Comments on "Origin of Soil Materials in Foothill Soils of Willamette Valley, Oregon"

We have no question about the validity of data in the recent paper by Glasmann and Kling (5). However, study of 285 ha and 15 to 25 quartz grains per sample is hardly a basis for conclusions compared with field studies of about 758,000 ha (2,3,6).

The events related to the Champoeg surface (2), which represents the Spokane (1) floods of the Portland Delta and the Willamette Valley sand facies of the Portland Sand and Gravel, are ignored. The Champoeg surface incises the Calapooya-Senecal-Bethel surfaces and the associated Irish Bend sediments of the Willamette Formation (2). If Glasmann and Kling conclude that sediment from ancient glacial Lake Missoula filled a "temporarily ponded" Willamette Valley, this must have occurred 123 times, because we find at least this many beds in the Irish Bend Member. Are all of these strata from the Spokane Flood and yet are truncated by the Champoeg surface? We have previously described ice-rafted erratic pebbles and cobbles in the Irish Bend (2,3) and erratic boulders on the contour at slope inflections of the Bethel surface (4). Littoral surge channels associated with Irish Bend also attest to the presence of a sound that was stable for a sufficient time to be tide affected. Therefore, the presence of a few erratic sands is not surprising. They present no comparison with sediments known to have come from glacial Lake Missoula.

In the Willamette Valley, the Pleistocene surfaces are incised by the Holocene Winkle surface with 14C dates from Oregon, Idaho, and Washington, indicating Winkle dissection began around 10,000-12,000 years ago. Studies in the Idaho Panhandle show that the last five Spokane floods occurred shortly before Winkle time. There were many Spokane floods—one documented at 450,000 years ago at least and five since about 20,000 years ago. Which one(s) do they mean?

There is no mention by Glasmann and Kling (5) of the commonality in particle size and mineralogy between the Irish Bend and the Tyee Formation of the Coast Range. The abundant micas, etc. from Tyee are diluted with erratics (3). "Micas are conspicuous to the field observer and serve as a distinctive feature" (3, p. 126). The Tyee is a "prolific local source of mica" (3). Is it reasonable that all angular quartz grains be attributed to glacial action? It seems that the determination of provenance should consider all possible data rather than drawing sweeping conclusions from restricted information on a small area.

In summary, the stratigraphy and geomorphology of an area as large as the Willamette Valley done with 11 man years of investigations can hardly be generalized by Glasmann and Kling in a small area when the gross stratigraphy and geomorphology are ignored. It seems that they have not considered the regional relationships of these Pleistocene events. Somehow the story as presented by Glasmann and Kling lacks regional credibility in the setting of the Pacific Northwest despite excellent "lab data" (5). One is reminded of the old tale of blind men describing the elephant.

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We are pleased that Parsons and Balster do not question the validity of data presented in our recent paper which we do not question the validity of their work which served as the primary foundation for our understanding of geomorphic relationships in the foothills of the Willamette Valley. We in no way intended to destroy the credibility in the setting of the Pacific Northwest despite excellent "lab data"! One is reminded of the old tale of blind men describing the elephant.

We have not ignored the events related to the Champoeg surface (3), nor do we disagree with the events of this surface truncates the older Calapooya-Senecal-Bethel surfaces and associated Irish Bend sediment. The Champoeg surface and associated coarse sediments represent in part the effects of the last catastrophic Columbia River flood that entered the Willamette Valley. This flood occurred about 20,000 years ago (7) and is considered the largest of all floods (1, 4, 6). This flood scoured soils from the floor of the Willamette Valley and mixed them with previously entrained debris and erratics from the Columbia River headwaters (6, 2). A flood-produced lake form-