SEED PRODUCTION ON GRASS CULMS DETACHED PRIOR TO POLLINATION

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POPE (11) has shown that barley, *Hordeum vulgare* L., "harvested" prior to flowering produced viable seeds following hand emasculation and pollination, when the detached culms were sustained by distilled water. Harlen and Pope (4) had previously found that barley seeds matured sufficiently to germinate when harvested only 5 days after pollination, and (5) that spikes harvested 3 to 5 days after pollination continued development of the caryopses for at least 8 days if kept moist and in the unthreshed condition. Verret, *et al.* (12) have shown that sugarcane, *Saccharum officinarum* L., would produce viable seeds on canes which were detached prior to pollination and sustained in a 0.05% solution of sulfurous acid. Gruber (3) reported that most of the forage grasses which he investigated would bear viable seeds if harvested 14 days after flowering began. He noted considerable variation between species.

Hermann and Hermann (6) collected seeds of crested wheatgrass, *Agropyron cristatum* (L.) Gaertn., at 3-day intervals beginning 9 days after anther exertion. None of the seeds harvested 9 days after anther exertion germinated, either immediately following harvest or during five successive tests conducted at weekly intervals. Seeds harvested 12 days after anther exertion gave low germination values. Each succeeding period of harvest gave higher germination values than earlier periods, the maximum being reached by ripe seed harvested 36 days after flowering started.

McAlister (10) collected seeds of eight species of grasses at four stages of development, the earliest being 13 to 16 days after full bloom when the seeds were in the pre-milk stage. These pre-milk seeds gave fairly good germination values (70% or more) during the first months of storage. After long periods of storage, however, the decrease in viability was greater in immature than in mature seeds in most instances. He found that hulled seeds of the pre-milk stage, when dry, weighed only 16 to 44% of fully matured seeds.

Although environmental influences encountered by these investigators probably differed, their findings suggest that barley will mature seed in less time, following pollination, than is required by the forage grasses. It was with considerable interest, therefore, that the writer observed, during the winter of 1941-42, that the detached culms of meadow fescue, *Festuca elatior* L., downy chess, *Bromus tectorum* L., and mountain brome, *Bromus carinatus* Hook. and Arn., placed with the cut ends in vials of water prior to flowering produced well-