



**BUCKETING A BLADE** for the rotor of a gyro-glider is a most exacting task. These clamps are needed to insure uniform stress while cement is drying.  
— Photo by Herb Jones

# Electric Auto May Be Returning If College Research Is Successful

OREGON STATE COLLEGE—The "electric auto" may come back in feasible form in the future if research on fuel cells that is underway at Oregon State College and dozens of other industrial and college research centers is successful.

The old battery-run electric auto of 40 years ago made a bit at first but faded away because it took almost all of the electric energy derived to haul around the hefty block of storage batteries. It simply wasn't efficient enough.

Present-day research is keyed to development of a highly efficient fuel cell, says Dr. Robert E. Meredith, professor of chemical engineering at Oregon State College. In such a cell, the "fuel"—and it may take various forms—and oxygen or other elements are combined in such an electrochemical way that electrical energy is obtained directly without going through the mechanical cycle of generators, etc.

Right now, Meredith is experimenting with a carbon fuel cell

(a purified version of coal) that gives off direct electrical energy when heated and exposed to oxygen. The process is still relatively crude, but Meredith is hopeful that findings may lead to better things. Victor E. Hauser Jr., who is working for his doctor's degree, is assisting Meredith on the project.

Alcohol, metals, and dozens of other fuel cell substances are being tried elsewhere, Meredith noted.

A 1,000 fuel cell demonstration tractor was built by Allis-Chalmers Manufacturing Co. two years ago. The cells converted fuel gases directly into current for a 20-horsepower electric motor that powered the tractor. While admittedly only a demonstration device, the no-beat, no-noise, no-friction tractor showed that possibilities are there once the fuel cells are perfected, Meredith said.

Years of experiments remain, of course, but he foresees a time when the fuel cells will be used for dozens of purposes—in factor-

ies where electricity may become a by-product of some chemical reactions, space vehicles, etc.—in addition to auto prospects.

## Current Best Sellers

(Compiled by Publishers' Weekly)

FICTION

ADVISE AND CONSENT,

Drury.

HAWAII, Michener.

THE LAST OF THE JUST, Schwarz-Bart.

SERMONS AND SODA WATER, O'Hara.

TO KILL A MOCKINGBIRD, Lee.

NONFICTION

THE RISE AND FALL OF THE THIRD REICH, Shirer.

WHO KILLED SOCIETY, Amory.

THE WASTE MAKERS, Packard.

THE SNAKE HAS ALL THE LINES, Kerr.

BORN FREE, Adamson.

## Safe Stairs Important

AP Newsfeatures

When you plan to convert your basement into a recreation room, don't overlook the probable necessity of remodeling the stairs. You won't want an outdated intrusion into a modern room.

First of all, you want the stairs to be safe. If you plan to build a new staircase yourself, here are some tips on safety and design.

The most desirable staircase angle is 30 to 35 degrees. The relation between risers and treads also is important for safety and ease of walking. The rule is that the sum of one tread and one riser should equal 17 or 18 inches. A riser of seven inches and tread of 10 to 11 inches depth is ideal.

Handrails usually are placed 32 or 33 inches above the stairs. Ideal stairs are three feet wide, which will allow two people to pass comfortably.

Stairs with open risers will further the feeling of openness and lightness in your room.

Our idea is to suspend the stairs. One end of each tread rests on a shelf angle fastened to the wall. The other end is pierced by a 1½-inch round metal rod with a flange on the bottom of the step and at the ceiling.

In another open-riser construction—which does not need to be against a wall—the side boards of the steps form structural support. Steps rest on cleats on the inside face of the side boards. Railing and supports can be of black iron.

Treads should be of hardwood, preferably oak. An asphalt, rubber or cork tile finish provides an easy-to-clean surface.

If your present steps are well made and safe, but not attractive,

live, you can hide them with a storage wall or a room divider.

## The Reader's Corner

By MRS. BETTY COTE

Thomas Wolfe and his Family by Mabel Wolfe Wheaton.

A memoir of a well-known writer's family, based on the conversations and notes of the late Mabel Wolfe Wheaton, the elder sister of Thomas Wolfe, and the "Helen" of his novels. She had signed a contract to write this book in collaboration with LeGette Blythe only a week before her death. She comments on the dramatic version of "Look Homeward, Angel," as well as describing family affairs.

Emily Dickinson's Poetry; Stairway Of Surprise by Charles Roberts Anderson.

An intensive study of Emily Dickinson's poetry including the full text of over 100 of her best poems. In an informative, well-written, and beautifully organized book, Mr. Anderson reveals the several important facets of her thought and work: her theory of art, use of words and employment of wit; her attitude toward the outer world of nature in its many forms; and her preoccupation with the inner world of ecstasies and despairs.

The First Five Lives of Annie Besant by Arthur H. Nethercot.

The present book is the first volume of a projected two-volume biography of one of the most dynamic women of Victorian England. The author is a widely known scholar, professor of English at Northwestern University, a recognized authority on Bernard Shaw and the literary period associated with Shaw's name. This first volume is divided into five chapters corresponding to the five phases of Annie Besant's early career. They are entitled "The Christian Wife," "The Atheist Mother," "The Martyr of Science," "The Socialist Labor Agitator" and "The Chela of the Mahatmas." The second volume will cover the major part of her career as leader of the Theosophical movement as well as her role in the struggle for the emancipation of India. The biographer spent close to a year in India gathering materials for this book.

My Life by Marc Chagall.

Chagall's autobiography, written in 1922, when the artist was about 33, now published in English for the first time, has two parts. The first one deals with his youth up to the time he entered Leon Bakst's art school in Petersburg and parallels his paintings. All the motives and colors of his paintings, the blue stars, the violet earth, grandfather sitting on the chimney and eating carrots, the green rabbits, peasants in their baths, red Jews on the streets, on horses, even on roofs, and his

bride Bella are charmingly interwoven. The second part tells about the artist's way from Petersburg to Paris, his friendship with Apollinaire and Cendrars, his first exhibit in Berlin, his return to Russia at the beginning of World War I, his official activities as director of an art school after the Revolution, his disappointments and his return to France. The book makes pleasant reading for people interested in art or in Chagall, but has also literary merit of its own.

Sacco-Vanzetti, the Murder and the Myth by Robert H. Montgomery.

The trial of Sacco and Vanzetti in 1921 for the murder of a paymaster and his guard in South Braintree, Mass., has been a cause of contention for forty years. Because they were professional anarchists, it has been passionately argued by individuals and by organizations heavily financed to support the cause of the two men that they never were legally proved guilty; that they were convicted and executed for their political opinions. In the view of the late Justice Oliver Wendell Holmes, however, the Sacco-Vanzetti case was an ordinary murder "turned into a text by the Reds." And in the view of Mr. Montgomery, considered one of the foremost legal minds in Massachusetts, Sacco and Vanzetti were guilty of murder as charged and were properly convicted by an uninfluenced jury. He has devoted years to a study of the evidence, and in his book he examines the arguments of prosecution and defense.

Golf Is My Game by Bobby Jones.

Although Bobby Jones has played little golf in recent years, having retired from active competition in 1930, he is still the most highly regarded man in golf. Here is the master himself talking about many of the varied aspects of the game he knows and loves so well. He tells of fourteen years of exciting championship competition—and what golf is compared with what it was.

Fate Is the Hunter by Ernest Kellogg Conn.

A true account (with only a few names fictionalized) of the author's start as an airlines pilot and the dangerous missions he flew for the Air Transport Command in World War II. The setting is very nearly the whole world, from the cold Canadian wilderness to Brazil and India. He praises the line pilots who have been his friends and fellow officers, a modest, wary, tough, immensely skilled breed of air-

men; Ra'ivavae; an Expedition to the Most Fascinating and Mysterious Island in Polynesia by Donald Marshall.

An account of an expedition into the South Seas to the island of Ra'ivavae to examine the state of civilization and the religion, the rites, superstitions and beliefs of the inhabitants.

Memoirs of World War I by Brigadier-General William Mitchell.

General "Billy" Mitchell was one of the most controversial figures in American military history. Flamboyant and colorful, he fought for years to give air power its rightful place in war and peace. His turbulent Army career ended, of course, with his famous court-martial.

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### ON THE COVER

Harry Brown, left, and Merle Clark, Klamath Falls, subdue their eager flying machine as it comes alive in a stiff winter wind.

—Herald and News Photo