one number of a journal may cost $5, while the next may cost $10, and yet only perhaps thirty to forty more pages are included, and the plates, curves and charts do not seem essentially different from those of the less expensive number.

We are also convinced that if the editors and publishers of these expensive journals would really cooperate in an earnest effort to bring down prices, something could be accomplished. The chief responsibility rests with the publishers, however, for in Germany they control the medical publications, employ the editors and pay for the papers printed in the journals. Lately, in every commercial undertaking, prices have been scaled to meet changed economic conditions, and the publishing business should be no exception to this rule.

These German publishers have cautioned libraries against cancellation, as they say that a decrease in the number of subscriptions would lead to an increase of prices for the remaining subscribers. Many American libraries are facing reduction of income, and every means possible is being considered whereby economies can be effected. Therefore, it is obviously impossible for many of them to continue subscriptions to these high priced journals. Many European libraries and individual subscribers, even in Germany, have been forced to cancel their subscriptions, and unless there is evidence of a change in policy on the part of the German publishers, it will not be long before there will be wide-spread cancellation of these high-priced journals by American libraries, who are at present among the most extensive subscribers. If this is to be met by further increase in prices, still further cancellations will result, and a vicious cycle established which would certainly be unfortunate for all concerned.

The Medical Library Association therefore decided to issue an appeal to the German scientific and medical societies and to editors of German medical journals. The American College of Physicians joined the Medical Library Association in this appeal, which was issued in January 1933.[7] This letter summarized the situation and urged German scientists to use their influence and cooperation wherever possible to bring about a decrease in the cost of these journals before wide-spread cancellation had become inevitable.

A few suggestions were made as to possibilities in accomplishing this objective: (1) Decrease in the size and number of the volumes, through briefer articles and careful editorial selection; (2) fixed annual subscription prices for the journals; (3) statements in advance of the approximate number of volumes to appear each year.

That the present situation is considered unfortunate by many Germans is indicated by several articles which have appeared lately in the German journals,[8,9] showing that the subject is being given consideration there as well as elsewhere.

The situation is a serious one, and those interested in medical education, scientists and investigators, especially in the fields of medicine and the biological sciences, should use any influence they may have with German colleagues to urge their cooperation in reducing the prices of these scientific journals. It is also of the utmost importance for such individuals to study the situation in regard to the particular library from which their reference material is drawn.

In view of present economic conditions, it is likely that the next few years will see the cancellation of large numbers of these expensive German journals, until they will be available only in the large cities, and in libraries with large endowments. This means that investigators working at a distance from such centers will be at a disadvantage as compared with other colleagues; but unless within the next few months marked cooperation is shown on the part of the editors and publishers of these high-priced German journals, the unfortunate results outlined above will inevitably take place.

That we, in this country, can continue indefinitely to expend 70 per cent. of our current periodical budgets for perhaps forty or fifty journals published by a few German firms is extremely unlikely; especially when there are three to five hundred journals necessary for a good medical library, many of which certainly contain material as valuable as that appearing in the journals which are so excessively high priced.

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[7] This letter was published in full in the *Bulletin of the Medical Library Association*, n. s., 21: 90–91, 1933. Reprints can be obtained by those interested on application to the Chairman of the Committee on Cost of Current Medical Periodicals.

IS LONGEVITY COMPATIBLE WITH OPTIMUM GROWTH?

MODERN nutrition is governed by the philosophy that a diet which produces optimum growth in the young animal is the ideal. This carries with it the assumption that optimum growth means optimum health. When experimental findings are applied to

[8] Georg Leyh, Address delivered before the Vereins Deutscher Bibliothekare und des Verbandes Deutscher Volksbibliothekare in Jena am 18. u. 19. Mai 1932. *Zentralblatt für Bibliothekswesen* 49, Heft 8, 1932.

[9] H. Morstatt, "Über die Notwendigkeit, den Umfang der wissenschaftlichen Veröffentlichungen einzuschränken." *Die Naturwissenschaften*, 19: 968, 1931.

man, they usually imply the additional assumption that optimum growth leads also to long duration of life, commonly termed longevity. There is no doubt that the nutrition of animals that are to be slaughtered for meat shortly after they mature should be considered from the point of view of rapid growth, since that implies efficient feed conversion. On the other hand at the present time it is the general practise of those who are concerned with child nutrition to attempt to attain the maximum growth of the child without regard to the possible interrelationship between such growth and a short life span. The same philosophy dominates the practises of rearing dairy calves and horses to maturity as rapidly as possible although it is desirable that they have a long productive life span.

In 1912 Slonaker[1] reared three male rats upon an omnivorous diet. Their mean length of life was 1,222 days, but it required 391 days for these rats to attain their maximum weight. A study of Slonaker's growth data indicates that these rats really grew very slowly to maturity and that they did not grow rapidly and then merely fatten to a maximum weight as middle age approached. I have disregarded Slonaker's data upon exercised rats, because there is nothing in the literature for comparison. I have not cited his data upon the vegetarian groups because they died relatively young and need not be considered in a discussion of longevity.

In a report concerning the rat diet that has proved satisfactory as far as reproduction and growth in our colony is concerned, Maynard[2] showed most of the growth of the male rat takes place before the sixteenth week with a gradual weight increase until the twenty-eighth week. During the past four years we fed a group of seventy-five male rats upon this diet until they died. Their mean age at death was 503 ± 12 days. Only 1 of these rats lived for more than 900 days.

Although Slonaker's data are very limited they indicate that our rats upon the stock diet are dying in middle age. Our rats matured rapidly, those of Slonaker slowly.

In our studies upon brook trout we have reported experiments twice in which trout that failed to grow lived much longer than those that grew upon similar diets.[3, 4] This first called our attention to the possible relationship between the rate of growth and the span of life within a given species. A relationship between rate of attaining maturity and life span between various species is frequently mentioned by early biologists, however Zabinski[5] from his studies with insects has noted the possibility of prolonging life by retarding the growth rate. Osborne and Mendel[6] suggested the same possibility from their studies with rats.

Miss Campbell[7] found she could extend the mean length of life as well as the growth of rats slightly by increasing the milk in the diet. In the light of Slonaker's data, these findings have only negative bearing upon the problem of longevity because even her group that lived the longer died in approximately middle life at a mean age of 664 days. All her many hundreds of rats died without any attaining the mean age of Slonaker's three males and her value for mean age disregards early deaths. Therefore her data indicate nothing concerning the interrelationship of growth and longevity. Her findings also confirm those of others that the female rat grows more slowly and outlives the male.

We may then have diets that are entirely satisfactory for growth and reproduction and these same diets may be unsatisfactory for longevity. It is known from many experiments that we may have a slow growth rate and a short life span upon a deficient diet. No one has ever found it possible, however, to have both rapid growth with early attainment of maturity, and longevity. It is possible that longevity and rapid growth are incompatible and that the best chance for an abnormally long life span belongs to the animal that has grown slowly and attained a late maturity.

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SOLUBLE SESQUIOXIDES AND ORGANIC MATTER FROM ALKALI TREATMENTS ON SOILS

ALKALI treatments, equivalent to one ton per acre, on Appalachian upland podzol soils of Quebec have been studied in percolators in an attempt to break down the relatively large amount of organic matter and to decrease the acidity (pH about 5.0, "lime requirement" 3 tons CaO per acre). The results found differ from those reported by Meyer[1] based on the effects of calcium carbonate applied to Caddo silt loam of pH 4.8. Liming podzol soils has not produced the large increases in soluble iron and organic matter found in the case of the acid Louisiana soils. On the other hand, equivalent treatments with sodium hydroxide and sodium carbonate on these podzol soils give marked increase of soluble organic matter in

[1] J. R. Slonaker, Leland Stanford Jr. Univ. Publications (1912).
[2] L. A. Maynard, SCIENCE, lxxi: 192. 1930.
[3] J. W. Titcomb, *et al.*, *Trans. Am. Fish. Soc.*, 58: 205. 1928.
[4] C. M. McCay, *et al.*, *Trans. Am. Fish. Soc.*, 61: 58. 1931.
[5] J. Zabinski, *Jour. Exp. Biol.*, vi: 360. 1929.
[6] T. B. Osborne, *et al.*, SCIENCE, xlv, 294. 1917.
[7] H. Louise Campbell, Thesis, Columbia Univ. (1928).
[1] A. H. Meyer, "Iron Toxicity from Liming," SCIENCE, 76: 56. 1932.