ever, significant differences do occur between the sexes of the other three species, with males being less variable than females (*polyphemus* males $\overline{CV}=19.98$, females 33.79; *flavomarginatus* males 28.02, females 32.03; *agassizi* males 31.15, females 43.01) (Table 12).

5) None of the species differ significantly from any other in total carapace variability (*berlandieri* $\overline{CV}=34.53$, *polyphemus* $\overline{CV}=28.33$, *agassizi* $\overline{CV}=33.04$, *flavomarginatus* $\overline{CV}=31.08$).

6) Patterns of character variances differ in each of the four extant species.

The correlation of size and sex was investigated by means of an analysis of plastral length variance (σ) of adult males and females in each population. This showed that the deviation of each sample is homogeneous and within expected limits. The results of Bartlett's test of Chi-Square (DF=77) strongly suggest (F=24.1) that the observed differences in intersexual plastral length variances are due to differences in the mean lengths alone, and not to the observed variability of the sexual subpopulations.

An identical analysis of carapace length variances in adult males and females of each population shows that in this instance the observed differences in carapace variances are not homogeneous, inasmuch as the variance in *polyphemus* females is much greater than any other sample. Females tend to be more variable in other shell characters as well (No. 4 of both plastral and carapace sections above).

Osteological studies normally make use of one of three comparative techniques: ratios, log-ratios, or actual measurements. To determine which of these techniques would be most discriminatory in adult *Gopherus* shells, a series of discrimination analyses were completed, utilizing a stepwise regression technique (BioMed 005, UCLA Med. Center). Two tests analyzing discrimination ability of different techniques were applied to one dependent variable and four (and in another case to 10) independent morphological variables of the xiphiplastron in three *Gopherus* species (Table 13). Still another technique test utilized the same

TABLE 13.—COMPARISON OF ANALYSIS TECHNIQUES.

	Ratios			Log-ratios			Measurements		
	C.D.[1]	D.D.[2]	I.C.[3]	C.D.[1]	D.D.[2]	I.C.[3]	C.D.[1]	D.D.[2]	I.C.[3]
				4 INDEPENDENT VARIABLES					
polyphemus x *agassizi* (n=40)	11	21	14	14	23	3	18	16	2
berlandieri x *agassizi* (n=36)	6	30	0	7	29	0	32	4	0
polyphemus x *berlandieri* (n=38)	3	34	1	7	30	1	31	7	0
				10 INDEPENDENT VARIABLES					
polyphemus x *agassizi* (n=40)	35	5	0	11	28	1	36	4	0
polyphemus x *berlandieri* (n=38)	19	8	11	17	1	20	21	8	9
berlandieri x *agassizi* (n=30)	14	11	5	10	2	18	27	3	0

[1]C.D. = Correctly differentiated.
[2]D.D. = Doubtfully differentiated.
[3]I.D. = Incorrectly differentiated.