Retiring This Year

C. Hewitt Dix

C. Hewitt Dix becomes professor of geophysics emeritus this year after being on the faculty since 1948. But his association with the Institute goes back a lot further than that. In some ways it even goes back further than his four years as a student at Caltech, because he grew up in Pasadena and was in and out of the Robert A. Millikan household for years as a close boyhood friend of Glen Millikan.

Dix's student days at Caltech, from 1923 to 1927, are memorable for him not only for the education he acquired but for the men he met. Arthur Amos Noyes was his particular friend and benefactor, and he helped Dix get through school in a very practical way—by hiring him as a carpenter to work on the building of his home in Corona del Mar. Noyes was helpful in less tangible ways too; Dix says he learned more about the art of management from observing Noyes than he ever got from all the books he read on the subject. Noyes was also a shrewd judge of the potentialities of people, and Dix remembers him predicting that Linus Pauling would be a great scientist, and Arnold Beckman a remarkable industrial chemist.

After he got his Caltech BS in physics, Dix went to Rice Institute in Houston, Texas, where he took an AM in 1928 and a PhD in 1931, both in mathematics. He stayed on at Rice until 1934 as an instructor in mathematics; then, because of financial pressures, he took a job with the Humble Oil and Refining Company as a research geophysicist.

This leap into a new profession was challenging, but fortunately his training in physics was not as far removed from geology as it would be today. Besides, Dix had had some work in geology in the first courses John Buwalda taught at Caltech, and this background, coupled with a genuine interest in geophysical phenomena and a creative approach to problems, launched his 13-year career in the petroleum industry.

From 1939 to 1941, Dix was a geophysicist with Socony-Vacuum Oil Company, and in 1941 he returned to Pasadena as chief seismologist for the United Geophysical Company. He remained with this company until 1947, becoming both a vice president and a member of the board of directors.

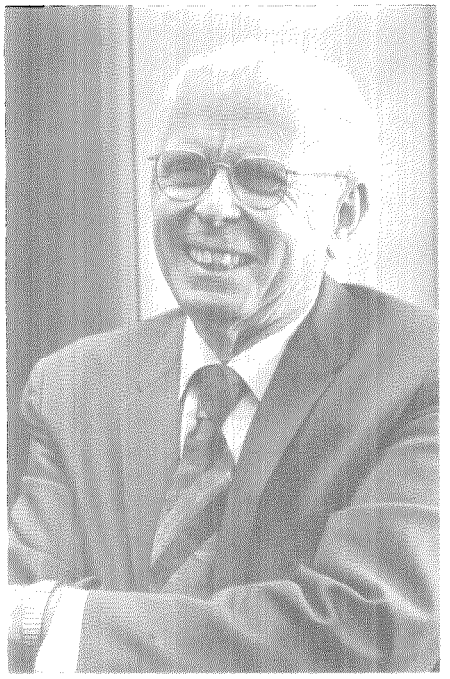
During his years in industry, Dix spent a good deal of time in some of the far corners of the world—particularly, Brazil, Venezuela and Colombia—making some very successful oil exploration studies. He also worked for the U.S. Navy during World War II, planning and setting up the first oil exploration work on the north coast of Alaska. (His book, *Seismic Prospecting for Oil*, was published in 1952.)

Gradually, travel became less and less appealing to Dix, and he couldn't help being eager to realize his long-felt determination to return to academic life. He was happy, then, in 1948 to accept the position of associate professor of geophysics at Caltech—though he hedged his bets by keeping a half-time consulting schedule for several years. In 1954 he became full professor of geophysics.

Dix's research at Caltech has been concerned chiefly with investigations of the theoretical aspects of the propagation of seismic waves. This has been done in various research projects—all of them, according to his colleague Robert Sharp, "displaying an amazing ability to think of new ways of doing things in the field of applied geophysics." He did several series of experiments with the aid of a miniature bus which had been converted into a mobile laboratory by the addition of extensive instrumentation. With it Dix and his students investigated discontinuities in the earth's crust down to a depth of 22 miles.

With a portable rig, they would drill a series of holes about 30 feet deep, place about 100 pounds of dynamite in each, and detonate two to eight shots simultaneously. About a dozen pairs of geophones were set out to monitor each shot. They were sensitive enough to pick up ground motions as small as one-millionth of an inch—so sensitive, in fact, that they were buried a few inches deep to reduce surface noises such as wind. The geophones were linked by wires to recorders in the bus. The recorders picked up from the geophones the reflected shot waves, which traveled at about 18,000 feet per second through the ground, reflecting off discontinuities at different depths.

The bus is now long gone, but from it Dix monitored artificially produced seismic waves all over the southwest, and this work helped him come up with a theory to explain the processes of mountain-building and the mechanism by which ocean basins maintain their integrity.



Another important aspect of Dix's work at the Institute—and one that is much harder to measure—is his careful, sensitive direction of graduate students. All over the world there are distinguished geophysicists who owe their distinction to the concern and influence of Hewitt Dix, who took the time to work with them on their problems. (He always made sure that the problems remained *theirs*, incidentally; he believes strongly in encouraging the creative ideas of young people, but he also believes in utilizing their interests to help them help themselves.)

While he considers retirement a "mixed grill," Dix is looking forward to working on things that for many years he has had to leave undone, including some theoretical problems in mathematics he had to drop when he left Rice. "Ever since," he says, "I've hung onto the field by clinging with my fingernails to the edge of the cliff. I believe the really good work comes from young people so I don't expect big results, but maybe I can get some kind of handhold now." □