



ILLUSTRATION BY PETER BURCHARD



by DR. LEE DE FOREST as told to Alfred Balk

THE COMING MIRACLES of SCIENCE

"The Father of Radio" looks to the



future and sees a golden age which will astonish even the most imaginative dreamers

Dr. Lee de Forest, often referred to as "The Father of Radio," is one of the United States' most famous scientists. In 1906, 11 years after Marconi introduced wireless telegraphy, de Forest devised the audion tube, which made transmission of the voice possible.

Now retired and living in Hollywood, Calif., he made the survey which resulted in the accompanying exclusive forecast for Family Weekly.

A HALF-CENTURY AGO, after my introduction of the audion tube, a professor and I began speculating on what the world of the future would be like. I won't recall our ideas, for time has proved us quite unimaginative. I, for one, never foresaw that radio, which the audion tube made possible, would evolve into the force it did—and lead to television.

Yes, science seems to move so fast nowadays it even surprises scientists. In 1951, one of my colleagues, Brig. Gen. David Sarnoff, asked researchers for three "gifts" for his 50th anniversary in electronics, then five years off. The developments were major ones—a magnetic tape recorder for black-and-white TV, an electronic air conditioner with no moving parts, and an electronic amplifier of light—both five years later they were realities.

More and more, such research "miracles" have become commonplace, and from what scientists in many fields have told me, we will see the world of tomorrow sooner than we think. Before this century has ended, for example, it seems to me these "dreams" will be realities:

Space Exploration

Men will have orbited around the earth and moon many times over. Space platforms outside the earth's atmosphere will be in use as relay stations. We will have landed on the moon and established a base there. Instrument-equipped missiles will be fired millions of miles into space, and will return to earth with data on the planets and other bodies of our solar system.

Communication

You will have portable telephones no larger than a king-size cigarette pack (transistor radios of that size already are being built). Walking down a street in Boston, you can call your family at home, or phone a friend in Los Angeles—or even abroad.

A miniature TV screen will let you see the person you are phoning. (By accepting a less-detailed image than that of home TV, we already can send such pictures over telephone wires and narrow radio bands.) You can also see items you may be considering for purchase, from small products to pieces of real estate.

When you phone a foreign country, electronic translating equipment, built on the principle of today's computers, will translate your conversation instantaneously. If, for example, you are calling Japan, answers will come back translated from Japanese.

World-wide television, both color and black-and-white, will be common. Atmospheric disturbances never will disrupt it; relays will be possible through communications satellites or use of the atmospheric "scatter effect" which reflects some TV waves over phenomenal distances even now.

Miniature TV sets, completely portable, and flat-surface sets hung like pictures on your wall will be old-hat.

Transportation

Cars will have "automatic pilots." After entering an expressway, you can relax and ride an invisible beam. It will keep your car at a safe distance from other autos, and radar automatically will apply your brakes as required.

Passenger-carrying helicopters—helibuses—will take you up and over congestion, turning the sky into radar-controlled, multilevel highways which, incidentally, will be much less costly than those on the ground. Inexpensive private airplanes equipped for vertical take-off and landing also will fill the air.

Atomic-powered missiles will carry freight and mail between cities—and continents—within minutes. Jets and missiles will be commonplace for passenger flights.

Downtown streets will have moving conveyor-type sidewalks. They will carry you from one store or office to another—as you sit on a portable golf-type stool if you like.

Light

Electroluminescence, or "cold light," will revolutionize the appearance of homes, industries, and entire cities. With no heat, shadow, or glare, this lovely "glow" will usher in a new era of comfort and safety in individual rooms, at airports, and on highways. A touch of a button will permit changes of color nuances for entire wall panels.

Power

Nuclear energy will be a practical power source for industry, autos, ships, missiles, trains, and planes. One "shot" of atomic fuel will last years, even decades. A single atomic battery will produce all the electricity needed for years in homes or factories in isolated regions.

Devices which will catch and store energy from

the sun's rays will make solar heating, lighting, and power a reality. Solar energy in some regions may be cheaper and more practical than nuclear power!

Some day, too, the need for power wires and such common household items as cords and plugs may have vanished. There is a technical possibility that power can be transmitted directly on invisible beams—and that an airplane, for instance, can be controlled and powered by transmission of a radio and energy signal.

Business and Industry

Automation, electronic equipment, and other machines will make it possible to increase production per worker, creating more leisure time and a constantly rising living standard. (Atomic processing plants, oil refineries, and others now can be operated in large part from a control panel.)

Many firms now are drowning in an ever-rising sea of paper work; so is government. Electronic computers will take over vast recording and accounting jobs, freeing tens of thousands of clerical personnel for other responsibilities. The need for expensive models of many new products, from jets to smaller items, will be eliminated: computers can predict their performance under varying conditions in a few hours.

You'll be able to dictate memos and personal letters directly into an electronic typewriter. Already, a rudimentary phonetic typewriter can type a few simple words and phrases as they are spoken into a microphone.

Health

Man's life span will have increased to nearly 100 years. The causes of and cure for cancer will have been found. We will know how to deal with most types of heart disease. The ability to "transplant" certain organs and tissues, new cures for many

mental ailments, mastery of crippling arthritis and even most types of headaches and colds—all will be part of medicine's achievements.

The atom and electron will be your doctor's servants. Electronic "brains," for instance, will store knowledge of every symptom of every disease, making instantly available to physicians everywhere up-to-the-minute scientific findings which they could never hope to keep abreast of.

Food Resources

New discoveries will make the waters of wretchedness recede from every corner of civilization. Our limitless oceans will be "farmed" for nutritive products. Refining of salt water into fresh will be widespread and inexpensive. Striking developments in irrigation and flood control, more efficient use of solar energy, electronic acceleration of germination and growth, and revolutionary chemical and biological discoveries will expand mankind's food resources so that famine will be eliminated—despite immense population increases.

Home

There will be almost no housekeeping problems. Temperature, humidity, and velocity of air in each part of the home will be kept automatically at comfortable levels, day and night. Smoke, dust, and harmful bacteria will be purged from the air before it enters. The reversible heat pump, based on the principle of a refrigeration unit, will cool homes in summer and heat them in winter.

Electronic appliances will do your cooking, dishwashing, and disposal of waste. High-frequency sound waves will clean the dishes. An electronic oven will cook meat in two or three minutes. All appliances can be turned off from miles away by dialing code numbers on your pocket-size radio-

phone—and, thanks to an electronic housekeeping "center," you'll enjoy such luxuries as having breakfast ready the moment you get up.

Blankets no longer will be necessary indoors; a radiant "canopy" over your bed will replace them. Instead of a picture window, there will be an invisible "curtain" of moving air to divide your living room and patio. A home TV circuit will enable you to look into nurseries or other rooms at the opposite end of the house.

New dirt- and grease-resistant floor, furniture, and wall coverings will be available. There even will be a bug-killing paint which, year in and year out, will kill any insects that touch it.

Climate

Thanks to data furnished by satellites, as well as the electronic analysis of land, atmosphere, and oceans, climate control will be within man's reach. We will know how to dissipate storms of hurricane intensity or divert them from their destructive course. We will unfreeze ports which are now ice-bound. We will be able to predict weather precisely for months and years ahead.

This is not science fiction. These elements of a golden age are definitely within our reach.

Some things, however, science cannot do. It cannot, for example, determine how its gifts are to be utilized.

It cannot overcome blind fears or small thoughts which impede progress.

Nor can science make nations live together in a spirit of justice, humility, and peace.

This, all men together must learn to do. Or science—with all its miracles—will be meaningless.