INFORMATION TO USERS

This material was produced from a microfilm copy of the original document. While the most advanced technological means to photograph and reproduce this document have been used, the quality is heavily dependent upon the quality of the original submitted.

The following explanation of techniques is provided to help you understand markings or patterns which may appear on this reproduction.

1. The sign or "target" for pages apparently lacking from the document photographed is "Missing Page(s)". If it was possible to obtain the missing page(s) or section, they are spliced into the film along with adjacent pages. This may have necessitated cutting thru an image and duplicating adjacent pages to insure you complete continuity.
2. When an image on the film is obliterated with a large round black mark, it is an indication that the photographer suspected that the copy may have moved during exposure and thus cause a blurred image. You will find a good image of the page in the adjacent frame.
3. When a map, drawing or chart, etc., was part of the material being photographed the photographer followed a definite method in "sectioning" the material. It is customary to begin photoing at the upper left hand corner of a large sheet and to continue photoing from left to right in equal sections with a small overlap. If necessary, sectioning is continued again — beginning below the first row and continuing on until complete.
4. The majority of users indicate that the textual content is of greatest value, however, a somewhat higher quality reproduction could be made from "photographs" if essential to the understanding of the dissertation. Silver prints of "photographs" may be ordered at additional charge by writing the Order Department, giving the catalog number, title, author and specific pages you wish reproduced.
5. PLEASE NOTE: Some pages may have indistinct print. Filmed as received.

Xerox University Microfilms
300 North Zeeb Road
Ann Arbor, Michigan 48106

76-8334

KENNEDY, Michael L., 1942-
GEOGRAPHIC VARIATION IN ORD'S KANGAROO
RAT, DIPODOMYS ORDII.

The University of Oklahoma, Ph.D., 1975
Zoology

THE UNIVERSITY OF OKLAHOMA

GRADUATE COLLEGE

GEOGRAPHIC VARIATION IN ORD'S KANGAROO RAT, DIPODOMYS ORDII

A DISSERTATION

SUBMITTED TO THE GRADUATE FACULTY

in partial fulfillment of the requirements for the

degree of

DOCTOR OF PHILOSOPHY

BY

MICHAEL L. KENNEDY

Norman, Oklahoma

1975

GEOGRAPHIC VARIATION IN ORD'S KANGAROO RAT, *DIPODOMYS ORDII*

APPROVED BY

Gary D Schnell

Cluff E. Hopla

James R. Estes

Victor H Hutchison

DISSERTATION COMMITTEE

TABLE OF CONTENTS

FOREWORD

The main body of the dissertation has been prepared in a style appropriate for the Journal of Mammalogy to which it will be submitted for consideration for publication. Appendices have been added to the dissertation to provide supporting data for anyone with additional interest in geographic variation analysis. The citations in the main body of the dissertation to Kennedy (1975) refer to this dissertation.

LIST OF FIGURES

LIST OF TABLES
AND
APPENDICES

GEOGRAPHIC VARIATION IN ORD'S KANGAROO RAT, *DIPODOMYS ORDII*

Michael L. Kennedy

ABSTRACT.--Geographic variation was assessed in 7853 specimens of Ord's kangaroo rat (*Dipodomys ordii*) with univariate and multivariate analyses. A matrix of correlation among 16 morphologic characters was computed and the first three principal components extracted, which accounted for 89.3 percent (component I = 69.5 percent; II = 13.8 percent; III = 6.1 percent) of the variation in the character set among males and 90.4 percent (I = 69.8 percent; II = 14.9 percent; III = 5.6 percent) among females. Three-dimensional projection of localities onto principal components show that for both males and females the large individuals occur east of the Western Cordillera, and smaller animals occur to the west in the United States and Mexico. Populations of the eastern and western parts of the range are linked by intermediates. At least two complexes are formed in the western part of the range. Specimens from Padre and Mustang Islands tend to be separated from the others by principal component II. Other small groups and individual quadrats are loosely connected to the main clusters.

For both sexes, projections on components I, II, and III were analyzed with respect to eight environmental variables (mean January temperature, mean July temperature, mean annual temperature, mean annual precipitation, latitude, longitude, altitude, and evapotranspiration). These environmental data accounted for 56.3 percent of the variation in principal component I (41.3 percent in component II) for males and 60.0 percent (47.6 percent in component II) for females.

With principal component I representing body size in the classic meaning of ecogeographic variation analysis, populations of Ord's kangaroo rats follow Bergmann's ecogeographic rule. If principal component II is taken to represent size-independent variation in cranial measurements, which may reflect changes in surface area relative to volume, this species exhibits at best a weak trend of geographic variation that follows Allen's ecogeographic rule. There was no significant association of projections onto principal component III with the eight environmental variables when examining all quadrats.

GEOGRAPHIC VARIATION IN ORD'S KANGAROO RAT, *DIPODOMYS ORDII*

Michael L. Kennedy

Ord's kangaroo rat, *Dipodomys ordii*, ranges over most of the western United States, parts of southern Canada, and much of northern and central Mexico (Hall and Kelson, 1959). Because of this relatively wide geographic distribution and its large amount of intraspecific variation in morphological characters, *D. ordii* provides an ideal subject for studying the processes of geographic differentiation of populations (Schmidly, 1971).

D. ordii has been extensively collected, and I examined approximately 20,000 specimens (8350 in detail) representing over 2500 localities during this study. Johnson and Selander (1971), Mazrimas and Hatch (1972), Stock (1974), and Best and Schnell (1974) have included small numbers of this species in their investigations. Allen (1891), True (1889), Trowbridge and Whitaker (1940), Hall (1951), Setzer (1952), Anderson (1972), and others have conducted limited taxonomic work on *D. ordii*. However, except for the investigation of Setzer (1949), no extensive effort has been made to examine the systematics of this species over its entire range. He described 35 subspecies and discussed speciation, but as pointed out by Desha (1967), samples were small and sexual dimorphism was not thought significant. Desha (1967) studied variation in a population of *D. o. medius* from Lynn Co., Texas. He found significant sexual dimorphism in 9 of 14 cranial and mandibular measurements and concluded that there was a need to re-evaluate all of the subspecies of *D. ordii* with statistical methods. Schmidly (1971) examined four populations of *D. ordii* from western Texas. One of the populations exhibited sexual dimorphism in 14 characters studied. In the other populations examined, two were dimorphic in 5 characters and the other in 10. He suggested that future taxonomic studies should consider the sexes separately. Schmidly and Hendricks (1976) assessed nongeographic and geographic variation in *D. ordii* from southern Texas and northern Mexico and concluded that *D. compactus* is a separate species from *D. ordii.*

The purpose of my study was to: (1) re-evaluate geographic variation in *D. ordii*; (2) determine the distribution of the morphological variation; (3) determine the degree of covariation between morphologic and environmental variables. My approach to answering these questions has been purely phenetic. This study should help clarify the intraspecific taxonomy of *D. ordii*, as well as provide additional insight into the analysis of intraspecific geographic variation in general.

MATERIALS AND METHODS

I recorded 16 linear skull measurements from 8350 adult specimens (Fig. 1). These characters were selected to include: (1) measurements that could be repeated with accuracy; (2) many of the characters used in previous systematic studies of *D. ordii* for comparisons of results; (3) several previously unused characters which potentially could provide additional insight. Measurements were taken with dial calipers to the nearest 0.1 mm. All adult specimens (criteria: dentition complete, auditory bulba shiny and translucent, and the premolars and molars showed some wear) were used in the statistical analyses to determine sexual dimorphism. Specimens used in this study are housed in 68 collections in the United States and Canada (see acknowledgments).

I attempted to reduce heterogeneity in sample sizes by arbitrarily establishing a grid system (Fig. 2) in much the same manner as Jackson (1970). This is considered justified because my purpose was to look at the broad geographic trends of variation rather than the details of local distributions. The grid system divides the range of D. ordii into quadrats (= localities) approximately 100 mi. (1.609 km) on each side. I did not use more than 35 males or 35 females per quadrat, and deleted quadrats for which I had less than 8 specimens. The latter to increase the reliability of character means and variances. Male analyses included 122 quadrats; females analyses included 113. Quadrats from which specimens were not available in adequate numbers are not shown on the grid. The grid has not been distorted to accommodate island and peninsular populations. Each quadrat was assigned a four digit number. The first two digits indicate the north-south location of the quadrat; the last two refer to the east-west position. The final raw data matrix included 7853 individuals (4335 and 3518 females). Specimens which were described as D. compactus by Schmidly and Hendricks (1976) were included in this study.

Univariate and multivariate biometric routines were applied for character analyses for both sexes. Means of these characters were presented in Appendix I of Kennedy (1975). Basic statistics, single-classifications analysis of variance, and sum of squares simultaneous test procedure (SS-STP) were carried out with a program (UNIVAR) written by Power (1969). The

Mann-Whitney U-test was used from Sokal and Rohlf (1969). Bivariate correlations were determined with a program (BIVAR) written by Power (1967), and multivariate analyses were performed using NT-SYS programs (Rohlf et al., 1969). Matrices of Pearson's product-moment correlations were computed, and phenetic distance coefficients were derived from standardized character values. Cluster analyses were conducted with UPGMA (unweighted pair-group method using arithmetic averages) on the correlation and distance matrices. A matrix of correlation among characters was computed and the first three principal components extracted; projections of localities being prepared from these data. A shortest minimally connected network was computed in the original character space and was used to connect localities in the 3-D plots (see Appendix III of Kennedy, 1975). A further explanation of these techniques, plus the rationale for their use, is given in Sneath and Sokal (1973). Stepwise multiple regression analyses were computed with program BM-02R of the BMD computer programs (Dixon, 1970).

To graphically display interquadrat variation in component I, I used the SYMAP program at the University of Oklahoma. Explanations of the use and value of SYMAP have been presented by Jackson (1970) and Johnston and Selander (1971). Such a map is limited by the number of map points; the greater the number the more refined the map. Interquadrat values for males and females were averaged with a moving vector routine that generates a generalized contour map. Eight levels of contouring were used. Most computations were carried out on the IBM 360 computer at the University of Oklahoma.

Environmental data considered for each quadrat were mean January temperature, mean July temperature, mean annual temperature, mean annual precipitation, latitude, longitude, altitude, and evapotranspiration. Evapotranspiration data were determined from tables in Thornthwaite Associates (1964), and other environmental measurements were taken from several sources (U. S. Department of Commerce, 1966, 1973; Great Britain Meteorlogical Office, 1965; Canada Meteorological Branch, 1962; Nelson, 1968; and Showers, 1973).

Optimally, environmental data were taken from five weather stations within each quadrat, but for many quadrats less than five were available. If no reporting station existed within the quadrat, I used linear interpolation between two stations to estimate a value for the quadrat. Means of the values recorded for each quadrat were used for all analyses involving environmental variables (see Appendix II of Kennedy, 1975).

Quadrats were divided into groups in an attempt to examine the interlocality variation in greater detail. Quadrats 2015 and 2115 were omitted from these groupings. The Eastern-Southern Group refers to quadrats with the last two digits of 09 or greater. Quadrats with the last two digits of 08 or less are referred to as the Northwestern-Southwestern Group. Quadrats with the first two digits numbered 12 or less and the last two digits numbered 08 or less are termed the Northwestern Group; quadrats with the first two digits numbered 13 or greater and the last two 08 or less plus the quadrats occuring in Mexico are referred to as the Southwestern-Mexican Group. The location of these groups can be determined from Fig. 2.

RESULTS AND DISCUSSION

Character Correlations.--A dendrogram computed from the matrix of correlations of male skull characters is presented as Fig. 3. The one for females is essentially identical and therefore not included. Third molar width, least supraoccipital width, greatest interparietal width, and least interorbital width add heterogeneity to the character set. The other characters cluster together in a manner which suggests a degree of redundancy. Schmidly (1971), indicated that certain characters (for example, basal length, bullar-premaxillary length, and mandibular length) probably represent a single adaptive complex.

Schmidly (1971) noted the least supraoccipital width to be the most variable of his cranial measurements in all samples, and Davis (1942) reported the interparietal and supraoccipital to be highly variable in *D. o. sennetti* and *D. o. compactus*. The high degree of variability in the supraoccipital width was also noted by Lidicker (1960) in *D. merriami* and Nader (1964) in *D. spectabilis*. Both attributed this variability to the dependence of the width of the supraoccipital on bullar inflation. Lidicker (1960) indicated that the variability exhibited by this character greatly reduced its value in studies of geographic variation. Nader (1964) reported the supraoccipital and in particular the interparietal to be unstable in *D. spectabilis*. The presence of more than one interparietal, its fusion with the supraoccipital, or sometimes its absence, are indications of its instability. I found least supraoccipital width and greatest interparietal width to fluctuate within and among many populations. However, it seems that even though these two measurements are highly variable, they are useful characters in studying interpopulation heterogeneity.

Lidicker (1960) reported the least interorbital breadth to be a relatively conservative character in *D. merriami* and to show only minor geographical changes in most areas. Setzer (1949) found the least interorbital width to be useful in establishing a cranial index for *D. ordii*, and Schmidly (1971) and Desha (1967) indicated this character to vary only moderately in Ord's kangaroo rat as did Nader (1964) for *D. spectabilis* and *D. deserti*. I found this character to be relatively uncorrelated with several other characters and, therefore, a useful character in studying intraspecific variation.

Bader and Lehmann (1965) and Leamy and Bader (1968) reported useful information from phenotypic variation in molar width in *Mus musculus* and *Peromyscus leucopus*, repectively. Third molar width appeared to be an independent character in *D. ordii*, and therefore, a character which may provide new insight into this species. I concluded that each character contributed some useful information but that there was some duplication in information indicated by the high correlations of several of the characters (Fig. 3).

Sexual Dimorphism.--Eleven of 16 skull characters show significant sexual dimorphism (Table 1). Five characters (intermaxillary width, premolar width, toothrow length, least supraoccipital width, and greatest interparietal width) did not vary sexually. Greatest skull length, bullar-premaxillary length, and basal length showed the greatest relative differences between sexes. I found significant sexual dimorphism in the greatest skull depth in contrast to Desha (1967).

While there is a growing literature concerning sexual dimorphism in vertebrates, there are still many questions unanswered concerning sexual dimorphism in *D. ordii*. Setzer (1949) did not think sexual dimorphism significant in his analyses. However, Desha (1967) and Schmidly (1971) reported significant sexual dimorphism, and Schmidly and Hendricks (1976) found a limited degree of sexual dimorphism in southern populations.

Schmidly (1971) indicated that sexual dimorphism varied geographically and suggested that the variability may result from genetic and hormonal sex differences or may, to some extent, be due to nongenetic modification of the phenotype caused by local environmental conditions. While no intraspecific competition studies have been conducted concerning _D. ordii_, limited interspecific information indicates the larger size of males of this species may be advantageous in defending a territory. Eisenberg (1963) pointed out that heteromyid rodents are territorial and that they defend a limited area in the vicinity of and including the burrow. Johnston (1969) suggested that the increase in size of males is an advantage in fighting for the European sparrows (_Passer domesticus_, _P. hispaniolensis_, and their hybrids).

In my study, there are no significant differences between sexes in toothrow length and premolar width, but there is a significant difference in the width of the third molar. The biological significance, if any, of this condition is unclear. Selander (1966) reported that in birds morphological and ecological polymorphism frequently are expressed in sexual dimorphism in size and structure of the feeding apparatus and in differential foraging behavior and niche utilization by the sexes. Scudo (1969) suggested that dimensional differences between sexes may result from differences in the mean environmental expenditure per individual. This means that the ratio between the environmental resources allocated to males and to females might be the most meaningful quantity in determining sexual dimorphism. Dixon (1958) indicated that _D. m. merriami_ females occupied smaller home ranges than the males, and Blair (1943) found that in southern New Mexico the size of the home range of *D. merriami* seemed to vary with the seasons as well as to be different between the sexes. Females had average home ranges of less than 2 acres in March but increased this to almost 4 acres in April and May; whereas, males had average ranges of just over 4 acres. The sexual difference between third molar width in my results, could be interpreted as an adaptation to lessen intersexual competition for food. Alcoze and Zimmerman (1973) have called attention to the food habits and dietary overlap of two heteromyid rodents from the mesquite plains of Texas; they reported winter and spring diets of *D. ordii* but no between sex comparisons were made. Rosenzweig and Sterner (1970) discussed the question of interspecies seed selection in heteromyids. Work is needed to determine whether there are differences between sexes in food types of *D. ordii*.

Interlocality Character Variation.--Highly significant interlocality heterogeneity is shown by all characters (Table 2). Relatively, the third molar width varied the least while the greatest skull length, bullar-premaxillary length, basal length, greatest skull depth, and upper diastemal length have the highest F-values for both sexes. Schmidly (1971) found greatest skull length and greatest skull depth to be among his least variable cranial measurements, and Desha (1967) reported greatest skull length, greatest skull depth, and basal length to have low coefficients of variation.

Interlocality variation in *D. ordii* appears to be more complicated than can be explained by single-characters. Nader (1964) reported that there were no clear and continuous clinal changes in the measurements studied throughout the range of *D. spectabilis*. I found similar results for Ord's kangaroo rat. However, while there appears to be no overall continuous directional gradient in the measurements studied, there are single-character gradients over smaller areas of the range. In the Great Plains, southwestern United States and Mexico and northwestern United States, gradients are found for most characters. Setzer (1949) suggested that Allen's ecogeographic rule (for warm-blooded animals protruding body parts are shorter in cool climates and larger in warm ones Allen, 1877), is not operative in Ord's kangaroo rat. *D. o. terrosus* which ranges farthest north has the longest tail; whereas, *D. o. celeripes*, found in the central part of the range of the species, has the shortest tail. These results could be misleading because only single characters were considered. Johnston and Selander (1971) indicated that different covariant sets of size variation can be extracted from a matrix of size characters and that these covariant sets can bear different relationships to environmental factors. This suggests why single-character regressions may be superficially contradictory. Setzer (1949) also reported a general tendency for the nasals to decrease in length and the rostrum to decrease in width as the southern limits of the species' range are approached. He indicated that no other cranial feature of *D. ordii* showed a graduation that might be termed a cline. While I found the nasal and rostrum measurements to be the smallest in the southern quadrats, continuous clinal variation was present only in the eastern and southern quadrats. The broad pattern of variation over the range for the individual characters studied is as follows: skull measurements from quadrats east of the Rocky Mountains in the Great Plains tend to be large; small skull measurements are found west of the Western Cordillera in the United States and Mexico. Results of SS-STP analyses illustrating these trends for each character are presented in Kennedy (1975).

Principal components have been extracted to summarize variation. Character loadings, which indicate the correlations of characters with the first three principal components, are given in Table 3. In general, the pattern of character loadings are the same for both sexes. The first three components explain 89.3 percent of the total interlocality phenetic variance of males and 90.4 percent of females. Thus, there is little distortion in distances when reducing the 16-dimensional character to three dimensions.

Component I is essentially a general size factor with high correlations for all characters except third molar width, least supraoccipital width, and greatest interparietal width. It separates the relatively small D. ordii--those to the left in Figs. 6 and 7--from the larger animals located to the right. Since component I accounts for 69.5 percent and 69.8 percent of the variability in males and females, respectively, it may be taken to represent overall size, and projections of localities on this component can be used to reflect such differences between quadrats. Projections on component I are summarized in Figs. 4 and 5.

Component II has high loadings for greatest skull width, least interorbital width, and highest loadings for least supraoccipital width, and greatest interparietal width. It explains 13.8 percent of the variability in males and 14.9 percent in females. Greatest interparietal width and supraoccipital width exhibit positive correlations. The other high loadings are negative. Therefore, component II tends to separate those animals with narrow skulls and interorbitals and wide supraoccipitals and interparietals; these are located in the background of Figs. 6 and 7. Animals from the foreground (see Figs. 6 and 7) have relatively wide skulls and interorbitals along with narrow supraoccipitals and interparietals.

The third factor has its highest correlation with third molar width and accounts for 6.1 percent of the variability in males and 5.6 percent in females. D. ordii, which tend to be relatively small for this measurement, have the greater height (i.e. larger sticks). Localities near the base of the diagram have a short stick which indicates a large third molar. Quadrats 0810, 1209, 1611, 1612, and 1909 for both sexes are distinguished by this component (see Figs. 6 and 7). Male quadrats 0611 and 1614 also have high values for component III. Many females quadrats have relatively low values for this component. Southernmost quadrats for both sexes have relatively low values for component III.

From standardized locality means of the 16 skull characters, I constructed three-dimensional projections of the 122 male and 113 female quadrats (Figs. 6 and 7). Due to the large number of localities, only a partial shortest minimally connected network is shown in miniature in the figures. In Fig. 6, there are three main male clusters of quadrats and several smaller groups. The large cluster to the right is composed of quadrats occurring in the Great Plains. This cluster has smaller subclusters with the largest animals occurring at the far right. The major group of quadrats to the left in the foreground is composed of localities occurring in the southwestern United States and Mexico. The third major series of quadrats, in the background and to the left, is made up of localities occurring in the northwestern United States. One smaller, scattered group is found in the center of the model, somewhat intermediate between the three main clusters. Another small group is represented by quadrats 2014, 1914, 2115, and 2015. Other small clusters appear to be loosely connected to these groups. Of interest is quadrat 1506 which represents specimens from the periphery of the range in southwest Arizona. Since the sample size was only eight specimens and only male specimens were available, this locality should be examined in more detail to determine the exact status of the quadrat with relation to the others.

Female quadrats are arranged in much the same manner as males (Fig. 7). The three main clusters and the smaller groups of intermediate quadrats are readily apparent. As in Fig. 6, several quadrats appear to be loosely connected in the model.

These data indicates that mountain ranges have played a major role in the distribution of D. ordii. This is best illustrated by the eastern and western segments of the species on different sides of the Rocky Mountains. Setzer (1949) reported that any mountain which had vegetational belts above the Transition Life-zone would serve as a barrier to the dispersal of these animals.

There is some evidence that, along with mountains, soil types and waterways may have served as barriers to this species. Maxwell and Brown (1968), Martin and Preston (1968), Lampe et al. (1974), Blair (1954), and others have reported D. ordii to occur in sandy soils. Setzer (1949) indicated that this species was almost exclusively confined to sandy areas. The distribution of D. ordii, as indicated by specimen, also indicate this species to be restricted to sandy areas in semiarid regions. The distribution of D. ordii could well be predicted from soil maps of the western half of North America.

Nader (1964) reported that the only geographic feature which may represent a barrier to D. deserti is the Colorado River. However, Goldman (1937) pointed out that this does not seem to be an effective barrier, especially at the southern end where the river is shallow and the course of the river has shifted back and forth several times in the past. An important consideration would appear to be to what extent does D. ordii swim. Grinnell (1922) reported kangaroo rats lack the ability to swim. Stock (1972) indicated swimming ability in several species of kangaroo rats including D. ordii, but current, water temperature, and air temperature were not varied. These variables were pointed out by Schmidly and Packard (1967) to influence the swimming ability in pocket mice. Patton (1969) reported the action of rivers to be a physiographic and ecologic barrier for Perognathus goldmani. My results indicate that waterways have been only partial or temporary barriers to D. ordii. Figs. 6 and 7 show a continuous network within this species. While there are major complexes, these complexes do not appear to be completely separated.

Waterways may have played as important a role in dispersal as in isolating populations. Baccus (1971) found the Brazos River to be a dispersal route for D. ordii in north-central Texas. Wind deposited sand as terraces along the banks and onto marginal areas adjacent to the river. The sandy soils permitted Ord's kangaroo rat, and certain other western species, to extend eastward into wooded areas. This appears also to be the case along the South Canadian River in Oklahoma (unpublished data) and probably along other waterways as well.

Setzer (1949) described six different groups of subspecies (Great Plains, Gulf Coast, Mexican, Southwestern, Western Desert, and Intermontane). The quadrats I found to occur in the Great Plains and northwestern United States correspond closely with his Great Plains and Western Desert Groups. Quadrats 2015 and 2115 represent animals described by Setzer (1949) as the Gulf Coast Group. The complex he described as the Intermontane Group are mostly those quadrats intermediate between eastern and western segments of the species. His Southwestern and Mexican Groups correspond closely with animals from the quadrats in the southwestern United States and Mexico. Figs. 6 and 7 show the Mexican quadrats to group together and the southwestern United States quadrats to cluster together, and I do not see a clear separation between the two groups.

A possible relationship exists between overall size of *D. ordii* and sympatry with other species of kangaroo rats. In the Great Plains, where there are no other species of kangaroo rats (with the exception of *D. elator* in a small area of north-central Texas), *D. ordii* reaches its greatest size. In the northwestern United States, where the species is small in size, the range of Ord's kangaroo rat, according to Hall and Kelson (1959), overlaps with that of *D. microps*. In the quadrats which occur intermediate between eastern and western segments (see Figs. 6 and 7), there is some overlap with *D. microps* and *D. merriami* (Hall and Kelson, 1959); however, with few exceptions, animals occurring in these quadrats are not as large as those in many parts of the Great Plains. In the southwestern United States and Mexico, *D. ordii* is sympatric with *D. deserti*, *D. merriami*, *D. spectabilis*, *D. nelsoni*, and *D. phillipsii* (see range maps in Hall and Kelson, 1959). Animals in these areas are also small in size. Projections onto principal component I for quadrats where the range of *D. ordii* overlap with other kangaroo rats were tested (Mann-Whitney U-test) against quadrats in which there was no overlap. In both sexes, animals in quadrats where there was no overlap were significantly larger than those in quadrats of overlap. These results indicate that in areas of sympatry body size may be a function of interspecific competition. They could be interpreted to support the work of McNab (1971) which indicated that the presence of other species that utilize the same food resources influences body size. McNab's studies have dealt mainly with predator species, and there is evidence that kangaroo rats select for certain size in seeds (Brown and Lieberman, 1973; Dunham, 1968). This could be a mechanism to reduce interspecific competition. Therefore, McNab's conclusions may not be relevant.

Brown and Lieberman (1973) detected no evidence of intraspecific variation in body size of D. ordii and D. deserti in response to differences in the number or identity of coexisting species. They suggested that various species of heteromyid (including D. ordii) differentially utilize seeds of different sizes according to their body sizes. Brown (1973) reported that the number of species which coexist is determined by the abundance and predictability of seeds.

Another approach for accounting for the relationship between overall size of D. ordii and sympatry with other species of kangaroo rats is related to interspecific habitat segregation. Lidicker (1960) discussed interspecific habitat segregation between D. merriami, D. ornatus, D. spectabilis, and D. ordii. When these animals come into direct contact, different species retreat to certain types of habitat. Lidicker (1960) indicated that suitable habitat was the most important factor determining the distribution of D. merriami and that competition with related forms seemed to be the second most important factor. Possibly, in areas where habitat segregation occurs, there is only a limited amount of desirable habitat available and small body size in D. ordii is selected for. This could reduce the amount of food and space the animals need and allow population numbers high enough to insure the survival of the species in these areas. More detailed studies are needed on the exact relationship between body size of D. ordii and sympatry with other species of kangaroo rats.

Principal Components and Environmental Variation.--For both sexes, components I, II, and III were analyzed with respect to eight environmental variables. This was performed by stepwise multiple regression with projections on a component being the dependent variable. Also, correlations were carried out between principal component projections and each environmental variable. The correlations of eight environmental variables with male and female components I and II are presented in Table 4. No variables were found to be correlated significantly with component III of either sex when examining all quadrats as one group; therefore, it will be discussed in a limited manner.

Since component I accounts for approximately 70 percent of the total interlocality variation for each sex and this factor is taken to represent body size in the classic meaning of ecogeographic variation analysis (Niles, 1973), my primary goal was to explain the variation in component I. Discussions consider all quadrats as one unit unless otherwise noted. Only statistically significant variables are reported in the following accounts.

Principal Component I and Environmental Variables.--In the regression of the environmental variables on male component I, seven accounted for 56.3 percent of the variation. Mean January temperature (22.1 percent) and mean annual precipitation (17.4 percent) explained 39.5 percent of the variation in component I. Mean annual temperature (6.4 percent), latitude (5.1 percent), evapotranspiration (3.3 percent), and longitude (2.0 percent) also accounted for significant variation. Regression of the environmental variables on female component I showed eight variables to explain 61.0 percent of the variation; evapotranspiration (18.3 percent), mean January temperature (17.1 percent), latitude (7.2 percent), and longitude (2.7 percent) were statistically significant and accounted for 45.3 percent of the variation in this component.

Since evapotranspiration and mean annual precipitation are highly correlated (.751), temperature and rainfall variables probably account for much of the variation in component I for both sexes. This follows Bergmann's ecogeographic rule, which is restated by James (1970) as: "Intraspecific size variation in homeotherms is related to a combination of climatic variables that includes temperature and moisture. Small size is associated with hot humid conditions, larger size with cooler or drier conditions." The classical interpretation of this rule has been presented by Mayr (1963), "races from cooler climates tend to be larger in species of warm-blooded vertebrates than races of the same species living in warmer climates." The usual physiological interpretation of Bergmann's rule is based on the fact that the volume of the body increases as the cube and the surface as the square of a linear dimension. The larger a body, the relatively smaller its surface. In a cold climate there should be a selective advantage in the relative reduction of surface resulting from increased size, since the metabolic rate is more nearly proportional to surface than to body weight (Kleiber, 1947; Hemmingsen, 1960). In hot climates the advantage should be on small body size and relatively large surface.

The high negative correlation of component I for both sexes with mean January temperature and low correlation with mean July temperature (see Table 4) could be taken as support for Rensch's hypothesis (Rensch, 1939) that natural selection for size is greater during the period of winter minimum temperatures. Johnston and Selander (1971) reported the size component to show a negative regression on all measures of winter temperature and no regression effects on measures of summer temperature for the house sparrow (*Passer domesticus*). James (1970) recorded the differences between the dry and wet-bulb temperature to be greatest in summer and least in the winter for several species of birds and indicated that this might account for the variation implied by Rensch's hypothesis.

Since evapotranspiration is a good predictor of net primary productivity (Rosenweig, 1968) and appears to influence variation in females more than that in males, net primary productivity may be more limiting to females than to males at least in certain areas. Males, having a larger home range, may have more food available to them. This could partially account for the difference between sexes in *D. ordii*. Rosenweig (1968), in discussing interspecific size variation in mammalian carnivores, indicated that if food is in short supply, as in deserts and tundra, body size will be limited by food supply; if evapotranspiration is very high in an environment, body size and evapotranspiration are not correlated (Rosenweig, 1968). This could be the case with male *D. ordii*. Johnston (1969) reported different relationships to precipitation for males and females of European sparrows.

In an attempt to examine the interlocality variation in size in more detail, component I projections were analyzed with respect to eight environmental variables for smaller groups of localities. In the Eastern-Southern Group, eight environmental variables accounted for 80.1 percent of the variation in males and 78.1 percent in females. Only latitude was significant and accounted for 69.4 percent and 67.4 percent in males and females, respectively. Since temperature depends on latitude (Mayr, 1963), and taking component I to represent body size, these results in the Eastern-Southern Group indicate that these populations are following Bergmann's rule. Brown and Lee (1969) reported Bergmann's rule to hold for 10 populations of <u>Neotoma</u> from western North America. One should consult James (1970), Niles (1973), Brown and Lee (1969), Rosenweig (1968), McNab (1971) and others for recent discussions of the validity of Bergmann's rule. I use this rule as a generalization. Mayr (1956) indicated that though exceptions have been found to the ecogeographic rules (Allen, Bergmann, and Gloger), there is enough conformity to the rules to make them useful for descriptive purposes.

In the Northwestern-Southwestern Group, environmental variables accounted for only 22.8 percent of the variation in component I for males; none were significant. No individual variable accounted for more than 8.5 percent of the variation. For females in the Northwestern-Southwestern Group, eight variables accounted for 48.2 percent of the variation. Latitude (14.3 percent), altitude (8.8 percent), mean January temperature (8.4 percent), and mean annual temperature (8.3 percent) accounted for 39.8 percent of the variation. Since environmental variables did not explain as much of the variation in the Northwestern-Southwestern Group as in the Eastern-Southern Group, I subdivided the former into a Northwestern Group and Southwestern-Mexican Group.

The Mexican quadrats were included in this last group because Figs. 6 and 7 show the southwestern United States quadrats and quadrats in Mexico to cluster closely together. In the Southwestern-Mexican Group seven variables accounted for 56.8 percent of the variation in male component I, with mean January temperature explaining 43.5 percent. Eight variables explained 61.6 percent of the variation in component I for females, with mean January temperature accounting for 55.2 percent. Thus, animals occurring in quadrats of this group exhibit variation that follows Bergmann's rule.

Eight environmental variables accounted for 27.2 percent of the variation in component I for males in the Northwestern Group. Mean January temperature explained 12.1 percent of this variation. For females, eight variables accounted for 74.0 percent of the variation in component I. Longitude (31.5 percent), mean July temperature (13.5 percent), and altitude (14.7 percent) explained 59.7 percent of this variation. The relationship between size and environmental variables is different in this group --the reasons are unclear. Other variables (soil, competition, or available food) may be accounting for part of the variation in male component I (i.e. Brown and Lieberman (1973) found greater variability in the sizes of seeds in the cheek pouches of *D. ordii* from the eastern part of the Great Basin Desert than those from the western part). Also, the manner in which I am viewing variation may be too broad to detect the details of variation in this area. A smaller grid system and the use of additional environmental variables should allow for a more precise determination of the relationship between environmental variables and male body sizes.

Principal Component II and Environmental Variables.--In the regression of the environmental variables on male component II for all localities, eight accounted for 41.3 percent of the variation, with latitude (29.3 percent), mean annual precipitation (6.7 percent), and mean July temperature (2.2 percent) interpreting the significant variation. Regression of the environmental variables on female component II resulted in eight variables explaining 47.6 percent of the variation. Latitude (33.2 percent), mean annual precipitation (7.8 percent), and mean January temperature (3.4 percent) accounted for the significant portion of variation in this component.

I examined the size-independent variation in greater detail by analyzing component II projections for smaller groups of quadrats with relation to eight environmental variables. In the Eastern-Southern Group, eight variables explained 52.1 percent of the variation in component II for males. Altitude (24.1 percent), mean January temperature (16.7 percent), and evapotranspiration (7.6 percent) accounted for 48.4 percent. For females, six variables interpreted 61.1 percent of the variation. Latitude (31.4 percent) and longitude (23.4 percent) explained 54.8 percent of the variation. Evapotranspiration and altitude accounted for 2.9 percent and 3.3 percent, respectively.

Eight variables accounted for 57.7 percent of the variation in component II for males in the Northwestern-Southwestern Group, with latitude explaining 39.6 percent. Eight variables accounted for 55.6 percent of the variation for females. Latitude explained 35.3 percent of this variation.

In the Southwestern-Mexican Group, eight variables explained 41.4 percent of the variation in component II for males. Altitude

(18.7 percent) and mean annual temperature (13.6 percent) interpreted 32.3 percent of this variation. For females, eight variables explained 36.9 percent of the variation. Altitude accounted for 18.2 percent.

Eight variables interpreted 26.1 percent of the variation in component II for males in the Northwestern Group. No variables were significant. For females, eight variables explained 35.0 percent of the variation. Mean annual temperature (11.9 percent) accounted for the significant variation.

Results of the regression of the environmental variables on component II are similar for both sexes. Latitude and mean annual precipitation are important variables over the entire range. Temperature variables have a strong influence in the Northwestern Group. Altitude is an important variable in the Northwestern-Southwestern Group. These results indicate that there have been definite morphologic adaptations to climatic gradients. James (1970) reported similar results in birds in the eastern and central United States.

Niles (1973) suggested for horned larks (*Eremophila alpestris*) that size-independent variation in cranial measurements may serve to increase surface area relative to volume. Component II for this study has high positive loadings for greatest interparietal width and least supraoccipital width, and high negative loadings for least interorbital width and greatest skull width. This component has a significant negative correlation with mean January temperature and mean annual temperature and a significant positive correlation with latitude for both sexes (see Table 4); therefore, changes in the character values involved in this component may reflect an increase in surface area in hot environments. This increase in surface area is small in relation to the total available surface area of the animal. However, a wider skull (as reflected in the increase in least interorbital width and greatest skull width) relative to body size would be an advantage in warmer areas to provide more surface area for heat radiation. Enlargement in these character values would serve the same function as extremities. If component II represents size-independent variation in cranial measurements which serves to increase surface area relative to volume, D. ordii is following Allen's ecogeographic rule. However, at best this is a weak relationship.

Principal Component III and Environmental Variables.--Component III accounted for only a small part of the phenetic variance (see Table 3), and in analyzing this component with relation to eight environmental variables, I found no variables to be correlated significantly when all quadrats were examined as one unit or in examining the Eastern-Southern Group. Only a small amount of variation in this component for either sex is accounted for by the eight environmental variables in the other groups with the exception of the Northwestern Group. In this group, eight variables explained 73.7 percent of the variation in component III for males and 53.8 percent for females. Longitude (56.9 percent) and mean annual precipitation (8.4 percent) interpreted 65.3 percent of the variation for males, and mean annual temperature (13.2 percent) and altitude (11.8 percent) accounted for the significant variation for females.

Conclusions.--If geographic variation is viewed broadly, populations of D. ordii are divided into eastern and western groups which are separated by mountain ranges. Large individuals (those in quadrats to the right in Figs. 6 and 7) occur in the Great Plains east of the Rocky Mountains; smaller animals (those in quadrats to the left in Figs. 6 and 7) occur west of the Western Cordillera. At least two complexes are formed in the western part of the range. One complex is in the northwestern United States (quadrats in the background to the left in Figs. 6 and 7), and the other is in the southwestern United States and Mexico (quadrats to the left in the foreground in Figs. 6 and 7). Animals from quadrats 2015 and 2115, which represent specimens from Padre and Mustang Islands in Texas, tend to be distinguished in Figs. 6 and 7 by component II. Quadrats occurring near the center of Figs. 6 and 7 represent animals which are intermediate between eastern and western segments.

With principal component I representing body size in the classic meaning of ecogeographic variation analysis, populations of _D. ordii_ are following Bergmann's rule. If principal component II is taken to represent size - independent variation in cranial measurements which may serve to increase surface area relative to volume, this species exhibits at best a weak relationship of a type subsumed under Allen's rule. These generalities indicate that size variation in this species is adaptively organized and that strong morphologic selection has been important in shaping phenetic variation in _D. ordii_. This has occurred in spite of the generally subdivided population structure of the species.

ACKNOWLEDGMENTS

I am sincerely grateful to Gary D. Schnell for his direction throughout the course of this study. I am greatly indebted to Victor H. Hutchison, Cluff E. Hopla, and James R. Estes for their help and advice throughout my graduate program. Many individuals helped with the loan of materials used in this study, and others permitted me to study specimens in the collections under their care. I thank the curators of the following collections: Acad. Nat. Sci., Philadelphia, Pa.; Amer. Mus. Nat. Hist., New York, N. Y.; Baylor Univ., Waco, Texas; Brigham Young Univ., Provo, Utah; California Acad. Sci., San Francison, Calif.; California State Univ., San Jose, Calif.; Cameron State Univ., Lawton, Okla.; Colorado State Univ., Fort Collons, Col.; Dallas Mus. Nat. Hist., Dallas, Texas; Denver Nat. Hist. Mus., Denver, Col.; Eastern New Mexico Univ. Nat. Hist. Mus., Portales, N. Mex.; Field Mus. Nat. Hist., Chicago, Ill.; Fort Worth Mus. Sci. and Hist., Fort Worth, Texas; Humboldt State College, Arcata, Calif.; Kearney State College, Kearney, Nebr.; Los Angles County Nat. Hist. Mus., Los Angles, Calif.; Memphis State Univ., Memphis, Tenn.; Michigan State Univ., East Lansing, Mich.; Midwestern Univ., Wichita Falls, Texas; Montana State Univ., Bozeman, Mont.; Moore Lab. Zool., Los Angeles, Calif.; Mus Arid Land Biol., El Paso, Texas; Mus. Comp. Zool., Cambridge, Mass.; Mus. Nat. Hist., Lawrence, Kans.; Mus. Nat. Hist., Urbana, Ill.; Mus. Northern Arizona, Flagstaff, Ariz.; Mus. High Plains, Hays, Kans.; Mus. Vert. Zool., Berkeley, Calif.; Mus. Zool., Baton Rouge, La.; Mus. Zool., Ann Arbor, Mich.; National Mus., Washington, D. C.; New Mexico State Univ.,

Las Cruces, N. Mex.; North Dakota State Univ., Fargo, N. Dak.; North Texas State Univ., Denton, Texas; Northern Arizona Univ., Flagstaff, Ariz.; Oklahoma Baptist Univ., Shawnee, Okla.; Ohio State Univ., Columbus, Ohio; Portland State Univ., Portland, Oreg.; Prov. Mus. and Arch. Alberta, Edmonton, Alberta; Puget Sound Mus. Nat. Hist., Tocoma, Wash.; Royal Ontario Mus., Toronto, Ontario; San Diego Nat. Hist. Mus., San Diego, Calif.; San Diego State Univ., San Diego, Calif.; Southern Illinois Univ., Carbondale, Ill.; Stephen F. Austin Univ., Nacogdoches, Texas; Stovall Mus. Sci. and Hist., Norman, Okla.; Sul Ross State Univ., Alpine, Texas; Texas A and M Univ., College Station, Texas; The Mus., Lubbock, Texas; Thomas Burke Memorial Washington State Mus., Seattle, Wash.; T. L. Best Private Collection, Boston, Mass.; Tulane Univ. Riverside Res. Lab., Belle Chasse, La.; Univ. Alberta, Edmonton, Alberta; Univ. Arizona, Tucson, Ariz.; Univ. British Columbia, Vancouver; Univ. California, Los Angeles, Los Angeles, Calif.; Univ. Colorado Mus., Boulder, Col.; Univ. Montana, Missoula, Mont.; Univ. Nebraska, Lincoln, Nebr.; Univ. Nevada, Reno, Nev.; Univ. New Mexico, Albuquerque, N. Mex.; Univ. North Dakota, Grand Forks, N. Dak.; Univ. Texas at Austin, Austin, Texas; Univ. Uath, Salt Lake City, Utah; Washington State Univ., Pullman, Wash.; Weber State College, Ogden, Utah.

Other individuals have helped in different ways throughout this study. I benefited from discussions with H. W. Setzer of the National Museum, and D. J. Schnidly of Texas A and M University. Ginna Davidson aided in the preparation of figures. Thanks are due to fellow graduates students, K. N. Randolph, J. J. Hellack, and T. L. Best, for their encouragement and assistance throughout this study. This work was supported in part by

National Science Foundation Grant GB-30814 to Gary D. Schnell and Doctoral Dissertation Research Grant GB-33062.

LITERATURE CITED

Alcoze, T. M., and E. G. Zimmerman. 1973. Food habits and dietary overlap of two hetermoyid rodents from the mesquite plains of Texas. J. Mamm., 54:900-908.

Allen, J. A. 1877. The influence of physical conditions in the genesis of species. Radical Rev., 1:108-140.

_____. 1891. On a collection of mammals from southern Texas and northeastern Mexico. Bull. Amer. Mus. Nat. Hist., 3:219-228.

Anderson, S. 1972. Mammals of Chihuahua/ taxonomy and distribution. Bull. Amer. Mus. Nat. Hist., 148:151-410.

Baccus, J. T. 1971. The mammals of Baylor Co., Texas. Texas J. Sci., 22:177-185.

Bader, R. S., and W. H. Lehmann. 1965. Phenotypic and genotypic variation in odontometric traits of the house mouse. Amer. Midland Nat., 74:28-38.

Best, T. L., and G. D. Schnell. 1974. Bacular variation in kangaroo rats (Genus Dipodomys). Amer. Midland Nat., 91:257-270.

Blair, W. F. 1943. Populations of the deer mouse and associated small mammals in the mesquite association of southern New Mexico. Contrib. Lab. Vert. Biol., Univ. Mich., 21:1-40.

_____. 1954. Mammals of the mesquite plains biotic district in Texas and Oklahoma, and speciation in the central grasslands. Texas J. Sci., 3:235-264.

Brown, J. H. 1973. Species diversity of seed-eating desert rodents in sand dune habitats. Ecology, 54:777-787.

Brown, J. H., and A. K. Lee. 1969. Bergmann's rule and climatic adaptation in woodrats (Neotoma). Evolution, 23:329-338.

Brown, J. H., and G. A. Lieberman. 1973. Resourse utilization and coexistence of seed-eating desert rodents in sand-dune habitats. Ecology, 54:788-797.

Canada Meteorological Branch. 1962. The climate of Canada. Meteorological Branch, Air Services, Dept. of Transport. Toronto, Ontario. 74 pp.

Davis, W. B. 1942. The systematic status of four kangaroo rats. J. Mamm., 23:328-333.

Desha, P. G. 1967. Variation in a population of kangaroo rats, Dipodomys ordii medius (Rodentia: Heteromyidae) from the high plains of Texas. Southwestern Nat., 12:275-289.

Dixon, K. L. 1958. Spatial organization in a population of Nelson pocket mouse. Southwestern Nat., 3:107-113.

Dixon, W. J. (ed.). 1970. BMD biomedical computer programs. Univ. California Press, Berkeley, 773pp.

Dunham, M. 1968. A comparative food habit study of two species of kangaroo rats, Dipodomys ordii and D. merriami. Unpublished M.S. Thesis, Univ. New Mexico, Albuquerque, New Mexico, 25 pp.

Eisenberg, J. F. 1963. The behavior of heteromyid rodents. Univ. California Publ. Zool., 69:1-114.

Goldman, E. A. 1937. The Colorado River as a barrier in mammalian distribution. J. Mamm., 18:427-435.

Great Britain Meteorological Office. 1965. Tables of temperature, relative humidity and precipitation for the world. Her Majesty's Stationery Office, London, 84 pp.

Grinnell, J. 1922. A geographical study of the kangaroo rats of California. Univ. California Publ. Zool., 24:1-124.

Hall, E. R. 1951. Mammals obtained by Dr. Curt von Wedel from the barrier beach of Tamaulipas, Mexico. Univ. Kansas Publ., Mus. Nat. Hist., 5:33-47.

_____. and K. R. Kelson. 1959. The mammals of North America. 2 vols. Ronald Press Co., New York, 1083 pp.

Hemmingsen, A. M. 1960. Energy metabolism as related to body size and respiratory surfaces and its evolution. Repts. Steno Memorial Hospital, Nordisk Insulin-lab., Denmark, 9:1-110.

Jackson, J. 1970. Character variation in the hairy woodpecker (Dendrocopos villosus). Unpublished Ph.D. Dissertation, Univ. Kansas, Lawrence, 170 pp.

James, F. C. 1970. Geographic size variation in birds and its relationship to climate. Ecology, 51:365-390.

Johnson, W. E., and R. K. Selander. 1971. Protein variation and systematics in kangaroo rats (genus Dipodomys). Syst. Zool., 20:377-405.

Johnston, R. F. 1969. Character variation and adaptation in European sparrows. Syst. Zool., 18:206-231.

Johnston, R. F., and R. K. Selander. 1971. Evolution in the house sparrow. II. Adaptive differentiation in North American populations. Evolution, 25:1-28.

Kennedy, M. L. 1975. Geographic variation in Ord's kangaroo rat, Dipodomys ordii. Unpublished Ph.D. Dissertation, Univ. Oklahoma, Norman, 120 pp.

Kleiber, M. 1947. Body size and metabolic rate. Physiol. Rev., 27: 511-541.

Lampe, R. P., J. K. Jones Jr., R. S. Hoffman, and E. C. Birney. 1974. The mammals of Carter County, southeastern Montana. Occas. Pap. Mus. Nat. Hist., Univ. Kansas, 25:1-39.

Leamy, L. J., and R. S. Bader. 1968. Components of variance of odontometric traits in a wild-derived population of Peromyscus leucopus. Evolution, 22:826-834.

Lidicker, W. Z. 1960. An analysis of intraspecific variation in the kangaroo rat Dipodomys merriami. Univ. California Publ. Zool., 67:125-218.

Martin, R. E., and J. R. Preston. 1968. The mammals of Harmon Co., Oklahoma. Proc. Oklahoma Acad. Sci., 49:42-60.

Maxwell, M. H., and L. N. Brown. 1968. Ecological distribution of rodents on the high plains of eastern Wyoming. Southwestern Nat., 13:143-158.

Mayr, E. 1956. Geographical character gradients and climatic adaptation. Evolution, 10:105-108.

_____. 1963. Animal species and evolution. Harvard Univ. Press, Cambridge, Mass., 797 pp.

Mazrimas, J. A., and F. T. Hatch. 1972. A possible relationship between satellite DNA and the evolution of kangaroo rats species (Genus Dipodomys). Nat. New Biol., 240:102-105.

McNab, B. K. 1971. On the ecological significance of Bergmann's rule. Ecology, 52:845-854.

Nader, I. A. 1964. An analysis of intraspecific variation in the kangaroo rats _Dipodomys spectabilis_ Merriam and _Dipodomys deserti_ Stephens. Unpublished Ph.D. Dissertation, Univ. Illinois, Urbana, 221 pp.

Nelson, H. L. 1968. Climatic data for representative stations of the world. Univ. Nebraska Press, Lincoln, 81 pp.

Niles, D. M. 1973. Adaptive variation in body size and skeletal proportions of horned larks of the southwestern United States. Evolution, 27:405-426.

Patton, J. L. 1969. Chromosome evolution in the pocket mouse, _Perognathus goldmani_ Osgood. Evolution, 23:645-662.

Power, D. M. 1967. BIVAR, a FORTRAN IV program for general computer use. Version of June, 1967, unpubl. MS.

_____. 1969. UNIVAR, a FORTRAN IV program for general computer use. Version of July, 1969, unpubl. MS.

Rensch, B. 1939. Klimatische auslese von Grossenvarianten. Arch. fur Naturg. NF 8:89-129.

Rohlf, F. J., J. Kishpaugh, and R. Bartcher. 1969. Numerical taxonomy system of multivariate statistical programs. Version of September, 1969; Univ. Oklahoma Comp. Center: Program NTSYS.

Rosenzweigh, M. L. 1968. The strategy of body size in mammalian carnivores. Amer. Midland Nat., 80:299-315.

_____. and P. W. Sterner. 1970. Population ecology of desert rodent communities: body size and seed-husking as bases for heteromyid coexistence. Ecology, 51:217-224.

Schmidly, D. J. 1971. Population variation in Dipodomys ordii from western Texas. J. Mamm., 52:108-120.

Schmidly, D. J., and F. S. Hendricks. 1976. Systematics of the southern races of Dipodomys ordii. Bull. Southern California Acad. Sci., in press.

Schmidly, D. J., and R. L. Packard. 1967. Swimming ability in pocket mice. Southwestern Nat., 12:480-482.

Scudo, F. M. 1969. On the adaptive value of sexual dimorphism: II. Unisexuality. Evolution, 23:36-49.

Selander, R. K. 1966. Sexual dimorphism and differential niche utilization in birds. Condor, 68:113-151.

Setzer, H. W. 1949. Subspeciation in the kangaroo rat, Dipodomys ordii. Univ. Kansas Publ., Mus. Hist., 1:473-573.

_____. 1952. A renaming of Dipodomys ordii fuscus. J. Washington Acad. Sci., 42:391.

Showers, V. 1973. The world in figures. John Wiley and Sons, New York, 585 pp.

Sneath, P. H. A., and R. R. Sokal. 1973. Numerical taxonomy. W. H. Freeman and Company, San Francisco, 573 pp.

Sokal, R. R., and F. J. Rohlf. 1969. Biometry, the principles and practice of statistics in biological research. W. H. Freeman and Company, San Francisco, 776 pp.

Stock, A. D. 1972. Swimming ability in kangaroo rats. Southwestern Nat., 17:98-99.

_____. 1974. Chromosome evolution in the genus *Dipodomys* and its phylogenetic implications. J. Mamm., 55:505-526.

Thornthwaite Associates. 1964. Average climatic water balance data of the continents. Lab. of Climatol., Publ. in Climatology., 17:231-615.

Trowbridge, A. H., and H. L. Whitaker. 1940. A new kangaroo rat from Oklahoma. J. Mamm., 21:343-345.

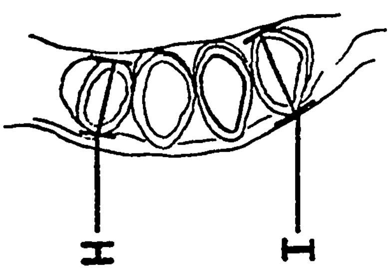
True, F. W. 1889. Description of *Geomys personatus* and *Dipodomys compactus*, two new species of rodents from Padre Island, Texas. Proc. United States Nat. Mus., 11:159-160.

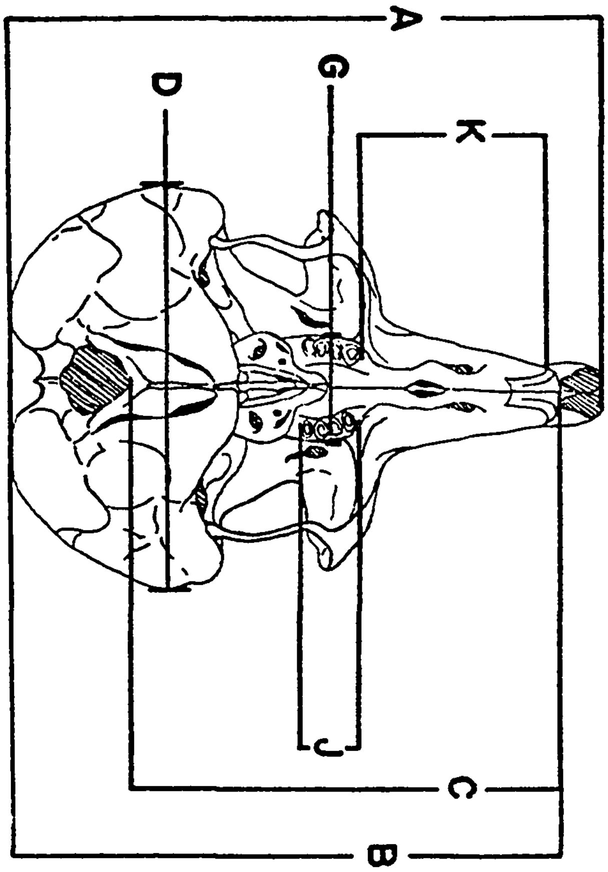
United States Dept. Commerce. 1966. World weather records 1951-1960, vol. I: North America, 535 pp.

United States Dept. Commerce. 1973. Climatography of the United States (by state). Monthly normals of temperature, precipitation, and heating and cooling degree days 1941-70.

FIGURES

FIGURE 1.--Description of skull characters of *Dipodomys ordii*. A, greatest skull length; B, bullar-premaxillary length; C, basal length; D, greatest skull width; E, maxillary width; F, greatest skull depth; G, intermaxillary width; H, third molar width; I, premolar width; J, toothrow length; K, upper diastemal length; L, least interorbital width; M, nasal length; N, rostral width; O, least supraoccipital width; P, greatest interparietal width.


H
I


A
G
D
K
J
C
B


F

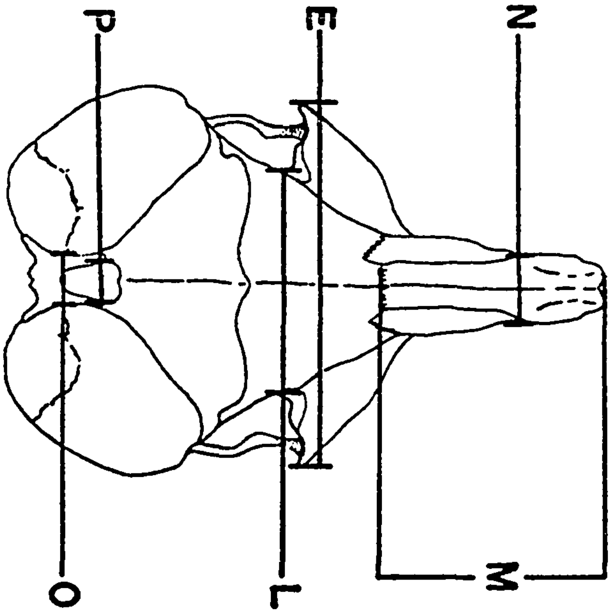

P
E
N
O
L
M

FIGURE 2.--Sample quadrats used in the study of interlocality variation in *Dipodomys ordii*. Quadrats indicated are approximately 100 mi. on a side. All quadrats were represented by male and female specimens except: 0612, 0708, 0711, 0713, 0915, 1112, 1506, 1515, 1911, 2211, 2512 (male only); 0710, 1010, 1709 (female only). Total male quadrats = 122; female = 113.

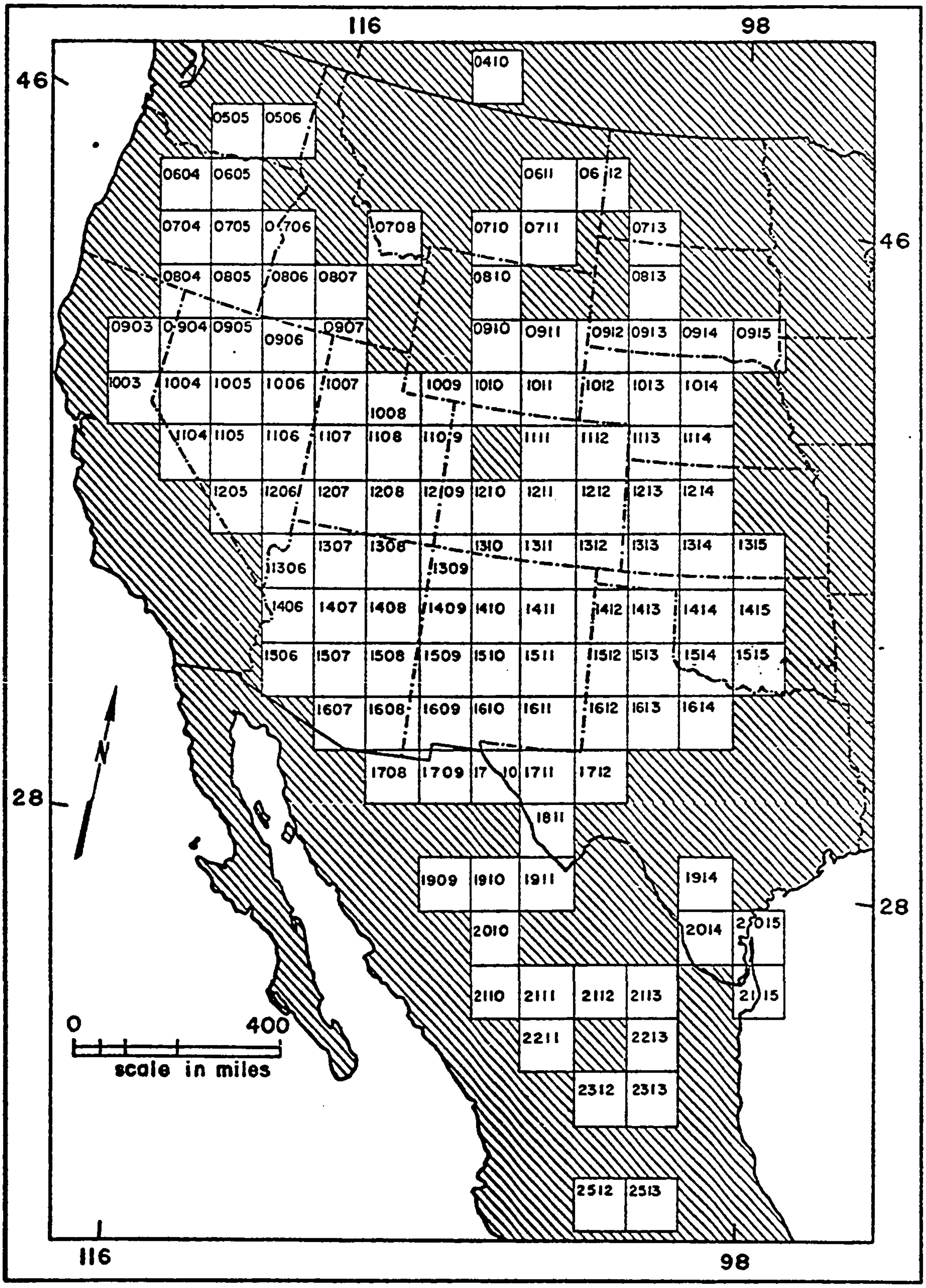
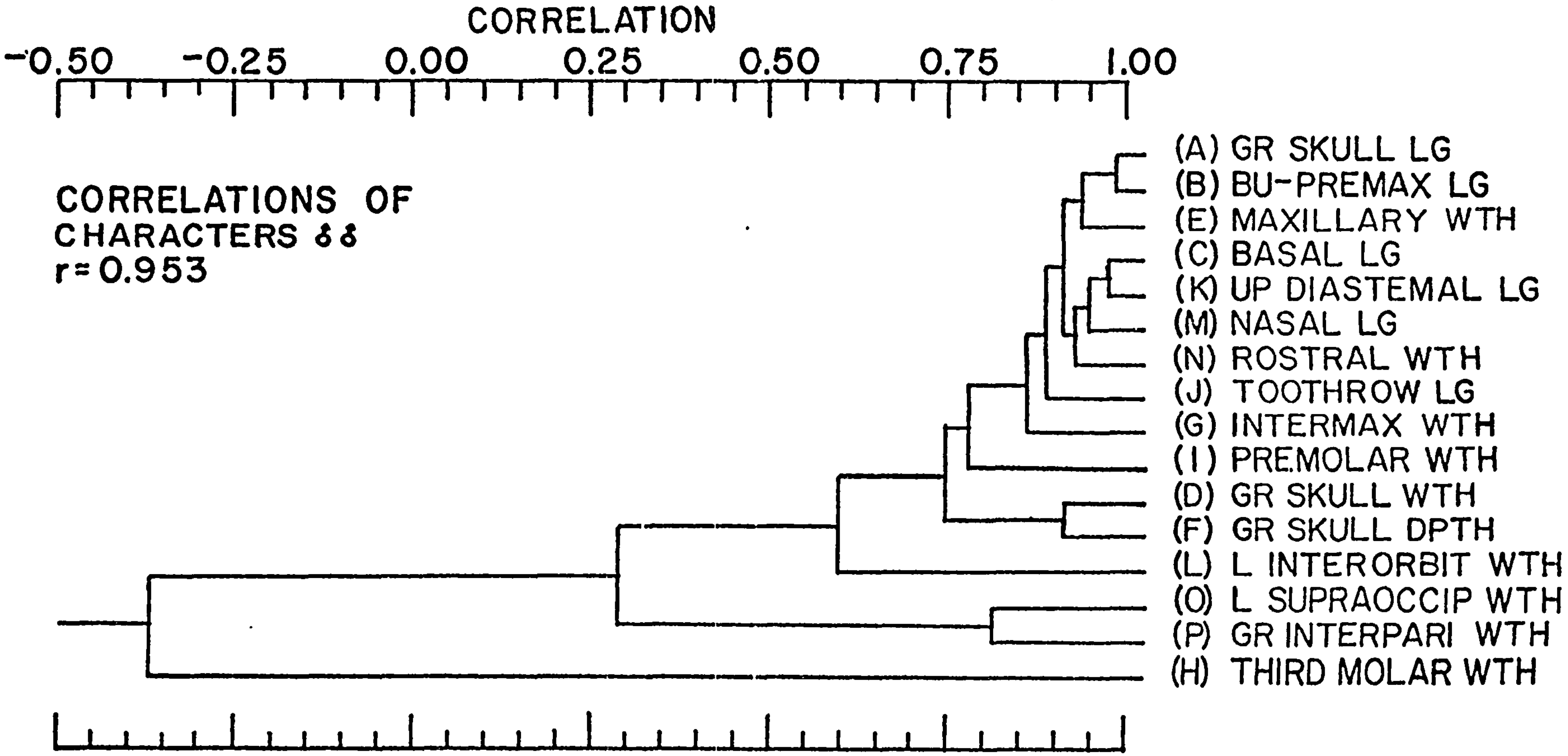

116
98
46
46
28
28
116
98
0410
0505
0506
0604
0605
0611
0612
0704
0705
0706
0708
0710
0711
0713
0804
0805
0806
0807
0810
0813
0903
0904
0905
0906
0907
0910
0911
0912
0913
0914
0915
1003
1004
1005
1006
1007
1008
1009
1010
1011
1012
1013
1014
1104
1105
1106
1107
1108
1109
1111
1112
1113
1114
1205
1206
1207
1208
1209
1210
1211
1212
1213
1214
1306
1307
1308
1309
1310
1311
1312
1313
1314
1315
1406
1407
1408
1409
1410
1411
1412
1413
1414
1415
1506
1507
1508
1509
1510
1511
1512
1513
1514
1515
1607
1608
1609
1610
1611
1612
1613
1614
1708
1709
1710
1711
1712
1811
1909
1910
1911
1914
2010
2014
2015
2110
2111
2112
2113
2115
2211
2213
2312
2313
2512
2513
N
0
400
scale in miles

FIGURE 3.--Dendrogram from the matrix of correlations of male skull characters of *Dipodomys ordii*.



CORRELATIONS OF CHARACTERS ♂♂
r=0.953

FIGURE 4.--Generalized contour diagram of geographic variation in mean values of principal component I from the matrix of correlations of 16 skull characters of male *Dipodomys ordii*.

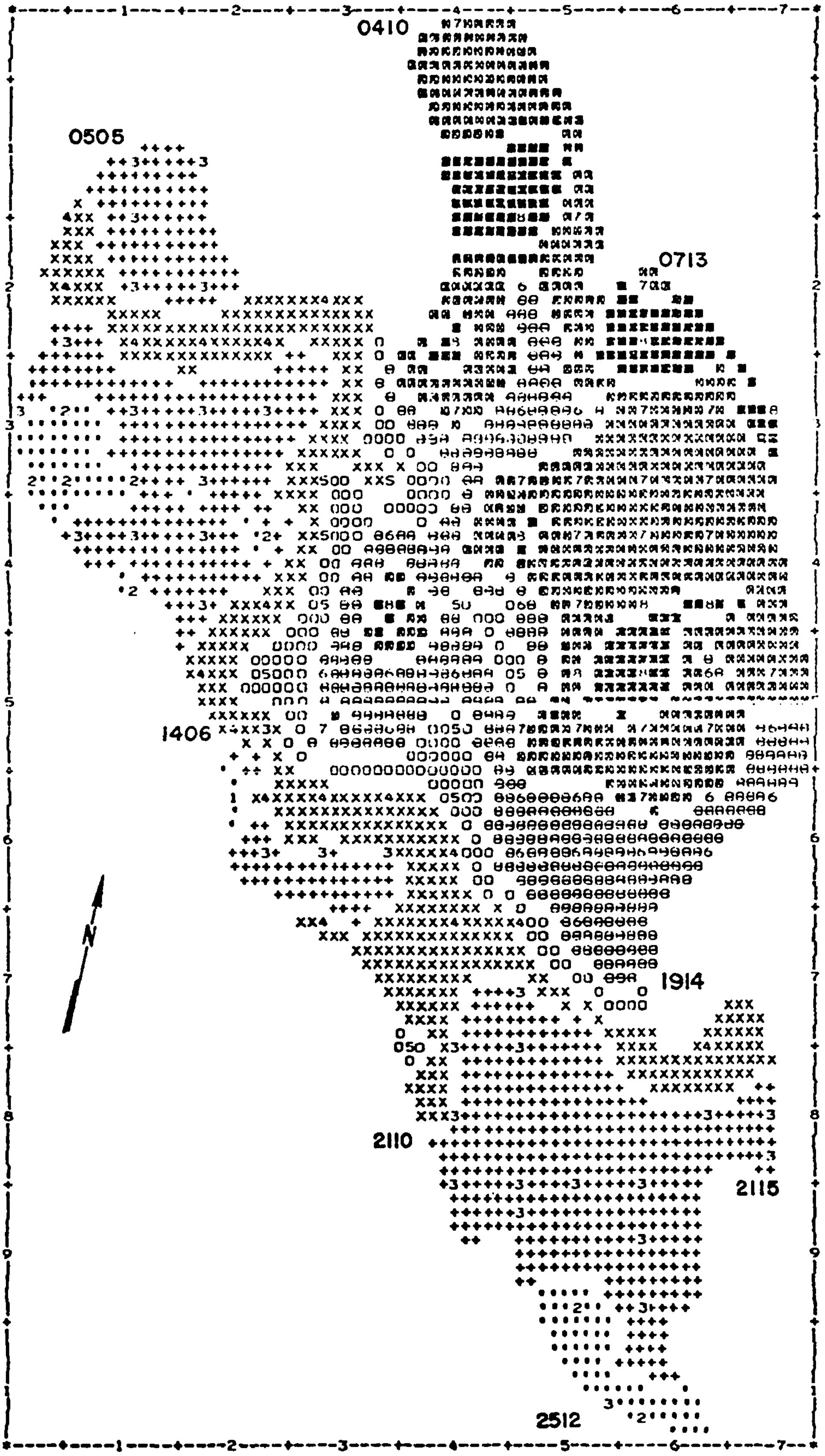
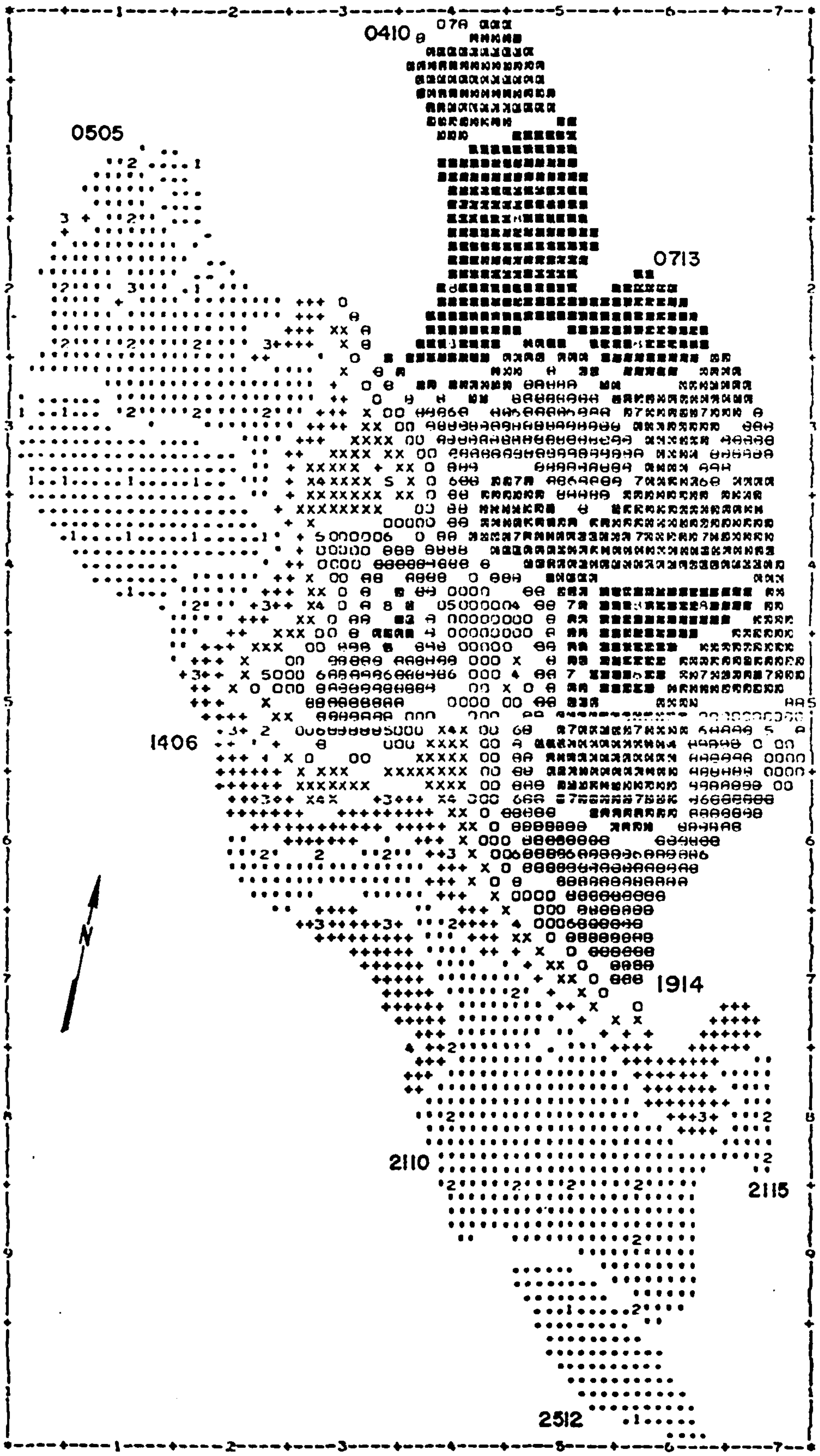

0410
0505
0713
1406
1914
2110
2115
2512
N
1
2
3
4
5
6
7
8
9

FIGURE 5.--Generalized contour diagram of geographic variation in mean values of principal component I from the matrix of correlations of 16 skull characters of female *Dipodomys ordii*.



0410
0505
0713
1406
1914
2110
2115
2512
N
1
2
3
4
5
6
7
8
9

FIGURE 6.--Projection of 122 quadrats onto the first three principal components of variation in the matrix of correlations of 16 skull characters of male *Dipodomys ordii*. Identification numbers refer to the code in Fig. 2. The sole purpose of the broken lines is to aid in the identification of individual quadrats. Numbers for quadrats enclosed by broken lines are given at the top of the model under the corresponding letter heading. These quadrats are numbered from left to right and north to south.

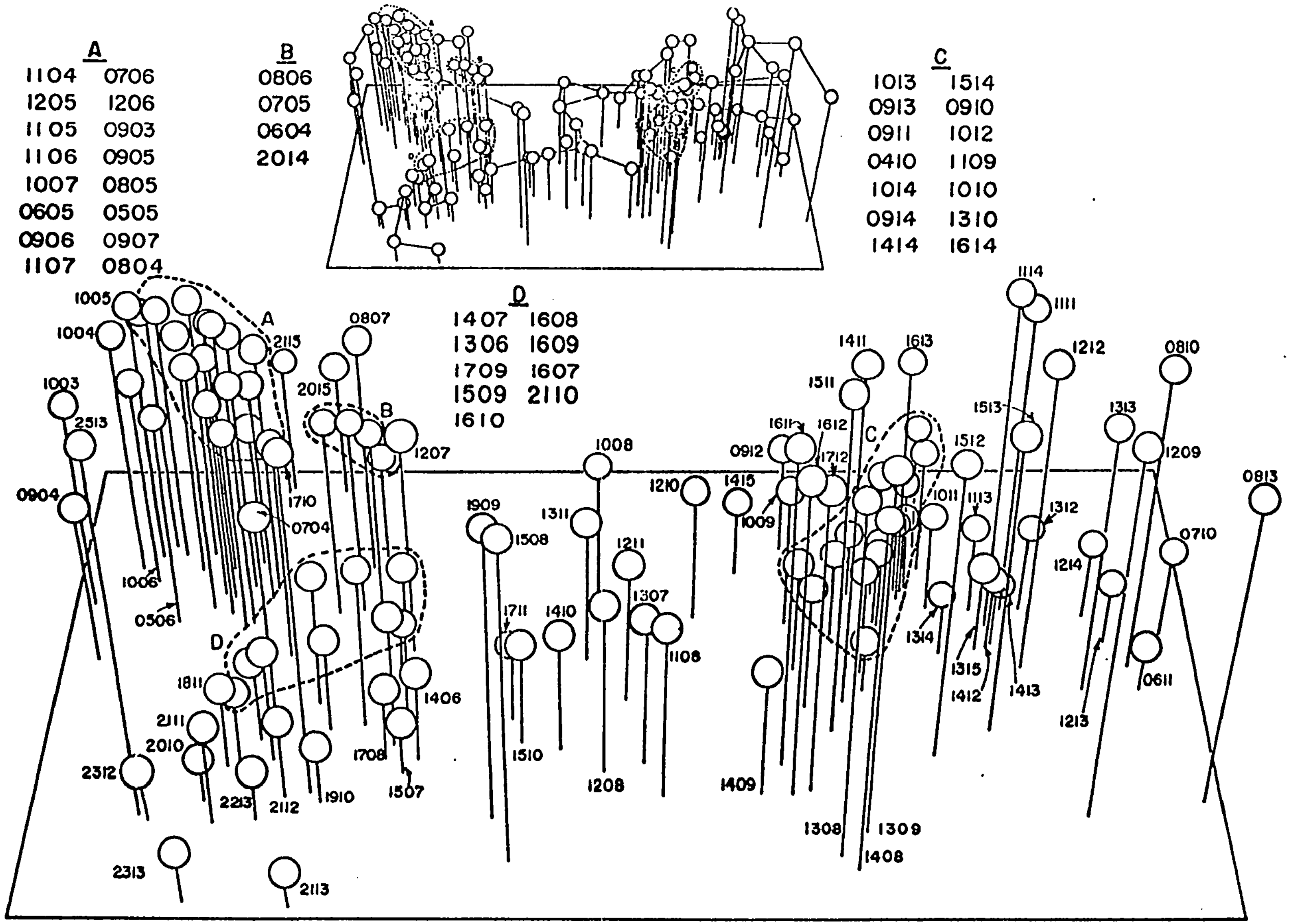
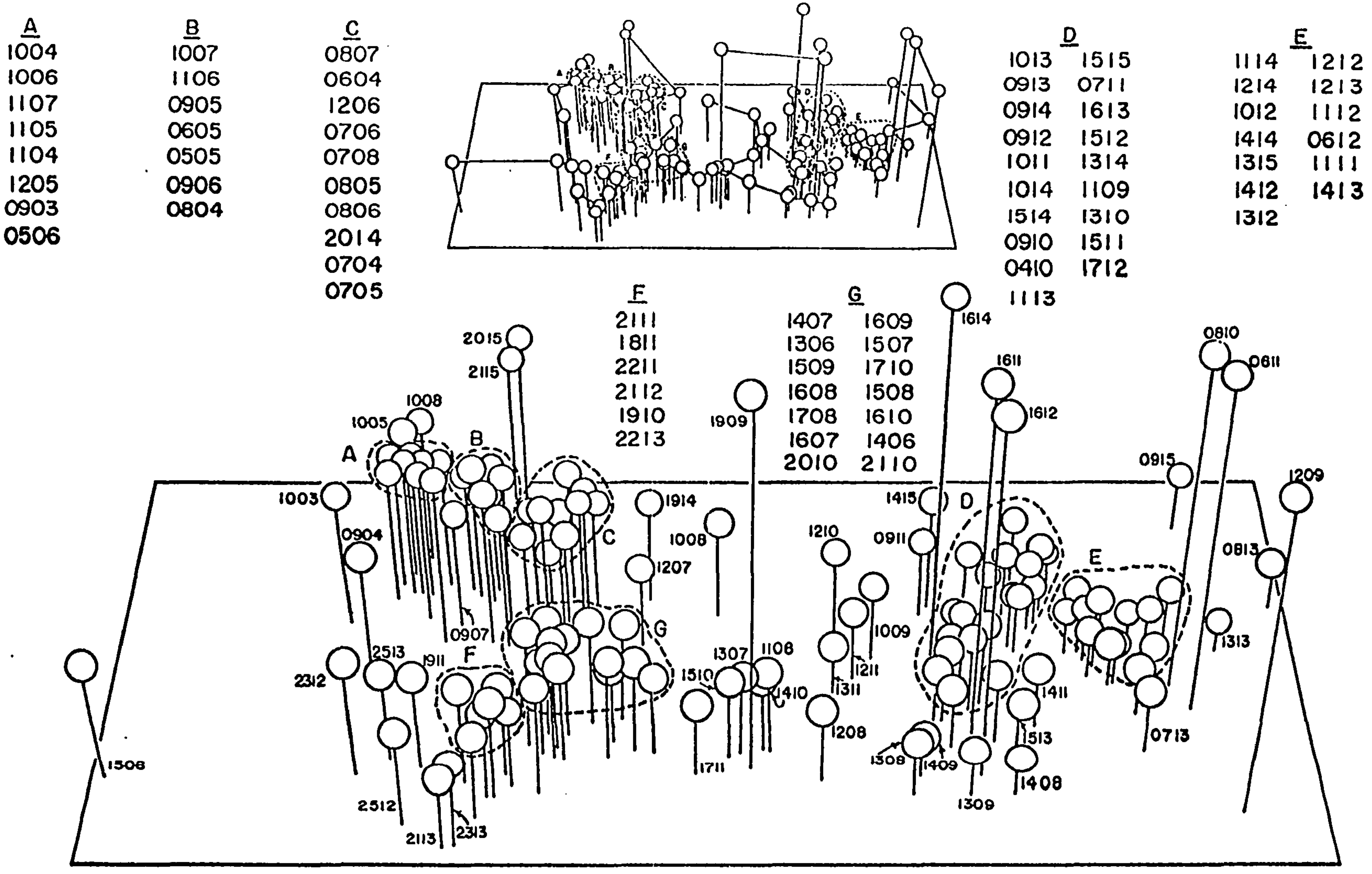

A
1104 0706
1205 1206
1105 0903
1106 0905
1007 0805
0605 0505
0906 0907
1107 0804
B
0806
0705
0604
2014
C
1013 1514
0913 0910
0911 1012
0410 1109
1014 1010
0914 1310
1414 1614
D
1407 1608
1306 1609
1709 1607
1509 2110
1610
1005
1004
1003
2513
0904
1006
0506
2115
0807
2015
1207
1710
0704
1811
2111
2010
2312
2213
2112
1910
1708
1507
1406
2313
2113
1909
1508
1311
1008
1711
1410
1211
1307
1108
1510
1208
1210
1415
1009
1409
0912
1611
1612
1712
1411
1613
1511
1308
1309
1408
1513
1512
1011
1113
1314
1315
1412
1413
1114
1111
1212
1313
1312
1214
1213
1209
0810
0710
0611
0813

FIGURE 7.--Projection of 113 quadrats onto the first three principal components of variation in the matrix of correlations of 16 skull characters of female *Dipodomys ordii*. Identification numbers refer to the code in Fig. 2. See Fig. 6 for explanation of quadrats enclosed by broken lines.


A
1004
1006
1107
1105
1104
1205
0903
0506
B
1007
1106
0905
0605
0505
0906
0804
C
0807
0604
1206
0706
0708
0805
0806
2014
0704
0705
D
1013 1515
0913 0711
0914 1613
0912 1512
1011 1314
1014 1109
1514 1310
0910 1511
0410 1712
1113
E
1114 1212
1214 1213
1012 1112
1414 0612
1315 1111
1412 1413
1312
F
2111
1811
2211
2112
1910
2213
G
1407 1609
1306 1507
1509 1710
1608 1508
1708 1610
1607 1406
2010 2110
2015
2115
1008
1005
A
B
C
1003
0904
0907
2513
1911
F
G
2312
2512
2113
2313
1506
1914
1008
1207
1909
1307
1108
1510
1410
1711
1210
0911
1415
D
1009
1211
1311
1208
1308
1409
1309
1614
1611
1612
1411
1513
1408
E
0915
0810
0611
1209
0813
1313
0713

TABLES

TABLE 1. --Secondary sexual dimorphism in size in sixteen skull characters in Ord's kangaroo rat, *Dipodomys ordii*.

	Character-State Means[1]		Analysis of Variance[2]	
Character	Male	Female	df	F-ratio
Greatest skull length	38.22	37.98	1,7129	36.491***
Bullar-premaxillary length	34.48	34.26	1,7413	31.150***
Basal length	27.26	27.04	1,6785	37.944***
Greatest skull width	23.98	23.90	1,7377	8.436***
Maxillary width	20.60	20.52	1,7168	10.904***
Greatest skull depth	12.76	12.74	1,7459	9.152***
Intermaxillary width	4.96	4.96	1,7080	-0.483
Third molar width	0.958	0.954	1,7247	6.720***
Premolar width	1.15	1.15	1,7604	2.032
Toothrow length	7.37	7.37	1,7638	-0.528
Upper diastemal length	8.48	8.39	1,7632	57.440***
Least interorbital width	12.63	12.60	1,6450	7.007***
Nasal length	14.17	14.04	1,7387	55.501***
Rostral width	3.74	3.70	1,7346	29.806***
Least supraoccipital width	2.57	2.58	1,7345	0.476
Greatest interparietal width	2.59	2.60	1,7345	0.476

---

[1] Dimensions in mm; number of male quadrats = 122; female = 113; number of male specimens = 4335; female = 3518.

[2] Means of characters are compared by single-classification analysis of variance.

[3] Values marked with a single asterisk (*) indicates r is significant at $P \leq 0.05$; for those marked with two asterisk (**) r is significant at $P \leq 0.01$; for those marked with three asterisk (***) r is significant at $P \leq 0.001$.

TABLE 2.--Interlocality variation in 16 skull characters in *Dipodomys ordii*.[1]

Character	Sex	df	F-ratio[2]
Greatest skull length	Male	121, 2959	49.880
	Female	112, 2583	51.599
Bullar-premaxillary length	Male	121, 3056	47.852
	Female	112, 2660	51.154
Basal length	Male	121, 2784	41.479
	Female	112, 2451	38.279
Greatest skull width	Male	121, 3015	26.297
	Female	112, 2652	27.342
Maxillary width	Male	121, 2925	24.476
	Female	112, 2546	24.730
Greatest skull depth	Male	121, 3049	38.445
	Female	112, 2667	35.149
Intermaxillary width	Male	121, 2925	30.250
	Female	112, 2541	29.674
Third molar width	Male	121, 2970	7.227
	Female	112, 2606	7.634
Premolar width	Male	121, 3085	19.770
	Female	112, 2708	19.644
Toothrow length	Male	121, 3092	37.043
	Female	112, 2726	38.566
Upper diastemal length	Male	121, 3100	38.840
	Female	112, 2719	41.511
Least interorbital width	Male	121, 2630	32.137
	Female	112, 2278	35.863
Nasal length	Male	121, 3015	24.187
	Female	112, 2654	26.170
Rostral width	Male	121, 2994	25.947
	Female	112, 2645	28.056
Least supraoccipital width	Male	121, 2984	26.052
	Female	112, 2640	24.086
Greatest interparietal width	Male	121, 3006	10.616
	Female	112, 2655	11.600

[1] Single-classification analysis of variance.

[2] Significant interpopulation heterogeneity (= geographic variation) is indicated by an F-ratio exceeding 1.220≤(P 0.05).

TABLE 3. - Character loading[1] and explained variances of the first three principal components of interlocality phenetic variation in *Dipodomys ordii*.

		Components of Variance[2]		
	Sex	I	II	III
Greatest skull length	Males	.983	-.080	-.056
	Females	.988	-.063	-.017
Bullar-premaxillary length	Males	.988	-.070	-.041
	Females	.990	-.045	-.047
Basal length	Males	.979	.112	-.043
	Females	.976	.132	-.040
Greatest skull width	Males	.801	-.351	-.085
	Females	.810	-.392	.141
Maxillary width	Males	.958	.015	.014
	Females	.955	.051	-.053
Greatest skull depth	Males	.871	-.209	-.079
	Females	.885	-.228	.092
Intermaxillary width	Males	.917	-.021	.021
	Females	.939	.008	-.070
Third molar width	Males	.236	.078	-.965
	Females	.343	.327	-.813
Premolar width	Males	.852	-.291	.067
	Females	.855	-.316	-.026
Toothrow length	Males	.936	-.091	.056
	Females	.934	-.075	.075
Upper diastemal length	Males	.951	.175	-.051
	Females	.939	.253	-.064
Least interorbital width	Males	.638	-.538	-.056
	Females	.700	-.403	-.364
Nasal length	Males	.963	.216	-.004
	Females	.941	.225	.013
Rostral width	Males	.944	.203	-.025
	Females	.936	.266	-.041
Least supraoccipital width	Males	.476	.827	.010
	Females	.385	.872	.005
Greatest interparietal width	Males	.275	.905	.031
	Females	.155	.913	.238

[1] Correlations of locality mean values (n male = 122; n female = 113) of individual characters with the component axes.

[2] Percent of phenetic variance accounted for by component I - males, 69.5 percent; females, 69.8 percent. Component II - males, 13.8 percent; females, 14.9 percent. Component III - males, 6.1 percent; females, 5.6 percent. The total phenetic variance of the first three components = males, 89.3 percent; females, 90.4 percent.

TABLE 4 --Correlation of eight environmental variables with male and female first and second principal components. See Table 1 for explanation of significance levels.

Environmental variable	Male Component I	Male Component II	Female Component I	Female Component II
Mean January Temp	-.470*	-.437*	-.400*	-.467*
Mean July Temp	.019	-.107	.103	-.111
Mean Annual Temp	-.312*	-.368*	-.215	-.392*
Mean Annual Precip	.344*	.175	.388*	.184
Latitude	.362*	.541**	.270	.576**
Longitude	-.225	.181	-.258	.155
Altitude	-.149	-.265	-.180	-.293
Evapotranspiration	.414*	.185	.428*	.225

APPENDICES

Appendix I. Table 1 (males) and Table 2 (females) indicate the character means for each quadrat used in the analyses of geographic variation. The characters used are as follows: A, greatest skull length; B, bullar-premaxillary length; C, basal length; D, greatest skull width; E, maxillary width; F, greatest skull depth; G, intermaxillary width; H, third molar width; I, premolar width; J, toothrow length; K, upper diastemal length; L, least interorbital width; M, nasal length; N, rostral width; O, least supraoccipital width; P, greatest interparietal width.

Table 1

Character means - Male

QUAD.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
410	39.45	35.71	28.22	24.69	21.63	12.92	5.21	.98	1.59	7.63	8.99	12.79	15.01	4.11	2.82	2.62
505	36.77	32.87	26.27	23.32	20.00	12.37	4.76	.85	1.54	7.30	8.26	12.01	13.72	3.48	2.64	2.63
506	36.34	32.76	26.12	22.99	19.89	12.20	4.71	.83	1.55	7.18	8.15	12.08	13.75	3.46	2.70	2.56
604	37.27	33.40	26.57	23.50	20.27	12.49	4.73	.91	1.59	7.44	8.24	12.11	13.93	3.59	2.72	2.85
605	37.00	33.02	26.39	23.41	20.27	12.31	4.69	.85	1.50	7.29	8.21	12.07	14.08	3.53	2.72	2.63
611	40.42	36.54	29.00	24.95	21.61	13.24	5.44	1.01	1.64	7.84	9.17	13.30	15.19	4.14	2.81	2.51
612	39.89	36.32	28.90	24.67	21.83	13.07	5.21	.99	1.61	7.69	9.33	13.36	15.02	4.06	2.63	2.65
704	37.63	33.69	26.80	23.86	20.83	12.55	4.68	.83	1.51	7.29	8.45	11.92	13.92	3.59	2.44	2.46
705	37.51	33.59	26.66	23.75	20.15	12.49	4.69	.88	1.53	7.40	8.38	11.82	13.99	3.60	2.39	2.44
706	37.47	33.63	26.71	23.47	20.22	12.44	4.73	.88	1.52	7.31	8.26	12.03	14.10	3.47	2.63	2.64
708	37.34	33.38	26.64	23.59	20.30	12.64	4.67	.92	1.52	7.25	8.38	11.80	14.03	3.67	2.67	2.69
711	39.34	35.56	28.36	24.23	21.53	12.76	5.17	.95	1.60	7.65	8.96	12.94	14.78	3.93	2.71	2.46
713	39.99	36.25	28.89	24.83	21.66	13.05	5.52	.99	1.75	7.75	9.12	13.14	15.18	3.90	2.57	2.35
804	37.07	33.22	26.38	23.68	20.03	12.56	4.58	.88	1.54	7.31	8.24	11.81	13.79	3.54	2.48	2.67
805	37.51	33.71	26.85	23.78	20.27	12.47	4.68	.86	1.48	7.39	8.46	12.02	14.11	3.53	2.56	2.75
806	37.70	33.80	26.78	23.71	20.24	12.51	4.69	.92	1.53	7.40	8.31	11.83	14.27	3.61	2.63	2.69
807	37.00	33.28	26.56	23.49	20.31	12.51	4.74	.91	1.52	7.40	8.32	11.85	14.05	3.66	2.73	2.86
810	40.35	36.38	28.83	25.00	21.45	13.36	5.25	1.01	1.65	7.79	8.97	13.36	15.13	4.05	3.09	2.64
813	40.87	36.83	29.56	25.00	22.06	13.27	5.36	.97	1.75	7.86	9.41	13.26	15.43	4.03	3.36	3.16
903	36.62	32.95	26.16	23.19	20.05	12.36	4.59	.88	1.50	7.11	8.16	11.78	13.61	3.51	2.65	2.72
904	36.45	32.40	25.85	23.37	19.88	12.40	4.61	.90	1.47	7.04	8.05	12.21	13.48	3.41	2.31	2.40
905	36.97	33.20	26.29	23.57	20.03	12.54	4.56	.87	1.47	7.11	8.17	11.75	13.81	3.60	2.59	2.93
906	37.25	33.47	26.27	23.76	20.05	12.63	4.58	.89	1.41	7.06	8.16	11.88	13.99	3.61	2.54	2.95
907	36.82	33.09	26.17	23.64	19.95	12.43	4.73	.96	1.52	7.16	8.16	11.62	13.56	3.48	2.57	2.74
910	39.64	35.82	28.47	24.38	21.27	13.41	5.22	1.00	1.58	7.65	8.77	13.00	14.98	3.98	3.00	2.91
911	38.99	35.22	28.21	23.98	20.74	13.20	5.02	.93	1.59	7 59	8.76	12.92	14.38	4.01	3.24	2.83
912	39.05	35.27	28.27	24.23	21.28	12.93	5.25	.97	1.62	7.55	8.98	12.81	14.71	3.97	3.08	2.76
913	39.54	35.83	28.66	24.22	21.18	13.11	5.33	.91	1.62	7.57	9.07	12.87	14.70	4.05	3.07	2.78
914	39.61	35.86	28.85	24.12	21.13	13.04	5.45	.96	1.64	7.55	9.05	12.80	14.92	4.09	3.08	2.79
915	40.03	36.23	28.85	24.56	21.43	13.18	5.60	1.00	1.70	7.60	9.17	12.85	15.40	4.29	3.80	3.30
1003	35.93	32.54	25.81	23.08	19.66	12.29	4.68	.91	1.47	6.97	7.94	11.84	13.49	3.41	2.64	2.66
1004	36.63	33.00	25.94	23.36	19.83	12.39	4.61	.91	1.46	6.94	8.04	11.58	13.65	3.52	2.67	2.88
1005	36.72	33.02	26.11	23.52	19.82	12.41	4.47	.86	1.42	7.03	8.13	11.72	13.64	3.59	2.69	3.13
1006	36.55	32.96	25.99	23.47	19.84	12.46	4.57	.91	1.44	7.03	8.03	11.79	13.56	3.58	2.77	3.03
1007	36.99	33.23	26.27	23.62	20.33	12.48	4.76	.91	1.47	7.09	8.11	11.78	13.85	3.56	2.64	2.98
1008	38.35	34.48	27.41	23.91	20.60	12.65	5.10	.91	1.52	7.28	8.51	12.20	14.28	3.72	2.75	2.86
1009	38.93	35.14	27.76	24.19	20.33	13.06	5.23	.96	1.58	7.61	8.66	12.73	14.43	3.81	2.89	2.63
1011	39.68	35.89	28.51	24.37	21.60	13.08	5.09	.91	1.58	7.58	9.12	13.08	14.75	3.95	3.10	2.81
1012	39.78	35.80	28.56	24.56	21.50	13.16	5.24	.99	1.68	7.65	9.10	13.02	14.72	4.01	3.02	2.73
1013	39.12	35.46	28.34	24.04	21.03	13.12	5.27	.97	1.73	7.53	8.98	12.97	14.73	4.04	3.25	3.11
1014	39.44	35.76	28.57	24.22	21.15	13.10	5.34	.98	1.66	7.61	9.03	12.89	14.54	4.06	3.06	2.82
1104	36.84	33.23	26.33	23.43	19.81	12.45	4.65	.93	1.47	7.02	8.18	11.57	13.64	3.59	2.70	2.99
1105	36.85	33.18	26.09	23.41	19.87	12.48	4.60	.87	1.43	7.05	8.11	11.69	13.74	3.56	2.61	2.91
1106	36.94	33.24	26.18	23.64	20.06	12.52	4.64	.92	1.49	7.11	8.07	11.72	13.67	3.60	2.69	2.92
1107	36.55	32.85	25.80	23.47	19.85	12.44	4.61	.89	1.49	7.05	8.04	11.57	13.44	3.55	2.66	2.91
1108	38.25	34.62	27.15	24.73	20.34	13.19	4.99	.96	1.64	7.56	8.34	12.30	13.87	3.76	2.12	2.54
1109	39.39	35.57	27.98	24.83	20.83	13.09	5.33	.95	1.61	7.63	8.72	12.88	14.44	3.89	2.49	2.55
1111	39.98	36.23	28.77	24.88	21.56	13.35	5.50	.98	1.70	7.77	8.93	13.27	14.75	4.12	2.87	2.72
1112	40.16	36.42	29.10	24.76	21.65	13.28	5.24	1.00	1.65	7.66	9.20	13.34	15.07	4.10	2.91	2.64
1113	39.74	36.01	28.60	24.39	21.34	13.05	5.11	.99	1.66	7.63	9.07	12.87	14.72	3.97	2.86	2.73
1114	39.59	35.89	28.96	24.41	21.37	13.27	5.33	.99	1.73	7.54	9.00	12.86	14.67	4.14	2.94	2.86
1205	36.53	32.88	26.01	23.37	19.44	12.41	4.75	.91	1.47	6.93	8.11	11.63	13.62	3.49	2.61	2.86
1206	37.36	33.56	26.54	23.75	20.17	12.63	4.78	.91	1.52	7.13	8.09	11.95	13.72	3.61	2.71	2.75
1207	37.75	33.99	26.64	24.15	19.95	12.87	4.96	.93	1.60	7.10	8.23	13.17	13.86	3.50	2.22	2.00

Appendix I, 1/5

QUAD.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1208	39.06	35.15	27.33	24.91	20.50	13.31	5.14	.91	1.61	7.27	8.37	12.01	13.81	3.63	2.57	2.68
1209	40.98	36.94	28.93	25.95	21.52	13.71	5.23	1.01	1.60	7.55	8.38	12.59	14.09	3.71	2.00	2.34
1210	38.40	34.74	27.83	23.98	20.98	13.04	5.02	.94	1.75	7.86	8.83	13.14	14.81	4.08	2.22	2.40
1211	38.76	34.99	27.92	24.39	20.77	13.13	5.02	.95	1.56	7.74	8.73	12.85	14.10	3.86	2.81	2.99
1212	40.10	36.23	28.96	24.58	21.68	13.10	5.17	.99	1.60	7.38	8.65	12.74	14.38	3.86	2.57	2.72
1213	39.94	36.19	29.18	24.62	21.57	13.17	5.32	.99	1.70	7.62	9.15	13.07	14.95	4.01	2.85	2.67
1214	40.35	36.59	29.04	24.83	22.06	13.22	5.36	.98	1.71	7.74	9.24	13.30	14.91	4.15	2.85	2.60
1306	37.92	34.06	26.56	23.97	20.08	12.68	4.92	.95	1.66	7.65	9.22	13.11	15.16	4.09	3.14	2.87
1307	38.61	34.84	27.10	24.69	20.26	13.10	4.97	.96	1.57	7.26	8.11	12.39	13.79	3.60	2.25	2.46
1308	39.36	35.60	27.59	25.24	20.78	13.39	5.12	.97	1.64	7.45	8.34	12.35	13.86	3.71	2.14	2.47
1309	39.72	36.20	28.03	25.43	20.84	13.43	5.08	.97	1.68	7.58	8.53	12.82	14.13	3.75	2.02	2.43
1310	39.38	35.55	28.27	24.85	20.89	13.20	5.15	.99	1.65	7.62	8.63	12.85	14.42	3.92	1.98	2.40
1311	38.67	34.91	27.74	24.51	20.67	13.16	4.96	.94	1.63	7.56	8.66	12.91	14.51	3.77	2.39	2.73
1312	40.14	36.41	29.51	24.67	21.77	13.17	5.20	.94	1.57	7.46	8.59	12.81	14.27	3.82	2.44	2.62
1313	40.55	36.67	29.64	24.70	22.02	13.15	5.30	1.00	1.68	7.71	9.14	13.16	15.00	4.19	3.03	2.63
1314	39.29	35.60	28.40	24.03	21.11	12.95	5.37	.98	1.70	7.73	9.37	13.17	15.34	4.16	2.93	2.74
1315	39.99	36.23	29.01	24.31	21.79	12.91	5.30	.95	1.68	7.52	8.93	12.79	14.69	3.96	2.56	2.38
1406	38.41	34.44	26.75	24.21	20.39	12.65	4.90	.96	1.67	7.74	9.14	13.00	15.03	4.07	2.85	2.62
1407	37.42	33.53	26.37	23.60	20.42	12.45	4.91	.99	1.57	7.23	8.18	12.84	14.15	3.53	2.12	2.38
1408	40.13	36.26	28.08	25.71	20.86	13.53	5.13	.98	1.58	7.13	8.06	12.66	13.86	3.55	2.29	2.46
1409	39.41	35.46	27.70	25.10	20.94	13.32	5.04	.99	1.68	7.65	8.60	12.77	14.47	3.92	2.05	2.41
1410	38.51	34.66	27.29	24.40	20.51	12.93	4.86	.96	1.67	7.51	8.52	13.00	14.37	3.83	2.16	2.47
1411	39.63	35.75	27.66	24.64	21.39	13.12	5.25	1.03	1.61	7.43	8.42	12.96	14.12	3.77	2.31	2.43
1412	39.95	36.12	29.71	24.69	21.42	13.10	5.20	1.00	1.72	7.70	8.76	13.01	14.59	3.96	2.64	2.71
1413	40.00	36.15	28.78	24.53	21.66	13.00	5.46	1.01	1.73	7.66	9.05	13.22	14.84	4.11	2.97	2.83
1414	39.83	36.12	28.75	24.36	21.63	12.93	5.21	.99	1.70	7.73	9.09	13.03	15.11	3.99	2.70	2.49
1415	38.99	35.41	28.52	23.69	21.43	12.51	5.07	.92	1.70	7.70	9.09	12.80	14.59	4.32	2.99	2.55
1506	35.27	31.68	24.69	22.78	19.20	11.66	4.78	1.00	1.69	7.54	8.87	12.77	14.49	3.91	3.24	2.79
1507	37.85	33.99	27.07	23.92	20.39	12.49	4.95	.98	1.47	6.81	7.63	12.44	13.13	2.97	1.84	1.93
1508	37.96	34.27	26.96	24.29	20.21	12.71	4.80	.92	1.56	7.00	8.29	12.99	14.04	3.56	2.31	2.34
1509	38.01	34.22	26.72	23.87	20.09	12.73	4.85	.96	1.55	7.19	8.14	12.70	13.81	3.57	2.20	2.25
1510	38.17	34.39	26.82	24.38	20.66	12.81	4.94	.97	1.54	7.25	8.24	12.90	13.93	3.55	2.28	2.56
1511	39.35	35.69	28.27	24.63	21.26	12.99	5.20	.97	1.60	7.44	8.26	13.15	14.11	3.71	2.22	2.44
1512	39.14	35.38	27.95	24.31	21.23	13.06	5.33	.99	1.70	7.68	8.71	13.07	14.66	3.84	2.51	2.47
1513	38.62	35.58	28.18	24.28	21.23	13.09	5.32	1.01	1.67	7.74	8.57	13.06	14.42	3.79	2.60	2.72
1514	39.23	35.16	28.31	24.31	21.37	12.92	5.24	.97	1.69	7.67	8.83	12.96	14.55	4.04	2.71	2.61
1515	38.57	35.02	28.73	23.94	21.38	12.79	5.28	1.03	1.70	7.62	8.83	13.03	14.41	4.01	3.03	2.78
1607	37.49	33.68	26.43	23.58	20.28	12.44	5.00	.95	1.69	7.55	8.61	12.96	14.42	3.99	2.71	2.87
1608	37.31	33.73	26.22	23.57	20.11	12.47	4.85	.95	1.58	7.28	8.07	12.65	13.62	3.54	2.21	2.30
1609	37.45	33.68	26.32	23.69	20.17	12.56	4.93	.96	1.59	7.17	8.03	12.81	13.59	3.59	2.31	2.34
1610	37.99	34.26	26.79	24.19	20.26	12.70	4.83	.97	1.55	7.26	8.09	12.96	13.62	3.54	2.23	2.34
1611	39.18	35.41	27.87	24.56	21.05	13.06	5.28	1.01	1.62	7.30	8.09	12.84	13.93	3.55	2.37	2.36
1612	39.35	35.61	28.09	24.39	21.05	13.10	5.17	1.03	1.69	7.65	8.63	13.14	14.44	3.82	2.49	2.61
1613	39.36	35.55	28.44	24.35	21.15	12.98	5.24	.97	1.71	7.65	8.74	13.20	14.48	3.81	2.42	2.41
1614	38.93	35.25	28.00	23.95	21.30	12.74	5.20	1.01	1.70	7.61	8.73	12.86	14.72	3.87	2.67	2.63
1708	37.66	33.82	26.41	23.80	20.50	12.54	4.81	.95	1.71	7.64	8.77	12.54	14.59	3.80	2.64	2.71
1710	37.77	33.98	26.54	23.81	19.99	12.63	4.86	.97	1.54	7.18	8.20	12.77	13.70	3.50	2.28	2.34
1711	38.15	34.26	27.01	24.11	20.58	12.77	4.95	.97	1.59	7.20	8.04	12.79	13.73	3.53	2.17	2.36
1712	39.39	35.61	28.04	24.53	21.14	12.94	5.13	.99	1.61	7.42	8.25	13.09	13.70	3.68	2.23	2.24
1811	37.08	33.42	26.08	23.47	20.08	12.43	4.86	1.00	1.67	7.64	8.71	13.10	14.56	3.89	2.35	2.46
1909	37.98	34.46	26.89	23.87	21.03	12.71	4.91	1.02	1.62	7.17	8.18	12.89	13.59	3.50	2.05	2.22
1910	37.21	33.45	26.45	23.53	19.84	12.60	4.72	.98	1.66	7.46	8.41	13.06	13.89	3.69	2.31	2.31
1911	36.59	33.08	25.86	23.17	19.74	12.50	4.69	.96	1.58	7.19	8.21	13.05	13.77	3.52	2.03	2.02
1914	37.55	34.19	26.69	23.22	20.24	12.38	4.99	.97	1.59	7.13	8.08	12.94	13.24	3.41	2.05	2.20
2010	37.21	33.59	26.25	23.55	20.23	12.47	4.78	.97	1.53	7.28	8.31	12.88	14.20	3.67	3.07	2.91
2014	36.88	33.64	26.52	22.95	19.92	12.23	5.11	.92	1.61	7.16	8.27	12.88	13.86	3.52	2.30	2.11
2015	36.68	33.44	26.89	21.88	19.60	12.00	4.89	.84	1.55	6.94	8.27	12.96	13.80	3.57	2.72	2.63
2110	37.07	33.49	26.07	23.54	20.21	12.63	4.80	.92	1.52	6.84	8.40	12.44	14.14	3.83	3.54	3.16

Appendix I, 2/5

QUAD.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
2111	37.36	33.53	26.20	23.58	20.27	12.52	4.71	.93	1.53	6.97	8.07	12.95	13.64	3.47	2.00	2.13
2112	37.18	33.54	26.13	23.81	20.20	12.59	4.77	.94	1.55	6.99	8.10	12.97	13.54	3.50	1.99	2.07
2113	37.10	33.43	25.74	24.02	19.76	12.88	4.65	.97	1.57	6.96	7.98	13.15	13.24	3.43	1.85	1.88
2115	36.61	33.38	26.72	22.02	19.51	12.14	4.96	.86	1.53	7.02	8.16	12.45	14.15	3.67	3.55	3.03
2211	36.95	33.43	26.22	23.77	20.23	12.58	4.67	.96	1.58	7.27	8.23	13.17	13.35	3.46	2.01	2.21
2213	37.31	33.59	25.97	23.27	20.08	12.69	4.68	.98	1.60	7.11	8.00	13.30	13.52	3.46	1.97	1.99
2312	36.08	32.57	25.45	23.01	19.60	12.25	4.68	.95	1.57	7.11	7.91	12.97	13.22	3.45	2.09	2.07
2313	37.14	33.48	26.03	23.83	19.86	12.56	4.80	.95	1.55	7.09	8.08	12.96	13.42	3.49	1.69	1.79
2512	36.43	32.97	25.67	23.56	19.76	12.37	4.75	.97	1.52	7.27	7.96	12.93	13.29	3.52	1.84	1.81
2513	36.82	33.14	25.81	23.83	19.66	12.43	4.51	1.00	1.50	7.24	8.04	12.46	13.21	3.37	2.23	2.11

Appendix I, 3/5

Table 2
Character means - Female

QUAD.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
0410	39.29	35.52	27.92	24.56	21.36	13.00	5.17	.94	1.60	7.61	8.94	13.00	14.92	4.10	2.91	2.85
0505	36.34	32.62	26.20	23.07	19.85	12.35	4.75	.87	1.55	7.30	8.06	11.89	13.53	3.47	2.71	2.57
0506	36.14	32.35	25.89	22.92	19.59	12.27	4.65	.83	1.54	7.26	8.02	11.89	13.61	3.41	2.75	2.59
0604	37.15	33.26	26.41	23.48	20.40	12.48	4.69	.88	1.55	7.43	8.20	12.05	13.91	3.63	2.58	2.73
0605	36.46	32.54	25.93	23.25	20.02	12.33	4.64	.84	1.50	7.30	8.15	11.91	13.70	3.45	2.70	2.76
0611	40.36	36.62	29.08	24.81	21.96	13.19	5.45	.97	1.72	7.92	9.12	13.22	15.17	4.09	2.67	2.44
0704	37.04	33.19	26.30	23.66	20.02	12.45	4.69	.89	1.55	7.35	8.21	11.64	13.57	3.46	2.19	2.28
0705	37.36	33.40	26.51	23.76	20.21	12.46	4.69	.88	1.49	7.40	8.33	11.81	13.97	3.59	2.44	2.65
0706	36.54	32.65	25.91	22.98	19.64	12.33	4.69	.88	1.54	7.29	7.97	11.68	13.84	3.42	2.69	2.88
0710	40.77	36.77	29.00	25.11	22.10	13.37	5.55	.95	1.65	7.90	9.06	13.22	15.22	3.98	2.93	2.74
0804	36.86	33.13	26.33	23.54	20.21	12.45	4.67	.87	1.51	7.26	8.16	11.84	13.71	3.54	2.49	2.53
0805	36.67	32.99	26.31	23.37	19.96	12.37	4.59	.91	1.52	7.28	8.19	11.82	13.81	3.43	2.69	2.79
0806	37.24	33.41	26.45	23.57	20.15	12.47	4.55	.92	1.54	7.27	8.21	11.86	13.95	3.63	2.61	2.72
0807	36.94	33.10	26.50	23.42	20.27	12.50	4.77	.92	1.53	7.42	8.31	11.64	13.93	3.62	2.77	2.94
0810	40.43	36.55	28.95	24.93	21.46	13.45	5.27	1.01	1.65	7.79	9.16	13.29	15.27	4.02	3.09	2.63
0813	40.40	36.37	28.91	24.90	21.99	13.18	5.42	1.02	1.71	7.86	9.15	13.40	15.18	4.05	3.23	2.99
0903	36.58	32.85	26.01	23.20	19.88	12.48	4.60	.91	1.52	7.12	8.07	11.68	13.58	3.54	2.64	2.68
0904	35.95	32.29	25.55	23.06	19.87	12.27	4.70	.89	1.44	6.99	7.93	12.20	13.35	3.32	2.51	2.45
0905	36.78	33.03	26.09	23.56	19.84	12.48	4.63	.86	1.46	7.13	8.09	11.68	13.76	3.59	2.51	2.71
0906	36.83	32.99	25.94	23.53	20.09	12.53	4.59	.86	1.42	7.08	8.01	11.80	13.82	3.55	2.69	2.92
0907	36.83	33.13	26.13	23.47	20.00	12.40	4.70	.95	1.48	7.05	8.20	11.60	13.70	3.52	2.80	3.05
0910	39.22	35.41	28.05	24.17	21.03	13.24	5.24	.99	1.60	7.64	8.66	12.96	14.50	3.86	2.98	2.58
0911	39.05	35.34	28.27	28.27	24.21	13.08	5.19	.99	1.64	7.71	8.79	12.93	14.60	3.98	3.15	2.84
0912	38.82	35.01	28.02	23.77	20.71	12.80	5.20	1.00	1.66	7.51	8.86	12.77	14.48	3.96	3.17	2.97
0913'	39.45	35.81	28.93	24.08	21.07	13.11	5.31	.90	1.63	7.60	9.03	12.88	14.64	4.04	3.11	2.93
0916	39.26	35.53	28.37	23.94	20.86	12.93	5.50	.97	1.69	7.57	9.01	13.08	14.61	4.03	3.05	2.84
1003	36.01	32.29	25.53	22.85	19.52	12.28	4.64	.93	1.49	6.69	7.82	11.79	13.40	3.39	2.79	2.66
1004	36.24	32.29	25.69	23.07	19.59	12.32	4.62	.92	1.50	7.00	7.88	11.59	13.47	3.43	2.71	2.99
1005	36.50	32.83	25.90	23.23	19.69	12.27	4.49	.88	1.45	7.01	8.04	11.56	13.64	3.52	2.61	3.04
1006	36.41	32.84	25.83	23.25	19.51	12.39	4.62	.89	1.49	7.01	7.98	11.51	13.38	3.39	2.68	2.95
1007	36.51	32.86	25.94	23.83	19.90	12.37	4.63	.94	1.45	7.02	8.03	11.66	13.57	3.52	2.69	2.95
1008	38.19	34.45	27.31	23.78	20.43	12.67	5.14	.93	1.55	7.38	8.53	12.65	14.32	3.70	2.82	2.83
1009	39.08	35.29	27.64	24.28	20.69	13.09	5.16	.92	1.59	7.69	8.75	12.75	14.50	3.81	2.90	2.74
1010	39.37	35.62	28.15	24.39	20.96	13.11	5.29	.99	1.66	7.70	8.77	12.95	14.50	3.83	2.71	2.66
1011	39.47	35.71	28.45	24.43	21.65	13.11	4.95	.91	1.63	7.60	9.04	13.22	14.75	4.05	2.95	2.80
1012	39.26	35.54	28.08	24.19	21.16	13.10	5.26	.95	1.66	7.64	8.90	12.93	14.40	3.95	2.91	2.60
1013	39.05	35.63	28.53	24.14	21.15	13.17	5.31	.96	1.66	7.56	9.07	13.03	14.33	4.01	3.12	3.17
1014	39.26	35.50	28.51	23.99	21.22	12.95	5.40	.97	1.68	7.59	8.93	13.04	14.46	4.00	3.11	2.79
1104	36.67	32.95	26.01	23.19	19.70	12.83	4.65	.91	1.50	7.08	8.10	11.37	13.58	3.55	2.74	3.00
1105	36.40	32.81	25.78	23.18	19.91	12.36	4.56	.90	1.43	7.03	8.05	11.54	13.68	3.51	2.69	2.99
1106	36.51	32.84	25.81	23.39	19.89	12.50	4.72	.91	1.49	7.10	7.90	11.62	13.56	3.52	2.81	3.03
1107	36.63	32.89	25.77	23.48	19.77	12.42	4.65	.91	1.49	7.07	7.97	11.63	13.50	3.56	2.59	2.89
1108	38.68	34.97	27.25	24.93	20.61	13.22	5.07	.96	1.66	7.61	8.27	12.20	13.97	3.69	1.92	2.38
1109	39.10	35.30	27.91	24.40	20.67	13.03	5.35	.96	1.60	7.63	8.54	12.94	14.36	3.90	2.61	2.64
1111	39.60	35.85	28.75	24.52	21.46	13.14	5.43	1.00	1.70	7.56	9.08	13.05	14.50	3.97	3.10	2.94
1113	39.70	36.05	28.82	24.43	21.54	13.12	5.17	.96	1.67	7.64	9.12	13.12	14.70	4.02	2.98	2.82
1114	39.67	35.80	28.02	24.40	21.28	12.91	5.35	1.01	1.69	7.79	8.94	12.67	14.97	4.17	2.95	2.79
1205	36.31	32.62	25.72	23.12	19.81	12.30	4.75	.91	1.47	6.85	7.99	11.56	13.67	3.47	2.83	3.03
1206	36.68	32.98	25.97	23.53	20.01	12.53	4.77	.91	1.51	7.11	8.04	11.81	13.55	3.60	2.71	2.90
1207	37.55	33.74	26.50	23.97	19.67	12.79	4.88	.93	1.61	7.21	8.24	11.90	13.75	3.56	2.63	2.74
1208	38.45	34.60	26.94	24.73	20.36	13.18	5.07	.90	1.62	7.46	8.29	12.47	13.85	3.65	2.07	2.46
1209	40.08	36.10	28.48	25.83	21.17	13.52	5.29	1.06	1.79	7.85	8.66	12.75	14.80	3.92	2.30	2.50
1210	38.36	34.70	27.72	23.92	21.00	13.00	5.05	.98	1.59	7.50	8.66	12.77	14.23	3.80	2.79	2.81
1211	38.37	34.52	27.47	24.23	20.52	13.13	5.09	.97	1.55	7.41	8.47	12.66	14.20	3.73	2.37	2.56

Appendix I, 4/5

QUAD.	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1212	39.84	36.03	28.68	24.62	21.57	13.15	5.26	1.00	1.70	7.66	8.95	13.05	14.89	4.02	2.84	2.72
1213	39.99	36.39	29.29	24.78	22.01	13.17	5.28	.97	1.72	7.73	9.25	13.28	14.93	4.12	2.88	2.65
1214	40.15	36.46	29.02	24.77	21.90	13.20	5.33	.99	1.69	7.76	9.18	13.10	15.03	4.11	2.96	2.77
1306	37.58	33.71	26.25	23.87	19.98	12.58	4.90	.96	1.57	7.29	8.06	12.48	13.66	3.49	2.33	2.49
1307	38.54	34.72	27.22	24.73	20.41	13.16	4.97	.97	1.65	7.45	8.39	12.61	13.99	3.72	2.17	2.49
1308	39.16	35.37	27.54	25.24	20.85	13.40	5.17	1.02	1.69	7.71	8.44	12.79	14.01	3.79	2.08	2.33
1309	39.42	35.47	27.61	25.27	20.69	13.37	5.12	1.01	1.72	7.67	8.50	12.75	14.41	3.79	2.12	2.45
1310	39.05	35.46	28.22	24.89	21.08	13.21	5.15	.97	1.61	7.56	8.72	12.86	14.30	3.74	2.41	2.63
1311	38.21	34.31	27.36	24.14	20.49	13.07	4.88	.95	1.56	7.37	8.45	12.63	14.12	3.77	2.48	2.06
1312	40.14	36.04	29.11	24.56	21.69	13.10	5.26	.95	1.66	7.66	9.05	13.32	14.80	4.05	3.03	2.84
1313	39.99	36.16	28.98	24.56	21.77	13.07	5.37	1.00	1.71	7.72	9.15	13.15	14.98	4.08	2.81	2.47
1314	39.61	35.89	28.69	24.04	21.26	12.93	5.38	.96	1.69	7.59	9.00	12.81	14.81	4.04	2.65	2.47
1315	39.90	36.10	28.65	24.38	21.93	12.90	5.22	.91	1.64	7.60	9.09	13.01	14.97	4.04	2.83	2.68
1406	37.85	34.05	26.46	23.90	20.26	12.50	4.91	.98	1.58	7.28	8.09	12.90	13.82	3.49	2.12	2.34
1407	37.09	33.20	26.06	23.69	20.19	12.45	4.83	.99	1.61	7.21	7.92	12.63	13.66	3.48	2.35	2.58
1408	39.51	35.62	27.66	25.29	20.85	13.39	5.20	1.03	1.70	7.56	8.47	12.76	14.37	3.72	1.94	2.31
1409	39.16	35.40	27.48	24.97	20.67	13.27	5.08	.99	1.69	7.60	8.44	12.81	14.14	3.76	2.06	2.43
1410	38.33	34.54	26.87	24.37	20.46	12.91	4.87	.99	1.61	7.43	8.15	12.87	13.86	3.72	2.30	2.44
1411	38.90	35.24	28.05	24.36	21.02	13.11	5.12	1.04	1.70	7.63	8.71	12.90	14.31	3.86	2.76	2.66
1412	39.39	35.88	28.31	24.64	21.44	13.09	5.29	1.00	1.72	7.78	8.89	13.27	14.65	4.06	2.91	2.72
1413	39.65	35.83	29.00	24.47	21.50	13.08	5.38	.98	1.66	7.77	9.01	13.01	14.70	4.06	2.89	2.58
1414	39.11	35.52	27.75	23.98	21.50	12.75	5.17	.96	1.65	7.63	8.93	13.19	14.48	4.01	3.18	2.68
1415	38.42	34.91	28.10	23.34	21.25	12.45	5.14	.95	1.73	7.49	8.75	12.71	14.23	3.90	3.27	2.70
1507	37.82	33.91	26.55	24.04	20.03	12.43	5.01	.96	1.62	7.09	8.05	12.99	13.92	3.53	2.25	2.16
1508	38.24	34.22	26.75	24.49	20.43	12.76	4.93	1.02	1.59	7.35	8.17	12.79	13.97	3.49	1.99	2.07
1509	37.48	33.62	26.30	23.69	20.05	12.68	4.90	.98	1.62	7.29	8.07	12.62	13.71	3.52	2.24	2.41
1510	38.07	34.33	26.76	24.12	20.51	12.76	4.91	.97	1.60	7.40	8.28	12.87	13.92	3.59	2.28	2.43
1511	38.83	35.14	27.73	24.43	21.01	13.01	5.27	1.00	1.69	7.67	8.53	12.97	14.46	3.74	2.56	2.67
1512	39.26	35.58	28.45	24.49	21.48	13.11	5.32	1.00	1.70	7.67	8.68	13.29	14.49	3.85	2.48	2.58
1513	39.30	35.75	28.41	24.43	21.31	13.16	5.40	1.03	1.74	7.72	8.85	13.01	14.54	3.94	2.67	2.50
1514	39.09	35.36	28.17	24.28	21.33	12.88	5.16	.98	1.70	7.63	8.72	12.97	14.58	4.05	2.87	2.75
1607	37.18	33.28	26.09	23.27	19.85	12.29	4.94	.98	1.57	7.13	7.97	12.54	13.62	3.49	2.22	2.20
1608	37.22	33.54	25.96	23.58	20.06	12.53	4.84	.99	1.56	7.23	7.98	12.77	13.54	3.57	2.31	2.33
1609	37.00	33.39	25.86	23.63	19.61	12.61	4.92	.95	1.56	7.19	7.83	12.75	13.27	3.46	2.29	2.24
1610	37.59	33.85	26.46	23.84	20.08	12.63	4.81	.98	1.61	7.35	8.01	12.78	13.76	3.48	2.40	2.37
1611	38.73	34.96	27.56	24.35	20.95	12.86	5.19	1.01	1.69	7.57	8.50	13.02	14.28	3.83	2.46	2.51
1612	38.79	35.17	27.58	24.38	20.91	12.97	5.14	1.03	1.69	7.69	8.54	12.95	14.21	3.74	2.35	2.31
1613	38.99	35.22	28.00	24.32	21.29	13.01	5.20	1.02	1.73	7.68	8.53	12.93	14.47	3.86	2.77	2.70
1614	39.13	35.51	28.22	24.16	21.62	12.74	5.26	1.00	1.71	7.80	8.79	12.92	14.51	3.79	2.60	2.43
1708	37.36	33.59	26.03	23.46	20.42	12.47	4.96	.97	1.60	7.26	7.97	13.16	13.79	3.56	2.20	2.31
1709	37.47	33.79	27.31	23.77	20.22	12.52	4.92	.92	1.49	7.28	8.18	12.77	13.66	3.47	2.55	2.46
1710	37.07	33.38	25.99	23.67	19.80	12.63	4.79	1.00	1.57	7.23	7.80	12.72	13.41	3.51	2.20	2.29
1711	37.81	34.01	26.73	24.07	20.73	12.60	4.95	1.00	1.61	7.36	8.16	13.12	13.91	3.61	2.35	2.48
1712	39.20	35.35	27.87	24.39	21.01	12.95	5.22	1.01	1.69	7.62	8.41	12.96	14.51	3.85	2.29	2.29
1811	36.66	32.99	25.73	23.28	19.83	12.38	4.74	.98	1.59	7.14	8.12	12.72	13.50	3.39	2.11	2.17
1909	37.40	33.74	26.44	23.73	20.56	12.66	4.96	1.03	1.65	7.44	8.24	13.04	13.65	3.60	2.21	2.19
1910	37.04	33.33	26.03	23.63	20.27	12.60	4.71	.98	1.60	7.19	7.95	13.13	13.60	3.46	2.12	2.09
2010	36.47	33.06	26.04	23.01	19.75	12.30	4.74	.99	1.61	7.15	7.97	12.91	13.52	3.39	2.08	1.96
2014	36.82	33.64	26.27	22.88	19.95	12.33	5.06	.88	1.54	6.98	8.25	12.91	13.92	3.66	2.86	2.98
2015	36.77	33.50	26.78	22.16	19.57	12.14	4.94	.87	1.54	6.92	8.35	12.64	14.01	3.76	3.36	3.05
2110	36.63	33.00	25.79	23.29	20.00	12.34	4.76	.93	1.57	7.19	7.85	13.03	13.81	3.46	2.03	2.26
2111	37.08	33.39	26.01	23.62	19.79	12.68	4.68	.91	1.54	7.02	7.90	12.61	13.57	3.32	2.10	1.89
2112	37.09	33.42	25.88	23.59	20.01	12.57	4.75	.93	1.56	6.94	8.17	12.95	13.35	3.41	1.93	2.18
2113	37.46	33.79	26.01	24.24	19.83	12.84	4.66	.98	1.59	7.02	7.99	13.09	13.29	3.44	1.92	1.69
2115	36.48	33.31	26.65	21.76	19.24	12.08	4.93	.89	1.54	6.97	8.19	12.45	14.03	3.64	3.50	2.92
2213	37.07	33.38	25.74	23.75	20.05	12.58	4.66	.96	1.57	6.97	7.92	13.41	13.38	3.41	2.05	2.15
2312	36.09	32.61	25.44	23.23	19.53	12.34	4.62	.97	1.59	7.14	8.01	13.01	12.99	3.46	2.09	1.94
2313	36.70	33.15	25.74	23.64	19.71	12.49	4.75	.98	1.59	7.12	7.91	12.84	13.26	3.39	1.71	1.71
2513	36.62	32.98	25.66	23.71	19.31	12.42	4.56	1.01	1.51	7.26	7.92	12.34	12.99	3.29	2.12	2.18

Appendix I, 5/5

Appendix II. Table 1 indicates the means of the environmental data. The environmental variables used are as follows: A, mean January temperature; B, mean July temperature; C, mean annual temperature; D, mean annual precipitation; E, latitude; F, longitude; G, altitude; H, evapotranspiration.

Table 1

Environmental Data
Means

QUAD.	A	B	C	D	E	F	G	H
0410	12.00	62.50	37.90	17.50	5220.0	11366.0	2280.0	-45.96
0505	30.12	69.00	50.54	11.03	4584.0	12011.0	1815.0	-73.07
0506	32.17	73.57	52.85	12.52	4585.0	11863.0	0853.0	-45.19
0604	30.97	64.95	47.38	9.55	4423.0	12096.0	2789.0	-64.15
0605	31.43	63.87	48.53	12.55	4466.0	12010.0	2522.0	-52.27
0611	15.04	71.90	44.10	12.23	4667.0	10598.0	2680.0	-47.95
0612	13.17	70.52	42.77	14.80	4657.0	10356.0	2547.0	-39.20
0704	30.80	68.10	52.50	11.18	4242.0	12032.0	4360.0	-56.03
0705	26.25	69.35	47.15	10.70	4335.0	11849.0	3791.0	-50.51
0706	28.94	75.74	51.86	10.22	4375.0	11700.0	2219.0	-55.30
0708	18.30	64.65	41.85	16.36	4381.0	11135.0	5085.0	-19.38
0710	19.05	71.60	45.80	13.59	4540.0	10732.0	2968.0	-46.56
0711	19.25	71.00	44.85	15.50	4553.0	10534.0	3323.0	-30.36
0713	12.80	71.05	42.85	17.36	4556.0	10166.0	2453.0	-33.96
0804	26.50	61.90	42.75	11.57	4192.0	11939.0	6058.0	-63.73
0805	27.80	70.70	48.40	9.34	4313.0	11697.0	3647.0	-52.40
0806	29.60	74.65	51.25	9.63	4283.0	11531.0	2878.0	-57.35
0807	25.30	70.75	47.35	10.07	4240.0	11299.0	4232.0	-55.43
0810	18.22	70.65	44.62	9.67	4346.0	10758.0	4497.0	-54.48
0813	18.80	74.50	46.75	15.59	4381.0	10144.0	2310.0	-36.73
0903	29.90	69.20	48.80	14.49	4023.0	12034.0	4148.0	-19.08
0904	29.43	73.53	50.17	06.37	4023.0	11801.0	4059.0	-77.96
0905	27.70	71.45	48.00	08.01	4046.0	11700.0	4416.0	-65.61
0906	23.00	69.15	44.90	10.18	4079.0	11503.0	5363.0	-62.31
0907	26.65	73.95	48.85	13.39	4091.0	11269.0	5170.0	-77.88
0910	21.45	69.85	44.15	10.94	4218.0	10652.0	6384.0	-41.27
0911	24.30	71.03	46.13	13.97	4250.0	10534.0	5095.0	-19.73
0912	24.20	72.90	47.50	15.43	4204.0	10299.0	3784.0	-39.91
0913	23.17	73.43	47.80	18.80	4235.0	10152.0	3343.0	-25.67
0914	21.55	74.55	47.85	19.72	4225.0	09802.0	1962.0	-25.66
0915	19.60	75.15	48.25	23.72	4193.0	09782.0	1760.0	-13.02
1003	32.13	70.03	49.97	08.05	3899.0	11934.0	4477.0	-56.75
1004	30.53	74.20	51.30	05.12	3981.0	11836.0	3947.0	-84.83
1005	27.80	69.40	46.70	12.20	3971.0	11618.0	6309.0	-48.72

Appendix II, 1/4

QUAD.	A	B	C	D	E	F	G	H
1311	30.77	70.80	50.37	16.31	3629.0	10396.0	6142.0	-33.54
1312	34.25	76.80	55.07	17.16	3656.0	10238.0	4263.0	-21.87
1313	34.20	80.02	57.00	19.33	3675.0	10092.0	2940.0	-39.00
1314	35.02	81.16	58.94	24.56	3677.0	09883.0	1691.0	-15.41
1315	34.05	82.35	58.85	27.38	3678.0	09811.0	1260.0	-13.46
1406	38.90	77.13	56.68	13.28	3438.0	11232.0	4391.0	-58.24
1407	39.90	78.03	57.67	16.65	3432.0	11159.0	4424.0	-59.23
1408	32.80	75.34	53.20	08.99	3475.0	10972.0	5495.0	-76.12
1409	28.73	71.07	49.20	10.81	3537.0	10807.0	6613.0	-65.61
1410	32.46	73.30	52.60	11.92	3466.0	10571.0	5937.0	-72.58
1411	37.22	77.42	57.02	14.60	3510.0	10377.0	4500.0	-39.18
1412	35.02	76.92	55.68	17.08	3559.0	10270.0	4395.0	-45.66
1413	35.05	79.00	57.05	21.22	3563.0	10127.0	3349.0	-33.80
1414	37.54	82.50	60.46	21.24	3518.9	09893.0	1718.0	-24.68
1415	37.60	82.94	61.02	29.88	3560.0	09774.0	1159.0	-08.78
1506	52.00	92.10	71.05	06.66	3294.0	11233.0	0884.0	-87.76
1507	45.60	86.08	65.10	13.58	3302.0	11074.0	2675.0	-55.08
1508	39.54	78.04	58.28	14.17	3335.0	10952.0	4654.0	-47.65
1509	38.27	77.10	57.77	08.97	3343.0	10712.0	5312.0	-70.43
1510	35.32	74.40	54.62	11.48	3386.0	10594.0	5752.0	-62.07
1511	38.03	78.40	58.43	12.66	3370.0	10395.0	4004.0	-50.38
1512	37.50	77.60	57.70	16.65	3419.0	10317.0	4145.0	-40.75
1513	39.03	81.67	60.63	20.18	3427.0	10064.0	2474.0	-35.12
1514	39.98	84.50	62.78	24.01	3430.0	09932.0	1444.0	-27.81
1515	41.43	84.70	63.80	31.47	3393.0	09810.0	0923.0	-20.66
1607	47.74	83.00	64.60	12.33	3186.0	01104.0	3228.0	-73.30
1608	45.13	80.15	62.18	11.85	3160.0	10977.0	4084.0	-72.18
1609	39.92	78.24	58.70	09.99	3215.0	10777.0	4686.0	-70.72
1610	40.35	80.30	60.10	07.82	3232.0	10628.0	3938.0	-77.29
1611	42.67	80.05	61.92	12.48	3230.0	10397.0	3669.0	-64.22
1612	41.25	80.35	61.40	15.22	3242.0	10232.0	3290.0	-49.72
1613	42.42	82.35	63.07	18.32	3255.0	10096.0	2535.0	-41.78
1614	44.00	84.50	64.80	24.73	3266.0	09911.0	1469.0	-38.30
1708	45.70	81.00	63.10	11.82	3121.0	10935.0	3937.0	-36.76
1709	41.70	80.60	62.10	07.36	3144.0	10629.0	3734.0	-45.20

Appendix II, 3/4

QUAD.	A	B	C	D	E	F	G	H
1006	25.97	71.42	47.25	08.66	3974.0	11457.0	5711.0	-62.73
1007	28.07	75.73	50.73	14.14	4017.0	11178.0	4577.0	-36.95
1008	17.45	71.30	45.90	08.07	4014.0	10992.0	5302.0	-70.06
1009	15.35	70.20	44.70	07.52	4022.0	10942.0	5135.0	-61.82
1010	17.30	66.60	42.40	13.78	4031.0	10733.0	6285.0	-41.27
1011	26.65	72.05	48.20	13.57	4030.0	10474.0	4827.0	-43.03
1012	26.07	72.83	48.60	15.15	4076.0	10347.0	4232.0	-36.89
1013	25.10	74.65	49.35	18.04	4116.0	10184.0	3322.0	-25.65
1014	22.86	75.11	49.24	21.77	4105.0	09568.0	2425.0	-10.16
1104	30.20	73.00	50.50	04.20	3804.0	11705.0	5426.0	-80.96
1105	30.60	70.70	49.10	12.34	3807.0	11535.0	6250.0	-71.85
1106	28.50	71.00	47.50	12.89	3900.0	11413.0	6825.0	-52.37
1107	28.90	78.00	52.20	12.06	3923.0	11220.0	5075.0	-67.50
1108	27.30	79.75	54.20	07.02	3868.0	10973.0	4018.0	-56.58
1109	24.20	76.27	51.13	07.89	3921.0	10913.0	4522.0	-70.95
1111	28.00	72.95	49.50	14.16	3976.0	10432.0	5044.0	-40.58
1112	27.05	73.35	49.50	15.69	3963.0	10306.0	4677.0	-38.04
1113	28.30	76.75	52.07	19.44	3992.0	10121.0	2992.0	-31.27
1114	26.70	77.92	52.60	24.37	3980.0	09926.0	2067.0	-22.61
1205	37.85	82.80	59.55	06.24	3671.0	11471.0	3282.0	-78.53
1206	33.37	77.83	54.87	08.87	3729.0	11357.0	4254.0	-75.00
1207	29.25	71.55	49.57	11.17	3736.0	11254.0	5820.0	-52.44
1208	28.80	75.47	51.75	10.28	3761.0	10930.0	5324.0	-76.42
1209	26.32	70.74	48.10	12.83	3789.0	10825.0	6390.0	-18.98
1210	22.76	64.56	42.88	08.28	3769.0	10596.0	7529.0	-58.73
1211	29.35	73.55	50.60	13.82	3833.0	10437.0	5392.0	-57.14
1212	29.73	77.57	53.47	13.58	3804.0	10297.0	3895.0	-55.00
1213	30.68	78.68	54.36	18.84	3802.0	10082.0	3042.0	-33.06
1214	29.26	79.08	54.34	24.41	3866.0	09910.0	2094.0	-22.04
1306	35.01	73.57	53.22	14.38	3550.0	11205.0	5371.0	-56.04
1307	32.70	74.33	52.77	10.51	3597.0	11187.0	5511.0	-76.47
1308	31.13	75.57	52.90	09.33	3561.0	10996.0	5595.0	-65.90
1309	28.75	74.72	51.32	08.61	3634.0	10781.0	5751.0	-65.91
1310	23.02	66.25	44.52	14.82	3638.0	10616.0	7501.0	-18.31

Appendix II, 2/4

QUAD.	A	B	C	D	E	F	G	H
1710	43.60	82.30	63.40	07.77	3148.0	10624.0	3918.0	-73.66
1711	36.20	55.10	42.73	06.45	3114.0	10390.0	2223.0	-48.86
1712	43.85	83.55	64.55	11.32	3141.0	10271.0	2731.0	-62.42
1811	47.95	82.30	66.35	12.00	2977.0	10381.0	3523.0	-78.49
1909	50.90	77.90	64.90	09.20	3148.0	10609.0	4740.0	-56.53
1910	51.10	78.40	65.80	09.72	2838.0	10604.0	4744.0	-69.12
1911	54.10	85.60	71.30	07.49	2700.0	10326.0	3149.0	-63.92
1914	52.05	85.80	70.20	24.52	2882.0	09890.0	0694.0	-57.07
2010	54.70	81.10	69.20	08.11	2685.0	10465.0	4226.0	-48.46
2014	56.87	89.73	74.40	19.36	2725.0	09889.0	0391.0	-47.79
2015	56.00	85.20	72.00	27.78	2745.0	09767.0	0121.0	23.30
2110	56.50	82.50	70.80	07.35	2604.0	10396.0	3967.0	-44.64
2111	58.30	83.80	72.50	06.50	2533.0	10326.0	3708.0	-54.30
2112	54.30	73.20	64.20	08.23	2526.0	10100.0	5178.0	-56.26
2113	59.70	83.10	72.70	25.79	2540.0	10019.0	1765.0	-48.26
2115	59.90	84.75	73.80	25.11	2584.0	09734.0	0029.0	-41.57
2211	54.20	70.50	64.10	06.30	2390.0	10280.0	6139.0	-32.99
2213	57.45	76.90	68.20	20.00	2375.0	10039.0	3961.0	-26.30
2312	50.00	58.10	55.80	12.32	2247.0	10234.0	8570.0	-26.00
2313	55.20	70.70	63.70	14.21	2209.0	10059.0	6158.0	-56.82
2512	57.75	72.95	64.90	29.25	1992.0	10118.0	6012.0	-03.61
2513	51.90	62.20	55.65	29.20	1921.0	09926.0	8174.0	-20.06

Appendix II, 4/4

Appendix III. Table 1 indicates the shortest minimally connected network between quadrats.

Table 1

The shortest connection network[1] between 122 male and 113 female quadrats.

(Male) Q[2]	(Male) J	Length[3]	(Male) Q	(Male) J	(Male) Length	(Female) Q	(Female) J	Length	(Female) Q	(Female) J	(Female) Length
0410	0711	.353	1710	1509	.303	0410	1011	.327	1306	1207	.476
0410	1113	.374	1708	1507	.323	1011	1113	.288	1306	0804	.493
1113	1012	.234	1910	2211	.327	1113	1312	.197	0804	0705	.286
1012	1212	.244	2112	2313	.343	1312	1214	.280	0705	0806	.284
1012	1014	.274	1811	1911	.343	1214	1213	.216	0806	0604	.241
1014	0913	.170	1911	2312	.303	1113	1315	.317	0804	0905	.300
0913	0914	.197	2313	2512	.350	1113	1412	.325	0905	1107	.258
0913	0912	.249	2313	2113	.368	1412	1413	.317	1107	1007	.186
1212	1315	.274	1211	1210	.385	1113	0913	.340	1007	1105	.147
1212	1213	.277	1306	1207	.414	0913	1014	.304	1105	1005	.159
1213	1312	.244	1211	1009	.416	1014	0914	.194	1107	1206	.220
1312	1112	.244	0912	0911	.435	1014	1012	.308	1007	0907	.223
1312	1313	.299	1514	1415	.468	1012	1010	.241	1206	1106	.226
1112	0612	.301	1213	0713	.480	1012	0910	.287	0907	1104	.236
1212	1412	.304	1207	1206	.484	0910	1009	.289	1007	0906	.251
1014	1514	.305	1206	1106	.286	1010	1109	.303	1104	1006	.255
1012	1114	.305	1106	0905	.153	1012	0911	.308	1006	1004	.180
1313	1214	.313	0905	1105	.196	1012	1514	.309	1107	0903	.258
1113	1011	.330	1106	1007	.197	0913	1013	.309	1004	1205	.270
1213	1111	.336	1105	1006	.203	1014	1414	.355	0903	0805	.293
1113	1613	.360	1006	1005	.186	1413	1314	.362	0805	0605	.181
1613	1511	.248	1106	1104	.204	1009	1210	.370	0605	0505	.282
1511	1712	.194	1105	1004	.206	1213	0611	.371	0505	0506	.203
1613	1512	.315	1004	1107	.181	0911	0912	.390	0605	0706	.292
1613	1314	.336	1004	1205	.211	1010	1310	.398	0604	0807	.317
1712	1109	.368	0905	0906	.241	1214	0710	.401	1004	1003	.324
1109	1310	.309	1107	0903	.279	1210	1008	.403	0804	0704	.365
1310	1409	.373	0903	0907	.276	1210	1311	.430	1003	0904	.393
1409	1308	.238	0907	0804	.302	1311	1211	.250	0912	1415	.515
1308	1309	.311	0804	0708	.293	1211	1307	.413	1609	1710	.659
1309	1408	.189	0708	0806	.246	1307	1208	.214	1710	2513	.541
1308	1208	.375	0708	0807	.249	1208	1108	.307	1710	1909	.560
1208	1307	.377	0806	0805	.252	1307	1409	.348	1909	1508	.497
1307	1108	.173	0805	0706	.247	1307	1410	.351	1315	1212	.677
1315	1414	.392	0706	0605	.221	1410	1510	.231	1212	1313	.305
1014	1013	.394	0605	0505	.258	1510	1711	.226	1212	1111	.382
0913	0910	.395	0505	0506	.257	1510	1406	.336	1212	1513	.388
1310	1211	.396	0807	0604	.269	1406	1610	.268	1513	1512	.280
1211	1311	.202	0806	0705	.307	1610	1509	.196	1512	1511	.355
1311	1410	.351	0705	0704	.186	1509	1306	.214	1511	1611	.259
1410	1510	.243	1205	1003	.329	1306	1407	.278	1611	1612	.257
1510	1711	.279	1003	0904	.416	1306	1608	.281	1612	1712	.248
1711	1610	.338	0904	2513	.466	1608	1609	.282	1511	1613	.270
1610	1406	.273	1214	0813	.508	1406	1708	.296	1613	1411	.217
1406	1508	.284	1210	1008	.546	1406	1507	.310	1212	1114	.395
1610	1710	.294	1407	2014	.589	1608	1607	.317	1212	0810	.457
1710	1609	.230	2014	1914	.577	1607	1811	.311	0810	0813	.476
1609	1608	.214	0813	0915	.700	1811	2010	.261	1612	1308	.498
1609	1607	.224	1914	2115	.768	1811	2110	.301	1308	1309	.249
1608	1407	.227	2115	2015	.327	1811	2112	.351	1309	1408	.234
1609	1708	.232	1511	1612	.905	2112	2213	.288	1309	1209	.573
1608	1811	.270	1612	1611	.241	2213	1910	.318	1206	2014	.713
1811	2010	.257	1611	1411	.300	2010	2312	.356	2014	2015	.532
2010	2110	.247	1411	1513	.322	2112	2111	.402	2015	2115	.317
2110	1910	.260	1513	1515	.418	1306	1709	.408			
1710	1306	.270	1515	1614	.408	2111	2313	.438			
2110	2112	.297	1411	1413	.503	1010	1614	.455			
2112	2111	.168	1413	0611	.409	2313	2113	.455			
			0611	0810	.340						
			1612	1909	.741						
			0611	1209	.806						
			2312	1506	.908						

---

[1] This network is sometimes referred to as a "Prim" network.

[2] Q = quadrats; J = quadrat with shortest connection to Q.

[3] Vector of length between Q and J.

Appendix IV. Tables 1-16 and 17-32 indicate the non-significant subsets derived from the STP analyses for males and females, respectively. Each table is continued on a second page.

Table 1

Greatest skull length - Male

```
QUAD.   MEAN                  NON-SIGNIFICANT SUBSETS

               123456789012345678901234567890123456789012345678901234567890

 1209  40.98   I
  813  40.87   II
 1313  40.55   III
  611  40.42   IIII
 1214  40.35   IIII
  810  40.35   IIIII
 1112  40.16   IIIIII
 1312  40.14   IIIIII
 1408  40.13   IIIIIII
 1212  40.10   IIIIIIII
  915  40.03   IIIIIIII
 1413  40.00   IIIIIIII
  713  39.99   IIIIIIIII
 1315  39.99   IIIIIIIIII
 1111  39.98   IIIIIIIIII
 1412  39.95   IIIIIIIIII
 1213  39.94   IIIIIIIIIII
  612  39.89   IIIIIIIIIIII
 1414  39.83   IIIIIIIIIIII
 1012  39.78   IIIIIIIIIIIII
 1113  39.74   IIIIIIIIIIIII
 1309  39.72   IIIIIIIIIIIII
 1011  39.68   IIIIIIIIIIIIII
  910  39.64   IIIIIIIIIIIIIII
 1411  39.63   IIIIIIIIIIIIIII
  914  39.61   IIIIIIIIIIIIIII
 1114  39.59   IIIIIIIIIIIIIII
  913  39.54   IIIIIIIIIIIIIIII
  309  39.45   IIIIIIIIIIIIIIIII
 1014  39.44   IIIIIIIIIIIIIIIII
 1409  39.41   IIIIIIIIIIIIIIIII
 1109  39.39   IIIIIIIIIIIIIIIII
 1712  39.39   IIIIIIIIIIIIIIIII
 1310  39.38   IIIIIIIIIIIIIIIIII
 1308  39.36    IIIIIIIIIIIIIIIII
 1613  39.36    IIIIIIIIIIIIIIIIII
 1612  39.35    IIIIIIIIIIIIIIIIII
 1511  39.35    IIIIIIIIIIIIIIIIIII
  711  39.34    IIIIIIIIIIIIIIIIIIII
 1314  39.29     IIIIIIIIIIIIIIIIIII
 1514  39.23      IIIIIIIIIIIIIIIIIII
 1611  39.18      IIIIIIIIIIIIIIIIIIII
 1512  39.14      IIIIIIIIIIIIIIIIIIIII
 1013  39.12      IIIIIIIIIIIIIIIIIIIIII
 1208  39.06       IIIIIIIIIIIIIIIIIIIIII
  912  39.05       IIIIIIIIIIIIIIIIIIIIIII
 1415  38.99       IIIIIIIIIIIIIIIIIIIIIIII
  911  38.99        IIIIIIIIIIIIIIIIIIIIIIII
 1009  38.93         IIIIIIIIIIIIIIIIIIIIIII
 1614  38.93         IIIIIIIIIIIIIIIIIIIIIIII
 1211  38.76          IIIIIIIIIIIIIIIIIIIIIII
 1311  38.67           IIIIIIIIIIIIIIIIIIIIIII
 1513  38.62            IIIIIIIIIIIIIIIIIIIIIII
 1307  38.61             IIIIIIIIIIIIIIIIIIIIIII
 1515  38.57              IIIIIIIIIIIIIIIIIIIIIII
 1410  38.51               IIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 1/64

```
1406  38.41                 IIIIIIIIIIIIIIIIIIIIIIII
1210  38.40                  IIIIIIIIIIIIIIIIIIIIIIII
1008  38.35                   IIIIIIIIIIIIIIIIIIIIIIII
1108  38.25                    IIIIIIIIIIIIIIIIIIIIIIII
1510  38.17                     IIIIIIIIIIIIIIIIIIIIIIII
1711  38.15                      IIIIIIIIIIIIIIIIIIIIIIII
1509  38.01                       IIIIIIIIIIIIIIIIIIIIIIII
1610  37.99                        IIIIIIIIIIIIIIIIIIIIIIII
1909  37.98                         IIIIIIIIIIIIIIIIIIIIIIII
1508  37.96                          IIIIIIIIIIIIIIIIIIIIIIII
1306  37.92                           IIIIIIIIIIIIIIIIIIIIIIII
1507  37.85                           IIIIIIIIIIIIIIIIIIIIIIIII
1710  37.77                            IIIIIIIIIIIIIIIIIIIIIIIII
1207  37.75                             IIIIIIIIIIIIIIIIIIIIIIIII
 806  37.70                              IIIIIIIIIIIIIIIIIIIIIIIII
1708  37.66                              IIIIIIIIIIIIIIIIIIIIIIIIII
 703  37.63                               IIIIIIIIIIIIIIIIIIIIIIIII
1914  37.55                                IIIIIIIIIIIIIIIIIIIIIIII
 805  37.51                                IIIIIIIIIIIIIIIIIIIIIIII
 704  37.51                                 IIIIIIIIIIIIIIIIIIIIIIII
1607  37.49                                 IIIIIIIIIIIIIIIIIIIIIIII
 705  37.47                                  IIIIIIIIIIIIIIIIIIIIIII
1609  37.45                                  IIIIIIIIIIIIIIIIIIIIIIII
1407  37.42                                   IIIIIIIIIIIIIIIIIIIIIII
2111  37.36                                   IIIIIIIIIIIIIIIIIIIIIII
1206  37.36                                    IIIIIIIIIIIIIIIIIIIIII
 708  37.34                                    IIIIIIIIIIIIIIIIIIIIIII
2213  37.31                                     IIIIIIIIIIIIIIIIIIIIII
1608  37.31                                     IIIIIIIIIIIIIIIIIIIIII
 603  37.27                                      IIIIIIIIIIIIIIIIIIIII
 906  37.25                                      IIIIIIIIIIIIIIIIIIIIII
1910  37.21                                       IIIIIIIIIIIIIIIIIIIII
2010  37.21                                        IIIIIIIIIIIIIIIIIIII
2112  37.18                                        IIIIIIIIIIIIIIIIIIII
2313  37.14                                        IIIIIIIIIIIIIIIIIIII
2113  37.10                                         IIIIIIIIIIIIIIIIIII
1811  37.08                                         IIIIIIIIIIIIIIIIIII
 804  37.07                                          IIIIIIIIIIIIIIIIII
2110  37.07                                          IIIIIIIIIIIIIIIIII
 604  37.00                                          IIIIIIIIIIIIIIIIII
 807  37.00                                          IIIIIIIIIIIIIIIIII
1007  36.99                                           IIIIIIIIIIIIIIIII
 905  36.97                                            IIIIIIIIIIIIIIII
2211  36.95                                            IIIIIIIIIIIIIIII
1106  36.94                                             IIIIIIIIIIIIIII
2014  36.88                                             IIIIIIIIIIIIIII
1105  36.85                                             IIIIIIIIIIIIIII
1104  36.84                                              IIIIIIIIIIIIII
2513  36.82                                              IIIIIIIIIIIIII
 907  36.82                                               IIIIIIIIIIIII
 504  36.77                                               IIIIIIIIIIIII
1005  36.72                                                IIIIIIIIIIII
2015  36.68                                                 IIIIIIIIIII
1004  36.62                                                  IIIIIIIIII
2115  36.61                                                   IIIIIIIII
1911  36.59                                                    IIIIIIII
1006  36.55                                                    IIIIIIII
1107  36.55                                                     IIIIIII
1205  36.53                                                     IIIIIII
 904  36.45                                                      IIIIII
2512  36.43                                                       IIIII
 505  36.34                                                        IIII
2312  36.08                                                         III
1003  35.93                                                          II
1506  35.27                                                           I

               123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 2/64

Table 2

Bullar-premaxillary length - Male

```
QUAD.    MEAN                          NON-SIGNIFICANT SUBSETS

                 123456789012345678901234567890123456789012345678901234567890

  1209  36.94    I
   813  36.83    II
  1313  36.67    III
  1214  36.59    IIII
   611  36.54    IIIII
  1112  36.42    IIIIII
  1312  36.41    IIIIII
   810  36.38    IIIIIII
   612  36.32    IIIIIIII
  1408  36.26    IIIIIIII
   713  36.25    IIIIIIIII
  1111  36.23    IIIIIIIII
   915  36.23    IIIIIIIII
  1315  36.23    IIIIIIIII
  1212  36.23    IIIIIIIIII
  1309  36.20    IIIIIIIIIII
  1213  36.19    IIIIIIIIIII
  1413  36.15    IIIIIIIIIIII
  1414  36.12    IIIIIIIIIIIII
  1412  36.12    IIIIIIIIIIIII
  1113  36.01    IIIIIIIIIIIII
  1114  35.89    IIIIIIIIIIIIII
  1011  35.87    IIIIIIIIIIIIII
   914  35.86    IIIIIIIIIIIIIII
   913  35.83    IIIIIIIIIIIIIII
   910  35.82    IIIIIIIIIIIIIII
  1012  35.80    IIIIIIIIIIIIIII
  1014  35.76    IIIIIIIIIIIIIIII
  1411  35.75    IIIIIIIIIIIIIIII
   309  35.71    IIIIIIIIIIIIIIII
  1511  35.69    IIIIIIIIIIIIIIII
  1612  35.61    IIIIIIIIIIIIIIIII
  1712  35.61    IIIIIIIIIIIIIIIII
  1314  35.60    IIIIIIIIIIIIIIIIII
  1308  35.60    IIIIIIIIIIIIIIIIII
  1513  35.58    IIIIIIIIIIIIIIIIIII
  1109  35.57    IIIIIIIIIIIIIIIIIII
   711  35.56     IIIIIIIIIIIIIIIIIII
  1613  35.55     IIIIIIIIIIIIIIIIIII
  1310  35.55     IIIIIIIIIIIIIIIIIIII
  1013  35.46     IIIIIIIIIIIIIIIIIIIII
  1409  35.46      IIIIIIIIIIIIIIIIIIII
  1415  35.41       IIIIIIIIIIIIIIIIIIII
  1611  35.41       IIIIIIIIIIIIIIIIIIIII
  1512  35.38       IIIIIIIIIIIIIIIIIIIIII
   912  35.27        IIIIIIIIIIIIIIIIIIIIII
  1614  35.25        IIIIIIIIIIIIIIIIIIIIII
   911  35.22        IIIIIIIIIIIIIIIIIIIIIII
  1514  35.16         IIIIIIIIIIIIIIIIIIIIII
  1208  35.15          IIIIIIIIIIIIIIIIIIIIII
  1009  35.14           IIIIIIIIIIIIIIIIIIIIII
  1515  35.02            IIIIIIIIIIIIIIIIIIIIII
  1211  34.99             IIIIIIIIIIIIIIIIIIIII
  1311  34.91              IIIIIIIIIIIIIIIIIIIII
  1307  34.84               IIIIIIIIIIIIIIIIIIIII
  1210  34.74                IIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 3/64

```
1410  34.66                 IIIIIIIIIIIIIIIIIIIII
1108  34.62                  IIIIIIIIIIIIIIIIIIIII
1008  34.48                   IIIIIIIIIIIIIIIIIIIII
1909  34.46                    IIIIIIIIIIIIIIIIIIIII
1406  34.44                     IIIIIIIIIIIIIIIIIIIII
1510  34.39                      IIIIIIIIIIIIIIIIIIIII
1508  34.27                       IIIIIIIIIIIIIIIIIIIII
1610  34.26                        IIIIIIIIIIIIIIIIIIIII
1711  34.26                         IIIIIIIIIIIIIIIIIIIII
1509  34.22                          IIIIIIIIIIIIIIIIIIIII
1914  34.19                          IIIIIIIIIIIIIIIIIIIIII
1306  34.06                           IIIIIIIIIIIIIIIIIIIII
1207  33.99                            IIIIIIIIIIIIIIIIIIIII
1507  33.99                             IIIIIIIIIIIIIIIIIIIII
1710  33.98                             IIIIIIIIIIIIIIIIIIIII
1708  33.82                              IIIIIIIIIIIIIIIIIIIII
 806  33.80                               IIIIIIIIIIIIIIIIIIII
1608  33.73                                IIIIIIIIIIIIIIIIIII
 805  33.71                                IIIIIIIIIIIIIIIIIIII
 703  33.69                                 IIIIIIIIIIIIIIIIIII
1607  33.68                                 IIIIIIIIIIIIIIIIIII
1609  33.68                                  IIIIIIIIIIIIIIIIII
2014  33.64                                  IIIIIIIIIIIIIIIIIII
 705  33.63                                  IIIIIIIIIIIIIIIIIII
 704  33.59                                   IIIIIIIIIIIIIIIIII
2010  33.59                                   IIIIIIIIIIIIIIIIII
2213  33.59                                    IIIIIIIIIIIIIIIIII
1206  33.56                                    IIIIIIIIIIIIIIIIII
2112  33.54                                    IIIIIIIIIIIIIIIIII
2111  33.53                                     IIIIIIIIIIIIIIIII
1407  33.53                                     IIIIIIIIIIIIIIIII
2110  33.49                                     IIIIIIIIIIIIIIIII
2313  33.48                                      IIIIIIIIIIIIIIII
 906  33.47                                      IIIIIIIIIIIIIIII
1910  33.45                                      IIIIIIIIIIIIIIII
2015  33.44                                       IIIIIIIIIIIIIII
2211  33.43                                       IIIIIIIIIIIIIII
2113  33.43                                       IIIIIIIIIIIIIII
1811  33.42                                        IIIIIIIIIIIIII
 603  33.40                                        IIIIIIIIIIIIII
2115  33.38                                        IIIIIIIIIIIIII
 708  33.38                                        IIIIIIIIIIIIII
 807  33.28                                         IIIIIIIIIIIII
1106  33.24                                         IIIIIIIIIIIII
1104  33.23                                          IIIIIIIIIIII
1007  33.23                                          IIIIIIIIIIII
 804  33.22                                          IIIIIIIIIIII
 905  33.20                                           IIIIIIIIIII
1105  33.18                                           IIIIIIIIIII
2513  33.14                                           IIIIIIIIIII
 907  33.09                                            IIIIIIIIII
1911  33.08                                            IIIIIIIIII
 604  33.02                                             IIIIIIIII
1005  33.02                                             IIIIIIIII
1004  33.00                                              IIIIIIII
2512  32.97                                              IIIIIIII
1006  32.96                                              IIIIIIII
 903  32.95                                               IIIIIII
1205  32.88                                               IIIIIII
 504  32.87                                               IIIIIII
1107  32.85                                                IIIIII
 505  32.76                                                 IIIII
2312  32.57                                                  IIII
1003  32.54                                                   III
 904  32.40                                                    II
1506  31.68                                                     I

               123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 4/64

Table 3

Basal length - Male

```
QUAD.   MEAN                NON-SIGNIFICANT SUBSETS

                  12345678901234567890123456789012345678901234567890

1412  29.71    I
1313  29.64    II
 813. 29.56    III
1312  29.51    IIII
1213  29.18    IIIII
1112  29.10    IIIIII
1214  29.04    IIIIII
1315  29.01    IIIIIII
 611  29.00    IIIIIIII
1212  28.96    IIIIIIIII
1114  28.96    IIIIIIIII
1209  28.93    IIIIIIIIII
 612  28.90    IIIIIIIIII
 713  28.89    IIIIIIIIIII
 915  28.85    IIIIIIIIIII
 914  28.85    IIIIIIIIIII
 810  28.83    IIIIIIIIIIII
1413  28.78    IIIIIIIIIIII
1111  28.77    IIIIIIIIIIIII
1414  28.75    IIIIIIIIIIIII
1515  28.73    IIIIIIIIIIIIII
 913  28.66    IIIIIIIIIIIIII
1113  28.60    IIIIIIIIIIIIII
1014  28.57    IIIIIIIIIIIIIII
1012  28.56    IIIIIIIIIIIIIII
1415  28.52    IIIIIIIIIIIIIIII
1011  28.51    IIIIIIIIIIIIIIIII
 910  28.47    IIIIIIIIIIIIIIIII
1613  28.44    IIIIIIIIIIIIIIIII
1314  28.40    IIIIIIIIIIIIIIIIII
 711  28.36    IIIIIIIIIIIIIIIIIII
1013  28.34    IIIIIIIIIIIIIIIIIII
1514  28.31    IIIIIIIIIIIIIIIIIII
1310  28.27     IIIIIIIIIIIIIIIIIII
1511  28.27     IIIIIIIIIIIIIIIIIIII
 912  28.27      IIIIIIIIIIIIIIIIIII
 309  28.22      IIIIIIIIIIIIIIIIIII
 911  28.21      IIIIIIIIIIIIIIIIIII
1513  28.18      IIIIIIIIIIIIIIIIIIII
1612  28.09      IIIIIIIIIIIIIIIIIIII
1408  28.08       IIIIIIIIIIIIIIIIIII
1712  28.04        IIIIIIIIIIIIIIIIIII
1309  28.03        IIIIIIIIIIIIIIIIIIII
1614  28.00        IIIIIIIIIIIIIIIIIIIII
1109  27.98         IIIIIIIIIIIIIIIIIIIII
1512  27.95         IIIIIIIIIIIIIIIIIIIIII
1211  27.92          IIIIIIIIIIIIIIIIIIIIII
1611  27.87           IIIIIIIIIIIIIIIIIIIIII
1210  27.83            IIIIIIIIIIIIIIIIIIIIII
1009  27.76             IIIIIIIIIIIIIIIIIIIIII
1311  27.74              IIIIIIIIIIIIIIIIIIIIII
1409  27.70               IIIIIIIIIIIIIIIIIIIIII
1411  27.66               IIIIIIIIIIIIIIIIIIIIIII
1308  27.59                IIIIIIIIIIIIIIIIIIIIIII
1008  27.41                 IIIIIIIIIIIIIIIIIIIIIII
1208  27.33                  IIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 5/64

```
1410  27.29                  IIIIIIIIIIIIIIIIIIIIIII
1108  27.15                   IIIIIIIIIIIIIIIIIIIIIII
1307  27.10                    IIIIIIIIIIIIIIIIIIIIIII
1507  27.07                     IIIIIIIIIIIIIIIIIIIIIII
1711  27.01                      IIIIIIIIIIIIIIIIIIIIIII
1508  26.96                       IIIIIIIIIIIIIIIIIIIIIII
2015  26.89                        IIIIIIIIIIIIIIIIIIIIIII
1909  26.89                         IIIIIIIIIIIIIIIIIIIIIII
 805  26.85                          IIIIIIIIIIIIIIIIIIIIIII
1510  26.82                           IIIIIIIIIIIIIIIIIIIIIII
 703  26.80                            IIIIIIIIIIIIIIIIIIIIII
1610  26.79                             IIIIIIIIIIIIIIIIIIIIII
 806  26.78                              IIIIIIIIIIIIIIIIIIIIII
1406  26.75                               IIIIIIIIIIIIIIIIIIIII
2115  26.72                               IIIIIIIIIIIIIIIIIIIII
1509  26.72                                IIIIIIIIIIIIIIIIIIII
 705  26.71                                IIIIIIIIIIIIIIIIIIIII
1914  26.69                                IIIIIIIIIIIIIIIIIIIII
 704  26.66                                 IIIIIIIIIIIIIIIIIIII
 708  26.64                                 IIIIIIIIIIIIIIIIIIIII
1207  26.64                                 IIIIIIIIIIIIIIIIIIIII
 603  26.57                                  IIIIIIIIIIIIIIIIIIII
1306  26.56                                  IIIIIIIIIIIIIIIIIIII
 807  26.56                                  IIIIIIIIIIIIIIIIIIII
1710  26.54                                   IIIIIIIIIIIIIIIIIII
1206  26.54                                   IIIIIIIIIIIIIIIIIII
2014  26.52                                   IIIIIIIIIIIIIIIIIII
1910  26.45                                   IIIIIIIIIIIIIIIIIII
1607  26.43                                   IIIIIIIIIIIIIIIIIII
1708  26.41                                    IIIIIIIIIIIIIIIIII
 604  26.39                                    IIIIIIIIIIIIIIIIII
 804  26.38                                    IIIIIIIIIIIIIIIIII
1407  26.37                                    IIIIIIIIIIIIIIIIII
1104  26.33                                     IIIIIIIIIIIIIIIII
1609  26.32                                     IIIIIIIIIIIIIIIII
 905  26.29                                      IIIIIIIIIIIIIIII
1007  26.27                                      IIIIIIIIIIIIIIII
 504  26.27                                      IIIIIIIIIIIIIIII
 906  26.27                                      IIIIIIIIIIIIIIII
2010  26.25                                       IIIIIIIIIIIIIII
2211  26.22                                       IIIIIIIIIIIIIII
1608  26.22                                       IIIIIIIIIIIIIII
2111  26.20                                       IIIIIIIIIIIIIII
1106  26.18                                        IIIIIIIIIIIIII
 907  26.17                                        IIIIIIIIIIIIII
 903  26.16                                        IIIIIIIIIIIIII
2112  26.13                                         IIIIIIIIIIIII
 505  26.12                                         IIIIIIIIIIIII
1005  26.11                                         IIIIIIIIIIIII
1105  26.09                                          IIIIIIIIIIII
1311  26.08                                          IIIIIIIIIIII
2110  26.07                                           IIIIIIIIIII
2313  26.03                                           IIIIIIIIIII
1205  26.01                                           IIIIIIIIIII
1006  25.99                                            IIIIIIIIII
2213  25.97                                             IIIIIIIII
1004  25.94                                             IIIIIIIII
1911  25.86                                              IIIIIIII
 904  25.85                                               IIIIIII
2513  25.81                                                IIIIII
1003  25.81                                                 IIIII
1107  25.80                                                  IIII
2113  25.74                                                   III
2512  25.67                                                   III
2312  25.45                                                    II
1506  24.69                                                     I

              123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 6/64

Table 4

Greatest skull width - Male

```
 QUAD.   MEAN                        NON-SIGNIFICANT SUBSETS

                 1234567890123456789012345678901234567890123456789012345678901234567890

  1209  25.95    I
  1408  25.71    II
  1309  25.43    III
  1308  25.24    IIII
  1409  25.10    IIIII
   813  25.00    IIIIII
   810  25.00    IIIIIII
   611  24.95    IIIIIIII
  1208  24.91    IIIIIIII
  1111  24.88    IIIIIIIII
  1310  24.85    IIIIIIIII
  1214  24.83    IIIIIIIIII
   713  24.83    IIIIIIIIIII
  1109  24.83    IIIIIIIIIII
  1112  24.76    IIIIIIIIIIII
  1108  24.73    IIIIIIIIIIIII
  1313  24.70    IIIIIIIIIIIII.
   309  24.69    IIIIIIIIIIIIII
  1307  24.69    IIIIIIIIIIIIIII
  1412  24.69    IIIIIIIIIIIIIIII
   612  24.67    IIIIIIIIIIIIIIII
  1312  24.67    IIIIIIIIIIIIIIII
  1411  24.64    IIIIIIIIIIIIIIIII
  1511  24.63     IIIIIIIIIIIIIIII
  1213  24.62     IIIIIIIIIIIIIIIII
  1212  24.58     IIIIIIIIIIIIIIIIII
  1611  24.56     IIIIIIIIIIIIIIIIIII
  1012  24.56     IIIIIIIIIIIIIIIIIIII
   915  24.54     IIIIIIIIIIIIIIIIIIIII
  1712  24.53     IIIIIIIIIIIIIIIIIIIII
  1413  24.53     IIIIIIIIIIIIIIIIIIIIII
  1311  24.51     IIIIIIIIIIIIIIIIIIIIIII
  1114  24.41     IIIIIIIIIIIIIIIIIIIIIIII
  1410  24.40      IIIIIIIIIIIIIIIIIIIIIII
  1612  24.39      IIIIIIIIIIIIIIIIIIIIIIII
  1113  24.39      IIIIIIIIIIIIIIIIIIIIIIII
  1211  24.39      IIIIIIIIIIIIIIIIIIIIIIIII
  1510  24.38      IIIIIIIIIIIIIIIIIIIIIIIIII
   910  24.38      IIIIIIIIIIIIIIIIIIIIIIIIIII
  1011  24.37       IIIIIIIIIIIIIIIIIIIIIIIIII
  1414  24.36       IIIIIIIIIIIIIIIIIIIIIIIIIII
  1613  24.35       IIIIIIIIIIIIIIIIIIIIIIIIIIII
  1315  24.31       IIIIIIIIIIIIIIIIIIIIIIIIIIIII
  1512  24.31       IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  1514  24.31       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  1508  24.29        IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  1513  24.28        IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
   711  24.23        IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
   912  24.23        IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
   913  24.22        IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  1014  24.22        IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  1406  24.21         IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  1610  24.19         IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  1009  24.19          IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  1207  24.15           IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
   914  24.12            IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 7/64

```
1711  24.11
1013  24.04
1314  24.03
2113  24.02
 911  23.98
1210  23.98
1306  23.97
1614  23.95
1515  23.94
1507  23.92
1008  23.91
1909  23.87
1509  23.87
 703  23.86
2313  23.83
2513  23.83
1710  23.81
2112  23.81
1708  23.80
 805  23.78
2211  23.77
 906  23.76
 704  23.75
1206  23.75
 306  23.71
1609  23.69
1415  23.69
 804  23.68
1106  23.64
 907  23.64
1007  23.62
1407  23.60
 708  23.59
1607  23.58
2111  23.58
 905  23.57
1608  23.57
2512  23.56
2010  23.55
2110  23.54
1910  23.53
1005  23.52
 603  23.50
 807  23.49
1811  23.47
1107  23.47
 705  23.47
1006  23.47
1104  23.43
1105  23.41
 604  23.41
 904  23.37
1205  23.37
1004  23.36
 504  23.32
2213  23.27
1914  23.22
 903  23.19
1911  23.17
1003  23.08
2312  23.01
 505  22.99
2014  22.95
1506  22.78
2115  22.02
2015  21.88
```

Appendix IV, 8/64

Table 5

Maxillary width - Male

```
QUAD.   MEAN                NON-SIGNIFICANT SUBSETS

               123456789012345678901234567890123456789012345678901234567890

1214   22.06   I
 813   22.06   II
1313.  22.02   III
 612   21.83   IIII
1315   21.79   IIIII
1312   21.77   IIIIII
1212   21.68   IIIIIII
 713   21.66   IIIIIIII
1413   21.66   IIIIIIII
1112   21.65   IIIIIIIII
 309   21.63   IIIIIIIIII
1414   21.63   IIIIIIIIIII
 611   21.61   IIIIIIIIIII
1011   21.60   IIIIIIIIIII
1213   21.57   IIIIIIIIIIII
1111   21.56   IIIIIIIIIIIII
 711   21.53   IIIIIIIIIIIII
1209   21.52   IIIIIIIIIIIIII
1012   21.50   IIIIIIIIIIIIII
 315   21.48   IIIIIIIIIIIIIII
 810   21.45   IIIIIIIIIIIIIII
1415   21.43   IIIIIIIIIIIIIII
1412   21.42   IIIIIIIIIIIIIIII
1411   21.39   IIIIIIIIIIIIIIII
1515   21.38   IIIIIIIIIIIIIIII
1114   21.37   IIIIIIIIIIIIIIIII
1514   21.37   IIIIIIIIIIIIIIIII
1113   21.34   IIIIIIIIIIIIIIIIII
1614   21.30   IIIIIIIIIIIIIIIIII
 912   21.28   IIIIIIIIIIIIIIIIII
 910   21.27   IIIIIIIIIIIIIIIIIII
1511   21.26   IIIIIIIIIIIIIIIIIII
1512   21.23   IIIIIIIIIIIIIIIIIIII
1513   21.23   IIIIIIIIIIIIIIIIIIIII
 913   21.18   IIIIIIIIIIIIIIIIIIIII
1613   21.15   IIIIIIIIIIIIIIIIIIIIII
1014   21.15   IIIIIIIIIIIIIIIIIIIIIII
1712   21.14   IIIIIIIIIIIIIIIIIIIIIIII
 914   21.13   IIIIIIIIIIIIIIIIIIIIIIIII
1314   21.11    IIIIIIIIIIIIIIIIIIIIIIIII
1611   21.05    IIIIIIIIIIIIIIIIIIIIIIIIII
1612   21.05    IIIIIIIIIIIIIIIIIIIIIIIIIII
1013   21.03    IIIIIIIIIIIIIIIIIIIIIIIIIIII
1909   21.03     IIIIIIIIIIIIIIIIIIIIIIIIIIII
1210   20.98      IIIIIIIIIIIIIIIIIIIIIIIIIIII
1409   20.94      IIIIIIIIIIIIIIIIIIIIIIIIIIIII
1310   20.89       IIIIIIIIIIIIIIIIIIIIIIIIIIIII
1408   20.86        IIIIIIIIIIIIIIIIIIIIIIIIIIIII
1309   20.84         IIIIIIIIIIIIIIIIIIIIIIIIIIIII
1109   20.83          IIIIIIIIIIIIIIIIIIIIIIIIIIIII
1308   20.78           IIIIIIIIIIIIIIIIIIIIIIIIIIIII
1211   20.77            IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 911   20.74             IIIIIIIIIIIIIIIIIIIIIIIIIIIII
1311   20.67              IIIIIIIIIIIIIIIIIIIIIIIIIIIII
1510   20.66               IIIIIIIIIIIIIIIIIIIIIIIIIIIII
1008   20.60                IIIIIIIIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 9/64

```
1711  20.58                  IIIIIIIIIIIIIIIIIIIIIIIIIIIII
1410  20.51                   IIIIIIIIIIIIIIIIIIIIIIIIIIIII
1708  20.50                   IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1208  20.50                   IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1407  20.42                     IIIIIIIIIIIIIIIIIIIIIIIIIIIII
1406  20.39                      IIIIIIIIIIIIIIIIIIIIIIIIIIII
1507  20.39                       IIIIIIIIIIIIIIIIIIIIIIIIIIII
 703  20.38                       IIIIIIIIIIIIIIIIIIIIIIIIIIII
1108  20.34                        IIIIIIIIIIIIIIIIIIIIIIIIIII
1007  20.33                         IIIIIIIIIIIIIIIIIIIIIIIIII
1009  20.33                          IIIIIIIIIIIIIIIIIIIIIIIIII
 807  20.31                           IIIIIIIIIIIIIIIIIIIIIIIII
 708  20.30                            IIIIIIIIIIIIIIIIIIIIIIIII
1607  20.28                            IIIIIIIIIIIIIIIIIIIIIIIII
 603  20.27                             IIIIIIIIIIIIIIIIIIIIIIIII
2111  20.27                              IIIIIIIIIIIIIIIIIIIIIIII
 805  20.27                              IIIIIIIIIIIIIIIIIIIIIIII
 604  20.27                              IIIIIIIIIIIIIIIIIIIIIIII
1610  20.26                               IIIIIIIIIIIIIIIIIIIIIII
1307  20.26                               IIIIIIIIIIIIIIIIIIIIIII
1914  20.24                               IIIIIIIIIIIIIIIIIIIIIII
 806  20.24                                IIIIIIIIIIIIIIIIIIIIII
2211  20.23                                IIIIIIIIIIIIIIIIIIIIII
2010  20.23                                IIIIIIIIIIIIIIIIIIIIII
 705  20.22                                 IIIIIIIIIIIIIIIIIIIII
2110  20.21                                 IIIIIIIIIIIIIIIIIIIII
1508  20.21                                  IIIIIIIIIIIIIIIIIIII
2112  20.20                                  IIIIIIIIIIIIIIIIIIII
1609  20.17                                  IIIIIIIIIIIIIIIIIIII
1206  20.17                                   IIIIIIIIIIIIIIIIIII
 704  20.15                                   IIIIIIIIIIIIIIIIIII
1608  20.11                                   IIIIIIIIIIIIIIIIIII
1509  20.09                                    IIIIIIIIIIIIIIIIII
1811  20.08                                    IIIIIIIIIIIIIIIIII
2213  20.08                                     IIIIIIIIIIIIIIIII
1306  20.08                                     IIIIIIIIIIIIIIIII
1106  20.06                                     IIIIIIIIIIIIIIIII
 906  20.05                                      IIIIIIIIIIIIIIII
 903  20.05                                      IIIIIIIIIIIIIIII
 804  20.03                                       IIIIIIIIIIIIIII
 905  20.03                                       IIIIIIIIIIIIIII
 504  20.00                                        IIIIIIIIIIIIII
1710  19.99                                        IIIIIIIIIIIIII
 907  19.95                                        IIIIIIIIIIIIII
1207  19.95                                         IIIIIIIIIIIII
2014  19.92                                         IIIIIIIIIIIII
 505  19.89                                          IIIIIIIIIIII
 904  19.88                                          IIIIIIIIIIII
1105  19.87                                          IIIIIIIIIIII
2313  19.86                                           IIIIIIIIIII
1107  19.85                                            IIIIIIIIII
1910  19.84                                            IIIIIIIIII
1006  19.84                                             IIIIIIIII
1004  19.83                                             IIIIIIIII
1005  19.82                                              IIIIIIII
1104  19.81                                              IIIIIIII
2512  19.76                                              IIIIIIII
2113  19.76                                               IIIIIII
1911  19.74                                               IIIIIII
1003  19.66                                                IIIIII
2513  19.66                                                IIIIII
2312  19.60                                                 IIIII
2015  19.60                                                  IIII
2115  19.51                                                   III
1205  19.44                                                    II
1506  19.20                                                     I

               123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 10/64

Table 6

Greatest skull depth - Male

```
QUAD•   MEAN                      NON=SIGNIFICANT SUBSETS

                123456789012345678901234567890123456789012345678901234567890

 1209   13•71   I
 1408   13•53   II
 1309   13•43   III
  910   13•41   IIII
 1308   13•39   IIIII
  810   13•36   IIIIII
 1111   13•35   IIIIIII
 1409   13•32   IIIIIIII
 1208   13•31   IIIIIIIII
 1112   13•28   IIIIIIIIII
 1114   13•27   IIIIIIIIIII
  813   13•27   IIIIIIIIIII
  611   13•24   IIIIIIIIIII
 1214   13•22   IIIIIIIIIII
  911   13•20   IIIIIIIIIIII
 1310   13•20   IIIIIIIIIIII
 1108   13•19   IIIIIIIIIIIII
  915   13•18   IIIIIIIIIIIII
 1213   13•17   IIIIIIIIIIIII
 1312   13•17   IIIIIIIIIIIII
 1012   13•16   IIIIIIIIIIIII
 1311   13•16   IIIIIIIIIIIIII
 1313   13•15   IIIIIIIIIIIIIII
 1211   13•13   IIIIIIIIIIIIIIII
 1013   13•12   IIIIIIIIIIIIIIII
 1411   13•12   IIIIIIIIIIIIIIII
  913   13•11    IIIIIIIIIIIIIII
 1212   13•10    IIIIIIIIIIIIIIII
 1014   13•10    IIIIIIIIIIIIIIII
 1612   13•10    IIIIIIIIIIIIIIII
 1412   13•10    IIIIIIIIIIIIIIII
 1307   13•10    IIIIIIIIIIIIIIII
 1513   13•09    IIIIIIIIIIIIIIIII
 1109   13•09    IIIIIIIIIIIIIIIIII
 1011   13•08    IIIIIIIIIIIIIIIIII
  612   13•07    IIIIIIIIIIIIIIIIIII
 1512   13•06    IIIIIIIIIIIIIIIIIII
 1611   13•06     IIIIIIIIIIIIIIIIIII
 1009   13•06     IIIIIIIIIIIIIIIIIIII
 1113   13•05     IIIIIIIIIIIIIIIIIIII
  713   13•05     IIIIIIIIIIIIIIIIIIIII
 1210   13•04     IIIIIIIIIIIIIIIIIIIII
  914   13•04     IIIIIIIIIIIIIIIIIIIIII
 1413   13•00      IIIIIIIIIIIIIIIIIIIIII
 1511   12•99      IIIIIIIIIIIIIIIIIIIIIII
 1613   12•98       IIIIIIIIIIIIIIIIIIIIIII
 1314   12•95        IIIIIIIIIIIIIIIIIIIIIII
 1712   12•94        IIIIIIIIIIIIIIIIIIIIIIII
  912   12•93        IIIIIIIIIIIIIIIIIIIIIIIII
 1414   12•93        IIIIIIIIIIIIIIIIIIIIIIIIII
 1410   12•93         IIIIIIIIIIIIIIIIIIIIIIIIII
  309   12•92          IIIIIIIIIIIIIIIIIIIIIIIIII
 1514   12•92           IIIIIIIIIIIIIIIIIIIIIIIIII
 1315   12•91           IIIIIIIIIIIIIIIIIIIIIIIIIII
 2113   12•88            IIIIIIIIIIIIIIIIIIIIIIIIIII
 1207   12•87             IIIIIIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 11/64

```
1510  12.81              IIIIIIIIIIIIIIIIIIIIIIIIIII
1515  12.79               IIIIIIIIIIIIIIIIIIIIIIIIIII
1711  12.77                IIIIIIIIIIIIIIIIIIIIIIIIIII
 711  12.76                 IIIIIIIIIIIIIIIIIIIIIIIIIII
1614  12.74                  IIIIIIIIIIIIIIIIIIIIIIIIIII
1509  12.73                   IIIIIIIIIIIIIIIIIIIIIIIIII
1909  12.71                    IIIIIIIIIIIIIIIIIIIIIIIIII
1508  12.71                     IIIIIIIIIIIIIIIIIIIIIIIIII
1610  12.70                      IIIIIIIIIIIIIIIIIIIIIIIIII
2213  12.69                       IIIIIIIIIIIIIIIIIIIIIIIII
1306  12.68                        IIIIIIIIIIIIIIIIIIIIIIIII
1008  12.65                         IIIIIIIIIIIIIIIIIIIIIIII
1406  12.65                          IIIIIIIIIIIIIIIIIIIIIIII
 708  12.64                          IIIIIIIIIIIIIIIIIIIIIIIII
2110  12.63                           IIIIIIIIIIIIIIIIIIIIIIII
1710  12.63                           IIIIIIIIIIIIIIIIIIIIIIII
 906  12.63                            IIIIIIIIIIIIIIIIIIIIIII
1206  12.63                             IIIIIIIIIIIIIIIIIIIIIII
1910  12.60                              IIIIIIIIIIIIIIIIIIIIII
2112  12.59                              IIIIIIIIIIIIIIIIIIIIII
2211  12.58                              IIIIIIIIIIIIIIIIIIIIII
2313  12.56                               IIIIIIIIIIIIIIIIIIIII
1609  12.56                                IIIIIIIIIIIIIIIIIIIII
 804  12.56                                IIIIIIIIIIIIIIIIIIIII
 703  12.55                                 IIIIIIIIIIIIIIIIIIII
 905  12.54                                  IIIIIIIIIIIIIIIIIII
1708  12.54                                   IIIIIIIIIIIIIIIIII
2111  12.52                                   IIIIIIIIIIIIIIIIII
1106  12.52                                    IIIIIIIIIIIIIIIII
1415  12.51                                     IIIIIIIIIIIIIIII
 806  12.51                                     IIIIIIIIIIIIIIII
 807  12.51                                     IIIIIIIIIIIIIIII
1911  12.50                                     IIIIIIIIIIIIIIII
1507  12.49                                     IIIIIIIIIIIIIIII
 704  12.49                                      IIIIIIIIIIIIIII
 603  12.49                                      IIIIIIIIIIIIIII
1105  12.48                                      IIIIIIIIIIIIIIII
1007  12.48                                       IIIIIIIIIIIIIII
1608  12.47                                       IIIIIIIIIIIIIII
2010  12.47                                        IIIIIIIIIIIIII
 805  12.47                                        IIIIIIIIIIIIII
1006  12.46                                        IIIIIIIIIIIIII
1104  12.45                                        IIIIIIIIIIIIII
1407  12.45                                         IIIIIIIIIIIII
 705  12.44                                         IIIIIIIIIIIII
1107  12.44                                         IIIIIIIIIIIIII
1607  12.44                                          IIIIIIIIIIIII
1811  12.43                                          IIIIIIIIIIIII
2513  12.43                                          IIIIIIIIIIIII
 907  12.43                                           IIIIIIIIIIII
1005  12.41                                           IIIIIIIIIIII
1205  12.41                                           IIIIIIIIIIII
 904  12.40                                            IIIIIIIIIII
1004  12.39                                             IIIIIIIIII
1914  12.38                                             IIIIIIIIII
2512  12.37                                             IIIIIIIIII
 504  12.37                                              IIIIIIIII
 903  12.36                                              IIIIIIIII
 604  12.31                                               IIIIIIII
1003  12.29                                                IIIIIII
2312  12.25                                                 IIIIII
2014  12.23                                                  IIIII
 505  12.20                                                   IIII
2115  12.14                                                    III
2015  12.00                                                     II
1506  11.66                                                      I

              123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 12/64

Table 7

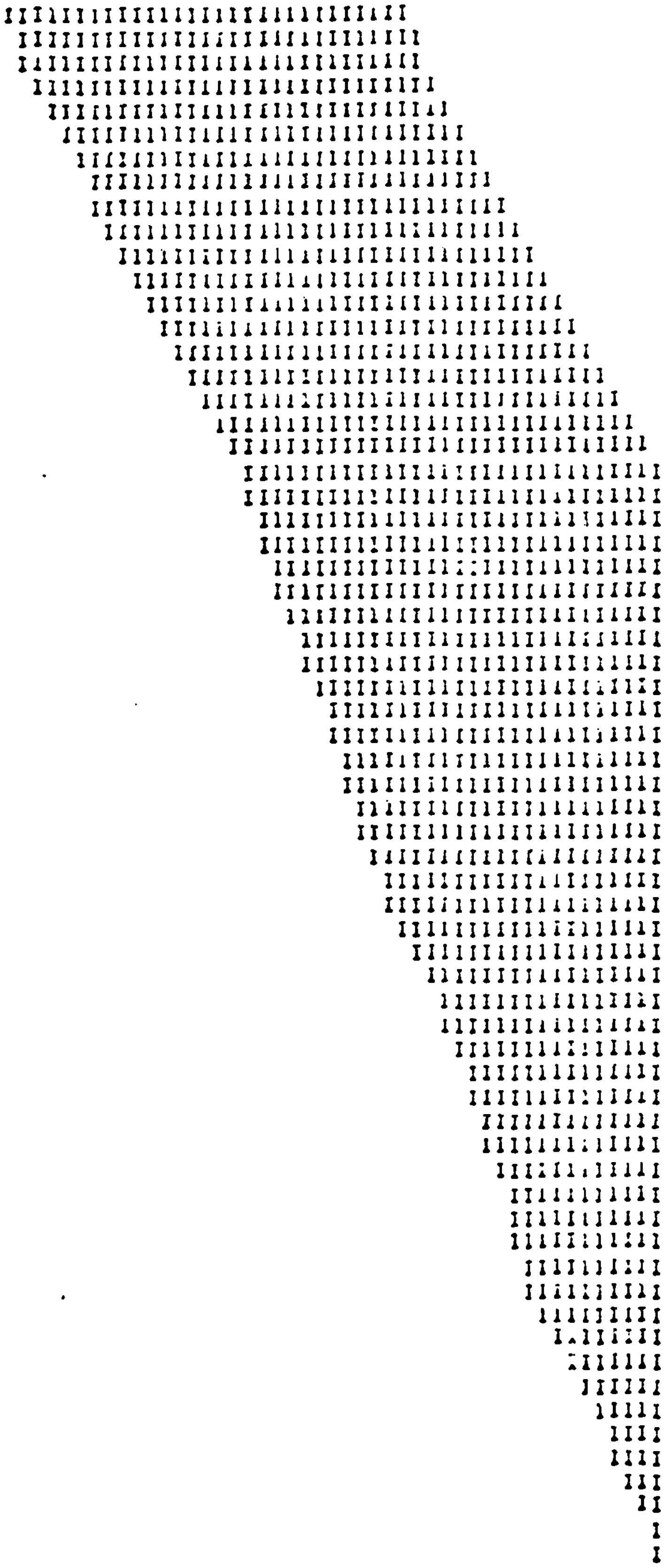
Intermaxillary width - Male

```
QUAD.   MEAN                    NON-SIGNIFICANT SUBSETS

                12345678901234567890123456789012345678901234567890

  915   5.60    I
  713   5.52    II
 1111   5.50    III
 1413   5.46    III
  914   5.45    IIII
  611   5.44    IIIII
 1314   5.37    IIIIII
  813   5.36    IIIIIII
 1214   5.36    IIIIIII
 1014   5.34    IIIIIIII
 1109   5.33    IIIIIIIII
 1114   5.33    IIIIIIIII
  913   5.33    IIIIIIIII
 1512   5.33    IIIIIIIIII
 1513   5.32    IIIIIIIIIII
 1213   5.32    IIIIIIIIIIII
 1313   5.30    IIIIIIIIIIIII
 1315   5.30    IIIIIIIIIIIII
 1611   5.28    IIIIIIIIIIIIII
 1515   5.28    IIIIIIIIIIIIII
 1013   5.27    IIIIIIIIIIIIIII
 1411   5.25    IIIIIIIIIIIIIII
  912   5.25    IIIIIIIIIIIIIII
  810   5.25    IIIIIIIIIIIIIII
 1514   5.24    IIIIIIIIIIIIIIII
 1012   5.24    IIIIIIIIIIIIIIII
 1112   5.24    IIIIIIIIIIIIIIIII
 1613   5.24    IIIIIIIIIIIIIIIII
 1209   5.23    IIIIIIIIIIIIIIIIII
 1009   5.23    IIIIIIIIIIIIIIIIII
  910   5.22    IIIIIIIIIIIIIIIIIII
  612   5.21    IIIIIIIIIIIIIIIIIII
  309   5.21    IIIIIIIIIIIIIIIIIIII
 1414   5.21    IIIIIIIIIIIIIIIIIIII
 1511   5.20    IIIIIIIIIIIIIIIIIIIII
 1614   5.20    IIIIIIIIIIIIIIIIIIIIII
 1412   5.20    IIIIIIIIIIIIIIIIIIIIII
 1312   5.20    IIIIIIIIIIIIIIIIIIIIIII
 1612   5.17    IIIIIIIIIIIIIIIIIIIIIIII
  711   5.17    IIIIIIIIIIIIIIIIIIIIIIIII
 1212   5.17    IIIIIIIIIIIIIIIIIIIIIIIIII
 1310   5.15    IIIIIIIIIIIIIIIIIIIIIIIIIII
 1208   5.14     IIIIIIIIIIIIIIIIIIIIIIIIIII
 1408   5.13     IIIIIIIIIIIIIIIIIIIIIIIIIIII
 1712   5.13      IIIIIIIIIIIIIIIIIIIIIIIIIII
 1308   5.12       IIIIIIIIIIIIIIIIIIIIIIIIIII
 2014   5.11       IIIIIIIIIIIIIIIIIIIIIIIIIIII
 1113   5.11       IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1008   5.10        IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1011   5.09        IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1309   5.08         IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1415   5.07          IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1409   5.04           IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  911   5.02            IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1211   5.02             IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1210   5.02              IIIIIIIIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 13/64



```
1607   5.00
1914   4.99
1108   4.99
1307   4.97
1311   4.96
2115   4.96
1207   4.96
1711   4.95
1507   4.95
1510   4.94
1609   4.93
1306   4.92
1407   4.91
1909.  4.91
1406   4.90
2015   4.89
1811   4.86
1710   4.86
1410   4.86
1608   4.85
1509   4.85
1610   4.83
1708   4.81
2313   4.80
2110   4.80
1508   4.80
1206   4.78
1506   4.78
2010   4.78
2112   4.77
 504   4.76
1007   4.76
2512   4.75
1205   4.75
 807   4.74
 603   4.73
 907   4.73
 705   4.73
1910   4.72
2111   4.71
 505   4.71
 604   4.69
 806   4.69
 704   4.69
1911   4.69
 805   4.68
 703   4.68
2213   4.68
1003   4.68
2312   4.68
 708   4.67
2211   4.67
1104   4.65
2113   4.65
1106   4.64
1107   4.61
 904   4.61
1004   4.61
1105   4.60
 903   4.59
 804   4.58
 906   4.58
1006   4.57
 905   4.56
2513   4.51
1005   4.47

              123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 14/64

Table 8

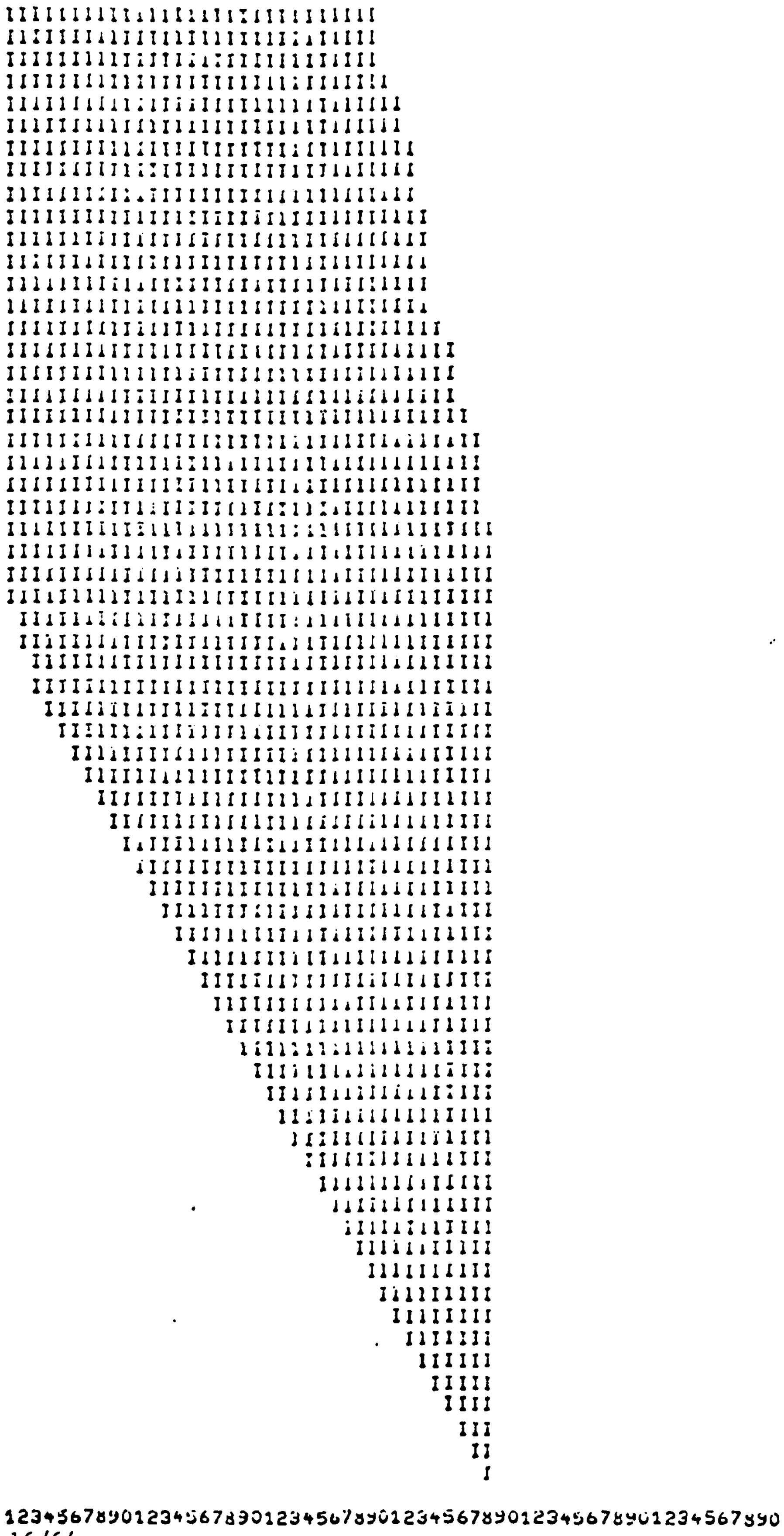
Third molar width - Male

```
QUAD.    MEAN                    NON-SIGNIFICANT SUBSETS

                  123456789012345678901234567890123456789012345678901234567890

 1411    1.03     I
 1612    1.03     II
 1515    1.03     III
 1909    1.02     IIII
 1209    1.01     IIIII
  810    1.01     IIIII
 1611    1.01     IIIIII
 1614    1.01     IIIIIII
  611    1.01     IIIIIII
 1413    1.01     IIIIIIII
 1513    1.01     IIIIIIIII
 2513    1.00     IIIIIIIII
 1112    1.00     IIIIIIIII
  910    1.00     IIIIIIIIII
  915    1.00     IIIIIIIIII
 1506    1.00     IIIIIIIIII
 1412    1.00     IIIIIIIIII
 1313    1.00     IIIIIIIIII
 1811    1.00     IIIIIIIIIII
 1310     .99     IIIIIIIIIIII
 1213     .99     IIIIIIIIIIII
 1012     .99     IIIIIIIIIIIII
 1512     .99     IIIIIIIIIIIIII
  713     .99     IIIIIIIIIIIIII
 1414     .99     IIIIIIIIIIIIII
 1712     .99     IIIIIIIIIIIIIII
 1407     .99     IIIIIIIIIIIIIIII
 1113     .99     IIIIIIIIIIIIIIIII
 1409     .99     IIIIIIIIIIIIIIIIII
  612     .99     IIIIIIIIIIIIIIIIII
 1114     .99     IIIIIIIIIIIIIIIIIII
 1212     .99     IIIIIIIIIIIIIIIIIII
 1507     .98     IIIIIIIIIIIIIIIIIIII
 1111     .98     IIIIIIIIIIIIIIIIIIII
  309     .98     IIIIIIIIIIIIIIIIIIII
 1408     .98     IIIIIIIIIIIIIIIIIIIII
 2213     .98     IIIIIIIIIIIIIIIIIIIII
 1910     .98     IIIIIIIIIIIIIIIIIIIII
 1314     .98     IIIIIIIIIIIIIIIIIIIIII
 1214     .98     IIIIIIIIIIIIIIIIIIIIII
 1014     .98     IIIIIIIIIIIIIIIIIIIIIII
 2512     .97     IIIIIIIIIIIIIIIIIIIIIIII
 1711     .97     IIIIIIIIIIIIIIIIIIIIIIII
 2010     .97     IIIIIIIIIIIIIIIIIIIIIIII
 2113     .97     IIIIIIIIIIIIIIIIIIIIIIII
 1914     .97     IIIIIIIIIIIIIIIIIIIIIIIII
 1710     .97     IIIIIIIIIIIIIIIIIIIIIIIII
  813     .97     IIIIIIIIIIIIIIIIIIIIIIIII
 1610     .97     IIIIIIIIIIIIIIIIIIIIIIIII
 1510     .97     IIIIIIIIIIIIIIIIIIIIIIIIII
 1613     .97     IIIIIIIIIIIIIIIIIIIIIIIIII
  912     .97     IIIIIIIIIIIIIIIIIIIIIIIIIII
 1511     .97     IIIIIIIIIIIIIIIIIIIIIIIIIII
 1309     .97     IIIIIIIIIIIIIIIIIIIIIIIIIIII
 1514     .97     IIIIIIIIIIIIIIIIIIIIIIIIIIII
 1308     .97     IIIIIIIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 15/64



```
1013     .97
1410     .96
 914     .96
1307     .96
1406     .96
1009     .96
1609     .96
1108     .96
1509     .96
1911     .96
2211     .96
 907     .96
 711     .95
2313     .95
1211     .95
1608     .95
1315     .95
2312     .95
1607     .95
1109     .95
1708     .95
1306     .95
1312     .94
1210     .94
2112     .94
1311     .94
2111     .93
1207     .93
 911     .93
1104     .93
2014     .92
2110     .92
 806     .92
1106     .92
 708     .92
1415     .92
1508     .92
1008     .91
1003     .91
1004     .91
1206     .91
1011     .91
1208     .91
 807     .91
1205     .91
 603     .91
 913     .91
1006     .91
1007     .91
 904     .90
1107     .89
 906     .89
 704     .88
 903     .88
 804     .88
 705     .88
 905     .87
1105     .87
1005     .86
 805     .86
2115     .86
 504     .85
 604     .85
2015     .84
 703     .83
 505     .83

         123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 16/64

Table 9

Premolar width - Male

```
QUAD.    MEAN              NON-SIGNIFICANT SUBSETS

                 123456789012345678901234567890123456789012345678901234567890

  813    1.75    I
 1209    1.75    II
  713    1.75    III
 1412    1.73    III
 1114    1.73    IIII
 1013    1.73    IIII
 1411    1.72    IIII
 1612    1.71    IIII
 1614    1.71    IIIII
 1213    1.71    IIIII
 1414    1.70    IIIII
 1212    1.70    IIIIII
 1511    1.70    IIIIII
 1613    1.70    IIIIIII
 1413    1.70    IIIIIIII
 1111    1.70    IIIIIIIII
  915    1.70    IIIIIIIII
 1514    1.70    IIIIIIIII
 1313    1.70    IIIIIIIIII
 1611    1.69    IIIIIIIIIII
 1415    1.69    IIIIIIIIIIII
 1513    1.69    IIIIIIIIIIIII
 1515    1.69    IIIIIIIIIIIIII
 1012    1.68    IIIIIIIIIIIIIII
 1312    1.68    IIIIIIIIIIIIIIII
 1308    1.68    IIIIIIIIIIIIIIIII
 1314    1.68    IIIIIIIIIIIIIIIIII
 1408    1.68    IIIIIIIIIIIIIIIIIII
 1512    1.67    IIIIIIIIIIIIIIIIIIII
 1315    1.67    IIIIIIIIIIIIIIIIIIIII
 1409    1.67    IIIIIIIIIIIIIIIIIIIIII
 1712    1.67    IIIIIIIIIIIIIIIIIIIIIII
 1909    1.66    IIIIIIIIIIIIIIIIIIIIIIII
 1214    1.66    IIIIIIIIIIIIIIIIIIIIIIIII
 1014    1.66    IIIIIIIIIIIIIIIIIIIIIIIIII
 1113    1.66    IIIIIIIIIIIIIIIIIIIIIIIIIII
 1309    1.65    IIIIIIIIIIIIIIIIIIIIIIIIIIII
 1112    1.65    IIIIIIIIIIIIIIIIIIIIIIIIIIIII
  310    1.65    IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1108    1.64    IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1307    1.64    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  914    1.64    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  611    1.64    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1310    1.63    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  912    1.62    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1610    1.62    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  913    1.62    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1811    1.62     IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1410    1.61      IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1711    1.61       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1207    1.61        IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  612    1.61        IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 2010    1.61         IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1109    1.61          IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 2110    1.60          IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 2213    1.60           IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 17/64

```
 711   1·60          IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1208   1·60           IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1211   1·60            IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1510   1·60             IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 309   1·59             IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 911   1·59              IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1911   1·59              IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1608   1·59               IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 603   1·59                IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1710   1·59                 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 910   1·58                  IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1607   1·58                   IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1009   1·58                   IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1011.  1·58                    IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1407   1·58                    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1910   1·58                     IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
2211   1·58                     IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1311   1·57                      IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1406   1·57                       IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
2113   1·57                       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1306   1·57                        IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
2312   1·57                        IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1210   1·56                         IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1507   1·56                         IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
2014   1·55                          IIIIIIIIIIIIIIIIIIIIIIIIIIIII
2313   1·55                          IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
2112   1·55                           IIIIIIIIIIIIIIIIIIIIIIIIIIIII
1508   1·55                           IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 505   1·55                            IIIIIIIIIIIIIIIIIIIIIIIIIIIII
1609   1·55                             IIIIIIIIIIIIIIIIIIIIIIIIIIIII
1509   1·54                              IIIIIIIIIIIIIIIIIIIIIIIIIIII
 504   1·54                              IIIIIIIIIIIIIIIIIIIIIIIIIIII
 804   1·54                               IIIIIIIIIIIIIIIIIIIIIIIIIII
1708   1·54                               IIIIIIIIIIIIIIIIIIIIIIIIIII
 806   1·53                                IIIIIIIIIIIIIIIIIIIIIIIIII
2115   1·53                                 IIIIIIIIIIIIIIIIIIIIIIIII
2111   1·53                                  IIIIIIIIIIIIIIIIIIIIIIII
1914   1·53                                  IIIIIIIIIIIIIIIIIIIIIIII
 704   1·53                                   IIIIIIIIIIIIIIIIIIIIIII
 907   1·52                                    IIIIIIIIIIIIIIIIIIIIII
2015   1·52                                     IIIIIIIIIIIIIIIIIIIII
2512   1·52                                     IIIIIIIIIIIIIIIIIIIII
 807   1·52                                      IIIIIIIIIIIIIIIIIIII
 708   1·52                                      IIIIIIIIIIIIIIIIIIII
1008   1·52                                       IIIIIIIIIIIIIIIIIII
 705   1·52                                        IIIIIIIIIIIIIIIIII
1206   1·52                                         IIII.IIIIIIIII.II
 703   1·51                                          III.IIIIIIIIIIII
2513   1·50                                           IIIIIIIIIIIIIII
 604   1·50                                           IIIIIIIIIIII.II
 903   1·50                                            IIIIIIIIIII.II
1106   1·49                                             IIIIIIIIIIIII
1107   1·49                                              IIIIIIIIIIII
 805   1·48                                               IIIIIIIIIII
1007   1·47                                                IIIIIIIIII
1003   1·47                                                 IIIIIIIII
1104   1·47                                                  IIIIIIII
1205   1·47                                                  IIIIIIII
 905   1·47                                                   IIIIIII
1506   1·47                                                   IIIIIII
 904   1·47                                                    IIIIII
1004   1·46                                                     IIIII
1006   1·44                                                      IIII
1105   1·43                                                       III
1005   1·42                                                        II
 906   1·41                                                         I

              123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 18/64

Table 10

Toothrow length - Male

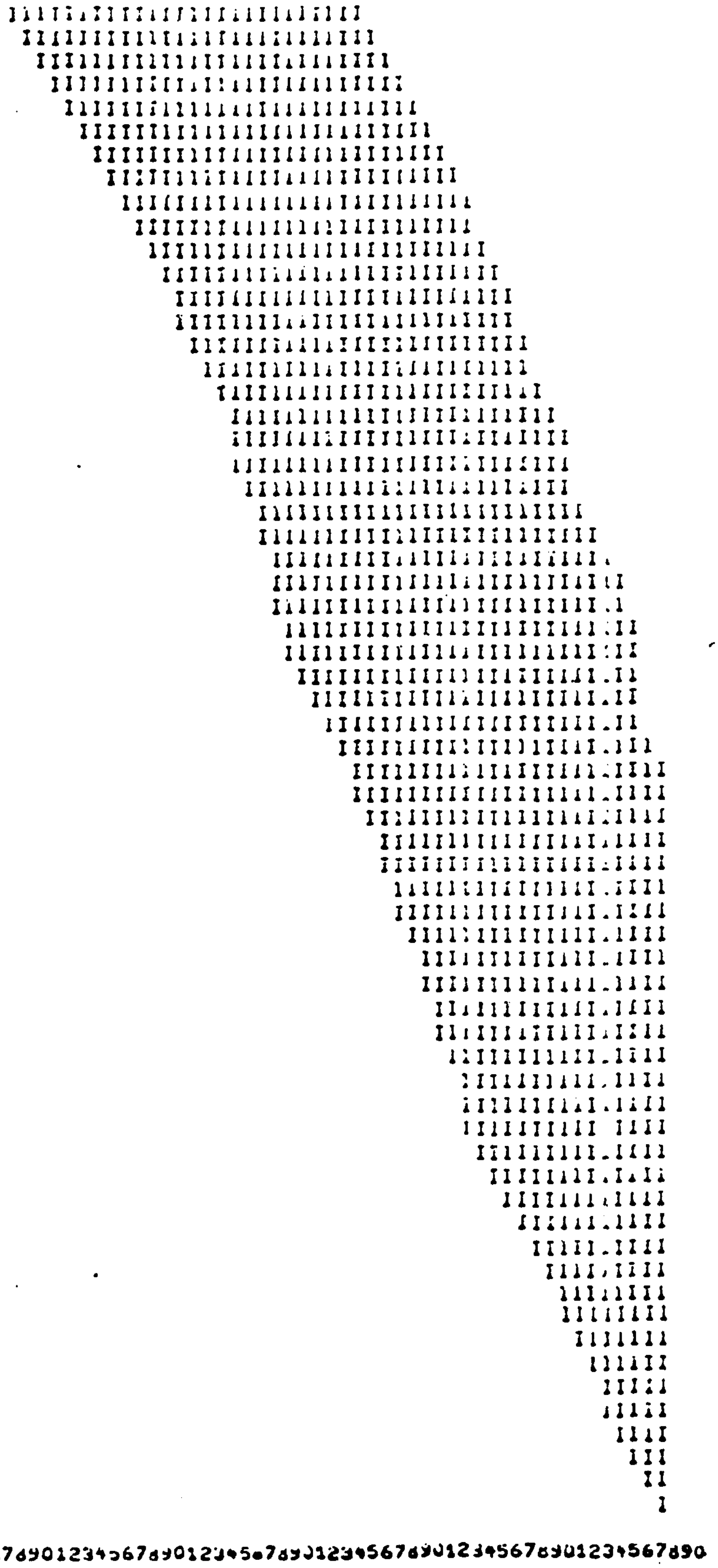
```
QUAD.   MEAN                   NON-SIGNIFICANT SUBSETS

                123456789012345678901234567890123456789012345678901234567890

1209    7.86    I
 813    7.86    II
 611    7.84    III
 810    7.79    IIII
1111    7.77    IIII
 713    7.75    IIII
1315    7.74    IIII
1512    7.74    IIIII
1213    7.74    IIIIII
1313    7.73    IIIIII
1413    7.73    IIIIIII
1312    7.71    IIIIIIII
1414    7.70    IIIIIIII
1411    7.70    IIIIIIII
 612    7.69    IIIIIIIII
1511    7.68    IIIIIIIII
1513    7.67    IIIIIIIIII
1412    7.66    IIIIIIIIII
1112    7.66    IIIIIIIIII
 910    7.65    IIIIIIIIII
 711    7.65    IIIIIIIIIII
1408    7.65    IIIIIIIIIII
1612    7.65    IIIIIIIIIII
1214    7.65    IIIIIIIIIII
1012    7.65    IIIIIIIIIIII
1611    7.65    IIIIIIIIIIIII
1712    7.64    IIIIIIIIIIIII
1614    7.64    IIIIIIIIIIIIII
1109    7.63    IIIIIIIIIIIIII
1113    7.63    IIIIIIIIIIIIIII
 309    7.63    IIIIIIIIIIIIIIII
1309    7.62    IIIIIIIIIIIIIIII
1514    7.62    IIIIIIIIIIIIIIIII
1212    7.62    IIIIIIIIIIIIIIIIII
1014    7.61    IIIIIIIIIIIIIIIIII
1009    7.61    IIIIIIIIIIIIIIIIIII
1613    7.61    IIIIIIIIIIIIIIIIIII
 915    7.60    IIIIIIIIIIIIIIIIIIII
 911    7.59    IIIIIIIIIIIIIIIIIIII
1308    7.58    IIIIIIIIIIIIIIIIIIII
1011    7.58    IIIIIIIIIIIIIIIIIIIII
 913    7.57    IIIIIIIIIIIIIIIIIIIIII
1310    7.56    IIIIIIIIIIIIIIIIIIIIIII
1108    7.56    IIIIIIIIIIIIIIIIIIIIIIII
 914    7.55    IIIIIIIIIIIIIIIIIIIIIIII
 912    7.55    IIIIIIIIIIIIIIIIIIIIIIIII
1515    7.55    IIIIIIIIIIIIIIIIIIIIIIIII
1208    7.55     IIIIIIIIIIIIIIIIIIIIIIIII
1114    7.54     IIIIIIIIIIIIIIIIIIIIIIIIII
1013    7.53     IIIIIIIIIIIIIIIIIIIIIIIIIII
1409    7.51       IIIIIIIIIIIIIIIIIIIIIIIIII
1909    7.46        IIIIIIIIIIIIIIIIIIIIIIIIII
1311    7.46         IIIIIIIIIIIIIIIIIIIIIIIIII
1307    7.45          IIIIIIIIIIIIIIIIIIIIIIIIII
1510    7.44           IIIIIIIIIIIIIIIIIIIIIIIIII
1210    7.44            IIIIIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 19/64

603	7.44
1410	7.43
1711	7.42
807	7.40
704	7.40
806	7.40
805	7.39
1211	7.38
804	7.31
705	7.31
504	7.30
1610	7.30
604	7.29
703	7.29
1914	7.28
1406	7.28
1008	7.28
1607	7.28
2211	7.27
2512	7.27
1207	7.27
1609	7.26
1306	7.26
1509	7.25
708	7.25
2513	7.24
1710	7.20
1508	7.19
1910	7.19
1708	7.18
505	7.18
1407	7.18
1608	7.17
1811	7.17
907	7.16
2010	7.16
1911	7.13
1206	7.13
2312	7.11
2213	7.11
1106	7.11
903	7.11
905	7.11
2110	7.10
2313	7.09
1007	7.09
906	7.06
1507	7.06
1107	7.05
1105	7.05
904	7.04
1005	7.03
1006	7.03
2115	7.02
1104	7.02
2112	6.99
1003	6.97
2111	6.97
2113	6.96
2014	6.94
1004	6.94
1205	6.93
2015	6.84
1506	6.81



Appendix IV, 20/64

Table 11

Upper diastemal length - Male

```
QUAD•   MEAN                 NON-SIGNIFICANT SUBSETS

               123456789012345678901234567890123456789012345678901234567890

  813   9•41   I
 1313   9•37   II
  612.  9•33   III
 1213   9•24   III
 1214   9•22   IIII
 1112   9•20   IIII
  611   9•17   IIIII
  915   9•17   IIIII
 1212   9•15   IIIII
 1315   9•14   IIIIII
 1312   9•14   IIIIII
  713   9•12   IIIIIII
 1011   9•12   IIIIIIII
 1012   9•10   IIIIIIIII
 1414   9•09   IIIIIIIIII
 1413   9•09   IIIIIIIIII
  913   9•07   IIIIIIIIIII
 1113   9•07   IIIIIIIIIIII
 1412   9•05   IIIIIIIIIIIII
  914   9•05   IIIIIIIIIIIIII
 1014   9•03   IIIIIIIIIIIIIII
 1114   9•00   IIIIIIIIIIIIIIII
  309   8•99   IIIIIIIIIIIIIIII
  912   8•98   IIIIIIIIIIIIIIIII
 1013   8•98   IIIIIIIIIIIIIIIIII
  810   8•97   IIIIIIIIIIIIIIIIII
  711   8•96   IIIIIIIIIIIIIIIIIII
 1111   8•93   IIIIIIIIIIIIIIIIIII
 1314   8•93   IIIIIIIIIIIIIIIIIII
 1415   8•87   IIIIIIIIIIIIIIIIIIII
 1209   8•83   IIIIIIIIIIIIIIIIIIIII
 1513   8•83   IIIIIIIIIIIIIIIIIIIIII
 1514   8•83   IIIIIIIIIIIIIIIIIIIIII
 1614   8•77    IIIIIIIIIIIIIIIIIIIIII
  910   8•77     IIIIIIIIIIIIIIIIIIIIII
 1411   8•76     IIIIIIIIIIIIIIIIIIIIII
  911   8•76     IIIIIIIIIIIIIIIIIIIIII
 1612   8•74      IIIIIIIIIIIIIIIIIIIIII
 1210   8•73       IIIIIIIIIIIIIIIIIIIIII
 1613   8•73        IIIIIIIIIIIIIIIIIIIIII
 1109   8•72         IIIIIIIIIIIIIIIIIIIIII
 1712   8•71          IIIIIIIIIIIIIIIIIIIIII
 1511   8•71           IIIIIIIIIIIIIIIIIIIIII
 1009   8•66            IIIIIIIIIIIIIIIIIIIIII
 1310   8•66             IIIIIIIIIIIIIIIIIIIIII
 1211   8•65             IIIIIIIIIIIIIIIIIIIIIII
 1611   8•63              IIIIIIIIIIIIIIIIIIIIIII
 1309   8•63               IIIIIIIIIIIIIIIIIIIIIII
 1515   8•61               IIIIIIIIIIIIIIIIIIIIIIII
 1408   8•60               IIIIIIIIIIIIIIIIIIIIIIIII
 1311   8•59                IIIIIIIIIIIIIIIIIIIIIIIII
 1512   8•57                 IIIIIIIIIIIIIIIIIIIIIIIII
 1308   8•53                 IIIIIIIIIIIIIIIIIIIIIIIIII
 1409   8•52                  IIIIIIIIIIIIIIIIIIIIIIIIII
 1008   8•51                  IIIIIIIIIIIIIIIIIIIIIIIIIII
  805   8•46                   IIIIIIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 21/64

703	8.45
1410	8.42
1909	8.41
2015	8.40
708	8.38
704	8.38
1208	8.38
1207	8.37
1307	8.34
1108	8.34
807	8.32
806	8.31
1914	8.31
1507	8.29
2010	8.27
2014	8.27
705	8.26
1510	8.26
504	8.26
1711	8.25
804	8.24
603	8.24
1509	8.24
2211	8.23
2110	8.23
1910	8.21
604	8.21
1708	8.20
1104	8.18
1406	8.18
1811	8.18
905	8.17
2115	8.16
907	8.16
906	8.16
903	8.16
505	8.15
1508	8.14
1005	8.13
1306	8.11
1205	8.11
1105	8.11
1007	8.11
2112	8.10
1609	8.09
1610	8.09
1206	8.09
1911	8.08
2313	8.08
1607	8.07
2111	8.07
1106	8.07
1407	8.06
904	8.05
1004	8.04
1710	8.04
2513	8.04
1107	8.04
1006	8.03
1608	8.03
2213	8.00
2113	7.98
2512	7.96
1003	7.94
2312	7.91
1506	7.63

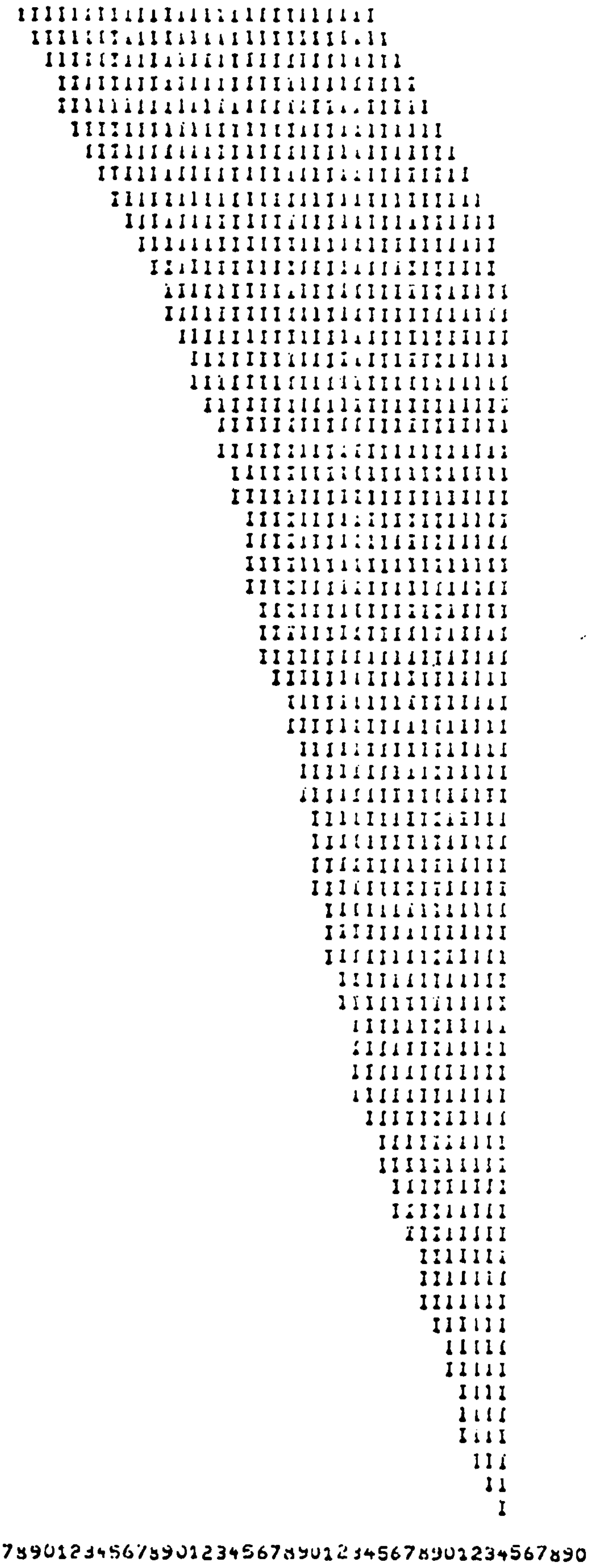


Table 12

Least interorbital width - Male

```
QUAD.    MEAN                  NON-SIGNIFICANT SUBSETS


                  1234567890123456789012345678901234567890123456789012345678901234567890

  810   13.36     I
  612   13.36     II
 1112.  13.34     III
 2213   13.30     IIII
  611   13.30     IIIII
 1213   13.30     IIIIII
 1111   13.27     IIIIIII
  813   13.26     IIIIIII
 1412   13.22     IIIIIIII
 1612   13.20     IIIIIIIII
 2110   13.17     IIIIIIIIII
 1313   13.17     IIIIIIIIII
 2211   13.17     IIIIIIIIIII
 1312   13.16     IIIIIIIIIII
 1510   13.15     IIIIIIIIIIII
 2113   13.15     IIIIIIIIIIIII
 1611   13.14     IIIIIIIIIIIII
 1209   13.14     IIIIIIIIIIIIII
  713   13.14     IIIIIIIIIIIIII
 1214   13.11     IIIIIIIIIIIIII
 1712   13.10     IIIIIIIIIIIIIII
 1711   13.09     IIIIIIIIIIIIIII
 1011   13.08     IIIIIIIIIIIIIII
 1511   13.07     IIIIIIIIIIIIIII
 1212   13.07     IIIIIIIIIIIIIIII
 1909   13.06     IIIIIIIIIIIIIIIII
 1512   13.06     IIIIIIIIIIIIIIIII
 1910   13.05     IIIIIIIIIIIIIIIII
 1514   13.03     IIIIIIIIIIIIIIIII
 1413   13.03     IIIIIIIIIIIIIIIII
 1012   13.02     IIIIIIIIIIIIIIIIII
 1411   13.01     IIIIIIIIIIIIIIIIII
  910   13.00     IIIIIIIIIIIIIIIIII
 1315   13.00     IIIIIIIIIIIIIIIIII
 1409   13.00     IIIIIIIIIIIIIIIIII
 1507   12.99     IIIIIIIIIIIIIIIIII
 1013   12.97     IIIIIIIIIIIIIIIIII
 2112   12.97     IIIIIIIIIIIIIIIIII
 2312   12.97     IIIIIIIIIIIIIIIIIII
 1609   12.96     IIIIIIIIIIIIIIIIIII
 1515   12.96     IIIIIIIIIIIIIIIIIII
 2313   12.96     IIIIIIIIIIIIIIIIIII
 1410   12.96     IIIIIIIIIIIIIIIIIII
 2014   12.96     IIIIIIIIIIIIIIIIIII
 1513   12.96     IIIIIIIIIIIIIIIIIII
 2111   12.95     IIIIIIIIIIIIIIIIIIII
  711   12.94     IIIIIIIIIIIIIIIIIIII
 1911   12.94     IIIIIIIIIIIIIIIIIIII
 2512   12.93     IIIIIIIIIIIIIIIIIIII
  911   12.92     IIIIIIIIIIIIIIIIIIII
 1310   12.91     IIIIIIIIIIIIIIIIIIIII
 1509   12.90     IIIIIIIIIIIIIIIIIIIII
 1014   12.89     IIIIIIIIIIIIIIIIIIIII
 1811   12.89     IIIIIIIIIIIIIIIIIIIII
 2010   12.88     IIIIIIIIIIIIIIIIIIIII
 1914   12.88     IIIIIIIIIIIIIIIIIIIII
```

```
1109   12.88    IIIIIIIIIIIIIIIIIIIII
1113   12.87    IIIIIIIIIIIIIIIIIIIII
 913   12.87    IIIIIIIIIIIIIIIIIIIII
1613   12.86    IIIIIIIIIIIIIIIIIIIIII
1114   12.86    IIIIIIIIIIIIIIIIIIIIII
1309   12.85    IIIIIIIIIIIIIIIIIIIIII
 915   12.85    IIIIIIIIIIIIIIIIIIIIII
1210   12.85    IIIIIIIIIIIIIIIIIIIIII
1406   12.84    IIIIIIIIIIIIIIIIIIIIII
1610   12.84    IIIIIIIIIIIIIIIIIIIIII
1308   12.82    IIIIIIIIIIIIIIIIIIIIIII
 912   12.81    IIIIIIIIIIIIIIIIIIIIIII
1608   12.81    IIIIIIIIIIIIIIIIIIIIIII
1311   12.81     IIIIIIIIIIIIIIIIIIIIII
 914   12.80     IIIIIIIIIIIIIIIIIIIIIII
1414   12.80      IIIIIIIIIIIIIIIIIIIIII
1314   12.79       IIIIIIIIIIIIIIIIIIIII
1710   12.79        IIIIIIIIIIIIIIIIIIII
 309   12.79         IIIIIIIIIIIIIIIIIIII
1408   12.77          IIIIIIIIIIIIIIIIIIII
1708   12.77          IIIIIIIIIIIIIIIIIIII
1415   12.77          IIIIIIIIIIIIIIIIIIII
1211   12.74           IIIIIIIIIIIIIIIIIIII
1009   12.72            IIIIIIIIIIIIIIIIIIII
1508   12.70             IIIIIIIIIIIIIIIIIIII
1407   12.66              IIIIIIIIIIIIIIIIIIII
1607   12.65               IIIIIIIIIIIIIIIIIIII
1208   12.59                IIIIIIIIIIIIIIIIIIII
1614   12.54                 IIIIIIIIIIIIIIIIIIII
2513   12.46                  IIIIIIIIIIIIIIIIIIII
2115   12.45                   IIIIIIIIIIIIIIIIIIII
1506   12.44                    IIIIIIIIIIIIIIIIIIII
2015   12.44                     IIIIIIIIIIIIIIIIIIII
1306   12.39                      IIIIIIIIIIIIIIIIIIII
1307   12.35                       IIIIIIIIIIIIIIIIIIII
1108   12.30                        IIIIIIIIIIIIIIIIIIII
 904   12.21                         IIIIIIIIIIIIIIIIIII
1008   12.20                          IIIIIIIIIIIIIIIIII
 603   12.11                           IIIIIIIIIIIIIIIII
 505   12.08                            IIIIIIIIIIIIIIII
 604   12.07                             IIIIIIIIIIIIIII
 705   12.03                              IIIIIIIIIIIIII
 805   12.02                              IIIIIIIIIIIIII
1207   12.01                               IIIIIIIIIIIII
 504   12.01                                IIIIIIIIIIII
1206   11.95                                 IIIIIIIIIII
 703   11.92                                  IIIIIIIIII
 906   11.88                                  IIIIIIIIII
 807   11.85                                   IIIIIIIII
1003   11.84                                    IIIIIIII
 806   11.82                                    IIIIIIII
 704   11.82                                     IIIIIII
 804   11.81                                      IIIIII
 708   11.80                                      IIIIII
1006   11.79                                       IIIII
 903   11.78                                       IIIII
1007   11.78                                        IIII
 905   11.75                                         III
1106   11.72                                         III
1005   11.72                                         III
1105   11.69                                          II
1205   11.63                                          II
 907   11.62                                          II
1004   11.58                                           I
1107   11.57                                           I
1104   11.57                                           I

                123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 24/64

Table 13

Nasal length - Male

```
QUAD.   MEAN                    NON-SIGNIFICANT SUBSETS

               123456789012345678901234567890123456789012345678901234567890

  813  15.43   I
  915  15.40   II
 1313  15.34   III
  611  15.19   IIII
  713  15.18   IIII
 1214  15.16   IIIII
  810  15.13   IIIIII
 1413  15.11   IIIIIII
 1112  15.07   IIIIIIII
 1315  15.03   IIIIIIII
  612  15.02   IIIIIIIII
  309  15.01   IIIIIIIII
 1312  15.00   IIIIIIIIII
  910  14.98   IIIIIIIIIII
 1212  14.95   IIIIIIIIIII
  914  14.92   IIIIIIIIIIII
 1213  14.91   IIIIIIIIIIIII
 1412  14.84   IIIIIIIIIIIIII
 1209  14.81   IIIIIIIIIIIIIII
  711  14.78   IIIIIIIIIIIIIIII
 1011  14.75   IIIIIIIIIIIIIIII
 1111  14.75   IIIIIIIIIIIIIIIII
 1013  14.73   IIIIIIIIIIIIIIIII
 1113  14.72   IIIIIIIIIIIIIIIII
 1012  14.72   IIIIIIIIIIIIIIIIII
 1613  14.72   IIIIIIIIIIIIIIIIIII
  912  14.71   IIIIIIIIIIIIIIIIIIII
  913  14.70   IIIIIIIIIIIIIIIIIIII
 1314  14.69   IIIIIIIIIIIIIIIIIIIII
 1114  14.67   IIIIIIIIIIIIIIIIIIIIII
 1511  14.66   IIIIIIIIIIIIIIIIIIIIII
 1614  14.59   IIIIIIIIIIIIIIIIIIIIIII
 1414  14.59   IIIIIIIIIIIIIIIIIIIIIIII
 1411  14.59   IIIIIIIIIIIIIIIIIIIIIIII
 1712  14.56   IIIIIIIIIIIIIIIIIIIIIIIII
 1513  14.55   IIIIIIIIIIIIIIIIIIIIIIIII
 1014  14.54    IIIIIIIIIIIIIIIIIIIIIIIII
 1310  14.51     IIIIIIIIIIIIIIIIIIIIIIII
 1415  14.49      IIIIIIIIIIIIIIIIIIIIIIII
 1612  14.48      IIIIIIIIIIIIIIIIIIIIIIIII
 1408  14.47      IIIIIIIIIIIIIIIIIIIIIIIIII
 1109  14.44       IIIIIIIIIIIIIIIIIIIIIIIIII
 1611  14.44        IIIIIIIIIIIIIIIIIIIIIIIIII
 1009  14.43        IIIIIIIIIIIIIIIIIIIIIIIIIII
 1309  14.42         IIIIIIIIIIIIIIIIIIIIIIIIIII
 1512  14.42          IIIIIIIIIIIIIIIIIIIIIIIIIII
 1515  14.42          IIIIIIIIIIIIIIIIIIIIIIIIIIII
 1514  14.41          IIIIIIIIIIIIIIIIIIIIIIIIIIII
  911  14.38          IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1211  14.38           IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1409  14.37           IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1008  14.28            IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1311  14.27             IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  806  14.27             IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1914  14.20             IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 2115  14.15              IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 25/64

```
1406  14.15               IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
2015  14.14                IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1308  14.13                 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1410  14.12                  IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 805  14.11                   IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1510  14.11                    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1210  14.10                     IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 705  14.10                     IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1208  14.09                      IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 604  14.08                      IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 807  14.05                       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1507  14.04                       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 708  14.03                       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 704  13.99                        IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 906  13.99                         IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1610  13.93                          IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 603  13.93                           IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1509  13.93                            IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 703  13.92                            IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1909  13.89                             IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1108  13.87                             IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
2010  13.86                              IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1307  13.86                               IIIIIIIIIIIIIIIIIIIIIIIIIIIII
1407  13.86                                IIIIIIIIIIIIIIIIIIIIIIIIIIII
1007  13.85                                 IIIIIIIIIIIIIIIIIIIIIIIIIII
1207  13.81                                  IIIIIIIIIIIIIIIIIIIIIIIIII
1508  13.81                                   IIIIIIIIIIIIIIIIIIIIIIIII
 905  13.81                                   IIIIIIIIIIIIIIIIIIIIIIIII
2014  13.80                                    IIIIIIIIIIIIIIIIIIIIIIII
 804  13.79                                    IIIIIIIIIIIIIIIIIIIIIIII
1306  13.79                                     IIIIIIIIIIIIIIIIIIIIIII
1910  13.77                                     IIIIIIIIIIIIIIIIIIIIIII
 505  13.75                                      IIIIIIIIIIIIIIIIIIIIII
1105  13.74                                      IIIIIIIIIIIIIIIIIIIIII
1710  13.73                                       IIIIIIIIIIIIIIIIIIIII
 504  13.72                                        IIIIIIIIIIIIIIIIIIII
1206  13.72                                        IIIIIIIIIIIIIIIIIIII
1708  13.70                                        IIIIIIIIIIIIIIIIIIII
1711  13.70                                         IIIIIIIIIIIIIIIIIII
2110  13.68                                         IIIIIIIIIIIIIIIIIII
1106  13.67                                         IIIIIIIIIIIIIIIIIII
1004  13.65                                          IIIIIIIIIIIIIIIIII
2111  13.64                                          IIIIIIIIIIIIIIIIII
1104  13.64                                           IIIIIIIIIIIIIIIII
1005  13.64                                           IIIIIIIIIIIIIIIII
1205  13.62                                            IIIIIIIIIIIIIIII
1607  13.62                                            IIIIIIIIIIIIIIII
1609  13.62                                             IIIIIIIIIIIIIII
 903  13.61                                              IIIIIIIIIIIIII
1608  13.59                                               IIIIIIIIIIIII
1811  13.59                                                IIIIIIIIIIII
 907  13.56                                                IIIIIIIIIIII
1006  13.56                                                 IIIIIIIIIII
2112  13.54                                                  IIIIIIIIII
2213  13.52                                                  IIIIIIIIII
1003  13.49                                                   IIIIIIIII
 904  13.48                                                    IIIIIIII
1107  13.44                                                     IIIIIII
2313  13.42                                                      IIIIII
2211  13.36                                                       IIIII
2512  13.29                                                       IIIII
1911  13.24                                                       IIIII
2113  13.24                                                        IIII
2312  13.22                                                         III
2513  13.21                                                          II
1506  13.13                                                           I

              123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 26/64

Table 14

Rostral width - Male

```
 QUAD•    MEAN                    NON-SIGNIFICANT SUBSETS

                 1234567890123456789012345678901234567890123456789012345678901234567890

  1414   4•32    I
   915   4•29    II
  1312   4•19    III
  1313   4•16    IIII
  1213   4•15    IIIII
   611   4•14    IIIIII
  1114   4•14    IIIIII
  1111   4•12    IIIIII
   309   4•11    IIIIII
  1412   4•11    IIIIIII
  1112   4•10    IIIIIIII
   914   4•09    IIIIIIII
  1214   4•09    IIIIIIIII
  1209   4•08    IIIIIIIIII
  1315   4•07    IIIIIIIIIII
  1014   4•06    IIIIIIIIIII
   612   4•06    IIIIIIIIIIII
   810   4•05    IIIIIIIIIIIII
   913   4•05    IIIIIIIIIIIIII
  1013   4•04    IIIIIIIIIIIIIII
  1513   4•04    IIIIIIIIIIIIIII
   813   4•03    IIIIIIIIIIIIIIII
  1012   4•01    IIIIIIIIIIIIIIII
  1212   4•01    IIIIIIIIIIIIIIIII
  1514   4•01    IIIIIIIIIIIIIIIIII
   511   4•01    IIIIIIIIIIIIIIIIIII
  1515   3•99    IIIIIIIIIIIIIIIIIII
  1413   3•99    IIIIIIIIIIIIIIIIIIII
   910   3•98    IIIIIIIIIIIIIIIIIIIII
  1113   3•97    IIIIIIIIIIIIIIIIIIIIII
   912   3•97    IIIIIIIIIIIIIIIIIIIIII
  1411   3•96    IIIIIIIIIIIIIIIIIIIIIII
  1314   3•96    IIIIIIIIIIIIIIIIIIIIIII
  1011   3•95    IIIIIIIIIIIIIIIIIIIIIIII
   711   3•93    IIIIIIIIIIIIIIIIIIIIIIIII
  1408   3•92    IIIIIIIIIIIIIIIIIIIIIIIIII
  1309   3•92    IIIIIIIIIIIIIIIIIIIIIIIIII
  1415   3•91    IIIIIIIIIIIIIIIIIIIIIIIIIII
   713   3•90    IIIIIIIIIIIIIIIIIIIIIIIIIIII
  1109   3•89     IIIIIIIIIIIIIIIIIIIIIIIIIII
  1712   3•89     IIIIIIIIIIIIIIIIIIIIIIIIIIII
  1613   3•87      IIIIIIIIIIIIIIIIIIIIIIIIIII
  1211   3•86       IIIIIIIIIIIIIIIIIIIIIIIIIII
  1210   3•86       IIIIIIIIIIIIIIIIIIIIIIIIIIII
  1511   3•84        IIIIIIIIIIIIIIIIIIIIIIIIIIII
  2015   3•83         IIIIIIIIIIIIIIIIIIIIIIIIIIII
  1409   3•83         IIIIIIIIIIIIIIIIIIIIIIIIIIIII
  1611   3•82          IIIIIIIIIIIIIIIIIIIIIIIIIIIII
  1311   3•82           IIIIIIIIIIIIIIIIIIIIIIIIIIIII
  1009   3•81            IIIIIIIIIIIIIIIIIIIIIIIIIIIII
  1612   3•81             IIIIIIIIIIIIIIIIIIIIIIIIIIIII
  1614   3•80             IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  1512   3•79              IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  1410   3•77               IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  1310   3•77                IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  1108   3•76                 IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 27/64

```
 1308   3.75       IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1008   3.72        IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1307   3.71         IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1208   3.71          IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1510   3.71           IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1909   3.69            IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1711   3.68             IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1914   3.67              IIIIIIIIIIIIIIIIIIIIIIIIIIIII
  708   3.67              IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 2115   3.67               IIIIIIIIIIIIIIIIIIIIIIIIIIII
  807   3.66                IIIIIIIIIIIIIIIIIIIIIIIIIII
 1207   3.63                 IIIIIIIIIIIIIIIIIIIIIIIIII
  806   3.61                  IIIIIIIIIIIIIIIIIIIIIIIIII
  906   3.61                   IIIIIIIIIIIIIIIIIIIIIIIII
 1206   3.61                    IIIIIIIIIIIIIIIIIIIIIIII
 1306   3.60                     IIIIIIIIIIIIIIIIIIIIIII
  905   3.60                      IIIIIIIIIIIIIIIIIIIIII
 1106   3.60                      IIIIIIIIIIIIIIIIIIIIII
  704   3.60                       IIIIIIIIIIIIIIIIIIIII
  603   3.59                       IIIIIIIIIIIIIIIIIIIII
 1104   3.59                        IIIIIIIIIIIIIIIIIIII
 1005   3.59                         IIIIIIIIIIIIIIIIIII
  703   3.59                         IIIIIIIIIIIIIIIIIII
 1608   3.59                          IIIIIIIIIIIIIIIIII
 1006   3.58                          IIIIIIIIIIIIIIIIII
 2014   3.57                          IIIIIIIIIIIIIIIIII
 1508   3.57                           IIIIIIIIIIIIIIIII
 1507   3.56                           IIIIIIIIIIIIIIIII
 1105   3.56                            IIIIIIIIIIIIIIII
 1007   3.56                            IIIIIIIIIIIIIIII
 1610   3.55                             IIIIIIIIIIIIIII
 1509   3.55                             IIIIIIIIIIIIIII
 1107   3.55                              IIIIIIIIIIIIII
 1407   3.55                              IIIIIIIIIIIIII
 1609   3.54                               IIIIIIIIIIIII
 1607   3.54                               IIIIIIIIIIIII
  804   3.54                               IIIIIIIIIIIII
  805   3.53                               IIIIIIIIIIIII
 1406   3.53                                IIIIIIIIIIII
  604   3.53                                IIIIIIIIIIII
 1710   3.53                                 IIIIIIIIIII
 2512   3.52                                 IIIIIIIIIII
 1004   3.52                                 IIIIIIIIIII
 1910   3.52                                  IIIIIIIIII
 2010   3.52                                  IIIIIIIIII
  903   3.51                                  IIIIIIIIII
 1811   3.50                                  IIIIIIIIII
 1708   3.50                                   IIIIIIIII
 2112   3.50                                   IIIIIIIII
 2110   3.50                                   IIIIIIIII
 1205   3.49                                   IIIIIIIII
 2313   3.49                                    IIIIIIII
  907   3.48                                    IIIIIIII
  504   3.48                                     IIIIIII
 2111   3.47                                     IIIIIII
  705   3.47                                     IIIIIII
 2211   3.46                                     IIIIIII
 2213   3.46                                      IIIIII
  505   3.46                                      IIIIII
 2312   3.45                                       IIIII
 2113   3.43                                       IIIII
 1911   3.41                                       IIIII
 1003   3.41                                        IIII
  904   3.41                                         III
 2513   3.37                                          II
 1506   2.97                                           I

               12345678901234567890123456789012345678901234567890
```

Appendix IV, 28/64

Table 15

Least supraoccipital width - Male

```
QUAD.   MEAN                  NON-SIGNIFICANT SUBSETS

               123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890

  915   3.80   I
 2115   3.55   II
 2015   3.54   III
  813   3.36   IIII
 1013   3.25   IIIII
 1415   3.24   IIIIII
  911   3.24   IIIIIII
 1214   3.14   IIIIIIII
 1011   3.10   IIIIIIIII
  810   3.09   IIIIIIIIII
  914   3.08   IIIIIIIIIII
  912   3.08   IIIIIIIIIIII
 1914   3.07   IIIIIIIIIIIII
  913   3.07   IIIIIIIIIIIII
 1014   3.06   IIIIIIIIIIIIII
 1312   3.03   IIIIIIIIIIIIIII
 1514   3.03   IIIIIIIIIIIIIIII
 1012   3.02   IIIIIIIIIIIIIIIII
  910   3.00   IIIIIIIIIIIIIIIIII
 1414   2.99   IIIIIIIIIIIIIIIIIII
 1412   2.97   IIIIIIIIIIIIIIIIIIII
 1114   2.94   IIIIIIIIIIIIIIIIIIIII
 1313   2.93   IIIIIIIIIIIIIIIIIIIII
 1112   2.91   IIIIIIIIIIIIIIIIIIIIII
 1009   2.89    IIIIIIIIIIIIIIIIIIIIII
 1111   2.87    IIIIIIIIIIIIIIIIIIIIIII
 1113   2.86     IIIIIIIIIIIIIIIIIIIIII
 1213   2.85     IIIIIIIIIIIIIIIIIIIIIII
 1212   2.85     IIIIIIIIIIIIIIIIIIIIIII
 1315   2.85     IIIIIIIIIIIIIIIIIIIIIIII
  309   2.82     IIIIIIIIIIIIIIIIIIIIIIIII
 1210   2.81      IIIIIIIIIIIIIIIIIIIIIIII
  611   2.81      IIIIIIIIIIIIIIIIIIIIIIIII
 1006   2.77      IIIIIIIIIIIIIIIIIIIIIIIII
 1008   2.75      IIIIIIIIIIIIIIIIIIIIIIIII
  807   2.73      IIIIIIIIIIIIIIIIIIIIIIIIII
  604   2.72      IIIIIIIIIIIIIIIIIIIIIIIIII
 2014   2.72      IIIIIIIIIIIIIIIIIIIIIIIIII
  603   2.72       IIIIIIIIIIIIIIIIIIIIIIIII
  711   2.71       IIIIIIIIIIIIIIIIIIIIIIIII
 1513   2.71        IIIIIIIIIIIIIIIIIIIIIIIII
 1206   2.71         IIIIIIIIIIIIIIIIIIIIIIII
 1515   2.71         IIIIIIIIIIIIIIIIIIIIIIII
 1104   2.70         IIIIIIIIIIIIIIIIIIIIIIII
  505   2.70          IIIIIIIIIIIIIIIIIIIIIIII
 1413   2.70           IIIIIIIIIIIIIIIIIIIIIIII
 1106   2.69           IIIIIIIIIIIIIIIIIIIIIIII
 1005   2.69            IIIIIIIIIIIIIIIIIIIIIIII
 1004   2.67            IIIIIIIIIIIIIIIIIIIIIIII
 1613   2.67             IIIIIIIIIIIIIIIIIIIIIIII
  708   2.67             IIIIIIIIIIIIIIIIIIIIIIII
 1107   2.66              IIIIIIIIIIIIIIIIIIIIIIII
  903   2.65              IIIIIIIIIIIIIIIIIIIIIIII
 1007   2.64               IIIIIIIIIIIIIIIIIIIIIIII
 1003   2.64                IIIIIIIIIIIIIIIIIIIIIII
 1411   2.64                IIIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 29/64

```
1614   2.64               IIIIIIIIIIIIIIIIIIIIIIII
 504   2.64               IIIIIIIIIIIIIIIIIIIIIIIII
 705   2.63               IIIIIIIIIIIIIIIIIIIIIIIIII
 806   2.63                IIIIIIIIIIIIIIIIIIIIIIIIII
 612   2.63                IIIIIIIIIIIIIIIIIIIIIIIIIII
1105   2.61                IIIIIIIIIIIIIIIIIIIIIIIIIII
1205   2.61                IIIIIIIIIIIIIIIIIIIIIIIIIIII
1512   2.60                 IIIIIIIIIIIIIIIIIIIIIIIIIII
 905   2.59                 IIIIIIIIIIIIIIIIIIIIIIIIIIII
 713   2.57                 IIIIIIIIIIIIIIIIIIIIIIIIIIIII
1211   2.57                 IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 907   2.57                  IIIIIIIIIIIIIIIIIIIIIIIIIIIII
1207   2.57                  IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 805   2.56                  IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1314   2.56                  IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 906   2.54                   IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1511   2.51                   IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1611   2.49                    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1109   2.49                     IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 804   2.48                     IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1311   2.44                      IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 703   2.44                       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1612   2.42                        IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1310   2.39                         IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 704   2.39                          IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1610   2.37                           IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1712   2.35                            IIIIIIIIIIIIIIIIIIIIIIIIIIIII
1608   2.31                             IIIIIIIIIIIIIIIIIIIIIIIIIIII
1909   2.31                              IIIIIIIIIIIIIIIIIIIIIIIIIII
1410   2.31                               IIIIIIIIIIIIIIIIIIIIIIIIII
 904   2.31                                IIIIIIIIIIIIIIIIIIIIIIIIII
1507   2.31                                 IIIIIIIIIIIIIIIIIIIIIIIII
2010   2.30                                  IIIIIIIIIIIIIIIIIIIIIIII
1407   2.29                                   IIIIIIIIIIIIIIIIIIIIIII
1708   2.28                                   IIIIIIIIIIIIIIIIIIIIIII
1509   2.28                                    IIIIIIIIIIIIIIIIIIIIII
1306   2.25                                     IIIIIIIIIIIIIIIIIIIII
1711   2.23                                      IIIIIIIIIIIIIIIIIIII
1609   2.23                                       IIIIIIIIIIIIIIIIIII
2513   2.23                                        IIIIIIIIIIIIIIIIII
1209   2.22                                         IIIIIIIIIIIIIIIII
1510   2.22                                          IIIIIIIIIIIIIIII
2110   2.22                                          IIIIIIIIIIIIIIII
1607   2.21                                           IIIIIIIIIIIIIII
1508   2.20                                           IIIIIIIIIIIIIII
1710   2.17                                            IIIIIIIIIIIIII
1409   2.16                                            IIIIIIIIIIIIII
1307   2.14                                             IIIIIIIIIIIII
1406   2.12                                              IIIIIIIIIIII
1108   2.12                                              IIIIIIIIIIII
2312   2.09                                               IIIIIIIIIII
1911   2.05                                                IIIIIIIIII
1408   2.05                                                 IIIIIIIII
1811   2.05                                                  IIIIIIII
1910   2.03                                                  IIIIIIII
1308   2.02                                                   IIIIIII
2211   2.01                                                   IIIIIII
2111   2.00                                                    IIIIII
1208   2.00                                                     IIIII
2112   1.99                                                     IIIII
1309   1.98                                                      IIII
2213   1.97                                                      IIII
2113   1.85                                                       III
2512   1.84                                                       III
1506   1.84                                                        II
2313   1.69                                                         I

              123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 30/64

Table 16

Greatest Interparietal width - Male

```
QUAD.   MEAN                NON-SIGNIFICANT SUBSETS


                123456789012345678901234567890123456789012345678901234567890

  915   3.30    I
 2015   3.16    II
  813   3.16    III
 1005   3.13    IIII
 1013   3.11    IIIII
 2115   3.03    IIIIII
 1006   3.03    IIIIIII
 1104   2.99    IIIIIIII
 1210   2.99    IIIIIIIII
 1007   2.98    IIIIIIIIII
  906   2.95    IIIIIIIIIII
  905   2.93    IIIIIIIIIII
 1106   2.92    IIIIIIIIIIII
 1105   2.91    IIIIIIIIIIIII
 1107   2.91    IIIIIIIIIIIIII
 1914   2.91    IIIIIIIIIIIIIII
  910   2.91    IIIIIIIIIIIIIII
 1004   2.88    IIIIIIIIIIIIIII
 1515   2.87    IIIIIIIIIIIIIIII
 1214   2.87    IIIIIIIIIIIIIIIII
 1205   2.86    IIIIIIIIIIIIIIIIII
 1114   2.86    IIIIIIIIIIIIIIIIII
 1008   2.86    IIIIIIIIIIIIIIIIII
  807   2.86    IIIIIIIIIIIIIIIIIII
  603   2.85    IIIIIIIIIIIIIIIIIIII
  911   2.83    IIIIIIIIIIIIIIIIIIIII
 1412   2.83    IIIIIIIIIIIIIIIIIIIIII
 1014   2.82    IIIIIIIIIIIIIIIIIIIIII
 1011   2.81    IIIIIIIIIIIIIIIIIIIIII
 1415   2.79    IIIIIIIIIIIIIIIIIIIIIII
  914   2.79    IIIIIIIIIIIIIIIIIIIIIIII
  913   2.78    IIIIIIIIIIIIIIIIIIIIIIII
 1514   2.78    IIIIIIIIIIIIIIIIIIIIIIIII
  912   2.76    IIIIIIIIIIIIIIIIIIIIIIIIII
 1206   2.75    IIIIIIIIIIIIIIIIIIIIIIIIII
  805   2.75    IIIIIIIIIIIIIIIIIIIIIIIIIII
 1313   2.74    IIIIIIIIIIIIIIIIIIIIIIIIIIII
  907   2.74    IIIIIIIIIIIIIIIIIIIIIIIIIIII
 1113   2.73    IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1012   2.73    IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1310   2.73    IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1211   2.72    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  903   2.72    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1512   2.72    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1111   2.72    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1614   2.71    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1411   2.71    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  806   2.69    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  708   2.69    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1207   2.68    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  804   2.67    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1212   2.67    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1003   2.66    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  612   2.65    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  810   2.64    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  705   2.64    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 31/64

```
1112   2.64   IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 604   2.63   IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1312   2.63   IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1009   2.63    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
2014   2.63    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 504   2.63     IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1613   2.63     IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 309   2.62     IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1311   2.62     IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1315   2.62     IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1611   2.61      IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1513   2.61      IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1213   2.60       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1509   2.56        IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 505   2.56         IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1414   2.55         IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1109   2.55          IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1108   2.54          IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 611   2.51          IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1413   2.49           IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1409   2.47            IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1511   2.47             IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1307   2.47              IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1407   2.46               IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1306   2.46                IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 711   2.46                IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1712   2.46                 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 703   2.46                 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1510   2.44                  IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 704   2.44                   IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1308   2.43                    IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1410   2.43                     IIIIIIIIIIIIIIIIIIIIIIIIIIIII
1612   2.41                      IIIIIIIIIIIIIIIIIIIIIIIIIIII
1408   2.41                       IIIIIIIIIIIIIIIIIIIIIIIIIII
1209   2.40                        IIIIIIIIIIIIIIIIIIIIIIIIII
1309   2.40                         IIIIIIIIIIIIIIIIIIIIIIIII
 904   2.40                         IIIIIIIIIIIIIIIIIIIIIIIII
1406   2.38                          IIIIIIIIIIIIIIIIIIIIIIII
1314   2.38                           IIIIIIIIIIIIIIIIIIIIIII
1610   2.36                           IIIIIIIIIIIIIIIIIIIIIII
1710   2.36                            IIIIIIIIIIIIIIIIIIIIII
 713   2.35                            IIIIIIIIIIIIIIIIIIIIII
1608   2.34                             IIIIIIIIIIIIIIIIIIIII
1708   2.34                              IIIIIIIIIIIIIIIIIIII
1609   2.34                               IIIIIIIIIIIIIIIIIII
1507   2.34                               IIIIIIIIIIIIIIIIIII
1208   2.34                                IIIIIIIIIIIIIIIIII
1909   2.31                                 IIIIIIIIIIIIIIIII
1607   2.30                                  IIIIIIIIIIIIIIII
1508   2.25                                  IIIIIIIIIIIIIIII
1711   2.24                                   IIIIIIIIIIIIIII
1811   2.22                                    IIIIIIIIIIIIII
2211   2.21                                     IIIIIIIIIIIII
1911   2.20                                     IIIIIIIIIIIII
2111   2.13                                      IIIIIIIIIIII
2513   2.11                                       IIIIIIIIIII
2010   2.11                                        IIIIIIIIII
2112   2.07                                         IIIIIIIII
2312   2.07                                          IIIIIIII
1910   2.02                                           IIIIIII
2110   2.00                                            IIIIII
2213   1.99                                             IIIII
1506   1.93                                              IIII
2113   1.88                                               III
2512   1.81                                                II
2313   1.79                                                 I

              123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 32/64

Table 17

Greatest skull length - Female

```
QUAD.   MEAN                  NON-SIGNIFICANT SUBSETS

                1234567890123456789012345678901234567890123456789012345678901234567890

  710  40.77    I
  810  40.43    II
  813. 40.40    III
  611  40.36    IIII
 1214  40.15    IIII
 1312  40.14    IIIII
 1209  40.08    IIIIII
 1313  39.99    IIIIII
 1213  39.99    IIIIIII
 1315  39.90    IIIIIIII
 1212  39.84    IIIIIIII
 1113  39.70    IIIIIIIII
 1114  39.67    IIIIIIIIII
 1413  39.65    IIIIIIIIII
 1314  39.61    IIIIIIIIIII
 1111  39.60    IIIIIIIIIIII
 1408  39.51    IIIIIIIIIIII
 1011  39.47    IIIIIIIIIIII
  913  39.45    IIIIIIIIIIIII
 1309  39.42    IIIIIIIIIIIIII
 1412  39.39    IIIIIIIIIIIIII
 1010  39.37    IIIIIIIIIIIIIII
 1513  39.30    IIIIIIIIIIIIIII
  309  39.29    IIIIIIIIIIIIIII
 1512  39.26    IIIIIIIIIIIIIII
  914  39.26    IIIIIIIIIIIIIIII
 1012  39.26    IIIIIIIIIIIIIIII
 1014  39.26    IIIIIIIIIIIIIIIII
  910  39.22    IIIIIIIIIIIIIIIII
 1712  39.20    IIIIIIIIIIIIIIIII
 1409  39.16    IIIIIIIIIIIIIIIIII
 1308  39.16     IIIIIIIIIIIIIIIII
 1614  39.15     IIIIIIIIIIIIIIIIII
 1414  39.11     IIIIIIIIIIIIIIIIII
 1109  39.10     IIIIIIIIIIIIIIIIII
 1514  39.09      IIIIIIIIIIIIIIIIII
 1009  39.08       IIIIIIIIIIIIIIIII
 1310  39.05       IIIIIIIIIIIIIIIIII
  911  39.05       IIIIIIIIIIIIIIIIII
 1013  39.05       IIIIIIIIIIIIIIIIII
 1613  38.99        IIIIIIIIIIIIIIIIII
 1411  38.90        IIIIIIIIIIIIIIIIII
 1511  38.83         IIIIIIIIIIIIIIIIII
  912  38.82         IIIIIIIIIIIIIIIIII
 1612  38.79         IIIIIIIIIIIIIIIIIII
 1611  38.73          IIIIIIIIIIIIIIIIIII
 1108  38.68          IIIIIIIIIIIIIIIIIIII
 1307  38.54           IIIIIIIIIIIIIIIIIIII
 1208  38.45            IIIIIIIIIIIIIIIIIIII
 1415  38.42             IIIIIIIIIIIIIIIIIIII
 1211  38.37              IIIIIIIIIIIIIIIIIIII
 1210  38.36               IIIIIIIIIIIIIIIIIIII
```

Appendix IV, 33/64

```
1410   38.33               IIIIIIIIIIIIIIIIIIII
1508   38.24                IIIIIIIIIIIIIIIIIIII
1311   38.21                 IIIIIIIIIIIIIIIIIIII
1008   38.19                  IIIIIIIIIIIIIIIIIIII
1510   38.07                   IIIIIIIIIIIIIIIIIIII
1406   37.85                    IIIIIIIIIIIIIIIIIIII
1507   37.82                     IIIIIIIIIIIIIIIIIIII
1711   37.81                      IIIIIIIIIIIIIIIIIIII
1610   37.59                       IIIIIIIIIIIIIIIIIIII
1306   37.58                        IIIIIIIIIIIIIIIIIIII
1207   37.55                         IIIIIIIIIIIIIIIIIIII
1509   37.48                          IIIIIIIIIIIIIIIIIIII
1709   37.47                           IIIIIIIIIIIIIIIIIIII
2113   37.46                           IIIIIIIIIIIIIIIIIIII
1909   37.40                            IIIIIIIIIIIIIIIIIIII
 704   37.36                             IIIIIIIIIIIIIIIIIIII
1708   37.36                             IIIIIIIIIIIIIIIIIIIII
 806   37.24                              IIIIIIIIIIIIIIIIIIII
1608   37.22                               IIIIIIIIIIIIIIIIIII
1607   37.18                                IIIIIIIIIIIIIIIIIII
 603   37.15                                 IIIIIIIIIIIIIIIIIII
1407   37.09                                 IIIIIIIIIIIIIIIIIII
2112   37.09                                  IIIIIIIIIIIIIIIIII
2111   37.08                                  IIIIIIIIIIIIIIIIII
2213   37.07                                  IIIIIIIIIIIIIIIIII
1710   37.07                                   IIIIIIIIIIIIIIIII
1910   37.04                                   IIIIIIIIIIIIIIIII
 703   37.04                                   IIIIIIIIIIIIIIIII
1609   37.00                                   IIIIIIIIIIIIIIIII
 807   36.94                                    IIIIIIIIIIIIIIII
 804   36.86                                     IIIIIIIIIIIIIII
 907   36.83                                     IIIIIIIIIIIIIII
 906   36.83                                     IIIIIIIIIIIIIII
2014   36.82                                      IIIIIIIIIIIIII
 905   36.78                                      IIIIIIIIIIIIII
2015   36.77                                      IIIIIIIIIIIIII
2313   36.70                                       IIIIIIIIIIIII
1206   36.68                                       IIIIIIIIIIIII
 805   36.67                                       IIIIIIIIIIIII
1104   36.67                                        IIIIIIIIIIII
1811   36.66                                        IIIIIIIIIIII
1107   36.63                                        IIIIIIIIIIII
2110   36.63                                         IIIIIIIIIII
2513   36.62                                         IIIIIIIIIII
 903   36.58                                          IIIIIIIIII
 705   36.54                                          IIIIIIIIII
1007   36.51                                           IIIIIIIII
1106   36.51                                           IIIIIIIII
1005   36.50                                            IIIIIIII
2115   36.48                                            IIIIIIII
2010   36.47                                            IIIIIIII
 604   36.46                                            IIIIIIII
1006   36.41                                             IIIIIII
1105   36.40                                             IIIIIII
 504   36.34                                              IIIIII
1205   36.31                                              IIIIII
1004   36.24                                               IIIII
 505   36.14                                                IIII
2312   36.09                                                 III
1003   36.01                                                  II
 904   35.95                                                   I

               123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 34/64

Table 18

Bullar-premaxillary length - Female

```
QUAD•    MEAN                        NON-SIGNIFICANT SUBSETS

              123456789012345678901234567890123456789012345678901234567890

  710  36•77  I
  611  36•62  II
  610. 36•55  III
 1214  36•46  IIII
 1213  36•39  IIIII
  813  36•37  IIIIII
 1313  36•16  IIIIIII
 1209  36•10  IIIIIII
 1315  36•10  IIIIIIII
 1113  36•05  IIIIIIII
 1312  36•04  IIIIIIIII
 1212  36•03  IIIIIIIIII
 1314  35•89  IIIIIIIIII
 1412  35•88  IIIIIIIIIII
 1111  35•85  IIIIIIIIIII
 1413  35•83  IIIIIIIIIII
  913  35•81  IIIIIIIIIIII
 1114  35•80  IIIIIIIIIIII
 1513  35•75  IIIIIIIIIIII
 1011  35•71  IIIIIIIIIIIII
 1013  35•63  IIIIIIIIIIIII
 1010  35•62  IIIIIIIIIIIII
 1408  35•62  IIIIIIIIIIIII
 1512  35•58  IIIIIIIIIIIII
 1012  35•54  IIIIIIIIIIIIII
  914  35•53  IIIIIIIIIIIIII
  309  35•52  IIIIIIIIIIIIII
 1414  35•52  IIIIIIIIIIIIIII
 1614  35•51  IIIIIIIIIIIIIII
 1014  35•50  IIIIIIIIIIIIIII
 1309  35•47  IIIIIIIIIIIIIII
 1310  35•46  IIIIIIIIIIIIIIII
  910  35•41  IIIIIIIIIIIIIIIII
 1409  35•40  IIIIIIIIIIIIIIIII
 1308  35•37  IIIIIIIIIIIIIIIII
 1514  35•36  IIIIIIIIIIIIIIIIII
 1712  35•35   IIIIIIIIIIIIIIIII
  911  35•34   IIIIIIIIIIIIIIIIII
 1109  35•30    IIIIIIIIIIIIIIIII
 1009  35•29     IIIIIIIIIIIIIIIII
 1411  35•24     IIIIIIIIIIIIIIIII
 1613  35•22      IIIIIIIIIIIIIIIII
 1612  35•17      IIIIIIIIIIIIIIIIII
 1511  35•14       IIIIIIIIIIIIIIIIII
  912  35•01       IIIIIIIIIIIIIIIIIII
 1108  34•97       IIIIIIIIIIIIIIIIIII
 1611  34•96        IIIIIIIIIIIIIIIIIII
 1415  34•91         IIIIIIIIIIIIIIIIIII
 1307  34•72          IIIIIIIIIIIIIIIIIII
 1210  34•70           IIIIIIIIIIIIIIIIIII
 1208  34•60            IIIIIIIIIIIIIIIIIII
 1410  34•64             IIIIIIIIIIIIIIIIIII
```

Appendix IV, 35/64

```
1211   34.52                  IIIIIIIIIIIIIIIIIII
1008   34.45                   IIIIIIIIIIIIIIIIIII
1510   34.33                    IIIIIIIIIIIIIIIIIII
1311   34.31                     IIIIIIIIIIIIIIIIIII
1508   34.22                      IIIIIIIIIIIIIIIIIII
1406   34.05                       IIIIIIIIIIIIIIIIIII
1711   34.01                        IIIIIIIIIIIIIIIIIII
1507   33.91                         IIIIIIIIIIIIIIIIIII
1610   33.85                          IIIIIIIIIIIIIIIIIII
2113   33.79                           IIIIIIIIIIIIIIIIIII
1709   33.79                           IIIIIIIIIIIIIIIIIII
1909   33.74                            IIIIIIIIIIIIIIIIIII
1207.  33.74                             IIIIIIIIIIIIIIIIIII
1306   33.71                              IIIIIIIIIIIIIIIIIII
2014   33.64                               IIIIIIIIIIIIIIIIII
1509   33.62                               IIIIIIIIIIIIIIIIIII
1708   33.59                                IIIIIIIIIIIIIIIIII
1608   33.54                                IIIIIIIIIIIIIIIIII
2015   33.50                                 IIIIIIIIIIIIIIIIII
2112   33.42                                 IIIIIIIIIIIIIIIIII
 806   33.41                                  IIIIIIIIIIIIIIIIII
 704   33.40                                  IIIIIIIIIIIIIIIIII
1609   33.39                                   IIIIIIIIIIIIIIIII
2111   33.39                                   IIIIIIIIIIIIIIIIII
2213   33.38                                   IIIIIIIIIIIIIIIIII
1710   33.38                                    IIIIIIIIIIIIIIIII
1910   33.33                                    IIIIIIIIIIIIIIIII
2115   33.31                                    IIIIIIIIIIIIIIIII
1607   33.28                                     IIIIIIIIIIIIIIII
 603   33.26                                     IIIIIIIIIIIIIIII
1407   33.20                                      IIIIIIIIIIIIIII
 703   33.19                                      IIIIIIIIIIIIIII
2313   33.15                                      IIIIIIIIIIIIIII
 804   33.13                                      IIIIIIIIIIIIIII
 907   33.13                                      IIIIIIIIIIIIIII
 807   33.10                                       IIIIIIIIIIIIII
2010   33.06                                       IIIIIIIIIIIIII
 905   33.03                                       IIIIIIIIIIIIII
2110   33.00                                       IIIIIIIIIIIIII
 805   32.99                                        IIIIIIIIIIIII
1811   32.99                                        IIIIIIIIIIIII
 906   32.99                                        IIIIIIIIIIIII
1206   32.98                                        IIIIIIIIIIIII
2513   32.98                                        IIIIIIIIIIIII
1104   32.95                                         IIIIIIIIIIII
1107   32.89                                          IIIIIIIIIII
1007   32.86                                          IIIIIIIIIII
 903   32.85                                           IIIIIIIIII
1106   32.84                                           IIIIIIIIII
1006   32.84                                            IIIIIIIII
1005   32.83                                             IIIIIIII
1105   32.81                                             IIIIIIII
 705   32.65                                             IIIIIIII
1205   32.62                                              IIIIIII
 504   32.62                                               IIIIII
2312   32.61                                                IIIII
 604   32.54                                                IIIII
 505   32.35                                                 IIII
1003   32.29                                                  III
 904   32.29                                                   II
1004   32.29                                                    I

                1234567890123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 36/64

Table 19

Basal length - Female

```
QUAD.   MEAN                     NON-SIGNIFICANT SUBSETS

                123456789012345678901234567890123456789012345678901234567890

 1213   29.29   I
 1312   29.11   II
  611   29.08   III
 1214   29.02   III
  710   29.00   IIII
 1413   29.00   IIII
 1313   28.98   IIIII
  810   28.95   IIIIII
  913   28.93   IIIIIII
  813   28.91   IIIIIIII
 1113   28.82   IIIIIIIII
 1111   28.75   IIIIIIIIII
 1314   28.69   IIIIIIIIIII
 1212   28.68   IIIIIIIIIIII
 1315   28.65   IIIIIIIIIIIII
 1013   28.53   IIIIIIIIIIIIII
 1014   28.51   IIIIIIIIIIIIIII
 1209   28.48   IIIIIIIIIIIIIII
 1512   28.45   IIIIIIIIIIIIIIII
 1011   28.45   IIIIIIIIIIIIIIII
 1513   28.41   IIIIIIIIIIIIIIIII
  914   28.37   IIIIIIIIIIIIIIIII
 1412   28.31   IIIIIIIIIIIIIIIIII
  911   28.27   IIIIIIIIIIIIIIIIII
 1614   28.22   IIIIIIIIIIIIIIIIII
 1310   28.22   IIIIIIIIIIIIIIIIII
 1514   28.17   IIIIIIIIIIIIIIIIII
 1010   28.15   IIIIIIIIIIIIIIIIIII
 1415   28.10   IIIIIIIIIIIIIIIIIII
 1012   28.08   IIIIIIIIIIIIIIIIIIII
 1411   28.05   IIIIIIIIIIIIIIIIIIIII
  910   28.05   IIIIIIIIIIIIIIIIIIIII
  912   28.02   IIIIIIIIIIIIIIIIIIIII
 1114   28.02   IIIIIIIIIIIIIIIIIIIIII
 1613   28.00   IIIIIIIIIIIIIIIIIIIIII
  309   27.92    IIIIIIIIIIIIIIIIIIIIII
 1109   27.91    IIIIIIIIIIIIIIIIIIIIII
 1712   27.87     IIIIIIIIIIIIIIIIIIIIII
 1414   27.75      IIIIIIIIIIIIIIIIIIIIII
 1511   27.73       IIIIIIIIIIIIIIIIIIIII
 1210   27.72       IIIIIIIIIIIIIIIIIIIIII
 1408   27.66        IIIIIIIIIIIIIIIIIIIIII
 1009   27.64         IIIIIIIIIIIIIIIIIIIII
 1309   27.61          IIIIIIIIIIIIIIIIIIIII
 1612   27.58           IIIIIIIIIIIIIIIIIIIII
 1611   27.56            IIIIIIIIIIIIIIIIIIIII
 1308   27.54             IIIIIIIIIIIIIIIIIIIII
 1409   27.48              IIIIIIIIIIIIIIIIIIIII
 1211   27.47               IIIIIIIIIIIIIIIIIIIII
 1311   27.36               IIIIIIIIIIIIIIIIIIIIII
 1008   27.31                IIIIIIIIIIIIIIIIIIIIII
 1709   27.31                IIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 37/64

```
1108  27.25                 IIIIIIIIIIIIIIIIIIIIIII
1307  27.22                  IIIIIIIIIIIIIIIIIIIIIII
1208  26.94                   IIIIIIIIIIIIIIIIIIIIIII
1410  26.87                    IIIIIIIIIIIIIIIIIIIIIII
2015  26.78                     IIIIIIIIIIIIIIIIIIIIIII
1510  26.76                      IIIIIIIIIIIIIIIIIIIIIII
1508  26.75                       IIIIIIIIIIIIIIIIIIIIIII
1711  26.73                        IIIIIIIIIIIIIIIIIIIIIII
2115  26.65                         IIIIIIIIIIIIIIIIIIIIIII
1507  26.55                          IIIIIIIIIIIIIIIIIIIIIII
 704  26.51                           IIIIIIIIIIIIIIIIIIIIII
 807  26.50                            IIIIIIIIIIIIIIIIIIIII
1207  26.50                             IIIIIIIIIIIIIIIIIIII
1610  26.46                              IIIIIIIIIIIIIIIIIII
1406  26.46                               IIIIIIIIIIIIIIIIII
 806  26.45                               IIIIIIIIIIIIIIIIII
1909  26.44                                IIIIIIIIIIIIIIIII
 603  26.41                                 IIIIIIIIIIIIIIII
 804  26.33                                 IIIIIIIIIIIIIIII
 805  26.31                                 IIIIIIIIIIIIIIII
 703  26.30                                 IIIIIIIIIIIIIIII
1509  26.30                                  IIIIIIIIIIIIIII
2014  26.27                                  IIIIIIIIIIIIIII
1306  26.25                                   IIIIIIIIIIIIII
 504  26.20                                   IIIIIIIIIIIIII
 907  26.13                                    IIIIIIIIIIIII
1607  26.09                                    IIIIIIIIIIIII
 905  26.09                                    IIIIIIIIIIIII
1407  26.06                                     IIIIIIIIIIII
2010  26.04                                     IIIIIIIIIIII
1708  26.03                                     IIIIIIIIIIII
1910  26.03                                     IIIIIIIIIIII
2113  26.01                                      IIIIIIIIIII
1104  26.01                                      IIIIIIIIIII
 903  26.01                                      IIIIIIIIIII
2111  26.01                                      IIIIIIIIIII
1710  25.99                                       IIIIIIIIII
1206  25.97                                        IIIIIIIII
1608  25.96                                        IIIIIIIII
1007  25.94                                         IIIIIIII
 906  25.94                                         IIIIIIII
 604  25.93                                         IIIIIIII
 705  25.91                                         IIIIIIII
1005  25.90                                         IIIIIIII
 505  25.89                                         IIIIIIII
2112  25.88                                          IIIIIII
1609  25.86                                          IIIIIII
1006  25.83                                          IIIIIII
1106  25.81                                           IIIIII
2110  25.79                                           IIIIII
1105  25.78                                           IIIIII
1107  25.77                                            IIIII
2213  25.74                                            IIIII
2313  25.74                                            IIIII
1811  25.73                                            IIIII
1205  25.72                                             IIII
1004  25.69                                             IIII
2513  25.66                                             IIII
 904  25.55                                              III
1003  25.53                                               II
2312  25.44                                                I

              123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 38/64

Table 20

Greatest skull width - Female

```
QUAD.   MEAN                     NON-SIGNIFICANT SUBSETS

                 123456789012345678901234567890123456789012345678901234567890

 1209   25.83    I
 1408   25.29    II
 1309   25.27    III
 1308   25.24    IIII
  710   25.11    IIIII
 1409   24.97    IIIIII
 1108   24.93    IIIIIII
  810   24.93    IIIIIII
  813   24.90    IIIIIIII
 1310   24.89    IIIIIIII
  611   24.81    IIIIIIIII
 1213   24.73    IIIIIIIIII
 1214   24.77    IIIIIIIIIII
 1307   24.73    IIIIIIIIIIII
 1208   24.73    IIIIIIIIIIIII
 1412   24.64    IIIIIIIIIIIIII
 1212   24.62    IIIIIIIIIIIIII
 1312   24.56    IIIIIIIIIIIIIII
  309   24.56    IIIIIIIIIIIIIII
 1313   24.56    IIIIIIIIIIIIIIII
 1111   24.52    IIIIIIIIIIIIIIIII
 1512   24.49    IIIIIIIIIIIIIIIII
 1508   24.49    IIIIIIIIIIIIIIIII
 1413   24.47    IIIIIIIIIIIIIIIIII
 1113   24.43    IIIIIIIIIIIIIIIIIII
 1513   24.43    IIIIIIIIIIIIIIIIIII
 1011   24.43     IIIIIIIIIIIIIIIIIII
 1511   24.43     IIIIIIIIIIIIIIIIIIII
 1114   24.40     IIIIIIIIIIIIIIIIIIII
 1109   24.40     IIIIIIIIIIIIIIIIIIII
 1712   24.39     IIIIIIIIIIIIIIIIIIIII
 1010   24.39     IIIIIIIIIIIIIIIIIIIIII
 1612   24.38      IIIIIIIIIIIIIIIIIIIII
 1315   24.38      IIIIIIIIIIIIIIIIIIIIII
 1410   24.37       IIIIIIIIIIIIIIIIIIIIII
 1411   24.36       IIIIIIIIIIIIIIIIIIIIIII
 1611   24.35       IIIIIIIIIIIIIIIIIIIIIII
 1613   24.32       IIIIIIIIIIIIIIIIIIIIIIII
 1009   24.28       IIIIIIIIIIIIIIIIIIIIIIIII
 1514   24.28       IIIIIIIIIIIIIIIIIIIIIIIIII
 2113   24.24        IIIIIIIIIIIIIIIIIIIIIIIIII
 1211   24.23        IIIIIIIIIIIIIIIIIIIIIIIIII
  911   24.21        IIIIIIIIIIIIIIIIIIIIIIIIIII
 1012   24.19        IIIIIIIIIIIIIIIIIIIIIIIIIIII
  910   24.17        IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1614   24.16        IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1311   24.14        IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1013   24.14         IIIIIIIIIIIIIIIIIIIIIIIIIIII
 1510   24.12          IIIIIIIIIIIIIIIIIIIIIIIIIIII
  913   24.08          IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1711   24.07           IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1507   24.04           IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 39/64

```
 1314   24.04         IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1014   23.99         IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1414   23.98          IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1207   23.97           IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  914   23.94            IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1210   23.92             IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1406   23.90             IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1306   23.87              IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1610   23.84               IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1008   23.78                IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  912   23.77                 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1709   23.77                 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  704   23.76                  IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 2213   23.75                   IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1909   23.73                    IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 2513   23.71                     IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1509   23.69                      IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1407   23.69                       IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1710   23.67                        IIIIIIIIIIIIIIIIIIIIIIIIIIII
  703   23.66                        IIIIIIIIIIIIIIIIIIIIIIIIIIII
 2313   23.64                         IIIIIIIIIIIIIIIIIIIIIIIIIIII
 1910   23.63                          IIIIIIIIIIIIIIIIIIIIIIIIIII
 1609   23.63                           IIIIIIIIIIIIIIIIIIIIIIIIII
 2111   23.62                           IIIIIIIIIIIIIIIIIIIIIIIIII
 2112   23.59                           IIIIIIIIIIIIIIIIIIIIIIIIII
 1608   23.58                            IIIIIIIIIIIIIIIIIIIIIIIII
  806   23.57                            IIIIIIIIIIIIIIIIIIIIIIIII
  905   23.56                             IIIIIIIIIIIIIIIIIIIIIIII
  804   23.54                             IIIIIIIIIIIIIIIIIIIIIIII
  906   23.53                              IIIIIIIIIIIIIIIIIIIIIII
 1206   23.53                              IIIIIIIIIIIIIIIIIIIIIII
  603   23.48                               IIIIIIIIIIIIIIIIIIIIII
 1107   23.48                               IIIIIIIIIIIIIIIIIIIIII
  907   23.47                                IIIIIIIIIIIIIIIIIIIIII
 1708   23.46                                IIIIIIIIIIIIIIIIIIIIII
  807   23.42                                 IIIIIIIIIIIIIIIIIIIII
 1106   23.39                                  IIIIIIIIIIIIIIIIIIII
 1007   23.38                                  IIIIIIIIIIIIIIIIIIII
  805   23.37                                   IIIIIIIIIIIIIIIIIII
 1415   23.34                                    IIIIIIIIIIIIIIIIII
 2110   23.29                                     IIIIIIIIIIIIIIIII
 1811   23.28                                     IIIIIIIIIIIIIIIII
 1607   23.27                                      IIIIIIIIIIIIIIII
 1006   23.25                                       IIIIIIIIIIIIIII
  604   23.25                                        IIIIIIIIIIIIII
 1005   23.23                                        IIIIIIIIIIIIII
 2312   23.23                                         IIIIIIIIIIIII
  903   23.20                                          IIIIIIIIIIII
 1104   23.19                                           IIIIIIIIIII
 1105   23.18                                           IIIIIIIIIII
 1205   23.12                                            IIIIIIIIII
 1004   23.07                                             IIIIIIIIII
  504   23.07                                              IIIIIIIII
  904   23.05                                               IIIIIIII
 2010   23.01                                                IIIIIII
  705   22.98                                                 IIIIII
  505   22.92                                                  IIIII
 2014   22.88                                                   IIII
 1003   22.85                                                    III
 2015   22.16                                                     II
 2115   21.76                                                      I
             1234567890123456789012345678901234567890123456789012345678901234567890
```

Table 21

Maxillary width - Female

```
QUAD•   MEAN                 NON-SIGNIFICANT SUBSETS

                123456789012345678901234567890123456789012345678901234567890

  710   22•10   I
 1213   22•01   I
  813   21•99   II
  611   21•96   III
 1315   21•93   III
 1214   21•90   IIII
 1313   21•77   IIIII
 1312   21•69   IIIIII
 1011   21•65   IIIIIII
 1614   21•62   IIIIIIII
 1212   21•57   IIIIIIII
 1113   21•54   IIIIIIIII
 1413   21•50   IIIIIIIIII
 1414   21•50   IIIIIIIIIII
 1512   21•48   IIIIIIIIIII
 1111   21•46   IIIIIIIIIIII
  810   21•46   IIIIIIIIIIII
 1412   21•44   IIIIIIIIIIIII
  309   21•36   IIIIIIIIIIIIII
 1514   21•33   IIIIIIIIIIIIII
 1513   21•31   IIIIIIIIIIIIIII
 1613   21•29   IIIIIIIIIIIIIIII
 1114   21•28   IIIIIIIIIIIIIIIII
 1314   21•26   IIIIIIIIIIIIIIIII
 1415   21•25   IIIIIIIIIIIIIIIIII
 1014   21•22   IIIIIIIIIIIIIIIIIII
 1209   21•17   IIIIIIIIIIIIIIIIIIII
 1012   21•16   IIIIIIIIIIIIIIIIIIIII
 1013   21•15   IIIIIIIIIIIIIIIIIIIIII
  911   21•11   IIIIIIIIIIIIIIIIIIIIII
 1310   21•08   IIIIIIIIIIIIIIIIIIIIIII
  913   21•07   IIIIIIIIIIIIIIIIIIIIIII
  910   21•03   IIIIIIIIIIIIIIIIIIIIIIII
 1411   21•02   IIIIIIIIIIIIIIIIIIIIIIII
 1712   21•01   IIIIIIIIIIIIIIIIIIIIIIII
 1511   21•01    IIIIIIIIIIIIIIIIIIIIIIII
 1210   21•00    IIIIIIIIIIIIIIIIIIIIIIIII
 1010   20•96    IIIIIIIIIIIIIIIIIIIIIIIIII
 1611   20•95     IIIIIIIIIIIIIIIIIIIIIIIII
 1612   20•91      IIIIIIIIIIIIIIIIIIIIIIIII
  914   20•86      IIIIIIIIIIIIIIIIIIIIIIIIII
 1308   20•85       IIIIIIIIIIIIIIIIIIIIIIIIII
 1408   20•85       IIIIIIIIIIIIIIIIIIIIIIIIIII
 1711   20•73        IIIIIIIIIIIIIIIIIIIIIIIIIII
  912   20•71        IIIIIIIIIIIIIIIIIIIIIIIIIIII
 1309   20•69        IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1009   20•69         IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1109   20•67          IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1409   20•67           IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1108   20•61           IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1909   20•56            IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1211   20•52             IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 41/64

```
 1510  20.51              IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1311  20.49               IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1410  20.46                IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1008  20.43                 IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1508  20.43                 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1708  20.42                  IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1307  20.41                   IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  603  20.40                    IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1208  20.36                    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  807  20.27                     IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1910  20.27                     IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1406  20.26                      IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1709  20.22                       IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  804  20.21                        IIIIIIIIIIIIIIIIIIIIIIIIIIIII
  704  20.21                         IIIIIIIIIIIIIIIIIIIIIIIIIIII
 1407  20.19                          IIIIIIIIIIIIIIIIIIIIIIIIIII
  806  20.15                          IIIIIIIIIIIIIIIIIIIIIIIIIII
  906  20.09                           IIIIIIIIIIIIIIIIIIIIIIIIII
 1610  20.08                            IIIIIIIIIIIIIIIIIIIIIIIII
 1603  20.06                             IIIIIIIIIIIIIIIIIIIIIIII
 2213  20.05                             IIIIIIIIIIIIIIIIIIIIIIII
 1509  20.05                              IIIIIIIIIIIIIIIIIIIIIII
 1507  20.03                              IIIIIIIIIIIIIIIIIIIIIII
  703  20.02                              IIIIIIIIIIIIIIIIIIIIIII
  604  20.02                              IIIIIIIIIIIIIIIIIIIIIII
 2112  20.01                               IIIIIIIIIIIIIIIIIIIIII
 1206  20.01                               IIIIIIIIIIIIIIIIIIIIII
 2110  20.00                               IIIIIIIIIIIIIIIIIIIIII
  907  20.00                                IIIIIIIIIIIIIIIIIIIII
 1306  19.98                                IIIIIIIIIIIIIIIIIIIII
  805  19.96                                 IIIIIIIIIIIIIIIIIIII
 2014  19.95                                 IIIIIIIIIIIIIIIIIIII
 1105  19.91                                  IIIIIIIIIIIIIIIIIII
 1007  19.90                                   IIIIIIIIIIIIIIIIII
 1106  19.89                                    IIIIIIIIIIIIIIIII
  903  19.88                                     IIIIIIIIIIIIIIII
  904  19.87                                      IIIIIIIIIIIIIII
  504  19.85                                      IIIIIIIIIIIIIII
 1607  19.85                                       IIIIIIIIIIIIII
  905  19.84                                       IIIIIIIIIIIIII
 2113  19.83                                        IIIIIIIIIIIII
 1811  19.83                                        IIIIIIIIIIIII
 1205  19.81                                        IIIIIIIIIIIII
 1710  19.80                                         IIIIIIIIIIII
 2111  19.79                                          IIIIIIIIIII
 1107  19.77                                          IIIIIIIIIII
 2010  19.75                                           IIIIIIIIII
 2313  19.71                                           IIIIIIIIII
 1104  19.70                                            IIIIIIIII
 1005  19.69                                            IIIIIIIII
 1207  19.67                                             IIIIIIII
  705  19.64                                             IIIIIIII
 1609  19.61                                              IIIIIII
 1004  19.59                                               IIIIII
  505  19.59                                               IIIIII
 2015  19.57                                                IIIII
 2312  19.53                                                 IIII
 1003  19.52                                                  III
 1006  19.51                                                  III
 2513  19.31                                                   II
 2115  19.24                                                    I

               123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 42/64

Table 22

Greatest skull depth - Female

```
QUAD.   MEAN                        NON-SIGNIFICANT SUBSETS

                 123456789012345678901234567890123456789012345678901234567890

 1209   13.52    I
  810   13.45    II
 1308   13.40    III
 1408   13.39    IIII
  710   13.37    IIIII
 1309   13.37    IIIIII
 1409   13.27    IIIIIII
  910   13.24    IIIIIII
 1108   13.22    IIIIIIII
 1310   13.21    IIIIIIII
 1214   13.20    IIIIIIIII
  611   13.19    IIIIIIIIII
 1208   13.18    IIIIIIIIII
  813   13.18    IIIIIIIIII
 1213   13.17    IIIIIIIIII
 1013   13.17    IIIIIIIIIII
 1307   13.16    IIIIIIIIIIII
 1513   13.16    IIIIIIIIIIII
 1212   13.15    IIIIIIIIIIII
 1111   13.14    IIIIIIIIIIII
 1211   13.13    IIIIIIIIIIIII
 1113   13.12    IIIIIIIIIIIII
 1010   13.11    IIIIIIIIIIIIII
  913   13.11    IIIIIIIIIIIIIII
 1411   13.11    IIIIIIIIIIIIIII
 1512   13.11    IIIIIIIIIIIIIII
 1011   13.11    IIIIIIIIIIIIIII
 1312   13.10    IIIIIIIIIIIIIII
 1012   13.10    IIIIIIIIIIIIIIII
 1412   13.09    IIIIIIIIIIIIIIII
 1009   13.09    IIIIIIIIIIIIIIII
 1413   13.08    IIIIIIIIIIIIIIIII
  911   13.08    IIIIIIIIIIIIIIIII
 1313   13.07    IIIIIIIIIIIIIIIII
 1311   13.07    IIIIIIIIIIIIIIIIII
 1109   13.03    IIIIIIIIIIIIIIIIIII
 1613   13.01    IIIIIIIIIIIIIIIIIII
 1511   13.01     IIIIIIIIIIIIIIIIIII
  309   13.00     IIIIIIIIIIIIIIIIIIII
 1210   13.00     IIIIIIIIIIIIIIIIIIII
 1612   12.97      IIIIIIIIIIIIIIIIIIII
 1712   12.95       IIIIIIIIIIIIIIIIIIII
 1014   12.95       IIIIIIIIIIIIIIIIIIIII
 1314   12.93       IIIIIIIIIIIIIIIIIIIIII
  914   12.93        IIIIIIIIIIIIIIIIIIIIII
 1410   12.91         IIIIIIIIIIIIIIIIIIIIII
 1114   12.91         IIIIIIIIIIIIIIIIIIIIIII
 1315   12.90          IIIIIIIIIIIIIIIIIIIIIII
 1514   12.88          IIIIIIIIIIIIIIIIIIIIIIII
 1611   12.86           IIIIIIIIIIIIIIIIIIIIIIII
 2113   12.84            IIIIIIIIIIIIIIIIIIIIIIII
  912   12.80             IIIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 43/64

```
1207  12.79             IIIIIIIIIIIIIIIIIIIIIIII
1508  12.76              IIIIIIIIIIIIIIIIIIIIIIII
1510  12.76               IIIIIIIIIIIIIIIIIIIIIIII
1414  12.75                IIIIIIIIIIIIIIIIIIIIIIII
1614  12.74                 IIIIIIIIIIIIIIIIIIIIIIII
1509  12.68                  IIIIIIIIIIIIIIIIIIIIIIII
2111  12.68                  IIIIIIIIIIIIIIIIIIIIIIIII
1008  12.67                   IIIIIIIIIIIIIIIIIIIIIIII
1909  12.66                    IIIIIIIIIIIIIIIIIIIIIIII
1710  12.63                     IIIIIIIIIIIIIIIIIIIIIIII
1610  12.63                      IIIIIIIIIIIIIIIIIIIIIIII
1609  12.61                       IIIIIIIIIIIIIIIIIIIIIIII
1910  12.60                        IIIIIIIIIIIIIIIIIIIIIIII
1711  12.60                         IIIIIIIIIIIIIIIIIIIIIIII
2213  12.58                         IIIIIIIIIIIIIIIIIIIIIIII
1306  12.58                          IIIIIIIIIIIIIIIIIIIIIII
2112  12.57                           IIIIIIIIIIIIIIIIIIIIIII
1206  12.53                            IIIIIIIIIIIIIIIIIIIIII
1608  12.53                             IIIIIIIIIIIIIIIIIIIII
 906  12.53                             IIIIIIIIIIIIIIIIIIIIII
1709  12.52                             IIIIIIIIIIIIIIIIIIIIII
1106  12.50                              IIIIIIIIIIIIIIIIIIIII
 807  12.50                              IIIIIIIIIIIIIIIIIIIII
1406  12.50                               IIIIIIIIIIIIIIIIIIII
2313  12.49                                IIIIIIIIIIIIIIIIIII
 903  12.48                                IIIIIIIIIIIIIIIIIII
 603  12.48                                 IIIIIIIIIIIIIIIIII
 905  12.48                                 IIIIIIIIIIIIIIIIII
1708  12.47                                 IIIIIIIIIIIIIIIIII
 704  12.46                                  IIIIIIIIIIIIIIIII
1415  12.45                                  IIIIIIIIIIIIIIIII
 703  12.45                                  IIIIIIIIIIIIIIIII
 804  12.45                                  IIIIIIIIIIIIIIIII
1407  12.45                                  IIIIIIIIIIIIIIIII
1507  12.43                                   IIIIIIIIIIIIIIII
2513  12.42                                   IIIIIIIIIIIIIIII
1107  12.42                                    IIIIIIIIIIIIIII
 806  12.42                                    IIIIIIIIIIIIIII
 907  12.40                                     IIIIIIIIIIIIII
1006  12.39                                     IIIIIIIIIIIIII
1811  12.38                                     IIIIIIIIIIIIII
1104  12.38                                      IIIIIIIIIIIII
 805  12.37                                      IIIIIIIIIIIII
1007  12.37                                       IIIIIIIIIIII
1105  12.36                                       IIIIIIIIIIII
 504  12.35                                        IIIIIIIIIII
2312  12.34                                         IIIIIIIIII
2110  12.34                                         IIIIIIIIII
 705  12.33                                          IIIIIIIII
2014  12.33                                          IIIIIIIII
 604  12.33                                          IIIIIIIII
1004  12.32                                           IIIIIIII
2010  12.30                                           IIIIIIII
1205  12.30                                            IIIIIII
1607  12.29                                             IIIIII
1003  12.28                                              IIIII
 904  12.27                                              IIIII
 505  12.27                                               IIII
1005  12.27                                                III
2015  12.14                                                 II
2115  12.08                                                  I

              123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 44/64

Table 23

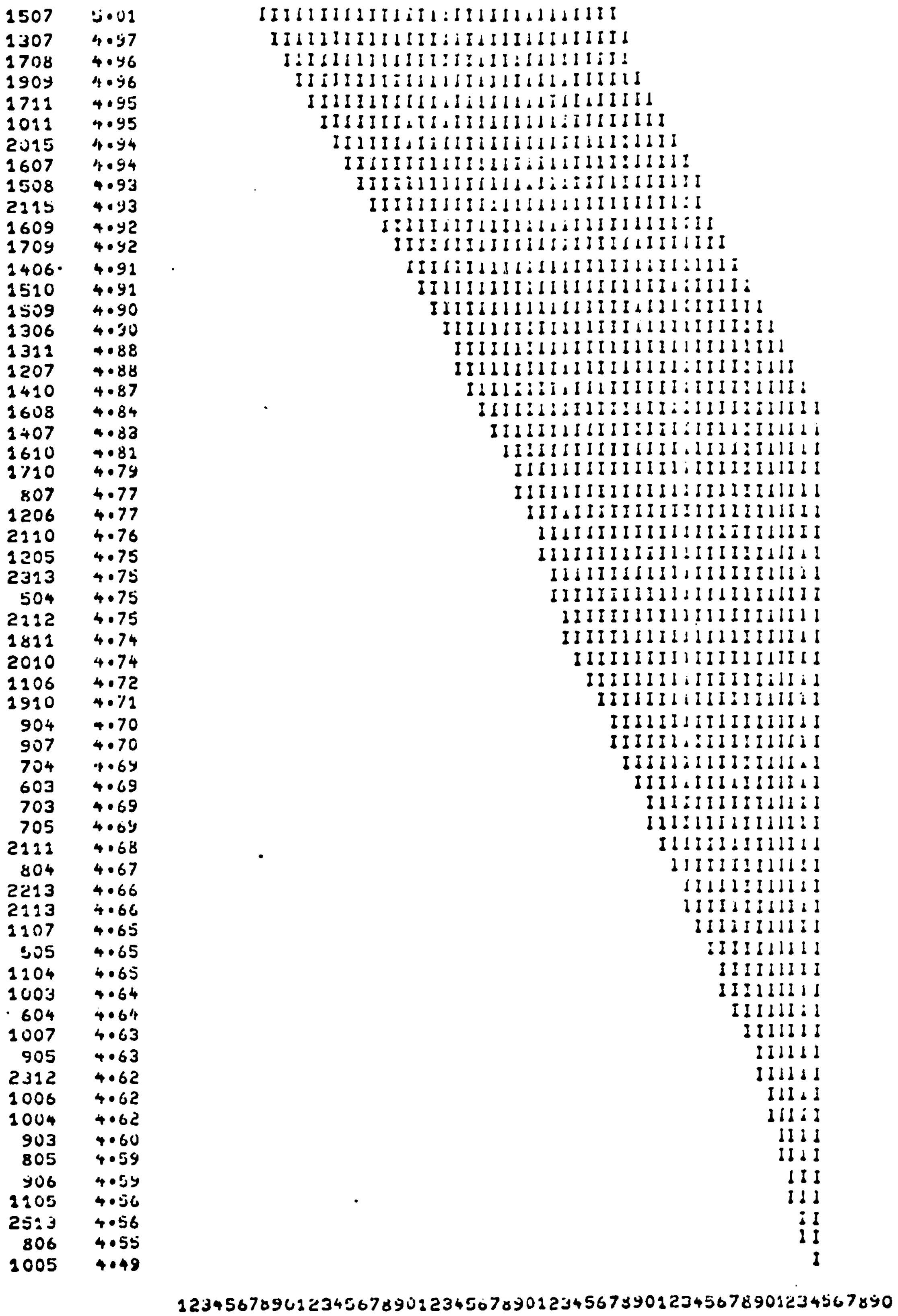
Intermaxillary width - Female

```
QUAD.   MEAN                  NON-SIGNIFICANT SUBSETS

                123456789012345678901234567890123456789012345678901234567890

 710    5.55    I
 914    5.50    II
 611    5.45    III
1111    5.43    III
 813    5.42    III
1513    5.40    IIII
1014    5.40    IIII
1413    5.38    IIIII
1314    5.38    IIIIII
1313    5.37    IIIIIII
1114    5.35    IIIIIIII
1109    5.35    IIIIIIII
1214    5.33    IIIIIIII
1512    5.32    IIIIIIIII
 913    5.31    IIIIIIIIII
1013    5.31    IIIIIIIIII
1209    5.29    IIIIIIIIIII
1010    5.29    IIIIIIIIIII
1412    5.29    IIIIIIIIIII
1213    5.28    IIIIIIIIIII
1511    5.27    IIIIIIIIIIII
 810    5.27    IIIIIIIIIIIII
1012    5.26    IIIIIIIIIIIII
1614    5.26    IIIIIIIIIIIII
1312    5.26    IIIIIIIIIIIIII
1212    5.26    IIIIIIIIIIIIII
 910    5.24    IIIIIIIIIIIIIII
1315    5.22    IIIIIIIIIIIIIIII
1712    5.22    IIIIIIIIIIIIIIII
 912    5.20    IIIIIIIIIIIIIIIII
1408    5.20    IIIIIIIIIIIIIIIII
1613    5.20    IIIIIIIIIIIIIIIIII
1611    5.19    IIIIIIIIIIIIIIIIIII
 911    5.19    IIIIIIIIIIIIIIIIIIII
1113    5.17    IIIIIIIIIIIIIIIIIIII
 309    5.17    IIIIIIIIIIIIIIIIIIIII
1414    5.17    IIIIIIIIIIIIIIIIIIIIII
1308    5.17    IIIIIIIIIIIIIIIIIIIIII
1009    5.16    IIIIIIIIIIIIIIIIIIIIIII
1514    5.16    IIIIIIIIIIIIIIIIIIIIIIII
1310    5.15     IIIIIIIIIIIIIIIIIIIIIIII
1008    5.14     IIIIIIIIIIIIIIIIIIIIIIIII
1612    5.14      IIIIIIIIIIIIIIIIIIIIIIIII
1415    5.14      IIIIIIIIIIIIIIIIIIIIIIIIII
1411    5.12      IIIIIIIIIIIIIIIIIIIIIIIIIII
1309    5.12      IIIIIIIIIIIIIIIIIIIIIIIIIIII
1211    5.09       IIIIIIIIIIIIIIIIIIIIIIIIIIII
1409    5.08        IIIIIIIIIIIIIIIIIIIIIIIIIIII
1208    5.07         IIIIIIIIIIIIIIIIIIIIIIIIIIII
1108    5.07         IIIIIIIIIIIIIIIIIIIIIIIIIIIII
2014    5.06          IIIIIIIIIIIIIIIIIIIIIIIIIIIII
1210    5.05          IIIIIIIIIIIIIIIIIIIIIIIIIII.III
```

Appendix IV, 45/64



```
1507    5.01
1307    4.97
1708    4.96
1909    4.96
1711    4.95
1011    4.95
2015    4.94
1607    4.94
1508    4.93
2115    4.93
1609    4.92
1709    4.92
1406    4.91
1510    4.91
1509    4.90
1306    4.90
1311    4.88
1207    4.88
1410    4.87
1608    4.84
1407    4.83
1610    4.81
1710    4.79
 807    4.77
1206    4.77
2110    4.76
1205    4.75
2313    4.75
 504    4.75
2112    4.75
1811    4.74
2010    4.74
1106    4.72
1910    4.71
 904    4.70
 907    4.70
 704    4.69
 603    4.69
 703    4.69
 705    4.69
2111    4.68
 804    4.67
2213    4.66
2113    4.66
1107    4.65
 505    4.65
1104    4.65
1003    4.64
 604    4.64
1007    4.63
 905    4.63
2312    4.62
1006    4.62
1004    4.62
 903    4.60
 805    4.59
 906    4.59
1105    4.56
2513    4.56
 806    4.55
1005    4.49

123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 46/64

Table 24

Third molar width - Female

```
QUAD.   MEAN                  NON-SIGNIFICANT SUBSETS

                123456789012345678901234567890123456789012345678901234567890

 1209   1.06    I
 1411   1.04    II
 1612   1.03    III
 1408   1.03    IIII
 1909   1.03    IIII
 1513   1.03    IIIII
  813   1.02    IIIII
 1508   1.02    IIIIII
 1613   1.02    IIIIII
 1308   1.02    IIIIIII
  810   1.01    IIIIIII
 1114   1.01    IIIIIIII
 1611   1.01    IIIIIIIII
 1712   1.01    IIIIIIIIII
 1309   1.01    IIIIIIIIIII
 2513   1.01    IIIIIIIIIIII
 1710   1.00    IIIIIIIIIIII
 1212   1.00    IIIIIIIIIIII
 1511   1.00    IIIIIIIIIIIII
 1313   1.00    IIIIIIIIIIIIII
 1512   1.00    IIIIIIIIIIIIIII
 1111   1.00    IIIIIIIIIIIIIIII
 1614   1.00    IIIIIIIIIIIIIIII
 1412   1.00    IIIIIIIIIIIIIIII
  912   1.00    IIIIIIIIIIIIIIII
 1711   1.00    IIIIIIIIIIIIIIII
 1410    .99    IIIIIIIIIIIIIIII
  910    .99    IIIIIIIIIIIIIIIII
 1409    .99    IIIIIIIIIIIIIIIII
  911    .99    IIIIIIIIIIIIIIIII
 1010    .99    IIIIIIIIIIIIIIIII
 1214    .99    IIIIIIIIIIIIIIIIII
 2010    .99    IIIIIIIIIIIIIIIIII
 1407    .99    IIIIIIIIIIIIIIIIIII
 1608    .99    IIIIIIIIIIIIIIIIIIII
 1210    .98    IIIIIIIIIIIIIIIIIIII
 1607    .98    IIIIIIIIIIIIIIIIIIIII
 1413    .98    IIIIIIIIIIIIIIIIIIIII
 1514    .98    IIIIIIIIIIIIIIIIIIIIII
 1610    .98    IIIIIIIIIIIIIIIIIIIIII
 1509    .98    IIIIIIIIIIIIIIIIIIIIIII
 1910    .98    IIIIIIIIIIIIIIIIIIIIIII
 2113    .98    IIIIIIIIIIIIIIIIIIIIIIII
 1406    .98    IIIIIIIIIIIIIIIIIIIIIIIII
 1811    .98    IIIIIIIIIIIIIIIIIIIIIIIIII
 2313    .98    IIIIIIIIIIIIIIIIIIIIIIIIII
  611    .97    IIIIIIIIIIIIIIIIIIIIIIIIIII
 1708    .97    IIIIIIIIIIIIIIIIIIIIIIIIIII
 2312    .97    IIIIIIIIIIIIIIIIIIIIIIIIIII
 1213    .97    IIIIIIIIIIIIIIIIIIIIIIIIIIII
 1014    .97    IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1510    .97    IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 47/64

```
  914     .97    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1310     .97    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1307     .97    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1211     .97    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1507     .96    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1314     .96    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1108     .96    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1306     .96    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1113     .96    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1109     .96    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 2213     .96    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1013     .96    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1414.    .96    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1415     .95    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  710     .95    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1012     .95    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1609     .95    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  907     .95    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1312     .95    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1311     .95    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  309     .94    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1007     .94     IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 2112     .93      IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1207     .93       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1008     .93        IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 2110     .93        IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1003     .93         IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1009     .92          IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1004     .92           IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  807     .92            IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  806     .92             IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1709     .92              IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1011     .91               IIIIIIIIIIIIIIIIIIIIIIIIIIII
 1107     .91                IIIIIIIIIIIIIIIIIIIIIIIIIII
 2111     .91                 IIIIIIIIIIIIIIIIIIIIIIIIII
  805     .91                  IIIIIIIIIIIIIIIIIIIIIIIII
 1315     .91                   IIIIIIIIIIIIIIIIIIIIIIII
 1205     .91                    IIIIIIIIIIIIIIIIIIIIIII
 1206     .91                    IIIIIIIIIIIIIIIIIIIIIII
  903     .91                     IIIIIIIIIIIIIIIIIIIIII
 1106     .91                      IIIIIIIIIIIIIIIIIIIII
 1104     .91                       IIIIIIIIIIIIIIIIIIII
  913     .90                        IIIIIIIIIIIIIIIIIII
 1208     .90                         IIIIIIIIIIIIIIIIII
 1105     .90                          IIIIIIIIIIIIIIIII
 2115     .89                           IIIIIIIIIIIIIIII
 1006     .89                            IIIIIIIIIIIIIII
  703     .89                             IIIIIIIIIIIIII
  904     .89                              IIIIIIIIIIIII
 1005     .88                               IIIIIIIIIIII
  603     .88                                IIIIIIIIIII
 2014     .88                                 IIIIIIIIII
  705     .88                                  IIIIIIIII
  704     .88                                   IIIIIIII
 2015     .87                                    IIIIIII
  504     .87                                     IIIIII
  804     .87                                      IIIII
  906     .86                                       IIII
  905     .86                                        III
  604     .84                                         II
  505     .82                                          I

                 123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 48/64

Table 25

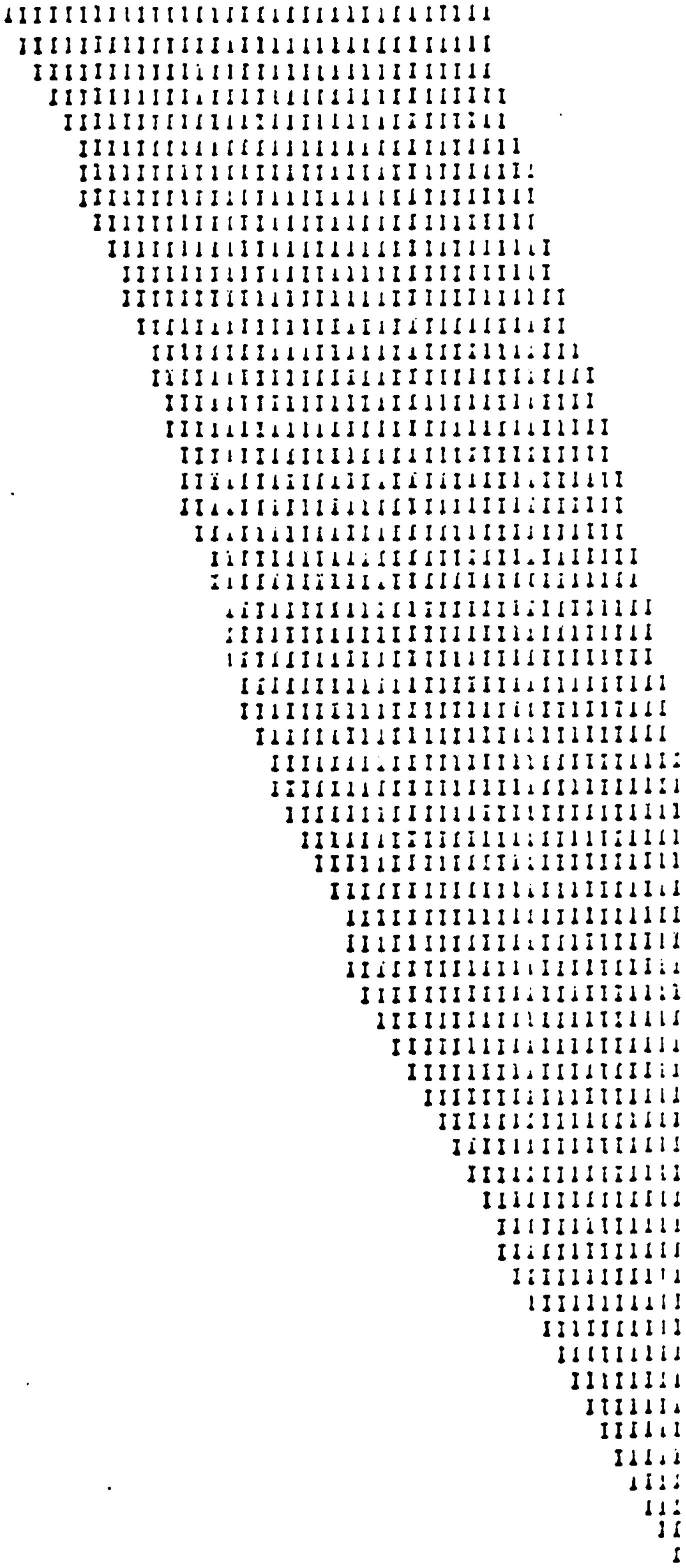
Premolar width - Female

```
QUAD.   MEAN                     NON-SIGNIFICANT SUBSETS

                  123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890

 1209   1.79      I
 1513   1.74      II
 1415   1.73      III
 1613   1.73      IIII
  611   1.72      IIIII
 1213   1.72      IIIII
 1412   1.72      IIIIII
 1309   1.72      IIIIII
  813   1.71      IIIIIII
 1614   1.71      IIIIIIII
 1313   1.71      IIIIIIII
 1512   1.70      IIIIIIIII
 1111   1.70      IIIIIIIIII
 1411   1.70      IIIIIIIIII
 1408   1.70      IIIIIIIIII
 1514   1.70      IIIIIIIIIII
 1212   1.70      IIIIIIIIIIII
 1314   1.69      IIIIIIIIIIIII
 1611   1.69      IIIIIIIIIIIIII
 1612   1.69      IIIIIIIIIIIIIII
 1308   1.69      IIIIIIIIIIIIIIII
 1712   1.69      IIIIIIIIIIIIIIIII
  914   1.69      IIIIIIIIIIIIIIIIII
 1114   1.69      IIIIIIIIIIIIIIIIIII
 1409   1.69      IIIIIIIIIIIIIIIIIII
 1511   1.69      IIIIIIIIIIIIIIIIIIII
 1214   1.69      IIIIIIIIIIIIIIIIIIIII
 1014   1.68      IIIIIIIIIIIIIIIIIIIIII
 1113   1.67      IIIIIIIIIIIIIIIIIIIIII
 1413   1.66      IIIIIIIIIIIIIIIIIIIIIII
 1013   1.66      IIIIIIIIIIIIIIIIIIIIIIII
 1012   1.66      IIIIIIIIIIIIIIIIIIIIIIII
 1312   1.66      IIIIIIIIIIIIIIIIIIIIIIIII
 1108   1.66      IIIIIIIIIIIIIIIIIIIIIIIIII
  912   1.66      IIIIIIIIIIIIIIIIIIIIIIIIIII
 1010   1.66      IIIIIIIIIIIIIIIIIIIIIIIIIIII
  710   1.65      IIIIIIIIIIIIIIIIIIIIIIIIIIII
  810   1.65      IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1414   1.65      IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1307   1.65      IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1909   1.65      IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  911   1.64      IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1315   1.64      IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  913   1.63      IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1011   1.63      IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1208   1.62      IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1509   1.62       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1507   1.62        IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1410   1.61         IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 2010   1.61          IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1207   1.61           IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1711   1.61            IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 49/64



```
1310    1.61
1407    1.61
1610    1.61
1910    1.60
1510    1.60
 910    1.60
 309    1.60
1708    1.60
1109    1.60
1811    1.59
2313    1.59
2113    1.59
2312    1.59
1210    1.59
1508    1.59
1009    1.59
1406    1.58
1710    1.57
2110    1.57
2213    1.57
1306    1.57
1607    1.57
1609    1.56
1608    1.56
2112    1.56
1311    1.56
1211    1.55
 703    1.55
 303    1.55
1008    1.55
 504    1.55
2111    1.54
 705    1.54
2015    1.54
 505    1.54
2115    1.54
 806    1.54
2014    1.54
 807    1.53
 903    1.52
 805    1.52
2513    1.51
 804    1.51
1206    1.51
 604    1.50
1104    1.50
1004    1.50
1106    1.49
1709    1.49
1006    1.49
 704    1.49
1107    1.49
1003    1.49
 907    1.48
1205    1.47
 905    1.46
1005    1.45
1007    1.45
 904    1.44
1105    1.43
 906    1.42

                      123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 50/64

Table 26

Toothrow length - Female

```
QUAD.   MEAN                 NON-SIGNIFICANT SUBSETS

               123456789012345678901234567890123456789012345678901234567890

  611   7.92   I
  710   7.90   II
  813   7.86   III
 1209   7.85   IIII
 1614   7.80   IIII
 1114   7.79   IIII
  810   7.79   IIIII
 1412   7.78   IIIII
 1413   7.77   IIIII
 1214   7.76   IIIIII
 1213   7.73   IIIIIII
 1513   7.72   IIIIIII
 1313   7.72   IIIIIII
  911   7.71   IIIIIIII
 1308   7.71   IIIIIIII
 1010   7.70   IIIIIIII
 1009   7.69   IIIIIIII
 1612   7.69   IIIIIIIII
 1613   7.68   IIIIIIIII
 1309   7.67   IIIIIIIIII
 1512   7.67   IIIIIIIIIII
 1511   7.67   IIIIIIIIIII
 1312   7.66   IIIIIIIIIIII
 1212   7.66   IIIIIIIIIIIII
 1012   7.64   IIIIIIIIIIIII
  910   7.64   IIIIIIIIIIIIII
 1113   7.64   IIIIIIIIIIIIII
 1514   7.63   IIIIIIIIIIIIII
 1414   7.63   IIIIIIIIIIIIIII
 1411   7.63   IIIIIIIIIIIIIII
 1109   7.63   IIIIIIIIIIIIIIII
 1712   7.62   IIIIIIIIIIIIIIII
  309   7.61   IIIIIIIIIIIIIIIII
 1108   7.61   IIIIIIIIIIIIIIIIII
 1315   7.60   IIIIIIIIIIIIIIIIII
 1011   7.60   IIIIIIIIIIIIIIIIIII
  913   7.60   IIIIIIIIIIIIIIIIIIII
 1409   7.60   IIIIIIIIIIIIIIIIIIII
 1314   7.59   IIIIIIIIIIIIIIIIIIIII
 1014   7.59   IIIIIIIIIIIIIIIIIIIIII
 1611   7.57   IIIIIIIIIIIIIIIIIIIIIII
 1408   7.56   IIIIIIIIIIIIIIIIIIIIIIII
 1310   7.56    IIIIIIIIIIIIIIIIIIIIIIII
 1013   7.56    IIIIIIIIIIIIIIIIIIIIIIIII
 1111   7.56    IIIIIIIIIIIIIIIIIIIIIIIIII
  914   7.56     IIIIIIIIIIIIIIIIIIIIIIIII
  912   7.51     IIIIIIIIIIIIIIIIIIIIIIIIII
 1210   7.50      IIIIIIIIIIIIIIIIIIIIIIIII
 1415   7.49       IIIIIIIIIIIIIIIIIIIIIIIII
 1208   7.46        IIIIIIIIIIIIIIIIIIIIIIIII
 1307   7.45         IIIIIIIIIIIIIIIIIIIIIIIII
 1909   7.44          IIIIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 51/64

```
  603   7.43          IIIIIIIIIIIIIIIIIIIIIIIII
 1410   7.43           IIIIIIIIIIIIIIIIIIIIIIIII
  807   7.42            IIIIIIIIIIIIIIIIIIIIIIIII
 1211   7.41             IIIIIIIIIIIIIIIIIIIIIIIII
  704   7.40              IIIIIIIIIIIIIIIIIIIIIIIII
 1510   7.40               IIIIIIIIIIIIIIIIIIIIIIIII
 1008   7.38                IIIIIIIIIIIIIIIIIIIIIIIII
 1311   7.37                 IIIIIIIIIIIIIIIIIIIIIIIII
 1711   7.36                  IIIIIIIIIIIIIIIIIIIIIIIII
  703   7.35                  IIIIIIIIIIIIIIIIIIIIIIIII
 1508   7.35                   IIIIIIIIIIIIIIIIIIIIIIIII
 1610   7.35                    IIIIIIIIIIIIIIIIIIIIIIIII
  604   7.30                     IIIIIIIIIIIIIIIIIIIIIIIII
  504   7.30                      IIIIIIIIIIIIIIIIIIIIIIIII
 1509   7.29                      IIIIIIIIIIIIIIIIIIIIIIIII
  705   7.29                       IIIIIIIIIIIIIIIIIIIIIIIII
 1306   7.29                        IIIIIIIIIIIIIIIIIIIIIIIII
  805   7.28                         IIIIIIIIIIIIIIIIIIIIIIIII
 1406   7.28                         IIIIIIIIIIIIIIIIIIIIIIIII
 1709   7.28                         IIIIIIIIIIIIIIIIIIIIIIIII
  806   7.27                          IIIIIIIIIIIIIIIIIIIIIIIII
 1708   7.26                          IIIIIIIIIIIIIIIIIIIIIIIII
 2513   7.26                          IIIIIIIIIIIIIIIIIIIIIIIII
  804   7.26                           IIIIIIIIIIIIIIIIIIIIIIIII
  505   7.26                            IIIIIIIIIIIIIIIIIIIIIIIII
 1710   7.23                             IIIIIIIIIIIIIIIIIIIIIIIII
 1608   7.23                             IIIIIIIIIIIIIIIIIIIIIIIII
 1207   7.21                              IIIIIIIIIIIIIIIIIIIIIIIII
 1407   7.21                               IIIIIIIIIIIIIIIIIIIIIIIII
 1910   7.19                                IIIIIIIIIIIIIIIIIIIIIIIII
 2110   7.19                                IIIIIIIIIIIIIIIIIIIIIIIII
 1609   7.19                                 IIIIIIIIIIIIIIIIIIIIIIII
 2010   7.15                                  IIIIIIIIIIIIIIIIIIIIIII
 2312   7.14                                   IIIIIIIIIIIIIIIIIIIIII
 1811   7.14                                    IIIIIIIIIIIIIIIIIIIII
 1607   7.13                                     IIIIIIIIIIIIIIIIIIII
  905   7.13                                      IIIIIIIIIIIIIIIIIII
 2313   7.12                                       IIIIIIIIIIIIIIIIII
  903   7.12                                        IIIIIIIIIIIIIIIII
 1206   7.11                                         IIIIIIIIIIIIIIII
 1106   7.10                                          IIIIIIIIIIIIIII
 1507   7.09                                          IIIIIIIIIIIIIII
  906   7.08                                           IIIIIIIIIIIIII
 1104   7.08                                           IIIIIIIIIIIIII
 1107   7.07                                            IIIIIIIIIIIII
  907   7.05                                             IIIIIIIIIIII
 1105   7.03                                              IIIIIIIIIII
 1007   7.02                                               IIIIIIIIII
 2111   7.02                                               IIIIIIIIII
 2113   7.02                                                IIIIIIIII
 1006   7.01                                                IIIIIIIII
 1005   7.01                                                 IIIIIIII
 1004   7.00                                                  IIIIIII
  904   6.99                                                   IIIIII
 2014   6.98                                                    IIIII
 2213   6.97                                                    IIIII
 2115   6.97                                                     IIII
 1003   6.96                                                     IIII
 2015   6.92                                                       II
 1205   6.85                                                        I

               123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 52/64

Table 27

Upper diastemal length - Female

```
QUAD•   MEAN                   NON-SIGNIFICANT SUBSETS

                12345678901234567890123456789012345678901234567890

  1213  9•25    I
  1214  9•18    II
   810  9•16    III
   813  9•15    III
  1313  9•15    III
   611  9•12    IIII
  1113  9•12    IIII
  1315  9•09    IIIII
  1111  9•08    IIIII
  1013  9•07    IIIII
   710  9•06    IIIII
  1312  9•05    IIIII
  1011  9•04    IIIIII
   913  9•03    IIIIII
  1413  9•01    IIIIIII
   914  9•01    IIIIIIII
  1314  9•00    IIIIIIIII
  1212  8•95    IIIIIIIIII
   309  8•94    IIIIIIIIIII
  1114  8•94    IIIIIIIIIIII
  1014  8•93    IIIIIIIIIIII
  1414  8•93    IIIIIIIIIIIII
  1012  8•90    IIIIIIIIIIIIII
  1412  8•89    IIIIIIIIIIIIIII
   912  8•86    IIIIIIIIIIIIIIII
  1513  8•85    IIIIIIIIIIIIIIII
   911  8•79    IIIIIIIIIIIIIIIII
  1614  8•79    IIIIIIIIIIIIIIIIII
  1010  8•77    IIIIIIIIIIIIIIIIII
  1009  8•75    IIIIIIIIIIIIIIIIII
  1415  8•75    IIIIIIIIIIIIIIIIIII
  1310  8•72     IIIIIIIIIIIIIIIIIIII
  1514  8•72      IIIIIIIIIIIIIIIIIII
  1411  8•71      IIIIIIIIIIIIIIIIIIII
  1512  8•68       IIIIIIIIIIIIIIIIIIII
  1209  8•66       IIIIIIIIIIIIIIIIIIIII
  1210  8•66        IIIIIIIIIIIIIIIIIIIII
   910  8•66        IIIIIIIIIIIIIIIIIIIIII
  1612  8•54         IIIIIIIIIIIIIIIIIIIIII
  1109  8•54          IIIIIIIIIIIIIIIIIIIIII
  1008  8•53           IIIIIIIIIIIIIIIIIIIIII
  1511  8•53            IIIIIIIIIIIIIIIIIIIIII
  1613  8•53             IIIIIIIIIIIIIIIIIIIIII
  1611  8•50             IIIIIIIIIIIIIIIIIIIIIII
  1309  8•50              IIIIIIIIIIIIIIIIIIIIIII
  1308  8•48              IIIIIIIIIIIIIIIIIIIIIIII
  1408  8•47               IIIIIIIIIIIIIIIIIIIIIIII
  1211  8•47                IIIIIIIIIIIIIIIIIIIIIIII
  1311  8•45                IIIIIIIIIIIIIIIIIIIIIIIII
  1409  8•44                 IIIIIIIIIIIIIIIIIIIIIIIII
  1712  8•41                  IIIIIIIIIIIIIIIIIIIIIIIII
  1307  8•39                  IIIIIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 53/64

```
2015   8.35                  IIIIIIIIIIIIIIIIIIIIIIIII
 704   8.33                   IIIIIIIIIIIIIIIIIIIIIIIII
 807   8.31                    IIIIIIIIIIIIIIIIIIIIIIIII
1208   8.29                     IIIIIIIIIIIIIIIIIIIIIIIII
1510   8.28                      IIIIIIIIIIIIIIIIIIIIIIIII
1108   8.27                      IIIIIIIIIIIIIIIIIIIIIIIIII
2014   8.25                      IIIIIIIIIIIIIIIIIIIIIIIIII
1207   8.24                       IIIIIIIIIIIIIIIIIIIIIIIIII
1909   8.24                       IIIIIIIIIIIIIIIIIIIIIIIIIII
 703   8.21                       IIIIIIIIIIIIIIIIIIIIIIIIIIII
 806   8.21                        IIIIIIIIIIIIIIIIIIIIIIIIIII
 603   8.20                         IIIIIIIIIIIIIIIIIIIIIIIIII
 907   8.20                          IIIIIIIIIIIIIIIIIIIIIIIIII
 805   8.19                           IIIIIIIIIIIIIIIIIIIIIIIII
2115   8.19                           IIIIIIIIIIIIIIIIIIIIIIIII
1709   8.18                            IIIIIIIIIIIIIIIIIIIIIIII
2112   8.17                             IIIIIIIIIIIIIIIIIIIIIII
1508   8.17                             IIIIIIIIIIIIIIIIIIIIIII
 804   8.16                              IIIIIIIIIIIIIIIIIIIIII
1711   8.16                               IIIIIIIIIIIIIIIIIIIII
1410   8.15                                IIIIIIIIIIIIIIIIIIII
 604   8.15                                IIIIIIIIIIIIIIIIIIII
1811   8.12                                 IIIIIIIIIIIIIIIIIII
1104   8.10                                 IIIIIIIIIIIIIIIIIII
1406   8.09                                  IIIIIIIIIIIIIIIIII
 905   8.09                                   IIIIIIIIIIIIIIIII
1509   8.07                                    IIIIIIIIIIIIIIII
 903   8.07                                    IIIIIIIIIIIIIIII
1306   8.06                                     IIIIIIIIIIIIIII
 504   8.06                                      IIIIIIIIIIIIII
1507   8.05                                      IIIIIIIIIIIIII
1105   8.05                                      IIIIIIIIIIIIII
1005   8.04                                       IIIIIIIIIIIII
1206   8.04                                       IIIIIIIIIIIII
1007   8.03                                        IIIIIIIIIIII
 505   8.02                                        IIIIIIIIIIII
1610   8.01                                        IIIIIIIIIIII
2312   8.01                                         IIIIIIIIIII
 906   8.01                                         IIIIIIIIIII
1205   7.99                                         IIIIIIIIIII
2113   7.99                                          IIIIIIIIII
1006   7.98                                          IIIIIIIIII
1608   7.98                                          IIIIIIIIII
1708   7.97                                          IIIIIIIIII
 705   7.97                                          IIIIIIIIII
2010   7.97                                           IIIIIIIII
1107   7.97                                           IIIIIIIII
1607   7.97                                           IIIIIIIII
1910   7.95                                            IIIIIIII
 904   7.93                                            IIIIIIII
2213   7.92                                            IIIIIIII
2513   7.92                                             IIIIIII
1407   7.92                                              IIIIII
2313   7.91                                              IIIIII
2111   7.90                                               IIIII
1106   7.90                                               IIIII
1004   7.88                                                IIII
2110   7.85                                                IIII
1609   7.83                                                 III
1003   7.82                                                  II
1710   7.80                                                   I

              123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 54/64

Table 28

Least interorbital width - Female

```
QUAD.   MEAN                NON-SIGNIFICANT SUBSETS

                123456789012345678901234567890123456789012345678901234567890

2213   13.41    I
 813   13.40    II
1312   13.32    II
 810   13.29    III
1512   13.29    IIII
1213   13.28    IIIII
1412   13.27    IIIIII
 611   13.22    IIIIIII
1011   13.22    IIIIIII
 710   13.22    IIIIIIII
1414   13.19    IIIIIIII
1708   13.16    IIIIIIIII
1313   13.15    IIIIIIIIII
1910   13.13    IIIIIIIIIII
1711   13.12    IIIIIIIIIII
1113   13.12    IIIIIIIIIIII
1214   13.10    IIIIIIIIIIIII
2113   13.09    IIIIIIIIIIIIII
 914   13.08    IIIIIIIIIIIIII
1111   13.05    IIIIIIIIIIIIIII
1212   13.05    IIIIIIIIIIIIIII
1909   13.04    IIIIIIIIIIIIIII
1014   13.04    IIIIIIIIIIIIIIII
1013   13.03    IIIIIIIIIIIIIIII
2110   13.03    IIIIIIIIIIIIIIII
1611   13.02    IIIIIIIIIIIIIIII
1413   13.01    IIIIIIIIIIIIIIIII
1513   13.01    IIIIIIIIIIIIIIIII
1315   13.01    IIIIIIIIIIIIIIIII
2312   13.01    IIIIIIIIIIIIIIIIII
 309   13.00    IIIIIIIIIIIIIIIIII
1507   12.99    IIIIIIIIIIIIIIIIII
1514   12.97    IIIIIIIIIIIIIIIIIII
1511   12.97    IIIIIIIIIIIIIIIIIII
 910   12.96    IIIIIIIIIIIIIIIIIIII
1712   12.96    IIIIIIIIIIIIIIIIIIII
2112   12.95    IIIIIIIIIIIIIIIIIIII
1010   12.95    IIIIIIIIIIIIIIIIIIII
1612   12.95    IIIIIIIIIIIIIIIIIIII
1109   12.94    IIIIIIIIIIIIIIIIIIII
 911   12.93    IIIIIIIIIIIIIIIIIIII
1613   12.93    IIIIIIIIIIIIIIIIIIII
1012   12.93    IIIIIIIIIIIIIIIIIIII
1614   12.92    IIIIIIIIIIIIIIIIIIIII
2014   12.91    IIIIIIIIIIIIIIIIIIIII
2010   12.91    IIIIIIIIIIIIIIIIIIIII
1406   12.90    IIIIIIIIIIIIIIIIIIIIII
1411   12.90    IIIIIIIIIIIIIIIIIIIIII
 913   12.88    IIIIIIIIIIIIIIIIIIIIII
1510   12.87    IIIIIIIIIIIIIIIIIIIIII
1410   12.87    IIIIIIIIIIIIIIIIIIIIII
1310   12.86    IIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 55/64

```
2313   12.84   IIIIIIIIIIIIIIIIIIIIII
1409   12.81   IIIIIIIIIIIIIIIIIIIIII
1314   12.81   IIIIIIIIIIIIIIIIIIIIII
1508   12.79   IIIIIIIIIIIIIIIIIIIIII
1308   12.79    IIIIIIIIIIIIIIIIIIIII
1610   12.78     IIIIIIIIIIIIIIIIIIII
1608   12.77     IIIIIIIIIIIIIIIIIIIII
1709   12.77     IIIIIIIIIIIIIIIIIIIII
 912   12.77     IIIIIIIIIIIIIIIIIIIII
1210   12.77      IIIIIIIIIIIIIIIIIIII
1408   12.76       IIIIIIIIIIIIIIIIIIII
1009   12.75       IIIIIIIIIIIIIIIIIIII
1209   12.75       IIIIIIIIIIIIIIIIIIII
1609   12.75        IIIIIIIIIIIIIIIIIII
1309   12.75        IIIIIIIIIIIIIIIIIII
1811   12.72        IIIIIIIIIIIIIIIIIII
1710   12.72         IIIIIIIIIIIIIIIIII
1415   12.71          IIIIIIIIIIIIIIIII
1114   12.67          IIIIIIIIIIIIIIIII
1211   12.66           IIIIIIIIIIIIIIII
1008   12.65            IIIIIIIIIIIIIIII
2015   12.64             IIIIIIIIIIIIIII
1407   12.63              IIIIIIIIIIIIII
1311   12.63               IIIIIIIIIIIII
1509   12.62                IIIIIIIIIIIII
2111   12.61                IIIIIIIIIIIIII
1307   12.61                 IIIIIIIIIIIIII
1607   12.54                  IIIIIIIIIIIIII
1306   12.48                   IIIIIIIIIIIIII
1208   12.47                    IIIIIIIIIIIIII
2115   12.45                     IIIIIIIIIIIIII
2513   12.34                      IIIIIIIIIIIIII
 904   12.20                       IIIIIIIIIIIIII
1108   12.20                        IIIIIIIIIIIII
 603   12.05                         IIIIIIIIIIII
 604   11.91                          IIIIIIIIIII
1207   11.90                           IIIIIIIIII
 505   11.89                            IIIIIIIII
 504   11.89                             IIIIIIII
 806   11.86                              IIIIIII
 804   11.84                               IIIIII
 805   11.82                               IIIIII
 704   11.81                                IIIII
1206   11.81                                IIIII
 906   11.80                                 IIII
1003   11.79                                 IIII
 705   11.68                                 IIII
 903   11.68                                  III
 905   11.68                                  III
1007   11.66                                  III
 807   11.64                                  III
 703   11.64                                  III
1107   11.63                                  III
1106   11.62                                   II
 907   11.60                                   II
1004   11.59                                   II
1005   11.56                                   II
1205   11.56                                   II
1105   11.54                                   II
1006   11.51                                   II
1104   11.37                                    I
               123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 56/64

Table 29

Nasal length - Female

```
QUAD.   MEAN                  NON-SIGNIFICANT SUBSETS

               123456789012345678901234567890123456789012345678901234567890123456789012345678901234567890

  810  15.27   I
  710  15.22   II
  813  15.18   III
  611  15.17   IIII
 1214  15.03   IIIII
 1313  14.98   IIIIII
 1114  14.97   IIIIIII
 1315  14.97   IIIIIII
 1213  14.93   IIIIIIII
  309  14.92   IIIIIIIII
 1212  14.89   IIIIIIIII
 1314  14.81   IIIIIIIIII
 1312  14.80   IIIIIIIIIII
 1209  14.80   IIIIIIIIIIII
 1011  14.75   IIIIIIIIIIII
 1413  14.70   IIIIIIIIIIIII
 1113  14.70   IIIIIIIIIIIIII
 1412  14.65   IIIIIIIIIIIIII
  913  14.64   IIIIIIIIIIIIIII
  914  14.61   IIIIIIIIIIIIIIII
  911  14.60   IIIIIIIIIIIIIIIII
 1514  14.58   IIIIIIIIIIIIIIIIII
 1513  14.54   IIIIIIIIIIIIIIIIIII
 1614  14.51   IIIIIIIIIIIIIIIIIIII
 1712  14.51   IIIIIIIIIIIIIIIIIIII
  910  14.50   IIIIIIIIIIIIIIIIIIIII
 1111  14.50   IIIIIIIIIIIIIIIIIIIII
 1010  14.50   IIIIIIIIIIIIIIIIIIIII
 1009  14.50   IIIIIIIIIIIIIIIIIIIIII
 1512  14.49   IIIIIIIIIIIIIIIIIIIIIII
 1414  14.48   IIIIIIIIIIIIIIIIIIIIIIII
  912  14.48   IIIIIIIIIIIIIIIIIIIIIIIII
 1613  14.47    IIIIIIIIIIIIIIIIIIIIIIII
 1511  14.46    IIIIIIIIIIIIIIIIIIIIIIIII
 1014  14.46    IIIIIIIIIIIIIIIIIIIIIIIIII
 1309  14.41     IIIIIIIIIIIIIIIIIIIIIIIIII
 1012  14.40      IIIIIIIIIIIIIIIIIIIIIIIIII
 1408  14.37      IIIIIIIIIIIIIIIIIIIIIIIIIII
 1109  14.36       IIIIIIIIIIIIIIIIIIIIIIIIIII
 1013  14.33       IIIIIIIIIIIIIIIIIIIIIIIIIIII
 1008  14.32        IIIIIIIIIIIIIIIIIIIIIIIIIIII
 1411  14.31        IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1310  14.30         IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1611  14.28         IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1210  14.23          IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1415  14.23          IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1612  14.21           IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1211  14.20            IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1409  14.14            IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1311  14.12             IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 2115  14.03              IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 2015  14.01               IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 57/64

```
1308  14.01                IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1307  13.99                 IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1508  13.97                  IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1108  13.97                  IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 704  13.97                   IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 806  13.95                    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 807  13.93                     IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
2014  13.92                      IIIIIIIIIIIIIIIIIIIIIIIIIIIII
1507  13.92                       IIIIIIIIIIIIIIIIIIIIIIIIIIIII
1510  13.92                        IIIIIIIIIIIIIIIIIIIIIIIIIIII
1711  13.91                         IIIIIIIIIIIIIIIIIIIIIIIIIIII
 603  13.91                          IIIIIIIIIIIIIIIIIIIIIIIIIII
1410  13.86                           IIIIIIIIIIIIIIIIIIIIIIIIIII
1208  13.85                            IIIIIIIIIIIIIIIIIIIIIIIIII
 705  13.84                            IIIIIIIIIIIIIIIIIIIIIIIIII
 906  13.82                             IIIIIIIIIIIIIIIIIIIIIIIII
1406  13.82                             IIIIIIIIIIIIIIIIIIIIIIIII
 805  13.81                             IIIIIIIIIIIIIIIIIIIIIIIIII
2110  13.81                              IIIIIIIIIIIIIIIIIIIIIIIII
1708  13.79                              IIIIIIIIIIIIIIIIIIIIIIIII
1610  13.76                               IIIIIIIIIIIIIIIIIIIIIIII
 905  13.76                                IIIIIIIIIIIIIIIIIIIIIII
1207  13.75                                 IIIIIIIIIIIIIIIIIIIIIII
1509  13.71                                  IIIIIIIIIIIIIIIIIIIIII
 804  13.71                                  IIIIIIIIIIIIIIIIIIIIII
 907  13.70                                   IIIIIIIIIIIIIIIIIIIII
 604  13.70                                    IIIIIIIIIIIIIIIIIIII
1105  13.68                                    IIIIIIIIIIIIIIIIIIII
1205  13.67                                     IIIIIIIIIIIIIIIIIII
1306  13.66                                      IIIIIIIIIIIIIIIIII
1709  13.66                                       IIIIIIIIIIIIIIIII
1407  13.66                                       IIIIIIIIIIIIIIIII
1909  13.65                                       IIIIIIIIIIIIIIIII
1005  13.64                                        IIIIIIIIIIIIIIII
1607  13.62                                         IIIIIIIIIIIIIII
 505  13.61                                         IIIIIIIIIIIIIII
1910  13.60                                         IIIIIIIIIIIIIII
1104  13.58                                          IIIIIIIIIIIIII
 703  13.57                                          IIIIIIIIIIIIII
1007  13.57                                          IIIIIIIIIIIIII
2111  13.57                                          IIIIIIIIIIIIII
1106  13.56                                           IIIIIIIIIIIII
 903  13.55                                           IIIIIIIIIIIII
1206  13.55                                            IIIIIIIIIIII
1608  13.54                                            IIIIIIIIIIII
 504  13.53                                            IIIIIIIIIIII
2010  13.52                                             IIIIIIIIIII
1811  13.50                                             IIIIIIIIIII
1107  13.50                                             IIIIIIIIIII
1004  13.47                                              IIIIIIIIII
1710  13.41                                               IIIIIIIII
1003  13.40                                                IIIIIIII
1006  13.38                                                IIIIIIII
2213  13.38                                                IIIIIIII
2112  13.35                                                 IIIIIII
 904  13.35                                                  IIIIII
2113  13.29                                                   IIIII
1609  13.27                                                    IIII
2313  13.26                                                     III
2312  12.99                                                      II
2513  12.99                                                       I

              123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 58/64

Table 30

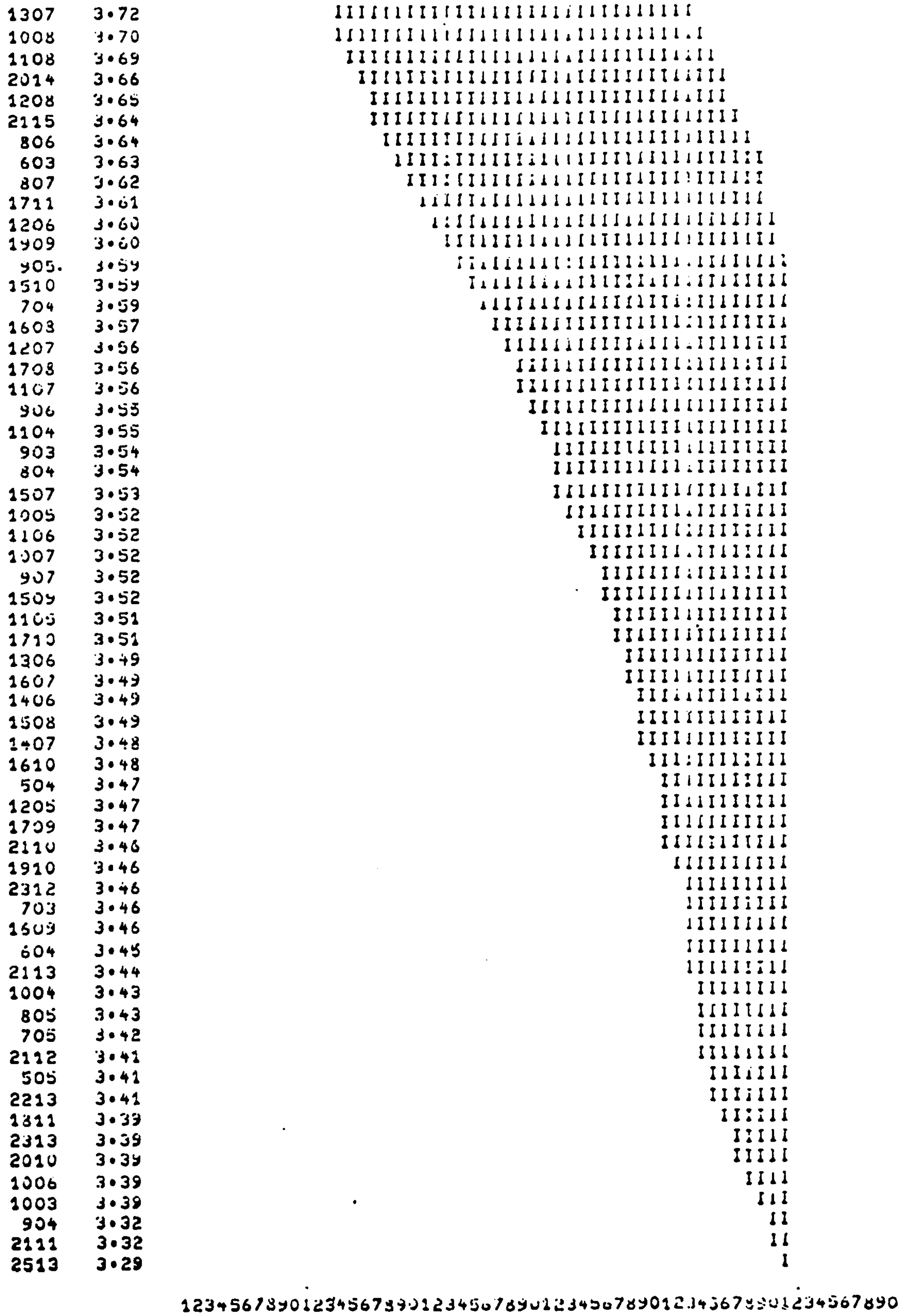
Rostral width - Female

```
QUAD.    MEAN                  NON-SIGNIFICANT SUBSETS

                 123456789012345678901234567890123456789012345678901234567890

 1114    4.17    I
 1213    4.12    I
 1214.   4.11    II
  309    4.10    III
  611    4.09    III
 1313    4.08    III
 1412    4.06    IIII
 1413    4.06    IIII
  813    4.05    IIII
 1011    4.05    IIIII
 1514    4.05    IIIII
 1312    4.05    IIIIII
 1314    4.04    IIIIIII
  913    4.04    IIIIIIII
 1315    4.04    IIIIIIIII
  914    4.03    IIIIIIIIII
 1113    4.02    IIIIIIIIIII
  810    4.02    IIIIIIIIIIII
 1212    4.02    IIIIIIIIIIIII
 1013    4.01    IIIIIIIIIIIIII
 1414    4.01    IIIIIIIIIIIIIII
 1014    4.00    IIIIIIIIIIIIIIII
  710    3.98    IIIIIIIIIIIIIIIII
  911    3.98    IIIIIIIIIIIIIIIIII
 1111    3.97    IIIIIIIIIIIIIIIIII
  912    3.96    IIIIIIIIIIIIIIIIIII
 1012    3.95    IIIIIIIIIIIIIIIIIII
 1513    3.94    IIIIIIIIIIIIIIIIIIII
 1209    3.92    IIIIIIIIIIIIIIIIIIIII
 1109    3.90    IIIIIIIIIIIIIIIIIIIII
 1415    3.90    IIIIIIIIIIIIIIIIIIIIII
  910    3.86    IIIIIIIIIIIIIIIIIIIIIII
 1613    3.86    IIIIIIIIIIIIIIIIIIIIIIII
 1411    3.86    IIIIIIIIIIIIIIIIIIIIIIIII
 1512    3.85    IIIIIIIIIIIIIIIIIIIIIIIII
 1712    3.85    IIIIIIIIIIIIIIIIIIIIIIIIII
 1010    3.83    IIIIIIIIIIIIIIIIIIIIIIIIIII
 1611    3.83     IIIIIIIIIIIIIIIIIIIIIIIIIII
 1009    3.81      IIIIIIIIIIIIIIIIIIIIIIIIIII
 1210    3.80       IIIIIIIIIIIIIIIIIIIIIIIIIII
 1308    3.79        IIIIIIIIIIIIIIIIIIIIIIIIIII
 1309    3.79         IIIIIIIIIIIIIIIIIIIIIIIIIII
 1614    3.79          IIIIIIIIIIIIIIIIIIIIIIIIIII
 1311    3.77           IIIIIIIIIIIIIIIIIIIIIIIIIII
 2015    3.76            IIIIIIIIIIIIIIIIIIIIIIIIIII
 1409    3.76             IIIIIIIIIIIIIIIIIIIIIIIIIII
 1511    3.74              IIIIIIIIIIIIIIIIIIIIIIIIIII
 1612    3.74              IIIIIIIIIIIIIIIIIIIIIIIIIIII
 1310    3.74               IIIIIIIIIIIIIIIIIIIIIIIIIIII
 1211    3.73               IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1408    3.72                IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1410    3.72                 IIIIIIIIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 59/64



```
1307    3.72
1008    3.70
1108    3.69
2014    3.66
1208    3.65
2115    3.64
 806    3.64
 603    3.63
 807    3.62
1711    3.61
1206    3.60
1909    3.60
 905.   3.59
1510    3.59
 704    3.59
1603    3.57
1207    3.56
1708    3.56
1107    3.56
 906    3.55
1104    3.55
 903    3.54
 804    3.54
1507    3.53
1005    3.52
1106    3.52
1007    3.52
 907    3.52
1509    3.52
1105    3.51
1710    3.51
1306    3.49
1607    3.49
1406    3.49
1508    3.49
1407    3.48
1610    3.48
 504    3.47
1205    3.47
1709    3.47
2110    3.46
1910    3.46
2312    3.46
 703    3.46
1609    3.46
 604    3.45
2113    3.44
1004    3.43
 805    3.43
 705    3.42
2112    3.41
 505    3.41
2213    3.41
1311    3.39
2313    3.39
2010    3.39
1006    3.39
1003    3.39
 904    3.32
2111    3.32
2513    3.29
```

Appendix IV, 60/64

Table 31

Least supraoccipital width - Female

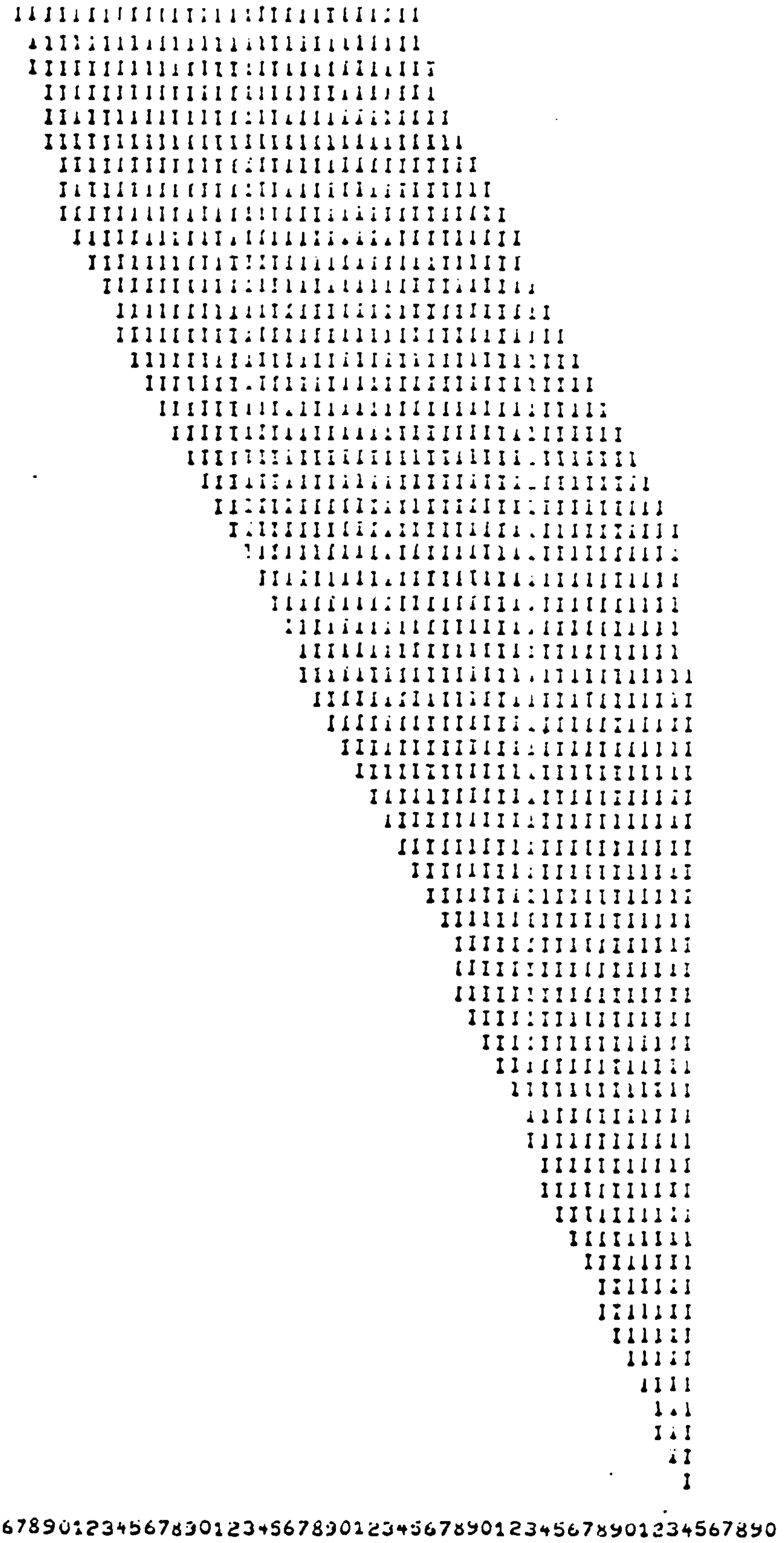
```
QUAD.    MEAN                NON-SIGNIFICANT SUBSETS

                  123456789012345678901234567890123456789012345678901234567890

 2115    3.50     I
 2015    3.36     II
 1415.   3.27     III
  813    3.23     IIII
 1414    3.18     IIIII
  912    3.17     IIIIII
  911    3.15     IIIIIII
 1013    3.12     IIIIIIII
  913    3.11     IIIIIIII
 1014    3.11     IIIIIIIII
 1111    3.10     IIIIIIIIII
  810    3.09     IIIIIIIIIII
  914    3.05     IIIIIIIIIIII
 1312    3.03     IIIIIIIIIIIII
 1113    2.98     IIIIIIIIIIIIII
  910    2.98     IIIIIIIIIIIIIII
 1214    2.96     IIIIIIIIIIIIIIII
 1011    2.95     IIIIIIIIIIIIIIIII
 1114    2.95     IIIIIIIIIIIIIIIII
  710    2.93     IIIIIIIIIIIIIIIIII
  309    2.91     IIIIIIIIIIIIIIIIII
 1412    2.91     IIIIIIIIIIIIIIIIII
 1012    2.91     IIIIIIIIIIIIIIIIII
 1009    2.90     IIIIIIIIIIIIIIIIIII
 1413    2.89     IIIIIIIIIIIIIIIIIII
 1213    2.88     IIIIIIIIIIIIIIIIIIII
 1514    2.87     IIIIIIIIIIIIIIIIIIIII
 2014    2.86     IIIIIIIIIIIIIIIIIIIIII
 1212    2.84      IIIIIIIIIIIIIIIIIIIII
 1315    2.83      IIIIIIIIIIIIIIIIIIIII
 1205    2.83      IIIIIIIIIIIIIIIIIIIIII
 1008    2.82      IIIIIIIIIIIIIIIIIIIIII
 1106    2.81      IIIIIIIIIIIIIIIIIIIIIII
 1313    2.81      IIIIIIIIIIIIIIIIIIIIIII
  907    2.80       IIIIIIIIIIIIIIIIIIIIIII
 1210    2.79       IIIIIIIIIIIIIIIIIIIIIII
 1003    2.79       IIIIIIIIIIIIIIIIIIIIIIII
  807    2.77       IIIIIIIIIIIIIIIIIIIIIIII
 1613    2.77       IIIIIIIIIIIIIIIIIIIIIIII
 1411    2.76       IIIIIIIIIIIIIIIIIIIIIIII
  505    2.75       IIIIIIIIIIIIIIIIIIIIIIIII
 1104    2.74        IIIIIIIIIIIIIIIIIIIIIIII
 1010    2.71        IIIIIIIIIIIIIIIIIIIIIIIII
  504    2.71        IIIIIIIIIIIIIIIIIIIIIIIII
 1206    2.71        IIIIIIIIIIIIIIIIIIIIIIIII
 1004    2.71        IIIIIIIIIIIIIIIIIIIIIIIIII
  604    2.70        IIIIIIIIIIIIIIIIIIIIIIIIIII
 1105    2.69         IIIIIIIIIIIIIIIIIIIIIIIIII
  906    2.69          IIIIIIIIIIIIIIIIIIIIIIIIII
  705    2.69          IIIIIIIIIIIIIIIIIIIIIIIIIII
  805    2.69          IIIIIIIIIIIIIIIIIIIIIIIIIIII
 1007    2.69           IIIIIIIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 61/64

```
1006   2.68
 611   2.67
1513   2.67
1314   2.65
 903   2.64
1207   2.63
 806   2.61
1109   2.61
1005   2.61
1614   2.60
1107   2.59
 603   2.58
1511·  2.56
1709   2.55
 905   2.51
 904   2.51
 804   2.49
1512   2.48
1311   2.48
1611   2.46
 704   2.44
1310   2.41
1610   2.40
1211   2.37
1407   2.35
1711   2.35
1612   2.35
1306   2.33
1608   2.31
1410   2.30
1209   2.30
1712   2.29
1609   2.29
1510   2.28
1507   2.25
1509   2.24
1607   2.22
1909   2.21
1710   2.20
1708   2.20
 703   2.19
1307   2.17
1406   2.12
1910   2.12
2513   2.12
1309   2.12
1811   2.11
2111   2.10
2312   2.09
1308   2.08
2010   2.08
1208   2.07
1409   2.06
2213   2.05
2110   2.03
1508   1.99
1408   1.94
2112   1.93
2113   1.92
1108   1.92
2313   1.71
```



Appendix IV, 62/64

Table 32

Greatest interparietal width - Female

```
QUAD.    MEAN                  NON-SIGNIFICANT SUBSETS

                 123456789012345678901234567890123456789012345678901234567890

 1013    3.17    I
 2015    3.05    II
  907    3.05    III
 1005    3.04    IIII
 1106    3.03    IIII
 1205    3.03    IIIII
 1104    3.00    IIIIII
 1004    2.99    IIIIIII
  813    2.99    IIIIIIII
 1105    2.99    IIIIIIIII
 2014    2.98    IIIIIIIIII
  912    2.97    IIIIIIIIII
 1006    2.95    IIIIIIIIIII
 1007    2.95    IIIIIIIIIII
 1111    2.94    IIIIIIIIIIII
  807    2.94    IIIIIIIIIIIII
  913    2.93    IIIIIIIIIIIII
 2115    2.92    IIIIIIIIIIIIII
  906    2.92    IIIIIIIIIIIIIII
 1206    2.90    IIIIIIIIIIIIIIII
 1107    2.89    IIIIIIIIIIIIIIIII
  705    2.88    IIIIIIIIIIIIIIIIII
  309    2.85    IIIIIIIIIIIIIIIIIII
  914    2.84    IIIIIIIIIIIIIIIIIIII
 1312    2.84    IIIIIIIIIIIIIIIIIIIII
  911    2.84    IIIIIIIIIIIIIIIIIIIIII
 1008    2.83    IIIIIIIIIIIIIIIIIIIIII
 1113    2.82    IIIIIIIIIIIIIIIIIIIIIII
 1210    2.81    IIIIIIIIIIIIIIIIIIIIIIII
 1011    2.80    IIIIIIIIIIIIIIIIIIIIIIIII
 1014    2.79    IIIIIIIIIIIIIIIIIIIIIIIII
  805    2.79    IIIIIIIIIIIIIIIIIIIIIIIII
 1114    2.79    IIIIIIIIIIIIIIIIIIIIIIIIII
 1214    2.77    IIIIIIIIIIIIIIIIIIIIIIIIII
  604    2.76    IIIIIIIIIIIIIIIIIIIIIIIIII
 1514    2.75    IIIIIIIIIIIIIIIIIIIIIIIIII
  710    2.74    IIIIIIIIIIIIIIIIIIIIIIIIIII
 1009    2.74    IIIIIIIIIIIIIIIIIIIIIIIIIII
 1207    2.74    IIIIIIIIIIIIIIIIIIIIIIIIIII
  603    2.73    IIIIIIIIIIIIIIIIIIIIIIIIIIII
 1212    2.72    IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1412    2.72    IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  806    2.72    IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  905    2.71    IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1613    2.70    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1415    2.70    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1414    2.68    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1315    2.68    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
  903    2.68    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1511    2.67    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1003    2.66    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 1311    2.66    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
```

Appendix IV, 63/64

```
1010    2.66    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1411    2.66    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 704    2.65    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1213    2.65    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1109    2.64    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 810    2.63    IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1310    2.63     IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1012    2.60      IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 505    2.59      IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1512    2.58       IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1407    2.58        IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1413    2.58        IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 910    2.58        IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 504    2.57         IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1211    2.56          IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
 804    2.53          IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1611    2.51           IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1209    2.50            IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1513    2.50            IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1306    2.49             IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1307    2.49              IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1711    2.48               IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1314    2.47                IIIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1313    2.47                 IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1709    2.46                 IIIIIIIIIIIIIIIIIIIIIIIIIIIIII
1208    2.46                  IIIIIIIIIIIIIIIIIIIIIIIIIIIII
 904    2.45                   IIIIIIIIIIIIIIIIIIIIIIIIIIII
1309    2.45                    IIIIIIIIIIIIIIIIIIIIIIIIIII
 611    2.44                    IIIIIIIIIIIIIIIIIIIIIIIIIIII
1410    2.44                     IIIIIIIIIIIIIIIIIIIIIIIIIII
1409    2.43                     IIIIIIIIIIIIIIIIIIIIIIIIIII
1510    2.43                      IIIIIIIIIIIIIIIIIIIIIIIIII
1614    2.43                       IIIIIIIIIIIIIIIIIIIIIIIIII
1509    2.41                        IIIIIIIIIIIIIIIIIIIIIIIII
1108    2.38                         IIIIIIIIIIIIIIIIIIIIIIII
1610    2.37                          IIIIIIIIIIIIIIIIIIIIIII
1406    2.34                           IIIIIIIIIIIIIIIIIIIIII
1308    2.33                            IIIIIIIIIIIIIIIIIIIII
1608    2.33                             IIIIIIIIIIIIIIIIIIII
1708    2.31                             IIIIIIIIIIIIIIIIIIII
1612    2.31                              IIIIIIIIIIIIIIIIIII
1408    2.31                              IIIIIIIIIIIIIIIIIII
1710    2.29                               IIIIIIIIIIIIIIIIII
1712    2.29                                IIIIIIIIIIIIIIIII
 703    2.28                                 IIIIIIIIIIIIIIII
2110    2.26                                 IIIIIIIIIIIIIIII
1609    2.24                                  IIIIIIIIIIIIIII
1607    2.20                                   IIIIIIIIIIIIII
1909    2.19                                    IIIIIIIIIIIII
2112    2.18                                     IIIIIIIIIIII
2513    2.18                                      IIIIIIIIIII
1811    2.17                                       IIIIIIIIII
1507    2.16                                        IIIIIIIII
2213    2.15                                         IIIIIIII
1910    2.09                                          IIIIIII
1508    2.07                                           IIIIII
2010    1.96                                            IIIII
2312    1.94                                             IIII
2111    1.89                                              III
2313    1.71                                               II
2113    1.69                                                I

                1234567890123456789012345678901234567890123456789012345678901234567890
```

Appendix IV, 64/64