TABLE 1. Percentage of SiO_2 present in amount greater or less than that required to form saturated normative minerals.

MgO in the analyses (percent)	Primitive shield rocks		Declining or decadent stage rocks	
	No. of analyses	Range of SiO_2	No. of analyses	Range of SiO_2
12–14	3	−2.7 to −1.7	3	−15.4 to −10.1
10–12	1	1.0	2	−14.6 to −8.8
8–10	5	−1.4 to 1.3	2	−10.0 to −4.6
7–8	25	0.4 to 10.0	1	−14.2
6–7	7	1.6 to 4.7	3	−6.8 to −3.7
5–6	1	5.1	3	−4.3 to −0.6

the magnesia content (as the magnesia-rich minerals are the greatest variants) from 56 analyses of rocks whose field relationships are known, 42 of the primitive stage, and 14 of the declining and decadent stage (Table 1).

Where lavas of the declining and decadent stage of activity are present, they make up the surface of the volcanoes; hence, they have been more abundantly represented in collections of rocks from which analyses have been made. Consequently, among the published analyses of Hawaiian lavas, the olivine basalts of the declining and decadent stage are represented far out of proportion to their abundance in the total volume of Hawaiian lavas. Upon averages of these analyses has been based the prevalent concept that the Hawaiian basaltic magma is undersaturated in silica. This concept is apparently not soundly based. In fact, the use of "olivine basalt" as the name of the principal magma type is open to question, since the olivine present in most of the magma was not chemically in equilibrium and is an unstable relic mineral preserved in the rocks because quenching stopped the process of resorption before it was completed.

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Received February 23, 1954.

The Helicopter and the Walkie-Talkie in Field Surveys

THE helicopter and the portable radiotelephone have become familiar working partners in triangulation surveys for mapping projects in mountainous areas of Alaska and the western states. The helicopter provides quick transportation for the triangulators, and the radio makes it possible to coordinate the activities of the large field crews employed.

A typical project, extending over 3000 mi^2 or more of desert mountains, can be triangulated in one season by seven or eight engineers with helicopters and radios. The helicopters operate a shuttle service from a base camp or from roads, thus landing the men with their instruments on mountain peaks and moving them from peak to peak as required. Each triangulation observing party carries a portable radiotelephone (walkie-talkie), and the operation as a whole is directed from a master transmitter mounted at the base camp or in a jeep. The men can talk to one another and to the helicopters over line-of-sight distances through the base radio. If necessary, a group conference can be held with each participant on a separate mountain peak.

Both horizontal positions and elevations are determined by triangulation, using optical-reading theodolites. This kind of surveying frequently requires measuring vertical angles reciprocally and simultaneously between two stations to avoid errors from atmospheric refraction. To carry out this operation, the triangulators use a "skirt" of fluorescent cloth around the instrument tripod as a signal. Radio contacts between observers make it possible for them to relocate stations quickly when the line-of-sight is blocked by trees or visibility is otherwise impaired. By these techniques, elevations have been extended as far as 50 mi across rugged mountainous terrain with an accuracy of about 2 ft.

Helicopters are usually operated in pairs, so that a means of rescue will be close at hand in case of accident, and as insurance against prolonged delays from mechanical failure. Although engineers working with helicopters save the time required for the arduous mountain climbing ordinarily involved in triangulation, helicopters are not as maneuverable at higher altitudes as they are near sea level, and landing on high peaks where cross winds are always blowing is a critical job, even for a skilled pilot. Taking off calls for still greater skill. Pilots prefer a peak with a sheer drop-off where they can dive immediately after taking off to gain flying speed. There have been no serious accidents in 5 yr of operation in topographic surveys, but it is still far from a routine means of transportation.

The value of helicopters and radiotelephone has been effectively demonstrated during 5 yr of use on surveys in Alaska, and the Geological Survey expects that their use will do a great deal to accelerate the mapping of large areas in Alaska and in the western United States.

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Received February 23, 1954.

Sex Ratio and Fruit Setting in Mango (*Mangifera indica* L.)

SOME varieties of mango set fruit poorly although flowering profusely, whereas others with fewer flowers bear a good crop. To examine the probable cause of this phenomenon, observations were recorded on sex ratio and fruit set in the following varieties of mango: Romani (poor crop); Dashehari (good crop); and Langra (heavy crop).

The data in Table 1 show the number of hermaphro-

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.

The author is thankful to Dr. I. B. Singh for suggesting the problem and his keen interest throughout the progress of this work.

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Received January 25, 1954.

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.