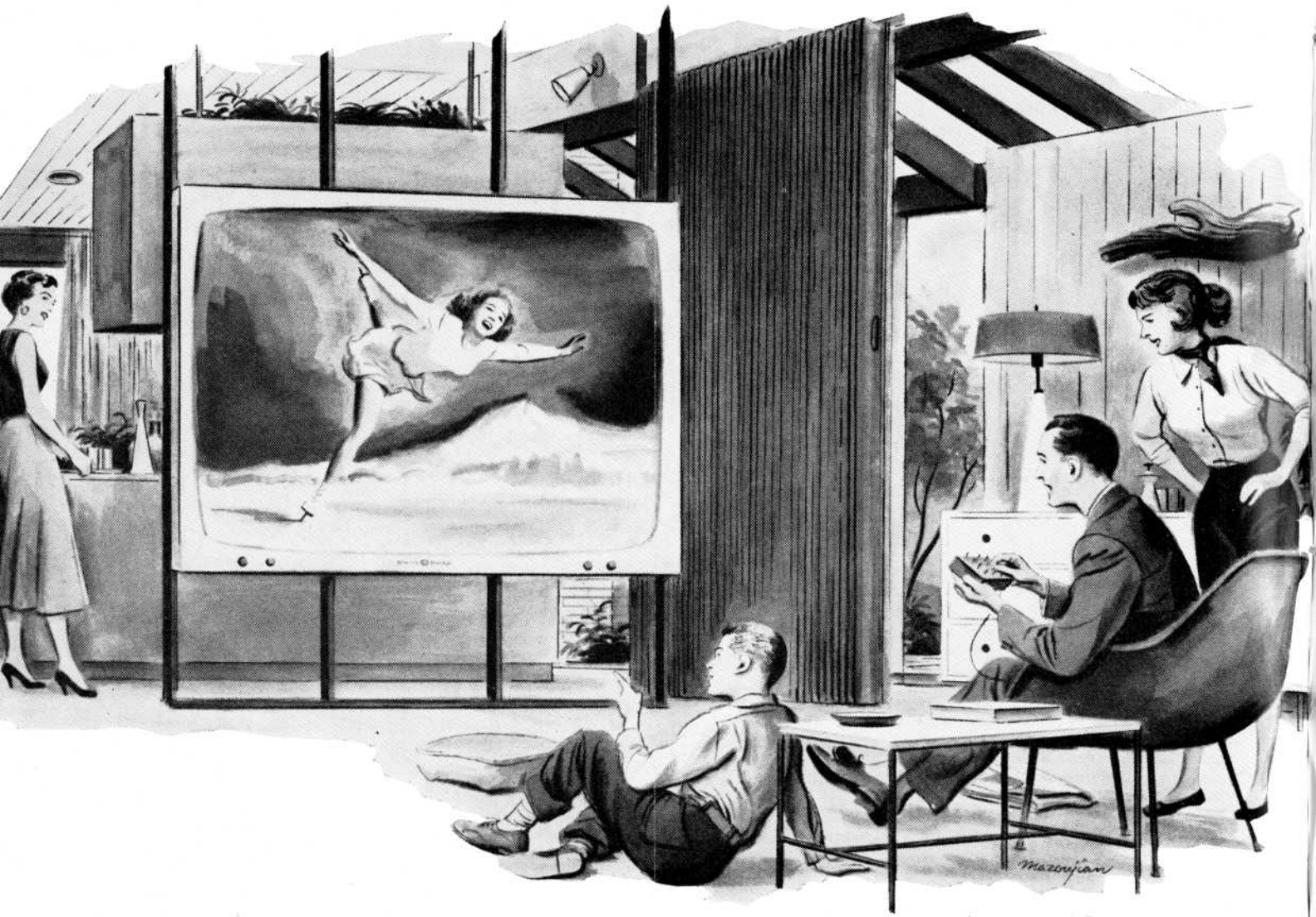

Art courtesy of General Electric Company

The Living Benefits of Engineering

In a day when conversation is laced with talk of new weapons for war, the Engineers are playing a major role in planning and producing better things for better living.

By LARRY LEVIEUX, '55

Ten years from today, you may be able to pick up the telephone in your home and dial a number in any city in the United States. You will probably have a color television set in the living room. You will be able to carry your Thanksgiving turkey to the oven, and the oven door will open automatically when you draw near. Then, your range will roast the turkey electronically, with the heat actually inside the bird.

Ten years from today, atomic energy will furnish 10 per cent of the total power produced in the United States. Atom-powered ships, airplanes and trains will be perfected—not for common use, of course, but that will come later. Our cities will be more beautiful, cleaner and safer; foods will be preserved without using expensive refrigeration; and our homes will be air-conditioned, both inside and out.

This is the 1965 that the engineer sees. But he takes only a quick glance, for many of these things are already accomplished. The future that you and I visualize is a reality to him—he has already seen these inventions, and perhaps used them. Their common use awaits only the adaptation of mass production techniques to make them cheap enough for popular consumption.

In talks with the chairmen of the various schools in the College of Engineering, *Sooner Magazine* learned of countless new ways that engineering will benefit you ten years from now. Many new theories and ideas have been proved sound, and await only the engineer to put them to work for us.

Science has drawn ahead of engineering. Peace-time use of atomic energy, for instance, depends upon the perfection of high-strength materials by the metallurgist, electronic control devices by the electrical engineer and machinery by the mechanical engineer. Men in many different fields are working for this one common goal, testifying that science and all engineering are interdependent.

A phase of engineering fast assuming national importance is city planning. Our overcrowded cities are undergoing the biggest transition since they stopped building

walls around the medieval cities. Modern transportation, suburban expansion and the threat of atomic destruction are making obsolete the old method of just letting a city "grow."

The civil engineer sees the city of the future as a grouping of several self-sufficient residential areas, each with its own shopping centers, schools and other facilities. Heavy traffic would be routed between two of these areas, making it unnecessary to cross major thoroughfares for everyday living. Express highways would carry suburbanites to the heart of their city and back again, swiftly and safely. Slum areas surrounding the downtown business district would be cleared and converted into vast parking lots. This is the engineer's solution to the related problems of city planning, traffic and parking which plague every large city today.

The ever-increasing size of our cities is making sanitary engineering an essential. As one professor said, "If we aren't careful, we'll soon be buried in our own garbage." One process, that of converting waste into food for animals and fish, is being developed at the University by the sanitary engineering department. Wastes are being used to obtain carbon dioxide, which, when combined with sunlight, produce the conditions necessary to grow algae. Because algae is a common fish food, the waste ultimately can be converted into food for humans.

What to do with the waste products from atomic piles is a question which the engineer is trying to answer. When atomic energy is employed in industry and used as a public power source, the considerable amount of radioactive waste will have to be disposed of. If it were simply dumped in the river, the entire countryside might be poisoned. Besides, for economical operation of atomic power, the waste products should be used some way.

WATER supply is another problem. Lack of water is hindering the growth and development of drought-stricken Western cities. One possible solution for the coastal cities is the use of sea water. The city of Los Angeles has employed a large research staff to investigate methods of removing the salt from Pacific Ocean water. Using tremendous evaporators and electrolysis it can be done, but it is too expensive. Within a few years the cost should be reduced, and a major obstacle to expansion will be overcome.

Although the growing popularity of air-conditioning has moved the family inside the home, newer developments in architecture and engineering will bring them out again. You can have summer bridge parties outdoors on the terrace, yet still enjoy the comfort of air-conditioning. This "miracle" will be accomplished by an air-jet wall around the terrace. Powerful jets of air produce an insulation to keep out the heat, yet remain invisible.

Light bulbs will be outmoded. Instead of a glare of light over a small area, the ceiling will glow with a radiance that will permeate the entire room. And room color need not be dependent on repeated paintings. Colors to fit changing moods may be obtained by using different types of light on special light-sensitive wall paint.

Homes are undergoing a drastic change. After hundreds of years of living in basically the same type homes—box-like structures with separate compartments for living quarters—man is breaking away. The "new" home, fast being accepted today, is a completely functional living unit—beautiful and livable.

The trend in home design being accepted more all the time is the decentralization of living quarters. The concept of family living, around the hearth, is being abandoned. The fireplace is a symbol only; its usefulness has come to an end. In the modern home you have facilities for group living, but there are separate quarters for the activities of different members of the family. The family is spending less time together, and this trend toward decentralization is the adaptation to a new need.

The problem of acoustics is more important now. With all sorts of noise-makers —TV, radio and phonographs available— and with individuals having different tastes in "noise" selection, quiet and privacy for individuals comes at a premium. New building materials and design are solving this.

The modern house requires as little upkeep as possible. There are fewer servants today and less time for the housewife to devote to housecleaning, so simple maintenance is essential.

Food preservation is an important area of research, and one of the most recent possibilities is using radioactive materials for that purpose. By shooting food with gamma rays, the decaying enzyme action is inhibited and the food preserved indefinitely. A bottle of milk thus treated was still sweet after a year without refrigeration. No ill effects to humans have been detected in tests, but studies are continuing.

PLASTICS are tomorrow's gift of the chemical engineer. Until recently, plastics have been thought of as substitute products, but now the direction of their use is as specialized products for specialized uses. Plastics will be used more for construction materials, automobile bodies, and rustless piping for homes. There is a plastic now available for construction purposes which is as strong as steel, but which weighs a tenth as much.

Synthetic fibers, of course, show possibilities for clothes that won't stain, won't wrinkle, and don't need to be dry-cleaned.

The airplane-in-every-backyard predicted at the close of World War II is still not in sight. The small private plane for the average home-owner is too expensive to buy and operate, and requires too much landing strip to make it practical. The future of aircraft, rather, is in the direction of four-to-seven place twin-engine executive airplanes. Many smaller companies are realizing that they can save valuable time and perform quicker service by flying.

Another possibility for popular use is the vertical take-off airplane now being experimented with for military use. These planes combine the speed of a conventional airplane with the small take-off area of a helicopter, without the limitations of either. When these planes are fully developed, it is expected that they will be used extensively for company air travel.

The helicopter, for which such high hopes were held in the early post-war years, is just now coming into its own. Its slow speed limits its use, but for inter-city travel it may be the answer to automobile congestion. For rapid transportation from downtown to the commercial airfields they are perfect. Many of the large buildings being erected today have built-in helicopter ports on their flat roofs, anticipating larger use of the "whirly-birds."

The atomic-powered airplane is not at all improbable. All the theories of atomic flight are complete, and it remains only for the aircraft companies to build the airplane that will put this new power into practice. There is a great advantage to using atomic power in airplanes. Long-distance flights, possibly remaining aloft for weeks, are entirely possible. Expensive refueling devices and refueling stations along the flight route will be unnecessary. For military purposes, an atom-powered bomber could fly anywhere in the world, drop its load, and return to home base.

Guided missiles and rockets will have increased use. Our air defense system will be improved because of their rapid take-off speeds. An interceptor rocket can be in contact with enemy formations within short minutes after the red alert. These rockets will have commercial uses, too. A V-2 type rocket could carry air mail and quick delivery packages from coast to coast in less than an hour at 3,000-miles-per-hour speeds.

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Outer space travel is still in the dim future. If anything, it seems farther away than it did ten years ago. Today, we know more about the complications that may arise and realize how much expense will be involved. Two of the biggest problems are how to attain the necessary speeds to offset the pull of gravity, and how to equip a man to stand the terrific temperatures and acceleration speeds which he would encounter.

The O.U. College of Engineering is particularly concerned with the oil industry. The United States is presently consuming petroleum at the rate of six million barrels a day. Ten years from now, the oil consumption will reach ten million barrels, or the equivalent of an East Texas field every day. Although present oil production is adequate for our needs, new oil-finding techniques are being developed for future use. Because of new fields being discovered, the re-working of old producing areas (secondary recovery), and the possibilities for development of foreign resources, the geological engineers don't expect to ever run out of oil. In addition to these reserves, there are oil shales and tar sands—oil-rich but totally undeveloped.

Once the oil is found, it is the petroleum engineer's job to get it to the surface and ultimately to the consumer. Improved methods of logging and drilling are expected to increase the number of well completions and make deep drilling more practical.

Every field of engineering is advancing just as rapidly. Scarcely is one invention fully perfected before it is made obsolete by another one. Ten years ago, it was possible to send 35 telephone messages over a single circuit. Today, 600 can be dispatched at one time. Ten years hence, several thousand. This is the sort of background work that goes on daily, unnoticed by the general public. But it is the work that provides better things for better living—through engineering.