CURRENT interest in long-time storage of wheat suggests the need for information with respect to the relation between length of storage and quality. It is well known that any damage such as will affect the commercial grade is likely to affect the quality deleteriously, but information with respect to possible deterioration when wheat is stored dry and free from insect damage is decidedly deficient. Wheat from the 1921 and later crops stored under such conditions by the Colorado Agricultural Experiment Station for the purpose of studying the relation of age to viability appeared to afford an unusual opportunity to study this relation. Accordingly, samples of those lots were milled and baked in the Milling, Baking, and Chemical Laboratory of the Bureau of Agricultural Economics in cooperation with the Division of Cereal Crops and Diseases, Bureau of Plant Industry, U. S. Dept. of Agriculture, in 1938. The purpose of this paper is to present such of the resulting data as will be of interest. Robertson and Lute have reported on the germination of the samples and have given the pertinent facts regarding their storage.

MATERIALS AND METHODS

Briefly, the studies herein reported were limited to Marquis spring wheat grown under irrigation and Kanred winter wheat grown on fallow without irrigation. After threshing and cleaning, the grain was stored in 100-pound sacks in a dry, unheated room. The annual precipitation and average annual humidity at Fort Collins are given by Robertson and Lute and the possible relation of these to storage is also discussed by these authors. The moisture content of the grain at time of storage was not determined but is believed to have been relatively low.

Samples of Marquis representing eight crops from the years 1921 to 1929 and of Kanred representing three crops from the years 1921, 1924, and 1929 were milled and the flour baked into bread.

The tempered wheats were milled on an Allis-Chalmers experimental flour mill provided with three pairs of break rolls and one pair of smooth rolls. (See U. S. Dept. of Agr. Tech. Bul. No. 197 for complete description of milling equipment and operative technic). Chemical tests (moisture, ash, and protein) were made by

1Contribution from the Department of Agronomy, Colorado Agricultural Experiment Station, Fort Collins, Colo. Received for publication July 27, 1939.
2Agronomist, Colorado Agricultural Experiment Station, Associate Baking Technologist, Division of Cereal Crops and Diseases, Bureau of Plant Industry, and Associate Grain Technologist, Grain Division, Bureau of Agricultural Economics, respectively.
3Credit is due H. C. Fellows, J. F. Hayes, Elwood Hoffecker, Ray Weaver, B. E. Rothgeb, and M. H. Newstadt of the Milling, Baking, and Chemical Laboratory for making some of the determinations reported in this paper.
5Loc. cit.