ANTHROPOLOGY

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Morphology of the Nasal Bones of the American Negro

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The purpose of this paper is to provide a morphological and metrical description and an expression of the variability in the nasal bones of a sample of adult male American Negro crania.

The data for this study is provided by a series of craniograph diagrams of eighty-one American Negro crania, which on the basis of an aggregate of morphological characteristics constitutes a relatively unhybridized series (1), from the T. Wingate Todd collection at Western Reserve University, which were drawn by Dr. Georg K. Neumann of Indiana University.* The original series of eighty-one individuals was reduced to sixty-five due to the exclusion of the specimens with damaged nasal bones.

A. METRICAL OBSERVATIONS

A number of measurements and indices were taken to express the variability in form of the nasal bones and to facilitate the quantification of the data.

The dimensions of the nasal bones

The following measurements have been taken on the nasal bones:

1. Length of the nasal bones—The distance from the naso-frontal suture to the free extremity of the nasal bones in the mid-sagittal plane (nasion to rhinion).
2. Upper nasal breadth—The distance between the maxillo-naso-frontal points on the right and the left sides in a horizontal plane.
3. Minimum nasal breadth—The minimum breadth of the two nasal bones, measured between the two lateral margins in a horizontal plane, wherever it occurs.
4. Maximum nasal breadth—The maximum breadth, of the two nasal bones, measured wherever it occurs between the two lateral margins in a horizontal plane.
5. Lower nasal breadth—The distance between the points at which the naso-maxillary sutures terminate at the nasal aperture on both sides.

An examination of Table 1 demonstrates that the most variable measurement is length, and least variable that of the maximum breadth of the nasal bones. The highest standard deviation $\partial = 3.39$ occurs

* The writer wishes to express her appreciation to Dr. Neumann for guidance and provision of data for the preparation of this paper.

again in the length of the nasal bones, and the lowest values in their minimum and the maximum breadths.

TABLE 1

Measurements and Statistical Constants of the Nasal Bones

Measurements	Range (in mm.)	Mean (in mm.)	Standard deviation (in mm.)	Coefficient of variation (in mm.)
1. Length of the nasal bone	13.4-30.0	19.9	±3.39	19.4
2. Upper breadth of nasals	7.3-17.5	13.5	±0.84	6.2
3. Minimum breadth of nasals	6.0-13.4	9.5	±0.60	6.3
4. Maximum breadth of nasals	12.8-21.4	18.9	±0.68	3.5
5. Lower breadth of nasals	8.5-21.6	17.4	±0.73	4.1

Nasal module

A module has been calculated for each set of nasal bones, serving as a criterion of size.

The module has been calculated in the following manner: Nasal module =

$$\frac{\text{Length}(1) + \text{Minimum breadth}(3) + \text{Maximum breadth}(4) \text{ of the nasal bones}}{3}$$

The nasal bone module ranges from 12.4 to 20.1. The mean is 16.8. The standard deviation reveals a variability of ±1.85.

Indices

Transverse index of the nasal bones:

$$\text{(a)} \quad \frac{\text{Minimum breadth of nasals}(3) \times 100}{\text{Upper breadth of nasals}(2)}$$

$$\text{(b)} \quad \frac{\text{Minimum breadth of nasals}(3) \times 100}{\text{Maximum breadth of nasals}(4)}$$

The two transverse indices indicate the relative proportions for the width of the nasal bones. They denote the relative degree of the direct extension of the naso-frontal and naso-maxillary sutures as well as the relative degree of constriction of the nasal bones. The range for index (a) is from 50.0 to 129.41, and that for index (b) from 28.25 to 81.58, yielding means of 78.32 for the former and 50.12 for the latter. The standard deviations exhibit high values, indicating a variability of ±12.64 for index (a), and ±10.63 for index (b).

B. MORPHOLOGICAL OBSERVATIONS

1. Course of the naso-frontal suture.

Three main categories are distinguished both on the basis of the course of the naso-frontal suture and the naso-maxillary suture. These

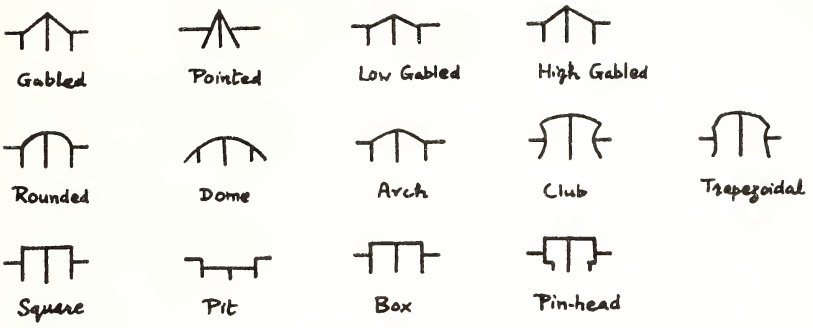

Figure 1. Course of the naso-frontal suture and its variants.

forms are represented in Fig. 1, with some of their variants. The dome form continues directly into the fronto-maxillary suture on either side, whereas the remaining seven—gable, arch, club, trapezoidal, pit, box and pin-head forms—are set off angularly from the naso-maxillary-frontal point. Tabulating only the forms found in our sample, the gabled course of the suture is represented in seven cases, i.e., 10.76%; the rounded course (i.e., domed, arched, club and trapezoidal with 32.30%, 13.84%, 7.69% and 6.50% respectively) represented in thirty-eight cases, i.e., 58.46%; the square form (i.e., pit, box, and pin-head with 1.53%, 21.53% and 7.69% respectively) occurring in twenty cases i.e., 30.78%.

2. Constriction of the nasal bones.

A scale for the constriction of the nasal bones is given in Fig. 2.

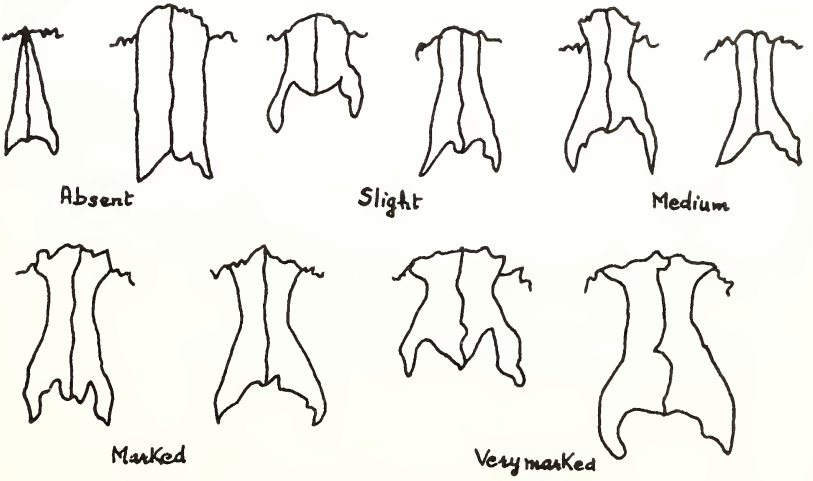

Figure 2. Constriction of the nasal bones.

The constriction is absent in only one case, i.e., 1.53%; slight in thirty-four cases, i.e., 53.86%; medium, marked, and very marked, in 27.68%, 15.38%, and 1.53% of the cases, respectively.

3. **Course of the lower margin of the nasal bones.**

Three categories showing the variability of the lower margin of the nasal bones are illustrated in Fig. 3.

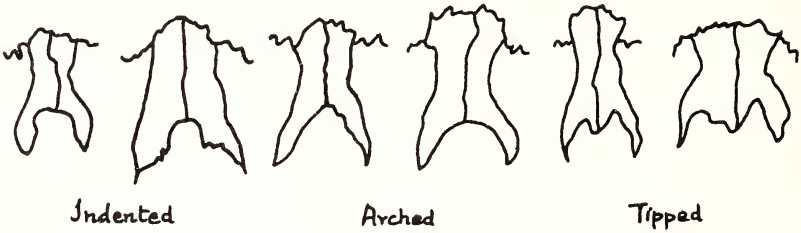

Figure 3. Course of the lower margin of the nasal bones.

The indented edge is represented by fifty-one cases, i.e., 76.93%; the intermediate arched or neutral edge by six cases, i.e., 9.23%; and the tipped edge by eight cases, i.e., 13.84%.

C. SUMMARY AND CONCLUSIONS

On the basis of a statistical analysis of the six measurements and the module of the sample, the series appears to be low in variability, that is, rather homogeneous in nature. On the other hand the two transverse indices of nasal bones indicate considerable variability in form.

As regards the analysis of the morphological characteristics, the round course of the naso-frontal suture and the indended course of the lower margin of the nasal bone, both characteristics occur in a very high frequency. By the employment of these scales it is possible to illustrate the typical forms of the nasal bones of our sample, and note that the most variable feature appears to be the degree of constriction of the bones, which this series exhibits.

In summary, this brief consideration of the morphological variation in the form of the nasal bones of a selected sample of American Negroes, demonstrates that on the basis of its low variability it can be considered racially homogeneous, and probably representative of the West African population from which it is derived.

Literature Cited

1. NEUMANN, H. W. 1962. The American Negro—His Origins and His Present Status as a Hybrid. Doctoral dissertation, Indiana University.