lating to the neuropathological effects of drugs, to the influence of hormones and hormonal sex factors, to early trends of personality in children, frustration studies and conclusions to be derived from psychoanalysis.

In order to provide an outlet for contributions in the field of experimental psychology dealing with neuroses and psychiatry, this committee is establishing a quarterly journal to be called *Psychosomatic Medicine,* the first issue of which is scheduled to appear in January, 1939. The journal is to be supported in its initial stages by a grant from the Josiah Macy, Jr. Foundation. It is the purpose of the journal "to bring together studies which will contribute to the understanding of the organism as a whole in both somatic and psychological aspects." The journal will be in charge of an editorial board representing psychology (in general), neurology, psychiatry, psychoanalysis, comparative physiology, internal medicine and pediatrics, and its scope will comprise these and related fields.

International Scientific Congresses

The National Research Council appointed representatives for the following international scientific congresses this year:

XIIIth Conference of the International Union of Chemistry, and the Xth International Congress of Pure and Applied Chemistry, Rome, May 15–21, 1938; 15 representatives.

XVth International Geographical Congress, and the 6th General Assembly of the International Geographical Union, Amsterdam, July 18–28, 1938; 7 representatives.

VIth General Assembly of the International Astronomical Union, Stockholm, August 3–10, 1938; 6 representatives.

VIth General Assembly of the International Scientific Radio Union, Venice, September 5–25, 1938; 5 representatives.

In addition a considerable number of other American scientists attended these meetings.

Publications

Among publications of the Council during the year may be mentioned:

An "International Directory of Anthropologists," which lists about 1,950 names, of whom some 600 are from the United States (mimeographed).

A treatise upon "Measurement of Radiant Energy" and a "Glossary of Physical Terms," sponsored by the Council and published commercially by the authors in the latter part of 1937.

"An Experimental Study of the Problem of Mitogenetic Radiation," issued under auspices of the Committee on Radiation. (N.R.C. *Bulletin* No. 100; July, 1937.)

The preparation of the third edition of the "Handbook of Scientific and Technical Societies of the United States and Canada," the Canadian section having been compiled by the Canadian National Research Council. (N.R.C. *Bulletin* No. 101; October, 1937.)

The "Third Report of the Committee on Photochemistry," critically summarizing contributions in this field during the seven years since the issuing of the Second Report of this Committee. (Published in the *Journal of Physical Chemistry,* Vol. 42, pages 699–854, June, 1938; and in the N.R.C. *Reprint and Circular Series,* No. 108, July, 1938).

Ross G. Harrison,
Chairman
Albert L. Barrows,
Executive Secretary

SPECIAL ARTICLES

ANTI-CATALASE AND THE MECHANISM OF SULFANILAMIDE ACTION

Healthy, normal rabbits fed sulfanilamide in adequate dosage survive intradermal infection with type I pneumococcus in greater number than rabbits not so benefited.[1] Blood taken from the rabbit during the period of conferred increase in capacity for resistance has a comparably increased capacity for retarding proliferation of type I pneumococcus *in vitro*.[2] The increase is, possibly, accomplished in an indirect way: the actual checking agent being, not sulfanilamide itself, but hydrogen peroxide.

[1] A. Locke, R. B. Locke, R. J. Bragdon and R. R. Mellon, SCIENCE, 86: 228, 1937.

[2] A. Locke, E. R. Main and R. R. Mellon, *in preparation.*

The pneumococcus and the hemolytic streptococcus have the property of being able to produce peroxide without, at the same time, being able to prevent peroxide accumulation.[3] Both are sensitive to peroxide injury and depend for peroxide elimination on catalase borrowed from the medium supporting growth. Catalases decompose peroxide and permit growth so long as they remain efficient. They are inactivated by hydroxylamine[4] and by substances related to hydroxylamine in structure or properties.[5,6]

[3] J. W. McLeod and J. Gordon, *Jour. Path. Bact.,* 26: 326, 1923.

[4] H. Blaschko, *Biochem. Jour.,* 29: 2302, 1935.

[5] D. Keilin and E. F. Hartree, *Nature,* 134: 933, 1934.

[6] M. G. Sevag and L. Maiweg, *Biochem. Ztschr.,* 288: 41, 1936.

Substances analogous to hydroxylamine in anti-catalase effect are produced from sulfanilamide when dilute solutions of the drug are exposed to ultraviolet radiation.[2] They should be as easily produced from sulfanilamide by peroxide-producing pneumo- and strepto-cocci, through equivalent processes of oxidative disintegration, producing an amount of anti-catalase, within the multiplying organisms, sufficient to permit accumulation of hydrogen peroxide to levels forcing change in growth rate or growth character.

The retarding effect of sulfanilamide on pneumococcal and streptococcal proliferation is not manifested until after a lag[7] possibly required for the preliminary period of absorption and oxidation, and subsequent hydrogen peroxide accumulation, above postulated. Blockade of the p-amino group, in sulfanilamide, through acetylation, produces a degree of impairment in effectiveness[8] parallel to the degree of impairment in susceptibility to oxidation effected. Oxidation of the p-amino group to a p-hydroxylamino grouping is reported to produce an increase in ability to check streptococcal proliferation *in vitro* not elicited following more drastic oxidation to the p-nitroso or p-nitro grouping.[9]

The effectiveness of sulfanilamide for producing retardation of streptococcal proliferation, *in vitro,* is increased following dilution of the growth medium with saline,[8] to an extent parallelling the diminution in catalase concentration produced. Sulfanilamide has appeared to be appreciably more effective, *in vivo,* in accomplishing sterilization of the catalase-poor spinal fluid than in accomplishing sterilization of the catalase-laden blood.[8]

A more detailed presentation of the above-covered material has been prepared for later publication as a part of a comprehensive report on non-specific factors in resistance which may escape notice of investigators interested more directly in the mechanism of sulfanilamide action.

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THE EFFECT OF AMMONOLYZED FOODS ON THE GROWTH OF ALBINO RATS

IT has been reported recently that calves can gain weight on forms of nitrogen not supposed hitherto to be digestible and assimilable by animals.[1] Much work of this kind extending back to 1919 has been done in the United States and in Germany, and it has been described in a recent review which contains an excellent bibliography.[2]

We have modified and extended such work by using albino rats instead of ruminant animals and by using liquid ammonia in place of nitrogen containing salts, although ammonium hydroxide, ammonium carbonate and ammonium citrate were used in some of the control experiments. A preliminary report concerning some of the work has been published.[3]

It had been shown previously that proteins are ammonolyzed in liquid ammonia, and thereby increase their nitrogen content.[4] Preliminary experiments showed that ammonolyzed casein caused a loss of weight in young rats when it was used to replace other proteins. In order to determine the cause of this toxic effect, a series of experimental feedings was made in which different constituents of the diet were treated with liquid ammonia or ammonium hydroxide or all the constituents of the diet were mixed with ammonium carbonate. It was found that failure to grow occurred in all cases in which the vitamin B complex in the form of dry yeast was allowed to come in contact with ammonia. However, if the yeast was supplied in a separate container, and the remaining food ammonolyzed, the rats not only showed no such interference with growth, but actually grew more rapidly than control animals on normal diets. The control and experimental animals were given their food ad libitum, except for the yeast, and ate equal amounts. The yeast when fed in separate containers was weighed each day, since it is known that vitamin B in excess will accelerate the growth of young rats. Litter mates were used with an equal distribution of males and females. The nitrogen content of the protein was increased by 2.2 per cent. by the treatment with liquid ammonia. In addition it was found that ammonolyzed food has less tendency to spoil or become mouldy than untreated foods.

Just how an albino rat can use such nitrogenous materials as food we are not prepared to say. An explanation in this case might be even more difficult than with ruminant animals, since in their case some intermediate action of bacteria is sometimes assumed.

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[7] H. Finklestone-Sayliss, C. G. Paine and L. B. Patrick, *Lancet* (2): 792, 1937.

[8] R. R. Mellon, P. Gross and F. B. Cooper, "Sulfanilamide Therapy of Bacterial Infections," C. C. Thomas, Baltimore, 1938.

[9] R. L. Mayer and C. Oechslin, *Compt. rend.,* 205: 181, 1937.

[1] E. B. Hart, H. J. Deobald and G. Bohstadt, SCIENCE, 88: Supplement, 10, 1938.

[2] J. F. T. Berliner, *Chemical Industries,* March, 1936.

[3] R. G. Roberts and H. J. Horvitz, *Jour. Biol. Chem.,* 123: Proc. XXXII cii, 1938.

[4] R. G. Roberts and C. O. Miller, *Jour. Am. Chem. Soc.,* 58: 309, 1936.