

ANTHROPOLOGICAL PAPERS
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Editor

CLARK WISSLER

FOREWORD

LOUIS ROBERT SULLIVAN

Since this volume is largely the work of the late Louis Robert Sullivan, a biographical sketch of this able anthropologist, will seem a fitting foreword.

Louis Robert Sullivan was born at Houlton, Maine, May 21, 1892. He was educated in the public schools of Houlton and was graduated from Bates College, Lewiston, Maine, in 1914. During the following academic year he taught in a high school and on November 24, 1915, he married Bessie Pearl Pathers of Lewiston, Maine. He entered Brown University as a graduate student and was assistant in zoology under Professor H. E. Walters, and in 1916 received the degree of master of arts.

From Brown University Mr. Sullivan came to the American Museum of Natural History, as assistant in physical anthropology, and during the first years of his connection with the Museum he laid the foundations for his future work in human biology, by training in general anatomy with Doctor William K. Gregory and Professor George S. Huntington and in general anthropology with Professor Franz Boas. From the very beginning, he showed an aptitude for research and he had not been long at the Museum ere he had published several important papers.

These activities were interrupted by our entrance into the World War. Mr. Sullivan was appointed a First Lieutenant in the Section of Anthropology, Surgeon-General's Office in 1918, and while on duty at headquarters assisted in the compilation of the reports on *Defects found in Drafted Men* and *Army Anthropology*. His particular contribution to these publications was the determination of the 156 standard population sections for the United States. This section map was used as the basis for the published studies issued by the Office of the Surgeon General. When this task was completed, Mr. Sullivan was assigned to Camp Grant to make an anthropometric survey of the recruits stationed there, but before his work was completed his quarters were destroyed by fire and his records were lost. At about this time he was stricken with influenza. Shortly afterward the war ended and in February, 1919, Mr. Sullivan was released from the service and returned to the Museum. During the months following his return to the Museum he suffered a long and serious illness which appears to have had a lasting effect on his health.

In 1920 the American Museum was invited to cooperate with the

Bernice P. Bishop Museum in Honolulu in an anthropological survey of Polynesia and Mr. Sullivan was assigned to organize and work out the racial problem. This was his first important field-work; before this he had confined himself to working either on skeletal material or to the analysis of data accumulated by others. He spent about eighteen months in the Hawaiian Islands, directing the work in physical anthropology conducted by the members of the Bayard Dominick Expeditions of the Bernice P. Bishop Museum and, on his own part, made measurements and observations on about nine thousand children in Honolulu, securing physical data on all the race groups represented in the schools, for all ages from six to nineteen.

After the completion of this field-work Mr. Sullivan returned to his work in the Museum in 1921, but soon was stricken with pleurisy. His failing health necessitated his living in a climate different from that of New York and he took up his residence in Tucson, Arizona. Before this illness he had completed his graduate work and early in 1922 was granted the degree of Doctor of Philosophy at Columbia University.

While in Tucson, Arizona, Doctor Sullivan made a study of the tooth and eye characters of the Mexican and Indian children in the schools. Later, this survey was extended to the children in the Reservation schools of Arizona, New Mexico, California, Nevada, and Oregon. With this second large accumulation of data he returned to the Museum in May, 1924, but unfortunately, very soon after his arrival in New York, it became clear that an immediate return to Tucson was imperative, and after a lingering illness there, he died on April 23, 1925.

Though his scientific career was curtailed and hampered by ill health, especially in the last three years of his life, the bibliographical record of Doctor Sullivan's contributions may offer some measure of the value of his accomplishments:—

Variations in the Glenoid Fossæ (*American Anthropologist*, n. s., vol. 19, no. 1, 1917).

Growth of the Nasal Bridge in Children (*American Anthropologist*, n. s., vol. 19, no. 3, 1917).

Racial Types in the Philippine Islands (*Anthropological Papers, American Museum of Natural History*, vol. 23, part 2, 1918).

Racial Types in the Population of the United States (*Natural History*, vol. 18, no. 6, 1918).

The Bearing of Physical Anthropology on the Problems of Orthodontia (*Dental Cosmos*, April, 1918).

The "Samar" United Twins (*American Journal of Physical Anthropology*, vol. 2, no. 1, 1919).

- The Pygmy Races of Man (Natural History, vol. 19, no. 6, 1919).
- Anthropometry of the Siouan Tribes (Proceedings of the National Academy of Sciences, vol. 6, no. 3, 1920).
- Anthropometry of the Siouan Tribes (Anthropological Papers, American Museum of Natural History, vol. 23, part 3, 1920).
- The Fossa Pharyngea in American Indian Crania (American Anthropologist, n.s., vol. 22, 1920).
- Differences in the Pattern of the Second Lower Molar Tooth (American Journal of Physical Anthropology, vol. 3, no. 2, pp. 255-257, 1920).
- The Status of Physical Anthropology in Polynesia (Proceedings, First Pan-Pacific Scientific Congress, part 1, Bernice P. Bishop Museum, Special Publication, Honolulu, 1921).
- The Physical Characteristics of the Two Prehistoric Chilean Miners (Natural History, vol. 21, no. 5, 1921).
- A Few Andamanese Skulls with Comparative Notes on Negrito Craniometry (Anthropological Papers, American Museum of Natural History, vol. 23, part 4, 1921).
- A Contribution to Samoan Somatology (Memoirs of the Bernice P. Bishop Museum, vol. 8, no. 2, 1921).
- A Contribution to Tongan Somatology (Memoirs of the Bernice P. Bishop Museum, vol. 8, no. 4, 1922).
- The Frequency and Distribution of Some Anatomical Variations in American Crania (Anthropological Papers, American Museum of Natural History, vol. 23, part 5, 1922).
- Marquesan Somatology with Comparative Notes on Samoa and Tonga (Memoirs of the Bernice P. Bishop Museum, vol. 9, no. 2, 1923).
- The "Blond" Eskimo—a Question of Method (American Anthropologist, n.s., vol. 24, no. 2, 1922).
- Essentials of Anthropometry (Special Publication, American Museum of Natural History, 1923).
- New Light on the Races of Polynesia (Asia, January, 1923).
- The Racial Diversity of the Polynesian Peoples (The Journal of the Polynesian Society, vol. 32, pp. 79-84, 1923).
- Race Types in Polynesia (American Anthropologist, n.s., vol. 26, no. 1, 1924).
- Relationships of the Upper Palaeolithic Races of Europe (Natural History, vol. 24, no. 6, 1924).
- With Katherine Murdoch*
- A Contribution to the Study of Mental and Physical Measurements in Normal Children (American Physical Education Review, May and June, 1923).
- Some Evidence of an Adolescent Increase in the Rate of Mental Growth (The Journal of Educational Psychology, September, 1922).
- With Milo Hellman*
- The Punin Calvarium (Anthropological Papers, American Museum of Natural History, vol. 23, part 7, 1925).
- With Franklin C. Paschal*

Racial Influences in the Mental and Physical Development of Mexican Children
(Comparative Psychology Monographs, vol. 3,
serial no. 14, October, 1925).

The following list includes the most important reviews by Doctor Sullivan.

Arboreal Man, by F. Wood Jones (New York, 1916). In *American Anthropologist*,
n.s., vol. 19, no. 3, 1917.

Organic Evolution. A Text-book, by Richard Swann Lull (New York, 1917). In
American Anthropologist, n.s., vol. 20, no. 1,
1918.

The Causes and Course of Organic Evolution; a Study in Bioenergies, by John
Muirhead MacFarlane (New York, 1918). In
American Anthropologist, n.s., vol. 20, no. 3,
1918.

The Racial History of Mankind, by Roland B. Dixon. In *American Anthropologist*,
n.s., vol. 25, no. 3, 1923.

Vertebrate Zoology, by Horatio Hackett Newman (New York, 1920). In *American
Anthropologist*, n.s., vol. 22, no. 2, 1920.

Richtlinien für Körpermessungen und deren statistische verarbeitung mit besonderer
Berücksichtigung von Schul messungen, by
Rudolf Martin (Munchen, 1924). In *American
Anthropologist*, n.s., vol. 27, no. 1, 1925.

The Evolution of Man. Essays by G. Elliot Smith, M.A., M.D., (New York, 1924).
In *American Anthropologist*, n.s., vol. 27, no. 1,
1925.

Diet and Race; Anthropological Essays. By F. P. Armitage. In *American Anthro-
pologist*, n.s., vol. 25, no. 3, 1923.

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Northeastern Asiatics, by Ales Hrdlicka. In
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1924.

Immigration in 1917. Based on the Annual Report of the Commissioner General of
Immigration, 1917. In *American Journal of
Physical Anthropology*, vol. 1, no. 4, 1918.

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BY

LOUIS R. SULLIVAN



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BY LOUIS R. SULLIVAN.

PREFACE.

This review is the result of studies made for the purpose of installing a somatological exhibit in the Philippine Hall of the American Museum of Natural History. No new or original data are presented. The purpose of the paper is to bring together the scattered observations of numerous observers in an attempt to indicate the racial affinities of the inhabitants of the Philippine Islands.

While an interpretation which is believed to be consistent with the data is offered, the aim has been to present the data in a form that will enable the reader to draw independent conclusions.

Throughout the study I have enjoyed the constant coöperation of Dr. A. L. Kroeber. I wish to acknowledge his helpful assistance in matters of synonymy, nomenclature, and location of tribes. Map 2 in this review is based on a similar map shortly to appear in Dr. Kroeber's *Peoples of the Philippines* to be published by this Museum.

The text figures and maps were drawn by Mr. S. Ichikawa and are based on Museum labels.

LOUIS R. SULLIVAN.

March, 1918.

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THE LITERATURE.

Anthropometric investigations in the Philippine Islands may be said to have been begun by Doctor J. Montano in 1885. Montano¹ made extended studies in the southern half of Luzon and in some of the other islands in the southern part of the Archipelago. His researches were thoroughly scientific and compare very favorably with those of modern workers. In many localities he measured only a few individuals, yet it seems certain that future research will not materially affect his conclusions. Montano recognized three racial types: —

- I. Negrito
 - Negrito of Bataan
 - Mamanua-Mindanao
 - Negrito Atas of Luzon
- II. Malay
 - Plus Chinese

Bikol
Tagalog
Bisaya
 - Plus Arabian and Indonesian

Sulu
Moro
Kalagan
- III. Indonesian
 - Samal (Isamal)
 - Bagobo
 - Guianga
 - Atas
 - Tagakaolo
 - Tagbanua
 - Manobo
 - Mandaya
 - Bilaan

In addition to his observations on the living, Montana reported on the skeletal material collected and the results of microscopic research on the hair.

¹, Montano.

Blumentritt's¹ numerous papers on the Philippines did much to clear up ethnographic confusion, as did also those of Meyer² and Schadenberg.³ Numerous verbal and photographic descriptions have appeared by many authors. First among these should be mentioned those of Dean C. Worcester⁴ and Meyer⁵. More general discussions may be found in the works of Deniker⁶ and Keane⁷.

The craniology of the Philippines has been dealt with by Virchow,⁸ Schadenberg,⁹ and Koeze¹⁰. The conclusions of Koeze agree in the main with those of Montano and Blumentritt.

Perhaps the most extensive series of measurements on the living are those of Folkmar.¹¹ In his *Album of Philippine Types* are the averages of the measurements on fairly large series of individuals representing nearly the whole of the Christian population on the Islands.

In 1904 Reed¹² recorded the measurements on the Negrito of Zambales. In the same year Savage Landor¹³ made a complete survey of the Islands, but his anthropometric data are of a peculiar character, not comparable with that of other observers. In 1905 Jenks¹⁴ published averages for the Bontok Igorot and in 1906 Kroeber¹⁵ measured individuals from the same locality.

In a series of publications from 1908 to 1913 Bean¹⁶ has contributed much valuable data on the natives of Luzon. Much of his later work is devoted to a scheme for determining racial affinities. Bean recognizes the following types: —

Adriatic (related to Adriatic of Deniker)
 Primitive (similar to primitive of Hagen and others)
 B. B. B. (big-cerebellumed, box-headed Bavarians of Ranke)
 Alpine
 Iberian (Mediterranean)
 North European (very few on Islands)
 Crô-Magnon
 Australoid

¹ Blumentritt, (a), (b), reviewed by Brinton.

² Meyer, (a).

³ Meyer and Schadenberg.

⁴ Worcester, (a), (b), (c), (d).

⁵ Meyer, (c).

⁶ Deniker.

⁷ Keane, (a), (b).

⁸ Virchow.

⁹ Schadenberg, (a).

¹⁰ Koeze.

¹¹ Folkmar.

¹² Reed.

¹³ Savage Landor.

¹⁴ Jenks.

¹⁵ Kroeber.

¹⁶ Bean, (a), (b), (c), (d).

Each of these types presents one or more modified types and there are numerous blends. There is also a type represented by one individual designated as *Homo Philippinensis*, a relative of *Homo Heidelbergensis*.

Of these types Bean says:—

This scheme is utilized in the segregation of Filipino types, and although an artificial division of the people is affected thereby, the groups segregated not only prove to be true types, but may even be designated as species of man.¹

One recognizes in this work an attempt to analyze the composition of the various racial types of man, yet the results are far from convincing. As to the source of these heretofore rather unexpected types Bean makes the following explanation:—

There have been waves and waves of migration which have apparently come from the south, and each succeeding wave finds the drift of the preceding one and in receding leaves its own, sometimes penetrating farther than its predecessor, sometimes falling short and retiring before having reached the remaining portions of the previous waves. Three crescents might be placed across the archipelago to represent the three European migrations.²

The crest of the first wave is represented by the Ilongot, the second by the Kalinga and Bontok Igorot, and the third by the Sulu. The Mohammedan wave advanced farther northward, but receded to Sulu when the Spaniards came. The three modified Iberian forms are evidence for three European migrations. The first came from Europe direct, the second by way of India, and the third from northern Africa and Arabia (Mohammedans of history). In this review we shall deal only with Bean's original data.

Barrows³ published measurements on the Negrito of Palawan, Surigao, and Bataan and also on the wild tribes of Luzon and Palawan. Nine years of residence and travel in the Philippines have convinced him that there is little evidence for an Indonesian theory and that racial diversity can be accounted for by Negrito and Malay intermixture. Barrows strengthens his convictions by data on the nasal index and index of arm reach. The advantages of close contact with the natives for many years cannot be denied; yet, when one considers the great gap between the conclusions of Bean and Barrows it is clear that the personal element must be left out of consideration and the concrete data taken at their face value.

In 1909 Christie⁴ published measurements of a group of Subanun from

¹ Bean, (c), 24.

² Bean, (d), 460.

³ Barrows, (a), (b).

⁴ Christie.

Mindanao. In his *The Wild Tribes of Davao District, Mindanao*, Cole¹ gives averages on several heretofore little-known groups. The same author promises more detailed measurements on these people as well as on some of the tribes of northern Luzon. Taylor² published the average stature of thirty-six Bontok Igorot, but the remaining measurements have not come to notice.

The most recent publication on the Philippines is the *Population of the Philippine Islands in 1916* by Beyer.³ In addition to the valuable statistics on the population there is a very convenient alphabetical summary of the ethnic groups. A brief statement is made of the culture and physical type of each group. The following racial types are promised: —

Short Mongol	Papuan
Tall Mongol	Indonesian
Primitive	Ainu
Australoid	Tall Caucasian
Negrito	Malay blend
Numerous Chinese, Japanese, Spaniards, Americans.	

The author admits that these are rather unusual types and will, doubtless, produce convincing statistics in a promised forthcoming volume.

THE PROBLEM.

The Philippine problem is a part of the much larger Malay problem. All through Malaysia we find an apparent stratification of the population. In the interior of the various islands, we find tribes variously called "wild", "pagan", or "head hunters". Surrounding these on all sides are the more civilized tribes designated as "civilized" or "christian." These people, for the most part, live near the coast of the Islands. Mingling with these peoples, we have the Mohammedan peoples known as "historic Malays" or "Moros". This stratification is further complicated in some instances, notably the Philippine Islands, by the presence of a fourth element, the pygmy Negrito, who usually occupy the mountain wilds.

This peculiar grouping has given rise to several theories as to the probable origin and affinities of the various groups. Confining our attention to the

¹ Cole, (c).

² Taylor.

³ Beyer.

Philippines, the most generally accepted explanation is that of Blumentritt.¹ The Negrito were, probably, the first inhabitants of the Islands. We had, in turn, two prehistoric Malay invasions. The first Malay invasion, probably from Borneo, drove the Negrito inland and the newcomers inhabited the coast. The second invasion, also prehistoric, drove the people of the first invasion inland. This resulted in a threefold stratification. Montano² and Meyer³ recognized these three groups, but called the first invaders Indonesian and the second Malay. In the sixteenth century we have the arrival of the Spaniards who were followed and, perhaps, preceded by the Chinese and others.⁴

For the most part, this classification of the population into three types has persisted, nominally at least. There has been some little disagreement in defining the two non-Negrito types and in the classification of the individual tribes or ethnic groups. Deniker⁵ and Keane⁶ accept it with modifications. Since the year 1900 much new data have been collected and two new tendencies have appeared. Bean,⁷ and very recently, Beyer,⁸ have greatly increased the number of racial types represented on the Islands. Barrows,⁹ on the other hand, has been inclined to discount the idea of multiplicity of types altogether and believes that, apart from the true Negrito, we have representatives of only one racial type and various blends with Negrito.

The existence of the Negrito, as a distinct racial type, is admitted by all. The problem remains to determine whether or not there is any justification in assuming more than one other racial type in the Islands. Ultimately comes the problem deciding the affinities of the inhabitants of the Philippine Islands to the inhabitants of the neighboring islands and the Malay Peninsula, and to mankind in general. This review will be restricted, for the most part, to the first problem.

¹ Blumentritt, (a), (b) and reviews of same by Brinton.

² Montano.

³ Meyer, (d).

⁴ Keane, (a).

⁵ Deniker.

⁶ Keane, (a), (b).

⁷ Bean, (a), (b), (c), (d).

⁸ Beyer.

⁹ Barrows, (b).

THE METHOD.

The data at hand are sufficiently representative of the entire population of the Philippines to make some sort of a preliminary summary justifiable. The various observers have differed in their choice of measurements, yet in nearly every case we have data on stature, head form, and form of the nose. Our comparison will then be limited principally to these three characters. However, we have enough data on the index of arm reach to make comparison possible. In a few instances, the absolute measurements may be used as a check, but for the most part, only the indices are given. It is to be regretted that the dimensions of the face were not recorded in more instances.

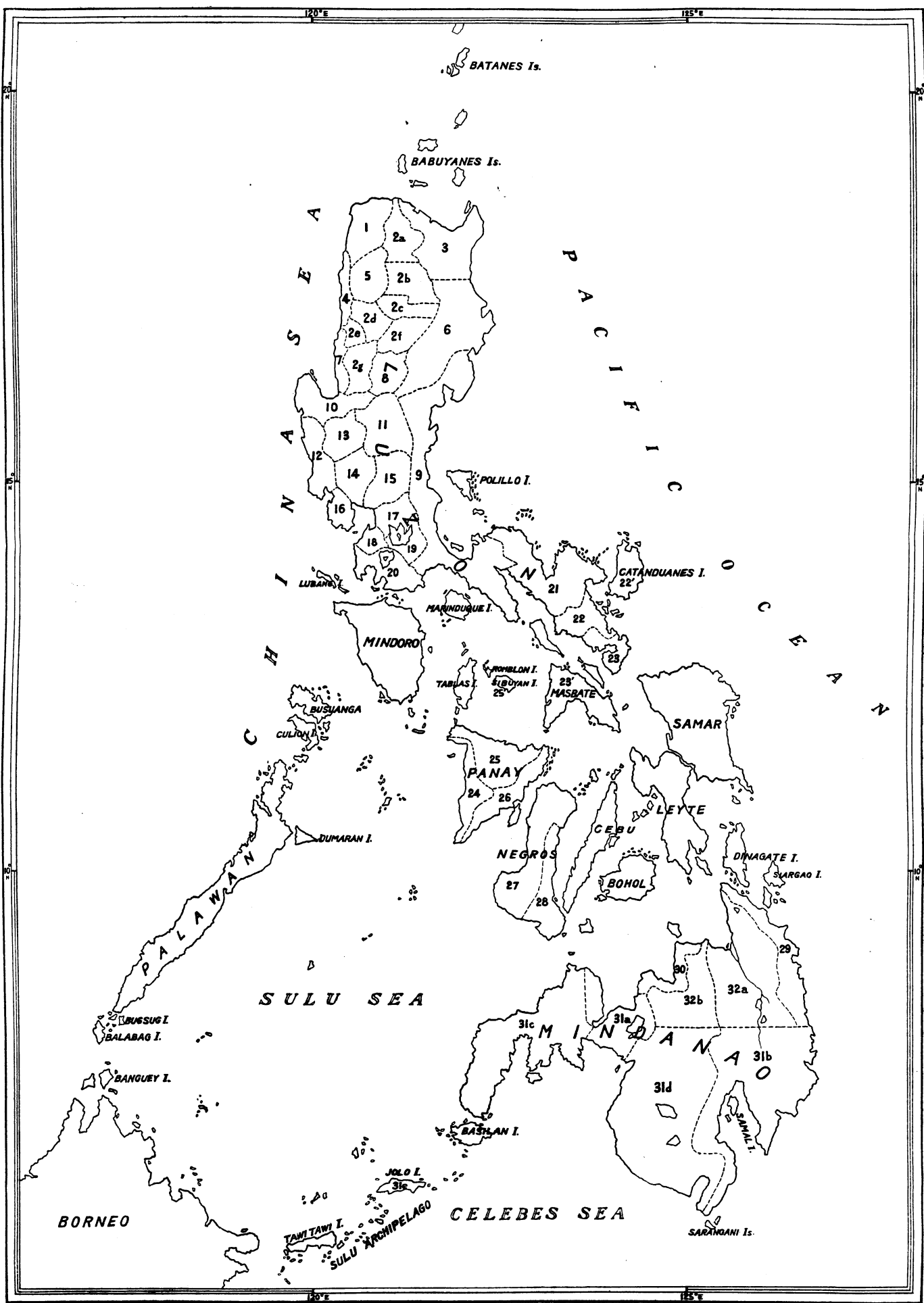
With the exception of a very few smaller series we have only the averages given. For this reason, we shall treat each series as an individual. Some of the observations are for only a very few individuals, yet the records of the different workers overlap sufficiently to permit us to judge fairly accurately the characters of each group considered. In the same way we can determine the comparability of the observations of two, and in some instances three, observers.

For convenience, we shall refer to the ethnic groups under the headings of Christian, Pagan, Mohammedan, and Negrito. Such a classification is obviously inconsistent, for the Negrito are Pagan. Yet, it seemed best to segregate them as a distinct group. Nominally, this subdivision is on the basis of religion, yet it is probably as truly a cultural classification. The Christians are the civilized coast peoples and the Pagans are the wild inland tribes. In culture, the Mohammedans probably stand nearer to the Christians and the Negrito nearer to the Pagans. The statistics on the population, the geographic distribution, and the cultural characterization of each group are taken almost directly from Beyer.¹ Beyer does not claim the accuracy for his census that the figures would imply, yet it is probably safe to say that it is the most accurate that has yet appeared and the most detailed for the ground it covers.

Works on craniometry will be used only as a check. The opinions and general impressions of the different observers will, for the most part, be disregarded and all conclusions will be based on the recorded measurements.

Throughout this review, "race" is used in the sense of one of the larger

¹ Beyer.



PHILIPPINE ISLANDS — PROVINCES AND DISTRICTS.

- | | | | |
|-----------------|-----------------------------|-------------------------------|------------------------|
| 1. Ilokos Norte | 8. Nueva Vizcaya | 21. Ambos Camarines | 27. Occidental Negros |
| 2. Mountain | 9. Tayabas | 22. Albay | 28. Oriental Negros |
| (a) Apayao | 9'. Marinduque Sub-province | 22'. Catanduanes Sub-province | Bohol |
| (b) Kalinga | 10. Pangasinan | 23. Sorsogon | 29. Surigao |
| (c) Bontok | 11. Nueva Ecija | 23'. Masbate Sub-province | 30. Misamis |
| (d) Lepanto | 12. Zambales | Mindoro | 31. Department of Moro |
| (e) Amburayan | 13. Tarlak | Samar | (a) Lanao |
| (f) Ifugao | 14. Pampanga | Palawan | (b) Davao |
| (g) Benguet | 15. Bulakan | 24. Antique | (c) Zamboanga |
| 3. Cagayan | 16. Bataan | 25. Capiz | (d) Cotabato |
| 4. Ilokos Sur | 17. Rizal | 25'. Romblon Sub-province | (e) Sulu |
| 5. Abra | 18. Cavite | 26. Iloilo | 32. Agusan |
| 6. Isabela | 19. La Laguna | Leyte | (a) Butuan |
| 7. La Union | 20. Batangas | Cebu | (b) Bukidnon |
- } Districts
- } Sub-provinces

groups of mankind and refers to the three or four main divisions: Mongoloid, Negroid, Caucasian, and Australoid. Racial type is used to designate one of the smaller and more concrete groups of mankind and is equivalent to sub-race. Any group differing from a racial type in a very few characters only will be designated as a local type.

GEOGRAPHY AND POPULATION.

The Philippine Islands lie southeast of Asia, nearly south of Japan and north of Borneo and Celebes. Geographically, they belong to the same group of islands as Borneo, Sumatra, Java, etc. and are a part of Asia rather than Oceania. They are, for the most part, of volcanic origin and are structurally connected with Borneo and Celebes by three isthmuses which are partly submerged. These three isthmuses enclose the Sulu and Celebes seas. Geologists agree that the Philippine Islands have probably been separated from Borneo and Malaysia since some time in the middle or upper Miocene.¹

The Archipelago consists of 3,141 islands and has a total area of 115,026 square miles. The interior of most of the islands is mountainous. The principal mountain ranges run north and south as do also the larger islands. The interior of the islands is heavily forested. The population is, in a great measure, distributed along the seaboard, in the great valley of Luzon, in the valley of the Cagayan River, in the valley of the Rio Grande de Mindanao in Mindanao, and in the valleys of smaller streams.

The most densely populated areas are in Ilokos Norte, Ilokos Sur, La Union, Pangasinan, Cagayan, Zambales, Bulakan, Rizal, Laguna, Batangas, Ambos Camarines, Albay and Sorsogon in Luzon, the coast of Samar, Leyte, Panay, Negros, Bohol, northern Mindanao, and nearly all of Cebu. This also represents the range of the Christian peoples. A wide strip in the eastern part of northern Luzon and another in eastern Zambales have a population of less than five persons to the square mile and are inhabited by the Negrito. The same relative density (or sparsity) of population is found in Palawan, the interior of Mindoro, and the greater part of Mindanao. In the latter islands the inhabitants are mainly pagan or wild tribes.

The total population at the end of the year 1915 is given as 9,503,271.²

¹ (Census 1903).

² Beyer.

Of these there were: —

8,413,347	Christians
700,000	Pagan
(35,926)	Negrito
315,980	Mohammedan

73,366 inhabitants of the Philippine Islands are foreign born. Of these two-thirds were Chinese and one-sixth were Asiatics or other nationalities. 500,000 native born inhabitants, or 5.26% of the total population, have Chinese blood. 200,000 native born inhabitants, or 2.1% of the total population have Spanish or other European blood.

THE MATERIAL.

I. CHRISTIAN GROUPS.

There were 8,413,347 Christians, or civilized people, on the Islands distributed in eight principal ethnic groups. These groups will be considered approximately from north to south.

Iloko¹ (Ilocano): 988, 841; third largest Philippine group.

Distribution: Ilokos Norte, Ilokos Sur, La Union; also in Cagayan, Isabela, Apayao, Pangasinan, Zambales, Tarlak, and Nueva Ecija in Luzon.

1.² Iloko of Ilokos Norte — Folkmar.³

37 Males			
Stature	1593	Head length	180
Arm reach	1657	Head width	151
Cephalic index	84.4	Nasal height	55
Nasal index	73.1	Nasal width	40
Index of arm reach	103.4 ⁴	Weight	51.6 kg.

2. Iloko of Ilokos Sur — Folkmar.

59 Males			
Stature	1596	Head length	177
Arm reach	1671	Head width	150
Cephalic index	85.1	Nasal height	53
Nasal index	72.9	Nasal width	39
Index of arm reach	104.7	Weight	51.6 kg.

3. Iloko of La Union — Folkmar.

31 Males			
Stature	1590	Head length	176
Arm reach	1664	Head width	151
Cephalic index	85.7	Nasal height	50
Nasal index	78.6	Nasal width	39
Index of arm reach	104.6	Weight	51.5

¹ Statistics on population and distribution are taken from Beyer.

² Numbers refer to approximate location on map 2 and are consistently used through the text to refer to these specific groups.

³ Folkmar.

⁴ Calculated from average stature and average arm reach.

4. Iloko of Ilokos Norte and Sur and La Union — Bean.¹

48 Males

Stature	1615	Head length	182
Cephalic index	83.5	Head width	152
Nasal index	81.8	Nasal height	43
		Nasal width	36.5

5. Iloko of Pangasinan — Folkmar.

34 Males

Stature	1621	Head length	178
Arm reach	1687	Head width	150
Cephalic index	84.3	Nasal height	52
Nasal index	76.5	Nasal width	40
		Weight	52.7

6. Iloko of Tarlak — Folkmar.

8 Males

Stature	1614	Head length	179
Arm reach	1686	Head width	152
Cephalic index	84.7	Nasal height	50
Nasal index	83.6	Nasal width	42
Index of arm reach	104.0	Weight	53.3

7. Iloko of Zambales — Folkmar.

24 Males

Stature	1609	Head length	178
Arm reach	1675	Head width	150
Cephalic index	84.4	Nasal height	51
Nasal index	77.5	Nasal width	39
Index of arm reach	104	Weight	53.6

Cagayan (Ibanag): 156,134; seventh largest group.

Distribution: Cagayan Valley in the provinces of Cagayan and Isabela, Luzon.

8. Cagayan of Cagayan — Folkmar.

10 Males

Stature	1637	Head length	184
Arm reach	1691	Head width	149
Cephalic index	80.8	Nasal height	50
Nasal index	81.1	Nasal width	41
Index of arm reach	103.3	Weight	52.9

9. Cagayan of Isabela — Folkmar.

5 Males

Stature	1594	Head length	184
Arm reach	1645	Head width	149
Cephalic index	80.9	Nasal height	51
Nasal index	78.9	Nasal width	41
Index of arm reach	103.2	Weight	58.9

¹ Bean, (b).

Pañgasinan: 381,493; fifth largest group on the Islands.

Distribution: chiefly in Pangasinan, a few are found in the neighboring provinces of Tarlak, Nueva Ecija, and La Union, Luzon.

10. Pañgasinan of Pangasinan — Folkmar.

40 Males			
Stature	1629	Head length	181
Arm reach	1683	Head width	152
Cephalic index	84.2	Nasal height	54
Nasal index	73.5	Nasal width	40
Index of arm reach	103.3	Weight	52.9

Pampañgan: 337,184; sixth largest group on the Islands.

Distribution: Pampanga and part of Tarlak, Luzon.

11. Pampañgan of Pampanga — Folkmar.

62 Males			
Stature	1620	Head length	182
Arm reach	1658	Head width	142
Cephalic index	80.7	Nasal height	52
Nasal index	76.2	Nasal width	40
Index of arm reach	102.4	Weight	53.6 kg.

Sambal: 56,146.

Distribution: Province of Zambales and a portion of western Pangasinan.

12. Sambal of Zambales — Folkmar.

17 Males			
Stature	1607	Head length	179
Arm reach	1673	Head width	148
Cephalic index	82.7	Nasal height	51
Nasal index	79.6	Nasal width	41
Index of arm reach	104.1	Weight	54.9

Tagalog: 1,789,049; second largest Philippine group.

Distribution: Provinces of Tayabas, Batangas, Cavite, Laguna, Rizal, Manila City, Bataan, Bulakan, and Nueva Ecija; a few in northern Camarines, Tarlak, and southern Zambales, Luzon. In addition to Luzon, the island of Marinduque is wholly Tagalog, Masbate is partly so, and the coastal region of the northern two-thirds of Mindoro.

13. Tagalog of Nueva Ecija and Nueva Vizcaya — Bean.

17 Males			
Stature	1661	Head length	183
Cephalic index	83.6	Head width	153
Nasal index	80.0	Nasal height	48
		Nasal width	39

14. Tagalog of Nueva Ecija — Folkmar.

26 Males

Stature	1610	Head length	180
Arm reach	1668	Head width	150
Cephalic index	83.3	Nasal height	50
Nasal index	80.4	Nasal width	40
Index of arm reach	103.6	Weight	52.0

15. Tagalog of Zambales — Bean.

9 Males

Stature	1651	Head length	183
Cephalic index	84.1	Head width	156
Nasal index	79.6	Nasal height	48
		Nasal width	38

16. Tagalog of Pangasinan — Bean.

18 Males

Stature	1610	Head length	181
Cephalic index	84.7	Head width	153
Nasal index	85.0	Nasal height	45
		Nasal width	38

17. Tagalog of Pampanga — Bean.

22 Males

Stature	1635	Head length	185
Cephalic index	81.3	Head width	150
Nasal index	87.6	Nasal height	44
		Nasal width	38

18. Tagalog of Bulakan — Folkmar.

22 Males

Stature	1597	Head length	180
Arm reach	1654	Head width	153
Cephalic index	84.7	Nasal height	50
Nasal index	82.0	Nasal width	41
Index of arm reach	104.0	Weight	54.5

19. Tagalog of Bulakan — Bean.

26 Males

Stature	1636	Head length	181
Cephalic index	84.2	Head width	152
Nasal index	83.2	Nasal height	45
		Nasal width	37

20. Tagalog of Tayabas — Folkmar.

28 Males

Stature	1579	Head length	180
Arm reach	1645	Head width	148
Cephalic index	82.3	Nasal height	52
Nasal index	76.0	Nasal width	40
Index of arm reach	104.2	Weight	50.7

21. Tagalog of Tayabas — Bean.

15 Males			
Stature	1606	Head length	180
Cephalic index	83.3	Head width	150
Nasal index	83.3	Nasal height	46
		Nasal width	38

22. Tagalog of Rizal — Folkmar.

25 Males			
Stature	1579	Head length	184
Arm reach	1645	Head width	149
Cephalic index	81.2	Nasal height	51
Nasal index	80.5	Nasal width	41
Index of arm reach	104.2	Weight	53.4

23. Tagalog of Rizal — Bean.

31 Males			
Stature	1628	Head length	181
Cephalic index	83.4	Head width	151
Nasal index	83.2	Nasal height	44.7
		Nasal width	37.2

24. Tagalog of Manila — Bean.

40 Males			
Stature	1638	Head length	181
Cephalic index	82.3	Head width	149
Nasal index	83.8	Nasal height	43.9
		Nasal width	36.9

25. Tagalog of Cavite — Folkmar.

20 Males			
Stature	1592	Head length	180
Arm reach	1645	Head width	149
Cephalic index	83.3	Nasal height	51
Nasal index	78.3	Nasal width	40
Index of arm reach	103.3	Weight	52.3

26. Tagalog of Cavite — Bean.

10 Males			
Stature	1667	Head length	185
Cephalic index	82.9	Head width	154
Nasal index	81.0	Nasal height	46.4
		Nasal width	37.6

27. Tagalog of La Laguna — Folkmar.

20 Males			
Stature	1600	Head length	179
Arm reach	1632	Head width	149
Cephalic index	83.0	Nasal height	50
Nasal index	81.9	Nasal width	41
Index of arm reach	102.0	Weight	54.9

28. Tagalog of La Laguna — Bean

14 Males			
Stature	1626	Head length	182
Cephalic index	81.3	Head width	148
Nasal index	84.3	Nasal height	43.9
		Nasal width	37.0

29. Tagalog of Batanga — Bean.

12 Males			
Stature	1642	Head length	182
Cephalic index	83.7	Head width	152
Nasal index	79.8	Nasal height	47
		Nasal width	38

30. Tagalog of Batanga — Folkmar.

28 Males			
Stature	1611	Head length	180
Arm reach	1668	Head width	150
Cephalic index	82.0	Nasal height	51
Nasal index	79.7	Nasal width	41
Index of arm reach	103.5	Weight	53.2

31. Tagalog? — Cainta, Rizal — Bean and Planta.¹

38 Males			
Stature	1609	Head length	184
Cephalic index	80.4	Head width	147
Facial index	85.7	Nasal height	48
Nasal index	82.8	Nasal width	39
Facial height	115	Ear height	61
Facial width	134		

32. Tagalog? — Taytay, Rizal — Bean and Planta.²

181 Males			
Stature	1595	Head length	183.0
Cephalic index	81.8	Head width	149.6
Facial index	81.3	Nasal height	47.1
Nasal index	85.2	Nasal width	40.0
Facial height	112.0	Ear height	61.5
Facial width	137.7		

Bikol: 685,309; fourth largest Philippine group.

Distribution: Ambos Camarines, Albay and Sorsogon on Luzon and the islands of Catanduanes and Masbate.

33. Bikol of Ambos Camarines — Folkmar.

18 Males			
Stature	1585	Head length	184
Arm reach	1663	Head width	151
Cephalic index	81.6	Nasal height	51
Nasal index	81.5	Nasal width	41
Index of arm reach	104.9	Weight	53.3

¹ Bean and Planta, (b).² Bean and Planta, (a).

34. Bikol of Sorsogon — Folkmar.

32 Males

Stature	1595	Head length	178
Arm reach	1658	Head width	151
Cephalic index	84.7	Nasal height	50
Nasal index	80.4	Nasal width	41
Index of arm reach	104.0	Weight	53.4

35. Bikol of Albay — Folkmar.

11 Males

Stature	1583	Head length	181
Arm reach	1672	Head width	148
Cephalic index	82.2	Nasal height	48
Nasal index	86.1	Nasal width	42
Index of arm reach	105.7	Weight	56.6

36. Bikol of Camarines, Albay, Sorsogon, etc.— Bean.

14 Males

Stature	1632	Head length	182
Cephalic index	83.5	Head width	152
Nasal index	86.3	Nasal height	45
		Nasal width	39

Bisaya: 3,977,210; largest group in the islands.

Distribution: Samar, Leyte, Cebu, Negros, Bohol, Panay, and the remaining smaller Bisayan Islands; coast region of southern Mindoro, coast of Palawan; and the north and east coasts of Mindanao.

37. Bisaya of Romblon Island — Folkmar.

3 Males

Stature	1622	Head length	180
Arm reach	1706	Head width	146
Cephalic index	80.9	Nasal height	53
Nasal index	75.0	Nasal width	40
Index of arm reach	105.2	Weight	56.6

38. Bisaya of Masbate Island — Folkmar.

7 Males

Stature	1588	Head length	179
Arm reach	1633	Head width	154
Cephalic index	86.3	Nasal height	48
Nasal index	84.4	Nasal width	40
Index of arm reach	102.2	Weight	53.3

39. Bisaya of Capiz Province, Panay Island — Folkmar.

27 Males

Stature	1590	Head length	181
Arm reach	1683	Head width	150
Cephalic index	83.0	Nasal height	49
Nasal index	85.0	Nasal width	42
Index of arm reach	105.9	Weight	53.2

40. Bisaya of Iloilo Province, Panay Island — Folkmar.

40 Males			
Stature	1586	Head length	180
Arm reach	1661	Head width	149
Cephalic index	83.1	Nasal height	49
Nasal index	84.1	Nasal width	41
Index of arm reach	104.7	Weight	51.0

41. Bisaya of Samar Island — Folkmar.

31 Males			
Stature	1558	Head length	176
Arm reach	1639	Head breadth	150
Cephalic index	85.5	Nasal height	48
Nasal index	81.9	Nasal width	40
Index of arm reach	105.2	Weight	49.8

42. Bisaya of Leyte Island — Folkmar.

46 Males			
Stature	1583	Head length	180
Arm reach	1648	Head width	152
Cephalic index	85.3	Nasal height	51
Nasal index	78.6	Nasal width	40
Index of arm reach	104.1	Weight	51.6

43. Bisaya of Cebu Island — Folkmar.

32 Males			
Stature	1599	Head length	181
Arm reach	1666	Head width	152
Cephalic index	83.7	Nasal height	48
Nasal index	79.6	Nasal width	38
Index of arm reach	104.2	Weight	52.3

44. Bisaya of Oriental Negros — Folkmar.

15 Males			
Stature	1607	Head length	180
Arm reach	1681	Head width	153
Cephalic index	84.9	Nasal height	51
Nasal index	80.9	Nasal width	41
Index of arm reach	104.6	Weight	56.5

45. Bisaya of Occidental Negros — Folkmar.

10 Males			
Stature	1554	Head length	182
Arm reach	1618	Head width	150
Cephalic index	82.7	Nasal height	50
Nasal index	81.9	Nasal width	41
Index of arm reach	104.1	Weight	49.0

46. Bisaya of Bohol Island — Folkmar.

16 Males			
Stature	1594	Head length	178
Arm reach	1676	Head width	151
Cephalic index	84.7	Nasal height	49
Nasal index	80.5	Nasal width	40
Index of arm reach	105.1	Weight	48.2

47. Bisaya of Surigao Province, Mindanao — Folkmar.

21 Males			
Stature	1594	Head length	178
Arm reach	1660	Head width	152
Cephalic index	85.8	Nasal height	49
Nasal index	83.3	Nasal width	41
Index of arm reach	104.1	Weight	48.2

48. Bisaya of Misamis, Mindanao — Folkmar.

11 Males			
Stature	1612	Head length	179
Arm reach	1692	Head width	153
Cephalic index	85.5	Nasal height	51
Nasal index	82.6	Nasal width	42
Index of arm reach	104.9	Weight	56.3

There are no data for the following minor Christian groups recognized by Beyer:—

Ivatan: 6,392; Batanes Islands.
 Gaddang A: 21,240; Nueva Vizcaya and Isabela, Luzon.
 Kalamian: 11,350; Kalamianes and Kuyo Islands near Palawan.
 Isinai: 2,647; 3 towns in Nueva Vizcaya, Luzon.
 Dumagat: 352; Kalawat Islands.

II. PAGAN GROUPS.

There are 700,000 pagan or uncivilized people in the Philippines. We shall consider first the Luzon groups. The wild tribes inhabit the interior of Luzon and in earlier literature are referred to as Igorot. Of these groups we have no data on the following:—

Apayao: 23,000; Apayao, Ilokos Norte, and Cagayan.
 Kalinga: 67,450; Kalinga, Apayao, and Cagayan.
 Tinggian: 27,648; Abra and neighboring provinces.
 Gaddang B: 12,480; Kalinga and Isabela.

Bontok (Igorot); 63,258.

Distribution: sub-province of Bontok and neighboring provinces.

49. Bontok of Bontok — Kroeber.¹

18 Males			
Stature	1550	Head length	186
Arm reach	1572	Head width	146
Cephalic index	78.4	Face height	110
Nasal index	99.8	Face width	135
Facial index	81.0	Nasal height	41
Index of arm reach	101.6	Nasal width	40

50. Bontok of Lepanto — Bean.²

14 Males			
Stature	1586	Head length	188
Cephalic index	77.1	Head width	145
Nasal index	97.6	Face height	108
Facial index	78.8	Face width	137
		Nasal height	41
		Nasal width	40
		Ear height	57.2

51. Bontok of Bontok — Jenks.³

14 Males			
Stature	1602	Head length	192
Cephalic index	79.1	Head width	152
Nasal index	79.2	Nasal length	52.6
		Nasal width	42.6

Kankanai (Igorot): 47,887

Distribution: Northern third of Benguet and part of Lepanto and Amburayan.

52. Kankanai of northern Benguet — Barrows.⁴

10 Males	
Stature	1505.7
Cephalic index	81.6
Nasal index	88.7

Nabaloi (Igorot, Inibaloi, Ibalois): 13,421.

Distribution: Southern Benguet and neighboring provinces.

53. Nabaloi of Agno Valley, Benguet — Bean.⁵

22 Males			
Stature	1536	Head length	186.0
Cephalic index	78.5	Head width	146.0
Facial index	80.4	Nasal height	40.0
Nasal index	95.0	Nasal width	38.0
Face height	107	Ear height	56.7
Face width	133		

¹ Kroeber,

² Bean, (a).

³ Jenks.

⁴ Barrows, (b).

⁵ Bean, (a).

54. Nabaloi of West Benguet — Bean.

46 Males			
Stature	1549	Head length	189
Cephalic index	77.8	Head width	147
Facial index	79.0	Nasal height	43
Nasal index	88.4	Nasal width	38
Face height	109	Ear height	59.3
Face width	138		

55. Nabaloi of Baguio, Benguet — Bean.

22 Males			
Stature	1491	Head length	186
Cephalic index	78.5	Head width	146
Facial index	80.4	Nasal height	40
Nasal index	95.0	Nasal width	38
Facial height	107	Ear height	56.7
Facial width	133		

56. Nabaloi of Kayapa, Benguet — Barrows.

7 Males	
Stature	1543
Arm reach	1590
Cephalic index	79.2
Nasal index	101.0
Index of arm reach	103.

57. Nabaloi of Southern Benguet — Barrows.

12 Males			
Stature	1563.4	Cephalic index	76.2
		Nasal index	92.1

Ifugao: 132,500; largest non-Christian group.

Distribution: mostly in Ifugao; few in neighboring provinces.

58. Ifugao of Benawi — Barrows.

10 Males			
Stature	1552	Cephalic index	76.9
		Nasal index	101.9

Ilongot: 6,150.

Distribution: mostly in Nueva Vizcaya about headwaters of the Cagayan River.

59. Ilongot of Nueva Vizcaya — Barrows.

4 Males			
Stature	1540	Cephalic index	83.3
		Nasal index	86

60. Ilongot of Pantabangan, Nueva Ecija — Barrows.

12 Males			
Stature	1563	Cephalic index	82.5
		Nasal index	89.2

Mangyan: 12,250; interior of Mindoro Island. No data.

Unclassified: 46,015. There are five main groups of Mountain people variously called "Non-Negroid," "Semi-Negroid," "Hill people," "remontados" scattered throughout the Archipelago. In the earlier census, they have been called "Bukidnon." Bukidnon is now restricted to a group living in Mindanao. The others are distributed as follows:—

- (a) Mountains of Central Luzon (4,316).
- (b) Southern Luzon (4,600) Katabangan.
- (c) Central part of Samar (1,420).
- (d) Central part of Negros (19,258).
- (e) Central part of Panay (16,421).

On Map 2 these groups are designated as "Hill People".

Of these groups we have data on the following only:—

61. Katabangan? of Camarines Sur — Montano.

2 Males

Stature	1550	Cephalic index	81.3	Nasal index	93.9
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Manobo: 39,600.

Distribution: Agusan River Valley, Mindanao.

62. Manobo of Davao, Mindanao — Montano.

3 Males

Stature	1616	Cephalic index	77.9	Nasal index	93.5
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63. Manobo of Agusan, Mindanao — Montano.

5 Males

Stature	1518	Cephalic index	82.5	Nasal index	93.4
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Subanun: 31,450 exclusive of numerous Christians and Mohammedans.

Distribution: The interior of the whole Zamboanga Peninsula, Mindanao.

64. Subanun of Zamboanga (coast), Mindanao — Christie.

20 Males

Stature	1608	Head length	177.0
Cephalic index	82.6	Head width	147.4
Nasal index	74.8	Nasal height	52.6
		Nasal width	39.9

Tagakaolo: 7,100.

Distribution: Interior of Saragani Peninsula and west coast of the Gulf of Davao, Mindanao.

65. Tagakaolo of Davao, Mindanao — Cole.¹

27 Males

Stature	1574	Cephalic index	81.5
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65'. Tagakaolo of Davao.

¹ Cole, (c).

Montano measured two men:—

Stature	1594	Cephalic index	80.8	Nasal index	85.5
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Kulaman: 3,600

Distribution: Sarangani Peninsula, Mindanao.

66. Kulaman of Davao, Mindanao — Cole.

27 Males

Stature	1583	Cephalic index	78.1
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Mandaya: 25,000.

Distribution: east and north of Davao Gulf, Mindanao.

67. Mandaya of Davao, Mindanao — Cole.

15 Males

Stature	1539	Cephalic index	84.6
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67'. Montano measured two men:—

Stature	1578	Cephalic index	81.3	Nasal index	90.8
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Bilaan: 10,400.

Distribution: Davao and Cotabato, Mindanao.

68. Bilaan of Davao, Mindanao — Cole.

38 Males

Stature	1547	Cephalic index	80.4
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68'. Montano measured 3 females and 4 young males.

They have an average nasal index of about 90.

Bagobo: 9,350.

Distribution: Northwest coast of Davao Gulf, Mindanao.

69. Bagobo of Davao, Mindanao — Cole.

33 Males

Stature	1586	Cephalic index	78.8
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69'. 1 Male (Montano)

Stature	1538	Cephalic index	81.4	Nasal index	77.8
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4 Male Guingas (Bagobo?) — Montano.

Stature	1630	Cephalic index	80.7	Nasal index	79.7
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Tagbanua: 19,460

Distribution: Mountainous interior of Palawan.

70. Tagbanua of Palawan — Barrows.

5 Males.

Stature	1550	Cephalic index	81.0	Nasal index	93.4
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1 Male (Montano)

Stature	1565	Cephalic index	80	Nasal index	93.0
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Atá: 7,500

Distribution: Davao province, Mindanao.

71. Atá of Davao, Mindanao — Montano.

1 Male — adult.

Stature	1688	Cephalic index	82.2	Nasal index	78.4
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We have no data on the following groups:—

Tirurai: 7,150; Cotabato, Mindanao.

Bukidnon: 48,500; Bukidnon, Mindanao.

Manguangan: 2,500; central Mindanao.

III. MOHAMMEDAN GROUPS.

There are about 315,980 Mohammedans. For the most part, they are called "Moros." A few of the groups have more specific names. They are all in the southern part of the Archipelago in and around Mindanao.

72. Kalagan of Davao Gulf, Mindanao — Montano.

1 Male

Stature	166	Cephalic index	79.5	Nasal index	102.5
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73. Isamal (Samal) of Samal Island, Mindanao — Montano.

2 Males

Stature	1579	Cephalic index	81.9	Nasal index	80.4
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74. Moro of Davao, Mindanao — Montano.

5 Males

Stature	1573	Cephalic index	81.9	Nasal index	84.6
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75. Moro of Cotabato, Mindanao — Folkmar.

2 Males

Stature	1599	Cephalic index	80.9	Nasal index	81.7
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76. Moro of Zamboanga, Mindanao — Folkmar.

6 Males

Stature	1613	Cephalic index	80.8	Nasal index	81.0
Arm reach	1696	Index of arm reach	105.1	Weight	48.9

77. Moro of Basilan Island — Folkmar.

2 Males

Stature	1556	Cephalic index	83.6	Nasal index	85.1
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78. Moro of Sulu Island — Folkmar.

10 Males

Stature	1596	Head length	180
Arm reach	1645	Head width	150
Cephalic index	83.1	Nasal height	50
Nasal index	83.2	Nasal width	42
Index of arm reach	103.1	Weight	51.4

79. Sulu of Sulu Island — Montano.

6 Males

Stature	1526	Index of arm reach	103.8	Cephalic index	84.7
				Nasal index	86.6

We have used the names given by the observer in every case but the following specific names are substituted for "Moro" by Beyer.¹

Samal;	78,700;	Sulu Archipelago.
Lanao;	58,350;	Lanao — Mindanao.
Yakan;	7,290;	Basilan Islands.
Palawan;	1,940;	Southern Palawan.
Magindanao;	79,850;	Cotabato, Mindanao.
Sanggil;	2,450;	South coast of Mindanao.
Sulu;	87,400;	Jolo Island, etc.

IV. NEGRITO GROUPS.

According to Beyer² there are seven principal groups of Negrito. The total number is approximately 35,926. They are distributed as follows: —

- (a) Apayao swamp region, Apayao and Cagayan; 4,500.
- (b) Ilokos Mountains mostly in Ilokos; 415.
- (c) Zambales Mountains, Zambales, Bataan, etc.; 9,186.
- (d) East Luzon Mountains from Cape Engano to Lucena, Tayabas; 12,500.
- (e) South Luzon Mountains, Tayabas, Camarines and Albay; 4,800.
- (f) "Bataks" of Palawan; 675.
- (g) "Mamanua" of Surigao — Mindanao; 3,850.

Smaller groups are mixed with some of the "hill tribes" on other islands.

We have the following data: —

80. Negrito of Bataan, Luzon — Montano.

18 Males

Stature	1485	Index of arm reach	105.3	Cephalic index	84.7
				Nasal index	94.7

81. Negrito (Aeta) of Zambales, Luzon — Reed.³

31 Males (27 females also measured)

Stature	1463	Head length	177.5
Cephalic index	82.2	Head width	147.0
Nasal index	106.0	Nasal height	40.5
		Nasal width	42.8

One female had a nasal index of 140.

¹ Beyer.² Beyer.³ Reed.

82. Negrito of Bataan, Luzon — Barrows.

9 Males

Stature	1454	Cephalic index	82.3	Nasal index	93.7
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83. Negrito (Mamanua) of Surigao, Mindanao — Barrows.

3 Males

Stature	1590	Cephalic index	84	Nasal index	103
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84. Negrito (Batak) of Palawan — Barrows

4 Males

Stature	1500	Cephalic index	81	Nasal index	97
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(According to Beyer the Bataks are Papuan?)

85. Negrito-Metis of Albay — Montano.

5 Males

Stature	1504	Cephalic index	85.8	Nasal index	92.7
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HAIR, SKIN, AND EYES.

In only a comparatively few instances do we have statistical records of skin color, hair form, and eye color. Montano and Kroeber have recorded skin color according to Broca's color scale. Cole has evidently made careful studies of this character, but has not yet published detailed information. However, there are not sufficient data on these characters at the present time to make them of any value in a minute comparative study.

The hair is almost uniformly black. The Negrito range from curly to woolly hair. The other inhabitants of the islands have straight or wavy hair. One gathers the impression that straight hair is most common, but that wavy hair frequently occurs in all groups, though more frequently in some of the pagan tribes of northern Luzon, Mindanao, and Palawan.

As to skin color, about all there can be said is that the Negrito vary from dark brown to black and that the other natives show varying shades of brown. The shades most frequently reported are numbers 21 and 37 of Broca's standard scale. Kroeber's Bontok were between 25 and 31 of Broca's scale. Montano recorded numbers 40 and 47 in several instances. The Bikol are the only Christians for whom we have records and they are reported as being most frequently of the shade of number 21 of Broca. Some of the pagan people are described as being of a very light shade. Caucasian affinities are claimed for some.

The eye color is reported as varying from a medium to a very dark brown. The eyes of the Negrito are wide open. The eyes of many of the other natives suggest the Mongol eye. The Mongoloid fold is reported to be as frequent as fifty or sixty percent in some cases among the Christian people. It is also found among the pagan and Mohammedan people. Jenks noted it among the Bontok and Christie among the Subanun. Other observers claim it to be of rare occurrence among the pagan tribes of Luzon. Although the statement cannot be made with certainty, it seems that the Mongoloid eye fold and obliquely placed eye slits are more frequent among the Christians than among the pagan people, at least in Luzon.

STATURE.

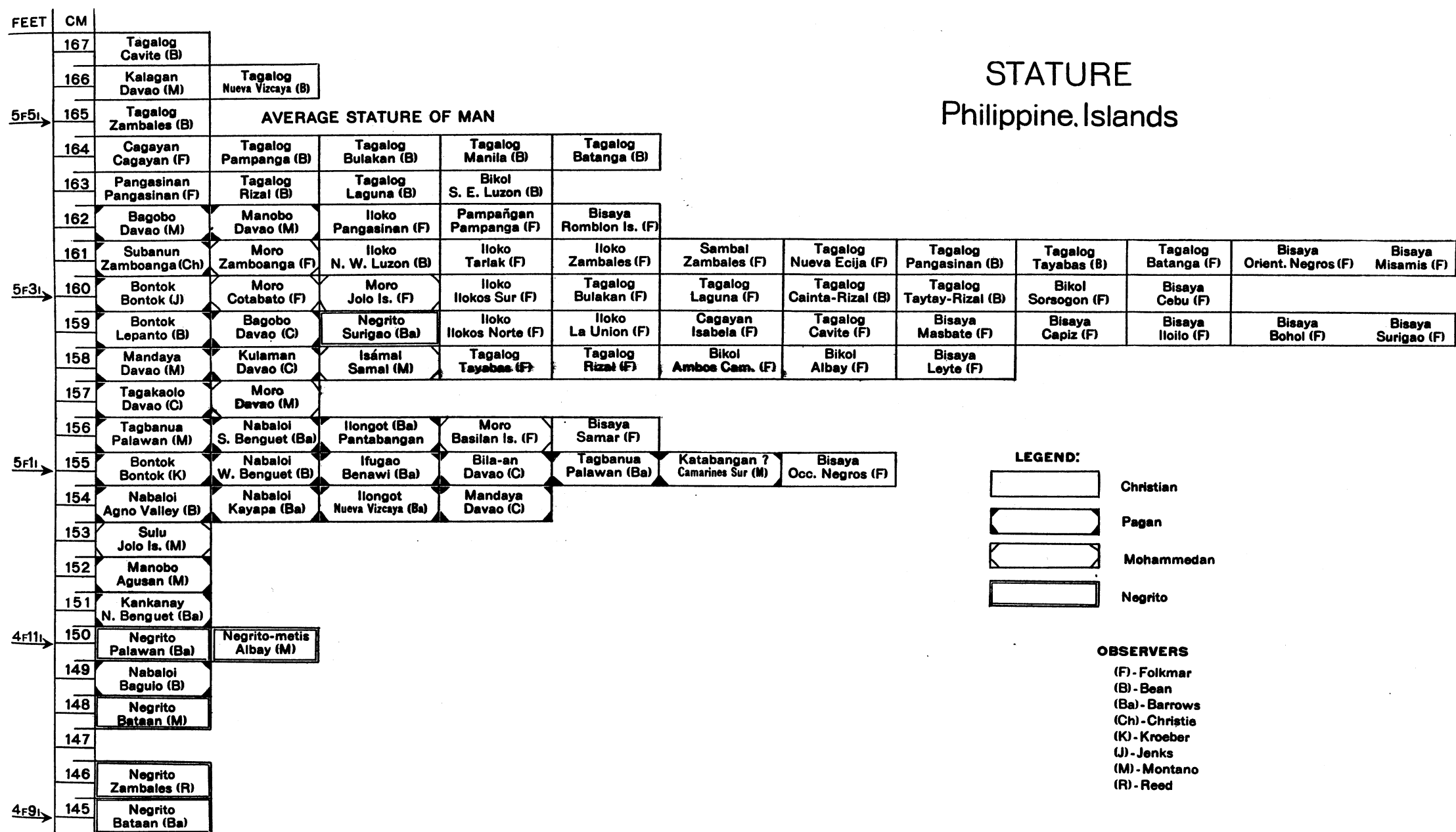
Stature is very frequently looked upon as the direct expression of economic well-being or the reverse. Within certain limits this is undoubtedly true, yet it has not been sufficiently demonstrated that stature is propor-

tionately more variable than certain other accepted characters descriptive of racial types. If we analyze the curve expressing the stature of mankind we do not find a random distribution, but notice that the main curve is composed roughly of a series of minor curves. The average and roughly the mode of the composite curve is at the 165 centimeter space, or five feet five inches. The stature for the Negroid groups presents two curves with one mode at 152 and 153 centimeters and another at 167 centimeters approximately. The Asiatic Mongols range above and below 160 and 161 centimeters. The mode for Europeans is approximately 165 centimeters and the curve for American Indians is almost a duplication of the curve for Europeans.

However, stature like all other anthropometric characters, is valuable only when we have the seriation, variability, and average of a fairly large series of observations. In only a few instances have observations been made on a very large number of Philippine natives, yet the uniformity of the averages of different observers convinces us that the data at hand may be regarded as expressing approximately the range of stature on the Islands.

For convenience in reviewing the range of this character, we have placed each ethnic group together with its geographic location and a symbol to designate whether it is Christian, Pagan, Mohammedan, or Negrito, opposite the number expressing the average stature in Fig. 1. This allows us to consider at one time the anthropometric, geographical, and ethnic relationships of the different groups. The grouping represents roughly the range and curve of stature in the Philippine Islands.

The first observation of significance is that the averages for nearly every group on the Islands fall below 165 centimeters, or the average stature of mankind. The bulk of the population of the Philippine Islands belongs to the shorter group of men. The range is from 145 to 167 centimeters, or 23 centimeters. The curve is asymmetrical. The Negrito, for the most part, do not fall within the main curve. Omitting the Negrito from our consideration, we still have a major and a minor mode, the first between 159 and 161 centimeters and a second at 155 centimeters. The Christian groups are the taller and are at the top, the Negrito are the shortest and are at the bottom of the scale, and the Pagan groups are intermediate between the two. The Mohammedan groups are scattered throughout the range of the Christian and Pagan groups. If we analyze the curve in greater detail we get the seriations and averages shown in the following table. We see that the averages of three of the classes, Christian, Pagan, and Negrito, correspond fairly well with the major and minor modes and there is another at 150 centimeters for the Negrito. It seems then, that to a certain extent, stature is associated with the classification adopted for analysis.



Average Stature	Christian	Pagan	Mohammedan	Negrito	Total
167	1				1
166	1		1		2
165	1				1
164	5				5
163	4				4
162	3	2			5
161	10	1	1		12
160	7	1	2		10
159	9	2	0	1	12
158	5	2	1		8
157	0	1	1		2
156	1	3	1		5
155	1	6			7
154		4			4
153		0	1		1
152		1			1
151		1			1
150		0		2	2
149		1			1
148				1	1
147					0
146				1	1
145				1	1
Averages:	160.5	156.0	159.0	150.0	158.5

For some of the Christian groups, we have data by several observers from several provinces. Let us consider the distribution of stature among these groups in greater detail.

Seriation of Stature: Christians.

	Tagalog	Cagayan	Pan- gasinan	Pam- panga	Bisaya	Iloko	Bikol	Sambal	Total
167	1								1
166	1								1
165	1								1
164	4	1							5
163	2		1				1		4
162	0			1	1	1	0		3
161	4				2	3	0	1	10
160	4				1	1	1		7
159	1	1			5	2	0		9
158	2				1		2		5
157					0				0
156					1				1
155					1				1
Averages:	162	161.5	163	162	159	160.5	160	161	160.5

The Tagalog vary from 158 to 167 centimeters and are apparently taller than the more southern Christian groups, the Bisaya and the Bikol. The Pangasinan and the Pampanga are also tall, while the Sambal, the Iloko, and the Cagayan are about the average. It remains to determine whether they are divergent in more than one character.

CEPHALIC INDEX.

Head form, as expressed by the cephalic index, is recorded for nearly all of the groups measured. There is one great source of error in this observation which should be taken into account. Artificial deformation of the head has been prevalent in the Philippine Islands at one time or another as the crania, described by Koeze,¹ testify. Among the crania collected in caves, several show the fronto-occipital deformation and others an occipital flattening. No specific reference to the practice has been noted, yet some of the photographs of Folkmar suggest an occipital flattening. Only recently Ten Kate² has called attention to the practice of moulding the head of the new-born child in Java. The effect of the process is to shorten the head in the antero-posterior direction. Hose and McDougall³ have recorded the practice of occipital flattening in Borneo. In view of these facts, more attention should be paid to the detection of such deformations. Failure to do so will seriously affect any statistical treatment of the cephalic index.

In Fig. 2, we have placed the respective ethnic groups above the number expressing the average cephalic index for the group. We shall regard the cephalic index as a purely descriptive character. Long and short head will be used with reference to conditions in the Philippine Islands and not as synonyms of brachycephaly and dolichocephaly. The difference between an average of 78 and one of 80 will be regarded as significant as a difference between an average of 80 and an average of 82.

Our curve is by no means symmetrical. The mode (81-82) is approximately the median (81), but nearly three times as many cases fall to right as to the left of 81. The tendency of the group as a whole is toward short-headedness and nearly two-thirds of the cases fall within the limits of brachycephaly. The Negrito and all of the Christian groups, except one, have an index of 81 or above. The Mohammedan range from 79 to 85. The Pagan groups show two modes, one at 78 and another at 81, but on the whole,

¹ Koeze.

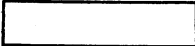
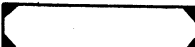


² Ten Kate, (a).

³ Hose and McDougall.

CEPHALIC INDEX

Philippine Islands

LEGEND:

	Christian
	Pagan
	Mohammedan
	Negrito

OBSERVERS

(F) - Folkmar
(B) - Bean
(Ba) - Barrows
(Ch) - Christie
(K) - Kroeber
(J) - Jenks
(M) - Montano
(R) - Reed

					Bisaya Romblon Is. (F)	Bikol Albay (F)				
					Tagalog Laguna (B)	Bikol Ambos Cam. (F)				
					Tagalog Rizal (F)	Tagalog Taytay-Rizal (B)	Bisaya Occ. Negros (F)	Bisaya Cebu (F)		
					Tagalog Pampanga (F)	Tagalog Batanga (F)	Bisaya Iloilo (F)	Bikol S. E. Luzon (B)		
					Pampangan Pampanga (F)	Tagalog Manila (B)	Bisaya Capiz (F)	Tagalog Batanga (B)	Bisaya Bohol (F)	
					Cagayan Cagayan (F)	Tagalog Tayabas (F)	Tagalog Laguna (F)	Tagalog Bulakan (B)	Bisaya Orient. Negros (F)	
					Cagayan Isabela (F)	Negrito Bataan (Ba)	Tagalog Cavite (B)	Tagalog Zambales	Bisaya Leyte (F)	
					Negrito Palawan (Ba)	Negrito Zambales (R)	Tagalog Cavite (F)	Tagalog Nueva Vizcaya (B)	Bikol Sorsogon (F)	
					Moro Cotabato (F)	Isámal Samal (M)	Tagalog Rizal (B)	Pampangan Pampangan (F)	Tagalog Bulakan (F)	
					Moro Zamboanga (F)	Moro Davao (M)	Tagalog Tayabas (B)	Iloko Zambales (F)	Tagalog Pangasinan (B)	Bisaya Misamis (F)
					Katabangan ? Camarines Sur (M)	Manobo Agusan (M)	Tagalog Nueva Vizcaya (F)	Iloko Pangasinan (F)	Iloko Tarlak (F)	Bisaya Surigao (F)
					Tagbanua Palawan (Ba)	Ata Davao (M)	Sambal Zambales (F)	Iloko N. W. Luzon (B)	Iloko Ilokos Sur (F)	Bisaya Samar (F)
					Tagakaolo Davao (M)	Tagakaolo Davao (C)	Moro Jolo Is. (F)	Iloko Ilokos Norte (F)	Negrito Bataan (M)	Bisaya Masbate (F)
					Bagobo Davao (M)	Ilongot Pantabangan (Ba)	Subanun Mindanao (Ch)	Negrito Surigao (Ba)	Sulu Jolo Is. (M)	Iloko La Union (F)
Nabaloi S. Benguet (Ba)	Bontok Lepanto (B)	Bontok Bontok (K)	Nabaloi Kayapa (Ba)	Bila-an Davao (C)	Mandaya Davao (M)	Kankanay N. Benguet (Ba)	Ilongot Nueva Vizcaya (Ba)	Moro Basilan Is. (F)	Mandaya Davao (C)	Negrito-metis Albay (M)
76	77	78	79	80	81	82	83	84	85	86
Dolichocephalic		Mesocephalic				Brachycephalic				

Fig. 2. The Cephalic Index in the Philippine Islands.

are longer-headed than the other groups. The relationships of the various groups are more clearly seen in the following seriation:—

Cephalic Index	Christian	Pagan	Mohammedan	Negrito	Total
76		1			1
77		2			2
78		6			6
79		3	1		4
80	1	2	0		3
81	7	5	2	1	15
82	6	5	2	2	15
83	10	2	1	0	13
84	11	0	1	1	13
85	8	1	1	1	11
86	5			1	6
Averages:	83.5	80.0	82.0	83.3	82.2

The differences are small, yet the conditions are similar to those we found for stature. There is a certain amount of overlapping, yet the overlapping is by the Pagan groups. This may seem an arbitrary statement of the case, yet a comparison of the data on stature and the cephalic index seems to warrant this interpretation. The Christian peoples are less variable in both of these characters. Below is the seriation of the cephalic index among the various Christian groups:—

Cephalic Index	Tagalog	Cagayan	Pangasinan	Pampanga	Bisaya	Iloko	Bikol	Sambal	Total
80	1								1
81	3	2		1	1				7
82	4						2		6
83	6				3			1	10
84	4		1		1	4	1		11
85	2				3	2	1		8
86					4	1			5
Averages:	83	81	84	81	84.4	84.5	83.2	83	83.5

Among the Christians, the Cagayan and the Pampanga have the longest and the Bisaya and the Iloko the shortest heads. Again, there is a fairly large difference between the average of the Tagalog and the Bisaya.

In this character we have one of the principal objections to the explanation advanced by Barrows¹ to account for certain wild tribes, the Kankanaï, Nabaloi, Ifugao, Ilongot, etc., as being a mixture of Malay and Negrito elements. The head of the wild tribes is almost invariably longer than the head of the Christian Malay and the Negrito of the same region. Of the

¹ Barrows, (b).

sixty Negrito crania described by Koeze,¹ 90 percent are brachycephalic. It is difficult to understand how a cross between two short-headed groups would result in a long head. Of the several groups proposed by Barrows, the Ilongot are the only ones whose characters would, in any measure, justify this assumption. In the one instance where we have definite data on the intermixture of Negrito and Bisayan, the Negrito-metis of Montano, the cephalic index is very high, 86.0.

NASAL INDEX.

There are several serious objections to the nasal index as an expression of the proportions of the nose. In the first place, the measurements of both dimensions are very small and any error of observation seriously affects the average. Also, there is apparently no uniformity on the part of different observers in determining the upper limits of the nose. The point corresponding to the nasion is very vaguely defined and hard to find in some instances. The width of the nose is taken at the widest point on the alae by some observers and at the point where the nose joins the face by others. It will be readily seen that very slight differences in technique would appreciably affect the results. Consequently, we can make only a very general comparison of this character. A case in question is at hand. Groups of individuals, described as Bontok Igorot, have been measured by Jenks, Bean, and Kroeber. Bean records an average nasal index of 97.6, Kroeber one of 99.8, and Jenks an average of 79.2. It is very difficult to determine how much of the difference is in the individuals measured and how much in the technique. It may be partly both.

Barrows² quotes Topinard to the effect that the nasal index is: —

... perhaps the most exact character for classifying races, all white races being leptorhinian, the yellow mesorhinian, and the black or negro races platyrhinian. Indeed, the presence of a markedly platyrhinian type of nose may almost be taken as clear proof of negro derivation.

In a loose sense, this is undoubtedly true, but we can by no means accept it as a law. It assumes the whole question at issue. The question as to whether or not the broad nose is necessarily always a Negroid characteristic is one of the big stumbling blocks in a universally satisfactory classification of the Australian natives and some of the inhabitants of southern Asia. At present, it is better to regard the nasal index, together with other anthropometric characters, as descriptive data, and decide racial affinities on a totality of the characters recorded.

¹ Koeze.

² Barrows, (b), 360.

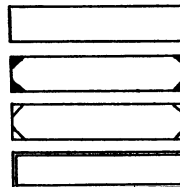
OBSERVERS

(F) - Folkmar
 (B) - Bean
 (Ba) - Barrows
 (Ch) - Christie
 (K) - Kroeber
 (J) - Jenks
 (M) - Montano
 (R) - Reed

NASAL INDEX

Philippine Islands

LEGEND:



Christian

Pagan

Mohammedan

Negrito

73	Iloko	Iloko Norte (F)	Iloko	Iloko Sur (F)
74	Pangasinan	Pangasinan (F)		
75	Subanun	Zamboanga (Ch)	Bisaya	Romblon Is. (F)
76	Pampangan	Pampanga (F)	Tagalog	Tayabas (F)
77	Iloko	Pangasinan (F)		
78	Ata	Davao (M)	Tagalog	Cavite (F)
79	Bagobo	Davao (M)	Iloko	La Union (F)
80	Isámal	Samal (M)	Tagalog	Nueva Vizcaya (B)
81	Moro	Zamboanga (F)	Tagalog	Rizal (F)
82	Moro	Cotabato (F)	Tagalog	Bulakan (F)
83	Moro	Jolo Is. (F)	Tagalog	Tayabas (B)
84	Iloko	Tarlac (F)	Bisaya	Masbate (F)
85	Moro	Davao (M)	Tagalog	Pangasinan (B)
86	Tagakulo	Davao (M)	Bikol	Albay (F)
87	Sulu	Jolo Is. (M)		
88	Nabaloi	W. Benguet (B)	Tagalog	Pampanga (B)
89	Kankanay	N. Benguet (Ba)	Ilongot	Pantabangan
90	Bile-an	Davao (M)		
91	Mandaya	Davao (M)		
92	Nabaloi	S. Benguet (Ba)		
93	Tagbanua	Palawan (M)	Tagbanua	Palawan (Ba)
94	Manobo	Davao (M)	Katabangan ?	Manobo
95	Nabaloi	Agno Valley (B)	Nabaloi	Baguio (B)
96				
97	Negrito	Palawan (Ba)		
98	Bontok	Lepanto (B)		
99				
100	Bontok	Bontok (K)		
101	Nabaloi	Kayapa (Ba)		
102	Ifugao	Benawi (Ba)		
103	Negrito	Surigao (Ba)		
104				
105				
106	Negrito	Zamboanga (R)		

Mesorhine

Chamaerhine

Hyperchamaerhine

Fig. 3. The Nasal Index in the Philippine Islands.

Again in Fig. 3, I have placed each group above the numbers expressing the nasal index of that group. This presents also an asymmetrical curve. Even after removing the Negrito, the mode, (81-84), is far removed from the median (90). There is a minor mode at 93. The range of the entire group for this character is 34. Below we have summarized the seriation in groups of 5.

Nasal Index	Christian	Pagan	Mohammedan	Negrito	Total
70-74	3				3
75-79	10	4			14
80-84	29	0	4		33
85-89	6	5	3		14
90-94		8		2	10
95-99		3		2	5
100-104		3	1	1	5
105-109				1	1
Averages:	81.0	90.5	86.0	98	85

Again, we find the Christian groups clustering about one side of the curve confined to less than half the range for the entire groups. Each of the major groups presents a fairly definite curve. The Christians present an average of 81.0, the Pagans an average of 90.5, and the Negrito an average of 98.0. The Mohammedans present an average of 86.0, slightly above the average for the entire group and intermediate between the Christians and Pagans.

The range of this index among the Christian groups is best shown by the following seriation:—

Nasal Index	Tagalog	Cagayan	Pan-gasinan	Pam-pangan	Bisaya	Iloko	Bikol	Sambal	Total
73						2			2
74			1						1
75					1				1
76	1			1					2
77						1			1
78	1					1			2
79	1	1			1	1			4
80	4				1		1	1	7
81	2	1			2				5
82	2				2	1	1		6
83	5				2				7
84	1				2	1			4
85	2				1				3
86							2		2
87									0
88	1								1
Averages:	81.8	80.0	74.0	76.0	81.6	80.0	83.5	80.0	81.0

On the whole, there is more or less uniformity in the nasal index among the Christian groups. The average for the greater number of the groups deviates only slightly from the average for the entire group. The Pangasinan and Pampangan diverge most and have the smallest nasal index.

BODY WEIGHT AND INDEX OF ARM REACH.

The data furnished by Folkmar¹ on weight are the more interesting because this character is so rarely reported on. His observations were mainly on the Christian groups.

	Groups	Average Stature	Average Weight
(3) ²	Bikol	158.6	54.4
(12)	Bisaya	159.0	52.0
(7)	Tagalog	160.0	53.0
(5)	Iloko	160.0	52.9
(1)	Sambal	161.0	54.9
(2)	Cagayan	161.5	55.9
(1)	Pampangan	162.0	53.6
(1)	Pangasinan	163.0	52.9

In general, the taller groups are heavier. There are a few exceptions in instances where only one provincial group is reported on. Stature and body weight are seriated below.

Kilograms	No. of Cases.	Centimeters	No. of Cases
48	2	155	1
49	1	156	1
50	1	157	0
51	2	158	5
52	8	159	9
53	7	160	5
54	3	161	6
55	2	162	2
56	3	163	1
57	2	164	1
58	0	165	0
59	1	166	1
Average:	53 kg.	Average:	160 cm.

¹ Folkmar.

² Numbers in () refer to number of provincial groups included.

Considered as one group they are slightly lighter than certain other groups of similar stature for whom we have data.

	Stature	Weight	Observer
Trumai (S. A. Indian)	160	58.2	Ranke
Polish Jews	161	55.0	Elkind
Sundanese	159	51.5	Kohlbrugge
Anamite	159	51.3	Bonifacy

It is questionable in how far this character is comparable, since Folkmar's subjects were convicts.

Barrows¹ has placed emphasis on the value of the arm reach index in determining racial affinities. Speaking of the Negrito he says: —

In every individual the extreme reach of the arms (Grande envergure) exceeded the stature. In men the excess varied from 30 mm. to 139 mm. and in the women from 23 mm. to 102 mm. This measurement shows the Negritos to have unusually long arms. In yellow races the arm-reach is about equal to the stature and in the white race it is usually a little above. I think we may take this excessive reach of arms to be a truly Negrito character.

This generalization is then used to support his explanation of the origin of the Nabaloi, Kankanai, Ifugao, and Ilongot. But this statement holds true only as a broad generalization. Excessive reach of arms as expressed by the index of arm reach does not necessarily express long arms. In some instances, it rather expresses wide shoulders. Barrows's argument may be met in two ways; first, by showing that racial types unquestionably non-negroid have a very high index of arm reach and secondly, by showing that certain of these pagan tribes showing other "Negrito-like characters" do not have a high index of arm reach.

The range of the average of this index is approximately from 99 to 109. The following partial list taken from Martin² will give some idea of its value as a test for Negroid intermixture.

Belgians	104.8
Trumai (Indian)	105.3
French	106.0
Aueto (Indian)	106.1
Bella Coola (Indian)	106.2
Lithuanians	106.6
Esths	108.0

Examination of the more complete table shows many more divergent cases. If we note the range of this index, as calculated from the average stature

¹ Barrows, (b), 359.

² Martin, (b).

and average arm reach recorded by Folkmar for the Christian groups, we see that it represents nearly the whole range of the index. In the majority of instances, the arm reach is considerably greater than stature.

On the other hand, the eighteen male Bontok Igorot measured by Kroeber¹ have an average arm reach index of 101.6, yet their nasal index, 99.8, is decidedly "Negroid". In the measurements recorded by Barrows the average index of arm reach would approximate very closely 103.

CORRELATIONS.

We have seen in the preceding tables (Figs. 1, 2, 3) that the respective curves for stature, proportions of the head, and proportions of the nose were asymmetrical. The Christian groups constituted the main curves and various other groups tended to cluster at the extremities. It now remains to determine whether or not these minor curves were made up of the same groups in each instance or, in other words, to determine whether a given group varied appreciably from the mean in one character or in several characters.

In Fig. 4 we have the correlation of the cephalic and nasal indices. If we bisect the correlation graph horizontally and vertically by a dotted line, we have four minor graphs representing equal portions of the range of these two indices. Section A would contain all groups with a nasal index above 90 and a cephalic index below 82; Section B would contain all groups with a corresponding range of nasal index and a cephalic index above 80; Section C would contain all groups with a nasal index below 91 and a cephalic index below 82; and in Section D we have all groups with a cephalic index of 81 and above, and a nasal index below 91. A glance at the graph (Fig. 4) shows us that all the Christian groups except number 31 (Tagalog of Cainta, Rizal) are within Section D as are also all the Mohammedan groups, except number 72. All of the Negrito groups are in Section B. In Section A, with the exception of number 72 (Kalagan) we have only Pagan groups. Near the border lines of Section A, we have six other Pagan groups, 63, 52, 60, 65, 68, and 54. Of the other Pagan groups number 51 (the Bontok of Bontok — Jenks) is isolated and numbers 69, 64, and 71 (the Bagobo, the Subanun, and Ata) stand interspersed among the Christian groups. In Section C, all of the groups are near the borders of Sections A and D except

¹ Kroeber.

number 51, the Bontok of Jenks. The variability of the Christian groups covers nearly the entire range of Section D. Of those Christian groups for which we have measurements from several provinces, there is no tendency for one group to segregate in any one part of the section. The various groups overlap. Another point of interest is that besides a few Pagan groups which stand intermediate between the Negrito and Christians in these two

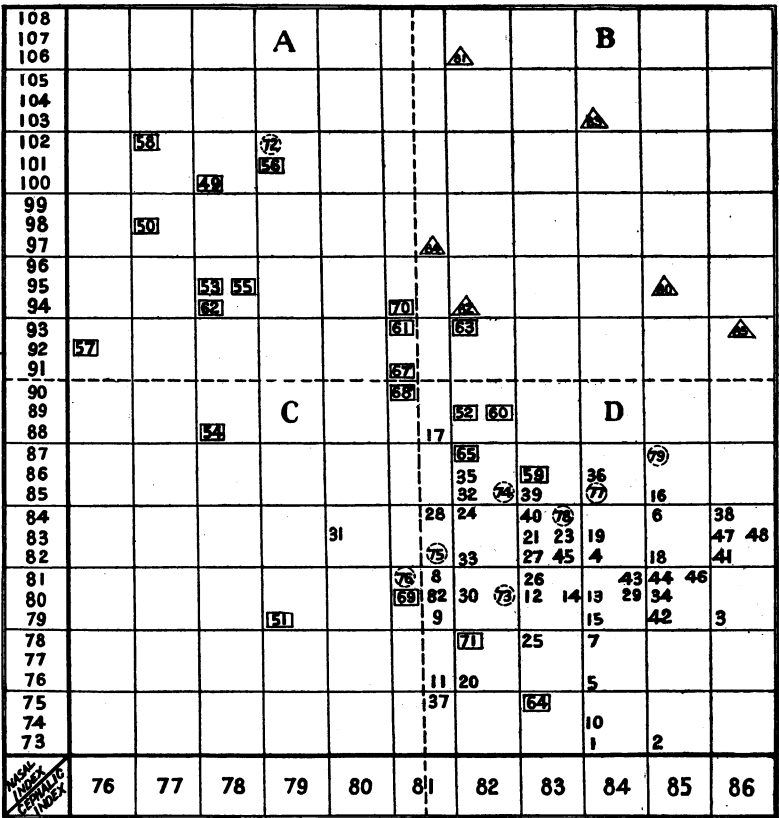


Fig. 4. Correlation of the Cephalic and Nasal Indices.

characters, there is another cluster of twelve or more groups in Section A which stand distinctly apart from both of these.

The relationship of the various groups may be shown by means of another diagram. We have data on stature, cephalic index, and nasal index for nearly every group. If we draw three lines of equal length representing

the range of these three characters, calibrate them at convenient intervals representing specific units of these measurements and indices, and place the ends in juxtaposition, we have a triangular correlation graph similar in principle to the rectangular graph used by Thompson ¹ for craniometrical observations. When we connect the points on the three lines representing the stature, cephalic index, and nasal index of a given group, we obtain a second triangle within the first. Variability of the indices and measurements produce marked changes in the size, proportions of the sides, and orientation of the inner triangles. Fig. 5 shows the form of triangle presented by several racial types.

In Fig. 6 we have represented, by means of similar graphs, stature, cephalic index, and nasal index for all those Philippine groups on which we have measurements. This enables us to review the entire data at a glance. The numbers and symbols correspond to those used elsewhere in the text.

The first forty-eight triangles representing the Christian population are very similar. The base is towards the top and the sides tend to be equal. But numbers 49 to 58 representing the Pagan groups of Luzon present an entirely different form with a different orientation. Again, number 51 (Bontok of Jenks) is entirely different and numbers 59 and 60 (the Ilongot) present an intermediate form. Numbers 61, 62, and 63 approach the form presented by Numbers 49 to 58; number 64 is similar to the first group; numbers 65 to 70 are similar to numbers 49 to 58; numbers 71 and 73 to 79 are like the first group; while number 72 resembles numbers 49 to 58. Numbers 80 to 85, representing the Negrito, present a distinctive form of triangle. The triangle is much larger than those representing any of the other groups.

Roughly then, we have three forms of triangles. The similarities may be summarized as follows: —

Type I	Type II	Type III
Nos. 1 to 48	Nos. 49 to 58	Nos. 80 to 85.
" 64	" 61 to 63	
" 71	" 65 to 70	
" 73 to 79	" 59 to 60?	
<hr/>	<hr/>	<hr/>
Total number 57	20	6
of groups		

¹ Thompson.

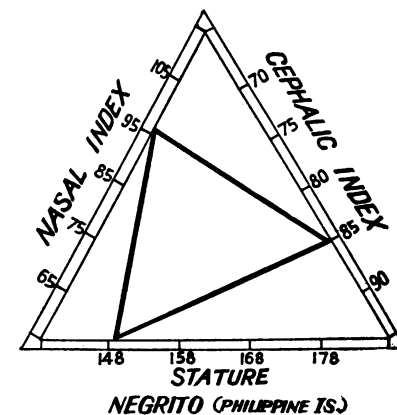
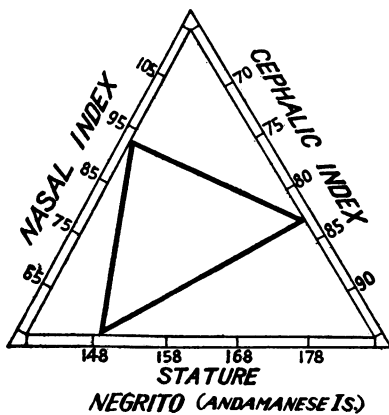
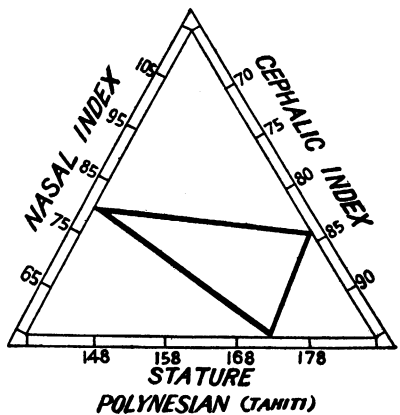
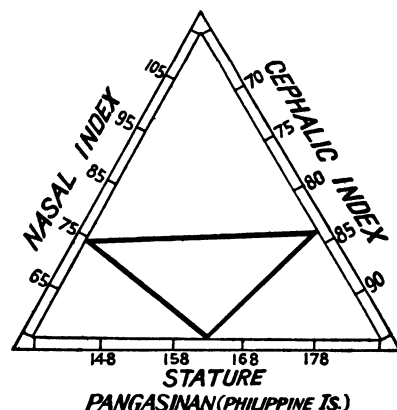
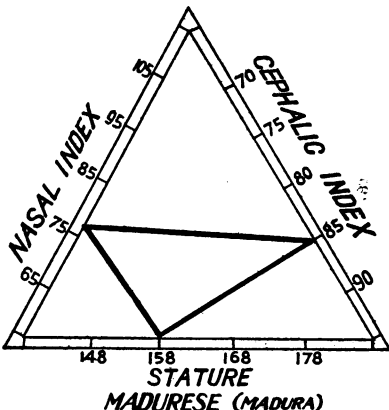
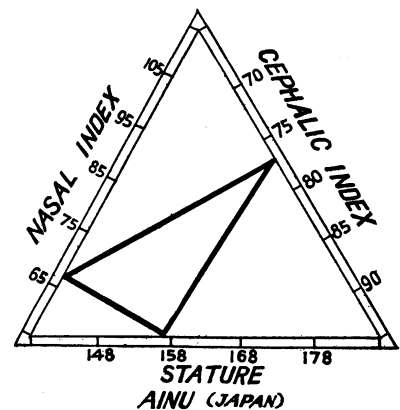
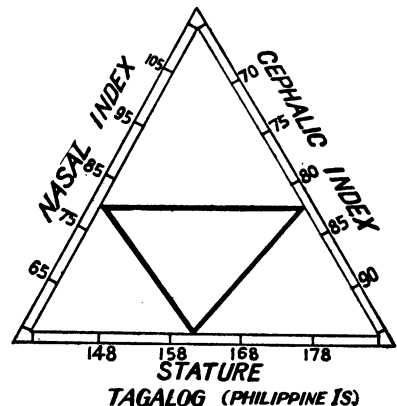
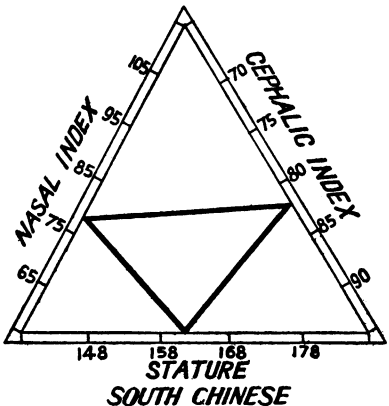
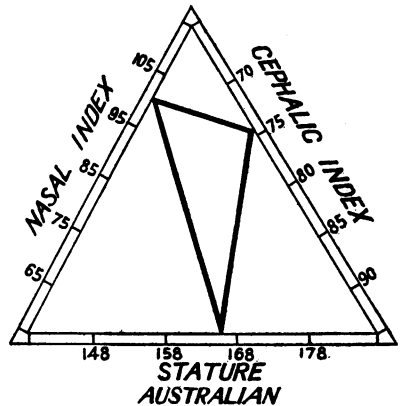
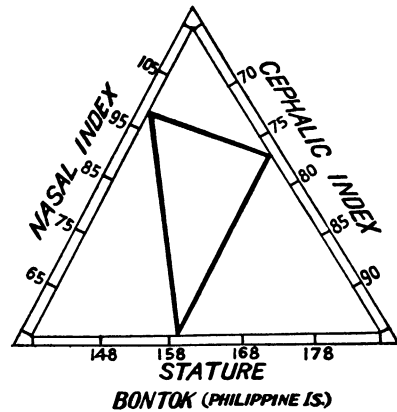
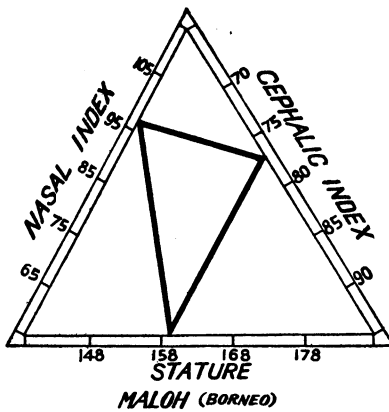
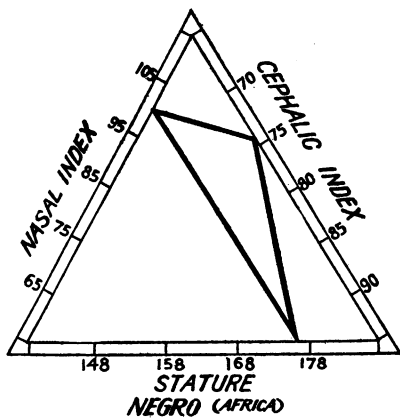


Fig. 5. Graphic Correlation of Stature, Cephalic and Nasal Indices of Miscellaneous Types.

GENERAL DISCUSSION.

Our conclusions should not be confused with our method. Throughout our review we have grouped the population of the Philippines into four groups: Christian, Pagan, Mohammedan, and Negrito, without any consideration of racial affinities, except in the case of the Negrito. Our purpose was twofold: in the first place, it afforded a convenient method of dealing rapidly with a fairly large series of observations, and in the second, it served as a basis for subdividing the population in our test for homogeneity or heterogeneity of racial type. We did not expect to find that there was any real correlation between Christianity, Mohammedanism, or Paganism and racial type. Assuming, however, that there were several racial types on the Archipelago, we should not expect to find them equally distributed among the three religious, or cultural groups. We would expect a certain association between physical types and culture groups to the extent that one group might contain a greater number of individuals representing one physical type and a lesser number of another. But so far as method is concerned, we might obtain similar results by geographical subdivisions. If, on the other hand, there was a homogeneity of racial types on the Islands, our subdivisions should have shown very similar averages for stature, head form, and nose form.

All our conclusions will be drawn directly from the data reviewed, and consequently will be far from conclusive. On several groups we have no observations and on many the observations are meager. More extended studies on several groups would, probably, considerably alter our conclusions. Then, too, we are dealing wholly with averages. The final conclusions on racial affinities in the Philippines must be based on more detailed and extensive studies. Finally, our characterization of racial types will define these types as they were at the time the observations were made with no speculation as to their original characteristics.

The data at hand would seem to indicate that the bulk of the population of the Philippine Islands may be included in three racial types each of which presents certain distinctive characteristics. These types may be characterized as follows:—

I. Malay.

Affinities: distinctly Mongoloid.

Hair: straight black.

Skin: varying shades of brown.

Eyes: dark brown; Mongoloid fold common.

Head: very short; cephalic index 81 and above.

Nose: relatively narrow; nasal index below 88.

Stature: tallest groups on the islands; average about 160 cm.

Represented by:—

Iloko	Subanun
Pangasinan	Ata
Tagalog	Isamal
Bikol	Moro of Davao
Bisaya	Moro of Cotabato
Sambal	Moro of Zamboanga
Pampanga	Moro of Basilan Island
Cagayan	Moro and Sulu of Jolo Island
	Bagobo?

II. Indonesian.

Affinities: less Mongoloid than the Malay type.

Hair: straight and wavy black or dark brown.

Skin: varying shades of brown.

Eyes: dark brown, Mongoloid fold less common than among Malay.

Head: longest on islands; cephalic index mostly below 82.

Nose: short and wide; nasal index above 87.

Stature: short, but taller than Negrito; average about 156 cm.

Represented by:—

Bontok (Igorot)	Kalagan
Kankanai (Igorot)	Mandaya
Nabaloi (Igorot)	Katabangan
Ifugao	Kulaman?
Manobo	Ilongot?
Bilaan	Bagobo?
Tagbanua	

III. Negrito.

Affinities: Negroid.

Hair: woolly, kinky, black.

Skin: very dark brown.

Eyes: dark brown, wide open.

Head: short; cephalic index above 81.

Nose: short, low and wide; nasal index above 93.

Stature: very short; average 150 cm.

Represented by:—

Negrito of Zambales.
Negrito of Bataan.
Negrito (Batak) of Palawan.
Negrito (Mamanua) of Surigao.

The nature of the data do not warrant further subdivision into local groups. Future research may indeed alter the above scheme somewhat, yet it does not seem likely that it will alter the fact that, apart from the Negrito and Malay types, we have still a third type which we have chosen

to call Indonesian. - The name Indonesian has been retained, although our definition of the type and classification of groups does not correspond to that of Montano,¹ Deniker² or Keane,³ differing from each in several details. It might also be added that the three authors quoted above are not in agreement, one with the others.

It remains then to determine whether or not we are justified in regarding these groups as distinct racial types. The first and third types as defined need no justification. All observers are agreed that we have, in the Philippines, a group which we have called Malay although some prefer to call it "Malayan" or "Proto-Malay." These two latter names have been avoided for the reason that they are frequently used to designate an earlier Malay or Mongoloid element and also at times as synonyms of Indonesian. For the present, it seems best to use a non-committal name. All anthropologists are also agreed on the presence of a distinct Negrito type. The second type, or Indonesian, alone needs explanation.

It has been suggested that it may represent a very thoroughly fused Negrito and Malay stock. It differs from the Malay in having a longer head, slightly wavy hair, less Mongoloid eyes and in being shorter in stature. On the other hand it is taller than the Negrito, has a longer head, the hair is not woolly or kinky. However, it should be mentioned here that one of Martin's⁴ most important conclusions in his recent survey of the whole Malay problem is that the Semang (Negrito) is differentiated from the Sakai by characters of hair alone and not by cranial proportions or skin color. But,⁵ even if we were to interpret this to mean that there was a possibility of the Sakai representing a type intermediate between the Malay and the Semang, it would not help us to solve the Philippine problem as such. The Negrito of the Philippines do differ from the Indonesians in head form as well as in hair form and stature.

Again we have no certain evidence for a thorough fusion of types. In the light of our present knowledge of heredity, there are no grounds for assuming that two racial types would ever become completely fused in the sense of forming a new race. It most certainly is a possibility, but at the present time cannot be regarded as a probability.

The population of the various groups has been recorded in some detail. It would seem that the relative size of two groups would be a rather important consideration in discussing the probable effect of one group on

¹ Montano.

² Deniker.

³ Keane, (a), (b).

⁴ Martin, (a).

⁵ As suggested by Barrows, (b).

another. We have seen that the Malay type made up the greater part of the population, about nine-tenths of the total. Next in order of size, we have the Indonesian and lastly, the Negrito. The Negrito are almost a negligible quantity. The census actually records nearly twice as many foreign-born Chinese as Negrito. Of course, one cannot judge the past by the present, yet it seems fair to assume that for some few centuries, at least, some such relative ratio has held between the various groups. On the basis of numbers alone we should be justified in assuming that the Chinese and other foreign-born had exerted as much influence on the Malay and Indonesian types within recent times as did the Negrito. Again, on the basis of numbers alone, we should expect the Malay and Indonesian types to produce more effect on the Negrito than the reverse. Again, this statement may seem to contradict itself, yet such an interpretation seems justifiable. In the United States we have the various European racial types as well as the Negroes and Indians. The two latter types are in the minority. It is probably safe to say that the European types have affected the Negro and Indian types to a greater degree than have these latter the European types.

This introduces another factor which should be considered in stating the effect of one racial type or even local type upon another. There are usually certain prejudices or social barriers which interfere with, even if they do not wholly prevent, equal reciprocity in such matters. Such factors do not necessarily prevent intermarriage, but usually result in those intermarrying living more often among one group than the other. Naturally, the results of such a practice would be to produce a greater apparent change of type in the first group. No implication of anything of the sort is revealed in the writings on the Philippines. Very frequently references are made to Negrito living among the Malay and Indonesian peoples. Yet, they are always overwhelmingly in the minority. That the Negrito, as well as the Chinese, have had a marked effect on the population of the Philippines, especially in some localities, no one would doubt, but at the present it seems extremely doubtful that they can be used as an explanation of the racial diversity of many groups. The conclusive solution of this problem cannot be obtained from mere averages. It would necessitate a very thorough study of the suspected groups and involve a correlation of the various characters.

Another possibility is that the Indonesian type might represent a local type separated from the Malay stock on the spot. This also may be regarded as within the range of possibility. Yet it hardly seems necessary to postulate such an hypothesis when we have a similar type occurring nearby. Let us now consider the distribution of types in other parts of the Malay Archipelago.

RELATED TYPES IN MALAYSIA.

It is not our purpose to review in detail the anthropometric data for the entire Malaysian Archipelago. In fact, so far as the present data permit, this has already been done by specialists in the several separate parts of the region. We shall simply summarize the conclusions of the later contributors and present some comparative data in an endeavor to show the racial affinities of the inhabitants of the Philippines.

Borneo.

Considering the data in geographical order we turn first to Borneo. In a brief note in "The Pagan Tribes of Borneo," A. C. Haddon¹ has very conveniently summarized the results of the anthropometric observations of the Cambridge Expedition to Sarawak and those of A. W. Niewenhuis in Netherlands Borneo. Dr. Haddon finds evidence of a short-headed group which he prefers to call Proto-Malayan in origin and a long-headed group which he terms Indonesian in origin. Hose and McDougall² have contributed a wealth of valuable material and Dr. Hose has made a detailed classification of the peoples of Sarawak. In the same year Garrett³ contributed some valuable data on the peoples of Borneo and Java. Below is a summary of the same characters which we employed in reviewing the peoples of the Philippines. The hair is black or very dark brown in color. The skin and eyes are varying shades of brown. Only the averages of the men are given.

Borneo.

No. of Cases	Group	Hair	Skin ⁷	Eyes ⁸	Cephalic Nasal		
					Stature	Index	Index
6	Orang Balik Papan ⁴	straight	4-5-6	2-3	1535	83.5	87.6
6	Orang Bulongan ⁴	straight	4-5-6	2-3	1577	86.1	84.5
7	Milanau ⁵ (6)	or wavy	"	6-14-12	Mongol fold present	1562	84.2 83.0
14	Sibuyan ⁵	"	—	—	1543	83.1	81.8
5	Sabop ⁵	"	12-17	—	1540	75.3	83.3
42	Land Dayak (Klementan ⁵)	"	25	—	1577	78.4	86.3
8	Long Kiput ⁵	"	14-12-17	trace of fold	1565	80.6	92.5

¹ Haddon.² Hose and McDougall.³ Garrett.⁴ Garrett.⁵ Hose and McDougall.⁶ Head deformation noted.⁷ Numbers refer to von Luschan's standard color scale.⁸ Numbers refer to Martin's standards.

No. of Cases	Group	Hair	Skin ¹	Eyes ²	Stature	Cephalic Index	Nasal Index
8	Long Pokun ³	straight or wavy	12-17	trace of fold	1590	76.9	88.2
10	Lerong ³	"	12-14-6	"	1520	78.5	86.5
33	Banjerese ⁴	"	4-5-6	2-3	1569	81.5	88.0
19	Punan ^{3(s)}	"	14-12-17	slightly oblique	1550	80.9	88.1
56	Iban (Sea Dayaks) ³	"	6-14-17	fold in 20%	1585	83.0	93.9
26	Kenyah ³	"	6-16-14	trace of fold	1608	79.9	92.7
43	Kayan ³	"	brown	no fold	1570	81.1	—
26	Ulu Ayars (Dayaks) ³	"	light brown	"	1551	74.7	—
14	Punan ³	"	"	"	1569	81.3	—
7	Maloh ³	wavy	17	—	1585	76.8	97.4
12	Barawan ³	straight or wavy	14-12-17	trace of fold	1540	77.8	89.1
16	Malang ³	wavy	12-14-17	dark brown	1535	76.9	88.2
21	Kayan ³	"	14-17	"	1550	79.8	91.6
4	Murut ³	"	12-14	"	1590	77.5	99.0
7	Kalabit ³	"	12-14	"	1565	78.5	91.5

Again, for purposes of analysis, let us treat the groups as individuals and seriate the results on stature, the cephalic index, and the nasal index.

Stature	Groups	Cephalic Index	Groups	Nasal Index	Groups
152 cm.	1	75	2	82	1
153	0	76	0	83	2
154	5	77	4	84	1
155	3	78	4	85	0
156	3	79	1	86	2
157	3	80	2	87	0
158	3	81	4	88	5
159	3	82	1	89	1
160	0	83	2	90	0
161	1	84	2	91	0
		85	0	92	3
		86	1	93	1
				94	1
				95	0
				96	0
				97	1
				98	0
				99	1

¹ Numbers refer to von Luschan's standard color scale.

² Numbers refer to Martin's standards.

³ Hose and McDougall.

⁴ Garrett.

⁵ Head deformation noted.

The groups represented are all of short stature, longer headed in the main than the inhabitants of the Philippines and there is a tendency for the nasal index to be high. Diligent search has revealed no Negrito element in Borneo. There are said to be great numbers of people from China and India and other parts of the mainland as well as from the rest of the Archipelago. According to the above table, we have again a long head correlated with a broad nose and short stature. There are also combinations of short and long heads with a lower nasal index.

Celebes Islands.

Our knowledge of the natives of Celebes is based chiefly on the researches of Fritz and Paul Sarasin.¹ Garrett's² observations include a few Bugi while Ten Kate³ has published on the Bugi and Macassar. Some of the measurements are listed below:—

No. of Cases	Group	Hair	Skin	Eyes	Stature	Cephalic Index	Nasal Index
24	Bugi and Macassar ⁴	straight	30-44		1623	82.1	85.9 ⁷
		wavy	Broca				
6	Bugi ⁵	straight	4-5-6	2-3	1544	83.4	87.5
		wavy					
9	Bugi ⁶	—	—	—	1568	87.0	86.0
12	Macassar ⁶	—	—	—	1615	86.2	84.4
12	Toala ⁴	curly	29-30		1575	80.4	99.5 ⁷
			Broca				
5	Tomuna (Muna) ⁴	curly	"		1576	84.5	102.4 ⁷
11	Tokea ⁴	curly	"		1570	83.2	99.8 ⁷
10	Toradja ⁴	straight	"		1598	81.3	97.8 ⁷
		wavy					
6	Tomekongka ⁴	straight	30-34		1569	81.8	90.0 ⁷
		wavy	Broca				

As a whole, the groups are slightly taller than those of Borneo. Sarasin⁸ distinguished three types: a Toala type including the Toala, the Tokea, and the Tomuna; a Toradja type including the Toradja, the Bugi, the Macassar, and the Tomekanga; and the Minahasser. In the Toala group

¹ Sarasins.

² Garrett.

³ Ten Kate, (a).

⁴ Sarasins.

⁵ Garrett.

⁶ Ten Kate, (a).

⁷ Sarasins calculated the nasal index from photographs.

⁸ Sarasins.

it seems we have a type different from any so far described and resembling the Sakai or Senoi and certain other types which we shall discuss later. This group is distinguished chiefly by the predominance of wavy or curly hair. The following types of hair form are quoted from Sarasin ¹:—

Flachwelliges	Low waves	3.7%
Hochwelliges	Deep waves	70.4%
Engwellig-lockiges	Closely curled	25.9%

All of the other peoples have straight or slightly wavy hair. Yet, even among the straight-haired groups, we have the tendency towards a long head and a broad nose. The Bugi and Macassar have the shortest heads, narrowest noses, and higher stature. The group with curly hair will be referred to again. It should be stated here that no Negrito or Papuan groups have been encountered on Celebes.

Java.

In Java we shall present only the observations of Hagen,² Kohlbrugge,³ and Garrett⁴ which may be taken as representative.

No. of Cases	Group	Hair	Skin	Eyes	Stature	Cephalic Index	Nasal Index
17	Javanese ⁴	straight	4-5	2-3	1570	85.0	85.7
56	Javanese ²	"	21 Broca	Mongol fold 52%	1617	84.4	83.0
37	Sundanese ⁴	"	4-5-6	2-3-4	1591	85.5	86.9
17	Sundanese ²	"	21 Broca	Mongol fold 53%	1588	86.5	81.8
105	Tenggerese ³	wavy	32-33 Broca	—	1600	79.7	100.4
10	Madurese (Madura ²)	straight	21 Broca	Mongol fold 33%	1581	85.0	77.0
7	Batavian Malay ⁴	"	4-5	3	1634	85.5	86.2

The stature is still low, yet, as a whole, the groups are slightly taller than the groups of Borneo and more like those of Celebes. We are also struck by the decided short-headedness of nearly every group. On the whole, the nasal index is also much lower. Yet, there is one exception — the Tenggerese mountaineers exhibit a longer head and a short broad nose. The hair also is wavy. In stature they are nearly as great as the other groups.

¹ Sarasins.

² Hagen, (b).

³ Kohlbrugge.

⁴ Garrett.

Here we may also mention a recent publication of Kleiweg de Zwaan¹ on the inhabitants of the Island of Nias near Sumatra. Some 1300 individuals were studied and measured. The mean stature was approximately 154.7, cephalic index 80.7, and nasal index 78.0. In an analysis and correlation of the measurements, it was found that the shorter individuals had lower cephalic indices and higher nasal indices. This is not the natural correlation we should expect according to our knowledge of growth. It is to be hoped that more extensive studies of this nature will be made in other parts of the Archipelago.

Sumatra.

Again, in Sumatra, Hagen² has contributed the greater part of the available data. His observations follow:—

No. of Cases	Group	Hair	Skin	Eyes	Stature	Cephalic Index	Nasal Index
40	Batak ³	straight	21 Broca	Mongol	1599	80.3	88.5
		wavy		fold 43%			
23	Delimalayan ⁴	straight	21 Broca	Mongol	1622	82.3	81.0
				fold 80%			
18	Menangkabau ⁵	"	"	Mongol	1599	80.1	81.0
				fold 43%			
20	Orang Kubu ⁶				1587	78.5	89.0

The Batak and Orang Kubu have the higher nasal indices and longer heads. Hagen³ distinguished two types among each of these groups, a long-headed group and a short-headed group.

Malay Peninsula.

In the Malay Peninsula we have had a score of workers. Of these we shall consider only the more recent contributions by Annandale and Robinson,⁴ Skeat,⁵ Duckworth,⁶ Martin,⁷ and Skeat and Blagden.⁸ These works furnish an extensive bibliography and discussion of the whole Malay problem.

Racial affinities in Malay have been rather obscure and may still be con-

¹ Kleiweg de Zwaan.

² Hagen, (b).

³ Hagen, (c).

⁴ Annandale and Robinson.

⁵ Skeat.

⁶ Duckworth, (a).

⁷ Martin, (a).

⁸ Skeat and Blagden.

sidered uncertain, but the recent works of Martin and Skeat have thrown considerable light on the matter. Martin's conclusions may be summarized in the following classification.

- I. Ulotrichi, or Woolly-haired group.
 1. Semang (Mendi or Menik) in the west of northern Perak and in Kedah.
 2. Pangan in the east of Kelantan and Patani.
- II. Cymotrichi, or Wavy-haired group.
 - Senoi (or Sakai) in southern and eastern Perak and in northwestern Pahang.
- III. Lissotrichi, or Smooth-haired group. (Mixed race with primitive Malay base.)
 1. Blandas
 2. Besis
 3. Mantra in Rembau and Malacca.
 4. Jakun in Johore.

Skeat's¹ conclusions, based upon his own observations and to some extent on the conclusions of Martin, are very similar. His classification is more committal on the third group, which he calls the Jakun group, and subdivides as follows:—

1. Tribes of Semang origin: Kenaboi? and Udai?
2. Tribes of Sakai origin: Blandas and Berembuns?
3. Jakun or Malayan aborigines:
 - (a) Orang Bukit (Land or Hill Jakun)
 - (b) Orang Laut (Sea Jakun)

Data from representative tribes are presented approximately in the same order as the above classification presents these tribes:—

Malay Peninsula.						
No. of Cases	Tribes	Hair	Skin	Stature	Cephalic Index	Nasal Index
5	Semang (Perak) ²	woolly	28–29–43	1549	77.9	83.5
			Broca			
20	Semang (Perak) ³	"	—	1520	77.9	97.0
9	Sakai (Jehehr) ³	wavy or curly		1542	77.6	95.4
10	Sakai (Po-Klo) ³	"		1545	78.1	95.7
18	Senoi I (S. W. Perak) ²	wavy	28–29–43	1547	80.0	85.8
			27–22			
			Broca			
7	Senoi II (Tapah) ²	"	"	1495	76.4	84.7

¹ Skeat.² Martin, (a).³ Annandale and Robinson.

No. of Cases	Tribes	Hair	Skin	Stature	Cephalic Index	Nasal Index
9	Senoi III (West Perak) ¹	wavy		1548	77.2	85.2
6	Eastern Senoi ¹	"	Broca	1543	77.6	83.3
34	Sakai (Mai Darat) ²	"	—	1565	79.5	88.0
13	Orang Belanus ³	straight or wavy	—	1562	77.7	81.5
8	Mantra (Negri Sembilan) ¹	"	"	1485	78.8	76.8
10	Blandas (Selangor) ¹	"	"	1543	77.1	76.6
14	Besisi ¹	"	"	1533	82.4	78.9
15	Orang Laut Islam ²	straight	yellowish brown	1602	83.7	86.9
36	Malay (South Perak) ²	"	"	1594	82.3	80.9
135	Malay (East Coast) ²	"	"	1597	82.7	82.6

The Semang is a pygmy negroid type usually classified with the Negrito of the Philippines and the inhabitants of the Andaman Islands. The head of the Semang is slightly longer than that of the other two groups mentioned.

Apart from the Negrito, Martin has established as a separate type the wavy or curly-haired Senoi or Sakai. A comparison of the measurements of Martin and Annandale and Robinson suggests that there is a difference in the technique in the nasal measurements. The Sakai of Annandale have long heads and a short broad nose. The Senoi of Martin have a long head and a slightly narrower nose. Martin sees in them certain resemblances to the Veddah of Ceylon and the Toala of the Celebes.

Skeat has suggested the following tentative classification:—

- I. Negrito:
 - Andamanese
 - Philippine Negrito
 - Semang or Pangan
 - African Pygmy
- II. Dravido-Australian:
 - Vedda of Ceylon
 - Tamil
 - Australian⁴
 - Sakai or Senoi
- III. Malayan:
 - Jakun
 - Malay

¹ Martin, (a).

² Annandale and Robinson.

³ Knocker.

⁴ This assumes the Australian Blacks to be non-homogeneous and refers to the Dravidian type.

These conclusions complicate matters somewhat. They raise the question as to whether or not we are dealing with four, rather than three, types. Are the Sakai or Senoi and related groups — the Vedda, Toala, and Australian — the same as the type which we have regarded as Indonesian? It seems doubtful, at least it is difficult to read Vedda, Tamil, or Australian affinities into the Bontok, Kankanai, Nabaloi and other Philippine tribes which we have called Indonesian. Martin, Sarasin, and others prefer to refer to this group as a pre-Dravidian type and regard them as the true aborigines of the Archipelago.

In summarizing the findings of somatological investigations in Malaysia the following facts should be borne in mind and the conclusions weighted accordingly. While we have data on a great number of widely distributed tribes there are many less accessible tribes that have not yet been studied. In the great majority of instances we have observations on only a very small number of individuals from each tribe. In even a greater number of cases, we have only averages recorded. Differences in technique may lead to a faulty interpretation in specific cases. Yet the nature of the data, as a whole, permits of some tentative conclusions which, perhaps, should be regarded as propositions awaiting confirmation or the reverse.

SUMMARY.

Turning first to the Philippines we found that aside from the possible influence of Chinese, Japanese, European, and other foreign elements, there was evidence for the existence of three fairly distinct racial types: Negrito, Indonesian, and Malay. The Negrito type we found again in the Malay Peninsula and in the Andamanese Islands. The two non-negroid types, Indonesian and Malay, we found in Borneo, Celebes, Java, Sumatra, and possibly in the Malay Peninsula. Besides these three types, there was found evidence of another type in the Sakai or Senoi of the Malay Peninsula and in the Toala of Celebes. This last type is regarded by investigators, who have studied them on the peninsula, as the true aboriginal inhabitants of the Archipelago. The data so far as published do not reveal the presence of this pre-Dravidian type in the Philippines, at least in any significant numbers or as a distinct group.

Racial affinities in the Malay Archipelago may be summarized in the following order. As a basis we have a pre-Dravidian element in the Sakai, Senoi, Toala, Vedda of Ceylon and Tamil; second, a scattered Negrito

group in the Negrito of the Philippines, Semang and Pangan of the Malay Peninsula, and the Andamanese Negrito; third, an Indonesian type represented by the Bontok, Nabaloi, Kankanai, Ifugao, etc., of the Philippine Islands, the Ulu Ayars (Dayak), Murut, Kalabit, Kayan, Maloh, etc., of Borneo, the Tenggerese of Java, Toradja and Tomèkongka of the Celebes, the Batak and the Kubu of Sumatra, and possibly some of the mixed tribes of the Malay Peninsula; and finally, a fourth type in the Malay people who, for the most part, inhabit the coast regions of the various islands and Malay Peninsula.

No one would claim that the racial relationships in the Archipelago were as simple as the above summary might suggest or that any one of the tribes mentioned was purely the representative of one racial type. Assuming these racial types to exist we can only say that a given tribe listed as Malay, Indonesian, etc., is predominately of that type. Individuals of a different racial type may also be present and in some instances in sufficient numbers to obscure the racial affinities of the tribe. For the same reason, it is impossible at present to give a more accurate definition of the various types.

As to the broader affinities of these four types, there is some room for differences of opinion. As a working basis, it is probably better to treat each group separately for the present. But the ultimate purpose of anthropology is to trace the phylogenetic relationships of the various racial types of man. The real difficulties lie in defining the larger subdivisions or primary races. Obviously, a classification of mankind which will satisfy a majority of anthropologists cannot be made until we have gained a more thorough knowledge of racial types and have learned how to weight the various criteria. If we accept tentatively a classification of mankind into four main branches: Mongoloid, Negroid, European, and Australian, the affinities of the various groups to one another may be more clearly stated.

It has been suggested that the first type, Sakai or pre-Dravidian, is related to the Australian type. In view of the fact that we know so little of the Australian aborigines, it is, perhaps, better to regard this as a suggestion. Specialists have linked the Negrito with the Papuan and African pygmies in the Negroid division of mankind. As to the Indonesian type, I believe the totality of its characters suggest Mongoloid affinities, although less pronounced than those of the Malay. At least it seems fair to say that its Caucasian characteristics are in the minority and remain to be demonstrated. The Malay type shows a majority of undoubted Mongoloid characteristics.

Finally, in regard to the theories of migration accounting for the apparent stratification of the population in the Philippines, it should be stated

that such a problem cannot be definitely solved from anthropometric data. That we can account for the population of the Islands by two or three migrations of relatively pure racial types seems hardly probable. In our consideration of the geographical relationship of the Philippines we saw that these islands were connected by three partly submerged isthmuses with Borneo and Celebes and in turn closely linked with Java, Sumatra, and the mainland of Asia. Similar racial types were found in these Islands. Groups representing the three main types in varying degrees of purity and intermixture have probably entered the islands by different routes and at widely separated time intervals. That such an explanation is the more plausible is undoubtedly true, especially for those groups which we have called Malay. It seems fairly certain that the Malay type represents a more or less continuous influx extending over a long period of time. The present apparent stratification of the population in the Philippine Islands and elsewhere in the Malay Archipelago may be the direct reflection of the great predominance in numbers of the Malay type.

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Ethnic Groups

The numbers in this list are the same as used on Map 2 and Fig. 6.

Christian ○

1. Iloko — Ilokos Norte (F)
2. Iloko — Ilokos Sur (F)
3. Iloko — La Union (F)
4. Iloko — N. W. Luzon (B)
5. Iloko — Pangasinan (F)
6. Iloko — Tarlak (F)
7. Iloko — Zambales (F)
8. Cagayan — Cagayan (F)
9. Cagayan — Isabela (F)
10. Pangasinan — Pangasinan (F)
11. Pampangan — Pampanga (F)
12. Sambal — Zambales (F)
13. Tagalog — Nueva Vizcaya (B)
14. Tagalog — Nueva Ecija (F)
15. Tagalog — Zambales (B)
16. Tagalog — Pangasinan (B)
17. Tagalog — Pampanga (B)
18. Tagalog — Bulakan (F)
19. Tagalog — Bulakan (B)
20. Tagalog — Tayabas (F)
21. Tagalog — Tayabas (B)
22. Tagalog — Rizal (F)
23. Tagalog — Rizal (B)
24. Tagalog — Manila (B)
25. Tagalog — Cavite (F)
26. Tagalog — Cavite (B)
27. Tagalog — La Laguna (F)
28. Tagalog — La Laguna (B)
29. Tagalog — Batangas (B)
30. Tagalog — Batangas (F)
31. Tagalog — Cainta-Rizal (B)
32. Tagalog — Taytay-Rizal (B)
33. Bikol — Ambos Camarines (F)
34. Bikol — Sorsogon (F)
35. Bikol — Albay (F)
36. Bikol — S. E. Luzon (B)
37. Bisaya — Romblon I. (F)
38. Bisaya — Masbate (F)
39. Bisaya — Capiz (F)
40. Bisaya — Iloilo (F)
41. Bisaya — Samar (F)
42. Bisaya — Leyte (F)

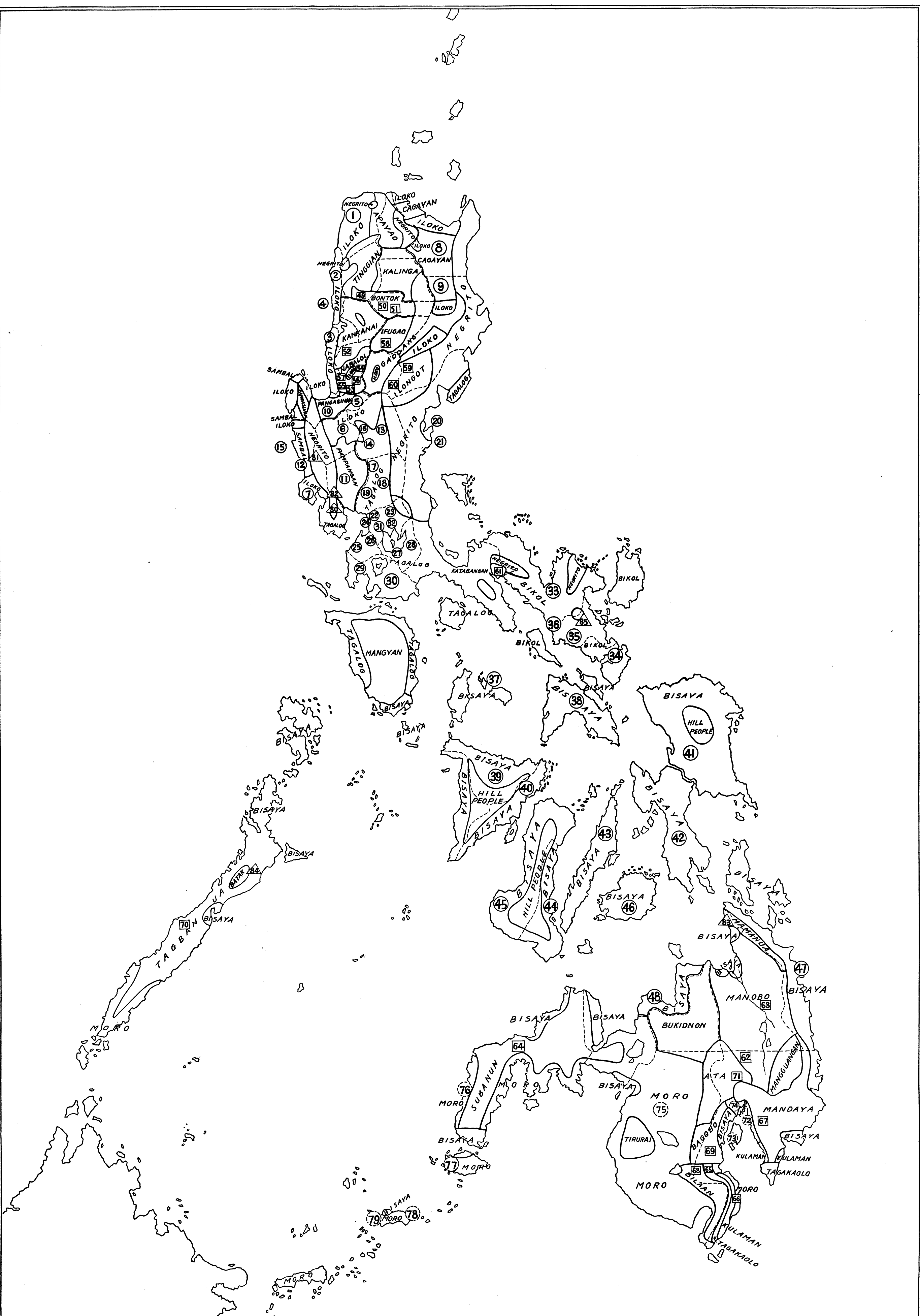
43. Bisaya — Cebu (F)
44. Bisaya — Oriental Negros (F)
45. Bisaya — Occidental Negros (F)
46. Bisaya — Bohol (F)
47. Bisaya — Surigao (F)
48. Bisaya — Misamis (F)

Pagan □

49. Bontok — Bontok (K)
50. Bontok — Lepanto (B)
51. Bontok — Bontok (J)
52. Kankanai — N. Benguet (Ba)
53. Nabaloi — Agno Valley (B)
54. Nabaloi — W. Benguet (B)
55. Nabaloi — Baguio (B)
56. Nabaloi — Kayapa (Ba)
57. Nabaloi — S. Benguet (Ba)
58. Ifugao — Benawi (Ba)
59. Ilongot — Nueva Vizcaya (Ba)
60. Ilongot — Pantabangan (Ba)
61. Katabangan — Camarines Sur (M)
62. Manobo — Davao (M)
63. Manobo — Agusan (M)
64. Subanun — Zamboanga (Ch)
65. Tagakaolo — Davao (C)
- 65'. Tagakaolo — Davao (M)
66. Kulaman — Davao (C)
67. Mandaya — Davao (C)
- 67'. Mandaya — Davao (M)
68. Bilaan — Davao (C)
- 68'. Bilaan — Davao (M)
69. Bagobo — Davao (C)
- 69'. Bagobo — Davao (M)
70. Tagbanua — Palawan (Ba)
71. Ata — Davao (M)

Mohammedan ○

72. Kalagart — Davao (M)
73. Isamal — Samal I. (M)
74. Moro — Davao (M)
75. Moro — Cotabato (F)
76. Moro — Zamboanga (F)
77. Moro — Basilan I. (F)



PHILIPPINE ISLANDS — ETHNIC GROUPS.

----- BOUNDARIES OF PROVINCES. ——— BOUNDARIES OF ETHNIC GROUPS.

The numbers on this map indicate the position of the ethnic groups listed on p. 60 and also correspond to the numbers used in the text. The location of the various groups is approximate.

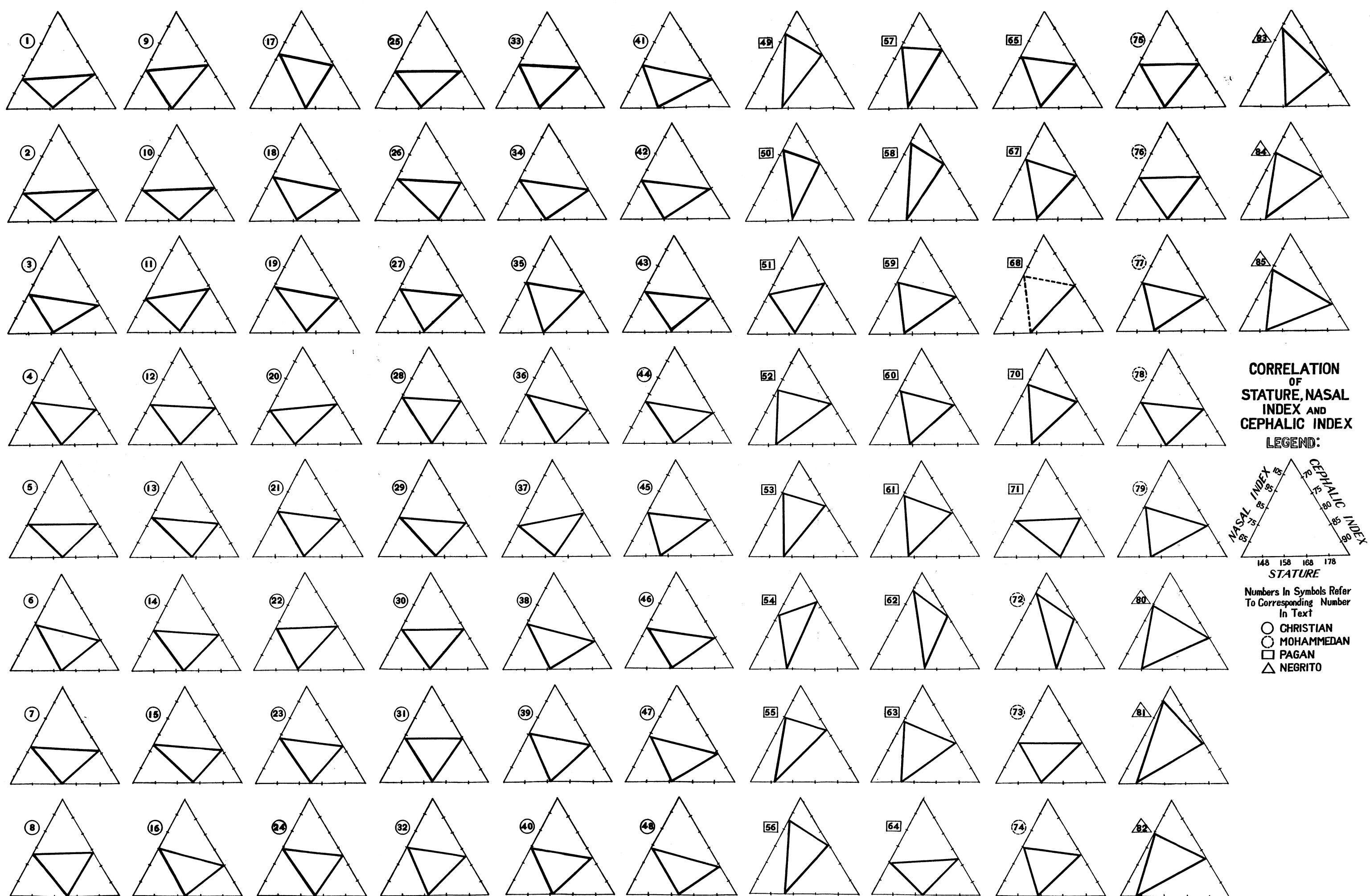


Fig. 6. Graphic Correlation of Stature, Cephalic and Nasal Indices for Philippine Types.

78. Moro — Jolo I. (F)

Observers

79. Sulu — Jolo I. (M)

Negrito Δ

80. Negrito — Bataan (M)

81. Negrito — Zambales (R)

82. Negrito — Bataan (Ba)

83. Mamanua — Surigao (Ba)

84. Batak — Palawan (Ba)

85. Negrito — metis — Albay (M)

B = Bean

Ba = Barrows

C = Cole

Ch = Christie

F = Folkmar

J = Jenks

K = Kroeber

M = Montano

R = Reed

