So much space is devoted to descriptions of diseases and to what should properly be considered hygiene rather than bacteriology that much of the subject-matter of microbiology has been omitted or treated very scantily. Such important groups as the anaerobes, the spirochaetes, the Actinomycetes and the autotrophic bacteria are barely mentioned, but there is a discussion of the per capita cost of soap in relation to hardness of water! One may question whether it is desirable to devote so much of the time of a supposedly cultural course to public health, especially when so many students now take college courses in preventive medicine. Such a presentation gives the student a very one-sided picture of microbiology, as though its relation to disease were its sole *raison d'être*.

For such teachers as wish to place the emphasis where this book places it, Dr. Birkeland's text can be recommended. It is very readable, enlivened here and there by bits of verse and anecdote, with much history of disease and sanitation. The reviewer was particularly tickled by the recommendation that the student apply the principle of Koch's postulates to political problems. The style is clear and straightforward, the arrangement orderly. It should be a very easy book to study. The presentation is rather elementary, but in this respect the book is somewhat uneven. Thus the student is not expected to know anything about the structure of a cell, but is expected to know enough chemistry to follow the conversion of tryptophane to scatole and indole.

The teacher who uses this text-book will need to supplement it with a very complete laboratory manual, for it gives little of the technique of the bacteriologist. Particularly, there is not much discussion of the procedures by which species of bacteria are identified or distinguished. Here again the treatment is somewhat uneven. The student is told, for instance, how to distinguish caprine, porcine and bovine strains of *Brucella,* but not how to separate *Escherichia coli* from *Aerobacter aerogenes.* However, such deficiencies can be readily made up in an adequate laboratory course.

ARTHUR T. HENRICI

SOCIETIES AND MEETINGS

NORTH CAROLINA ACADEMY OF SCIENCE

THE forty-second meeting of the North Carolina Academy of Science was held at Duke University on April 30 and May 1. Approximately eighty papers were presented in addition to two symposia related to the war. The first symposium was on "Health and the War," the second on "Nutrition in War Time." The meeting was exceptionally well attended in spite of war restrictions and proved interesting and profitable to the membership. About forty-five new members were added to the roll, and a number of former members were reinstated after a lapse of several years of non-membership.

The following officers were elected: *President,* M. L. Braun, Catawba College; *Vice-President,* Mary E. Yarborough, Meredith College; *New Member of the Executive Committee,* E. H. Hall, of the Woman's College of the University of North Carolina. Bert Cunningham, of Duke University, continues as secretary. Section officers elected are:

Section	*Chairman*	*Secretary*
Botany	F. A. Wolf	E. C. Cocke
Geology	W. F. Prouty	Willard Berry
Physics	W. E. Speas	N. Rosen
Psychology	Elizabeth Duffy	K. Zener
Wild Life	John D. Findley	R. O. Stevens
Zoology	G. T. Hargitt	Eva G. Campbell
Biochemistry	H. W. Ferrill	J. C. Andrews

H. S. Perry was selected to receive the Poteat Award for his noteworthy paper on "Control of Starchy Contamination in Sweet Corn by the Use of the 'Gamete' Gene."

Two awards were made to high-school students—one to Robert Anderson for his essay entitled "Fire in the American Forests" and the other to Donald Hartzog for his exhibition in photography, which included portrait enlargements, stills and microphotographs.

The academy selected State College at Raleigh as the next meeting place.

From the standpoints of interest, attendance and worth of papers, this meeting is considered by many members to be one of the best the academy has had.

BERT CUNNINGHAM, *Secretary*

KENTUCKY ACADEMY OF SCIENCE

THE thirtieth annual meeting of the Kentucky Academy of Science was held at the University of Louisville, April 23 and 24, in five divisional meetings and two general sessions. Affiliated groups represented were Biology, Kentucky Branch, Society of American Bacteriologists and Kentucky Society of Natural History, in joint session; Chemistry; Geology; Psychology and Philosophy; Physics, Astronomy and Mathematics, in joint session. Forty-two papers were read including that of the president, Dr. J. T. Skinner, on "Some Functions of Mineral Elements in Connection with Enzymatic Action," before the

Academy in general session. At the annual dinner at the Seelbach Hotel, Herman F. Willkie, of Jos. E. Seagram and Sons, spoke on "Alcohol Goes to War."

In addition to their divisional meetings the Kentucky Geological Society and the Kentucky Society of Natural History conducted field trips in the Louisville area. The latter society became an affiliate of the Academy.

The grants for aid in research of the American Association for the Advancement of Science were awarded to W. R. Allen and to D. R. Lincicome, both of the University of Kentucky. Officers elected for 1943–1944 are as follows:

President, L. A. Brown, Transylvania College.

Vice-President, Paul J. Kolachov, Jos. E. Seagram and Sons.

Secretary, Alfred Brauer, University of Kentucky.

Treasurer, Wm. J. Moore, Eastern Kentucky State Teachers College.

Representative on Council of American Association for the Advancement of Science, Austin R. Middleton, University of Louisville.

Councilor to Junior Academy, Anna A. Schnieb, Eastern Kentucky State Teachers College.

ALFRED BRAUER
Secretary

SPECIAL ARTICLES

THE "VITAMIN M" FACTOR[1]

EARLIER studies by Langston and associates[2] have demonstrated that monkeys which were maintained on diet 600, a modification of the Goldberger diet 268, developed nutritional cytopenia. This deficient diet supplemented with either 2 g of liver extract or 10 g of dried brewer's yeast daily maintained nutritional balance in monkeys. However, the basic diet supplemented with nicotinic acid, riboflavin and thiamine failed to alter appreciably the course of the deficiency manifestations. The term "vitamin M" was proposed for this factor present in liver and yeast which prevents nutritional cytopenia in the monkey. The identification and chemical isolation of additional members of the vitamin B complex suggested to us a study of whether diets supplemented more fully by the other members of the complex would simulate the activity of vitamin M, in preventing nutritional disequilibrium.

Methods and materials. Healthy young adult *Macaca mulatta* were employed in these studies. Three diets were used (Table I). A basic diet free of members of the vitamin B complex was substituted for the 600 diet, since the vitamin content could thereby be more accurately and easily controlled. Diet 1 consisted of the basic diet supplemented with 5 members of the B complex; diet 2 contained 5 other members of the complex in addition to diet 1; and the control diet 3 was made up of the basic diet supplemented with 2 cc of crude liver extract. All the supplements were dissolved in water and administered by means of a stomach tube every other day, except the liver extract which was introduced subcutaneously every other day.

TABLE I

EXPERIMENTAL DIETS

Diet 1
Basic diet

	Per cent.
Sucrose	68
Casein	18
Vegetable oil	8
Salt mixture U.S.P. number 2	4
Cod liver oil U.S.P.	2

Vitamin supplements:

	Daily rations mg
Thiamine hydrochloride	1
Riboflavin	1
Pyridoxin hydrochloride	1
Nicotinic acid amide	25
Calcium pantothenate	3
Ascorbic acid	25

Diet 2
Diet 1 with addition of:

	Daily ration mg
Choline chloride	50
Pimelic acid	1
Glutamine	1
Inositol	1
Sodium paraminohenzoate	50

Diet 3—Control
Basic diet plus 2 cc of liver extract every other day.

Results. All 6 of the monkeys on diet 1 and all 22 monkeys on diet 2 showed progressive weight loss, followed by lethargy, dryness of the coat and finally anorexia and weakness. Minor degrees of gingivitis appeared in about half the monkeys on both diets between the 21st and 44th diet days. As previously reported,[3] the animals on these dietary régimes developed leukopenia between the 4th and 15th weeks and displayed lowered resistance to experimental and spontaneous infections.[4] Significant degrees of anemia developed in less than half of the animals on diets 1 and 2.

Three monkeys each received limited supplements of a yeast residue containing folic acid.[5] They showed marked leucopoietic and clinical remissions during brief experimental periods.

Four monkeys on the control diet, supplemented with liver extract, exhibited none of the deficiency symptoms, in direct contrast to the other monkeys on the experimental diets, and gained weight and were in excellent health over a 6-month experimental period.

[1] This work has been aided by a grant from the International Health Division of the Rockefeller Foundation. Constituents of the special diets were generously furnished by the S.M.A. Corporation.

[2] W. C. Langston, W. J. Darby, C. F. Shukers and P. L. Day, *Jour. Exp. Med.,* 68: 923, 1938.

[3] H. E. Wilson, C. A. Doan, S. Saslaw and J. L. Schwab, *Proc. Soc. Exp. Biol. and Med.,* 50: 341, 1942.

[4] S. Saslaw, J. L. Schwab, O. C. Woolpert and H. E. Wilson, in press.

[5] B. L. Hutchings, N. Bohoros, W. H. Peterson, *Jour. Biol. Chem.,* 141: 521, 1941.