was still a substantial residue of nitrate. The effect of the manurial dressing on the nitrate nitrogen of the swards is greater at the fourth and fifth dates than at the second and third, presumably owing to the slower growth and decreased metabolism of nitrogen at the later dates, which fell in a rather dry period, having only 0·92 in. of rain between June 10 and July 7, 1957. This is consistent with the finding of Ferguson and Terry[1] that applications of nitrogen late in the growing season resulted in increased amounts of nitrate nitrogen in the herbage.

It is to be noted from the results that a high total nitrogen is not necessarily a prerequisite for a high nitrate nitrogen content. A high nitrate, however, seems to be associated with a generally lower proportion of true protein nitrogen to total nitrogen.

The main interest of the present results, however, lies in the species and strain differences. In the spaced single plants, *S*23 perennial ryegrass and *S*143 cocksfoot are almost without exception considerably higher in nitrate than the remaining grasses. In the swards, however, *S*24 ryegrass has a considerably higher nitrate content than *S*23, while *S*143 cocksfoot no longer heads the list and in the last two cuts of the swards has actually the lowest nitrate content.

No attempt is made at this stage to offer any explanation of these species and strain differences in nitrate accumulation. The investigation continues and the results will be published elsewhere in due course.

Acknowledgment is made to Mr. Ll. Iorwerth Jones, who provided the material for analysis from a field experiment at this Station.

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A Direct-Plating Method for the Assay of Radioactive Isotopes in Aqueous and Alcoholic Samples

In the course of a programme of work on the determination of residue levels of γ-2 : 4-dichlorophenoxybutyric acid and related compounds in plants, the results of which will be reported in the Proceedings of the British Weed Control Conference, 1958, a rapid method was required for the radiochemical assay of non-volatile compounds labelled with carbon-14 contained in aqueous and alcoholic solutions.

A method for plating aqueous samples in which the compound to be assayed is incorporated into a film of dry agar has been published by McCready[1]. We are grateful to Dr. McCready for having described to one of us (H. C.) the basic principles of his method before publication. A modification of the method has proved to be free from complications due to coagulation of the agar when alcoholic solutions are to be assayed and a sample can be prepared for counting within 20 min. The precision, although not as high as that obtained by McCready, is adequate for many purposes, and this limitation is offset by the speed and convenience with which samples can be prepared for counting.

A measured volume of 0·1 per cent aqueous solution of agar is pipetted on to a planchette which has been washed with carbon tetrachloride. An equal volume of the aqueous or alcoholic solution of the sample to be counted is added and mixed by stirring with a fine wire. It is convenient to take a volume of 0·1 ml. of each solution when using a planchette 15 mm. in diameter and 2 mm. deep. The planchette is then placed on a hot plate at about 60° C. and allowed to dry; the thin film should be invisible.

When an end-window Geiger–Müller tube type *EW*.3*H* (20th Century Electronics, Ltd.) was used the count-rate per μgm. given by a sample of an organic acid of molecular weight 217 labelled with carbon-14 at specific activity of 0·46 mc./m.mole was 235 c.p.m. above background, that is, the counting efficiency was about 5 per cent. The precision of the method, tested by carrying out ten replicate determinations on samples of a solution containing carbon-14, was ±1·5 per cent under conditions where the statistical variation in counting should not have exceeded ± 0·6 per cent.

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Relationship of Serological Reactivity to Antibody Molecular Weight

In recent years information has been obtained concerning the molecular weight of antibody in relation to specific serological reactivity. Deutsch and Chan[1] found that human A and B *iso*agglutinins have molecular weight near 1,000,000. Paic[2] reported that rabbit anti-sheep hæmolysin had a minimum molecular weight of 420,000. More recently, Talmage *et al.*[3] found that the hæmolytic activity of rabbit anti-sheep hæmolysin was associated with antibodies of two distinct molecular weights. The bulk of the hæmolytic activity was associated with a high molecular weight antibody of greater hæmolytic efficiency and in addition a low molecular weight antibody of lower hæmolytic efficiency. Johnson *et al.*[4] reported that rabbit anti-human hæmolysin, in contrast to rabbit anti-sheep hæmolysin, has a molecular weight in the region of 160,000. We observed[5] that human anti-A and rabbit anti-human hæmolysin had the same complement-fixing capacity (the amount of complement capable of being fixed), while rabbit anti-sheep hæmolysin had a complement-fixing capacity 3–4 times lower.

On the basis of the above information and the comparison of the sedimentation characteristics of the agglutinin, hæmolysin and complement-fixing activities of human anti-A, rabbit anti-human and rabbit anti-sheep erythrocyte antibodies, we wished to determine the association of serological reactivity to antibody molecular weight.

Centrifugation was carried out in a 'Spinco' Model *E* ultracentrifuge. The sera were initially diluted 1 : 4 with veronal buffered saline *p*H 7·4. 11 ml. of the diluted serum was centrifuged 200 min. in