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DISCUSSION

Proc. Paper 12508

[a]Discussion period closed for this paper. Any other discussion received during this discussion period will be published in subsequent Journals.

"blowback." During the course of the experiments by the authors, it was observed that when the velocity was increased significantly beyond that recommended by the envelope curve, a different flow pattern developed. In this pattern, large parts of the air pocket would tear and quickly rise to the high point. The collected air at the summit would again be forced down in smaller sizes. The back-and-forth movement of the air continued at a seemingly unpredictable rate and caused significant pressure pulsations. In another set of experiments, where a collared opening was provided simulating an air-valve, the "blowbacks" caused large quantities of water to be thrown up in gusts. From the experiments it was not possible to conclusively establish the point beyond which the "blowback" occurred. However, it was found that "blowback" did not occur when the velocity parameter was within 5% of the lower bound.

The writers regret the unfortunate interchange of the captions for Figs. 15 and 16.

The discusser has wisely pointed out the need for further investigation for pipelines with small slope angles.

Appendix.—Reference

10. Mechler, W. A., discussion of "Factors Influencing Flow in Large Conduits," by the Task Force on Flow in Large Conduits of the Committee on Hydraulic Structures, *Journal of the Hydraulic Division*, ASCE, Vol. 92, No. HY4, Proc. Paper 4895, July, 1966, pp. 203-218.

Errata.—The following corrections should be made to the original paper:

Page 247, line 1 of Table 1: Should read "Gandenberger" instead of "Ganderburger"
Page 247, line 3 of Table 1: Should read "Kalinske" instead of "Kalinski"
Page 255, caption of Fig. 15: Should read "Recommended Envelope Curve for Clearing of Aerated Pockets" instead of "Comparison of Kents Formula with His Experimental Results"
Page 255, caption of Fig. 16: Should read "Comparison of Kent's Formula with His Experimental Results" instead of "Recommended Envelope Curve for Clearing of Aerated Pockets"

Dynamic Behavior Model of Ephemeral Stream[a]

Closure by Kenneth G. Renard[5] and Emmett M. Laursen,[6] Members, ASCE

In their discussion, Smith and Chery frequently revealed their displeasure with the Laursen sediment transport relationships, but did not show reasons for this antipathy. However, inadvertantly, they introduced several points worth further discussion.

First, in referring to the Yang equation, they inferred it is "good" because it is "a sediment discharge model independent of bed material measurements." Then they proceeded to use Yang's Eq. 13 from Ref. 18, which indeed does not depend on the bed material. The writers cannot think of any other researchers who agree that the composition of the bed material is unimportant in determining the sediment-load transported by a stream. Other equations in Ref. 18 and subsequent papers by Yang included the bed material characteristics (21,22). Years ago, Zernial (23) and recently Laursen, et. al., (19) demonstrated the importance of the bed material characteristics, since most of the scatter in the sediment load-water discharge relationship of natural streams could be explained by changes in the composition of the bed material.

Also, Yang (18) repeated a figure from Ref. 17 where the Laursen relationship had been used incorrectly and, therefore, seemed inadequate for predicting field measurements on the Niobrara River. The Niobrara River study should remind us of the care we must take in working with field data. Maddock, in discussing Ref. 18, remarked that the staff gages used to obtain slope heaved in the winter. Also, the pond and falls above the naturally contracted gaging station on the Niobrara probably caused the pool-rapid effects, as discussed by Silverston and Laursen (20), with a measured total load not truly representative of the natural section. Other difficulties in interpreting the old Einstein field measurements were discussed in Ref. 5.

The reviewers stated ". . . the ratio of size composition of moving sediment to size composition of bed material . . . should be carefully studied." This type of an investigation was undertaken in the process of developing the paper. Fig. 5 showed the results of one undertaking. This figure showed that although the bed might contain a large amount of larger size material, Laursen's transport relation predicts that only a small percentage of this coarse material is being moved, a condition that apparently persists regardless of the discharge at the time in question. Although not unexpected, this figure showed that the composition of the finest size fractions in the bed are most important for determining the instantaneous concentration. The importance of this fine fraction led to the use of the large standard deviation, σ, as pointed out by the reviewers in Fig. 17.

[a] May, 1975, by Kenneth G. Renard and Emmett M. Laursen (Proc. Paper 11315).
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