above XY—away from the external electrodes—their speed is constant, as shown by the constancy of D wherever taken in this region. Nearing the cathode, however, the separation shrinks to C, then to B, the striations approach closer to each other, lose speed, but, it is noticed, never cross the Faraday dark space, the edge of which they approach in an asymptotic manner. It is important to notice that at the instant one striation has merged its identity in the edge of the Faraday dark space its successor is a distance behind of B equal to A, the Faraday dark space width.

The following table shows the approximate equality of these two distances at different gas pressures :

Photograph number.	Faraday dark space length (A in photo).	Travelling dark space length (B in photo).	Travelling dark space length in body of tube (D in photo).	Pressure in Pirani gauge.
7	0·44	0·54	1·76	20·4
18	0·67	0·67	3·30	18·0
14	1·27	1·34	3·34	10·5
12	1·39	1·39	3·90	9·7

The numbers in the pressure column are the voltmeter balance readings in the usual Pirani gauge circuit and are only included to indicate the trend of pressures employed. R. WHIDDINGTON.

Physics Laboratories,
University of Leeds, Aug. 30.

Aucuba or Yellow Mosaic of the Tomato: A Note on Metabolism.

THE metabolism of tomato plants infected with aucuba mosaic disease is being studied at the Cheshunt Experimental Station, and a number of interesting results have been obtained. The following appear to be fairly well established under the conditions of our experiments :

1. In the early stages of infection, the removal of starch from the leaves of a plant placed in the dark is greatly accelerated except at the points of infection, which show a marked local inhibition of starch removal, often surrounded as a transient phase by a zone of accelerated removal. At this stage starch formation in the light does not appear to be affected. The local inhibition is followed at a later stage, often about fourteen days, by the removal of starch over a larger area of the inoculated leaf, slight yellowing of the chlorophyll, and a failure to form starch over this area in the light.

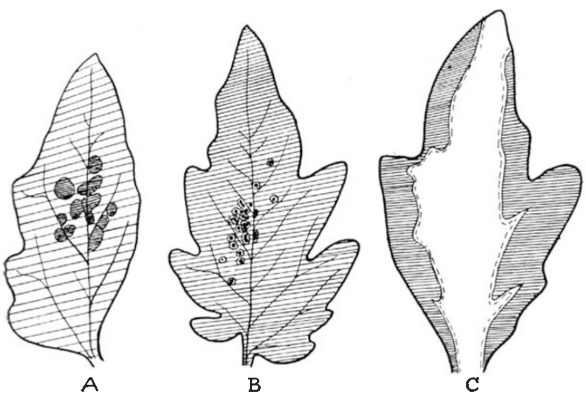

FIG. 1.—Starch reaction with iodine of tomato leaves inoculated by friction with Aucuba mosaic. *A*. Three days after inoculation, kept in greenhouse, tested 9.30 A.M. *B*. Four days after inoculation, kept in dark fifteen hours before testing. *C*. Fourteen days after inoculation, kept in greenhouse, tested 2 P.M.

2. The acidity of an aqueous extract of infected leaves sampled at dawn, that is immediately after loss of starch, is greater than that from healthy leaves.

3. Local absence of starch in the leaves, even during the day, appears to precede the appearance of mosaic symptoms.

4. The freshly discoloured chlorophyll appears to react with copper salts, regenerating a green colour.

5. At a later stage of infection, some days or weeks after typical mottling has appeared, a marked accumulation of starch is found in parts of the infected leaves and complete absence in other parts.

6. No definite evidence has yet been obtained as to the relative respiration rates of infected and healthy leaves.

While not desiring to attach undue importance to these results, we venture to suggest the following sequence of metabolism :

Starch
↓
Action of virus
↓
Acids
↙ ↓ ↘
Plus Nitrogen → Protein
Attack on Chlorophyll → Mottling, etc.
Respiration → CO_2

This view agrees with all the observed facts as we know them, such, for example, as the different type of winter and summer symptoms, the effect of nitrogen, darkness, and other factors on infected plants.

While much of the work must be repeated under more critical conditions, the above results appear of sufficient interest to be recorded at this stage.

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Aug. 27.

Photographic Sensitisers for the Infra-Red.

A STATEMENT which has been circulated recently (compare NATURE, Aug. 9, p. 218) that the late developments in the technique of infra-red photography have come largely from the needs of the motion picture industry is not accurate, and I think it is worth while to have the record correct.

The making of sensitising dyes for the extreme red seemed to have reached a limit about 1907 with the discovery of dicyanine, and no great progress was made until Adams and Haller at the Bureau of Chemistry in Washington discovered kryptocyanine in 1919. The Bureau of Chemistry was at that time working on sensitising dyes with the general view of making improvements in the preparation of dyes for photographic purposes. Kryptocyanine was utilised by W. H. Wright for his photographs of the Yosemite Valley from Mount Hamilton and later for his photographs of Mars. Its first use in the motion picture industry was by J. A. Ball, who used it for sensitising motion picture film for making imitation night scenes.

Kryptocyanine was not of much value in spectroscopy, its sensitising power being limited to the region below 8000 A., in which region dicyanine was already known to be effective.