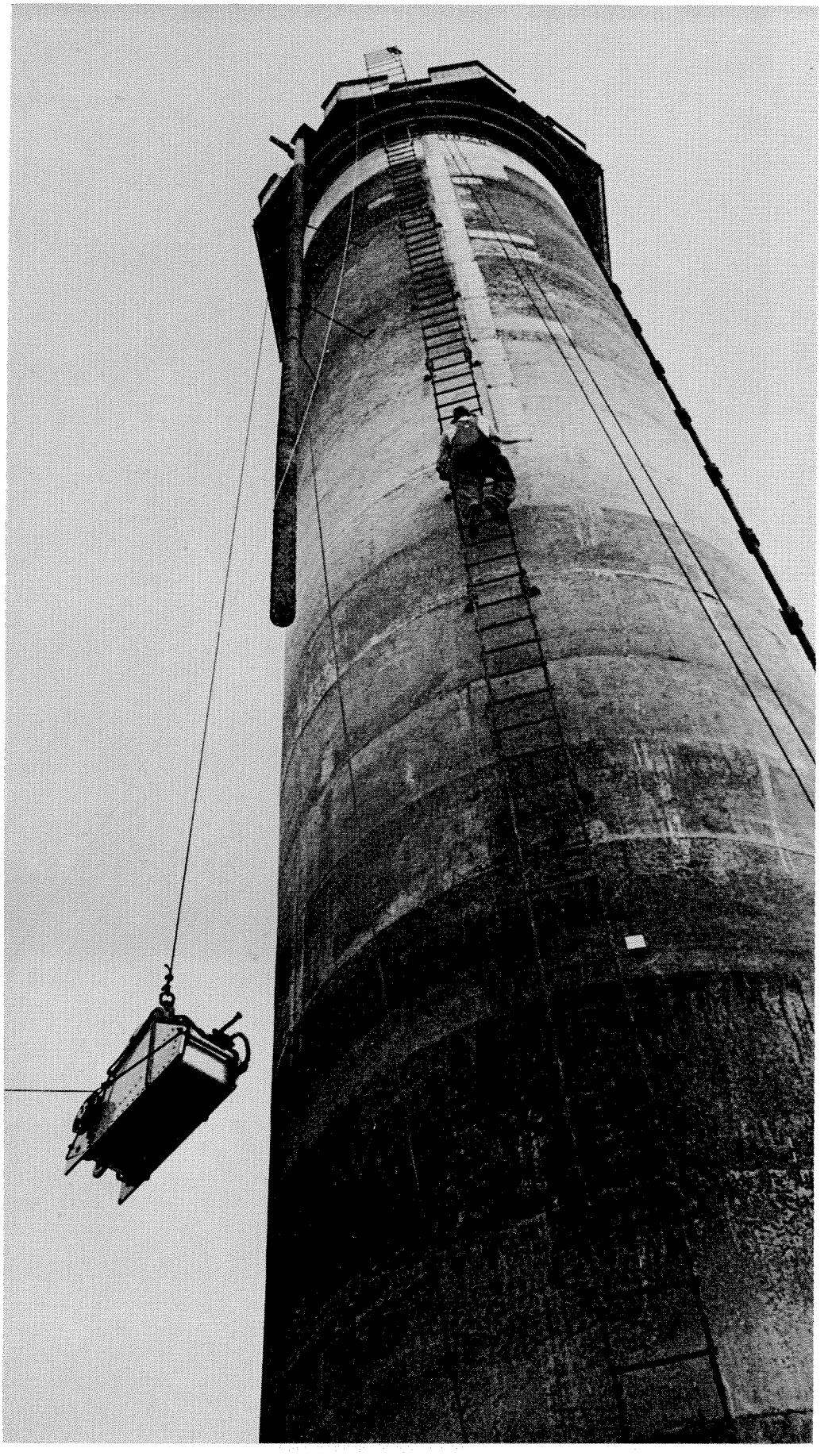
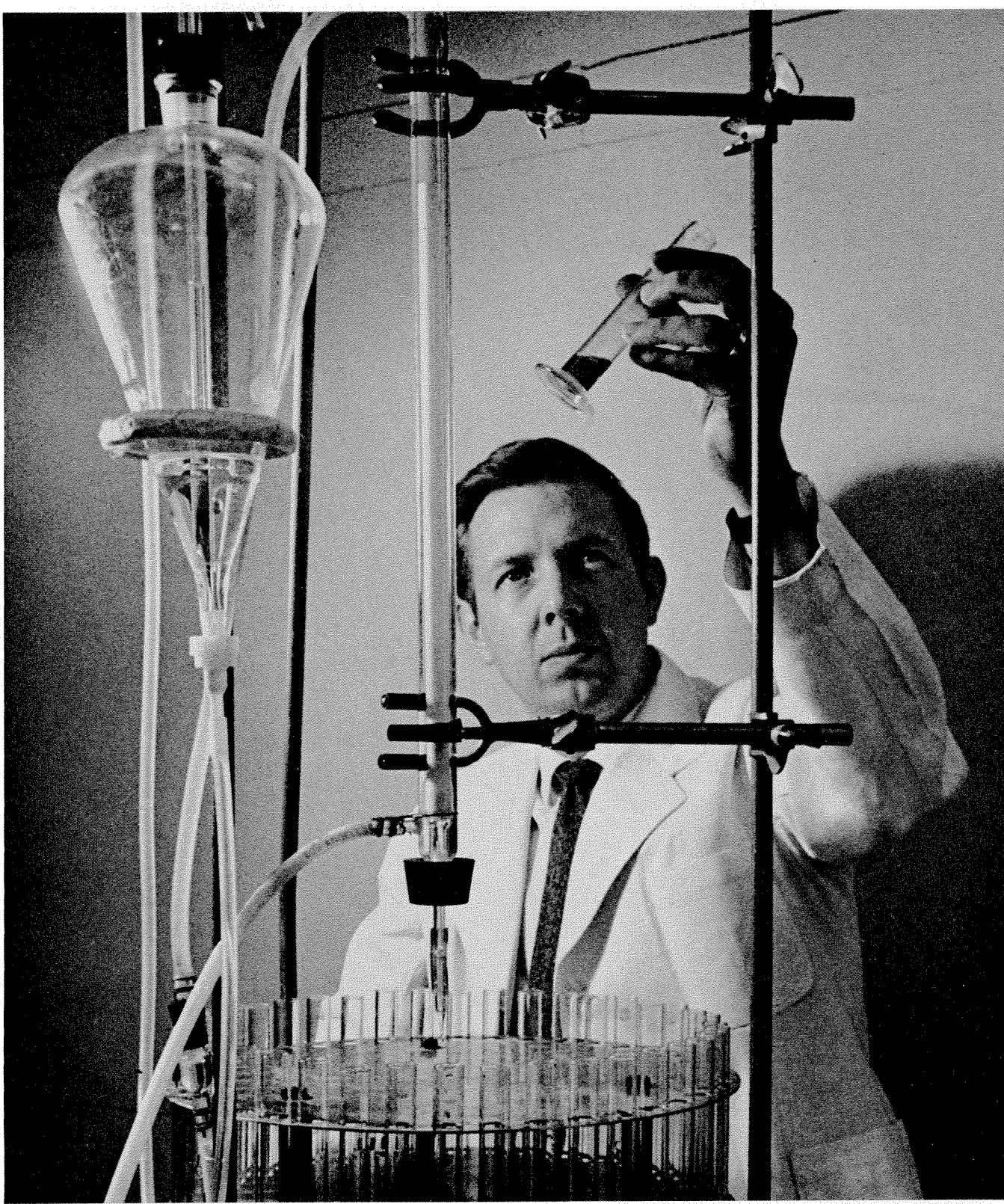


Research in Progress

ENGINEERING. A 1500-pound earthquake-manufacturing machine, developed by Caltech engineers, was hoisted up this 110-foot tower at Encino Dam last month. After being bolted in place, the machine shook the top of the tower with an energy equal to that of a fairly strong earthquake. This was the first field test of the machine, developed to make possible the more efficient design of earthquake-resistant structures.

BIOLOGY. Much of the experimental work on visual perception in Caltech's biology laboratories is performed with amphibians and fish. The fish are trained to differentiate between colors and patterns, coming to the surface and jumping out to snap for food only when the right pattern (polka dots or squares on white plaques) or the right color is shown to them. Sometimes flashing red and green lights are used to check the speed of response. Here, Harbans Arora, research fellow in biology, presents colored feeders (wooden balls painted red and green). The fish, which has been trained to respond to red light, will rise to the surface for this color. Responses are analyzed later by recording brain activities on an oscilloscope.



CHEMISTRY. Most individuals have one main type of hemoglobin in their blood; some have several. In order to study the various types, the hemoglobins must be separated. Here, at Caltech, graduate student Richard T. Jones, M.D., examines a hemoglobin sample before placing it on the chromatographic column attached to the upper part of a fraction collector. The hemoglobin solution is allowed to soak in, and is then followed by a chemical solution which causes the various hemoglobins to move down the column at different rates. As each hemoglobin washes off the column, it is automatically collected in test tubes. From such studies, chemists learn about the chemical structure of the various types of hemoglobin.