

has been derived with a high degree of exactness from the line 6127. This same line has been re-measured by Schmidt, who obtains very different results, leading to a different term analysis. An entirely independent analysis for the term in question has recently been published by Murakawa², who has achieved high resolution in analysing the structures of the lines 5407, 5678, both of which involve the above term.

In the accompanying table are given the intervals derived for (²D) 6s ³D₂, by Schmidt, Murakawa and myself. In addition, I have independently analysed Murakawa's *experimental* data and have enclosed the results in brackets. It should be pointed out that the nature of the lines 5407, 5678 is such that errors due to overlapping might cause small displacements, but *only* in the lower *F* levels.

<i>F</i>	Schmidt	Murakawa	Tolansky
$\frac{5}{2}$	216	236 (235)	234
$\frac{3}{2}$	227	236 (237)	233
$\frac{1}{2}$	182	181 (181)	185
$\frac{1}{2}$	117	114 (114)	110

It will be observed that Schmidt's data differ considerably from those of Murakawa and myself, particularly in the first two intervals, which are the very ones in which the accuracy of my measurements

is at its best (± 1 unit). It appears that the position of $F = 7/2$ is incorrectly given by Schmidt, since Murakawa and I are in agreement.

I wish to re-emphasize strongly what I have previously stated, namely, a cubic interaction formula need not of necessity imply the existence of a nuclear *octopole* moment. I suggest that it is possible that the existence of configuration interaction will convert the quadratic expression characteristic of electrical quadrupole moment into a cubic interaction law, the size of the cubic term depending upon the degree of configuration interaction. It is to be hoped that theoretical workers will examine this effect, since, if configuration interaction can distort hyperfine structures, *no* reliance can be placed upon any calculated nuclear electrical quadrupole moment until the existence of such interaction can be excluded with certainty.

S. TOLANSKY.

Physics Department,
University,
Manchester.
Sept. 6.

¹ Schmidt, T., *Z. Phys.*, **113**, 439 (1939).

² Tolansky, S., *Proc. Roy. Soc., A*, **170**, 205 (1939).

³ Schuler, H., and Schmidt, H., *Z. Phys.*, **98**, 239 (1939).

⁴ Casimir, H., *Physica*, **7**, 719 (1935).

⁵ Murakawa, K., *Z. Phys.*, **112**, 234 (1939).

Points from Foregoing Letters

HUMAN beings can be divided into two groups according as they experience a bitter taste or not with dilute solutions of phenylthiocarbamide, and the proportion of 'non-tasters' to 'tasters' is regularly 25-30 per cent. Tests by R. A. Fisher, E. B. Ford, and J. Huxley on manlike apes in zoological collections show that some of them cannot taste phenylthiocarbamide. The proportion of non-tasters in the chimpanzee agrees with that in man. It appears that in the ancestors both of man and of the apes a balance of selective forces must have maintained the gene ratio at a nearly constant value.

S. Ochoa, R. A. Peters and L. A. Stocken find that acetylphosphate is not oxidized by brain enzyme preparations and does not transfer its phosphate to adenylic acid in muscle extracts. They conclude that the compound is not an intermediate in the oxidation of pyruvic acid by brain.

E. Ciaranfi finds that the esters of fatty acids increase the oxygen consumption of normal tissue slices much more than the fatty acids themselves; only the fatty acid component of the esters is consumed. Neoplastic tissues do not oxidize the free fatty acids but actively oxidize their esters.

A. E. Braunstein and S. M. Bychkov claim that they have obtained a cell-free enzymatic system able to deaminate *L*-alanine at a fairly high rate under aerobic conditions and with pyocyanine as autoxidizable hydrogen carrier.

Using an inulin method, the volume of the inter-spaces in the excised sartorius of the frog is shown by E. J. Conway *et al.* to be 9 ml./100 gm. muscle,

whereas the chloride represents 14 per cent of the external concentration. This, supported by other facts, indicates the presence of chloride within the fibres. Evidence is given for the localization of sodium within the sarcoplasm and the existence of a second membrane, presumably that of the myofibril, which can, under certain conditions, show permeabilities differing from those of the sarcolemma.

V. B. Wigglesworth has induced moulting in decapitated nymphs of *Rhodnius* by implantation of the brain removed from other nymphs during the 'critical period'. Implantation of the corpus allatum and sympathetic ganglion gave negative results.

When a small quantity of coarsely sifted whole-wheat flour in a beaker is seeded with eggs of the flour beetle and conditions favourable to development are maintained, J. Stanley finds that the surface of the flour gradually assumes a distinctive form. The effect appears to be due to radial movement of the flour.

By the introduction of certain relativistic convergence factors, G. Wataghin deduces the condition for the rules of the ordinary quantum theory to hold, and examines these conditions by an independent method.

S. Tolansky criticizes the hyperfine structure measurements in the iodine spark spectrum published by Th. Schmidt. It is suggested that a quadrupole quadratic interaction formula might be converted into a cubic formula, as a result of configuration interaction.