These considerations seem to point strongly to the conclusion that the nitric acid formed in the soil in the process of nitrification is the solvent which may account for the availability of the soil constituents, both cations and anions, to the plants. This would be in line with the well-known fact that the total ash content of wheat grain increases with the increase in the protein content of the grain. Preliminary results obtained by the writer also indicate that the calcium and iron content of wheat increases with the increase in protein relatively more than does the total ash of the grain.—Jehiel Davidson, Bureau of Agricultural and Industrial Chemistry, Agricultural Research Administration, U. S. Dept. of Agriculture, Kansas State College, Manhattan, Kan.

THE RELATION OF ATMOSPHERIC HUMIDITY TO MOISTURE IN COTTONSEED

Cottonseed rapidly attains moisture equilibrium with the surrounding atmosphere. In humid regions storage of seed presents a problem of economic importance to farmers, seedsmen, and others who have occasion to store cottonseed for planting or milling purposes. At ordinary air temperatures safe storage is dependent largely on the moisture content of the seed; hence, information on the relation between seed moisture and the relative humidity of the storage atmosphere is of importance in determining conditions for safe storage. Such information is provided in this study.

The cottonseed used was well-matured seed of the Stoneville variety that had been in storage for approximately 1 year. Initial moisture content was 8.7% and germination was 90%. The seed was thoroughly mixed and divided into two lots. One lot was retained as normal, live seed, while the other lot was killed by heating at 100° C for 30 minutes.

Duplicate 150-gram samples of each lot were placed in desiccators over sulfuric acid solutions of the concentrations necessary to maintain the desired humidities. The data of Wilson1 were used in preparing the solutions. Preliminary experiments had shown that cottonseed would reach approximate equilibrium in moisture content with the surrounding atmosphere in 4 weeks or less. Since a change in the moisture content of the seed would result in a change in the concentration of the solution over which it was stored, the original acid solutions in the desiccators were replaced with fresh solutions after 4 weeks. The desiccators were held at a constant temperature of 25° ± 1° C. The seeds were tested for moisture content after 8 weeks and 12 weeks storage. All moisture percentages are reported on a wet-weight basis.2

Table 1 shows the moisture content of live and dead seed at each of the humidities used. Relative humidities in the storage atmos-