



MAN'S AMAZING TOMORROW

by Hudson Maxim

SCIENTIST AND INVENTOR FROM THE VIEWPOINT OF TO-DAY'S ACHIEVEMENTS FORECASTS A FUTURE FULL OF MARVELOUS THINGS



MR. MAXIM DICTATING ARTICLE TO HIS SECRETARY

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WHEN primitive man crept from his warren, threw the long tumbled hair from off his eyes and stood in the sunlight, the world had a far different meaning for him than it has today for the civilized man, as he steps from his residence into the bustle and business of modern life.

Everything that moved the primitive man believed endowed with life. To him all sounds were voices, whether of the wild beast, the wind or the rum of waters.

By his needs he was compelled to grapple with the forces of his environment, whether of animal life or inanimate nature, and the history of man has been a history of subordination of all things to his use.

But man's upward march has been inconceivably slow and the time immeasurably long. It required eons for the dull brain and the unaccustomed hand to fashion the simple stone hatchet and the mighty architect who made the first shelter of logs and boughs, and he who first contrived a way to kindle fire by friction was a greater innovator than an inventor of the modern world. He who first hallowed a log with fire and made a boat accomplished a greater feat toward human advancement than the designer of a Dreadnought.

In the fierce struggle for existence man has won the mastery mainly because of his superior intelligence and skill in the

subordination and utilization of means supplementing his own relatively small physical powers. Primitive man, armed with his simple weapons and intelligence, in concerted action, soon made himself master of the animal creation.

But war has always been the greatest stimulus to invention, requiring, as it does, the defence of property, life and home on the one hand and offering on the other the coveted rewards of conquest. Since that remote time when our omnivorous ancestors climbed down from their abodes in trees and fought for place in their environment and fed on every living thing in earth and sea and sky the good things of life have been for those who fought for them. Through all the ages man has been the living flesh from off the bones of every breathing thing, and he is master now of all the earth, and although far advanced on a very high intellectual plane yet there remain before him duties and achievements which shall far transcend anything he has yet accomplished.

Human advancement all over the earth has been marvellously rapid during the last century, yet it will be still more rapid in the next century. Man has but recently broken the chains of superstition upon the demons and dragons of his imagination. But he is not entirely free even yet.

Mighty China, still held in the iron grip of superstition, stands halting and trembling upon the verge where science replaces magic and mystery.

A little while ago invention was re-

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garbed with distrust and the inventor was frequently looked upon as a malefactor and treated accordingly. The inventor of the umbrella was stoned. The builder of the first steamboat in England was mobbed and his boat destroyed. Even at the present time the taxes and annuities imposed upon patents in many countries practically amount to penalization to the inventor. But inventors are agents of honor and reward and science is now the dominating spirit.

Future progress will be, as in the past, along the lines of man's greatest needs, with the increasing pressure of population and the inevitable exhaustion of our natural resources—coal, iron, petroleum, timber and, most important of all, the soil—resources must be had to inventions which lie far beyond our foresight. We must invent to meet the issue of civilization must perish and mankind revert again to barbarism in scanty, scattered tribes of hunters and fishers.

The world's supply of coal and iron, it is estimated, can at the longest last but a few centuries, and the soil is being rapidly impoverished, disintegrated and carried in the wash to the sea. Cortez found Mexico a garden and the hills covered with forests. The Spaniards cleared the forests, and fields and hills are now largely a barren waste.

Come with me, then, and let us peer a little beyond the frontiers of present knowledge and stare into the future with a "wild surmise," forecasting what man shall do to stem the tide that is setting against him, while we believe he still shall conquer greater and greater favours at the hand of destiny as the world wears and wastes beneath his tread.

Achievement will not keep us waiting.

for in this age of marvels, with which the inventor is constantly surprising us, it does not do to sleep too late in the morning, else when we awake we may find ourselves laggards in the subject near. Achievement now runs on so fast that it often outpaces the adjustment of our senses, and though we pinch ourselves to prove our wakefulness still the sense of dreaming intrudes on consciousness and harrasses conviction.

Many of us in still full life are able to go back for enough in yesterday to view the present through the wide eyes of wonder, while we are so fortified with expectation for the morrow that we look a second time to be assured whether or no that flock of clouds that skirts the sunset may be a fleet of airplanes climbing up the sky.

The flying machine is no longer confined to the realm of fancy or imagination, but the conquest of the air is already far advanced and the era of practical utility is near.

The wonder of yesterday becomes the commonplace of today, and the marvel of today will be commonplace tomorrow. The debt we owe to the inventor is the difference between all that is ours to enjoy in modern civilized life and the indigence of barbarism. But for the inventor we should still be denizens of the unbroken forests, clothed in the skins of beasts.

Like Antony, the inventor has with his "broad sword quartered the world," and "on green Neptune's back with ships made cities." He has been highways through the granite hills and levelled the world with the iron rail.

With his instruments of science the inventor has sounded the depths of the eternal skies. He has discovered whence Orion came, has felt the pulse of Aetna, and he knows the fortune and the fate of a million worlds. He has seen them quiver out of chaos far beyond the troubling touch of time, and he views their onward drift toward death in the infinite night and cold of immensity.

He foresees our own bright sun a paling ember on the hearth of time and reads our destiny in the scroll of the Milky Way by light that left its source so long ago that it was already old upon its flight ere Babylon was builded and when the Egyptian pyramids were still unquarried.

That human attribute the further above the brute and which places the intellect on the highest above the low browed savage is the imagination. That work of the mind which most excites the imagination is the most highly intellectual.

In aerial navigation the inventor is obliged to hang his life on the hazard of his mastery of unaccustomed principles, where there are innumerable untrod variables—a stunt of the imagination like taking a light through the fourth dimension.

In the not distant future we shall have our automobiles of the air, and in the wars of the future we shall have our aerial battle ships, our cruisers, our torpedo boats and torpedo boat destroyers. But they'll be airy, frail and fairy craft, indeed, compared with the grim steel monsters of the sea.

Although the value of the flying machine in future wars will be mainly as a scouting craft, still its importance for that service alone is hard to underestimate. Achievement now runs on so fast that it often outpaces the adjustment of our senses, and though we pinch ourselves to prove our wakefulness still the sense of dreaming intrudes on consciousness and harrasses conviction.

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of civilization of a people may be estimated by the quantities of nitric and sulphuric acids consumed. But what are we to do when the great nitre beds of South America, the world's only supply, shall have been exhausted—and they are being rapidly depleted?

The problem of fixation of atmospheric nitrogen by the electric current has already been solved and it requires but little further development to meet all needs.

Ammonia and all kinds of nitrates produced artificially, are among the immediate possibilities of the future. It requires but a sufficient quantity of cheap electrical energy to refertilize all our fields from the atmosphere. But heat and power we must have and in ever increasing quantities.

Were every river and rivulet dammed to its source the fall to the sea would not produce power enough for man's future use. Whether, then, must he look? Will he devise some practical engine for the utilization of the solar rays? It is estimated that the amount of energy received by the earth from the sun is equal to that of a continuous Niagara, 75,000 miles wide—wide enough to encircle the earth three times.

But the discovery of radiant matter, if it do not prove a "will of the wisp," may yet lead us to the discovery of a means of tapping the mighty storehouse of internal molecular energy.

The corpuscles of which molecules are composed are estimated to have a velocity of 100,000 miles a second—half the speed of light. This means that in a pound of ponderable substance there is sufficient energy in action to equal that of a one-pound projectile hurled at a velocity of 100,000 miles a second. Such energy is perfectly inaccessible.

The energy of impact of such a one-pound projectile would be sufficient to melt and volatilize and expend to untold tons of iron.

If a man discovers the key to unlock this storehouse of energy, he will be able to make a phylloxera of the world and reduce the cost of living so that labor will be at a premium as a source of amusement.

Civilization can grow no larger than the boundaries of transportation and communication will permit. Cities overgrow themselves because adequate transportation is lacking. The old time farm, the mountain height, the forest deep, the lonely lake, will soon burst from isolation, for the flying machine will people them with a teeming population. High speed and convenience of travel annihilate distance. The remote becomes near, the stranger a neighbor, and widely separated communities a united neighborhood.

Among the possibilities of the future will be the wireless electric sky roads, or zones of electric energy, leading from centre to centre of population and industry, along which flying machines will pass to and fro, drawing their energy from an electric system stretched along the earth, thus obviating the necessity of each individual flying machine developing its own energy. Flying machines will carry electric metres, and the consumer will pay for the energy used just as he now pays for the electric current which lights his residence.

When the flying machine shall have come into general use, strange contraptions will be contrived for the reception and storage of them, or we may say flying machine garages, where daily pilgrims from country to city and return will house their aerial equipment, and from which they will take flight for home when their day's work is done.

The broad expanse of the Hackensack meadows may possibly spring into great usefulness with the wide introduction of the flying machine.

As land values always accord with supply and demand, the flying machine will

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