

Relation of *Botrytis* spp. to the 'Chocolate Spot' Disease of Beans (*Vicia Faba*)

IN view of the considerable losses in bean crops sustained by farmers in parts of England and Wales during the present season, it appears expedient to summarise the present position of our knowledge of 'chocolate spot' disease.

Chocolate spot disease may attack both broad and field beans, and is characterised by the appearance of chocolate brown lesions on the shoot system. Sardina¹ has described two diseases of beans in Spain which he attributed to distinct species of *Botrytis*. One of these diseases is probably identical with 'chocolate spot'. Ikata² considers that *Botrytis Fabæ*, Ikata, is responsible for the disease in Japan. Natrass³ has just reported that a species of *Botrytis* is responsible for the disease in Cyprus.

Work has been carried out on all aspects of this disease at Cambridge since 1931 under the direction of Mr. F. T. Brooks. As early as April 1933, experiments carried out at the Cambridge Botany School showed conclusively that several forms of *Botrytis* are responsible for the major part of the disease in Britain, but full publication of the results of these investigations will be delayed.

In the field the disease may assume two forms: (1) a lethal attack resulting in blackening and death

of a part or the whole of the shoot system, (2) a non-lethal attack resulting in 'chocolate spot'. Both types of attack have been reproduced by artificial infection in field plots.

Chocolate discoloration of bean shoots is also caused by aphid exudates and other agencies.

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¹ J. R. Sardina, *Bol. Pat. y Entom. Agric. Madrid*, **5**, 59-80; 1931.
² S. Ikata, Abstract in *Jap. J. Bot.*, **7**, 1-2, 6; 1934.
³ R. M. Natrass, *Cyprus Agric. J.*, **30**, 2, 57-58; 1935.

Dissociation Energy of the CO Molecule

IN the last lines of my letter in NATURE of June 29, p. 1077, I erroneously wrote $C(^1D) + O(^3P)$ instead of $C(^3P) + O(^1D)$. This, together with a typographical error, obscured the meaning of the last sentence. It should read: "The alternative possibility that it would correspond to dissociation into $C(^3P) + O(^1D)$ and that therefore $D_{CO} = 9.105$ v.e. will be discussed in detail elsewhere."

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Points from Foregoing Letters

DR. R. BROOM has discovered tooth germs in the lower jaw of a young specimen of the Platypus, which are considerably anterior to the teeth already known. They are believed to be two incisors and a canine. If this determination of the germs be correct, *Ornithorhynchus* would seem more probably to have been descended from an Ictidosaurian reptile or a Pantotherian mammal in which there are large canines, than from a Multituberculata in which the canines were early lost.

By bombarding fluorine compounds with alpha rays, Dr. O. R. Frisch has obtained a radioactive element of long life emitting positrons. It follows the reactions of sodium and is probably Na^{22} , though from the behaviour of Cl^{34} , P^{30} and Al^{26} , Na^{22} should have a short period. A radio-element of half period 4.4 hours, probably Sc^{43} , has also been obtained by Dr. Frisch by the action of α -particles on calcium.

The rate at which carbohydrates are formed by plants from carbon dioxide and water in the presence of light depends, according to Dr. W. O. James, upon structural considerations which affect the amount of carbon dioxide reaching the chlorophyll granules; also, the energy absorbed from the light is greater than one quantum per reacting molecule. Hence the simplifying assumptions made in some of the formulæ put forward to explain the reaction appear unjustified.

Dr. M. Ritchie gives some explanations in answer to H. J. Schumacher's criticisms of his experiments on the rate of decomposition of ozone by heat ($O_3 \rightarrow O_2 + O$) and the deductions therefrom.

Prof. A. V. Hill directs attention to divergencies in the use of symbols representing various physical

magnitudes, and appeals for greater consistency in the derivation of such symbols.

Prof. E. W. Scripture gives an example showing that, by analysing a curve according to Fourier's method, one does not necessarily obtain the true components. He supplies illustrations of sound-film tracks representing vowels, the outlines of which support the Willis-Helmholz-Hermann theory of a series of short free vibrations rather than Wheatstone's theory of overtone resonance.

Two new methods for measuring the mechanical stresses due to vibrations are described by Dr. A. Bloch. One is based upon the change in electrical resistance in a specially prepared carbon coating which is directly applied to the surface under examination, and the other upon electrical changes in a crystal of quartz or Rochelle salt cemented to the structure to be examined.

W. F. Floyd directs attention to an error in the analytical treatment of the graphical representation of complex numbers by Wessel in 1797, due to inconsistency of symbolism. The error, Mr. Floyd states, is still found in many textbooks.

Dr. W. Bleeker submits two photographs taken in Holland of a 'fire-ball' which, calculations show, fell in the North Sea near the coast of southern Scotland on March 24; it was not seen in the British Isles, owing to clouds.

ERRATUM. In the penultimate and last lines of the note in NATURE of August 3, p. 187, on the communication by A. Emmerie, the phrase "constituents responsible for the Carr and Price reaction" should read "constituents which cause a reaction simulating the Carr and Price reaction".