field is known to be of great intensity. For example, the luminous layer covering the kathode (the dark space being 0·5 cm. to 4 cm.) gave hydrogen lines 0·4 Ångström unit in width, but the lines of the second hydrogen spectrum and certain air lines were not appreciably broadened. This broadening seems to be due mainly to motion of the particles rather than change of free periods, for it is found to the same extent behind the kathode in the canal rays. The broadening is so great that it is not possible with the instruments at the author's disposal to determine the shift of these lines except to fix a superior limit of 0·1 Ångström unit to its possible magnitude. The amount is probably considerably less than this. On the other hand, the shift of the lines of the second spectrum of hydrogen is so small as to approach the limits of error, viz. 0·005 Ångström unit. The mercury lines show no shift but a slight broadening.

The experiments thus show that any electrical analogue of the Zeeman effect is, under the above conditions, largely masked by a widening of the lines.

"The Alcoholic Ferment of Yeast-juice. Part II.—The Coferment of Yeast-juice." By Dr. A. **Harden** and W. J. **Young.**

Summary.—I.—(1) Photolytic decomposition of aqueous carbon dioxide can take place in the presence of chlorophyll, independently of vital or enzymic activity, provided that the necessary physical and chemical conditions are strictly adhered to.

(2) The products of the decomposition are formaldehyde and hydrogen peroxide, formic acid being an intermediate product.

(3) It is possible to reconstruct the process of photosynthesis outside the green plant, (*a*) as far as the production of formaldehyde and oxygen, by introducing a suitable catalysing enzyme into the system, and (*b*) as far as the production of oxygen and starch, by introducing, in addition to the enzyme, certain kinds of non-chlorophyllous living protoplasm.

II.—(1) There is direct experimental proof that formic acid is a product of the photolytic decomposition of carbon dioxide in the presence of an inorganic uranium salt.

(2) Formaldehyde has not been isolated and identified, in the case of an inorganic uranium salt, but a study of the reactions involved favours the view that it is formed as a transitory intermediate product.

MANCHESTER.

Literary and Philosophical Society, October 2.—Dr. W. E. Hoyle in the chair.—An account of *Eucommia ulmoides*, a Chinese tree yielding gutta-percha: Prof. F. E. **Weiss.** The author exhibited a young specimen of the tree, and mentioned that he had two larger ones growing in the open in his garden at Withington. The special interest in this tree lies in the fact that it is the only known plant yielding gutta-percha which can be grown outside the tropics.—A preliminary account of the life-history of the common house-fly (*Musca domestica*, L.): C. Gordon **Hewitt.** The female fly lays her eggs in the crevices of horse excrement, which for this purpose must be fresh. Despite the difficulty met with in getting the flies to lay their eggs in confinement, five lots of larvæ were reared, each batch experiencing different conditions of temperature. A rise in temperature produced an acceleration of the rate of development at any stage. In the larval state three stages are recognisable. The shortest period for the egg state was twenty-four hours, and remained constant. Those for the larval stages were two, two, and four days respectively, whilst that of the pupal state was six days. If these times be taken, the whole period from the deposition of the egg to the exclusion of the imago would last about fifteen days. In the actual experiments the total period varied from twenty to thirty days.

DIARY OF SOCIETIES.

WEDNESDAY, OCTOBER 17.

ROYAL MICROSCOPICAL SOCIETY, at 8.—Some Rotifera of the Sikkim Himalaya: J. Murray.—*Cornuvia serpula*; a Species of Mycetozoa new to Britain: J. M. Coon.

ENTOMOLOGICAL SOCIETY, at 8.

THURSDAY, OCTOBER 18.

CHEMICAL SOCIETY, at 8.30.—Presentation of the Longstaff Medal to Prof. W. Noel Hartley.—The Amino-dicarboxylic Acid derived from Pinene: W. A. Tilden and D. F. Blyther.—The Preparation and Properties of Dihydropinylamine (Pinocamphylamine): W. A. Tilden and F. G. Shepheard.—Determination of Nitrates: F. S. Sinnatt.—The Nature of Ammoniacal Copper Solutions: H. N. Dawson.—Malacone, a Silicate of Zirconium containing Argon and Helium: S. Kitchen and W. G. Winterson.—The Relationship of Colour and Fluorescence to Constitution, Part i., The Condensation Products of Mellitic and Pyromellitic Acids with Resorcinol: O. Silberrad.—The Colouring Matters of the Stilbene Group, Part iii.: A. G. Green and P. F. Crosland.—(1) Separation of αα- and ββ'-Dimethyladipic Acids; (2) Action of Alcoholic Potassium Hydroxide on 3-Bromo-1 : 1-Dimethyl-hexahydrobenzene: A. W. Crossley and N. Renouf.—(1) The Compounds of Pyridine with Dichromates; (2) The Normal Chromates and the Unsaturated Character of the Chromate Radical: S. H. C. Briggs.—(1) Interaction of Succinic Acid and Potassium Dichromate, Note on a Black Modification of Chromium Sesquioxide; (2) Derivatives of Polyvalent Iodine; the Action of Chlorine on Organic Iodo-derivatives, including the Sulphonium and Tetra-substituted Ammonium Iodides: E. A. Werner.—(1) New Derivatives of Diphenol (4-4'-Dihydroxydiphenyl); (2) The so-called "Benzidine Chromate" and Allied Substances: J. Moir.—The Interaction of the Alkyl Sulphates with the Nitrites of the Alkali Metals and Metals of the Alkaline Earths: P. C. Rây and P. Neogi.

INSTITUTION OF MINING AND METALLURGY, at 8.—The Auriferous Rocks of India, Western Australia, and South Africa; M. Maclaren.—Sand Sampling in Cyanide Works: D. Simpson.—Treatment of the Precipitate and Manipulation of the Tilting Furnaces at the Redjang-Lebong Mine, Sumatra: S. J. Truscott.—A Combined Air and Water Spray: T. White.

FRIDAY, OCTOBER 19.

INSTITUTION OF MECHANICAL ENGINEERS, at 8.—*Discussion:* Railway-motor-car Traffic: T. H. Riches and S. B. Haslam.—*Paper:* Some Notes on the Mechanical Equipment of Collieries: E. M. Hann.

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SUPPLEMENT.