PISUM CROSSES — A CORRECTION

by

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WELLENSIEK, in his last paper on *Pisum* (Genetica VII, p. 1—64, 1925) claims to have found a new linkage-group containing no less than six pair of factors.

Purple	— pink	B —b
Blunt pod-apex	— acute apex	Bt.—bt.
Straight pod	— curved pod	Cp.—cp.
Green pod	— yellow pod	Gp.—gp.
Strong membrane in pod	— thin membr.	V —v
Thick pod wall	— thin wall	N —n

Of these characters several present ambiguities of determination and recognition, but with that difficulty I do not propose to deal.

In working out these linkages the author seems not to be aware that in three instances the factors, according to his own statement went in as DR × DR. Anyone familiar with the study of linkage will know that here the two middle terms are increased in F_2 and the top-dominant and bottom-recessive classes are diminished as compared with the 9 : 3 : 3 : 1 ratio of free segregation. An example will perhaps best elucidate the mistake made. On p. 35 we are given the F_2 numbers from a cross between the purple curved acute variety *Krombekdoperwt* and the pink straight and blunt variety *Lathyrusbloemige Capucijner* (BB cp cp bt bt × bb Cp Cp Bt Bt). The factors B—Cp were in F_2 found to segregate as follows:

	B Cp	B cp	b Cp	b cp
	384	87	107	44
theor. exp.	349.2	116.4	116.4	38.8

Finding the deviations from expected numbers too big, the author concludes that a linkage must exist between B and Cp. A linkage of 1.5 : 1 he finds wil give a theoretical expectation of

367.3 : 99.6 : 99.6 : 56.0

a result which is apparently in better agreement with the actual numbers. Now if the cross had been of the type DD × RR this would have been quite correct. But in this case, when the factors entered into the cross as DR × DR, a 1.5 : 1 linkage would give the theoretical expectation

335.9 : 130.6 : 130.6 : 24.9

numbers which agree even less with the actual result than those obtained by assuming free segregation. It is not clear why the two end-terms should come too big, but evidently the reason cannot be linkage.

The evidence for a linkage existing between purple and blunt (B—Bt) and between green pod and curved pod (Bp—Cp cross 14) is based on a similar error. Even apart from this consideration, the existence of any such linkage B—Bt is, in view of what is already known of peas, most improbable. KAPPERT (1924) found a linkage between round cotyledon and blunt pod. The above mentioned linkage therefore would bring round and purple, and further also reduced stipules and acacia, into the same group of linked factors. But from our own work we have ample evidence that free segregation takes place between the round-tendrilled group as opposed to the purple-stipuled group.

It is perhaps also worth mentioning that the author (p. 19) seems to regard violet and red pod as due to the effect of a special allelomorphic pair. In my experience violet and red pods only represent different phenotypical expressions of the same factor. The factor for anthocyanin in the pod will in a green-podded plant give violet or red pods respectively, according to whether the flowers were purple or pink; in a yellow-podded plant the same factor will always give red pods. No-anthocyanin in pods means that they are green or yellow.