lapis lazuli or ultramarine for blue and terre verte for green. Such colours as yellowish green, light blue and bluish green have been got by mixing yellow and green or yellow and blue, blue and white and blue and green respectively.

Fuller details of the investigations will be published in a suitable journal.

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[2] "Entwicklung und Werkstoffe der Wandmalerei vom Altertum bis zur Neuzeit".
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[4] "Über die Maltechnik der Alten".
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Raman Spectra of 'Heavy' Arsine, Silicichloroform and Silicibromoform

CONTINUING the study of pyramidal molecules, we have measured the Raman lines of light and heavy arsine. These substances were prepared in the usual way, by means of sodium arsenide and water. The measurements give :

	ω_1	ω_2	ω_3
AsH_3	2094	990	910
AsD_3	1508	730	630

ω_1 and ω_3 correspond to the single frequencies; ω_2 to the double one.

We have also measured the Raman lines of heavy silicichloroform and silicibromoform ; these are :

	ω_1	ω_2	ω_3	ω_4	ω_5	ω_6
$DSiCl_3$	1647	252	489	555	—	179
$DSiBr_3$	1616	167	360	468	—	114

ω_1, ω_2, ω_3 correspond to the single frequencies, ω_4, ω_5, ω_6 to the double ones.

Complete discussion of these results will be published elsewhere later.

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Detection of Spotted Wilt Virus in Chrysanthemums

SPOTTED WILT of tomato, first recorded in Great Britain by K. M. Smith[1] in 1931, is now prevalent in the country, and is especially troublesome and difficult to control in gardens and 'mixed nurseries', where a variety of plants are grown, on account of the wide host range of the virus and the efficiency of its insect vector, *Thrips tabaci*. Control measures have to be directed towards the extermination of the insect vector and the destruction of infected plants, so that the detection of the virus in those perennial plants able to act as reservoirs from which the virus may be introduced into successive crops is often a matter of considerable importance.

Chrysanthemums are known to be susceptible to spotted wilt, and in several instances there has been strong circumstantial evidence that outbreaks of spotted wilt have originated from infected stocks of chrysanthemums. Unfortunately, the symptoms of spotted wilt in chrysanthemums, though at times well defined and recognised by characteristic ring and line patterns on the leaves, are usually rather indefinite and mild, and considerable difficulty has been experienced in detecting the virus in chrysanthemums, even in plants known to be infected. Observations and experiments made in the summer of 1935 and during the last few weeks have given a partial explanation of the failure to detect the virus of spotted wilt in chrysanthemums.

The addition of an extract of healthy chrysanthemum leaves to an extract of spotted wilt infected tomato leaves was found to inactivate the virus. For example, an extract of chrysanthemum leaves was prepared by grinding one part by weight of fresh leaves with two parts of distilled water and expressing the liquid through muslin. In the same way a preparation was made from spotted wilt infected tomato material, and divided into two portions. To one portion an equal volume of water was added, and of six tomato seedlings inoculated six developed symptoms of spotted wilt, and seventy-eight local lesions developed on four tobacco leaves inoculated, while no trace of infection resulted in similar numbers of tomato seedlings and tobacco leaves inoculated with the second portion to which an equal volume of chrysanthemum leaf extract had been added immediately before use.

Chrysanthemum leaf juice darkens rapidly on exposure to air, and it was thought that oxidising enzymes or the products of oxidation might be responsible for the inactivation of the virus. Bald and Samuel[2] showed that the virus of spotted wilt is sensitive to oxidising agents and that although certain reducing agents hasten inactivation, the activity of the virus in tomato juice is greatly prolonged in the presence of sodium sulphite. An extract of chrysanthemum leaves prepared with a 0·5 per cent solution of anhydrous sodium sulphite remains green for several days and does not immediately inactivate the virus when added to infected tomato juice. In one experiment the numbers of local lesions produced on eight tobacco leaves by portions of the same virus preparation diluted with equal parts of 0·5 per cent sulphite solution, sulphite chrysanthemum leaf extract and aqueous leaf extract were 152, 41 and 2 respectively.

A number of leaves were taken from a spotted wilt infected chrysanthemum and cut into halves longitudinally. One set of halves was ground up with 0·5 per cent sulphite solution, and sixteen lesions developed on the six tobacco leaves inoculated, while no lesions developed on the parallel series of leaves inoculated with the water extract prepared for the remainder of the material.

By this method it has been possible regularly to detect the virus in chrysanthemums from which previous attempts had been unsuccessful or inconclusive, and it is possible that the use of sodium sulphite might facilitate the detection of spotted wilt virus in other hosts or in plants in which the concentration of virus had fallen to a low level.

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