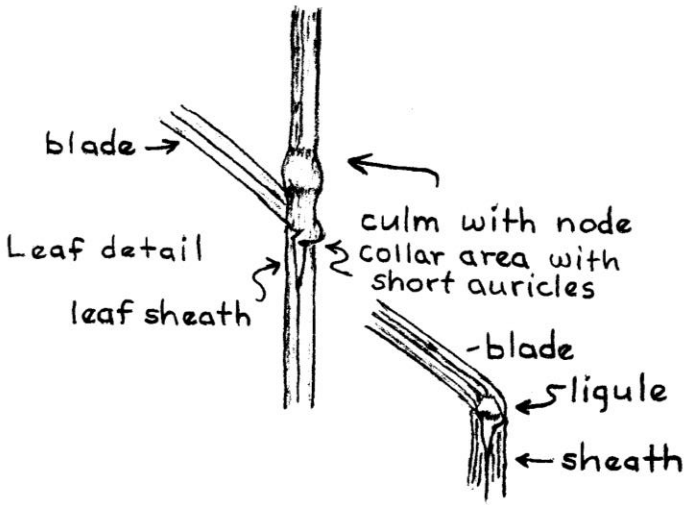
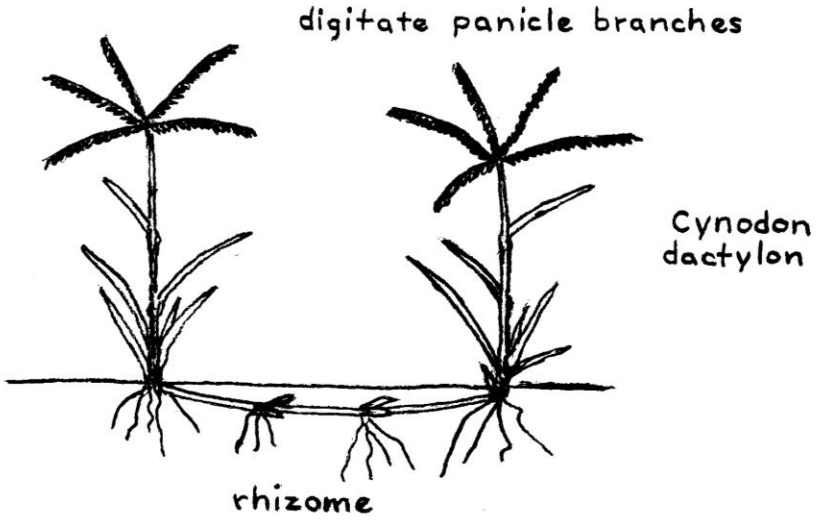
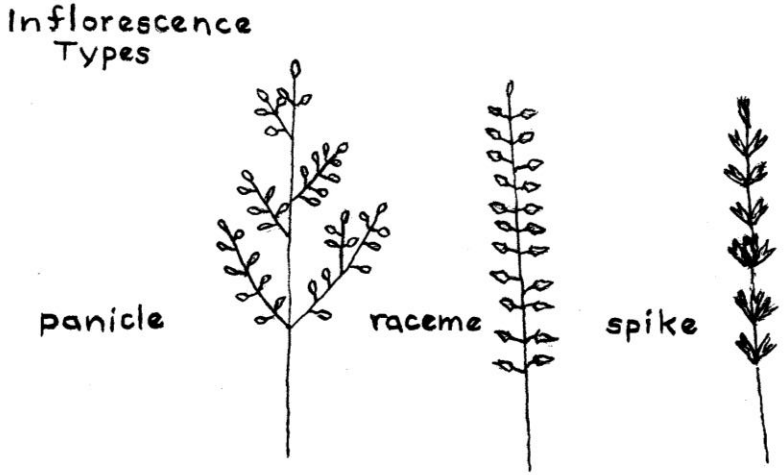






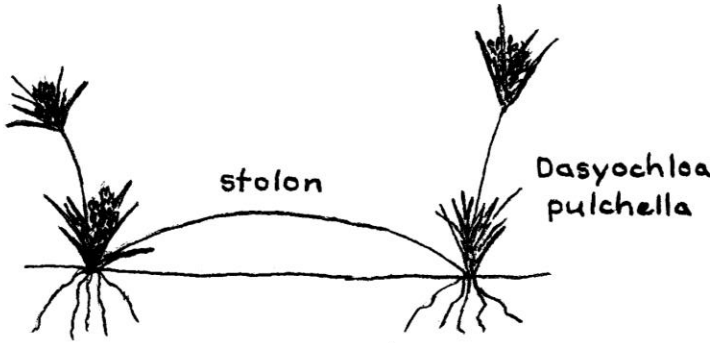
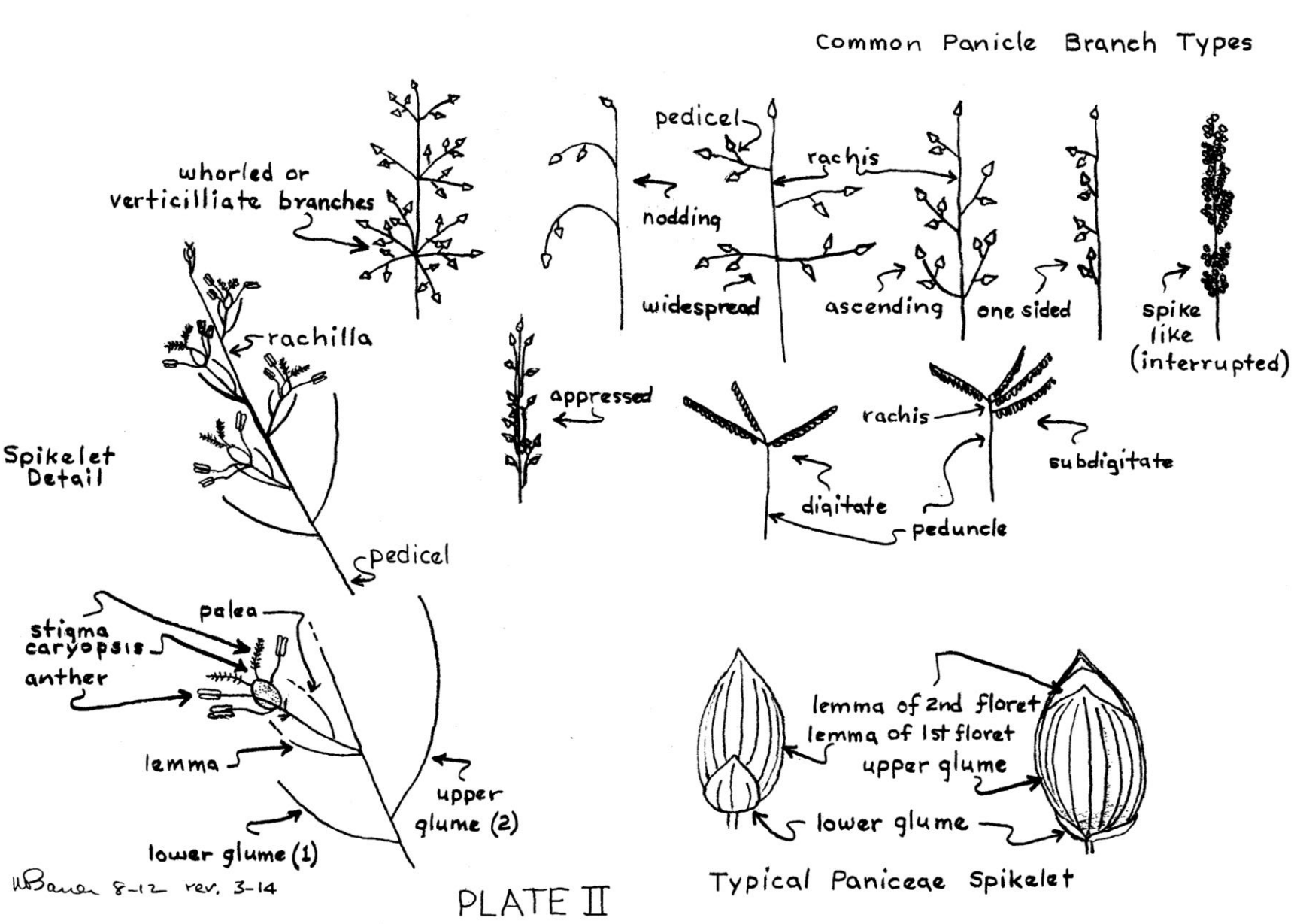
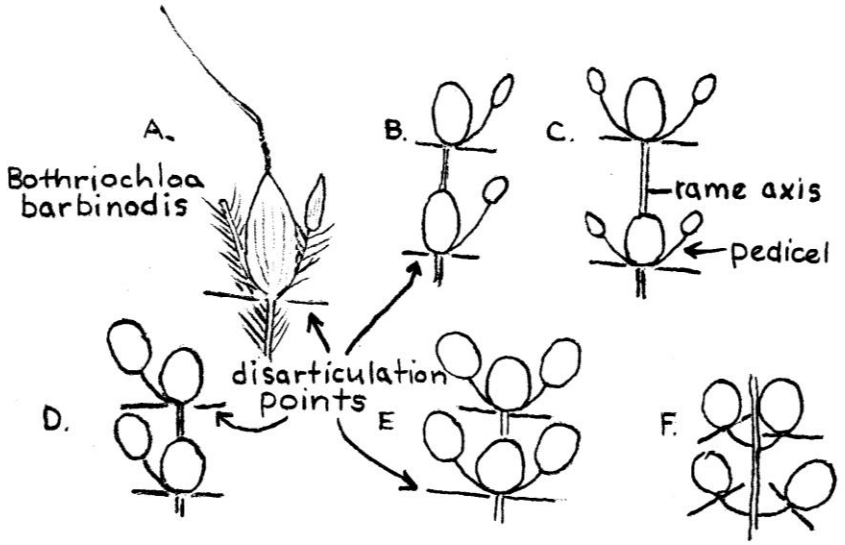


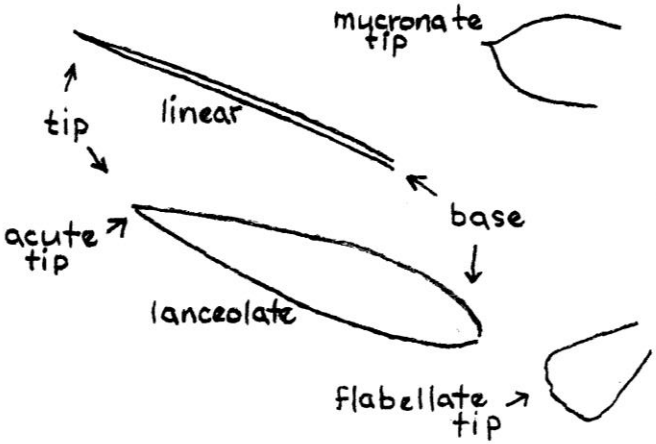
PLATE I

Bauer 8-12 rev 3-14


Common Panicle Branch Types
whorled or verticilliate branches
rachilla
Spikelet Detail
pedicel
palea
stigma
caryopsis
anther
lemma
upper glume (2)
lower glume (1)
nodding
widespread
pedicel
rachis
ascending
one sided
spike like (interrupted)
appressed
rachis
subdigitate
digitate
peduncle
lemma of 2nd floret
lemma of 1st floret
upper glume
lower glume
Typical Paniceae Spikelet
W Barker 8-12 rev. 3-14
PLATE II



Various Andropogonae inflorescence arrangements
top row: heteromorphic spikelet units
bottom row: homomorphic spikelet units
A–E Rame segments F. raceme segment



Various shapes mentioned for lemmas, leaves and overall outline of spikelets

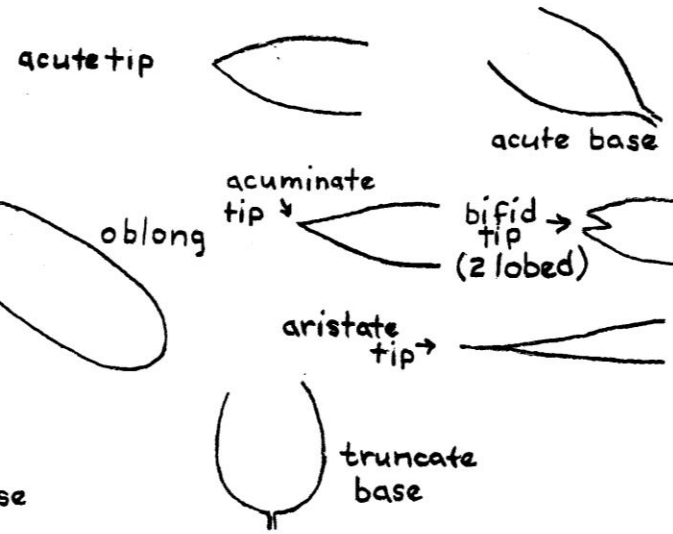


PLATE III

MBauer 8-12 rev 3-14

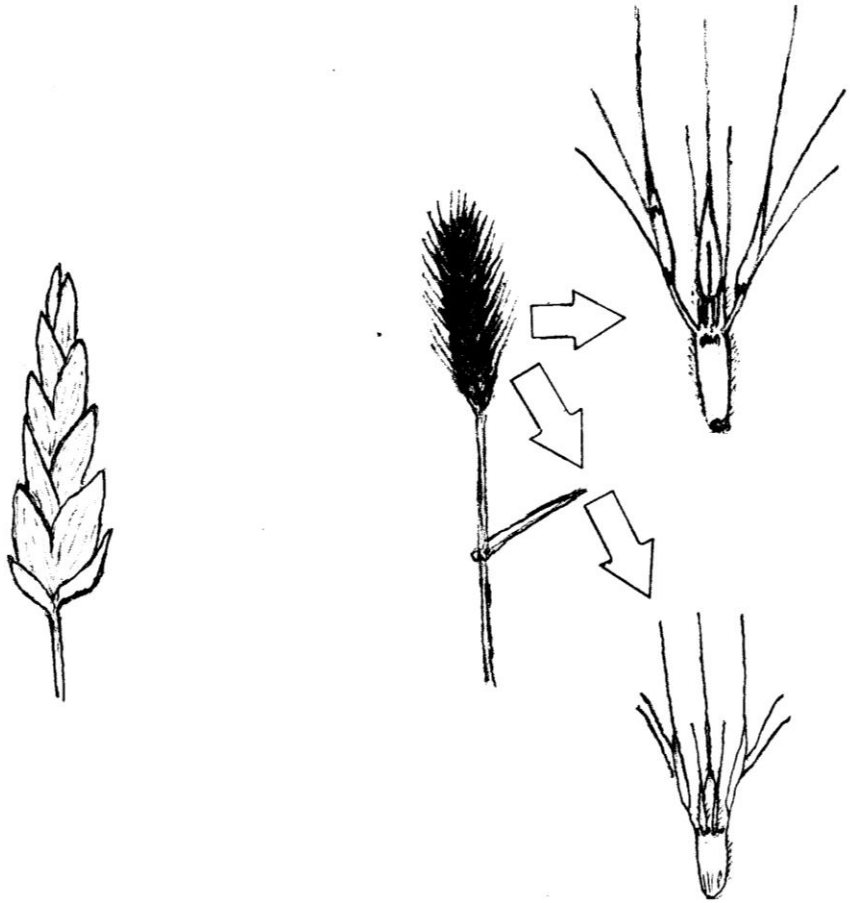


PLATE IV

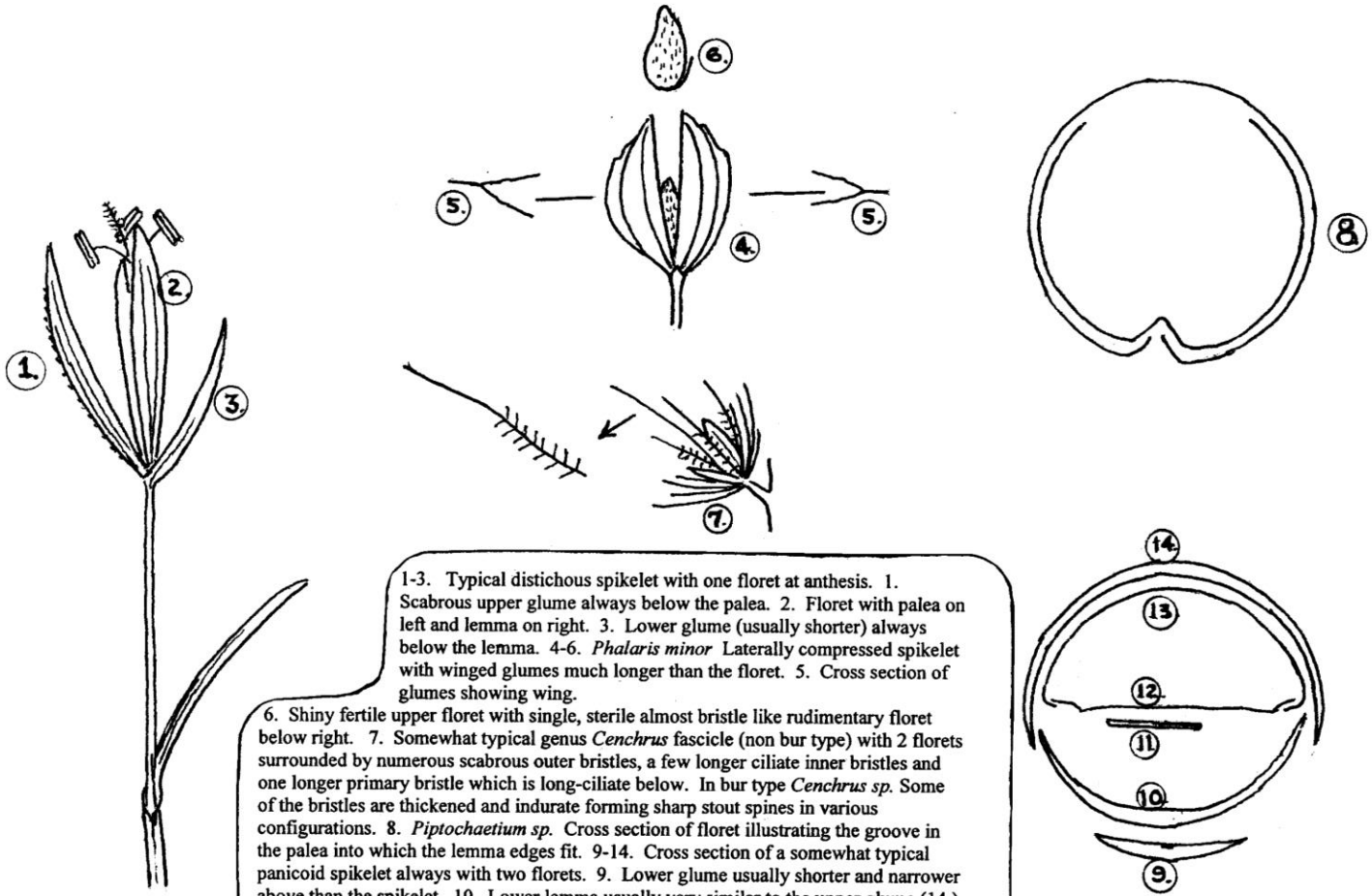
Left The typical Pooid spikelet showing the pedicel, glumes and nine florets. The paleas are not visable being obscured by the larger lemmas; nor is the rachilla visable. The lower glume (g1) is always below the first (lower) floret. Florets can vary from one to numerous. Awns may or may not be present.

Right Three Drawings *Hordeum murinum* of the Tribe Triticeae is common around Tucson. In this species the rachis disarticulates along with three spikelets. The upper drawing shows the adaxial or inner side. The darkened areas of the rachis segment are scars remaining from where the rachis segments attach. The shorter awns are on the glumes. In the central floret is what looks like an awn but is a continuation of the rachilla, probably vestigial from a progenitor that had more than one floret per spikelet. *Hordeum* sp. Only have one floret.

The bottom drawing illustrates the abaxial side. Most grasses have opposed glumes but in this species the glumes of the central spikelet are seen to be adjacent and long ciliate. If this segment is rotated about 90 degrees it would be seen that the glumes of the lateral spikelets are also adjacent with one being ciliate.

In this case the inflorescence is a raceme because the lateral spikelets have a short pedicel. The central spikelet is sessile, but the rachilla is evident for some distance between the glumes and the lemma, somewhat pedicel like.

Many of the species of this tribe do not have disarticulating rachises but all have spikes or spike like racemes. In the various species distances between spikelets or spikelet groups is highly variable.

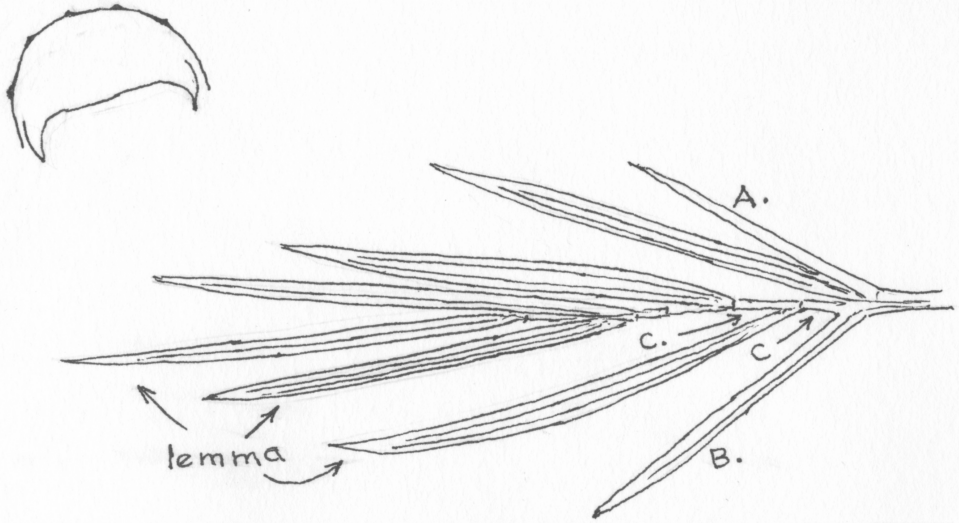


1-3. Typical distichous spikelet with one floret at anthesis. 1. Scabrous upper glume always below the palea. 2. Floret with palea on left and lemma on right. 3. Lower glume (usually shorter) always below the lemma. 4-6. *Phalaris minor* Laterally compressed spikelet with winged glumes much longer than the floret. 5. Cross section of glumes showing wing.

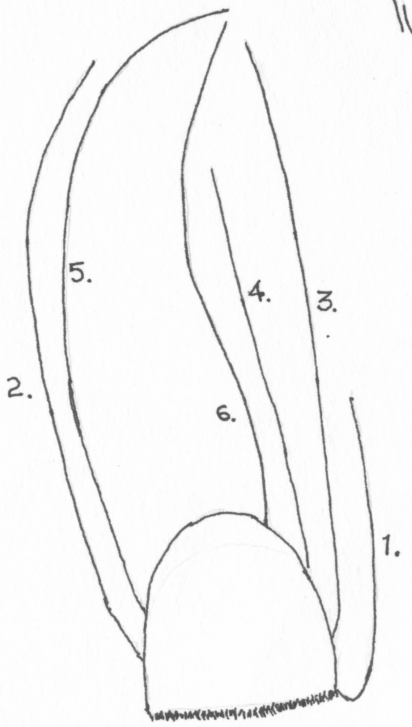
6. Shiny fertile upper floret with single, sterile almost bristle like rudimentary floret below right. 7. Somewhat typical genus *Cenchrus* fascicle (non bur type) with 2 florets surrounded by numerous scabrous outer bristles, a few longer ciliate inner bristles and one longer primary bristle which is long-ciliate below. In bur type *Cenchrus sp.* Some of the bristles are thickened and indurate forming sharp stout spines in various configurations. 8. *Piptochaetium sp.* Cross section of floret illustrating the groove in the palea into which the lemma edges fit. 9-14. Cross section of a somewhat typical panicoid spikelet always with two florets. 9. Lower glume usually shorter and narrower above than the spikelet. 10. Lower lemma usually very similar to the upper glume (14.). 11. Lower palea, absent in some species, but often fairly small, tongue shaped and laying against the upper palea (12.). 13. Upper lemma edges usually clasp the upper palea. `14. Upper glume about the same length as the upper floret and usually overlapping the similar lower lemma (10.).

MBauer 6-15

PLATE V



ABOVE: a bilaterally symmetrical multi floret spikelet not to scale patterned after a brome. A. First or lower glume (sometimes abbreviated g^1) B. Second or upper glume (sometimes abbreviated g^2) C. rachilla to which the lemmas are directly attached. Note six lemmas hence six florets. The lemmas are hiding the paleas and the reproductive parts within. Being bilaterally symmetrical the lower floret (first floret) is always adjacent to the lower glume; therefore the second floret is always adjacent to the second glume. In nearly all cases the lower florets with the exception of a few species are fertile while any empty (non reproductive and usually smaller) florets are distal.



LEFT: longitudinal cross section of a Paniceae type spikelet based upon *Setaria macrostachya* showing the relationship between the upper (distal) and lower (proximal) florets. In this species the mound of tissue at the base is about 1/3 mm high so that a distinct rachilla is not well defined when compared to easily seen rachilla in the brome spikelet shown above. 1. lower or first glume. 2. upper or second glume. 3. lemma of the first or lower floret. 4. palea of the first floret. 5. lemma of the second or upper floret. 6. palea of the upper floret. Reproductive parts are not shown. Usually the lower floret in Paniceae is sterile, sometimes male while the upper floret is bisexual. Note the bilateral symmetry of this spikelet similar to the brome pictured above.

PLATE VI

W Bauer 2020