mutually bagged florets set seed. The appreciable seed set in this case probably resulted from emasculation at too late a stage of anther development or chance contamination of pollination bags with field pollen.

Scissor-emasculated florets of bromegrass and crested wheatgrass were treated with different concentrations of alcohol with a view to hasten the degeneration and decay of the clipped anthers. Concentrations of 30, 40, 50, and 60% alcohol were used for 10 and 20 seconds. In both grasses emasculation was complete. However, there was reduced seed setting in open-pollination panicles as compared to those without the alcohol treatment. Consequently alcohol treatment offered no advantage over scissor emasculation without alcohol treatment.

Clipping of flowers by scissors appears a promising method of emasculation for perennial grasses with moderately large floral parts. The method is simple and rapid, and it results in good seed setting. In addition, florets can be checked readily when the emasculation of an inflorescence has been completed. Some reduction in seed setting results from scissor emasculation as compared to open-pollination. This reduction is not as serious as that following emasculation with tweezers or the use of hot water.—A. N. GHOSH and R. P. KNOWLES, Research Station, Canada Department of Agriculture, Saskatoon, Saskatchewan.

COUNTER-PLANTER FOR GRAIN SORGHUM IN GREENHOUSE FLATS

In an investigation of grain sorghum seed viability and seedling vigor at Iowa State University, it was necessary to plant a large number of rows of 50 seeds each in greenhouse flats. To expedite counting and planting operations, the author designed and the Iowa State University Instrument Shop constructed the counter-planter shown in figures 1 and 2.

The counter-planter was constructed using 2 pieces of 1/4-inch aluminum (20 1/2 by 2 inches) beveled on one edge and fastened together with hinges and coil springs to form a "V". Fifty blind holes of approximately 3/16-inch diameter, or slightly larger than the largest seed used in the investigation, were drilled in the apex of the "V".

Counting was accomplished by placing a portion of seed at one end of the counter-planter, then tilting and shaking the counter-planter slightly so that seed would roll across it and out the opposite end. At a glance it could be determined whether each of the 50 holes contained a sound seed. Tweezers were used to remove extra, cracked, diseased or otherwise damaged seeds and to replace them with sound seeds. Planting was accomplished by pressing the planter into the soil and opening the "V". In loose, dry soil the seeds were covered as the counter-planter was removed, but were left uncovered when the adjacent row was planted. The last row was covered by hand.

The counting-planting operation was performed and accurately, at a rate of approximately 90 rows per hour. Seeds were planted at a uniform depth and spaced evenly within a row (figure 1). This was of value in obtaining accurate and comparable measurements of seed and seedling vigor among different genotypes and seed subjected to varying freezing treatments.

The counter-planter was most effective with seed of approximately the same size as the holes, and with samples of uniform seed size. It worked satisfactorily with small seeded samples of Norghum and large seeded samples of RS 501 and RS 610.

It seems likely that the counter-planter could be modified for use with other round seeded crops. Providing interchangeable "jaws" with various sized holes at the "V" would enable the planter to accommodate a range of seed sizes.—GERALD E. CARLSON—Formerly Graduate Assistant, Agronomy Department, Iowa State University, now Research Agronomist, Regional Pasture Laboratory, University Park, PA.