

Schetelig, [Arnold]. "On the natives of Formosa." *Transactions of the Ethnological Society of London* 7 [1869]: 215-29.

On the Natives of Formosa.

By Dr. Schetelig.

[Read June 23rd, 1868.]

[P. 215] Before exhibiting, as I propose, some skulls and photographs of natives of Formosa, and before giving you my views as to the place, in the series of the races of mankind, which I would assign to those natives, I desire for a moment to call your attention to the history of foreign intercourse with that large island. Formosa, though within a day's sail and in sight of China, was not visited by the Chinese before the latter half of the sixteenth century, even if we take the ever-flowery accounts of Chinese history for granted. At all events, when the Dutch occupied the island, somewhere about 1620, they found only few Chinese living together with the original inhabitants in the plains; and it was not till after the Dutch had been dislodged from their two or three strongholds by the Chinese pirate chief Coxinga, that the crafty rulers of the Manchoo dynasty managed to lay their hands upon the island, which they have since claimed and kept as a sort of colony of the great empire. Thus has Formosa, to speak correctly, undergone, in the course of two centuries, several changes of rule. It has seen Chinese settlers flock in, -- it has been a *bonâ fide* Dutch colony, -- it has been the seat of many inroads by an independent Chinese king, -- and it has ultimately been raised to a province of the Chinese empire. The chequered history and present state of the isle is heightened by the traces and recollections of temporary settlements of the Japanese and Spaniards, as well as by those of independent Chinese chiefs, still reigning supreme in some parts; whilst the interior, the forest heights, above 3,000 feet elevation, still remain in the hands of the aborigines.

Of these aborigines, the Dutch, during their occupation of sixty years, knew and saw a great deal. They subjected great numbers to their rule, made them work for them, carried on a sort of trade with them, and converted them to the Christian faith. To do all this, they had to acquire a fair knowledge of the native language; and this they accomplished to an extent which, considering time and adverse circumstances, does their enterprising spirit great credit; for they not only spoke several dialects, but made themselves so familiar with two of these native languages, as to compile a valuable dictionary of them, [p. 216] and to translate portions of the Bible into them. The Dutch writings on the third dialect have been lost. The documents relating to the first two have since been discovered in Batavia, and further on I shall revert to them. But important as they may prove to those desirous of making out the idioms of Formosa, the Dutch have failed to leave any other than general accounts of the tribes. For the distinctions between these races, we must look to the poor remains that are still left in the island, and to circumstantial evidence, rather than rely on tradition.

It appears, when we compare the few existing Dutch notes on the natives generally with those of a Scotch contemporary, David Wright, and the marginal notes of the *Atlas Chinensis*, by Ogilby, that in the seventeenth century there existed in the plains and in some parts of the hills of Formosa a native race of a somewhat tall stature and tawny olive complexion, strong in limb, and generally resembling the Malayan type more than the Chinese. Their religion, or rather their want of it; their faith in spirits good and evil;

their mode of building houses, and of living in small communities on an oligarchic or democratic principle, rather than under the rule of a king; their simple husbandry and love of the chase; their marriage and funeral rites; but more than all, their mode of warfare, and the peculiar use of their enemies' skulls as much coveted trophies, place them, as far as their moral, intellectual, and social condition go, very much on a level with their nearest neighbours, the inhabitants of the Philippine islands and some of the natives of Borneo. This you will at once understand when reading of the habits and customs of the Dyaks as related by missionaries and travellers, and those of the Tagals and inhabitants of the northern provinces of the island of Luzon before the conquest. In the latter island, there are living, in the wild recesses of the provinces of Cagayan and Ilocos, to this day, unconquered tribes of Philippine origin, whose manners much resemble those of their forefathers and those of the Dyaks. It is not necessary, however, to attach much importance to the embellished and romantic accounts of Mons. de la Gironière, which have been made up for him by a French novelist in the feuilletonist style of the day. As to the language of the Formosan people, it consisted of several dialects, two of which have, as above stated, been handed down to us by the Dutch missionaries. These dialects, shortly after they had been exhumed from the Dutch archives in Batavia, were shown, by a German linguist, von der Gabelentz, to be branches of what may be regarded to have been established by W. v. Humboldt as the great Malayan type of language. Von der Gabelentz published an analytical paper on the [p. 217] subject in German. And of this origin they appear to have been not unworthy, but are rather a noble and organically shaped offspring, resembling in this some of the dialects now spoken in Luzon.

It is very much to be regretted that since the termination of the Dutch occupation the island has been left entirely to the mercy of the Chinese, who have played the same cruel part here as in other islands of the Malayan Archipelago. They have carried on the incessant and merciless fight of a semi-civilised against a barbarous race, which invariably results in the extermination of the weaker element. Already the effect has been visibly shown in Formosa. The native population has dwindled down before the vast influx of Chinese squatters, with whose industry both in husbandry and in trade no other race of the East has as yet been found able to compete. The remaining inhabitants are fast disappearing, those of the plains from intermarriage with the Chinese, whilst those of the hills fall an easy prey to the combined effects of a damp climate and famine, the roguish practices of the Chinese, the abuse of spirituous drinks, and to frequent epidemics of small pox. Those who still follow the old habits of their forefathers must clearly fall into a more rapid decay under the above-mentioned evil circumstances, forasmuch as there exists among the ancestral prescripts that dire law which stigmatises women bearing children before a given age, which is mostly from thirty-one to thirty-seven years. What with unprincipled settlers constantly at work against them, and with their inborn love of splitting up into small tribes, their minds being easily excited to warfare against their own kindred, the destruction going on is not to be wondered at. Indeed, occasional visitors are led to believe that nothing has been left to prove the connection between the present aborigines of Formosa and those known to the Dutch. It is true, indeed, that a great change has come over the natives, that they are fast becoming lost among the crowds of Chinese colonists. It is true, also, that those beautiful dialects cultivated by the Dutch savans, the Favorlang, Sidëia, and Sakam, are hardly to be traced, and, moreover, that the connecting link of history is wanting to show what has become of them since 1680 (for Mr. Psalmanassar, the only author in this interim, was an impostor, as you are all aware). Notwithstanding, I am convinced of the validity of my views, namely, *that the Malay origin of most of the inhabitants of Formosa is incontestable.*

At the present time we are able to distinguish among the various tribes of aborigines in Formosa, three races. The one, called Shekwan by the Chinese, is a peaceful people, living mostly near the sea-shore on the north end of the eastern coast and on some of the smaller islands near Kelung, and they are [p. 218] even to be traced as far as Tamsui, where they are, however, nearly extinguished, and nothing short of a careful survey of the huts on the sandy sea-shore to the south of the river will reveal the fact that this race has existed here before the Chinese. To what extent they may be found to have weathered the storm of Chinese immigration on the west coast, I am unable to say; but I shall prove to you by two skulls from the neighborhood of Pakow, that there this race turns up again. With these people I have had much intercourse in different parts of the north of the island; though I much regret, for more than one reason, that my stay was limited, and I had no opportunity of visiting the south. This race, the Shekwan, are of a tame yet not a shy disposition; strong in limb, and broad in face; of a yellow complexion; dark, heavy hair; dark eyes; well-shaped, oval eyelids; broad nostrils, and prominent cheek-bones. Every one of these signs you will be able to recognise in the photographs, which I exhibit, and which were taken by Mr. Ohlmer of Amoy, who accompanied me. The subjects were picked out by myself, and you can rely on their being as fair and accurate representatives of the race as could be got. Of their manners and customs but little can be said; they live in small, poorly-built houses, with thatched roofs, mostly near the sea-shore, where they have evidently been driven by the crafty Chinese; they subsist on agriculture in its simplest form, and on fishing. They have no religion of any importance, but believe in a "father of all things," who lives below, and to whom everybody will return, as he issued from him. To this "father" you will see them piously sacrifice a few grains of rice, or some drops from any cup offered them, before they partake of it. They have no idols, nor do they believe in a life hereafter; though they give up their dead, enclosed in four boards, to the "father of all things." Their peaceful nature is further evinced by their domestic and social life, which knows of no ruler, but an elder chosen by each small community according to influence or age. This dignity seems to be more of an ornamental than of an executive or legislative character, as there are but few offences to be visited at the hands of justice. A thief will be punished by having his thumbs tied together and hauled up to a tree or post as high above his head as possible. Murder seems entirely unknown among them. Of such self-governing communities there appear to be a great number. I was told that, between Sawo-bay and Pamsheang, a distance of twenty miles, there lived no less than thirty-six, all on friendly terms with one another, and with the people of Sawo-bay, to whom they, however, cheerfully gave the palm for good behaviour and a beautiful pronunciation of the dialect.

[P. 219] It need not be an object of surprise that this people, in the state of subserviency to, and dependence on, the Chinese, in which they live, are not eager to preserve their own language, especially as they have no written characters that could serve as a repository. For this reason I thought it high time for the rudiments to be gathered together by foreigners, and be placed on record, and I therefore devoted much of my time to studying this as well as the dialects of the race of natives inhabiting the hills of the north, and have carefully collected a couple of hundred words of each. These may be regarded as correct specimens, as all doubtful words, and those that only belonged to small circumscribed districts, have been either left out or marked, and the transcription made according to the phonetic system of Lepsius. These vocabularies have been embodied in a paper devoted to the special subject of Formosan languages, which will appear in the *Berlin Journal of the Sciences of Language and Ethno-Psychology*. I need not, therefore, trouble you with a detailed account of these idioms, but merely wish to lay before you the conclusions to which I have come with regard to the origin of

these dialects. (For I may as well, for the sake of unity, speak of the language of the northern mountaineer race now; although I shall treat on their physical appearance later.) Firstly, it is obvious, even from the limited number of words which a traveller is in a position to collect, that the two dialects are essentially of the Malayan type, as a great number of words indicate an intimate alliance to most of the other known Malayan dialects of the Archipelago, and because the grammatical characteristics of Malay, viz. -- the use of prefixes and suffixes for grammatical purposes, can be clearly proved to exist in both dialects, but much more in the dialect spoken in the plains, although even here it is recognisable in its rudiments only. As to the matter of comparing different dialects of the same great type, such as Malay, I cannot sufficiently express my misgivings of the method hitherto often adopted, which, regardless of the utterly fluctuating nature of pronunciation in more of the savage and illiterate tribes of eastern native races, applies to them the canons of Indo-European etymology, and puts down identity as a requisite of homologous origin. It is in this way that we should arrive at a painful dismemberment of that highly organised Malayan language, and thus deprive alike the traveller and the linguist of a valuable means of studying the fundamental coherence of their manifold offspring.

I believe I have shown, in the paper referred to, that the two dialects in question do not evince a distinct alliance to one or the other of the known dialects of the Archipelago, but that [p. 220] they bear a relation to most of them, and even to the most remote, viz. -- the Malagassian, which would not place them in a dependent position on any of the nearest tribes, such as the Caroline islanders, as far as linguistic evidence can be admitted to be conclusive.

Dismissing the subject of languages for the present, I desire to direct your attention to these two characteristic specimens of skulls which, from the physical signs they exhibit, and from comparison of their dimensions with those of some living subjects made by me on the spot, I have no hesitation in pronouncing to belong to the native tribe of the plains of Formosa just described. This tribe, though melting away under the influence of the more potent Chinese race, and known to them under the appropriate name of Shekwans; i.e., "cooked foreigners" (*versus* "Chinwans"; i.e., "raw foreigners," those of the hills), must certainly be regarded as the most important of Formosan native elements, as its remains are scattered all over the island, and most -- not all -- of the inhabitants of the south will be found identical with those of the northern plains. These two interesting skulls you will find of a most peculiar shape. They have both been sawn open vertically, in the median line, and a full opportunity of inspection is thus afforded to you. In proceeding to give you a description of these crania, I propose generally to consider their shape, size, and proportions, to compare them, also generally, with the skulls of Chinese, Malays, and Polynesians, whilst I desire, in order to avoid too much dry detail and the confusion necessarily attending upon reading a series of metrical figures, to give you every opportunity of correcting or corroborating my statements by looking into the table of measurements affixed.

The two skulls exhibited here, are of ordinary, but different size, the larger one apparently of advanced age, say fifty-five; whilst for the smaller, from the appearance of its sutures, I would claim an age, approximate to thirty-five. In the latter, the baso-occipital suture has remained ununited. Both I judge to be of male individuals. In both, the bones of the skull, as well as of the face, are strongly developed, and of a somewhat unusual weight and bulk. The temporal bone appears to be but of moderate size, the parietal and occipital of ordinary, the frontal bones rather beyond the mean, with very extensive frontal sinuses, but the zygomatic bones have assumed almost formidable

proportions. When regarding their shape, you will be struck with the beautiful oval form, as presented when viewed from above, which changes into a beautiful and regular egg-shape, as you bring the anterior fontanelle into the centre, then the zygomatic arches protrude from the sides like [p. 221] two big handles. This aspect of the skulls is suggestive of their dolichocephalic form; a fact which you verify by consulting the table; the cephalic index, indeed, being seventy-three only; while the index of height is a little beyond seventy-three, which gives the latter a surplus of four over the former. The forehead is sloping, the occiput almost rectangularly bent by the occipital protuberance being in both cases so very prominently developed.

Taking a lateral view of our skulls, I would ask you to observe the perfection of the arch into which enter the bones of the roof, and which I believe to stand unrivalled even when we compare these to a series of Indo-European skulls. You will here also notice the uncommon size of the maxillary bones and of the minor alae, as far as both have been preserved. On opening the crania and inspecting the interior, you will find the arched form of the outer skull to be but little at variance with the inner surface of the roof, there being few, if any, marks of the brain convolutions visible. The length and width of the basilar bones may be called ordinary. The line from the hinder point of the basilar axis to the insertion of the nasals into the frontal bone is long, as will mostly be the case in skulls of the hypsisthenocephalic shape, unless there be some evident displacement of the ethmoid and frontal bones. I would, however, warn you against admitting this line, which Professor Welcker has called *nb*, as a test of the length of the basilar axis, for I am inclined to conclude from most of my measurements that it tends to bear an inverted relation to it. The two perpendiculars which Professor Huxley has recommended to be erected on the ethmoid plane and the posterior termination of the region of the tentorium cerebelli, to show the overlapping of the great hemispheres over the base, you will also find put down; but you should always bear in mind that much allowance has to be here given for skulls of different cephalic indices and of different heights.

In comparing these two Formosan skulls with those of the neighboring races of the Chinese, the Malays and the Polynesians, I shall again, for the detailed measurements, request your inspection of the table; but I cannot refrain from laying down a few principles with regard to measurements generally, and the evidence to be gained from them as to the distinction of races. First of all, we cannot be too scrupulous in defining the extent to which any measurements of living individuals shall be regarded as conclusive. Were it not that I had myself had ample opportunity afforded to me during my visits to Luzon, Formosa, and Singapore, as well as during my stay in China, to convince me of the futility of measuring bodies by [p. 222] means of tape and callipers, at least with regard to the great majority of dimensions in the human frame, I ought to have been deterred from indulging in any hopes of its practicability by the multifarious measurements and figures exhibited in the anthropological part of the book describing the Austrian "Novara" expedition, which have been most carefully drawn up; but, considering the innumerable sources of error inseparable from the proceeding, to very little purpose. However, I admit the necessity of certain proportions of the bony skeleton being recorded, providing the utmost pains be taken to secure accuracy. A great disadvantage in using living subjects for taking measures of heads consists in our inability of ascertaining whether we are dealing with normal or synostotic skulls. Secondly, with regard to craniology itself, I deny the possibility of drawing from its teachings, in the present state of science at least, any conclusions expressive of the most distinguishing characters of widely different races, but I readily admit their value in testing tribes closely allied.

Reverting to our skulls, then, and the table affixed, you will observe the following points of interest: --

1. As to the question of shape. The two Formosan skulls are totally dissimilar to the Chinese on the one hand, and to the Malay crania on the other. While both the latter are invariably egg-shaped, with more or less developed tubera to make them angular; the skulls here exhibited are of an almost perfect oval, and peculiarly devoid of the flat roof which forms so prominent a feature in nearly all of the Malayan tribes, above all in the inhabitants of Lugon.

2. In their dimensions again, my table will give you sufficient proof of the great discrepancy existing, not merely, as could be expected, between the Formosan skulls and the Chinese, but between the former and all the Malayan placed on record. You will observe the great difference in the indices of width and height, the coincidence of both these facts being always an important sign; and you will agree with me that the width of the zygomatic bones, taken at their lowest point of joining with the maxillary and reduced in the width of the skull, in order to show their correct proportion to the whole cranium, leaves all the other skulls, Malayan as well as Chinese, far behind, thus giving a most peculiar and characteristic appearance to the face which, I have no doubt, you will find represented in the photographs of the people.

3. On the great question at issue, therefore, viz., the origin of this race of Formosan natives, I confess to have seriously vacillated. For, although, I was much inclined to accept what would appear to be an *à priori* argument, that they were to be [p. 2223] ranged amongst the Polynesian race, when I first came across them, I was so much startled by the evidence of a language essentially Malay, and that I could not, for a long time, make up my mind how finally to settle this question, till I came here, and made very liberal use of the permission given to me of examining the fine collection of skulls preserved in the Museum of the College of Surgeons. For here I was agreeably surprised to discover in the few Polynesian skulls which are there, as well as in those of the New Zealanders, a series of most valuable points for comparison with those of Formosa; and I state as my firm conviction, that these two races, as far as craniology can show us the way, are of the most intimate relation, whether we regard the dimensions or the shape of them. I would ask you to notice the almost identical indices of width and height of the skulls from Formosa, and of those from the Sandwich Islands, while even the Feejee Islanders come within a very close limit of them. In point of shape, on the other hand, there is not to be found amongst the various tribes of the Malayan Archipelago any head resembling the Formosan so much as does that of the Sandwich Islander. One most valuable test of the correctness of my view consists in the occurrence of the same enormous distance between the zygomatic bones in the Polynesian which I before claimed as a singular characteristic of the Formosan skull. This fact, far from rendering the evidence of their origin conflicting, ought, on the contrary, to contribute to verifying the maxim long since upheld by the linguists, that "the Tonga and Samoa dialects are organically allied to the Malay language," and that "the Polynesian and Malay races are virtually and originally the same." For if we have here a tribe which, in its idiom, betrays its extraction from the Malayan stock, while in its physical characteristics it leans to the eastern inhabitants of the Pacific, we must hail them as the connecting-link between the two, which hitherto has been believed to exist, but not found.

I am compelled, from want of time, to dismiss this subject; and have to offer a few remarks on those natives of northern Formosa who inhabit the hills, and appear to have no relation to those just described, but that their language will most likely prove to be another branch of the Malayan, although not in the least connected with the dialect of these Shekwans. This people, called Chinwans by the Chinese, are of entirely different physical appearance, lighter coloured, of smaller stature (measuring 5 feet 2 inches in height), of more delicate limbs, and a well-shaped oval face, their noses even tending towards the aquiline form. Mr. Swinhoe, in his paper on the "Ethnology of Formosa," has given a detailed account of their manners [p. 224] and customs; and also sketches of them, drawn from nature, which, however, as he himself remarked to me, have not received any justice at the hands of the artist and printer. I am, therefore, glad to lay before you a few photographs taken of them, and regret very much that, the people being very shy and superstitious, it was absolutely impossible to dispel their great suspicions of the photographic apparatus, and to procure as many specimens as I could have wished to obtain, the more so as the photographic representatio[n] is inadequate to render their characteristic tattooing visible. They are, as I have said, essentially a hill tribe; and I found them near Sawo-bay, as well as in the slopes of several of the hills bordering on the upper part of the Tamsui river, as also on the western side of the great mountain ridges of central Formosa. Mr. Dodd, of Tamsui, informed me that he had met with the same people some distance down to the south, I believe as far as sixty or eighty miles, and that there they still speak the identical dialect. But this native race also is sadly on the decline; as Chinese aggression has driven them into the inhospitable heights, and forced them to lead an unhappy life in those moist and unhealthy primeval forests, where they subsist on the chase, and such small quantities of rice as the Chinaman, eager to dispossess them of their valuable camphor-wood trees, from time to time barter to them for some territory, or a few articles of industry, such as woven cloth, etc. Smallpox and Chinese *samshoo* are doing the rest to destroy this formerly strong and warlike race.

The few measurements I was able to take of them, tend to prove their physical difference with the so-called Shekwans of the plains, which their manners, and customs, and their language indicate. For the latter, I must refer you to the paper on Formosan dialects, already mentioned; but I will not omit to express my opinion as to a nearer relationship being likely to turn out between this and some other Malayan dialects than I was at first, with the few means at my disposal, inclined to believe.

One more important feature in the craniology of Formosa has to be considered, -- the existence in the south of the island of a tribe or tribes totally unconnected with those described by me, *i.e.*, anthropologically speaking. As a proof of what I have said, I exhibit to you these two skulls. Desiring to ascertain the nature of the tribes of the south, I had for some time requested friends in Formosa to procure some heads from thence. These at last, and apparently with great difficulty, succeeded in having two entire heads sent down from the hills, and delivered [p. 225] over to my agents. These heads had been cut off according to the warlike fashion, which also, in former times, was known to exist amongst the aborigines of Formosa, and still continues a practice in Borneo, Luzon, and some of the Polynesian islands, and consequently the bones were much destroyed. The faces, though a little disfigured by decomposition, presented features different from all the natives of Formosa that I had seen, resembling more those of the wild Indian tribes of Luzon than of any other race. In making assertions like these, concerning the outward appearance of different races of mankind, I am fully aware of the difficulty attending them, and the many sources of error which have hitherto caused such observations to be mostly of a vague, conflicting kind.

But deprecating, as I do, any but a scientific way of treating anthropological subjects, I hope an occasional remark as this may be accepted as collateral evidence, the more so as further application will aid in bringing out the same result.

These two crania are also of different age; the one being that of an individual upwards of fifty, whilst the other does not appear to be much beyond thirty years of age. Both are seriously injured; the aged one having lost the whole of the tribasilar, some part of the occipital, the ethmoid, and other bones constituting the orbit; the younger one having retained the hinder portion of the tribasilar, but being otherwise in no way better preserved. The points presenting the greatest interest are: --

1. With reference to shape and conformation of bones, they do not nearly come up to the weight and bulk of the other two Formosan skulls, nor do they resemble them in any of their prominent features. The frontal bones rise much more vertically, and show very little prominence of the supraorbital ridges, although the frontal sinuses, in the one skull at least, are well-developed. The occipital bone forms a curve, with which the occipital protuberance interferes but slightly. The peculiarity in the shape of these two skulls consists in that tendency of the roof to assume a square towering appearance, with the tubera well marked, and the parietals falling abruptly off to the occipitals, so that two kinds of planes are here formed; the one, on the top of the roof; the other, on either side of the parietal, exactly in the angle between the temporal and occipital squamae. The former plane is a characteristic of most Malayan skulls; while the latter planes I have already, during my wanderings in the Philippines, been accustomed to regard as an important leading character of the natives there. Nay, it has there impressed me with such vivid clearness that, on consulting my journal of travels, I find it mentioned [p. 226] many a time, and twice as having aided me in discarding native individuals who were brought up to me as Negritos. On viewing the skulls from the top, they present a short egg-shape, with the greatest width nearly central. In this position the prominence of the tubera may also be clearly seen. The interior offers nothing unexpected, being generally much of the same shape as the outer surface, but showing some indentations caused by brain convolutions. The face is much more proportionate than that of the other two skulls. With regard to the question of prognathism, that most overrated of all craniological tests, I have adopted the principle laid down by Prof. Huxley, of expressing it by means of the angle formed by the basicranial axis, and a line drawn from its anterior end to the spina of the upper jawbone, which, in our two skulls, will be hardly more than 90° . Notwithstanding, in the one skull, anyone not versed in anatomy might still detect prognathism, which however, in this case, as in a great many others, is nothing but prominence of the maxillary process alone. This I have, for some time, been in the habit of terming false prognathism, and in my table you will find it represented by the difference between *ml* and *mp*.

2. Comparing the dimensions of these two skulls with others, you will notice that the two main indices vary but little with those of the Malaysians generally, and those of the Philippine islanders especially. To the small difference still showing, I am not inclined to attach much weight, as you can, first of all, never expect identity in a limited number of skulls; and secondly, because the various tribes of Malayan origin labour themselves under some fluctuation in this respect. An instance of this I have given you in the figures representing the cephalic index found in different provinces of Lugon. Not less than by the generality of the proportions mentioned just now, these skulls are separated from those first exhibited by the distance of the zygomatic bones, in which they do not

even approach the skulls of the Malays, but range exactly with the smaller of the two Philippine crania of the College of Surgeons.

The conclusions we may draw from the examinations of these skulls, enable us to throw out the proposition, that in the south of Formosa are still to be found some tribes resembling strongly those of the Lugonese in their anatomical characters, -- a fact which is quite in keeping with the proximity to Formosa of the Bashee islands (Babuyan), inhabited by Slocos and Cagayan people, as well as with the circumstance that amongst the scattered rudiments of several small dialects of the south, there are still preserved, though in a wretched and mutilated state, the associations of more than one idiom of Luzon.

[P. 227] Table I.

Containing Various Measurements of Four Formosan Skulls

| w | | | | | | | | | | | Vert | ical | | Length | of | Arch. | Median | Lower | Jaw |
|-------|--------|-------|--------|------|-----|-----|-----|-----|----|-----|-------|--------|-----|--------|---------|--------|--------|--------|--------|
| | Length | Width | Height | nb | bn | mb | b | bo | nn | zz | Antr. | Postr. | c | Front | Pariet. | Occip. | Arch. | Horiz. | Ascend |
| I A | 182 | 130 | 140 | 104 | 94 | 62 | 66 | 117 | 47 | 94 | 46 | 72 | 500 | 124 | 136 | 108 | 314 | | |
| II B | 186 | 135 | 140 | 104 | 95 | 62 | 68 | 128 | 54 | 109 | 52 | 77 | 508 | 126 | 130 | 116 | 316 | | |
| All A | 180 | 143 | 138 | 103 | 90 | 56 | 62 | 113 | 52 | 93 | 62 | 76 | 510 | 134 | 134 | 120 | 320 | 94 | 50 |
| II B | 172 | 144 | 130* | 100* | 96* | 62* | 60* | 110 | 49 | 97 | 50 | 76 | 505 | 125 | 114 | 112 | 318 | 96 | 50 |

Remarks. -- I A. The alisphenoid does not join the parietal. All sutures open, except the frontal. I B. The alisphenoid joins parietal. The coronal and lambda sutures are closed. II A. Long suture between alisphenoid and parietal. All sutures open, except frontal. II B. Alisphenoid joins parietal, coronal, sagittal, and lambdoid, in process of ossification.

Notes. -- All figures mean "millimetres". The height is obtained by measuring the distance between the anterior margin of the foramen magnum and the point where the coronal and sagittal sutures meet. The letter *b* refers invariably to the anterior margin of the foramen magnum; *nb* = the distance of *b* from the fronto-nasal suture; *bn* = distance from the spina nasalis of the maxillary; *b* = length of the tribasilar; *bo* = distance from the point of union between sagittal and lambdoidal sutures. The letters *nn* express the distance of the spina nasalis from the root of the nasal bones. The distance between the lower points of termination of the zygomatico-maxillary sutures is shown by the value of *zz*. For the explanation of the "anterior and posterior vertical," see the paper. *C* is the circumference taken in the usual manner, while the "median arch" begins and terminates at the upper margin of the auditory canal, and passes the junction of the coronal and sagittal suture.

The skulls I A and I B resemble the Polynesian type, II A and II B the Malayo-Philippine.

The five measurements of II B marked * are not to be considered quite correct, as much of the basilar bone is missing.

[P. 228] Table II.

Showing Comparative Measurements and Proportions of Formosan, Chinese, Malayan, and Polynesian Skulls.

Index Malar Greatest Greatest
of Index = Breadth distance
[Type of Skulls] Cephalic Height zz : of of zygo-
Index = H : L breadth Skull matical
of skull arches

I. Formosan

Living individuals in the north, Plains: Men 77

Women 76

Living individuals in the north, Hills Men 83.3

Women 80

Skulls in my possession -- I. A and B 73 79 77

II. A and B 81.4 79 66.5

II. Chinese

Living individuals south of China 80.3

Skulls in the Museum of the College of Surgeons, England 79.5 76.7

Skulls in my possession

Dr. Barnard Davis's Skulls 76 79 5.3 25

Skulls in the Museum of the London Hospital 78 76.8 69

III. Malayan Races

Measures in living subjects, Celebes 81

Measures in living subjects, Bugis 83

Measures in living subjects, Singapore 81

Measures in living subjects, Javanese 86

Measures in living subjects, Dayaks 82

Malayan Skulls, College of Surgeons 80 76.7 68

Malayan Skulls, Anatomical Museum of Kiel 81 79

Philippine Islands

Living Tagaloes 82.5

Living Bicolos 83.5

Living Women of Manilla 81.5

Skulls in College of Surgeons 83.5 77 67

Skulls in my possession 83.5

Skulls of Bisayans, by Davis 80 79 5.4 5

[IV. Other]

Sandwich Islands, Skulls, College of Surgeons 73 78 77

Feejee Islands, Skulls, College of Surgeons 75.3 76.7 70

Feejee Islands, Skulls, by Davis 72 77 4.9 4.6

Skulls of Maori men, by Davis 75 80 5.3 5.4

New Hebridean, Skulls, by Davis 69 75.7 5.8 6

New Caledonian, Skulls, by Davis 71 78 5.1 5.3

Loyalty Islanders, Skulls, by Davis 69 77 5 5.2

[Notes: 1. Unless otherwise noted, all figures mean "millimetres".

2. As measured by Dr. Davis, and given in British inches and decimals.]

[P. 229] In summing up the results of my investigations, I am enabled to say that, up to the present time and with our state of knowledge, we may determine three different races of natives in Formosa. One of these, evidently the most powerful, and formerly occupying a foremost position, forms a connecting link between the Malayan and Polynesian races in their language and craniology respectively. The second, although, through its language, allied to the Malayo-Polynesian, has not been satisfactorily placed yet with respect to anatomy. The third may be looked upon as representing the many small tribes who have, in the lapse of centuries, migrated over from the nearest islands, in the well-known true spirit of Malayan races. The point which remains open for discussion is the relation of the present tribes to those which were known two hundred years ago. This question, I consider, is of very difficult nature, as none but meagre information can be gained concerning it.