Hydromechanics in proceedings of Leonard Euler(to 300-th anniversary of birthday)

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The milestones of life and creativity of Leonard Euler, progressing of ideas hydromechanics in his proceedings are reviewed.

Leonard Euler (1707-1783)-one of the produced scientists who have rendered clout on progressing of physical and mathematical sciences in xviii century. In his creativity the great power of exploratory though, universality pf talent and huge bulk of the abandoned scientific heritage strikers.

L.Euler was born at Basel on April 15,1707,and die at St.Petersburg on September 7,1783. He was the son of a Lutheran minister who had settled at Basel, with whose sons Daniel and Nicolas he formed a lifelong friendship. When, in 1725, the younger Bernoullis went to Russia , on the invitation of the empress, they procured a place there for Euler, which in 1733 exchanged for the chair of mathematics, then vacated by Daniel Bernoulli. The severity of the climate affected his eyesight, and in 1735 he lost the use of one eye completely. In 1741 he moved to Berlin at the request, or rather command, of Frederick the Great;here he staied till 1766, when he returned to Russia, and was succeeded at Berlin by Lagrange. Within two or three years of his going back to St. Petersburg he became blind; but in spite of this, and although his house, together with many of his papers, were burned in1771, he recast and improved most of his earlier works. He died of apoplexy in1783. He was married twice.
And now we will talk about his work in mechanic.

On his first years in scientific activity in St. Petersburg hi detailed the program of grandiose and serious of work in mechanics. This work was published in his book "Mechanics, or science about movement." In this book he considered the motion of a point mass both in vacuum and in a

resisting medium. He analyzed the motion of a point mass under a central force and also considered the motion of a point mass on surface. In this latter topic he had to solved various problems of differential geometry and geodesics.

In 40th Euler met with question of hydro- aeromechanics not one time. Though questions were stand in questions about ballistics. At first he employed of ballistics in 1727-1728, in cause of Bernouli exoeriments, who studied the movement of spherical projectile, which discharged vertically uoward.

With the tasks of fluid mechanics Euler gain met in 1749, when the channel between Gavel and Odder, and after the invention of hydraulic machine by I.A. Segner.

To the primitive variant of "Senger machine" Euler put some development. So it became prototype of the reactive hydraulic turbine. In the work "The most complete theory of machines ,which work under the reaction of water», printed in Berlin in 1754 Euler initiate the beginning the theory and methods of design hydraulic turbines.

On befalf of the academy of science Euler borrows by studies on ship theory. In 1749 there was his monograph "Marine science" in two volumes. In the maden volume the general theory of equal balance and stability of floating bodies ia stated, in the second-the theory applies to analisis of problems, bound with with a construction and offloading of the vessels. This composition occupies an outstandingplase as in progressing a theory of buckling and theory of small oscillating and in naval architecture.

In 50th Euler prepared some big works by hydromechanics. Firs of them is "Beginnings of fluid movement", which was printed in the works of St. Petersburg academy of science. In the general principles hydrostatics and aerostatics were stated, the equal of continuity for flyid with constant gravity was output. Other three monographs of Euler –"The general princeples of balanced stated of fluids"," The general princeples of move of fluids" and "A Prolognatoin of studies under the theory of fluids movement", published in the notes of the Berlin acdemy of science (1755-1757), have compounded the establishing treatise on hydromechanics. In the second of them the differential paetial equation of moves of incompressible fluids and gases in narrow handsets of the arbitrary shape are reviewed. To all it connected mining by Euler of

reception of asolutionof a partial equations. One of such equations meets now in problems about flow of gass transonic and hypersonic sppeds.

And in the end of my spich I wont to say that Euler was the greatest science man who made a lot of the future.