in the issue of SCIENCE of October 24, 1941, quotes me so inaccurately.

It is stated (page 389) with a footnote reference to the *New York Times,* "Dr. S. R. Powers . . . describes the results of a five-year survey. . . ." I have never at any time written for this newspaper. The description referred to was done by a staff reporter of the newspaper and printed under the reporter's name. The statements that "conventional treatment of science will go by the board" and about "scrambled courses," although attributed to me in the newspaper article, were not made by me and do not represent my views even approximately. In general the statements are meaningless when subjected to scrutiny and are irrelevant to the work that is being done under my direction.

The work in progress is carried on under an organization known as the Bureau of Educational Research in Science, of Teachers College, Columbia University, with cooperation of well-trained critically minded high-school teachers and with advice and assistance from scientific men with impeccable reputations as teachers and research workers. Further information about the work of the bureau may be had from the *Teachers College Record,* January, 1939; *Report of the Dean of Teachers College,* 1940; *General Education Board Annual Report,* 1939 and 1940; and from the bureau's publications obtainable through the Bureau of Publications, Teachers College, Columbia University.

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THE COMPARATIVE COST OF LOAN SERVICE AND OF MICROFILM COPYING IN LIBRARIES

IN a discussion[1] of "The Place of Microfilm Copying in Library Organization," the view was expressed that this method of rendering library service might be organized in a manner that would permit its operation at no greater cost than that of lending books. An opportunity to examine this question more carefully has since been obtained and the expectation has been confirmed that the actual cost of these two methods of rendering library service is not very different.

In regard to the cost of making microfilms an analysis[2] of the operation of Medicofilm Service showed that in groups of 100 orders the total expenditure for materials and work at the wage rate of $1.00 per hour was $17.25 or 17¼ cents per microfilm. This included the time required to obtain the books from the shelves and to replace them after use, as well as that devoted to verifying the film copies and mailing them out, but did not include the time required for keeping the accounts and collecting for the work done.

Although the extent and practice in regard to lending books varies greatly in different libraries, the experience in the Army Medical Library of Washington is probably typical of many of the larger reference libraries. In this library one employee, devoting her entire time to this work, keeps the records of all books which go out on loan. Others obtain them from the shelves and replace them when returned. Furthermore, the wrapping and mailing is attended to by a library messenger. During the last five years the following number of books have been loaned annually:

Year	Number loaned
1936	12,919
1937	13,886
1938	14,104
1939	13,128
1940	14,000

Average, 13,607

Of these, about 20 per cent. go to local governmental institutions and are called for by messengers and the remainder are sent and returned by mail for which the postage is prepaid by the borrower.

The working schedule in governmental departments is 44 hours per week, which with deductions for holidays and annual leave corresponds to 2,068 hours per year. On the basis of wages at $1.00 per hour, the actual cost per book loaned is $2,068 ÷ 13,607 = $.15. If to this is added the 3 cents which is the cost of obtaining each book used for microfilming and replacing it on the shelf as well as the cost of wrapping supplies and messenger service for 80 per cent. of the books loaned, the total cost is appreciably higher than that of making and sending out microfilm copies.

There are, of course, advantages and disadvantages in both of these methods of rendering library service. From the standpoint of the borrower it is evident that those who have not yet become accustomed to using microfilms will object to receiving one in lieu of the loan of the book itself. Others, however, will appreciate the advantage of being able to keep the microfilm copy. From the standpoint of library operation there is little doubt that microfilm service has outstanding advantages in permitting the collections to remain intact for their more uninterrupted use as well as reducing wear and tear of the books.

The evidence here presented shows that libraries could substitute free microfilm service to the same extent that free lending service is now rendered without increasing the cost of operation. If the demand for microfilms increased sufficiently to tax the funds available for this purpose, a very small charge for the microfilms would probably be sufficient to keep expenses within the allotments for this feature of

[1] Seidell, SCIENCE, 94: 114–5, August 1, 1941.
[2] Seidell, *Jour. Documentary Reproduction,* 4: No. 3, September, 1941.

library service. In this manner it would be possible for many reference libraries to extend the scope of their usefulness far beyond their present limits. Lastly, the lessened cost of rebinding books due to wear and tear in transit through the mails, represents a factor of great importance in estimating savings made by the wide use of the microfilm.

ATHERTON SEIDELL

MEDICOFILM SERVICE,
ARMY MEDICAL LIBRARY

QUOTATIONS

PROBLEMS CONFRONTING MEDICAL INVESTIGATORS

IN a recent address at the fiftieth anniversary celebration of Stanford University, Dr. Walter B. Cannon[1] presented some questions which deserve careful study. The shift in age grouping of the population, with increasing percentages of the elderly and the aged, now widely recognized as a fact, has presented the medical profession with a series of new problems. As one grows older, Cannon points out, the fires of life burn less vigorously and the adjustments of bodily organs to emergencies tend to be impaired—the breath is shorter, the heart beats less effectively, blood pressure gradually rises as the years pass and becomes ill adapted to critical requirements. Are these features essential attributes of the elderly or are they the consequences of comfortable and habitual indolence? In middle age some of these effects may result from inactivity alone and can be reversed by training; is this true in the later decades? If so, should attempts be made to alter them? What, Cannon says, would be the effects if they were altered? These questions offer possibilities for useful research. Almost none of the most prominent disorders of senescence are thoroughly understood. The prevailing ignorance, it may be assumed, is largely due to lack of systematic study. The challenge presented by realization of this fact will doubtless receive many answers. Severe demands on the nervous system, which may have arisen in part from the remarkable shift in the occupation of the citizens, often result in calls for medical attention. A disorder of the brain may fail to be revealed at necropsy or under the microscope. And yet emotional upsets which leave in the nervous pathways no visible trace have concrete and obvious effects and may be the occasion for profound misery and suffering. The gradual onset of disabilities, bodily and mental, in the later years of life demands, Cannon believes, long-range studies on the possible influence of inheritance, early injuries, severe infections in childhood and youth, frustrated plans, the demands of labor and probably many other conditioning experiences. Cannon also calls attention to the disastrous cooperation of disease, pain and early death when warring hosts or nations battle against nations for supremacy. International developments unquestionably have affected medical research in a warping of scientific activities away from untrammeled pursuits toward problems of military significance. Medical investigators, however, by learning the nature and cure of malnutrition, by devising appropriate treatment for shock and hemorrhage and in many other ways have served to mitigate the torments and ravages of warfare. One of the results of the present war already has been a more intimate association of a highly desirable nature with medical investigators in Latin American nations. Finally Cannon emphasizes as one of the biggest problems facing medical investigators the filling of their own ranks. This is indeed primary, and, unless well-equipped recruits can be attracted to the career of the investigator, progress will end. Cannon dwells at some length on the attractions and rewards of medical investigators, pointing out particularly one consideration eminently creditable to their efforts: "Because life and health are precious and medical research is deeply concerned with protecting life and health, the triumphs of that research are put to use without regard to any national or racial difference. . . . Even though the beneficiaries may despise their benefactors, they must receive the benefactions. . . . The conquest of a disease, it should be remembered, is a permanent conquest."—*The Journal of the American Medical Association.*

SCIENTIFIC BOOKS

THE LABORATORY MOUSE

Biology of the Laboratory Mouse. By the STAFF of the Roscoe B. Jackson Memorial Laboratory, with a chapter on Infectious Diseases of Mice by J. H. DINGLE, Harvard Medical School. Philadelphia: Blakiston Company. 1941.

THIS book is the joint work of the staff of the Roscoe B. Jackson Laboratory, under the editorship of G. D. Snell. Some chapters are short monographs on subjects in the investigations of which the Jackson Laboratory has prominently participated, while other

[1] W. B. Cannon, "Problems Confronting Medical Investigators," SCIENCE, 94: 171–179, August 22, 1941.