is not large enough to be significant, the ratio of increase of the number of Russian papers abstracted is considerably higher than those of the other major languages.

In a previous paper (*1*) reference was made to the classification of Russian papers by general field during the years 1946–49. The authors received several communications suggesting that the data would have more significance if compared with the same classification on a worldwide basis. Table 3 presents these data. The differences in percentage need no particular comment except to note that security classification may account for the large differences in the field of applied mathematics.

The inevitable conclusion from the data presented is that the Russian language is gaining more and more significance in the field of mathematics. Whether it is now time for a shift in the Ph.D. requirement is a point for argument, but it appears that some adjustment will have to be made before long.

Even more significant is that the Russian scientist is making tremendous strides, whether we like it or not. Since our survival depends on a correct estimate of the situation, it is time for American scientists to draw their conclusions about the quality of Russian work from other sources than the editorial columns of their newspapers.

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Reference

1. HOWERTON, R. J., and HOWERTON, P. W. *Science*, **113**, 307 (1951).

Baule-Mitscherlich Limiting Factor Equation

RECENTLY, in a brief communication to SCIENCE (**115**, 23 [1952]), the author pointed out that Blackman's concept of limiting factors, which is based on Liebig's law, is not valid. Since that communication was submitted, a paper written on the subject by Baule (*Landwirtsch. Jahrb.*, **51**, 363 [1918]) has been studied. In it Baule argues that Liebig's law is invalid, and he presents a general limiting factor equation derived from that of Mitscherlich (*Landwirtsch. Jahrb.*, **38**, 537 [1909]). Baule's paper has apparently been ignored by most English-writing biologists. The most conspicuous case of such omission is that of Van den Hohnert (*Rec. trav. botan. Néerl.*, **27**, 149 [1930]), who carried out experiments designed specifically to elucidate the limiting factor problem but failed to include any consideration of Baule's equation.

The general equation is:

$$E = E_{max}(1 - e^{-0.7x/h_1})\ (1 - e^{-0.7y/h_2})\ (1 - e^{-0.7z/h_3})\ (\ldots)\ (\ldots),$$

where E is the rate of a process influenced by several factors; E_{max} is the maximal rate obtained when all factors are present at optimal intensity; and the x, y, z, etc., are intensities of the separate factors influencing the process. The 0.7 and the h's are constants introduced to facilitate fitting the equation to experimental data.

An inspection of the equation shows that the "slowest" factor does not limit the rate of the process exclusively, but all factors are influential at all times in varying degree, depending on their intensity. This is true except in the special case where a factor has zero intensity. Then the rate is zero, regardless of the intensity of other factors; thus Liebig's law is valid in this special case. The equation predicts, as has frequently been demonstrated experimentally, that when one factor is at a suboptimal intensity, the manipulation of other factors will still produce changes in the rate of the process. An examination of the individual terms of the equation reveals that the manipulation of a single factor, other factors being constant, should yield a logarithmic curve, not a Blackman-type curve. This prediction is also abundantly confirmed by the experimental results obtained by a host of researchers. The equation, therefore, seems to constitute an acceptable expression of limiting factor theory, and deserves more recognition than biologists have accorded it during the 35 years since it was published.

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Fluoridation of Water

WITH reference to page 199 of the Feb. 20, 1953, issue of SCIENCE, stating a resolution was passed by the Subsection on Dentistry (N2) endorsing fluoridation of city water supplies, can you give me any further information as to the disposition of the resolution?

VICTOR E. CARUSO

Wyckoff, New Jersey

On Saturday, December 27, Section Nd adopted the following resolution and directed that it be conveyed to the AAAS for approval and publication:

Be it resolved, That Section Nd (dentistry) convened in annual session in St. Louis December 27 strongly endorsed the fluoridation of city water supplies as a partial preventive of decay of the teeth of children and recommends that all cities and communities having a central water supply adopt this health measure.