the 2^3P_1 state to be 8 times kinetic theory value. Stuart[7] finds the effective radius of collisions between mercury atoms in the 2^3P_1 state with foreign gases to be 5.9×10^{-8} cm. MacNair[4] concludes that the largest effective radii are observed in depolarizing influences of neighboring atoms. In cases of transfer of energy between atoms not quite in resonance smaller effective radii are observed while with totally dissimilar atoms colliding the effective radii are still less. We would expect therefore that with N_2O_5 molecules in random distribution the effective radii would be somewhat larger than given by kinetic theory.

I would like to point out, that while collisions between inactive molecules are not considered to occur any more frequently than is usual in kinetic theory, yet collisions between active and inactive molecules which cause a transfer of energy and which may result in deactivation, are observed to occur 50 to 66 times as often as is given by kinetic theory using data for the radii of normal and excited atoms. (Schütz[6]). This indicates that the apparent abnormality in diameter for deactivation by collision can be accounted for by increased numbers of collisions. This point might bear consideration. Now it must be observed that the deactivational diameter calculated in the above fashion, presumes 100 per cent. efficiency for deactivation collisions, an assumption to which I am unable to subscribe any more than to assume that every collision resulting in a certain degree of activity causes the molecule to decompose. In a recent paper[8] I have shown that only one in 100,000 molecules of azo-methane which may be sufficiently activated, actually decomposes. We are thus in a position to understand more readily that the large deactivational diameters are only apparent and not real. Consider the reverse of the reaction:

$$A + B \rightleftarrows A_{act.} + B_{inact.}$$

If every collision resulted in the deactivation of $A_{act.}$, then the effective target area or diameter would turn out to be quite large, but if we give a kinetic theory value to the diameter of $A_{act.}$ we may then calculate the efficiency of deactivation. Another way of looking at the same thing is to say that on ordinary kinetic theory, an efficient process would appear to have larger effective target areas than an inefficient process.

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[7] Zeit. f. Physik. *32*, 262, 1925
[8] Proc. Nat. Acad. Sci. *13*, 546, 1927.

POLLEN STERILITY IN PEACHES

THE writer has previously reported[1] the pollen sterility of the J. H. Hale variety of peach, and in the *Proceedings* of the International Conference on Plant Sterilities is reported some results on the inheritance of sterilities. In the latter paper, it is stated that of 127 seedlings secured from open-pollinated blossoms of J. H. Hale, 42, or 33 per cent., were pollen sterile, judging by the appearance of the anthers and by germination tests.

In the spring of 1926, a number of seedlings resulting from controlled crosses, using J. H. Hale as the seed parent, have bloomed, and because of the interest in this subject, the counts are given herewith.

Parentage	Population	Bloomed	Sterile	Per cent.
J. H. Hale × 43215 (Elberta × Greensboro)	111	63	31	49.2
J. H. Hale × Marigold (Lola × Arp)	184	106	35	33.0
J. H. Hale × 27116 (Slappey × Dewey)	132	120	0	0.0
J. H. Hale × 32816 (Carman × Slappey)	193	178	0	0.0

Chinese Cling, which is pollen sterile, is probably the seed-parent of Elberta, and Elberta is probably the seed-parent of J. H. Hale. Greensboro and Carman are probably direct descendants from Chinese Cling and Lola and Slappey are probably indirect descendants. Dewey is believed to be of another group or race, and this latter group or race is probably involved in the parentage of Slappey and possibly of Elberta.

It is interesting that in the above crosses where a seedling of Slappey parentage was used no pollen sterile seedlings have, so far, occurred. In the progeny of J. H. Hale × 43215 and J. H. Hale × Marigold, there is an apparent difference in the ability of the pollen parent to produce maleness in the progeny, but there remain enough seedlings which have not bloomed to overcome this difference, and the latter eventuality is altogether within the bounds of reason.

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[1] Connors, C. H., "Fruit-setting on the J. H. Hale Peach in New Jersey Agricultural Experiment Stations," 43d Ann. Rpt., p. 102, 1922.