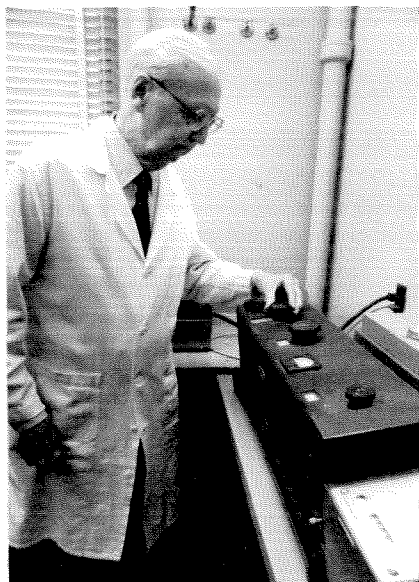


# The Spectrophotometers That Would Not Die

BECKMAN INSTRUMENTS has long been renowned for the quality and durability of its products. In 1970, to mark the firm's 35th anniversary, Beckman held a nationwide competition to find the oldest Beckman instrument still in use, the winner to receive a new pH meter as well as round-trip



As far as E&S can determine, these are the two oldest Beckman Instruments still in use on campus. Above: Walter Schroeder uses a 34-year-old DU spectrophotometer. Below: Rolf Sabersky uses a 30-year-old Model B spectrophotometer.



air fare to Beckman's corporate headquarters in Fullerton, California, to receive it.

The winner of this award turned out to be the Caltech chemistry laboratories, still happily using a 1936-vintage pH meter. Fred Anson, then professor of analytical chemistry, and George Slingmeyer, senior administrative assistant in chemistry, gladly accepted the new pH meter but, for some reason, declined the all-expense-paid trip to Fullerton.

Caltech continues to be the home of several venerable Beckman instruments that are still in daily use. As far as E&S can determine, the oldest of these is a Model DU ultraviolet/visible spectrophotometer in the laboratory of Walter Schroeder, senior research associate in chemistry.

Schroeder acquired this particular DU in January 1952 and uses it mostly for his work on hemoglobin. But he began using DUs as early as 1943 in a wartime project involving the analysis of rocket propellants. In this project the DU was used to analyze the complete spectra of cap-

tured German, Japanese, and Russian propellants. What happens to the propellant, the researchers asked, if you store a rocket in the blazing sun of a tropical beach for weeks on end?

For his work with hemoglobin, Schroeder uses the DU in its quantitative analysis mode. Hemoglobin absorbs light strongly at a wavelength of 415 nm in the ultraviolet. The more concentrated a solution of hemoglobin is, the more 415 nm light it will absorb. In this way, spectrophotometers can help determine a solution's concentration.

The second-oldest Beckman Instrument on campus seems to be a Model B spectrophotometer in the mechanical engineering student lab. The Model B was introduced in 1949 as a low-cost, easy-to-use alternative to the DU. It persisted in the market for 25 years, giving it the Beckman record for unmodified design. The exact age of this Model B has been lost in the mists of time, according to Rolf Sabersky, professor of mechanical engineering, but he says it's "just about 30 years old."

Sabersky uses his Model B with a special attachment called a diffuse reflectance accessory — an arrangement of mirrors in a sphere that allows him to study the radiation absorbed and emitted by opaque surfaces. With it he can determine the radiative heat transfer characteristics of such things as paper, roofing material, cloth, and tree leaves.

E&S has received reports of other old Beckman instruments on campus but has been unable to confirm that any are older than Schroeder's or Sabersky's. But we've heard tell of ancient centrifuges and antique liquid scintillation counters, so if you think your instrument can give Schroeder or Sabersky a run for the money, E&S would love to hear from you. We can't offer any prizes, however, other than the inner satisfaction that comes with the knowledge that you have made maximum use of a high-quality instrument. □