

### Estimation of Vitamin A

WITH further reference to our letter under this title in NATURE of March 7, p. 402, we have been in touch with Dr. E. M. Nelson, chief of the Vitamin Division, United States Department of Agriculture, Food and Drug Administration, Washington, concerning the ambiguous position of the U.S. Pharmacopœia Reference Cod Liver Oil. Our query was, Are we sure that the "Reference Oil" now in use is identical with the original product? In reply to our question he has given us permission to publish the following facts, which undoubtedly throw some light on a rather difficult situation:

"There has been only one lot of this reference oil prepared and the samples that have been issued were all bottled at the same time from this lot. Since the potency of 3000 units of vitamin A and 95 units of

vitamin D were assigned to this oil, assays have been made at intervals by six laboratories for both its vitamin A and vitamin D content. There has been no indication that the oil has changed in vitamin potency. As soon as the oil was obtained samples were sent to Dr. Charles E. Bills of Mead Johnson and Co., for spectrophotometric determination of vitamin A. He has made several such examinations since that time. His last report was made to the U.S. Pharmacopœia Vitamin Committee on March 24, at which time he stated that as far as can be determined spectrophotometrically the oil has not changed in vitamin A potency."

JOHN F. WARD.

Crookes Laboratories,  
London, N.W.10.

R. T. M. HAINES.

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### Points from Foregoing Letters

THE atomic masses of doubly charged thorium 232, and of uranium 238, have been determined by Prof. A. J. Dempster with the mass-spectrograph, by comparison with the isotopes 116 and 119 of tin (having the same mass-charge ratio). The presence of 0.4 per cent of a stable uranium isotope of mass 235 was also found, and since a radioactive uranium isotope of mass 235 and of half-life 24 hours is already known, Prof. Dempster concludes that the two isotopes, having the same mass and charge, are isomers differing in nuclear properties.

Some previous observations of the conductivity, unimolecular racemization and halogen replacements of alkyl halides in sulphur dioxide and formic acid solution are interpreted by Dr. E. D. Hughes, Prof. C. K. Ingold and A. D. Scott as arising from the slow liberation of a negative halogen ion ( $\text{Cl}^-$ ) followed by the rapid elimination of a positive hydrogen ion ( $\text{H}^+$ ). The original saturated compound thus becomes unsaturated, as is shown by its subsequent ability to absorb bromine.

A possible chemical mechanism to explain how the addition of sodium sulphide or of certain primary amines helps the removal of hair from hides by fresh lime liquors is suggested by Dr. H. Phillips. These substances reduce the sulphenic acid side-chains to cysteine, and thus prevent the generation of aldehyde groups; this facilitates the severing of the cystine disulphide cross-linkages of the keratin substance.

From the rate of sedimentation of solutions of thyroglobulin (the active constituent of the thyroid gland) under the influence of strong centrifugal forces, Dr. H. P. Lundgren concludes that it consists mainly of particles of 'molecular' weight 700,000. Low concentration of thyroglobulin or of salts, high temperature, high dielectric constant and  $\text{pH}$  above the isoelectric point have been found to favour the dissociation of thyroglobulin into components of lower particle weight.

The atomic heat of palladium between  $2.5^\circ$  and  $22^\circ$  K. has been determined by G. L. Pickard. He finds, in agreement with Mott's views, that it can be expressed as the sum of two factors, one due to lattice vibrations, which varies with the cube of the temperature, and another, the electronic specific heat, varying directly with the temperature and due to unfilled quantum states (positive holes).

The transparency of thin films of sodium and potassium in the far ultra-violet (Schumann region) has been determined by Prof. W. H. Watson and D. G. Hurst. They point out the value of sodium films as filters to remove the visible and ultra-violet light above 2100 Å., and direct attention to the conflict between experimental results and the existing theory of the optical properties of metals.

Rats from which the adrenal body has been removed live longer if fed on bread than when fed on Purina Dog Chow. Dr. R. A. Cleghorn and G. A. McVicar suggest that this is due to the lower potassium content of the bread, since it has been shown that potassium is detrimental to adrenalectomized animals.

By grafting on to chick embryo the anterior part of the embryonic axis of a two somite rabbit, a small but definite neural plate was induced in the host. This, C. H. Waddington states, shows that the rabbit contains an organization centre, and is additional proof that determination of the mammalian embryo is in fact produced by an organization centre.

Dr. C. H. Douglas Clark finds that the optical polarization ellipsoids of the four hydrogen halide gases constitute similar figures having equal anisotropies and depolarization factors. He calculates the polarizabilities for the four cases, and finds that the polarizability at right angles to the internuclear line is about 75 per cent of that along this line, and is equal to the polarizability of the corresponding negative ion.

In view of the divergence in the interpretation of the seismograms of the Hawke's Bay earthquake of 1931 and the calculations of the focal depth therefrom, R. C. Hayes has re-examined the original Takaka seismogram. Its record, he states, confirms in the main the original interpretation, from which a focal depth of 16-24 km. was inferred.

Referring to the note in this column (July 11, p. 81) on "Inactivation of Crystalline Pepsin", Dr. J. Steinhart states that the fifth-power relation reported in his communication does not extend over the small interval  $\text{pH}$  6.2-6.45, but from the most acid solutions measured to  $\text{pH}$  6.45. The velocity interval was over 1 to 5,000, while the smaller interval given in the synopsis is equivalent only to a range of about 1 to 15.