STERILE FLORETS IN WHEAT AND OTHER CEREALS.

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Floret sterility frequently occurs in the cereal crops in the Great Plains. The damage resulting therefrom is considerable and apparent to the most casual observer. It may be induced by drought (Pl. I, Fig. 1), hot winds, insects or parasitic fungi or by the combined action of two or more of these factors. Whatever the cause, the usual forms of sterility are too well known to require discussion herein. The purpose of this paper is to consider a condition of sterility which, though closely associated with drought and hot winds, is due, in the opinion of the writer, to neither as such. It may be designated as "floret sterility," since the individual florets are the structures affected by the disease.

Floret sterility is characterized simply by failure to produce grain. The appearance of the head and glumes is perfectly normal except that the glumes are less distended than in well-filled heads, in which sterile florets are easily detected because of the contrast. In durum and other wheats with stiff glumes and in seasons when the upper florets of the spikelets do not fill, sterile florets or even sterile heads may appear perfectly normal (Pl. I, Fig. 2). For this reason there may be considerable loss from sterility without its presence being suspected. Unlike the usual forms of blight, sterile florets are not confined to a particular part of the head (Pl. II, Fig. 1). They may occur in groups at the base, the tip, or the middle of the head, or they may be scattered, some at the base, others at the tip, and still others in the middle. One floret of a spikelet may be sterile though the other contains kernels.

Material damage from floret sterility was first observed at the Bellefourche Experimental Farm at Newell, S. D., in 1910. This was a very dry, hot season. It was, therefore, a matter of some surprise that the durum wheats produced smaller yields than the spring common varieties, although the appearance of the former in the field and the quantity of straw produced indicated the opposite result. On investigation it was found that this condition had occurred at other field stations in the Great Plains in both 1910 and 1911, two of the