Comments and Communications

In Praise of Chisholm's "Social Responsibility"

Dr. George Brock Chisholm's article "Social Responsibility" (*Science*, January 14, p. 27) merits more than the rather limited distribution afforded by *Science*. I am convinced there are many hundreds of intelligent non-scientists who would welcome these fundamental analyses of social phenomena that can lead to war.

Naturally, I am considerably interested in any intelligent means of preventing further destructive wars. I saw the beginnings of World War I in Berlin and London and, as an interned Japanese prisoner in Manila, personally felt the intensely evil effects of World War II.

It seems to me that there must be many other members of the AAAS who will share my belief that we should employ every means possible to prevent a return to another medieval period in the world. Scientists have a stake in this matter, not alone in protecting their own interests but in upholding and buttressing the kind of social pattern suggested by Dr. Chisholm, which is a workable plan and which means their survival.

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Concerning the Nutritive Value of Breads

In a recent publication (November 1948) entitled "Outlook for Bread and Flour Enrichment" (prepared by the Committee on Cereals, Food and Nutrition Board, National Research Council) the following reference is made to certain data reported in one of our publications (Guerrant and Fardig. *J. Nutrition*, 1947, 34, 523).

"Using various forms of bread to the extent of 30 percent of the diets of young rats, these authors showed the following gains in weight during an 8-week feeding period: whole wheat bread, 82 grams; non-enriched bread, loss; enriched bread, 95 grams; dark bread, 15 grams; milk bread, 20 grams. An important feature of these experiments is that they illustrate the importance of the non-bread components in the dietary in determining the relative nutritional merits of the breads. The presence of 20 percent purified casein in all diets insured the presence of adequate protein for the high demand of young growing rats—much higher than those of slower growing human beings."

Inasmuch as the foregoing statements have led to a misinterpretation of our data, a word of explanation is hereby presented. To this end it seems necessary to point out again that the studies referred to above were concerned particularly with the various flours and breads made therefrom as sources of *thiamine* and *riboflavin*. This we attempted to make clear in the title and elsewhere in our publication. Since this point is not made clear in the report prepared by the Committee on Cereals, and certain pertinent details of our studies are not included, it is my desire at this time to emphasize that we regarded growth rates reported as indications of the relative *thiamine* and *riboflavin* content of the respective breads, and only in these respects are they a measure of the relative nutritive values of the breads.

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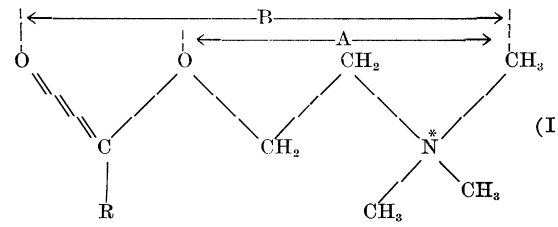
The Structure-Action Relationships of the Choline Group

In an interesting recent article (*Science*, 1948, 107, 94) Pfeiffer has suggested that all the numerous drugs which possess parasympathetic stimulant action "contain a ketone oxygen group adjacent to an ether oxygen linkage with a methyl substituted nitrogen at a distance of two saturated carbon atoms," as in (I):



(I)

He assumes further that these three groups, carbonyl oxygen, ether oxygen, and N-methyl, are prosthetic groups and proceeds to calculate from models the interprosthetic distances A and B. It may be noted in passing that this is an unusual use of the term "prosthetic," which literally means "something added in order to make up a deficiency" and has come to refer in immunology and enzymology to groups which must be added to an inert molecule (usually protein) in order to render it physiologically active (e.g. antigenic or enzymically active); in this sense, the obvious prosthetic group of acetylcholine is the acetyl group which converts the relatively inert substance choline into the highly potent parasympathetic transmitter. It would seem more fitting to refer to the three groups as pharmacologically *active* or *pharmacodynamic* groups. But leaving aside such niceties of terminology, it would indeed be welcome if the complexities of the pharmacology of parasympathetic drugs could be seen to have an underlying basis as simple as Pfeiffer suggests. Unfortunately, his assumptions are beset with difficulties, of which two may be briefly considered: (1) not all molecules containing the three groups disposed spatially as required show parasympathetic stimulant actions and (2) some molecules show such actions but do not contain all three groups.

(1) Not all choline esters of carboxylic acids are parasympathetic stimulants although they contain the three groups at the appropriate mean distances apart. The extraordinary potency of the acetic ester compared with that of its near homologues, such as the formic and propionic esters, is well known, but higher homologues, e.g. the butyric and valeric esters, have scarcely any parasympathomimetic activity (H. C. Chang and J. H.