

# ENGINEERING RESEARCH

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Unfamiliar to the older alumni but accepted as a matter of course by today's students a new activity which might be termed "commercial research" has appeared on the campus during recent years. This development has come largely unheralded and unsung—quietly settling down in various nooks and corners of the campus to the slow task of ferreting out valuable bits of engineering and technical information.

The U. S. Soil Conservation Service has recently completed an exceedingly well equipped laboratory for the study of soil mechanics and erosion. At the present time there is an extensive research program being carried on under the direction of Dr. Robert T. Knapp, Ph.D., '29 and Vito Vanoni B.S., '26, M.S., '32.

Several years ago engineers of the Los Angeles County Flood-Control District found themselves faced with problems on high velocity flow in curved channels arising from drainage of the La Canada and La Crescenta districts. No quantitative information on this subject being available a research program was undertaken under the direction of Dr. Knapp. Arthur T. Ippen Ph.D., '36 carried out preliminary work last year and established definite relations on the effect of curves for high velocity flow channels of rectangular cross section. These proved of such value that the research is being extended this summer with more refined equipment and with channels of various cross sections.

From Douglas, Northrup, and many other large aircraft manufacturing companies comes an almost continuous stream of models for testing in the wind tunnel. The Institute has the only large wind tunnel in the west and information gained from these tests is not only of value to the companies, but is of great value to the young science of aeronautics. At the present time the Aeronautics Department is engaged in publishing a series of monographs giving the results of wind tunnel tests to date.

The American Petroleum Institute carries on various studies under the direction of Dr. Lacey, and the Asphalt Institute is investigating various problems under the guidance of Dr. Beckman. The Metropolitan Water District carried out extensive pump tests under the direction of Professors Von Karman, Daugherty, and Knapp, as well as electrical studies under Professor Sorensen. These are but a partial list of the many and varied problems being investigated on the campus. It must be pointed out here that Caltech is not just a testing laboratory, because no research is undertaken unless it is felt that it will contribute to general scientific or engineering knowledge.

These research programs are a great boon to many Tech men, for not only does work on these programs furnish financial support to the men, but the problems investigated have furnished much material in the work for advanced degrees. These programs have also been a stepping stone by which many an alumnus has obtained a valued position in industry.

Research is a costly undertaking but one that often richly rewards its backers. This is pointed out by Professor Daugherty in an article on the hydraulic laboratory sponsored by the Metropolitan Water District in which he indicates that the District invested some 150,000 dollars and as a result of information gained will eventually save between one and two million dollars.