



# Editorial

## The Structure of Vitamin B<sub>12</sub>

Announcement was recently made of the establishment of the structure of vitamin B<sub>12</sub>. Two teams of investigators, a group at Oxford<sup>1</sup> (with an assist from U.C.L.A. and Princeton) and a group at Cambridge<sup>2</sup> both report the identical structure in the same issue of *Nature*. The former group based their studies largely on crystallography, whereas the latter emphasized biochemical reactions.

The complex structure has the formula C<sub>63</sub>H<sub>90</sub>O<sub>14</sub>N<sub>14</sub>PCo, and the configuration of the molecule is illustrated in the reports. Nutritional chemists may well be proud of this bilateral achievement, coming a short seven years after the isolation of this remarkably potent substance. To E. Lester Smith of the Glaxo Laboratories in England goes the distinction of being one of the two original isolators of vitamin B<sub>12</sub>, and also one of a

group which has now defined its structure.<sup>2</sup> Nor should it go unnoticed that, as in the case of its isolation, the establishment of the structure of vitamin B<sub>12</sub> was achieved simultaneously by two groups working independently—a form of scientific competition which can only lead to greater advances at a more rapid pace.

—S. O. WAIFE, M.D.

### REFERENCES

1. HODGKIN, D. C., PICKWORTH, J., ROBERTSON, J. H., TRUEBLOOD, K. N., PROSEN, R. J., and WHITE, J. G.: The crystal structure of the hexacarboxylic acid derived from B<sub>12</sub> and the molecular structure of the vitamin. *Nature* 176: 325 (Aug. 20), 1955.
2. BONNETT, R., CANNON, J. R., JOHNSON, A. W., SUTHERLAND, I., TODD, A. R., and SMITH, E. L.: The structure of vitamin B<sub>12</sub> and its hexacarboxylic acid degradation product. *Nature* 176: 328 (Aug. 20), 1955.

## Vitamins—Foods or Drugs

From time to time the Food and Drug Administration is asked if vitamins are foods or drugs. As defined in the Food, Drug, and Cosmetic Act, the term "food" means (1) articles used for food or drink for man or other animals; (2) chewing gum; and (3) articles used for components of any such article. The term "drug" means (1) articles recognized in the official U. S. Pharmacopeia, official Homeopathic Pharmacopeia of the United States, or official National Formulary, or any supplement to any of them; and (2) articles intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease in man or other

animals; and (3) articles (other than food) intended to affect the structure or any function of the body of man or other animals; and (4) articles intended for use as a component of any articles specified in clause (1), (2), or (3); but does not include devices or their components, parts, or accessories.

These definitions do not classify vitamin preparations in one category or the other. Vitamins are, in fact, included in both, and the courts have held that the food sections of the Law and the drug sections are not mutually exclusive. If a product is found to be in violation of the Act, then the intended use