

of the new triplets, mentioned in the letter in NATURE of September 22. Again following Sommerfeld (*Ann. d. Physik*, 70, 32, 1923) it is concluded that in the oxygen group the terms labelled by Fowler as mS are single, while the mP terms are triple, and the mD terms quintuple, just as in the case of chromium, which is in the same column of the periodic table. Accordingly the so-called "singlet" series of oxygen are really of a complex nature, a fact that has already been suggested by others (see Fowler, *loc. cit.*, p. 166), while in general the series spectra of the oxygen group are similar to those of chromium, as far as complexity of terms is concerned.

As already noted, similar triplets were found in sulphur, while independently the diagrams by Brackett and Birge had been used to predict the position of most of these new lines, the agreement in all cases being within the limits of error. The diagrams also allow the identification of some of the other new lines. In particular, the diagrams indicate that the triplets called, in the letter in NATURE of September 22, $oP-3D$ and $oP-4D$ are in reality $oP-2S$ and $oP-3S$ respectively, while those called $oP-2S$ and $oP-3S$ remain unidentified. In addition, the $\lambda 5279$ narrow triplet of sulphur has been identified as $iS-2P$. All these points, as well as more general questions, are fully discussed elsewhere by one of us (Birge, "Spectral Series of Divalent Elements," Jour. Optical Society of America, now in the press). One of the conclusions of that paper, derived from a study of the spectral diagrams already mentioned, is that the possible triple levels of the oxygen group, oP and $o\phi$, while having different sets of inner quant numbers, running in opposite directions, have nevertheless the same average numerical magnitude. But for some unknown reason the oP (valence) level represents a more probable condition, and $o\phi$ does not actually exist. Similarly, in the case of the elements of the second column of the periodic table, the non-appearing os level coincides numerically with the iS valence level.

J. J. HOPFIELD.
R. T. BIRGE.

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October 16.

Identification of Pure Organic Compounds.

IN his review of Mulliken's "Identification of Pure Organic Compounds," vol. iv., on p. 581 of NATURE of October 20, your reviewer surely does the author an injustice. Perhaps he is unacquainted with the earlier volumes, as I am, at present, with the latest—that under review. But I can testify to the great value of volumes i. and ii., and have used them regularly for the last two years. In identifying the components of commercial dyestuffs and similar work, Mulliken's methods are far less troublesome and time-expending than the classical method described by your reviewer, and aptly termed by Mulliken in his preface "the Method of the Empirical Formula." I have never experienced failure in preparing a characteristic derivative by following Mulliken's prescriptions, working with quantities of about $\frac{1}{16}$ gram. In fact, his beautifully neat methods for manipulating small quantities deserve to be more widely known, and, in my opinion, it is a matter for regret that your review will prevent this.

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I WELCOME Mr. Silvester's statement, and am glad to hear that Mulliken's methods are appreciated and found useful in technical organic chemistry. In these matters it is only possible to speak from one's own experience, and, as a research organic chemist and teacher of thirty years' standing, I should not dream of allowing my research students to learn to rely on Mulliken's methods. I adopt this attitude, not because his methods are bad or inaccurate, but because they are incomplete, and an extension of his system to meet all requirements would be impracticable.

J. F. T.

Amanita muscaria on Hampstead Heath.

THE letter from Dr. O. Rosenheim in NATURE of October 27, p. 622, would doubtless cause astonishment to many mycologists. *Amanita muscaria* is one of the commonest toadstools, and is to be found amongst almost any clump of birch trees in this country, consequently being a common sight in woods and on commons near London. The association between fungus and tree, moreover, is so constant that it is not unlikely that the mycelium is one of those concerned in forming birch mycorrhiza.

It is, however, the statement that there is difficulty in obtaining this and presumably other common agarics for scientific investigation that occasions this letter. If any chemist or physiologist desire such specimens, I should be pleased to circulate members of the British Mycological Society to that effect. That common species even are sometimes not to be had has been brought forcibly to my notice during the past two seasons. *Lactarius vellereus* was asked for last year at a time when, normally, the season is on the wane. Though the fungus had appeared in quantity in July and August—the season that year was abnormally early—it was exceedingly scarce in October and November. This year, though many mycologists have been on the look-out for it since the beginning of the season, I have heard of no one finding sufficient to fill a vasculum, let alone the promised hampers; *Amanita mappa*, on the contrary, has been so amazingly abundant everywhere that pantechinons could have been loaded with it.

It should be emphasised also that toadstools have their due season, the majority appearing some time during the period after summer rains until autumn frosts, and consequently it is not possible to provide fresh material of a given agaric all the year round.

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November 3.

Insecticides.

I AM interested in the question raised in NATURE of October 27, p. 622, as to the efficacy of camphor in preventing moths, and the apparent absence of experimental evidence on the subject. May I suggest that the whole matter of "insecticides" needs investigation. Daily we see upon advertisement hoardings the most alarming pictures, showing the truly devastating effects of popular insecticides on every known and unknown species of the insecta. I have had an opportunity of testing the truth of these statements, and I am profoundly disillusioned.

At the beginning of the rainy season in India my bungalow became in a few days infested with thousands of fleas, which had hatched in the floor matting.