

Royal Lee, the Man

*His interest in the
natural health way
never had dimmed*

By DON C. MATCHAN

In the march of time, there occasionally come across the stage in the drama of life, individuals whose contributions to mankind are such that it may be truly said, "the world is a better place because of him."

Of that caliber is Royal Lee, D. D. S., founder and president of Lee Engineering Company, Vitamin Products Company, Milwaukee, and the Franklin Corporation, Elm Grove, Wis.

Of sturdy Scandinavian stock, Royal Lee was endowed with an inquiring mind, the capacity and stamina to learn, and the willingness to share his discoveries with his fellowman.

What part fate may have played in shaping the career of this brilliant and fearless inventive genius is not possible to determine. It is possible that had he not been called into World War I, he would have remained the proprietor of a small-town garage in southern Wisconsin. But we're getting ahead of the story.

On April 7 Doctor Lee was 64 years old. Raised on a farm near Dodgeville, Wis. (famous as a lead-mining town since the War of 1812 and deriving its name from the first territorial chief executive of Wisconsin—Governor Dodge) the Lee family emigrated to United States in 1845 from Norway.

Royal attended elementary and high schools in his home town. His interest in science expressed itself early. At 12 he had compiled a notebook on biochemistry and nutrition by copying definitions on the subject from the school dictionary, and he had started collecting books on those subjects—a hobby which has continued over the years and has resulted in perhaps the largest individual collection in the world.

Ahead of him in school were two older sisters. Their physics books were his "meat" and by the time he had reached the class in high school where he could study physics, he was ready for an advanced course. His mechanically-bent mind grasped technical data swiftly, and he was able to persuade



DR. LEE (left) drives a point home while chatting with a friend during Ohio National Health Federation Convention last autumn.

the principal to organize a class in advanced physics. There were 15 students. Royal Lee was the teacher. The principal had predicted the class wouldn't get half-way through the book on electrical science. But they finished the book—and passed the examination without strain.

After getting his high school diploma he took over a garage in Mineral Point, Wis., and apparently was headed for a career in that field when Uncle Sam's long finger beckoned, and he entered the Army, serving from 1918 to January, 1919. He was married, while in service, to Miss Evelyn Egan, and after 40 years the players on that team remain unchanged. After being mustered out, he got a job at the base hospital at Camp Grant teaching automobile mechanics in the occupational therapy department. When the hospital was closed, he was ready for something more than running a garage.

He enrolled at Marquette University Dental School at 24, and was graduated in 1924. His purpose, however, was not to become a practicing dentist, but rather to build dental equipment. (It was at this stage of his development, perhaps, that his rebellious instinct against dictation first found expression)

"Dentists pay at least five times as much for equipment as they should," he declares, and he was going to try to change that situation. While a student, he was already manufacturing some dental electrical equipment. He contends he could have saved Chicago University half a million dollars but he was not prepared to "buy" business. "Sears tried to break the trust once by offering dentists a mail-order service," he recalls, "but they couldn't either."

But perhaps it was foreordained that his talents were not to be confined to building dental equipment. His education in dentistry, plus his innate interest in the physiology of homo sapiens, led him into research and discoveries resulting in unlimited benefit to all who will listen.

THE SPEED GOVERNOR

One of his most important inventions was the speed governor, used in motors, in all war instruments where close time-intervals must be established, or where constant speeds must be obtained. These devices are not available from any other source except in cumbersome and bulky form. One model is used on radar apparatus. One big electrical manufacturing firm supplied the first equipment with governors at a cost to the government of \$3,800 each. The Lee governor later was specified because it was more accurate and priced at \$32.50 each!

The famed Norden Bomb-Sight used the Lee governor to measure the time intervals of bomb dropping. And Sperry Gyroscope Co. used it in the instrument credited with saving the Navy in World War 2—the device used on guns on battleships which quickly calculate the angle by which guns must "lead" in order to hit a fast-moving target such as an airplane. In the early stage of the last war the Japanese sunk several British and American battle-wagons, and probably would have sent the rest to the bottom had it not been for this device. First used on the South Dakota, October 26, 1942, 32 enemy planes were shot down in her first major engagement. Subsequently, all vessels were

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equipped with it.

Its earlier uses, or variations thereof, were in telephone equipment and motion picture sound equipment.

(When "talking" pictures came out in 1926-27, Bell Telephone Lab. had one selling for \$1,200 and Lee sold his to them for \$3.50, and retains the account to this day).

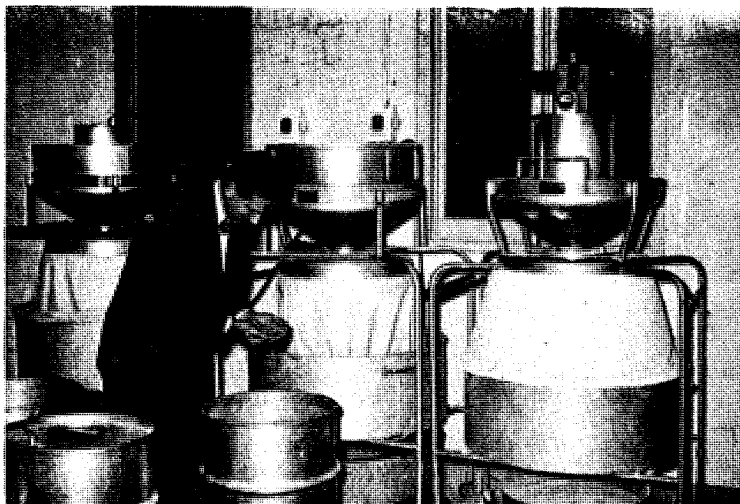
In reproducing sound, there must be consistency of speed or musical instruments will be off-key, and the Lee speed control device was first to hold this consistency. Lee governors have been found indispensable for recording and reproducing sound since the advent of the talking machine and television. Even in the kitchen, no self-respecting food mixer is without a Lee governor. It's also used in most adding machines and calculating machines. The latest field to be invaded is the machine tool field for which new and larger governors have been developed.

Three different plants manufacture devices that have come from the fertile brain of Dr. Royal Lee. Some years ago, Eastman Kodak asked Lee Engineering Co. to build a motor that would spin 30,000 rpm, for testing purposes. "With that order, we got to producing custom-made motors," he recalls. "We told them that if we could get bearings, we'd make the motor. In another request for a motor to be used on fighter planes requiring lighter camera equipment, we designed a motor, reducing the weight from 8½ to 3½ pounds, and delivering more than twice the power. After the war this motor found its place on our Household Flour Mill."

The Lee organization holds patents on nearly 100 improvements for electrical and speed controls for motors. In the early twenties he filed a patent application on a hydraulic valve compensator, "but automobile manufacturers wouldn't buy it," he smiles. Today, however, it's standard equipment.

'TOO EXPENSIVE,' SAID THE BRASS

Among other ideas which didn't find acceptance by the brass was his formula for landing shells "anywhere, including the moon, by utilizing hydrogen." (He then was Pvt. Royal Lee, Co. "A" 311th Supply Train, Chicago). The Germans had startled the world with the bombardment of Paris by Big Bertha. Young Lee had collected data revealing the potentialities of hydrogen as an explosive agent. He sent the War Department in Washington a complete report of his research, together with specifications of construction of equipment. In his file is a letter signed by Lt. Col. R. A. Millikan of the Science and Re-



THESE STONE TYPE MILLS for grinding various products are another of the machines turned out by Lee Engineering Company in Milwaukee.

search Department, A. S., A. P., affirming:

"1. Your letter of September 4, referring to experiments with an explosive mixture by the use of which hydrogen was the chief gas produced, has been referred to one of our technical men. His reply is transmitted herewith.

"2. In addition to what he has said we wish to call your attention to the fact the supply of materials you have used is comparatively limited, and the materials are consequently too expensive to be used on a large scale in this way."

Although Dr. Lee says he still is ready, upon call, to set up equipment in Texas to demonstrate his theory, "I was glad to file it away because I'm not anxious to show the world how to commit suicide.

"At that time I demonstrated that hydrogen gas properly used was so efficient as an explosive that it could be used with proper chemical mixtures to shoot bullets at the normal velocity, but without any noise whatever," he continued. "This, of course, would be a poor discovery to release to the general public, and I know of no military value to it. The fact remains, however, that I did make cartridges in 1917 that you could take rabbit-hunting and shoot rabbits without any report from the gun."

Still another use of the Lee motor control is in steel-cutting apparatus using oxygen as the cutting agent. The welding and cutting industry uses this instrument, and it enabled Henry Kaiser to break shipbuilding records where his Pantograph cutting machines sliced steel plates as if they were butter.

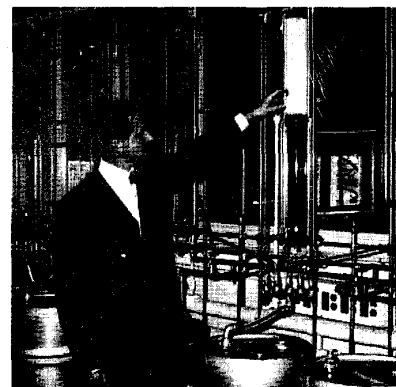
While this area of activity has occupied a percentage of his time, he doesn't boast about these accomplishments. "I consider our research on natural vita-

mins far more important to myself and other people than any of these engineering discoveries that can only be misused for war purposes," he declares. "There is actually more research in one vitamin tablet than there is in the whole gunsight that saved the Navy."

LIFETIME INTEREST IN NUTRITION

His deep interest in biochemistry and nutrition, dating back to boyhood as evidenced by the treatise written at the ripe age of 16, found expression in the form of a paper delivered to the senior class at Marquette Dental School in December, 1923. Titled "The Systemic Causes of Dental Caries," the paper is a scholarly summation in support of the thesis malnutrition is the basis of tooth decay and disease in general.

The paper quotes authorities whose research shows that "dental caries is due to a vitamin-deficient diet, starving the endocrines which then are unable to secrete sufficient of the germicidal ferments to prevent dental caries or other infectious disease. And the



THESE SPECIAL stills at Vitamin Products Company are used to concentrate fat soluble vitamins.



FROM THIS FIELD and many others like it comes the Green Leaf used by Vitamin Products Company in manufacture of certain of its products.

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presence of a systemic infection sets up a vicious circle, as the hyperactivity of the endocrines in fighting the disease makes the vitamin starvation more acute, such starvation being the original cause of susceptibility to the infection.

"It must be remembered that the metabolism of the human body, being an animal function, is a breaking down process of complex compounds that are built up by the synthetic processes of plant metabolism. The animal or human body cannot build up organic compounds, and is wholly dependent upon the vegetable kingdom for organic foods. Vitamins are a class of organic compounds probably the most complex of food constituents. . . All the ductless glands (thyroid, parathyroid, thymus, pineal body, pituitary, adrenal, gonads, pancreas, islands of Langerhans, spleen) must have one or more of the three classes of vitamins in order to secrete their vital fluids, and if deprived of the vitamins will atrophy and cease to function. Such cessation of function produces the following results:

- "1. Lessened resistance to infectious diseases, including dental caries. . .
- "2. Disturbances in metabolism, such as diabetes, rickets. . .
- "3. Lessening or cessation of endocrine function which is disturbance to organic function, including mental activity. . ."

THE SEARCH STARTS

Satisfied that malnutrition is to disease what correct nutrition is to health, Dr. Lee set about unlocking the secrets of how to prepare compounds containing the known vitamins and minerals, from natural sources. The brain that conceived the speed governor and the explosive power of hydrogen met

the challenge in the far-removed field of nutrition. In 1929 he had a concentrate ready for the market. It was distributed among dentist friends who discovered that its use among patients helped prevent colds and was helpful in heart cases.

"We found that heart disease had the same background as dental disease—malnutrition—and then we started contacting physicians as well as dentists with our product," Dr. Lee recalls.

This signalled the birth of Vitamin Products Co., of Milwaukee, Wis., with offices now in Boston, Philadelphia, Seattle, San Francisco, San Diego, Fresno, Dallas, St. Louis, Chicago, Salt Lake City and Orlando, Fla.

It took Vitamin Products Co. until 1956 to catch up with the annual sales volume of Lee Engineering and Manufacturing Co., President Lee reports. And although he probably could have made more money concentrating on electrical engineering, "you hate to turn down doctors asking for products to save life, and spend your time instead inventing gadgets that have nothing to do with life," says this unassuming gentleman from Wisconsin.

Among pioneers in the field of biochemistry who have had profound influence on the intellectual course of Dr. Lee's career was Dr. Sajous of Johns-Hopkins University who discovered vitamin C in 1933, and established that it is copper in organic form.

"Our philosophy," he says, "is to learn how to isolate specific fractions of foods that will correct specific deficiencies. It is not feasible to make one-a-day vitamins for prevention of disease because we should get that from eating natural foods."

REMOVE THE CAUSE

Lee products are available only through professional avenues. "We feel if the patient doesn't get the proper deficiency pattern, it's a waste of money to buy vitamins without actually know-

ing the need. We remove the cause."

An important tool in the Lee kit is the endocardiograph, adapted by Lee to amplify and record heart sounds. Described by Dr. Lee as "a definite diagnostic aid," the instrument records metabolic changes based on vitamin deficiency. A patient's progress—or lack thereof—is thus recorded at will.

With heart disease a leading cause of death in United States whereas in China and India the disease is "practically non-existent," Dr. Lee is hard-pressed to disguise his impatience.

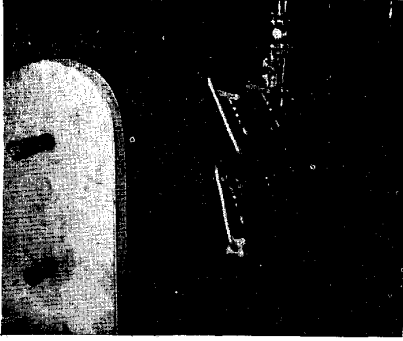
"It is as much a disgrace as it would be to have a million people a year dying of scurvy," he expostulates. "And all because of refined foods!"

A decade after Vitamin Products Co. had been launched, Dr. Lee organized the Lee Foundation for Nutritional Research, 2023 West Wisconsin Avenue, Milwaukee. A non-profit corporation, it was established as a research project with two objectives:

1. Education of the public to try to correct "this sad situation," and
2. Research to find remedies to correct malnutrition-caused disease.

A TRUE CRUSADER

The Foundation is the largest of its kind, and through the nearly two decades of existence has disseminated millions of pieces of literature, hundreds of thousands of books. It makes available, at savings, what are considered the most authoritative of the volumes, as pub-



THIS PICTURES the special high-vacuum drier for veal bone, used in Vitamin Products Company factory. It permits drying without excess heat and sterilization without heat. This equipment is an exclusive development by Lee Foundation for Nutritional Research.

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lished, pertaining to this sphere of interest—health and nutrition.

Dr. Lee is not the kind of person who pays lip-service to an ideal. He has backed his conviction with dollars—all the assets, in fact, of the exceptionally successful Vitamin Products Co. These resources, including valuable patents, have been assigned to the Foundation to assure its perpetuation.

A familiar figure in the field of “natural health,” Dr. Lee has provided moral and financial support to such organizations as Natural Food Associates, American Academy of Applied Nutrition, National Health Federation, and health publications championing freedom of choice and “the natural way.” He is a contributor to many of these publications, including *Herald of Health*, and his pamphlets and tracts are available through the Foundation. His endeavors include co-authorship, with William Hanson, of “Protomorphology, Study of Cell Autoregulation,” a study of biological growth factors and a survey of the problems of aging.

He’s a stalwart disciple of the principle of free enterprise and individual liberty, and of application of the Golden Rule, not only in relationships between individuals, but also between nations.

He asks for “economic freedom and commercial intercourse among nations while strictly minding our own business politically, permitting each nation to adopt and operate whatever form of government they choose. That course of action is nothing more than applying the Golden Rule, the only possible way of getting along with associates, whether people or nations.”