It will be noticed that we are here concerned not with a single particle, but with a collection of two particles, so that we may expect the *principle of action and reaction* to be called into service. (This principle was included in my paper, in a footnote.) The solution I would propose is as follows:

Since the force F applied to the composite body must be applied at some point, let us suppose that it is applied at the A' end of the body; and since the two parts A' and A'' must be connected together by some means, let Q be the force which each part exerts on the other. If now we confine our attention to the first body, A', we see that the net force acting on this body in the forward direction is $F - Q$, while the acceleration produced is the required acceleration of the combined body, say a; hence, by the fundamental proportion as applied to the first body,

$$(F - Q)/F = a/a'.$$

Similarly, if we confine our attention to the second body, A'', we see that the net force acting is Q, while the acceleration produced is the same as before, namely a; hence, by the fundamental proportion as applied to the second body,

$$Q/F = a/a''.$$

Solving these two equations for a, we have at once the required answer:

$$1/a = 1/a' + 1/a''.$$

It is obvious that the proof just given—involving the elimination of the internal forces Q—is nothing more than a special case of the proof regularly employed for the familiar theorem on the motion of the center of mass of any collection of particles. In fact, as far as I can make out his meaning, *all that Professor Hoskins values so highly in his (rather vague) principle of the additivity of mass is really contained in this well-known theorem on the motion of the center of mass.* If this is true, the chief difference between the methods advocated by Professor Hoskins and myself comes down to this: *he would regard as a fundamental assumption, to be stated as such at the very outset of the course, a rather complicated proposition called the additivity of mass, while I would prefer to treat this proposition as a theorem to be deduced by easy steps from much simpler fundamental assumptions.*

In conclusion, there are two minor points in Professor Hoskins's paper on which I may be permitted to comment.

First, I can not assent to Professor Hoskins's characterization of my method as one that "purports to be independent of mass." It is true that my method purports to require, at the start, only three fundamental concepts, namely: force, length and time; but the concept of mass is no more "ignored" or "evaded" in the development than are the concepts of energy, momentum, etc., all of which take their proper places in the theory as derived concepts. *The kinetic idea of mass or inertia (namely, force over acceleration) is as difficult as it is important, and should be led up to gradually, by easy and very definite steps.*[3]

Secondly, I can not admit that my method requires me to define "the unit force" as "the force which would give the unit mass 32.1740 units of acceleration." On the contrary, my idea of a force is a spring balance, and my idea of a unit force is any spring which may happen to be selected as a standard. It is a matter of entire indifference in my method whether the unit force is a pound or a dyne or a pennyweight.

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SIR CLEMENTS MARKHAM

TO THE EDITOR OF SCIENCE: It was a great pleasure to me to read the appreciation of Sir Clements Markham which came out in SCIENCE for April 21. Too often have the admirers of Sir Clements in this country had reason to believe that his anthropological labors are not properly appreciated here. Such a full, generous and complete résumé of his great accomplishment as that given by A. C. B. contributes toward a contrary belief.

Through Sir Clements Markham's extraordinary diligence and scholarship, students of South American anthropology are given ready access to Garcilasso de la Vega's "Royal Com-

[3] Compare the excellent remarks of Professor Willard J. Fisher in SCIENCE for July 7, 1916.

mentaries," to Pedro Sarmiento de Gamboa's diametrically opposed "History of the Incas," to the reliable and unbiased Cieza's writings, and to many other equally valuable works. Nor are Sir Clements's own works to be left unread by any student of the subject. He did more than any other one man for South American anthropology.

Perhaps the most endearing trait of the great scholar's character was his unselfishness. It happened that I ran across a copy of a certain rare book on Peru. Although I did not then know Sir Clements I ventured to write to him and ask him whether it would be worth while to publish an English translation of the work. He replied that it would. Although he himself had already made a translation (still in MS.) he encouraged me to go ahead with mine and he personally made arrangements for its publication in England. Such generosity is of the best sort. It shows that Sir Clements placed the advancement of knowledge above his own advancement, and it shows that he was glad to help even an unknown beginner by a personal sacrifice.

X.

SCIENTIFIC BOOKS

The Horse in Health and Disease. F. B. HADLEY. W. B. Saunders and Co., Philadelphia.

This book, designed as an introductory text to the study of veterinary science in agricultural schools and colleges, ought to fulfill its purpose. The author is to be congratulated upon his judgment in selecting the most suitable material. He has succeeded in bringing together in a condensed form a number of branches of veterinary science.

Although couched in scientific terms, most of which are defined with their first appearance, the book ought to be intelligible to a careful reader. The arrangement is complete, leaving little to be desired. The horse is taken as the type. Beginning with the anatomy and physiology, the structure and function of the normal or healthy animal is explained. This knowledge is indispensable to one expecting to recognize abnormal conditions. Then follows a brief description of a great variety of diseases, together with measures of control.

By way of adverse criticism, very little can be said. In discussing the subject of diagnosis of disease, there occurs: "Even an experienced diagnostician fails to make an absolutely accurate diagnosis in more than 50 per cent. of his cases." This must be very discouraging to a novice and the facts of the case do not render the statement justifiable. To be sure, the word *absolutely* makes the statement invulnerable, but the impression created is detrimental and uncomplimentary to the author's profession. Under retention of the urine occurs the following: "The bladder of the stallion or gelding can be emptied only by use of the catheter." Practitioners frequently evacuate the bladder of males by pressure upon the bladder per rectum, even upon recumbent animals.

The illustrations, most of which are photographs, are clear and numerous. The excellent paper and the clearness of the type are characteristic of the publishers.

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QUOTATIONS

THE CONTROL OF EPIDEMIC INFANTILE PARALYSIS

THE severe epidemic of infantile paralysis—or acute anterior poliomyelitis, to give the disease a more descriptive title—that now prevails in New York has not unnaturally given rise to a certain degree of anxiety in our own country also. During the last two months this epidemic has caused the death of some 1,400 children in New York, the mortality being about 25 per cent.; comparatively few adults have been attacked. Quarantine regulations are now being widely enforced in the neighboring districts, and children under 16 years of age, we read in the *Times*, are forbidden to travel, to the vast inconvenience of holiday-makers. The public health authorities in New York are only too familiar with epidemic infantile paralysis, for the disease is always present and always more or less active in that cosmopolitan town. They are endeavoring to limit the epidemic by the isolation or quaran-