factors which control flower color in plants of the genus Nemesia. A packet of seeds, labeled "Nemesia —Newton's Glories Mixed," was obtained from Peter Henderson and Co. in New York City, and sixteen plants were raised. Comparison with the description of this genus in the Flora Capensis seemed to indicate that these plants belonged to the species *N. strumosa.*

It was desired to obtain seed from self-pollinations for the next generation, but every flower which was selfed set no seed whatever, and as many as fifteen flowers were pollinated on some plants. Some crosses between these plants, made at the same time as the selfings, were fertile, proving that both the pollen and ovules were functional and that the failure to set seed was due to physiological incompatibility, commonly called self-sterility. Two families studied in the succeeding generation gave the same results, although few intra-family crosses were made.

In the third generation, three families were studied more intensively. In one, ten plants were selfed and all proved self-sterile, although one plant exhibited a slight tendency to be pseudo-fertile. Seventy-four of the ninety possible crosses were made and showed that two and only two intra-sterile, inter-fertile groups were present, of which one consisted of seven and the other of three plants. Ten plants of a second family were completely self-sterile when as many as ten flowers on a plant were self-pollinated. Fifty-nine crosses were made within this family and again two groups were found to be present. All crosses behaved regularly. In the third family, six plants belonged to one intra-sterile, inter-fertile class and six to another and all twelve were self-sterile. Only one cross exhibited behavior not in accordance with the general trend. Inter-family crosses between the two latter families showed that no group was common to both. A similar result was noted for the first and third families but, unfortunately, I did not cross the first two.

This study is being continued this year to learn whether Nemesia behaves like Nicotiana and most other plants which have been studied with respect to self-sterility.

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A NEW VASCULAR FUSARIUM DISEASE OF PEAS

DURING the course of an investigation of pea diseases, particularly of Fusarium wilt, carried on under the direction of Dr. J. C. Walker, of the Department of Plant Pathology, University of Wisconsin, a wilt disease possessing many of the characteristic symptoms of Fusarium wilt, caused by *F. orthoceras* v. *pisi* but produced by another species of Fusarium, has been repeatedly separated from the pea disease complex. This disease was first seen in Wisconsin in 1931, and was encountered frequently and found to be wide-spread in Wisconsin, Maryland and Delaware during the 1932 season. Specimens were also received from New Hampshire, Massachusetts, Idaho and Montana.

The new disease is tentatively referred to as "near-wilt" because of its close resemblance to the wilt disease previously described by Linford.[1] As they occur in the field and upon plants grown in artificially infested soil, the symptoms of the two diseases are so similar that it is practically impossible to differentiate them by this means. Typically the foliage takes on a yellowish cast, the leaflets and stipules become recurved and the stunted plant dies prematurely. Usually the vascular elements become brightly stained an orange or reddish color some distance up the stem.

One of the significant features of the new disease is that it occurs upon varieties known to be 100 per cent. resistant to *F. orthoceras* v. *pisi.* This is of great importance to both growers and seedsmen, for it means that certain seed stocks sold as resistant to the wilt caused by *F. orthoceras* v. *pisi* may wilt in the field because of another fungus.

Satisfactory diagnoses of these two diseases can only be made by culturing the causal fungi. The purple pigmentation of the near-wilt Fusarium upon certain media is useful in distinguishing it from the wilt pathogen. Although there is a wide range of pigmentation exhibited by the various strains of *F. orthoceras* v. *pisi* this purple type seldom is approached. An additional aid in distinguishing them is the abundance of spores, including macroconidia, produced by the near-wilt Fusarium, inasmuch as *F. orthoceras* v. *pisi* produces but few spores in culture and these few are microconidia, with infrequent exceptions.

The new disease may be distinguished from Fusarium rootrot, caused by *F. martii* v. *pisi,* since in rootrot a cortical decay of the underground stem conspicuously precedes the invasion of the stele, while both near-wilt and wilt are primarily diseases of the xylem tissue and not of the cortex. Under field conditions diseased plants frequently show both cortical and vascular invasion, and culturing must be used to identify the fungi present. *F. martii* v. *pisi* is easily distinguished in culture from the two vascular Fusaria by its masses of blue green spores.

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[1] M. B. Linford, "A Fusarium Wilt of Pea in Wisconsin," Wis. Agr. Exp. Sta. Res. Bul. 85, 44 pp. illus. 1928.