitors from the United States will not be less than 7,000 and this will represent every branch of manufacture and art.

It is quite impossible at this time to ascertain just how the exhibits from this country are to be divided, as the printed lists furnished by the American commissioner are somewhat vague. Enough facts are given, however, to show that almost every line of business followed in the United States will be well represented at Paris. Of the number of exhibitors who have already taken space, 1,110 represent the purely commercial branches, while the remaining exhibits are divided among such classifications as agriculture, mines, literature—which includes the American periodicals, science and the fine arts; religious, charitable and other associations, and education, which will include the exhibits of the schools, colleges, etc.

Prosals as such a description may seem the actual exhibits will be far from uninteresting, for they will include almost everything in the range of human endeavor so artistically arranged as to attract the immediate attention of even such a biased individual as the average Frenchman. When he has walked through the American exhibit he will have seen everything that a human being could possibly require in his passage from the cradle to the grave. There will be the food to feed him, the beverages to satisfy his thirst. He will see the clothing necessary for every stage of life and for every degree of temperature from the polar circle to the equator. If he desires amusement, education or opportunities for investment he need go no further—in fact he may buy everything from a stick of candy or a pipe of tobacco to a burial casket or a thousand horse-power motor, a set of false teeth or an incubator, and if he does not see at the first glance the article that he requires it will only be necessary for him to ask for it.

Numerically the largest exhibits will be those of the manufacturers of wines and other liquors. For all time France has held one of the highest positions among the makers of wines, and it has only been within the past few years that anyone of good taste has been willing to drink American made champagnes and other vinous beverages. Of late, however, the public taste has changed, as is shown by the fact that the total amount of wine imported by the United States in 1898 was less than more than a million dollars than what it has been for any one of the previous four or five years, while the exports were correspondingly greater. It cannot be denied that these figures prove conclusively that there is a growing demand for American wines and the wine manufacturers are satisfied that the demand will be increased many fold by their exhibit at the great world's exhibition.

BREWERS TAKE SPACE. In addition to the exhibit of wines, however, an effort will be made to excite foreign interest in other American drinks. No less than fifteen brewers have already taken space and each at a rate scale, many of the exhibitors having signified their intention of giving a thorough representation of the methods of brewing followed in the United States.

The brewers of beers and ales are not the only persons who are alive to the value of future export trade, however. There will be mineral waters and soft drinks enough to satisfy the thirst of an army of prohibitionists and, if something stronger is demanded, twelve distillers of whisky will have samples of their goods on hand. One of the features of the drink exhibit will be the American soda fountain, with its drinks of all kinds, while nearly every State in the Union will furnish its exhibits of hard and soft cider. In fact, it looks as if there was an organized effort being made to interest foreigners in this distinctive American beverage.

The American health food exhibit will be another prominent feature of the Exposition. Already nearly every manufacturer of condensed or other wise prepared milk, and there will be less than fifty indispensable breakfast foods on exhibit. In fact the French dyspeptic who wanders about in the midst of the array of health foods, all of which are guaranteed to satisfy the hunger and cure disease at one and the same time, will be bewildered by the menu set before him, even if he does not accept them as a pleasing substitute for frogs' legs and ashitole.

The American display of flour will also be large and interesting, as every kind of patent flour in use in this country will be on exhibition. The packers of the West are also preparing to make exhibits of various kinds of canned goods, and they will attempt to show their ability to compete with the foreign canner of fruits and vegetables. Naturally the manufacturers of tobacco in various forms will be on hand with fine displays of their products. If it is cigars that are wanted there will be thousands of kinds to choose among, if smoking tobacco is required it can be obtained in any form from the common plug to the most refined exhibits of the world, and if it is cigarettes that are needed every variety will be on sale even to those made of Turkish or Egyptian tobacco wrapped in Japanese rice paper.

In exhibits of machinery America will exhibit a number of "freak" exhibits that will have a place in the American section. One young man is going to show the Parisians how to turn air into a liquid, producing in so doing a cold so intense that ice sets it to boiling. By this means he will show them how to run great engines and power plants at a cost infinitely lower than any at which they have ever been run before. Another American will show the Frenchmen how to make artificial crystals that will scratch diamonds, and he hopes that, by the time for the opening of the Exposition, he will be able to make diamonds themselves in his little furnace.

WILD OSTRICHES. To describe all the novelties that America will show the foreign visitors to the great fair, however, is quite impossible, for the section will include almost everything from a reproduction of a Vermont granite quarry to a display of patent medicines. Among some of the most attractive exhibits, however, will be a herd of wild ostriches from a California ranch; the silk display; the artistic jewelry and the reproduction of an American glass maker's workshop, in which the men will be seen at their work of bending and cutting art glass ware.

THE REAL LIFE OF WASHINGTON.

By James Burton, Ph. D.

If there is any one day that every self-respecting patriotic citizen delights to honor it is Washington's birthday. That is one day in the year on which he can seize himself by the hand and tell himself that he is glad that he is the citizen of a country that could prize a man like Washington, and on this day he has plenty of time in which to meditate upon the merits of the great man who has so long been recognized as the Father of the Country, for it is a National holiday and he has no work to do.

At no time during the past century has the great George Washington been brought closer to the hearts of the people than he will be upon the occasion of his next birthday. The centennial of his death, which was celebrated some two months ago, tended to call the attention of all Americans to the character of the man who had done so much for the new nation, and the information that they derived at that time will be still fresh in their minds when they are called upon to celebrate another anniversary of his birth.

During the past hundred years the story of the life of Washington has come to be regarded too much in the light of a legend. So much stress has been laid upon the facts that he was a modest citizen, a perfect soldier, the one virtuous man of the eighteenth century that people have come to look upon him as a somewhat impossible creation of minds too much given to eulogizing their heroes. The poems of virtue have been sounded so often that the legendary character has taken the place of the real man who actually lived and breathed the first air of freedom more than a century ago.

THE REAL MAN. To talk this way may seem like treason, for to-day Washington occupies a place in the highest ranks of the immortals, but, in spite of all this, it is impossible to avoid the expression of the opinion that it would have been better if the character of the first President had not been so much idealized in its transmission through the years. In other words, if we had been permitted to remember that Washington was a man, with human faults and human imperfections, his character would not have suffered, for the inestimable virtues of which he was possessed would stand out in marked contrast to the more human background. If we remember that he was pock-marked, that he was jilted by a fair Low Land maid, that he was not always constant in his affections, and that he had a temper that now and then got the better of him, we should realize that the hero was a man like ourselves, and would marvel the more at the sterling characteristics that made him the founder of the nation.

Washington idealized is a character for whom there is no place in a world of human beings. Washington the real is a man for whom no words of praise are too great. As has been said by Greene, the historian, "No nobler figure ever stood in the forefront of a nation's life," and his birthday should be

an eternal festival wherever a free man speaks the English language. To one who reads of the early life of Washington it cannot but seem strange that he should have been chosen as the revolutionary leader of the colonies. It is true that he had some military training as a lad, but he had cast the exciting experiences of this kind of life aside to retire to the seclusion of his farm at Mount Vernon. There his life was prosaic in the extreme, but Washington accepted it without a murmur.

VERY AMBITIOUS. He was one of the most practical of men, one of the least visionary of human beings, and in none of the diaries that he kept at this time is there a trace of the divine discontent, the extraordinary ambition or the genius that would have been anticipated in a man destined to be such a great leader of the people. That the selection of Washington was a wise one there is not the shadow of a doubt. The wonder is how the revolutionists came to decide that he was the proper person to take command of the almost hopeless tangled affairs of the colonies. The process of his selection is a matter of history. The divine inspiration behind it all is what amazes.

The hesitation of Washington in accepting the command of the Continental army has often been described and the words with which he finally assumed the office of Commander-in-Chief ring true of modesty: "I beg it may be remembered by every gentleman in the room that I this day declare with the utmost sincerity I do not feel myself equal to the command I am honored with." Washington meant every word of this, but he was willing to assume the responsibilities in view of the unanimity of the appointment. If Washington was modest, however, he was also brave. He was a good soldier even if he was not one of the most brilliant of generals. Devotion to the cause for which he was fighting was his inspiration, and by his patience, his enthusiasm, and his passion of patriotism he at last inspired a whole nation to victory.

If there is one point that stands out clearly upon the pages of revolutionary history it is the fact that to Washington belongs the credit of having achieved the impossible. He led his men against the British forces, but these were not the only battles he was compelled to fight. He was called upon to contend against dissension in his own ranks, and at the time when discords and dissatisfactions threatened to cause the disruption of the Continental army, it was his personality alone that saved the day. This is the secret of his power; the real justification of his fame.

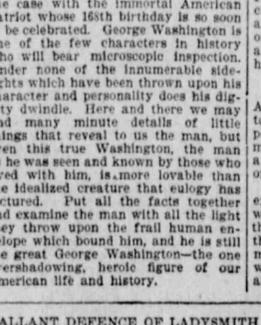
HIS RETIREMENT. After the great object of his life had been attained the commander retired, like Cincinnati, to his farm and private life. In his modesty he believed that he had closed the door upon public affairs, but the people had other claims upon him, and by almost unanimous acclaim he was recalled as first President, to institute the beginnings of the government, in the doing of which he was to set his name forever upon the new country. He was called in any brief space to give a proper estimate of Washington's character. That he had a temper that sometimes outraged itself into the meetings of the Cabinet, is a matter

that cannot be denied. He was a man who was particularly sensitive to criticism and the utterances of the opposition press often inflamed his passions. In spite of this, however, he was most magnanimous and could bear no lasting resentment against any man. Even those who nagged and attempted to thwart him during the days of the war he afterward helped to positions of emolument and distinction. Washington's mother was a great trial to him, but he was a good son and treated her most generously. She was far from refined in her appearance and was much given to smoking a pipe and gambling. In her firmness that characterized the son appeared as unreasonable obstinacy, but he bore with her and through experiences that must have tried his soul he remained always respectful, gentle and affectionate.

Much has been said in regard to Washington's unbelief in matters of religion, but his position in relation to spiritual things is one that is easily explained. He was an unbeliever, but he was most tolerant of the beliefs of others. Fawkes Day he interfered and expressed his surprise that the officers and soldiers should have been so "void of common sense as not to see the impropriety of such a step." From the very first Washington threw his influence in favor of religion, and yet no act of his indicates that this position was taken with a view to winning popularity. Memoirs and valet reminiscences have made more than one popular idol totter on its pedestal, but this is not the case with the immortal American patriot whose 153rd birthday is so soon to be celebrated. George Washington is one of the few characters in history who will bear microscopic inspection. Under none of the innumerable side-lights which have been thrown upon his character and personality does his dignity dwindle. Here and there we may find many minute details of little things that reveal to us the man, but even this true Washington, the man as he was seen and known by those who lived with him, is more lovable than the idealized creature that eulogy has pictured. Put all the facts together and examine the man with all the light they throw upon the frail human envelope which bound him, and he is still the great George Washington—the one overshadowing, heroic figure of our American life and history.

VERY LIBERAL. In his army days when the New England troops desired to burn an effigy of the Pope in celebration of Guy

WHEN HISTORY IS WRITTEN, THE GALLANT DEFENCE OF LADYSMITH WILL FORM ONE OF THE MOST INTERESTING CHAPTERS.



THE WAY THE PATRIOTIC MAIDEN CELEBRATES THE BIRTHDAY OF THE FATHER OF HIS COUNTRY.