

# The TWENTIETH CENTURY'S DEBT to the NINETEENTH

IN A swift review of what has been accomplished in the century now coming to its end one is most forcibly impressed with the fact that all knowledge, progress, civilization, is cumulative and continuous. No century or cycle of the world's moon stands by itself alone and complete; no great invention has sprung full armed from the head of Imperial Jove; but all the centuries since the beginning of time have been interdependent, forming an unbroken (though perhaps at periods interrupted) chain, making, if not for perfection, at least for a higher plane in the cosmic scheme of civilization.

The divine torch of human progress, lighted at the primal flame bestowed by the Creator, has been passed from hand to hand, and in even a brief resume of what this century has done for its successors its indebtedness to the past cannot be ignored.

At the close of the seventeenth century, for example, "the stupendous mind of Newton and the penetrating genius of Locke had laid their systems of matter and mind before the world." And who can gauge the influence of such minds as Franklin, Buffon, Cuvier, Count Rumford, Paley, Washington, Jefferson and a host of others who lived and applied their talents to the solution of problems having a worldwide significance in that formative period known as the eighteenth century? Some of them wrought blindly, as the revolutionists of France; some intelligently, as the colonialists who rose against the usurpations of King George III; but the iron was on the anvil, and they helped to forge it into the perfect product of today.

Electricity, that great primordial force which has revolutionized the world, was dimly apprehended more than 2,000 years ago. Step by step the inventors of the past groped their way along, in 1729 discovering the distinction between conductors and nonconductors, in 1745 giving electric shocks to skeptics and even talking of applying the life giving force to the growing of vegetables.

The whole world knows of Franklin's experiments in bringing lightning from the clouds, but few are aware of the fact that in 1739 one Jonathan Grouet of Massachusetts invented a telegraph by which he sent a message and received an answer over a distance of 99 miles. Experimentation went on in England, France and Germany, each individual investigator contributing something toward the final result until, leaping across the intervening years and crossing the boundary between the last century and this, the electric spark became endowed with almost human capabilities of speech when, in 1837, Morse filed his caveat for his great invention, the instrument which was destined to transform the world and place far distant countries in close communication.

Still, though it has redounded to our credit that Morse was an American, in strict justice to the truth we cannot claim that he was the sole inventor of the telegraphic instrument. Mighty minds in different lands simultaneously worked out the problem, and, as in the case of the most recent development of the science, wireless telegraphy, the men who appear most prominently identified with the invention were merely adapters and intelligent co-ordinators. And so with submarine telegraphy. Though Morse laid his first cable in 1842 and Colt successfully operated one between Fire Island and New York city in the same year, there were not the first attempts. But no amount of disparagement can rob Morse and Marconi of their laurels or deprive Field of the title bestowed by John Bright when in 1857, after years of effort, he had spanned the Atlantic as "the Columbus of modern times who by his cable had moored the new world alongside the old."

So, also, in regard to the discovery of the energy latent in steam: first patent for the steam engine was issued in 1765, but the century was three-quarters gone before Watt's important improvements were perfected. In this country, in 1779, Oliver Evans designed which he placed in flour and saw mills, and in 1804 he built a flat bottomed boat, mounted it on wheels, drove it by its own engine to the river bank, and there launched it and propelled it by means of his engine and paddle wheels.

Navigation by steam attracted the attention of inventors centuries ago. In 1725 Jonathan Hull patented a marine engine for towing vessels. In 1781 James Rumsey drove a boat on the Potomac at the speed of four miles an hour, and in 1783 William Henry of Chester, Pa., tried his model steamboat on the Connecticut. But it remained for Robert Fulton to perfect the first steamboat sufficiently for practical purposes, and his experiments were conducted in the first decade of this century. In 1802 he built a steamer on the Seine, and on this side of the water Colonel John Stevens of New Jersey, 1804, had a successful

ful screw driven steamer in operation. In 1805 Fulton built his Clermont, which in 1807 made its successful trip from New York to Albany at a speed of five miles per hour.

Ocean navigation by steam virtually began with Stevens' trip to the Delaware river in 1808, but the first steamer to cross the ocean was the Savannah, which sailed from Savannah to Russia, via England, in 1819. In 1825 a steamer went from England to Calcutta, and in 1833 the Sirius and Great Western left Cork and Bristol, respectively, for New York, which the latter reached in 15 days. Two years later the first "liner" was started by the Cunards, and in 1847 the first transatlantic screw steamer, the Massachusetts, was taken across by Captain R. P. Forbes, who then was on his way to introduce steam vessels into Chinese waters.

A search for the first railroad might take us back almost to prehistoric times, but the first steam railway was opened in England, 1825, though Stephenson had a locomotive running in 1814, and in 1829 one that attained a speed of 35 miles an hour. The first steam railroad in this country was the Baltimore and Ohio, 14 miles long, opened 1830, the year in which the late Peter Cooper built his locomotive which attained the speed of 18 miles an hour, and was not only the first one built this side of the Atlantic, but the first to draw passengers in America.

From these small beginnings has developed the vast railway system of the United States, with its million miles of roads and billions of capital. When Colonel John Stevens of Hoboken went before the legislature of his state to advocate the building of railways in 1812, he was laughed at because he predicted that an engine could attain to a speed of 40 or 50 miles an hour, and said, "I can see nothing to hinder a steam carriage from moving on these ways (rails) with a velocity of 100 miles an hour."

The history of the bicycle and the automobile is exactly similar. But if progress in terrestrial transport by steam has been slow, what shall we say of aerial transport or navigation of the atmosphere? Aeronautics as a science was studied faithfully centuries ago, and its mythic chronicles take us back to the times of the ancient Greek legends, while it is a tradition that Dante once rose and floated by means of artificial wings. It was the discovery of the properties of hydrogen gas in 1768 that boosted aerostatics into a practical plane and made possible the suspension of a balloon in air. The first ascension of the Montgolfiers in 1783 was by a hot air balloon to a height of 200 feet, but the same year a balloon inflated with hydrogen gas went up about 3,000 feet and remained aloft nearly an hour. These balloons were captive, and the first ascent by a human being was Oct. 15, 1783, the first free ascent with human freight being on Nov. 2, same year, in a hot air balloon which sailed over Paris and made a landing safely.

The following year there were 52 ascents, and in 1785 the English channel was crossed, one of the passengers being an American, Dr. John Jeffries of Boston. It has been amply demonstrated that one may go as high in a balloon as the rarefaction of the air will permit, and also remain suspended for a long period, but we are obliged to confess that after more than a century of experimentation man has not yet perfected the dirigible machine that will enable him to navigate the upper atmosphere as readily as he now moves about on land and water. Aerial navigation is an accomplished fact, has been for many years, and the next great triumph of mind over matter will be when dirigibility is secured. To this end many great minds have been working for the past ten years and more. Professor Langley in the United States has his "aerodrome," Maxim in England his "aeroplane," but the greater success of Santos Dumont in France and Count Zeppelin in Germany with their balloons of the airship type would seem to show that the two first named are working in the wrong direction. Dumont has sailed around the Eiffel tower and over Paris at will, while Zeppelin has made successful ascents from Lake Constance and returned without accident. It is interesting to note that while balloon voyaging preceded travel by both steam and electricity, yet in the end these last will be important factors in solving the vexed problem of how to navigate the air without danger to the navigators.

Doubtless man's greatest achievements have been in the domain of physics, and within its scope we may reckon photography, which, so far as can be ascertained, pertains wholly to this century. It was about 70 years ago that Daguerre was experimenting, but in 1835 Professor J. W. Draper of the University of New York published his paper on photography and seemed on the highroad to success when the Frenchman finally succeeded in fixing the fugitive image on the silver plate in the camera obscura, and photography was born in 1839—that is, a certain phase of it was—but the greatest triumph came when the negative on glass, printing and fixation on paper, made indefinite duplication of pictures possible.

So far we have noted the arts and processes of peace; but in the improvement of instruments and engineering of destruction that make for war equal advance has been made. At the opening of the century our armies were equipped with flintlock muskets and obsolete smooth bore cannon, though 900 years had passed since artillery was first used by the Chinese, and argu-

ments always won the battles, and others were not slow in adopting them. So it was with rifled guns, large and small, and also with respect to improved or strange types of naval vessels.

It was within the memory of many now living that the famous naval duel between ironclads—Merrimack and Monitor in 1862—showed the great powers how useless were the wooden walls of their greatest ships and revolutionized the maritime warfare of the world.

Since then has been the era of iron ships and steel clad floating fortresses, of gigantic guns and armor plates. The race between the builders of battle-

better off than in the days of the old Ironsides and Constitution.

The same may be said of the invention and multiplication of torpedo boats and torpedo boat destroyers. Our government places an order for a certain number of the former to schedule, say, 20 knots, and before they are off the stocks England comes out with a "destroyer" that can knock them all into cocked hats with its speed of 40 knots an hour and consequent invincibility. Then, again, when any certain nation or government shall have fully equipped itself with a navy perfect in every way the invention of the aerial "destroyer" renders it impotent in a de-

force, which has not yet yielded all its secrets to man. It is a speaking commentary on the rapidly with which electric inventions have been adopted and assimilated that the two foremost in their promulgation, Edison and Bell, are still living and hardly past hale middle age. To the one we are indebted for hundreds of inventions, by which he has established a record positively unrivaled in this or any other century; to the other the world points as the chief promoter of the telephone, which was first exhibited to the public in 1877. The same year brought forth Edison's phonograph, and two years later the first electric railway was constructed and exhibited in Berlin. This was followed closely by Edison and Field's electric railway, and today there is no important town or city without its system of transit by the underground or overhead trolley.

The electric light was produced by Davy in 1813, but for many years was regarded merely as an experimenter's plaything until suddenly there leaped out the arc and incandescent systems which have converted night into day.

The recent advance in electric science has been by leaps and bounds, yet each succeeding stage in its progress has been the result of long studied principles, each new discovery rendering that which followed easier. Every independent worker has aided every other until the cumulative product is apparent at the end of this, the world's most wonderful century.

Even in a cursory review of the century's achievements mention should be made not only of what it has done for America, but what America has done for the century. It is patent to all that no notable discovery or invention has been made that an American did not have a hand in. And this is stated not in the spirit of boasting, but as a simple fact. Not alone in the realm of science, but in art and literature, particularly in the latter, have Americans won the recognition of the world. The first book was printed in the colonies in 1639, not long after the first college was established, yet it was not until well into this century that a distinctively national literature was evoked. But it is no longer the vogue in Europe to ask who reads an American book. There are names in our literature that the world will not willingly let die, and the promise for the future is even greater than when Irving and Prescott, Bancroft and Longfellow, wrote.

The list of our authors who have achieved universal fame would in itself fill columns; equally true is it of those who in other walks of life have won renown.

The very fulness of this century is provocative of discouragement, for, after the wonderful things that have been achieved, what will be left for coming generations to do? History teaches that the pendulum of progress swings only so far onward, then swings back; but, again, history has never shown us another century so charged, so vital, with the spirit of progress. It cannot be that all these inventions, these discoveries, shall go for naught. There is no domain, except that of the air, in which man has not apparently mastered nearly all the great mysteries. The age of iron has been succeeded by that of steam, of electricity, of the Roentgen rays, and, reaching forward for new worlds to conquer, it is not improbable that man will take hold of the ethical and spiritual problems which have been waiting since the birth of time for their solution. Humanitarianism—that kind which makes for philanthropy—has reached a higher plane than ever it held before, and it may be that, standing on the threshold of a new century, with material and physical questions no longer to be settled, the great minds of earth will ponder the well being of their fellow men.

Mankind in the nineteenth century has done a great deal for the advancement of the twentieth; it would seem the twentieth century to take hold and do something for mankind. Turn about is fair play. FREDERICK A. OBER.

## A DOG JEKYLL AND HYDE.

Ernest Seton-Thompson, in a lecture recently, went so far as to place in a pointer—a genuine canine Dr. Jekyll and Mr. Hyde. The dog lived in New York and was remarkably well behaved and was particularly friendly toward the children in the well bred set in which his lot was cast. His only idiosyncrasy was his habit of disappearing for a day or two at a time. During one of these periods of disappearance a dog was caught in a distant section of the city who was vicious, degenerate and particularly savage toward children. He was killed, and the owners of the supposed good dog found upon investigation that their well behaved and beloved pet was one and the same with the vicious beast that had been shot.

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The Marquis of Lansdowne in 1866 succeeded to the marquessate and estates, which extend over nine counties, include close upon 140,000 acres and bring in a rent roll of between £50,000 and £60,000 per annum.

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## THE ROMANCE OF NAPOLEON AND EUGENIE.

So many pamphlets, memoirs and books have lately been written about the first days of Napoleon III's reign and the wooing of his beautiful bride that the Spanish journalists have taken up this marriage, far from having been the outcome of a series of intrigues on the part of the illustrious Comtesse de Montijo and her daughter, did not at first meet with the approval of the ladies, who did all they could to escape from the compromising attentions of the prince president.

According to them, the first meeting of Eugenie and Napoleon took place long before the return of the prince to France—that is, in 1816, when they both saw each other at the house of a lady in London and were mutually smitten, the man because the girl was lovely, the girl because the man was an exile and had in his eyes a sadness which went to her heart. But Eugenie became afraid of this fresh born love, and for three years managed to dodge the enamored Bonaparte.

Most of the scenes which were said to have taken place in the forest of Chantilly—the fallen arbut and the defiance of Miss Howard, the mistress of the prince—all these stories, they say, are mere inventions, and the real scene which decided Eugenie's fate took place on Dec. 31, 1822, in the house of Princess Mathilde. She had a numerous company gathered round the monumental marble chimney-piece in her drawing room to welcome the coming of the new year, which announced itself as being likely to be most eventful for the Bonaparte dynasty. Among the guests were the trio of Spanish beauties, the Comtesse de Montijo, still handsome, though somewhat dumpy and fat, and her two lovely daughters.

At half past 11 the new made emperor entered the drawing room and admirably managed to find a seat near Eugenie, who looked radiant in a white velvet gown and a bunch of fragrant Parma violets in her brilliant golden hair. At 12 sharp, according to a French custom which lively Princess Mathilde still kept up in her hospitable house, each gentleman turned to the lady on his right and respectfully implanted a kiss on her brow after having asked for a permission which is never refused.

But at the very moment when Napoleon was about to perform the agreeable ceremony Eugenie uttered a sharp cry of pain and turned pale. "Oh, mother!" she murmured, "you have hurt me!" Then, recollecting herself, she lightly pushed back the emperor and presented her long white hand to his lips. "Sire," she said, "it is not the custom in Spain for ladies to grant such favors to gentlemen, even on New Year's eve." This was all that I can do for you," Napoleon kissed the tips of the taper fingers. Then he was heard to say, "Next year I shall have hand and brow as well." And the Senora de Montijo did not regret that she trod hard on the toes of her daughter.

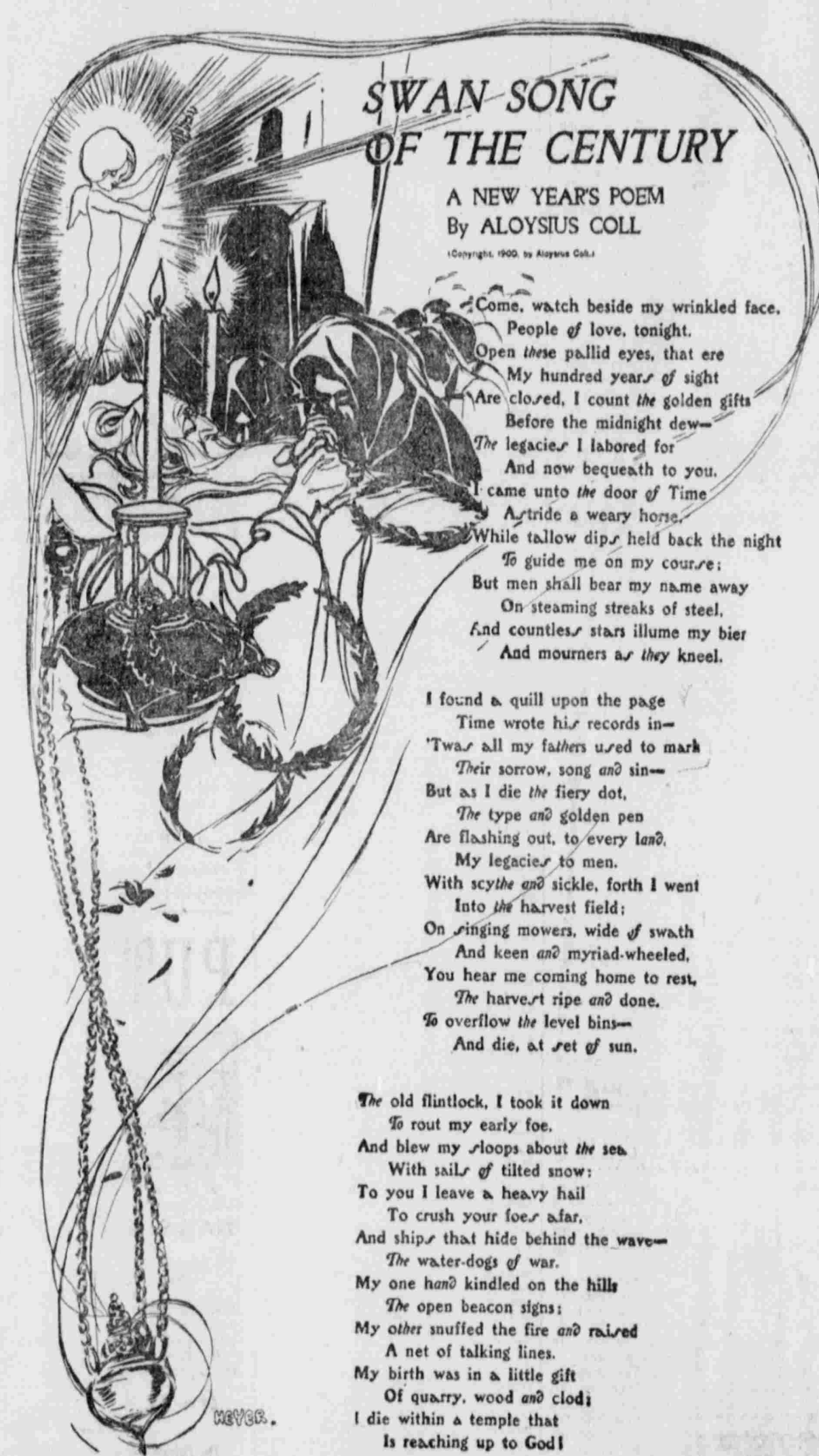
## SHE DIDN'T TRUST THEM.

A good story is told of Prince Waldemar of Denmark and his nephew, Prince George, governor general of Crete, who recently undertook an excursion together on their bicycles in order to visit the author Swedstrup at the village of Hellebak, near Helsingor. The royal cyclists were overtaken by a heavy shower and arrived at the villa in a deplorable condition, drenched to the skin. A maid-servant opened the door, eying the visitors with evident mistrust and saying that her master was not at home, but would probably return in an hour, and that she was quite alone. Great was her astonishment and discomfort when the strangers declared their intention of awaiting their host and entered.

With much hesitation, she led them into the parlor, placing chairs for them near the door and posting herself quite near them so as to watch every movement. The princes, highly amused at their comical situation, waited half an hour and then decided to return home, telling the girl to inform her master that Prince Waldemar of Denmark and Prince George of Greece had been in and visit him. Scrutinizing their wet and dirty clothes, the girl intimated that were making a fool of her and begged the gentlemen to give their real names. In vain they assured her and protested, and even after presenting their cards and a handsome tip the astonished maid could not bring herself to believe them and was not relieved until she had closed the door upon them.

## BERLIN'S MAGNIFICENT STREET.

Berlin boasts that Unter den Linden is the broadest street in any great city. It is 215 feet wide. The Ringstrasse in Vienna is 188 feet wide, the Paris Grand Boulevard 122 feet and the Andrássy strasse at Budapest 155 feet wide.



Come, watch beside my wrinkled face.  
People of love, tonight.  
Open these pallid eyes, that ere  
My hundred years of sight  
Are closed, I count the golden gifts  
Before the midnight dew—  
The legacies I labored for  
And now bequeath to you.  
I came unto the door of Time  
Astride a weary horse.  
While tallow dips back the night  
To guide me on my course;  
But men shall bear my name away  
On steaming streaks of steel,  
And countless stars illumine my bier  
And mourners as they kneel.

I found a quill upon the page  
Time wrote his records in—  
'Twas all my fathers used to mark  
Their sorrow, song and sin—  
But as I die the fiery dot,  
The type and golden pen  
Are flashing out, to every land,  
My legacies to men.  
With scythe and sickle, forth I went  
Into the harvest field;  
On ringing mowers, wide of swath  
And keen and myriad-wheeled,  
You hear me coming home to rest,  
The harvest ripe and done.  
To overflow the level bins—  
And die, at set of sun.

The old flintlock, I took it down  
To rout my early foe.  
And blew my loops about the sea.  
With sails of tilted snow:  
To you I leave a heavy hail  
To crush your foes afar,  
And ships that hide behind the wave—  
The water-dogs of war.  
My one hand kindled on the hills  
The open beacon signs;  
My other snuffed the fire and raised  
A net of talking lines.  
My birth was in a little gift  
Of quarry, wood and clod;  
I die within a temple that  
Is reaching up to God!

## PERTINENT POINTERS.

The late Senator Davis had a library of about 3,000 volumes, and it forms a large part of his comparatively small estate.

President McKinley has been smoking the same brand of cigar for 14 years. These cigars were sold him at \$7 a hundred.

The rumors that Prince George of Greece has been privately betrothed to Princess of Victoria of Wales are de-

nied in London because the Greek church strictly forbids the marriage of first cousins.

Jean de Reszke undergoes the severest training to keep himself and his voice in condition. He consequently can allow himself only few relaxations, but he owns, nevertheless, one of the largest and best private racing stables in Russia.

Colonel Charles W. Milner of the

Sixth United States Infantry, whom General MacArthur has just made military governor of the Island of Negros, has been in command of the Sixth ever since the battle of San Juan Hill, except before the regiment sailed for the Orient.

Senator Baker of Kansas carries a very curious pocket piece. It is a little crystalline cube, about an inch square, as transparent as glass. It is a piece of salt. Underneath the fertile soil of Kansas is the bed of a prehistoric

ocean. Ages ago the water of the ocean evaporated and left a solid mass of pure salt hundreds of feet under what is now the surface of the earth.

Of the late Sir Arthur Sullivan's charitable doings many instances are forthcoming. One secretary of a Sunday school in a poor Westminster district relates that he risked a penny stamp on an appeal to Sir Arthur for a subscription to the school's annual day in the country. There was no special claim on the musician, but the latter

sent a half guinea and thereafter never forgot to repeat the gift year by year.

The late Max Muller preserved his fondness for hard work to the end of his life. His "Six Systems of Indian Philosophy," a book of 600 pages, appeared in the year before his death. In conversation with a friend relating to Hindoo philosophy he commented admiringly on the wonderful acumen which had enabled Schopenhauer to recognize the immense philosophic importance of the "Upanishads," though

he had only a wretched translation of it.

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The adjutant general's department has on file many applications for retirement of officers who have served 30 years. Under existing law the president can at his discretion retire such

officers, but unless there is most excellent reason why an officer should not be required to remain in active service all such applications are being refused. It is said to be surprising how many officers of 30 years' service are anxious to leave the active list.

Five hundred motor carriages per year is the average output of a Paris firm for the last five years.

Cornmeal is the cow feed bought by a great majority of farmers when they are short of the grain ration.