



A WAR FOR EVERY YEAR.

SOME OF THE GREATEST IN ALL HISTORY INCLUDED IN THE LAST CYCLE OF STORM AND STRESS.

There would be to the lover of his kind be little pleasure in recording of the nineteenth century that it surpassed all its predecessors in the number, magnitude and destructiveness of its wars. Nor, indeed, are we sure that such a record would be true. It is, however, impossible to declare the century a peaceful one, though it opened with a notable cessation of war, and has closed with a more notable essay at universal peace. If we cannot point to a new declaration of war in each one of the hundred years, we must declare with Halfred the Bald, "In another 'twas multiplied three times." The unexampled progress of the world in civilization has resulted in greater complexity of the political relationships of the nations, and in bringing each nation into more direct contact with others and with a far greater number of others, and these conditions, amid the persistence of elemental passions, evil as well as benign, have inevitably widened the opportunity for war.

NAPOLEONIC CONFLICTS.

The century began with a sort of intermezzo in the Napoleonic wars. France made, in its first year, peace at Lunéville with Prussia and Austria, on the basis of monstrous spoliation; with Spain, Naples and Russia; and with England, after the latter had driven her out of Egypt and destroyed the Danish fleet. In the same year, however, France began war against Hayti, and Russia conquered Georgia, and the United States and Tripoli engaged in open war. The next year saw rebellion and French intervention in Switzerland. The next saw England again at war with France, and likewise with the Marhattas. The year 1804 saw Decatur's heroism at Tripoli, France's attempt to invade England, Spain's war against England, and Serbia's rising under Kara George. Ulm, Trafalgar, Austerlitz and Presburg are the landmarks of 1805, and Jena and Auerstadt those of 1806, while in the latter year Russia waged war on Turkey, and England regained possession of the Cape.

Eylau, Friedland, the Tilsit spoliation and the bombardment of Copenhagen filled 1807, with France's invasion of Portugal, which latter act invited the coming of the victor of Assaye and opened the sure road to Waterloo. The next year saw Bonaparte's aggressions on all sides, the advent of Wellesley in the Peninsula, and Russia's conquest of Finland, Saragossa and Talavera, Aspern and Wagram, and the peace of Schönbrunn, tell the tale of 1809, followed by Torres Vedras, the Russian campaign in the Balkans, Hidalgo's war for Mexican independence, and the outbreak of the revolutions throughout South America in 1810. Tippecanoe, Albuera and the slaughter of the Marathas were the widely diverse war notes of 1811, stern preludes to the tremendous struggles which were to begin with the next year.

FOUR YEARS OF GREAT WARS.

The first supremely great episodes of nineteenth century militarism bear date of 1812. In that year began the inconsiderate war between the United States and Great Britain, which started the naval gauds of the world and established a new sea power of serious magnitude. Bonaparte's disastrous Moscow campaign shattered his strength and prestige beyond repair, and Wellington's remorseless prosecution of the Peninsula war made omeans of Waterloo on a large and clear.

The next year saw Perry's victory on Lake Erie, the rising of the German people, the crushing of Bonaparte at Leipzig, and Wellington's invasion of France "past the Pyrenean pines." In 1814 came the battle of Lake Champlain and the restoration of peace between America and Great Britain; the fall of Paris and abdication of Bonaparte. In 1815 was fought the post-bellum battle of New-Orleans, Decatur's congress to the Barbary States, Milner's operations to reverse the revolt of Serbia; and the Congress of Vienna was held and the Holy Alliance was formed. But above all rose the one incomparable event of Waterloo.

REVOLUTIONS AND CONQUESTS.

After the "world's earthquake" a calm, with minor tremors. The British bombardment of Algiers, the crushing of the Marhattas, the Seminole War and the triumph of Bolivar at Bogota were the four chief military incidents of the next four years. But in 1820 came revolution in Portugal and revolts in Spain and Naples, and the next year saw revolution in Piedmont, Turin's revolution in Mexico and the beginning of the heroic struggle which set Greece free once more. The next year saw the infamous Congress of Verona, the separation of Brazil from Portugal, the rise of Santa Ana and the gratifying progress of the Greek war.

The name of Marco Bozzaris illumined 1822, despite the shame of France's suppression of constitutionalism in Spain at the behest of the Congress of Verona. Then came the death of Byron, the British war with Burma and the final fall of Spanish power in all of South America. The Greek war went on through 1825 and 1826, and in the latter year the Janissaries were massacred and Russia and Persia began a war. Navarino gave hope to Greece in 1827, and Russia overran much of Persia, compelling a spoilsive peace treaty in the next year, in which latter Russia renewed her aggressions upon Turkey. This interesting era ended in 1829 with Turkey's recognition of Greek independence and her spoliation by Russia under the peace treaty of Adrianople.

Promptly enough another series of wars began in 1830 with the French conquest of Algiers, the July revolution in France, the Belgian revolution, which was soon crowned with independence, and revolts in Brunswick, Saxony and Poland. The next year Poland was crushed, revolts in Modena and the Papal States were crushed by Austria, and the Egyptian invasion of Syria began. In 1831, another Carlist war, and the Russian conquest of Samarkand occurred in 1838, and then a breathing space was had in 1839, with only a Dalmatian insurrection and the suppression of revolts in Spain.

END OF THE CENTURY CONFLICTS.

The major wars of the last years of the century began in 1841-45, with that between China and Japan, which placed the latter among the great military Powers of the world. In the same years the Philippine rebellion against Spain occurred. France proceeded to the entire conquest of Madagascar in 1855, and another Cuban rebellion began. The next year saw the foolish and futile Jameson raid, the British suppression of Ashante horrors, the end of Italy's Abyssinian enterprise in the disaster of Adowa, the advent of Weyler, the Butcher, in Cuba and the progress of the Anglo-Egyptian expedition for the redemption of the Sudan as far as Dongola. In 1897 came the troubles in Crete, ending in the liberation of that island from Ottoman misrule; Greece's disastrous attack upon Turkey; the Anglo-Indian war with the hill tribes of the Afghan frontier, and Germany's seizure of Kiao-Chau.

A war of worldwide import was that of 1898 between the United States and Spain, resulting in the expulsion of the latter Power from the Western Hemisphere, of which it once claimed to be sole lord, and the great expansion of the territorial possessions of the United States. In the same year Omdurman and Khartoum were taken and the Sudan redeemed, and there occurred the Tagal rebellion in the Philippines, the beginning of the British-Boer war in South Africa, the final extinction of Mahdism in the Sudan and the Czar's Peace Congress of the World at The Hague. Finally the century went out with the Boxer outbreak in China and the invasion of that empire by half a dozen of the Powers for justice, vengeance, loot, conquest and what not, in an ominous campaign, the end of which is not yet seen.

Such is the war and peace record of the nineteenth century. It is a bloody one, yet may it largely be said that "these dead have not died in vain." The vested iniquities of many centuries have been swept away by the hot breath of war, millions of slaves have been set free, nations have been redeemed from alien despotism, the great principles of peaceful mediation and arbitration have been securely established, and, on the whole, civilization has gone forward, both upon the wings of peace and upon the thunderous passage of arms.

If the century has not been more free from bloodshed than its predecessors, it has at least been more free from blood shed in vain, and has brought the world perpetually nearer to the hope for century end when the Christmas bells shall ring.

Ring out the thousand wars of old—
Ring in the thousand years of peace.

W. FLETCHER JOHNSON.



AMERICAN INVENTIVENESS HAS PROVED A POWERFUL FACTOR IN THE NATION'S MATERIAL PROSPERITY.

By EDWARD W. BYRN, A. M.,
Author of "The Progress of Invention in the Nineteenth Century."

By special arrangement with "The Scientific American," The Tribune is able to reproduce a library of articles on the progress of invention, as collected by Mr. Byrn. The portion selected relates more particularly to advances in machinery.

When the nineteenth century began the United States was of limited territory, flanked by England on the north, Spain on the south and France on the west, a storm-swept coast on the east, and a hostile and ubiquitous host of aborigines in our midst. The necessities of life were still directing the energies of the early settlers almost entirely to agricultural pursuits and to supplying by the quickest methods the immediate wants of food and shelter. It is not surprising, then, that most of the notable steps of invention at this time should have been taken in foreign lands. As, however, the American people were quick to appreciate and adopt anything of practical value, and as in later years United States patents have been quite generally taken for the most important granted throughout the world, these foreign inventions have become working assets of industrial progress in the United States which cannot be ignored in any estimate of the causes of its growth.

In the very beginning of the first decade . . . Louis Robert, of France, devised a machine for making continuous webs of paper, which rendered the web perfecting printing press possible; Jacquard, also of France, invented a pattern loom. Somewhat later, Trevithick, an Englishman, built the first steam locomotive; and Winsor, his countryman, organized the first gas company.

STEAM NAVIGATION ESTABLISHED.

In our own land, Colonel John Stevens and Robert Fulton successfully established steam navigation and laid the foundation for the present great commerce and splendid naval equipment of the world.

In the second decade (1810-'20) König's rotary steam press marked a great advance in printing; Stephenson built his first locomotive; Fulton built the first steam war vessel; . . . Sir Humphry Davy invented the safety lamp, the English engineer Brunel supplied in civil engineering notable improvements in the methods of driving subterranean and submarine tunnels; . . . the American ship Savannah utilized steam for the first time for crossing the Atlantic, and Blanchard invented his lathe for turning irregular forms.

In the third decade (1820-'30) Faraday converted the electrical current into mechanical motion, and in experiments in the liquefaction and solidification of gases laid the foundation of the modern absorption ice machines; pens began to be cheaply made on Wright's machine; the first public passenger railway was opened in England between Stockton and Darlington; . . . magnet; Professor Henry perfected the same and rendered it effective for all useful purposes in the arts. Barlow's electrical spur wheel, Ohm's law of electrical resistance, Becquerel's electrically operated pendulum, marked other notable steps in the electrical field. Friction matches were introduced by John Walker, Neilson's hot blast for smelting iron was the greatest of the early steps in metallurgy, Stephenson's locomotive, the Rocket, took the prize for speed; the Stourbridge Lion was imported, and was the first practical locomotive to be put to work in America; . . . and Ericsson supplied the steam fire engine.

ELECTRIC MOTOR INVENTED.

In the third decade (1830-'40) the United States began to show the fertility and resourcefulness of its inventors to a remarkable degree. Professor Henry telegraphed signals to a distant

EDUCATIONAL PROGRESS RAPID

DIFFUSION OF ELEMENTARY INSTRUCTION THROUGHOUT THE CIVILIZED WORLD ITS MOST IMPORTANT FEATURE.

By PROF. WINTHROP MORE DANIELS, A. M.,
Political Economy, Princeton University.

Rapid and varied as the educational progress of the nineteenth century has been, there is one of its movements which in scope and importance outstrips all the others combined—I refer to the widespread diffusion throughout the civilized world of rudimentary instruction. For whatever else in the nineteenth century may be forgotten, future generations will not forget its radical dismemberment of the empire of illiteracy. To realize this change fully, we must look for a minute at the situation in 1801. Statistics of illiteracy are not forthcoming until about the middle of the century, but it is scarcely an exaggeration to say that throughout Central Europe the ability to read and write was then almost as rare as to-day it is common. The prevalence of rudimentary education has in a way alienated us from the experience of the past, and so sophisticated have we become that to-day we have to think twice to catch the point of Dogberry's dictum that "to be a well favored man is the gift of fortune; but to write and read comes by nature."

It goes, of course, without saying that this diffusion of the rudiments of letters is the outcome of the public school system, itself the most widespread social institution of the century. Common schools there were, it is true, in preceding centuries; but how few and transient these cases in the wilderness of illiteracy were prior to 1801 a cursory review will tell. In the early sixteenth century, as the outcome of the Reformation, common elementary schools were instituted in Saxony and other German States, and in certain of the Swiss cantons. Luther and Calvin in appealing "from an infallible Church to an infallible book," and the right of individual judgment thereupon, realized that popular education was an indispensable bulwark to the reformed system. In many parts of Holland and Sweden, also, the common school followed in the wake of the Protestant movement. But after the Thirty Years' War had swept over Germany scarcely a vestige of the common schools remained. It was only in small out-of-the-way corners, such as parts of Holland and Switzerland, that the young educational shoot took permanent root. In Scotland it is true that the parish schools planted by Knox's fiery zeal as an auxiliary to the Kirk lived on; and as late as 1776 Adam Smith could say of them, "In Scotland the establishment of such parish schools has taught almost the whole common people to read, and a very great percentage of them to write and account."

COMMON SCHOOL SYSTEM.

Not least important of these beginnings was the common school system of our Northern American colonies, especially New-York, Massachusetts and Connecticut—a system seemingly indigenous to New-England, and transplanted from Holland to New-York. Despite these exceptional instances of elementary schools reaching the bulk of their respective populations, the general situation in England, France, Germany and the rest of Europe in 1801 was an almost unbroken prevalence of general illiteracy, tempered by the enlightenment of the nobility, the wealthy, and the professional orders, on whose patronage the schools devoted to superior education depended. The public conscience excused its neglect of the masses by meagre doles for the religious instruction of a fraction of the poor. Even where common schools existed they gave in general only the most rudimentary instruction in "the three R's." They were under no central control or inspection. They had no uniform organization. There was little or no provision for testing the capability of the teachers. Everything requisite to make instruction efficient, attendance general, school influence pervasive or financial support adequate was lacking.

The leadership in the task of providing universal elementary instruction must be conceded to Prussia. Frederick the Great as early as 1763 had by decree made school attendance universally obligatory upon children, and had backed up the decree by specific provisions for general financial support of teachers and competent instruction. The legislation, though falling largely of its aim, blazed the way for subsequent advances. The present system may be said to date from 1794, when the Prussian Government took direct control and supervision of all schools, public and private, whether concerned with elementary or superior education. Since then the requirement of compulsory education in elementary studies has been enforced with ever increasing vigor. In point of completeness the Prussian system is still unrivaled, combining State supervision and inspection of schools and teachers, providing seminars for the preparation of qualified instructors, enforcing with thoroughness the requirement of compulsory attendance, and correlating into a unified whole the primary and the superior education of the kingdom.

France, notwithstanding her early adhesion to democratic principles, was unprovided with elementary public schools until 1833. In that year, under the leadership of Guizot, for whom Victor Cousin had investigated the German school system, public schools for primary instruction were first instituted. Here also the central Government took direct control, the outset of power of supervision and control.

HORACE MANN'S GREAT WORK.

In characteristic contrast to the Prussian and French systems of national public school establishments with central administrative control was the system of school administration to be found at the same time in the northern American States and in England. In the first the local governments had practical control over the public schools. In England the elementary schools were controlled by two voluntary religious societies, the earlier composed of Nonconformists and the later of Churchmen. But neither of these societies exercised any common superintendence, imposed any code of regulations nor enforced any uniform standards of instruction. The problem presented in New-England was to reform elementary education by wresting from the towns, and particularly from school districts, their short sighted and misused power of control. In old England the more serious problem was to provide instruction for the masses and at the same time to steer clear of ecclesiastical prejudices. In America it was Horace Mann, who, in the fourth decade of the century, undertook and accomplished in Massachusetts the essential reorganization of the public school system. He secured in 1839 the establishment of the first normal school for the preparation of teachers. He secured also provisions for testing the qualifications of teachers, and introduced the selective system of grading, general superintendence and uniform administration. In Connecticut, and afterward in Rhode Island, Henry Barnard accomplished essentially what Mann had done for Massachusetts. Nor was the influence of these two reformers confined to the States mentioned. The inherent

REDUCTION OF ILLITERACY.

The net result of the nineteenth century's establishment of common schools and compulsory attendance thereon may be grasped in a nutshell, if we compare the areas of illiteracy in 1801 and 1901. In the earlier year it is doubtful whether there was any considerable region apart from Scotland, the northern States of America, and the German principalities, where the illiterate population did not outnumber those possessed of the rudiments of education. To-day the area of enlightenment includes Central and Western Europe, Western Asia, and the United States, and the blacks predominate in numbers in the South). In Italy and Austro-Hungary the illiterates probably are in the minority, though forty years ago they were the majority. In Germany, where the illiterate population did not exceed one sixth of the total, the illiterate nations are chiefly Russia, Spain, Turkey and the unprogressive nations of the Orient and of South America. If the educational progress of the nineteenth century on its external side is most clearly marked by the diminution of illiteracy, on its internal side the real advance of the century is best exemplified in the educational movements which collectively we may term the extension of the educational franchise. Under this heading we may include (1) the educational reforms which have been effected in the home of education; (2) the specialized instruction for defectives and delinquents, typified, the one in schools for the blind and for deaf mutes, the other in the industrial schools; (3) the growth of the higher education of women; (4) the popularization of knowledge through the extension of various voluntary agencies, such as the Y. M. C. A. and the university extension centers.

EDUCATIONAL BENEVOLENCE.

The philanthropic impulse of the century has especially manifested itself in educational work for defective and delinquent classes, and in its generous provision for the enlightenment of backward or half-civilized races. The Peabody and Slater funds in the United States, as well as the State support of colored schools, and Federal support of Indian education, instance our participation in this kind of educational benevolence. More generally wide-spread throughout Christendom has been the growing interest in the instruction of the blind and of deaf mutes. In 1784, while Hartwood had the honor of the first school for the instruction of the blind, the first school was taken under State patronage in 1791. Italy was chiefly instrumental in founding in Berlin, similar institutions, and shortly after at Liverpool in 1791, and in this country the year 1829 saw founded in Boston the first established school of the kind. To-day the United States alone there are nearly forty of these schools, almost four hundred teachers, and more than three thousand pupils. The instruction of the blind, the deaf mutes, the feeble minded, the insane and the criminally disposed—who are of necessity discarded from the haul which ordinary educational agencies draw from the depths of ignorance.

EDUCATION OF WOMEN.

The opportunities for the collegiate instruction and professional training of women have been

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