

Some Disputed Points on Measurement of Velocity in Suspected Mud Flow

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Introduction

Two methods are able to be thought in studies on mud flow. One is the method of grasping it as it is. The other is to do a simplified experiment and to introduce some quantitative laws from it in order to apply them to actual mud flows. The latter is taken here and the mud flow is regarded as a continuous and homogeneous body consisted of clay and water, author calls it a fluid of slurry, and it is tried to measure the velocity of the fluid of slurry.

1. Current Meter of a Drag Force Type

A prerequisite for a current meter is not to disturb the flow so considerably as it has an influence on the measurements of velocities, not to mention that a drag force or other thing by the fluid changes with its velocity, taking a form of a mechanical force or some amount of electricity which corresponds to the velocity.

Author tried to make various current meter. As the results of that, it was found that it was the most suitable one for the measurement of velocity of a fluid of slurry structurally and in precision which was showed in Fig. 1.

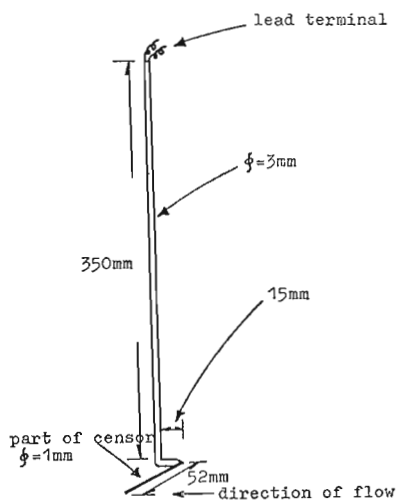
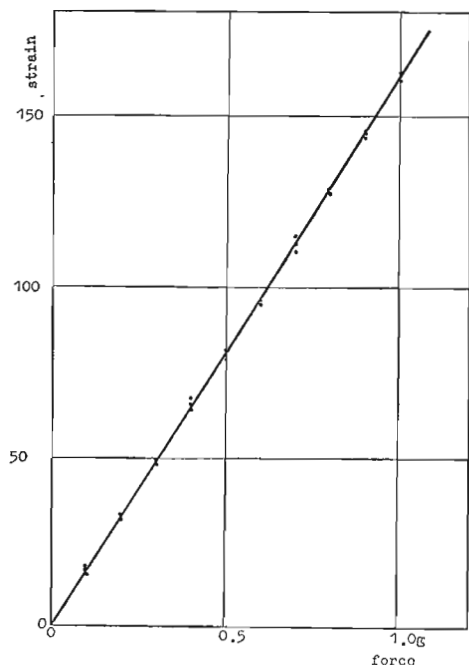


Fig. 1 Current meter of a drag force type

Fig. 2 Relation between force and strain in a current meter of a drag force type



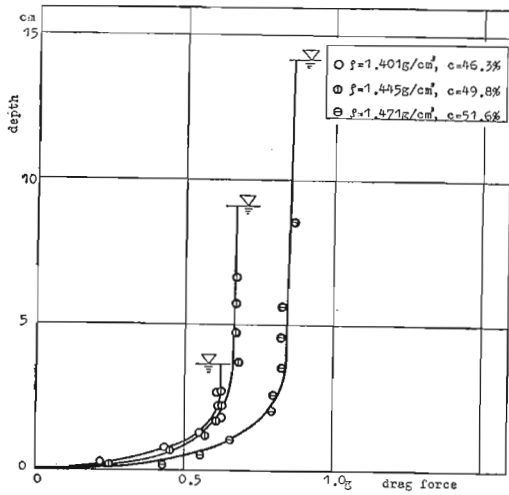


Fig. 3 Drag force profile

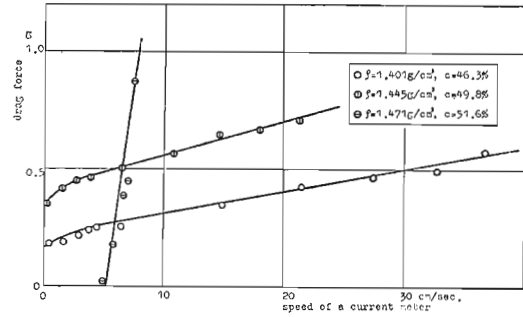


Fig. 4 Relation between speed of a current meter of a drag force type and its drag force

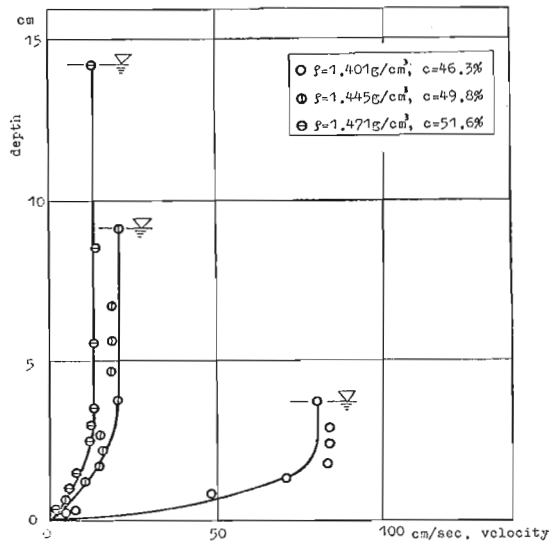


Fig. 5 Velocity profile

2. Discussion

Some points of the problems on the current meter of a drag force type were stated here, and there will be several points of problems on it still more. But it was found that the current meter of a drag force type could be used for the measurement of the velocity of a fluid of slurry, judging from the results of Fig. 2, Fig. 3, Fig. 4 and Fig. 5. Furthermore it confirms the matter that both velocities which were got by using the current meter of a drag force type and the C.D.S. were in accord. If such the current meter is used, it will be of service to elucidating the mechanism of mud flow in future.