

tein molecules during denaturation are indicative that transformation of one protein into another takes place without the intervening stage of amino acids.

Recent evidence points to the likelihood that some breakdown of fatty acids occurs by ω -oxidation.⁶ It is not inconceivable that the straight side chains of amino acids in the protein molecule may be similarly oxidized.

Indole is easily oxidized, and it is well known that, unless special precautions are taken, tryptophane, when wet or in solution, turns brown on exposure to air. This is also true of some proteins under appropriate conditions. It is difficult to conceive that a necessary condition for the breakdown of the indole ring of tryptophane is that the amino acid be in the free state and not combined in peptides or proteins.

The point that we desire to emphasize, and to which careful consideration should be given in future studies dealing with protein metabolism, is that it may be quite possible that some transformation or breakdown of the free groups in proteins occurs before hydrolysis of the peptide linkages. By such changes one type of protein may be transformed into another. From a thermodynamic view-point such a reaction is probably more efficient than one that requires hydrolysis to amino acids and resynthesis from the selected amino acids.

Finally, it does not appear to us impossible that the immune bodies that are commonly found in the globulin fraction of blood serum are not synthesized *de novo* but by modification of existing globulins. The upset of the normal albumin-globulin ratio by the injection of non-antigenic substances into animals⁷ may possibly be another example of the transformation of proteins by slight modification rather than *de novo* synthesis from amino acids.

Our visualization of protein anabolism and catabolism is that not only free amino acids are concerned in the reactions, but also peptides and proteins. It is admitted that experimental evidence in support of the latter concept is still meager. However, but little thought has been given to this idea, and it is the purpose of this article to stimulate interest in this field so that eventually we may have a thorough and adequate knowledge of protein metabolism.

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⁶ P. E. Verkade and J. van der Lee, *Biochem. Jour.*, 28: 31, 1934. See also, M. Jowett and J. H. Quastel, *Biochem. Jour.*, 29: 2143, 1935.

⁷ E. S. Schmidt and C. L. A. Schmidt, *Jour. Immunology*, 2: 343, 1917.

THE TREATMENT OF EXTREME CASES OF "SNIFFLES" IN THE RAT WITH SULFAPYRIDINE

SULFANILAMIDE, though very helpful as a counter-irritant in the lighter attacks of "sniffles" in the laboratory rat, apparently does little more than slow the progress of the disease in cases where the infection is more extreme and deep-seated.

In such cases we have employed sulfapyridine with much success. The dosage used is 1 mg per gram body weight of rat mixed with a small quantity of food. If the animal will not eat, a 2 cc concentrated solution of *sulfanilamide* injected abdominally gives the animal a respite from the disease which is accompanied by a return of appetite. *Sulfapyridine*, in the meantime, is mixed with a small quantity of food, preferably cow's milk (18 per cent. butter fat). Ingestion of the sulfapyridine obviates further use of sulfanilamide.

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THE following is a translation of resolutions that were adopted by the section of astronomy of the Academy of Sciences of the U.S.S.R. in December, 1938, and printed in Volume 16, No. 2, of the *Astronomical Journal of the Soviet Union*:

Having heard the papers of Eigenson, Zelmanoff, Bogorodsky and Krat, the meeting adopts the following:

1. Modern bourgeois cosmogony is in a state of deep ideological confusion resulting from its refusal to accept the only true dialectic-materialistic concept, namely, the infinity of the universe with respect to space as well as time.

2. The hostile work of the agents of Fascism, who at one time managed to penetrate to leading positions in certain astronomical and other institutions as well as in the press, has led to revolting propaganda of counter-revolutionary bourgeois ideology in the literature.

3. The few existing Soviet materialistic works on problems of cosmology have remained in isolation and have been suppressed by the enemies of the people, until recently.

4. Wide circles interested in science have been taught, at best, only in the spirit of indifference toward the ideological aspect of the current bourgeois cosmologic theories. . . .

5. The exposé of the enemies of the Soviet people makes necessary the development of a new Soviet materialistic cosmology. Already there are a few pioneer Soviet specialists in this subject. . . .

6. It is deemed necessary that Soviet science should enter the international scientific arena carrying concrete achievements in cosmologic theories on the basis of our philosophic methodology.

ASTRONOMER