ENGINEERING

Engineers Need Biology

To prevent harm to waterways and soil, engineers should know more ecology. Lack of knowledge leads to harm.

➤ ENGINEERS generally have little or no knowledge of biology, and this gap in their education often causes them to do harmful things unwittingly, declares Dr. Paul B. Sears, professor of botany at Oberlin College and author of Deserts on the March and other books on conservation.

In *Science* (July 4) Dr. Sears points out some of the ill effects of engineering works that might be avoided if engineers had more knowledge of living things and the soils and waters in which they live.

Engineers, networking the country with highways, are interested in water only to get rid of it as rapidly as possible. This, declares Dr. Sears, "accelerates movement of water into main drainage channels in flood time and interferes with maintenance of ground-water level by removing water before it can soak in. Also, by speeding the movement of water in earth channels, it leads to roadside erosion and consequent lateral gullies into agricultural land."

Industrial engineers may do an excellent job in building wealth-creating factories, but when they arrange for discharge of wastes into rivers they destroy wealth that is already there. One industrial plant, cited as an example, killed more than 200,000 fish in one summer month by pouring its toxic wastes into the Miami River.

Stream control, which is likely to be a very lively subject after this summer's disastrous floods, needs the broadest ecological approach to be really effective. This has been done in such places as the Tennessee valley. Yet the planners of a $20,000,000 dam in 1935 rejected the services of ecologists, with the consequence that in a few years they were having to fight flood damage, and found their reservoir to be rapidly filling up with silt.

Present engineering-school curricula have no place for basic courses in ecology, which is the sociology of plant and animal life, and the sciences that deal with soils and natural waters. It is hard to see how such studies could be squeezed into the tightly packed schedules in today's highly standardized engineering courses. Yet without this knowledge, engineers will continue to do unintentional evil along with their good works.

Science News Letter, July 19, 1947

DR. CALDWELL—The death of Dr. Otis W. Caldwell means a loss to science and education.

EDUCATION

Progress—Read to Learn

The death of Dr. Otis W. Caldwell on June 5 has ended a notable career in science and education. Dr. Caldwell was a leading biologist and for ten years head of the Lincoln Experimental School of Columbia University Teachers College. He was a powerful force in the new mode of education in this country.

At the time of the annual meeting of Science Service, Dr. Caldwell, who was a trustee of Science Service, nominated by the American Association for the Advancement of Science, prepared for delivery over the CBS network an evaluation of the public's uses of printed pages about science. Because of illness Dr. Caldwell was not able to deliver this on the radio and SCIENCE NEWS LETTER *now publishes it as a final message from Dr. Caldwell.*

➤ DURING my three-quarters of a century a lot of things have happened to the reading public. In our childhood we were constantly urged to *learn to read.* Ever since those childhood days we have been *reading to learn.* Indeed no child has made much progress until his emphasis on learning to read has shifted to reading to learn. Each one of us should always be improving his reading habits, and many adults constantly do so. Reading with enjoyment, understanding, and growth in culture has become a major interest of millions of people.

I well remember when my reading was restricted to "The Youth's Companion," "The Herald and Presbyter," the Sunday school leaflet, a weekly newspaper and an occasionally borrowed volume of Dickens or other novelist.

Though we then lived in a county seat town, the nearest public library was thirty miles away. Even the best public library didn't possess much of the best reading material. Not much then existed, as compared with what may be had today.

The scope and nature of American education has changed. Everybody may now have an education provided he has a little of the necessary gray matter. We even waste a lot of educational time trying to educate a minority who do not possess the "makings," because a little education has become the shibboleth of social respectability. Anyway, our American education has produced millions of high school, college and university graduates, nearly all of whom can benefit through use of modern reading material. Educated men and women in all walks of life constitute a new reading public. It is new in size and new in the scope of its interests.

No aspect of human learning is more important than science. Its astonishing new knowledge appeals to almost everyone. The benefits to humans are hard to measure but are very great. And probably most important of all, the ways of working of scientists seem likely to affect thinking and action of people in general.

People understand much of our science these days. Atomic energy means something to most readers even though parts of it are yet unknown to those who know most. If those who write and who

speak will always be as clear as they can be, plenty of folks will understand. New words are not a bother whenever new ideas are reused as the vital things for which new words exist.

Science News Letter, July 19, 1947

OCEANOGRAPHY

Longest Mountain Range To Be Explored by Boat

➤ THE WORLD'S longest mountain range, that extends almost from pole to pole, is about to be systematically explored for the first time—and by boat. Thus far, men have had knowledge of its existence, but no one has actually seen more than its highest peaks.

This range is almost wholly under water, very close to midline of the Atlantic ocean; it is known as the Atlantic ridge. Top peaks are such islands as the Azores and Ascension.

The exploration will be conducted by an expedition in the research ship Atlantis, owned by the Oceanographic Institution of Woods Hole. Prime objective is to learn whether there are deep, eroded canyons in the flanks of the ridge. The expedition will also endeavor to learn the depth of its covering mantle of silt and obtain samples of this bottom material.

Science News Letter, July 19, 1947

NUTRITION

World Must Double Food

International cooperation is necessary and possible, states one of leading authorities on the world food problem. Prices must be stabilized.

➤ WORLD FOOD production will have to be doubled within the next 25 years, declared Sir John Boyd Orr, director-general of the Food and Agriculture Organization of the United Nations. It looks like a large order, but it can and will be done, he predicted.

Sir John, who is one of the world's foremost agricultural economists, spoke as the guest of Watson Davis, director of Science Service, on Adventures in Science over the Columbia Broadcasting System.

The alternative to bringing everybody in the world up to the American level of nutrition is not pleasant to contemplate, Sir John asserted: "Two world wars and a world depression are just a mild shake-up compared with what we are in for unless we can solve the fundamental problems of industry, agriculture and trade on a world scale."

The speaker was confident that a program of international cooperation to increase food supplies is possible even though international action in certain other fields has been having its difficulties. For one thing, he pointed out, this program will be based on facts and not on theories, and it is in the interest of everyone to see it succeed.

Preparations for such a program have already been started, and will be the subject of a conference of the FAO at Geneva next month.

Sir John outlined the steps that will be recommended:

"A Preparatory Commission of 17 nations was set up some months ago to study long-term world food proposals made by FAO last summer. Their report makes strong recommendations for a world-wide agricultural and industrial development program such as we have been discussing, plus international commodity arrangements to stabilize the prices of major agricultural products in the world market.

"That latter provision is intended both to protect consumers from too high prices in a period of shortage and to safeguard producers in a period of so-called surplus by helping to prevent the kind of slump that ruined agriculture between the two world wars. Under these proposals, reserves of certain foodstuffs would be built up to prevent famine and to be used in other ways to meet human needs, and farmers in the high producing countries would have an assured market at steady prices.

"The whole program would be under the general guidance of an advisory body to be known as the World Food Council, or Council of the Food and Agricultural Organization, which would keep an eye pretty continuously on the world food situation and be prepared to meet problems as they arose. The actual operation of the program would be up to the individual governments—but the machinery would be provided through which they could work constantly together."

Science News Letter, July 19, 1947

MUD-DIGGING—To trap samples of ocean mud, this 10-foot long steel tube (behind middle man) is dropped over the side of the ship and plummets into the ocean bed through the pressure of an 850-pound lead weight (between middle and right men). A cross-section of sediment fills the tube, which then is hoisted to the deck.

"Distillers feeds" are grain-yeast feeds resulting from the processing of grain by a distillery; in the production of spirits from grain only the starch is removed, with the proteins, fats and minerals remaining, further enriched by yeast used in the fermentation.