this plan will forward to the undersigned their own suggestions and criticisms, together with a definite statement as to the conditions under which they would be willing to submit both new and old negatives or prints to the Marine Biological Laboratory film collection. It would also be extremely helpful if any interested in obtaining extra prints from such a collection would communicate with us. Needless to say, furtherance of the plan will depend almost wholly upon the response from readers of this note.

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ANOTHER TREATMENT OF THE UNITS FOR F = ma

IN the October 14, 1938, issue of SCIENCE Professor Perkins says that there are only two essentially different ways of handling gravitational measures of force. I am not quite sure what Professor Perkins would call *essentially* different, but there is certainly another way which looks different and does not involve some of the difficulties which he discusses.

Let us use only $F = ma$. The quantities are all to be measured in units from Table 1 and for a particular problem must all come from the same horizontal row of the table.

TABLE 1

		Length	Time	Mass	Force	Energy
Absolute ...	Metric	cm	sec	gm	dyne	erg
	English	ft	sec	pound	poundal	ft poundal
Gravitational or Engineering	Metric	cm	sec	metric slug	gm-f	gm-f cm
	English	ft	sec	slug	pound-f	ft pound-f

The pound-f and gm-f are defined as the weight of a pound mass and gm mass respectively.
The slug and metric slug are defined as the masses to which a pound force and gram force respectively will give unit acceleration (1 ft/sec², 1 cm/sec²).
K.E. $\frac{1}{2}mv^2$, $F_c = mv^2/r$, Work = Fs = change in potential energy.

We do not expect other formulas to be so written that we can enter them without first reducing the quantities involved to certain particular sets of units and still have the answer in terms of familiar units. We should do the same with $F = ma$.

With this treatment, only a single set of formulas is needed. Furthermore, no "g's" are scattered over these formulas like salt over a plate of food. In this country at present it is hardly possible to ignore "ft lb" of energy and horse power (= 550 ft lb-f per sec). Hence, however much the physicists would like to forget gravitational units, they must continue to teach both systems, but that does not need to mean that there must be two sets of formulas.

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THE MOVEMENT OF WATER FROM CONCENTRATED TO DILUTE SOLUTIONS THROUGH LIQUID MEMBRANES

IN the experiment of W. J. V. Osterhout and J. W. Murray[1] recently commented on by H. E. Bent[2] it appears to us that the permeability of the membrane for the solvent as well as for the solute deserves special consideration.

If the membrane were permeable only for the solvent there would be a contradiction of the second law of thermodynamics. However, the fact that the solute is simultaneously transferable contributes a positive reduction in free energy which fully compensates the work required for the apparently anomalous movement of a certain amount of solvent.

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THE AMERICAN ASSOCIATION OF SCIENTIFIC WORKERS

IN a recent issue of SCIENCE (December 16, 1938) the announcement was made of the formation of a branch of the American Association of Scientific Workers in Boston and Cambridge, Mass. It is hoped to establish similar branches of this association in various centers as a means of bringing together scientists of different disciplines to study the problems of science and society and to endeavor to give effect to the natural desires of scientists as members of democratic society. Its program is in accord with publicly expressed opinions of prominent men of science, including leaders of the American Association for the Advancement of Science, and it is hoped that active groups of the American Association of Scientific Workers and individual members will be able to cooperate with the American Association for the Advancement of Science in its activities in the field of science and society.

Not long after the founding of the American Association of Scientific Workers the following letter was received from Sir F. Gowland Hopkins, president of the Association of Scientific Workers in Great Britain and a past president of the British Association for the Advancement of Science and of the Royal Society:

I am much interested to learn of the foundation of the American Association of Scientific Workers, whose policy and program are so closely parallel to those of the Association of Scientific Workers in Great Britain.

In these days when science plays so great a part in every field of modern life it is essential for scientific workers to organize, both to protect their own economic and professional status and to work for the better organization and application of science for the benefit of the com-

[1] SCIENCE, 87: 430, 1938.
[2] SCIENCE, 88: 525, 1938.

munity. These problems are not confined to one country, and the Association of Scientific Workers welcomes the formation of a brother organization in America.

On behalf of the Association of Scientific Workers I would like to express the hope that you will receive great support from all scientific workers in America, and to wish you success in carrying out your policy.

At present the headquarters of the association is in Philadelphia, and we would be glad to receive inquiries from scientists in centers where there is not yet a local branch.

DONALD HORTON,
Corresponding Secretary

PHILADELPHIA, PA.

SCIENTIFIC BOOKS

CHARLES DARWIN

Charles Darwin. A Portrait. By GEOFFREY WEST. New Haven; Yale University Press. 1938. Pp. 359.

I TOOK up this volume with a feeling of prejudice; how could such an author, even after some years of diligent compilation, be in a position to appreciate Darwin's scientific work? Turning over some of the pages I found passages which confirmed my fears, and debated with myself whether to return the book to the editor unreviewed. Nevertheless, when I settled down to read the book page by page I had to admit that the recorded facts concerning Darwin had been collected with the utmost diligence, arranged with great care and set forth in a manner which made the book easy and profitable to read. With a reasonable amount of revision or expurgation, which I presume the author would not permit, the book might be described as a very satisfactory and illuminating biography. One can easily imagine the other side of the argument. It might well appear that after all a scientific worker who has grown up and lived in the Darwinian tradition was himself incapacitated for forming an impartial judgment. Morley, in writing the life of Gladstone, said that people would probably accuse him of partiality. He said that he would be sorry to be thought lacking in this quality; and one who is indebted to Darwin's influence in so many ways that it has formed a kind of atmosphere in which he has lived, cannot regard the matter with cold objectivity, or even wish to do so. It must be said of Mr. West, that throughout he regards his hero with respect and even affection, and shows little of the cheap cynicism with afflicts many biographers. He discusses the various personal and scientific matters, as they come up, with a lucidity which I fear few professional scientific workers could attain, and no one can read all this without profit. The available record as it stands probably does not do justice to the maturity of Darwin's mind when he sailed on the "Beagle." Having visited regions in South America which he described, I have been amazed at the accuracy and sagacity of his observations. I do not know who, to-day, could take such a comprehensive and understanding view of nature in a remote country visited for the first time. So again, his one important contribution to taxonomy, his monograph of the living and fossil barnacles, has stood the test of time as few such works have. This is the testimony of Pilsbry, the principal living authority on these animals. West's final chapter is headed "The Fragmentary Man," and he reaches the conclusion that "Darwin was incomplete and Darwinism accordingly inadequate as a philosophy by which men may live." I should put it differently. Darwinism is dynamic, and is not to be thought of as the basis of a static philosophy, nor does it pretend to deal with all aspects of reality. Since Darwin's time many important discoveries have been made, and were he living to-day, he would be the first to take account of them. The artist completes a work, and no one dares tamper with it; the scientific man, in contrast, is always on the road, never at the journey's end. In that sense all scientific work is fragmentary and incomplete, but this should not imply reproach. Considering his physical disabilities, and the limits of even the greatest human mind, Darwin was marvelous in his power of comprehending the larger aspects of nature, and the details of many matters. If he neglected subjects which we deem important we have no more right to complain than we should in the case of a noted pianist who did not play the flute.

The cry "back to Darwin" may have vitality to-day, as an encouragement to broader training and wider views, rather than the narrow specialization which is fostered by our educational methods. In this case, in spite of Mr. West's conception of Darwin as a "fragmentary man," I believe that his book will teach a different lesson, and may be read with profit as a stimulus to constructive thought and work.

T. D. A. COCKERELL

CONVERGENCE

A Text-book of Convergence. By W. L. FERRAR. Oxford University Press, 1938. viii + 192 pp. Price, $3.50.

As the title indicates, this book is a *text* on the theory of series. In the opinion of the reviewer it is clearly and carefully written, in a pleasant style, with good (albeit conventional) choice of material.

The subject-matter includes preliminary definitions