TABLE 1. Total number of flowers, flowers and percentage of total flowers resulting in fruit set at different stages per panicle. The figures indicate mean of 25 panicles.*

Variety	Av. no. of total flowers	No. of flowers	% of flowers which set fruit at				Sex ratio of staminate to hermaphrodite flowers
			Mustard stage	Pea stage	Marble stage	Fully developed stage	
Romani	537.0	4.0	0.22	0.08	0.01	0.005	133.4: 1
Dashehari	1212.0	359.0	2.93	.84	.09	.03	2.4: 1
Langra	1061.0	732.0	4.71	.84	.08	.03	0.45: 1

* Diameters: mustard stage, 2–6 mm; pea stage, 7–11 mm; marble stage, 12–16 mm; fully developed fruit, 30 mm and above.

dite flowers and percentages of fruit set at various stages of development. The sex ratio has also been worked out.

Since mango produces only staminate and hermaphrodite flowers, the latter play a vital role in determining the extent of yields. The varieties under observation showed a remarkable variation in percentage of hermaphrodite flowers: 0.74 in Romani (poor crop); 29.62 in Dashehari; and 68.9 in Langra. Peculiarly enough, some panicles in Romani variety consisted only of staminate flowers. The ratio of the number of staminate flowers produced in comparison with the number of hermaphrodite flowers follows a trend similar to the one shown by the percentage of hermaphrodite flowers.

It is clear from Table 1 that the variety having a lower percentage of flowers and large sex ratio had very low fruit set, whereas those having high percentage of flowers and small sex ratio gave heavy fruit set. The fruit set was so much affected by the number of hermaphrodite flowers and the sex ratio that, out of 1263 panicles produced on a Romani tree, only 32 fruits developed to maturity, whereas in Dashehari and Langra, 1015 and 2600 panicles produced as many as 350 and 700 fruits, respectively.

Thus the present observations taken under the same set of conditions indicate that poor setting in variety Romani is due to the large sex ratio and low percentage of flowers in a panicle. It may be possible to declare the most suitable sex ratio for optimum yield, after further investigations.

Further work is in progress and the detailed results will be published in due course.

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Extensions in Geographic Range or Lack of Data?

RECORDS of the extension of the geographic range of animals and plants into areas where it had been assumed that conditions would not permit them to exist, at least in appreciable numbers, are not new. There are many authenticated records of such movements. It is not the purpose of this communication to cast doubt upon any of the cases where ample supporting data exist, but rather to suggest that many examples of species adapting themselves to new conditions may be the result of insufficient information. This has been well illustrated in a recent communication by Kaston [*Science* 119, 192 (1954)] in the case of the black widow spider, *Latrodectus mactans* (Fabricius) in the New England area. My experience in Maryland with the same species appears to support Dr. Kaston.

From 1925 until 1932, I had never collected a black widow spider in the state, although I had seen the living animal farther south. In the early 1930's, a rash of newspaper and magazine articles created great interest in this supposedly deadly creature, and inquiries began to be received at the University of Maryland. The spider was presumed by many to be rare, but several popular writers suggested that it was moving in on the area around Washington, D.C.

With five students of entomology I began an expedition one afternoon in October in search of the black widow. Less than 200 yd from our starting point and while still on the campus, we discovered eight females and five males, in less than 10 min. As soon as we learned exactly where to look, we found the spider surprisingly abundant, and from that year on we always had live specimens in the laboratory during spring and autumn.

An entomologist who had worked in Maryland much longer than I confessed that he had never taken a living specimen, although he had received a few in the mail. After walking a short distance from the building that contains the entomological laboratories, we easily found several specimens, and from that time on he experienced no difficulty in making further collections.

Dr. H. E. Ewing, who worked with Arachnida in the Washington area for many years, told me that he had collected the black widow only a few times, although he had not made any special effort to do so.

It was his opinion, long before editors discovered that this animal was good copy material, that the species was inconspicuous but relatively common.

I also discovered that several species of Hemiptera supposedly rare or absent in the Maryland fauna were quite common. Several presumably northern forms were found, not in the western part of the state where their presence would have been no surprise, but in a region that has a growing season of more than 200 days, at sea level. They were feeding on a host that is common only in the warmest parts of the state, and apparently no entomologist had ever taken the trouble to examine this plant during the autumn. It seems obvious that climate was not the factor that limited the distribution.

Without discounting the possibility of ecologic changes, increases in cold-hardiness, and similar factors, we ought to examine all reports of extensions into new territory with skepticism, unless they are supported by more than casual observation.

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Mechanism of Suppression of Hemagglutinating Viruses

WE WISH to make confirmatory elaboration on the explanation of Groupe, Pugh, and Levine (*1*) for Newcastle disease virus inhibition by their achromobacter fermentation product (A.P.M.). They adduced evidence that A.P.M. probably acted by competition with a virus for receptors on the target cell rather than as a direct "virucidal" agent. On the other hand, McCrea and Duran-Reynals (*2*), in their report on vaccinia inhibition by hyaluronate-depolymer dialysate or glucuronolactone, imply virustatic or virucidal activity.

Preliminary clarification of the mode by which certain hemagglutinating-virus antagonists operate, pending appearance of a definitive report, may assist other investigators, because a hypothesis with seemingly broad implications has developed. Properties similar to those reported for A.P.M. had been encountered in the antibiotic-free and cobalamin-free carbohydrate fraction of the streptomycin fermentation residue made available as poultry feed (APF). Besides inhibiting vaccinia. Newcastle, and influenza virus hemagglutination, this fraction exhibited slight antihyaluronidase and antithrombic activity. The fraction was pigmented, so coprogen was tested and proved negative. However, lithium ferriprotoporphyrinate, a known antithrombic (*3*), as well as other vinyl porphyrins elicited decided inhibition of human erythrocyte hemagglutination (as evidenced in titrations with type specific and "rhesus type" antibodies, the latter in both direct and "blocking antibody" phases), including that by influenza B, Newcastle, and vaccinia. Infectivity inhibition of the latter was also demonstrated, using NDV strain CVB-14 in the allantoic sac of eggs and lymph vaccinia (Lederle) in rabbit abdominal skin as described by McCrea and Duran-Reynals. As a matter of fact, ordinary "water-soluble chlorophyll" (which is a chemically defined genus of alkali cupri-monovinyldihydroporphyrinates) is a practically utilizable competitive inhibitor of the hemagglutinating viruses, duplicating the effect of A.P.M., or the depolymer dialysate of McCrea and Duran-Reynals, in 0.02-millimolar solution. Its inhibitory effect has been found to be competitive, as Groupe, Pugh, and Levine postulated for their "antivirals."

Further study with "chlorophyllin" allocated its competitive activity to the enhanced resonance conferred on the pyrrols by a chelated transition element metal. The carbocyclic ring of "dibasic chlorophyll" is noncontributory; "tribasic chlorophyllin" (in which this ring has been opened) is even more active (*5*). From consideration around isosterism of pyrrol and a potentially resonating furanoid structure for glucuronolactone, it had been postulated that low-molecular weight solutes having an "aromatic" heteropentacyclic ring might effect that resonance contribution which would be isosteric with the modality for virus (presumably the furanoid, ribose) attachment to the cell receptor and compete for the latter with the virus. The hypothesis became theory when Tamm, *et al.* (*4*) demonstrated influenza B inhibition by benzimindazoles, which have the postulated configuration. This inhibition, from their data, is evidently competitive.

It is fair to assume that, had thiazoles, pyrazolines, and thiophens been tested under conditions which would have revealed competitive inhibition instead of having been tested for virucidal effect, the evanescent interest that they aroused as antivirals might have persisted. Their reexamination in this light seems warranted.

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