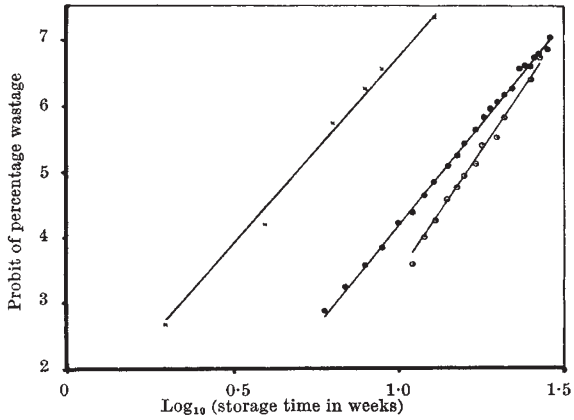

Fig. 2. Data for storage disorders in fruits reduced to transforms giving linear relationship. Symbols as for Fig. 1

stored as a unit and the individual fruits examined periodically for development of disorder; the mean and standard deviation of storage life for the sample may be calculated as for any grouped data. The latter situation, common in cool-storage experimentation, requires provision of a number of samples or units, each to be examined at only one of a series of times; this yields quantal data from which the methods of probit analysis provide an estimate of the log (time corresponding to a particular proportion of disordered fruit) together with its standard error.

The probit method has been applied to data for superficial scald of Granny Smith apples in cool storage, to be reported in detail elsewhere.

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A Specific and Predictable Biochemical Anomaly in Interspecific Hybrids of *Baptisia viridis* × *B. leucantha*

In a chromatographic analysis of twenty-one putative hybrids of *Baptisia viridis* × *B. leucantha* each of the hybrid types contained in the leaves 4 distinctive substances which were absent from the leaves of more than 25 specimens of each of the pure parental species examined. The 4 hybrid-specific components were distributed in a novel pattern and reacted characteristically in ammonia vapour when observed in ultra-violet light. Accordingly, they were considered to be bona fide hybrid-specific substances[1]. Since there has been considerable interest in the appearance of new components in hybrids, and attendant theoretical implications touch on aspects of plant biochemistry and evolutionary mechanisms, it is important to establish conclusively that such substances actually are hybrid-specific and, if possible, their identity.

As a result of a more comprehensive chromatographic study of *B. viridis*, *B. leucantha* and their natural hybrids we are now able to clarify somewhat the circumstances of the appearance of the 4 hybrid-type substances. The same 4 hybrid-type substances occur as constant species-specific components of the flowers of *B. viridis*. The components are absent from the leaves of *B. viridis* and entirely absent from *B. leucantha*. They are present in the flowers of hybrids of *B. leucantha* × *B. viridis* and in essentially unreduced amounts in the leaves of the hybrid. While the substances cannot be considered as *de novo* products in the hybrid, they nevertheless are hybrid-specific in the leaf. We wish to emphasize that these 4 components are major spots with unique attributes and they are consistently clearly identifiable in the circumstances described.

B. viridis also hybridizes with *Baptisia leucophaea* var. *laevicaulis* and with *B. nuttalliana*, but in these hybrids the 4 components are not detected in the leaves. Of the 3 species with which *B. viridis* hybridizes, *B. leucantha* is most different both morphologically and, on the basis of present knowledge, biochemically. Therefore, a greater genetic difference is probably represented in the hybrid, *B. viridis* × *B. leucantha*, and accordingly a breakdown in certain regulatory mechanisms is more easily explained in this hybrid. We infer from the appearance of the 4 components of *B. viridis* in the leaves of the hybrid *B. viridis* × *B. leucantha* that the mechanism which regulates the distribution of these components is disrupted so that the substances accumulate in sites in which they normally do not occur. Presumably, the other crosses, which are thought to involve genetically closer species, do not result in as great a modification of leaf biochemistry.

The interspecific hybrids of *Baptisia* generally contain the sum of the species-specific components of both parents, and most of the other components of the flower are present in the leaves as well[2]. Therefore, it is not likely that a common precursor which is normally diverted in the leaves to form some other type of compound is available for conversion to the 'hybrid-type' components. Certain properties of the 'hybrid-type' components indicate that they may be flavonoid in nature. Thus, an abnormal build-up of these compounds could be analogous to that of the anthocyanin pigments in which a number of conditions deleterious to the plant as a whole encourage the formation of anthocyanin in atypical sites in the plant.

It is possible that the phenomenon reported here could be used in artificial crosses with other species of *Baptisia* and *B. viridis* to provide further knowledge of species affinities in the genus by a unique method. Interspecific hybrids of *Baptisia* are unusually common. Beyond this, the phenomenon cited falls into the category of examples which may at some future time provide an experimental tool for the analysis of genetic regulatory mechanisms operative indirectly on a biochemical pathway.

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