

By JOHN ELFRETH WATKINS, JR.

These prophecies will seem strange, almost impossible. Yet they have come from the most learned and conservative minds in America. To the student and most careful man in our greatest institutions of science and learning I have gone, asking each in his turn to forecast for me what, in his opinion, will have been wrought in his own field of investigation before the dawn of 2001—a century from now. These opinions I have carefully transcribed.

**Five Hundred Million People.** There will probably be from 250,000,000 to 500,000,000 people in America and its possessions by the year 2001. To the student of history, Nicaragua will ask for admission to our Union after the completion of the great canal. Mexico will be next. Europe, needing more territory to the south of us, will cause many of the South and Central American republics to be voted into the Union by their own people.

**The American will be Taller by one to two inches.** His increase of stature will result, not from better health, due to vast resources in medicine, sanitation, food and shelter. He will live fifty years instead of thirty-five as at present—for he will reside in the suburbs. The city house will practically be no more. Building in blocks will be illegal. The trip from suburban home to office will require a few minutes only. A penny will pay the fare.

**There will be No C, X or Q in our every-day alphabet.** They will be abandoned because unnecessary. Spelling will have been adapted for the convenience of the English will be a language of condensed words expressing condensed ideas, and will be more extensively spoken than any other. Russian will rank second.

**Hot and Cold Air from Spigots.** Hot or cold air will be turned on from basins and faucets which will be a house as we now turn on hot or cold water to regulate the temperature of the bath. Central plants will supply this hot air and lead to city houses in the same way as we now supply gas or electricity. Raising early to build the furnace fire will be a task of the olden times. Homes will have no chimneys, because no smoke will be created within their walls.

**No Mosquitoes nor Flies.** Insect swarms will be unaccountable. Mosquitoes and flies will have been practically exterminated. Boards of health will have destroyed all stagnant pools and breeding-grounds, chemically treated all water supplies. The extermination of the horse and its stable will reduce the house-fly.

**Ready-Cooked Meals will be Bought from establishments similar to our bakeries of to-day.** They will purchase materials in tremendous wholesale quantities and sell the cooked foods at a price much lower than the cost of individual cooking. Food will be served hot or cold, private houses in pneumatic tubes or automobile wagons. The meal being over, the dishes used will be packed and returned to the cooking establishments where they will be washed. Such wholesale cookery will be done in electric laboratories rather than in kitchens. These laboratories will be equipped with electric stoves, and with electric devices, such as coffee grinders, egg-beaters, stirrers, shakers, purers, meat-choppers, meat-minces, potato-mashers, dish-washers, dish-driers, and canners, like the like. All such utensils will be washed in chemicals fatal to disease microbes. Having one's own cook and purchasing one's own food will be an extravagance.

**No Food will be Exposed.** Storekeepers who expose food to air breathed out by patrons or to the atmosphere of the streets will be fined. Even the food which will stale or adulterated produce. Liquid-air refrigerators will keep great quantities of food fresh for long intervals.

**Coal Will Not be Used for Heating or Cooking.** It will be scarce, but not entirely exhausted. The earth's hard coal will last until the year 2050 or 2100; its soft-coal mines until 2200 or 2300. The use of gas for heating and cooking will have become more and more expensive. Man will have found electricity manufactured by water-power to be much cheaper. Every river or creek with any suitable fall will be equipped with water-motors, turbines and dynamos, making electricity. Along the seacoast will be numerous power-works continually filled by waves and tides washing in. Out of the water will be conveniently falling over revolving wheels. All of our residential water, hot and salt, will thus be harnessed to do the work which Niagara is doing to-day—making electricity for heat, light and fuel.

**There will be No Street Cars in Our Large Cities.** All heavy traffic will be below or high above ground when brought within city limits. In most cities it will be confined to broad subways or tunnels, with light and air, and with hot or to high treaties with "moving sidewalks" for conveying to the top. These underground or overhead conduits and freight ways, with cushions, wheels, subways or treaties will be reserved for express trains. Cities, therefore, will be free from all noises.

**Photographs will be Telegraphed from any distance.** If there be a battle in China a hundred years hence snippets of its most striking events will be published in the newspapers an hour later. Even to-day photographs are being telegraphed over short distances. Photographs will reproduce all of Nature's colors.

**Trains One Hundred and Fifty Miles an Hour.** Trains will run two miles a minute, normally; express trains one hundred and fifty miles a day. To go from San Francisco to New York will take a day and a night by fast express. There will be cigar-shaped electric locomotives hauling long trains of cars. Cars will, like houses, be artificially cooled. Along the railroads there will be no smoke, no chimneys, because coal will neither be carried nor burned. There will be no stops for water. Passengers will travel through hot or dirty country with windows down.

**Automobiles will be Cheaper than Horses are to-day.** Farms will own automobile hayrakes, automobile truck-wagons, plows, harrows and hay-rakes. A one-horse motor in one of these vehicles will do the work of a pair of horses or more. Children will ride in automobile sleighs in winter. Automobiles will have been substituted for every horse vehicle now known. There will be, as already exist to-day, automobile hearses, ambulances, police patrolers, automobile ambulances, automobile street sweepers. The horse in harness will be as scarce, if, indeed, not even scarcer, than as the yoked ox is to-day.

**Everybody will Walk Ten Miles.** Gymnastics will begin in the nursery, where toys and games will be designed to strengthen the muscles. Exercise will be compulsory in the schools. Every school, college and community will have a complete gymnasium. All cities will have public gymnasiums. A man or woman unable to walk ten miles at a stretch will be regarded as a weakling.

**To England in Two Days.** Fast electric ships, crossing the ocean at more than a mile a minute, will go from New York to Liverpool in two days. The bodies of these ships will be of iron or steel, and will be supported upon runners, somewhat like those of the cars. These runners will be very buoyant. Upon their under sides will be turbines expelling jets of air. In this way a field of air will have a pushing effect upon them and they will slip through the thin water beneath and the air above. Ships with cabins artificially cooled will be entirely fire-proof. They will drive below the water and there await fair weather.

**There will be Air-Ships, but they will not successfully compete with surface cars and water vessels for passenger or freight traffic.** They will be maintained as deadly warships by all military nations. Some will transport men and will have judiciously placed armaments. Scientists making observations at great heights above the earth.

**Aerial War-Ships and Forts on Wheels.** Giant guns will shoot twenty-five miles or more, and will hurl anywhere within such a radius shells exploding and destroying whole cities. The projectiles will be aimed by aid of compasses which will be used by the gunners when the shells are fired from great heights. Fleets of air-ships, hiding themselves with dense, smoky mists, thrown off by themselves as they move, will float in the air, and be detected when they dash across open spaces at the great speed of express trains of clouds. They will make what are now known as cavalry charges. They will be used by the army in deep trenchments as fast as soldiers can occupy them. They will use silent cartridges. Submarine boats submerged for days will be capable of wiping a whole navy off the face of the earth. They will be used by the navy in producing models of one-hundred-mile vision with camera attachments, photographing an enemy within that radius. These boats will be large, and will be taken from across the street, will be lowered to the commanding officer in charge of troops below.

**There will be No Wild Animals except in menageries.** Rats and mice will have been exterminated. The horse will have become practically extinct. A few of high breed will be kept for racing, hunting and exercise. The automobile will have driven out cattle and sheep will have no horns. They will be unable to run. Cattle and sheep could be used to-day. A century ago the wild oxen, peacocks, and other birds and animals will be bred to meet, milk, wool and other by-products. Horns, bones, muscles and lungs will have been neglected.

**Man will See Around the World.** Persons and things of all kinds will be brought within focus of cameras connected with electric wires to America. American audiences in their millions will view upon large curtains the progress of battles in the various parts of the globe. The progress of battles seems to the very distance, as if the instrument bringing these distant scenes to the eye were a single tube. A man in a distant battle will be in a position when seen to blaze, and thus the lips of a remote actor or singer will be heard to utter words or music when seen to move.

**Telephones Around the World.** Wireless telephone and telegraph circuits will span the world. A husband in the middle of the Atlantic will be able to talk to his wife at her home in her bedroom in Chicago. We will be able to telephone to New York as readily as we now talk from New York to Brooklyn. A man in the middle of the ocean will connect with any circuit in their locality without the intervention of a "hello girl."

**Grand Opera will be Telephoned to private homes, and will sound as harmonious as though enjoyed from a theatre.** The automatic instruments, reproducing, and actually will bring the best music to the families of the untaunted. Great musicians gathered in one inclosure in New York will be capable of changing its tone from chorral to sad. At the same time music from instruments arranged in theatres or halls in San Francisco or New Orleans, for instance, will be capable of changing its tone from chorral to sad. In great cities there will be public opera-houses whose singers and musicians are paid from funds-endowed by philanthropists and by the government. The piano will be capable of changing its tone from chorral to sad. Many devices will add to the emotional effect of music.

**How Children will be Taught.** A university education will be free to every man and woman. Several great national universities will have been established. Children will study simple English grammar adapted to simplified English, and not copied after the Latin. Time will be saved by grouping like studies. Poor students will be given from school, free clothing and free books if ambitions and actually unable to meet their school and college expenses. Medical inspectors regularly visiting the public schools will furnish poor children free eyeglasses, free dentistry and free medical attention of every kind. The very poor will, when necessary, get free rides to and from school and free lunches between sessions. In vacation time poor children will be taken on trips to various parts of the world. Etiquette and housekeeping will be important studies in the public schools.

**Store Purchases by Tube.** Pneumatic tubes, instead of store wagons, will deliver packages and bundles. These tubes will collect, deliver and transport mail over certain lines, free of charge, and thus save on trips to certain parts of the world. They will be in first contact with the private houses of the wealthy; then with all homes. Great business establishments will be connected by tubes, similar to their branch post-offices of to-day, whence fast automobile vehicles will distribute purchases from house to house.

**Vegetables Grown by Electricity.** Winter will be turned into summer and night into day by the farmer. In cold weather he will place heat-conducting electric wires under the ground, and thus warm his growing plants. He will also grow great gardens under glass. At night his vegetables will be bathed in powerful electric light, serving the sunlight, and thus warm his growing plants. Rays of colored light will hasten the growth of many plants. Electricity applied to the soil will warm the plants, grow larger and faster, and will kill troublesome weeds. Rays of colored light will hasten the growth of many plants. Electricity applied to the soil will warm the plants, grow larger and faster, and will kill troublesome weeds. Rays of colored light will hasten the growth of many plants. Electricity applied to the soil will warm the plants, grow larger and faster, and will kill troublesome weeds.

**Oranges will Grow in Philadelphia.** Fast-flying refrigerators on land and sea will bring delicious fruits from the tropics and southern temperate zone within a few days. The farms of South America, South Africa, Australia and the South Sea Islands, and other distant lands, will be opposite ours, and thus will supply us in winter with fresh summer foods which cannot be grown here. Scientists will have discovered how to cultivate many fruits now confined to much hotter or colder climates. Delicious oranges will be grown in the suburbs of Philadelphia, cantaloupes, and other summer fruits will be of such a hardy nature that they can be stored through the winter as potatoes are now.

**Strawberries as Large as Apples will be eaten by our great-grandchildren for their Christmas dinners.** Raspberries and blackberries will be as large as apples. One cantaloup will supply an apple. Many, melons, cherries, grapes, plums, pears, peaches, apricots and other fruit will be cultivated over the entire United States.

**Peas as Large as Beets.** Peas and beans will be as large as beets are to-day. Sugar cane will produce twice as much sugar as the sugar beet. The milk of a cow will be more the chief source of our sugar supply. The milk-cane plant will have been developed into a rubber plant. Cheap nitrates will be harvested by machinery from the air. The soil will be enriched by machinery against disease microbes just as readily as man is to-day against their nutrition from the air and give fertility to the earth.

**Black, Blue and Green Roses.** Roses will be as large as cabbage heads. Pink roses will grow to the size of orchids. A penny will be as much measured but half an inch across. There will be black, blue and green roses. It will be possible to grow a flower in any color and to transfer the perfume of a scented flower to any other which will possess. Then may the penny be kept the perfume of the violet.

**Free Drugs will be Swallowed or taken into the stomach needed for the sick treatment of that which will be applied directly to these organs through the skin and flesh.** They will be carried with the electric current applied with the point of the living body, or by means of a vacuum. They will be the vital organs, through which the life of men and animals. The living body will be to all medical purposes as a magnet. Not only will it be possible for a physician to actually see a living, throbbing heart inside the chest, but he will be able to stop it by means of a vacuum. This work will be done with rays of invisible light.