that stomatous and astomatous proboscides have the same feeding reactions as normal Dilepti.

The interesting point is that a small specialized portion of the organism is capable of the same complicated response that is characteristic of the total organism.

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SOLID AND HOLLOW STEMMED GRASSES OF THE JORNADA EXPERIMENTAL RANGE

ORTHODOX descriptions of the grass family contain the statement "stems usually (or mostly) hollow." This characterization has been generally accepted as applying to all mature grasses other than the genera grouped under the tribes Andropogoneae and Nazieae, which are usually cited as exceptions.

My own conception of the stem structure of grasses conformed to this description until early in 1927 when certain grasses, not members of either of the excepted tribes, were found to have solid stems. This discovery led to further investigations, the results of which show that a very high percentage of the mature grasses native to the Jornada plains in southern New Mexico have solid internodes.

A subsequent search of the literature and other sources of botanical information has produced meager results regarding the occurrence of the solid stems in grasses. Only two statements were found to be out of the ordinary. Bews[1] states that the solid stem in grasses may be regarded as a primitive characteristic. Vavilov[2] refers to a solid-stemmed variety of *Agropyrum cristatum* Beauv., which he reports is widely distributed over European and Asiatic Russia.

Bews[1] also states that the culms of grasses are usually hollow, but a number of types have solid stems, including the Andropogoneae and many of the Paniceae.

The scant measure of attention given by authors to the stem structure in the descriptions of species indicates that the prevalence of solid stems in the grasses of the semi-desert Southwest is a local condition, which, possibly, has escaped notice.

Investigations relative to the stem structure of the native and introduced grasses of the Jornada plain were started in the late summer of 1927 and carried through each succeeding summer up to and including 1930. Field methods employed consisted of the following procedure: mature stems of the various species were selected and cut transversely at a point about equidistant from the nodes. The cut ends were examined with a hand lens. If there was any doubt regarding the determinations made with the hand lens, a specimen was selected and preserved for microscopic study.

Grasses examined to date number 70 species, representing 30 genera and including members of 8 tribes. Solid-stemmed grasses numbered 52 species, or 74 per cent. of the total number collected, and hollow-stemmed grasses include 18 species, or 26 per cent.

Annual and perennial plants were classified separately. The annuals include 15 species, of which 7, or 47 per cent., were solid-stemmed and 8, or 53 per cent., were hollow-stemmed.

Perennial grasses included 55 species, of which 45, or 82 per cent., were solid-stemmed and 10 species, or 18 per cent., were hollow-stemmed.

Native perennial grasses produce the major part of all the forage on southwestern plains. In the Jornada region the species of 5 genera—Bouteloua, Sporobolus, Aristida, Hilaria and Scleropogon—furnish 85 per cent. or more of the forage derived from grasses. All the species representing these genera are able to withstand grazing to a marked degree during protracted drought. They have the ability to exist on the less favorable situations, as well as on the more favorable ones. Observed representatives of these genera native to this region are without exception solid-stemmed grasses.

The hollow-stemmed perennial grasses furnish very little forage. They are sparsely scattered throughout the region, being restricted to the more favorable sites. Even on these more favorable locations, such as the bottoms of intermittent streams, or on the higher elevations where the precipitation is greater, the hollow-stemmed species generally exist under the protection of some jutting rock or in the shade of some hardy shrub.

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[1] J. W. Bews, "The World's Grasses," Longmans Green and Company, London, New York and Toronto, 1929.

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