and the sum obtained by this method is $f(x)$:

$$f(x) = \int_0^\infty e^{-xt}F(t)dt,$$

where

$$F(t) = A_0 + \frac{A_1}{1!}x + \frac{A_2}{2!}x^2 + \cdots.$$

A number l exists such that this integral converges when $R(x) > l$ and diverges when $R(x) < l$. This number l plays a fundamental rôle as regards the properties of the function $f(x)$ defined by the factorial series.

We have here in a special case two aspects of the general theory of summability of the series $\Omega(x)$, a theory of importance the development of which will lead to significant extensions of our knowledge of one of the most fundamental expansion problems in analysis. Early in 1917, Mr. Charles F. Green, a student at the University of Illinois, was beginning work upon this subject, looking towards a doctor's dissertation; but his labor has been interrupted by more pressing duties and he is now engaged as a pilot in the aviation service with the American Army in France.

UNIVERSITY OF ILLINOIS.

ON THE PROBLEM OF THE RESISTANCE INTEGRAL.

BY PROFESSOR TSURUICHI HAYASHI.

THE problem of minimizing the resistance integral seems to be of three main varieties.

1. Newton's problem:*

To get a solid of revolution formed by revolving a curve passing through two given points about an axis which shall experience a minimum resistance when it moves through a fluid in the direction of its axis.

The solution is the well-known transcendental curve.

* Philosophiæ Naturalis Principia Mathematica, 1687, Book 2, Section 7, Prop. 34, Scholium.