A PROPOS THE PAPER "THE MECHANISM OF DECAY OF A JET INTO LARGE DROPS"

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I consider that:

1. In the present state of knowledge there can be no doubt that perturbations for which $kR_0 > 1$ are in the nature of waves propagating on jets (as $R_0 \to \infty$ they go over into ordinary capillary waves on a plane surface). These waves can also be observed on a cylindrical jet of liquid flowing at low velocity out of a pipe. Perturbation of such a jet may be caused by contact. Standing "wrinkles" appear above the point of contact, i.e., waves propagating against the flow with the velocity of the flow. The lower the flow velocity, the greater the length of these waves, which is consistent with Eq. (5) in my remarks.

2. Likewise there can be no doubt that when $kR_0 < 1$ the perturbations are quite different in nature, i.e., wavelike irreversible deformations moving with the jet whose amplitude increases in time according to a power law. In this case, observed in the experiments of Professor Shabalin, there are no displacements of the perturbations relative to the jet, i.e., there is no "propagation of alternate expansions and contractions of cross sections along the jet."

3. Of course, both these types of motions are caused "by the action of Laplace forces."

4. A certain form of jet decay is caused by small initial perturbations (acoustic, turbulent, mechanical, etc., and in the extreme case, given absolute isolation from external perturbations, even by Brownian motions in the liquid) and obeys their laws of growth. These perturbations, and not "the influence of the adjacent distorted section of the jet itself," cause "the occurrence of a new independent perturbation in neighboring parts" of the jet, because perturbations with $kR_0 < 1$ cannot propagate along the jet. For these reasons not even the end of the jet can affect its decay.

5. The irreversibility of the growth of perturbations on a jet for $kR_0 < 1$ has already been observed by Plateau and Rayleigh. It has received a clear mathematical explanation and cannot be interpreted as if it were related to "elastic oscillations of the sections of liquid jets."

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This discussion is now considered closed. The editors.