PART THREE
SEXUAL SELECTION IN RELATION TO MAN
AND CONCLUSION

CHAPTER XIX
SECONDARY SEXUAL CHARACTERS OF MAN

Differences between man and woman—Causes of such differences and of
certain characters common to both sexes—Law of battle—Differences
in mental powers, and voice—On the influence of beauty in determin-
ing the marriages of mankind—Attention paid by savages to ornaments
—Their ideas of beauty in woman—The tendency to exaggerate each
natural peculiarity

With mankind the differences between the sexes are
greater than in most of the Quadrumanæ, but not
so great as in some, for instance, the mandrill.
Man on an average is considerably taller, heavier, and
stronger than woman, with squarer shoulders and more
plainly pronounced muscles. Owing to the relation which
exists between muscular development and the projection of
the brows,¹ the superciliary ridge is generally more marked
in man than in woman. His body, and especially his face,
is more hairy, and his voice has a different and more pow-
erful tone. In certain races the women are said to differ
slightly in tint from the men. For instance, Schweinfurth,
in speaking of a negress belonging to the Monbuttoes, who
inhabit the interior of Africa a few degrees north of the
Equator, says, "Like all her race, she had a skin several
shades lighter than her husband’s, being something of the

419, 420, 431.
(716)
color of half-roasted coffee."

As the women labor in the fields and are quite unclothed, it is not likely that they differ in color from the men owing to less exposure to the weather. European women are perhaps the brighter colored of the two sexes, as may be seen when both have been equally exposed.

Man is more courageous, pugnacious, and energetic than woman, and has a more inventive genius. His brain is absolutely larger, but whether or not proportionately to his larger body, has not, I believe, been fully ascertained. In woman the face is rounder; the jaws and the base of the skull smaller; the outlines of the body rounder, in parts more prominent; and her pelvis is broader than in man; but this latter character may perhaps be considered rather as a primary than a secondary sexual character. She comes to maturity at an earlier age than man.

As with animals of all classes, so with man, the distinctive characters of the male sex are not fully developed until he is nearly mature; and if emasculated they never appear. The beard, for instance, is a secondary sexual character, and male children are beardless, though at an early age they have abundant hair on the head. It is probably due to the rather late appearance in life of the successive variations whereby man has acquired his masculine characters, that they are transmitted to the male sex alone. Male and female children resemble each other closely, like the young of so many other animals in which the adult sexes differ widely; they likewise resemble the mature female much more closely than the mature male. The female, however, ultimately assumes certain distinctive characters, and in the formation of her skull is said to be intermediate between the child and the man.  

Again, as the young of closely

10 Eckor, translation in "Anthropological Review," Oct. 1888, pp. 531-556. The comparison of the form of the skull in men and women has been followed out with much care by Wolker.
allied though distinct species do not differ nearly so much from each other as do the adults, so it is with the children of the different races of man. Some have even maintained that race differences cannot be detected in the infantile skull. In regard to color, the newborn negro child is reddish nut-brown, which soon becomes slaty gray; the black color being fully developed within a year in the Soudan, but not until three years in Egypt. The eyes of the negro are at first blue, and the hair chestnut brown rather than black, being curled only at the ends. The children of the Australians immediately after birth are yellowish brown, and become dark at a later age. Those of the Guarany are white yellow, but they acquire in the course of a few weeks the yellowish brown tint of their parents. Similar observations have been made in other parts of America.  

I have specified the foregoing differences between the male and female sex in mankind, because they are curiously like those of the Quadruped. With these animals the female is mature at an earlier age than the male; at least this is certainly the case in the Cebus azarae. The males of most species are larger and stronger than the females, of which fact the gorilla affords a well-known instance. Even in so trifling a character as the greater prominence of the superciliary ridge, the males of certain monkeys differ from the females, and agree in this respect with mankind. In the gorilla and certain other monkeys, the cranium of the adult male presents a strongly marked

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7 Rengger, "Säugthiere," etc., 1830, s. 49.
8 As the Macacus cynomolgus (Desmarest, "Mammalogie," p. 65) and in Hylobates agilis (Geoffroy St.-Hilaire and F. Cuvier, "Hist. Nat. des Mamm.," 1824, tom. i. p. 2).
sexual selection in relation to man

... sagittal crest, which is absent in the female; and Boker found a trace of a similar difference between the two sexes in the Australians.* With monkeys, when there is any difference in the voice, that of the male is the more powerful.

We have seen that certain male monkeys have a well-developed beard, which is quite deficient or much less developed in the female. No instance is known of the beard, whiskers, or mustache being larger in the female than in the male monkey. Even in the color of the beard there is a curious parallelism between man and the Quadrumana, for with man, when the beard differs in color from the hair of the head, as is commonly the case, it is, I believe, almost always of a lighter tint, being often reddish. I have repeatedly observed this fact in England; but two gentlemen have lately written to me, saying that they form an exception to the rule. One of these gentlemen accounts for the fact by the wide difference in color of the hair on the paternal and maternal sides of his family. Both had been long aware of this peculiarity (one of them having often been accused of dyeing his beard), and had been thus led to observe other men, and were convinced that the exceptions were very rare. Dr. Hooker attended to this little point for me in Russia, and found no exception to the rule. In Calcutta, Mr. J. Scott, of the Botanic Gardens, was so kind as to observe the many races of men to be seen there, as well as in some other parts of India, namely, two races in Sikhim, the Bhotias, Hindus, Burmese and Chinese, most of which races have very little hair on the face; and he always found that when there was any difference in color between the hair of the head and the beard, the latter was invariably lighter. Now with monkeys, as has already been stated, the beard frequently differs strikingly in color from the hair of the head, and in such cases it is always of a lighter hue, being often pure white, sometimes yellow or reddish.**

** Mr. Blyth informs me that he has only seen one instance of the beard,
In regard to the general hairiness of the body, the women in all races are less hairy than the men; and in some few Quadrumana the under side of the body of the female is less hairy than that of the male. Lastly, male monkeys, like men, are bolder and fiercer than the females. They lead the troop, and when there is danger, come to the front. We thus see how close is the parallelism between the sexual differences of man and the Quadrumana. With some few species, however, as with certain baboons, the orang and the gorilla, there is a considerably greater difference between the sexes, as in the size of the canine teeth, in the development and color of the hair, and especially in the color of the naked parts of the skin, than in mankind.

All the secondary sexual characters of man are highly variable, even within the limits of the same race; and they differ much in the several races. These two rules hold good generally throughout the animal kingdom. In the excellent observations made on board the "Novara" the male Australians were found to exceed the females by only 65 millimetres in height, while with the Javans the average excess was 218 millimetres; so that in this latter race the difference in height between the sexes is more than thrice as great as with the Australians. Numerous measurements were carefully made of the stature, the circumference of the neck and chest, the length of the backbone and of the arms, in various races; and nearly all these measurements show

whiskers, etc., in a monkey becoming white with old age, as is so commonly the case with us. This, however, occurred in an aged Macacus cynomolgus kept in confinement, whose mustaches were "remarkably long and human like." Altogether this old monkey presented a ludicrous resemblance to one of the reigning monarchs of Europe, after whom he was universally nicknamed. In certain races of man the hair on the head hardly ever becomes gray; thus Mr. D. Forbes has never, as he informs me, seen an instance with the Aymaras and Quichuas of S. America.

11 This is the case with the females of several species of Hylobates; see Geoffrey St.-Hilaire and F. Cuvier, "Hist. Nat. des Mamm.," tom. i. See, also, on H. lar. "Penny Cyclopaedia," vol. ii, pp. 149, 150.

12 The results were deduced by Dr. Weisbach from the measurements made by Dr. E. Schenzer and Schwarz; see "Reise der Novara; Anthropolog. Teil," 1867, sa. 214, 231, 284, 298, 339, 269.
that the males differ much more from one another than do the females. This fact indicates that, as far as these characters are concerned, it is the male which has been chiefly modified, since the several races diverged from their common stock.

The development of the beard and the hairiness of the body differ remarkably in the men of distinct races, and even in different tribes or families of the same race. We Europeans see this among ourselves. In the Island of St. Kilda, according to Martin, the men do not acquire beards until the age of thirty or upward, and even then the beards are very thin. On the Euroepean-Asiatic continent, beards prevail until we pass beyond India; though with the natives of Ceylon they are often absent, as was noticed in ancient times by Diodorus. Eastward of India beards disappear, as with the Siamese, Malays, Kalmucks, Chinese and Japanese; nevertheless the Ainos, who inhabit the northernmost islands of the Japan Archipelago, are the hairiest men in the world. With negroes the beard is scanty or wanting, and they rarely have whiskers; in both sexes the body is frequently almost destitute of fine down. On the other hand, the Papuans of the Malay Archipelago, who are nearly as black as negroes, possess well-developed beards. In the Pacific Ocean the inhabitants of the Fiji Archipelago have large bushy beards, while those of the not distant archipelagoes of Tonga and Samoa are beardless; but these men belong to distinct races. In the Ellice group all the inhabitants belong to the same race; yet on one island alone, namely, Nunemaya, "the men have splen-
did beards"; while on the other islands "they have, as a rule, a dozen straggling hairs for a beard." 16

Throughout the great American continent the men may be said to be beardless; but in almost all the tribes a few short hairs are apt to appear on the face, especially in old age. With the tribes of North America, Catlin estimates that eighteen out of twenty men are completely destitute by nature of a beard; but occasionally there may be seen a man, who has neglected to pluck out the hairs at puberty, with a soft beard an inch or two in length. The Guaranys of Paraguay differ from all the surrounding tribes in having a small beard, and even some hair on the body, but no whiskers. 17 I am informed by Mr. D. Forbes, who particularly attended to this point, that the Aymaras and Quichuas of the Cordillera are remarkably hairless, yet in old age a few straggling hairs occasionally appear on the chin. The men of these two tribes have very little hair on the various parts of the body where hair grows abundantly in Europeans, and the women have none on the corresponding parts. The hair on the head, however, attains an extraordinary length in both sexes, often reaching almost to the ground; and this is likewise the case with some of the North American tribes. In the amount of hair, and in the general shape of the body, the sexes of the American aborigines do not differ so much from each other as in most other races. 18 This fact is analogous with what occurs with some closely allied monkeys; thus the sexes of the chimpanzee are not as different as those of the orang or gorilla. 19

In the previous chapters we have seen that with mam-

18 Prof. and Mrs. Agassez ("Journey in Brazil," p. 530) remark that the sexes of the American Indians differ less than those of the negroes and of the higher races. See, also, Rengger, ibid., p. 3, on the Guaranys.
19 Rütmeeyer, "Die Grenzen der Thierwelt; eine Betrachtung zu Darwin's Lehre," 1869, s. 54.
mals, birds, fishes, insects, etc., many characters, which there is every reason to believe were primarily gained through sexual selection by one sex, have been transferred to the other. As this same form of transmission has apparently prevailed much with mankind, it will save useless repetition if we discuss the origin of characters peculiar to the male sex together with certain other characters common to both sexes.

Law of Battle.—With savages, for instance the Australians, the women are the constant cause of war both between members of the same tribe and between distinct tribes. So no doubt it was in ancient times; "nam fuit ante Helenam mulier tetrrima belli causa." With some of the North American Indians, the contest is reduced to a system. That excellent observer, Hearne, says: "It has ever been the custom among these people for the men to wrestle for any woman to whom they are attached; and, of course, the strongest party always carries off the prize. A weak man, unless he be a good hunter, and well beloved, is seldom permitted to keep a wife that a stronger man thinks worth his notice. This custom prevails throughout all the tribes, and causes a great spirit of emulation among their youth, who are upon all occasions, from their childhood, trying their strength and skill in wrestling." With the Guanas of South America, Azara states that the men rarely marry till twenty years old or more, as before that age they cannot conquer their rivals.

Other similar facts could be given; but even if we had no evidence on this head, we might feel almost sure from the analogy of the higher Quadrumanas, that the law of battle had prevailed with man during the early stages of

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10 On the fighting of the male gorillas, see Dr. Savage, in "Boston Journal of Nat. Hist.," vol. v., 1847, p. 423. On Proebys entelus, see the "Indian Field," 1859, p. 146.
his development. The occasional appearance at the present day of canine teeth which project above the others, with traces of a diastema or open space for the reception of the opposite canines, is in all probability a case of reversion to a former state, when the progenitors of man were provided with these weapons, like so many existing male Quadruped. It was remarked in a former chapter that as man gradually became erect, and continually used his hands and arms for fighting with sticks and stones, as well as for the other purposes of life, he would have used his jaws and teeth less and less. The jaws, together with their muscles, would then have been reduced through disuse, as would the teeth through the not well understood principles of correlation and economy of growth; for we everywhere see that parts which are no longer of service are reduced in size. By such steps the original inequality between the jaws and teeth in the two sexes of mankind would ultimately have been obliterated. The case is almost parallel with that of many male Ruminants in which the canine teeth have been reduced to mere rudiments or have disappeared, apparently in consequence of the development of horns. As the prodigious difference between the skulls of the two sexes in the orang and gorilla stands in close relation with the development of the immense canine teeth in the males, we may infer that the reduction of the jaws and teeth in the early male progenitors of man must have led to a most striking and favorable change in his appearance.

There can be little doubt that the greater size and strength of man, in comparison with woman, together with his broader shoulders, more developed muscles, rugged outline of body, his greater courage and pugnacity, are all due in chief part to inheritance from his half-human male ancestors. These characters would, however, have been preserved or even augmented during the long ages of man's savagery, by the success of the strongest and boldest men, both in the general struggle for life and in their contests for wives; a success which would have insured their leaving a more
numerous progeny than their less favored brethren. It is not probable that the greater strength of man was primarily acquired through the inherited effects of his having worked harder than woman for his own subsistence and that of his family; for the women in all barbarous nations are compelled to work at least as hard as the men. With civilized people the arbitrament of battle for the possession of the women has long ceased; on the other hand, the men, as a general rule, have to work harder than the women for their joint subsistence, and thus their greater strength will have been kept up.

Differences in the Mental Powers of the Two Sexes.—With respect to differences of this nature between man and woman, it is probable that sexual selection has played a highly important part. I am aware that some writers doubt whether there is any such inherent difference; but this is at least probable from the analogy of the lower animals which present other secondary sexual characters. No one disputes that the bull differs in disposition from the cow, the wild boar from the sow, the stallion from the mare, and, as is well known to the keepers of menageries, the males of the larger apes from the females. Woman seems to differ from man in mental disposition, chiefly in her greater tenderness and less selfishness; and this holds good even with savages, as shown by a well-known passage in Mungo Park's Travels, and by statements made by many other travellers. Woman, owing to her maternal instincts, displays these qualities toward her infants in an eminent degree; therefore it is likely that she would often extend them toward her fellow-creatures. Man is the rival of other men; he delights in competition, and this leads to ambition which passes too easily into selfishness. These latter qualities seem to be his natural and unfortunate birthright. It is generally admitted that with woman the powers of intuition, of rapid perception, and perhaps of imitation, are more strongly marked than in man; but some, at least, of these faculties are char-
acteristic of the lower races, and therefore of a past and lower state of civilization.

The chief distinction in the intellectual powers of the two sexes is shown by man's attaining to a higher eminence, in whatever he takes up, than can woman—whether requiring deep thought, reason, or imagination, or merely the use of the senses and hands. If two lists were made of the most eminent men and women in poetry, painting, sculpture, music (inclusive both of composition and performance), history, science, and philosophy, with half a dozen names under each subject, the two lists would not bear comparison. We may also infer, from the law of the deviation from averages, so well illustrated by Mr. Galton, in his work on "Hereditary Genius," that if men are capable of a decided pre-eminence over women in many subjects, the average of mental power in man must be above that of woman.

Among the half-human progenitors of man and among savages there have been struggles between the males during many generations for the possession of the females. But mere bodily strength and size would do little for victory, unless associated with courage, perseverance, and determined energy. With social animals, the young males have to pass through many a contest before they win a female, and the older males have to retain their females by renewed battles. They have, also, in the case of mankind, to defend their females, as well as their young, from enemies of all kinds, and to hunt for their joint subsistence. But to avoid enemies, or to attack them with success, to capture wild animals, and to fashion weapons, requires the aid of the higher mental faculties, namely, observation, reason, invention, or imagination. These various faculties will thus have been continually put to the test and selected during manhood; they will, moreover, have been strengthened by use during this same period of life. Consequently, in accordance with the principle often alluded to, we might expect that they would at least tend to be transmitted chiefly to the male offspring at the corresponding period of manhood.
Now, when two men are put into competition, or a man with a woman, both possessed of every mental quality in equal perfection, save that one has higher energy, perseverance, and courage, the latter will generally become more eminent in every pursuit, and will gain the ascendency. He may be said to possess genius—for genius has been declared by a great authority to be patience; and patience, in this sense, means unflinching, undaunted perseverance. But this view of genius is perhaps deficient; for without the higher powers of the imagination and reason, no eminent success can be gained in many subjects. These latter faculties, as well as the former, will have been developed in man, partly through sexual selection—that is, through the contest of rival males, and partly through natural selection—that is, from success in the general struggle for life; and as in both cases the struggle will have been during maturity, the characters gained will have been transmitted more fully to the male than to the female offspring. It accords in a striking manner with this view of the modification and reinforcement of many of our mental faculties by sexual selection, that, first, they notoriously undergo a considerable change at puberty, and, secondly, that eunuchs remain throughout life inferior in these same qualities. Thus man has ultimately become superior to woman. It is, indeed, fortunate that the law of the equal transmission of characters to both sexes prevails with mammals; otherwise it is probable that man would have become as superior in mental endowment to woman, as the peacock is in ornamental plumage to the peahen.

It must be borne in mind that the tendency in characters acquired by either sex late in life, to be transmitted to the same sex at the same age, and of early acquired characters

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84 J. Stuart Mill remarks ("The Subjection of Women," 1869, p. 123). "The things in which man most excels woman are those which require most plodding and long hammering at single thoughts." What is this but energy and perseverance?

to be transmitted to both sexes, are rules which, though
genial, do not always hold. If they always held good,
we might conclude (but I here exceed my proper bounds)
that the inherited effects of the early education of boys and
girls would be transmitted equally to both sexes; so that
the present inequality in mental power between the sexes
would not be effaced by a similar course of early training;
nor can it have been caused by their dissimilar early train-
ing. In order that woman should reach the same standard
as man, she ought, when nearly adult, to be trained to
energy and perseverance, and to have her reason and im-
agination exercised to the highest point; and then she would
probably transmit these qualities chiefly to her adult daugh-
ters. All women, however, could not be thus raised, unless
during many generations those who excelled in the above
robust virtues were married, and produced offspring in
larger numbers than other women. As before remarked
of bodily strength, although men do not now fight for
their wives, and this form of selection has passed away,
yet, during manhood, they generally undergo a severe
struggle in order to maintain themselves and their fami-
lies; and this will tend to keep up or even increase their
mental powers, and, as a consequence, the present inequal-
ity between the sexes.  

Voice and Musical Powers.—In some species of Quadru-
mana there is a great difference between the adult sexes,
in the power of their voices and in the development of the
vocal organs; and man appears to have inherited this dif-
fERENCE FROM HIS EARLY PROGENITORS. His vocal cords are
about one-third longer than in woman, or than in boys;

An observation by Vogt bears on this subject; he says, "It is a remark-
able circumstance that the difference between the sexes, as regards the cranial
cavity, increases with the development of the race, so that the male European
exceeds much more the female than the negro the negro. Walcker confirms
this statement of Huxley from his measurements of negro and German
skulls." But Vogt admits ("Lectures on Man," Eng. translat., 1864, p. 82)
that more observations are requisite on this point.
and emasculation produces the same effect on him as on
the lower animals, for it "arrests that prominent growth
of the thyroid, etc., which accompanies the elongation of
the cords." With respect to the cause of this difference
between the sexes, I have nothing to add to the remarks in
the last chapter on the probable effects of the long-continued
use of the vocal organs by the male under the excitement of
love, rage, and jealousy. According to Sir Duncan Gibb, the
voice and the form of the larynx differ in the different
races of mankind; but with the Tartars, Chinese, etc., the
voice of the male is said not to differ so much from that
of the female as in most other races.

The capacity and love for singing or music, though not
a sexual character in man, must not here be passed over.
Although the sounds emitted by animals of all kinds serve
many purposes, a strong case can be made out that the vocal
organs were primarily used and perfected in relation to the
propagation of the species. Insects and some few spiders
are the lowest animals which voluntarily produce any sound;
and this is generally effected by the aid of beautifully con-
structed stridulating organs, which are often confined to
the males. The sounds thus produced consist, I believe
in all cases, of the same note, repeated rhythmically; and
this is sometimes pleasing even to the ears of man. The
chief and, in some cases, exclusive purpose appears to be
either to call or charm the opposite sex.

The sounds produced by fishes are said in some cases
to be made only by the males during the breeding season.
All the air-breathing Vertebrata necessarily possess an ap-
paratus for inhaling and expelling air, with a pipe capable
of being closed at one end. Hence when the primeval
members of this class were strongly excited and their
muscles violently contracted, purposeless sounds would

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almost certainly have been produced; and these, if they proved in any way serviceable, might readily have been modified or intensified by the preservation of properly adapted variations. The lowest Vertebrates which breathe air are Amphibians; and of these, frogs and toads possess vocal organs, which are incessantly used during the breeding season, and which are often more highly developed in the male than in the female. The male alone of the tortoise utters a noise, and this only during the season of love. Male alligators roar or bellow during the same season. Every one knows how much birds use their vocal organs as a means of courtship; and some species likewise perform what may be called instrumental music.

In the class of Mammals with which we are here more particularly concerned, the males of almost all the species use their voices during the breeding season much more than at any other time; and some are absolutely mute excepting at this season. With other species both sexes, or only the females, use their voices as a love-call. Considering these facts, and that the vocal organs of some quadrupeds are much more largely developed in the male than in the female, either permanently or temporarily, during the breeding season; and considering that in most of the lower classes the sounds produced by the males serve not only to call but to excite or allure the female, it is a surprising fact that we have not as yet any good evidence that these organs are used by male mammals to charm the females. The American Mycetes caraya perhaps forms an exception, as does the Hylobates agilis, an ape allied to man. This gibbon has an extremely loud but musical voice. Mr. Waterhouse states:"

"It appeared to me that in ascending and descending the scale, the intervals were always exactly half tones; and I am sure that the highest note was the exact octave to the lowest. The quality of the notes is very musical; and I do

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not doubt that a good violinist would be able to give a correct idea of the gibbon’s composition, excepting as regards its loudness.” Mr. Waterhouse then gives the notes. Prof. Owen, who is a musician, confirms the foregoing statement, and remarks, though erroneously, that this gibbon “alone of brute mammals may be said to sing.” It appears to be much excited after its performance. Unfortunately, its habits have never been closely observed in a state of nature; but, from the analogy of other animals, it is probable that it uses its musical powers more especially during the season of courtship.

This gibbon is not the only species in the genus which sings, for my son, Francis Darwin, attentively listened in the Zoological Gardens to H. leuciscus while singing a cadence of three notes, in true musical intervals, and with a clear musical tone. It is a more surprising fact that certain rodents utter musical sounds. Singing mice have often been mentioned and exhibited, but imposture has commonly been suspected. We have, however, at last a clear account by a well-known observer, the Rev. S. Lockwood, of the musical powers of an American species, the Hesperomys cognatus, belonging to a genus distinct from that of the English mouse. This little animal was kept in confinement, and the performance was repeatedly heard. In one of the two chief songs, “the last bar would frequently be prolonged to two or three; and she would sometimes change from C sharp and D, to C natural and D, then warble on these two notes a while, and wind up with a quick chirp on C sharp and D. The distinctness between the semitones was very marked, and easily appreciable to a good ear.” Mr. Lockwood gives both songs in musical notation; and adds that though this little mouse “had no ear for time, yet she would keep to the key of B (two flats) and strictly in a major key... Her soft clear voice falls an octave with all the precision possible; then, at

the wind up, it rises again into a very quick trill on C sharp and D."

A critic has asked how the ears of man, and he ought to have added of other animals, could have been adapted by selection so as to distinguish musical notes. But this question shows some confusion on the subject; a noise is the sensation resulting from the coexistence of several atrial "simple vibrations" of various periods, each of which intermits so frequently that its separate existence cannot be perceived. It is only in the want of continuity of such vibrations, and in their want of harmony inter se, that a noise differs from a musical note. Thus an ear to be capable of discriminating noises—and the high importance of this power to all animals is admitted by every one—must be sensitive to musical notes. We have evidence of this capacity even low down in the animal scale; thus Crustaceans are provided with auditory hairs of different lengths, which have been seen to vibrate when the proper musical notes are struck." As stated in a previous chapter, similar observations have been made on the hairs of the antennae of gnats. It has been positively asserted by good observers that spiders are attracted by music. It is also well known that some dogs howl when hearing particular tones." Seals apparently appreciate music, and their fondness for it "was well known to the ancients, and is often taken advantage of by the hunters of the present day." "

Therefore, as far as the mere perception of musical notes is concerned, there seems no special difficulty in the case of man or of any other animal. Helmholtz has explained, on physiological principles, why concords are agreeable and discords disagreeable to the human ear; but we are little

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* Several accounts have been published to this effect. Mr. Peach writes to me that he has repeatedly found that an old dog of his howls when B flat is sounded on the flute, and to no other note. I may add another instance of a dog always whining, when one note on a concertina, which was out of tune, was played.
concerned with these, as music in harmony is a late invention. We are more concerned with melody, and here again, according to Helmholtz, it is intelligible why the notes of our musical scale are used. The ear analyzes all sounds into their component "simple vibrations," although we are not conscious of this analysis. In a musical note the lowest in pitch of these is generally predominant, and the others which are less marked are the octave, the twelfth, the second octave, etc., all harmonies of the fundamental predominant note; any two notes of our scale have many of these harmonic over-tones in common. It seems pretty clear, then, that if an animal always wished to sing precisely the same song, he would guide himself by sounding those notes in succession which possess many over-tones in common—that is, he would choose for his song notes which belong to our musical scale.

But if it be further asked why musical tones in a certain order and rhythm give man and other animals pleasure, we can no more give the reason than for the pleasantness of certain tastes and smells. That they do give pleasure of some kind to animals we may infer from their being produced during the season of courtship by many insects, spiders, fishes, amphibians, and birds; for, unless the females were able to appreciate such sounds and were excited or charmed by them, the persevering efforts of the males, and the complex structures often possessed by them alone, would be useless; and this it is impossible to believe.

Human song is generally admitted to be the basis or origin of instrumental music. As neither the enjoyment nor the capacity of producing musical notes are faculties of the least use to man in reference to his daily habits of life, they must be ranked among the most mysterious with which he is endowed. They are present, though in a very rude condition, in men of all races, even the most savage; but so different is the taste of the several races, that our music gives no pleasure to savages, and their music is to us in most cases hideous and unmeaning. Dr. Seemann, in some interesting
remarks on this subject, * "doubts whether, even among the nations of Western Europe, intimately connected as they are by close and frequent intercourse, the music of the one is interpreted in the same sense by the others. By travelling eastward we find that there is certainly a different language of music. Songs of joy and dance accompaniments are no longer, as with us, in the major keys, but always in the minor." Whether or not the half-human progenitors of man possessed, like the singing gibbons, the capacity of producing, and therefore no doubt of appreciating, musical notes, we know that man possessed these faculties at a very remote period. M. Lartet has described two flutes, made out of the bones and horns of the reindeer, found in caves together with flint tools and the remains of extinct animals. The arts of singing and of dancing are also very ancient, and are now practiced by all or nearly all the lowest races of man. Poetry, which may be considered as the offspring of song, is likewise so ancient that many persons have felt astonished that it should have arisen during the earliest ages of which we have any record.

We see that the musical faculties, which are not wholly deficient in any race, are capable of prompt and high development, for Hottentots and Negroes have become excellent musicians, although in their native countries they rarely practice anything that we should consider music. Schwein- furth, however, was pleased with some of the simple melodies which he heard in the interior of Africa. But there is nothing anomalous in the musical faculties lying dormant in man; some species of birds which never naturally sing can, without much difficulty, be taught to do so; thus a house sparrow has learned the song of a linnet. As these two species are closely allied, and belong to the order of Insessores, which includes nearly all the singing birds in the world, it is possible that a progenitor of the sparrow

may have been a songster. It is more remarkable that parrots, belonging to a group distinct from the Insessores, and having differently constructed vocal organs, can be taught not only to speak, but to pipe or whistle tunes invented by man, so that they must have some musical capacity. Nevertheless it would be very rash to assume that parrots are descended from some ancient form which was a songster. Many cases could be advanced of organs and instincts originally adapted for one purpose having been utilized for some distinct purpose. Hence the capacity for high musical development, which the savage races of man possess, may be due either to the practice by our semi-human progenitors of some rude form of music, or simply to their having acquired the proper vocal organs for a different purpose. But in this latter case we must assume, as in the above instance of parrots, and as seems to occur with many animals, that they already possessed some sense of melody.

Music arouses in us various emotions, but not the more terrible ones of horror, fear, rage, etc. It awakens the gentler feelings of tenderness and love, which readily pass into devotion. In the Chinese annals it is said: “Music hath the power of making heaven descend upon earth.” It likewise stirs up in us the sense of triumph and the glorious ardor for war. These powerful and mingled feelings may well give rise to the sense of sublimity. We can concentrate, as Dr. Seemann observes, greater intensity of feeling in a single musical note than in pages of writing. It is probable that nearly the same emotions, but much weaker and far less complex, are felt by birds when the male pours forth his full volume of song, in rivalry with other males.

Since this chapter was printed, I have seen a valuable article by Mr. Chauncey Wright (“North American Review,” Oct. 1870, page 293), who, in discussing the above subject, remarks, “There are many consequences of the ultimate laws or uniformities of nature, through which the acquisition of one useful power will bring with it many resulting advantages as well as limiting disadvantages, actual or possible, which the principle of utility may not have comprehended in its action.” As I have attempted to show in an early chapter of this work, this principle has an important bearing on the acquisition by man of some of his mental characteristics.
to captivate the female. Love is still the commonest theme of our songs. As Herbert Spencer remarks, "music arouses dormant sentiments of which we had not conceived the possibility, and do not know the meaning; or, as Bichler says, tells us of things we have not seen and shall not see." Conversely, when vivid emotions are felt and expressed by the orator, or even in common speech, musical cadences and rhythm are instinctively used. The negro in Africa when excited often bursts forth in song; "another will reply in song, while the company, as if touched by a musical wave, murmur a chorus in perfect unison." Even monkeys express strong feelings in different tones—anger and impatience by low—fear and pain by high notes. The sensations and ideas thus excited in us by music, or expressed by the cadences of oratory, appear from their vagueness, yet depth, like mental reversions to the emotions and thoughts of a long-past age.

All these facts with respect to music and impassioned speech become intelligible to a certain extent, if we may assume that musical tones and rhythm were used by our half-human ancestors during the season of courtship, when animals of all kinds are excited not only by love, but by the strong passions of jealousy, rivalry, and triumph. From the deeply-laid principle of inherited associations, musical tones in the case would be likely to call up vaguely and indefinitely the strong emotions of a long-past age. As we have every reason to suppose that articulate speech is one of the latest, as it certainly is the highest, of the arts acquired by man, and as the instinctive power of producing musical notes and rhythms is developed low down in the animal series, it would be altogether opposed to the principle of evolution if we were to admit that man's musical capacity has been developed from the tones used in impassioned speech. We must suppose that the rhythms and

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cadences of oratory are derived from previously developed musical powers." We can thus understand how it is that music, dancing, song, and poetry are such very ancient arts. We may go even further than this, and, as remarked in a former chapter, believe that musical sounds afforded one of the bases for the development of language."

As the males of several quadrumanous animals have their vocal organs much more developed than in the females, and as a gibbon, one of the anthropomorphous apes, pours forth a whole octave of musical notes, and may be said to sing, it appears probable that the progenitors of man, either the males or females or both sexes, before acquiring the power of expressing their mutual love in articulate language, endeavored to charm each other with musical notes and rhythm. So little is known about the use of the voice by the Quadrumana during the season of love, that we have no means of judging whether the habit of singing was first acquired by our male or female ancestors. Women are generally thought to possess sweeter voices than men, and as far as this serves as any guide, we may infer that they first acquired musical powers in order to attract the other sex."

But if so, this must have occurred long ago,

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39 See the very interesting discussion on the "Origin and Function of Music," by Mr. Herbert Spencer, in his collected "Essays," 1868, p. 369. Mr. Spencer comes to an exactly opposite conclusion to that at which I have arrived. He concludes, as did Diderot formerly, that the cadences used in emotional speech afford the foundation from which music has been developed; while I conclude that musical notes and rhythm were first acquired by the male or female progenitors of mankind for the sake of charming the opposite sex. Thus musical tones became firmly associated with some of the strongest passions an animal is capable of feeling, and are consequently used instinctively, or through association, when strong emotions are expressed in speech. Mr. Spencer does not offer any satisfactory explanation, nor can I, why high or deep notes should be expressive, both with man and the lower animals, of certain emotions. Mr. Spencer gives also an interesting discussion on the relations between poetry, recitative, and song.

40 I find in Lord Monboddo's "Origin of Language," vol. i., 1774, p. 469, that Dr. Blacklock likewise thought "that the first language among men was music, and that before our ideas were expressed by articulate sounds, they were communicated by tones, varied according to different degrees of gravity and acuteness."

41 See an interesting discussion on this subject by Häckel, "Generelle Morph.," B. ii., 1886, s. 246.
before our ancestors had become sufficiently human to treat and value their women merely as useful slaves. The impassioned orator, bard, or musician, when with his varied tones and cadences he excites the strongest emotions in his hearers, little suspects that he uses the same means by which his half-human ancestors long ago aroused each other's ardent passions during their courtship and rivalry.

The Influence of Beauty in Determining the Marriages of Mankind.—In civilized life man is largely, but by no means exclusively, influenced in the choice of his wife by external appearance; but we are chiefly concerned with primeval times, and our only means of forming a judgment on this subject is to study the habits of existing semi-civilized and savage nations. If it can be shown that the men of different races prefer women having various characteristics, or conversely with the women, we have then to inquire whether such choice, continued during many generations, would produce any sensible effect on the race, either on one sex or both, according to the form of inheritance which has prevailed.

It will be well first to show in some detail that savages pay the greatest attention to their personal appearance.\footnote{A full and excellent account of the manner in which savages in all parts of the world ornament themselves, is given by the Italian traveller, Prof. Nantesa in "Rio de la Plata, Viaggio e Studi," 1867, pp. 525–545; all the following statements, when other references are not given, are taken from this work. See, also, Waits, "Introduction to Anthropology," Eng. transl., vol. 1, 1863, p. 276, et passim. Lawrence also gives very full details in his "Lectures on Physiology," 1822. Since this chapter was written Sir J. Lubbock has published his "Origin of Civilization," 1870, in which there is an interesting chapter on the present subject, and from which (pp. 42, 48) I have taken some facts about savages dying their teeth and hair, and piercing their teeth.} That they have a passion for ornament is notorious; and an English philosopher goes so far as to maintain that clothes were first made for ornament and not for warmth. As Prof. Waits remarks, "however poor and miserable man is, he finds a pleasure in adorning himself." The extravagance of the naked Indians of South America in decorating
themselves is shown "by a man of large stature gaining with difficulty enough by the labor of a fortnight to procure in exchange the chico necessary to paint himself red." "The ancient barbarians of Europe during the Reindeer period brought to their caves any brilliant or singular objects which they happened to find. Savages at the present day everywhere deck themselves with plumes, necklaces, armlets, earrings, etc. They paint themselves in the most diversified manner. "If painted nations," as Humboldt observes, "had been examined with the same attention as clothed nations, it would have been perceived that the most fertile imagination and the most mutable caprice have created the fashions of painting, as well as those of garments."

In one part of Africa the eyelids are colored black; in another the nails are colored yellow or purple. In many places the hair is dyed of various tints. In different countries the teeth are stained black, red, blue, etc., and in the Malay Archipelago it is thought shameful to have white teeth "like those of a dog." Not one great country can be named, from the Polar regions in the north to New Zealand in the south, in which the aborigines do not tattoo themselves. This practice was followed by the Jews of old, and by the ancient Britons. In Africa some of the natives tattoo themselves, but it is a much more common practice to raise protuberances by rubbing salt into incisions made in various parts of the body; and these are considered by the inhabitants of Kordofan and Darfur "to be great personal attractions." In the Arab countries no beauty can be perfect until the cheeks "or temples have been gashed." "In South America, as Humboldt remarks, "a mother would be accused of culpable indifference toward her children, if she did not employ artificial means to shape the calf of the

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43 Humboldt, "Personal Narrative," Eng. transl., vol. iv. p. 518; on the imagination shown in painting the body, p. 522; on modifying the form of the calf of the leg, p. 466.

leg after the fashion of the country." In the Old and New Worlds the shape of the skull was formerly modified during infancy in the most extraordinary manner, as is still the case in many places, and such deformities are considered ornamental. For instance, the savages of Colombia 44 deem a much flattened head "an essential point of beauty."

The hair is treated with especial care in various countries; it is allowed to grow to full length, so as to reach to the ground, or is combed into "a compact frizzled mop, which is the Papuan's pride and glory." 45 In Northern Africa "a man requires a period of from eight to ten years to perfect his coiffure." With other nations the head is shaved, and in parts of South America and Africa even the eyebrows and eyelashes are eradicated. The natives of the Upper Nile knock out the four front teeth, saying that they do not wish to resemble brutes. Further south, the Batokas knock out only the two upper incisors, which, as Livingstone 46 remarks, gives the face a hideous appearance, owing to the prominence of the lower jaw; but these people think the presence of the incisors most unsightly, and on beholding some Europeans, cried out, "Look at the great teeth!" The chief Sebituani tried in vain to alter this fashion. In various parts of Africa and in the Malay Archipelago the natives file the incisors into points like those of a saw, or pierce them with holes, into which they insert studs.

As the face with us is chiefly admired for its beauty, so with savages it is the chief seat of mutilation. In all quarters of the world the septum, and, more rarely, the wings of the nose are pierced; rings, sticks, feathers, and other ornaments being inserted into the holes. The ears are everywhere pierced and similarly ornamented, and with

the Botoceudos and Lenguas of South America the hole is gradually so much enlarged that the lower edge touches the shoulder. In North and South America and in Africa either the upper or lower lip is pierced; and with the Botoceudos the hole in the lower lip is so large that a disk of wood, four inches in diameter, is placed in it. Mantegazza gives a curious account of the shame felt by a South American native, and of the ridicule which he excited, when he sold his tembeta—the large colored piece of wood which is passed through the hole. In Central Africa the women perforate the lower lip and wear a crystal, which, from the movement of the tongue, has "a wriggling motion, indescribably ludicrous during conversation." The wife of the chief of Latooka told Sir S. Baker** that Lady Baker "would be much improved if she would extract her four front teeth from the lower jaw, and wear the long-pointed, polished crystal in her under lip." Further south with the Makalolo, the upper lip is perforated, and a large metal and bamboo ring, called a peiélé, is worn in the hole. "This caused the lip in one case to project two inches beyond the tip of the nose; and when the lady smiled the contraction of the muscles elevated it over the eyes. 'Why do the women wear these things?' the venerable chief, Chinsurdi, was asked. Evidently surprised at such a stupid question, he replied, 'For beauty! They are the only beautiful things women have; men have beards, women have none. What kind of a person would she be without the peiélé? She would not be a woman at all with a mouth like a man, but no beard.'"

Hardly any part of the body which can be unnaturally modified has escaped. The amount of suffering thus caused must have been extreme, for many of the operations require several years for their completion, so that the idea of their necessity must be imperative. The motives are various; the

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men paint their bodies to make themselves appear terrible in battle; certain mutilations are connected with religious rites, or they mark the age of puberty, or the rank of the man, or they serve to distinguish the tribes. Among savages the same fashions prevail for long periods," and thus mutilations, from whatever cause first made, soon come to be valued as distinctive marks. But self-adornment, vanity, and the admiration of others seem to be the commonest motives. In regard to tattooing, I was told by the missionaries in New Zealand, that when they tried to persuade some girls to give up the practice, they answered, "We must just have a few lines on our lips; else when we grow old we shall be so very ugly." With the men of New Zealand, a most capable judge says, "to have fine tattooed faces was the great ambition of the young, both to render themselves attractive to the ladies, and conspicuous in war." A star tattooed on the forehead and a spot on the chin are thought by the women in one part of Africa to be irresistible attractions." In most, but not all, parts of the world the men are more ornamental than the women, and often in a different manner; sometimes, though rarely, the women are hardly at all ornamented. As the women are made by savages to perform the greatest share of the work, and as they are not allowed to eat the best kinds of food, so it accords with the characteristic selfishness of man that they should not be allowed to obtain or use the finest ornaments. Lastly, it is a remarkable fact, as proved by the foregoing quotations, that the same fashions in modifying the shape of the head, in ornamenting the hair, in painting, tattooing, in perforating the nose, lips, or ears, in removing or filing the teeth, etc., now prevail, and have long prevailed, in the most distant quarters of the world. It is extremely improbable that

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Rev. R. Taylor, "New Zealand and its Inhabitants," 1855, p. 152

Mantegazza, "Viaggi e Studi," p. 542.
these practices, followed by so many distinct nations, should be due to tradition from any common source. They indicate the close similarity of the mind of man, to whatever race he may belong, just as do the almost universal habits of dancing, masquerading, and making rude pictures.

Having made these preliminary remarks on the admiration felt by savages for various ornaments, and for deformities most unsightly in our eyes, let us see how far the men are attracted by the appearance of their women, and what are their ideas of beauty. I have heard it maintained that savages are quite indifferent about the beauty of their women, valuing them solely as slaves; it may therefore be well to observe that this conclusion does not at all agree with the care which the women take in ornamenting themselves, or with their vanity. Burchell gives an amusing account of a Bushwoman who used as much grease, red ochre, and shining powder "as would have ruined any but a very rich husband." She displayed also "much vanity and too evident a consciousness of her superiority."

Mr. Winwood Reade informs me that the negroes of the West Coast often discuss the beauty of their women. Some competent observers have attributed the fearfully common practice of infanticide partly to the desire felt by the women to retain their good looks. In several regions the women wear charms and use love philtres to gain the affections of the men; and Mr. Brown enumerates four plants used for this purpose by the women of Northwestern America."

Hearne, an excellent observer, who lived many years with the American Indians, says, in speaking of the women, "Ask a Northern Indian what is beauty, and he will answer: A broad, flat face; small eyes, high cheek-bones, three or

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24 On the vegetable productions used by the Northwestern American Indians, "Pharmaceutical Journal," vol. x.
four broad, black lines across each cheek; a low forehead, a large, broad chin; a clumsy hook nose, a tawny hide, and breasts hanging down to the belt." Pallas, who visited the northern parts of the Chinese empire, says "those women are preferred who have the Mandschû form; that is to say, a broad face, high cheek-bones, very broad noses, and enormous ears;" and Vogt remarks that the obliquity of the eye, which is proper to the Chinese and Japanese, is exaggerated in their pictures for the purpose, as it "seems, of exhibiting its beauty, as contrasted with the eye of the red-haired barbarians." It is well known, as Huc repeatedly remarks, that the Chinese of the interior think Europeans hideous, with their white skins and prominent noses. The nose is far from being too prominent, according to our ideas, in the natives of Ceylon; yet "the Chinese in the seventh century, accustomed to the flat features of the Mongol races, were surprised at the prominent noses of the Cingalese; and Thang described them as having 'the beak of a bird, with the body of a man.'"

Finlayson, after minutely describing the people of Cochin China, says that their rounded heads and faces are their chief characteristics; and, he adds, "the roundness of the whole countenance is more striking in the women, who are reckoned beautiful in proportion as they display this form of face." The Siamese have small noses with divergent nostrils, a wide mouth, rather thick lips, a remarkably large face, with very high and broad cheek-bones. It is, therefore, not wonderful that "beauty, according to our notion, is a stranger to them. Yet they consider their own females to be much more beautiful than those of Europe.""

It is well known that with many Hottentot women the posterior part of the body projects in a wonderful manner;

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they are steatopygous; and Sir Andrew Smith is certain that this peculiarity is greatly admired by the men.** He once saw a woman who was considered a beauty, and she was so immensely developed behind, that when seated on level ground she could not rise, and had to push herself along until she came to a slope. Some of the women in various negro tribes have the same peculiarity; and, according to Burton, the Somal men "are said to choose their wives by ranging them in a line, and by picking her out who projects furthest a tergo. Nothing can be more hateful to a negro than the opposite form."**

With respect to color, the negroes rallyed Mungo Park on the whiteness of his skin and the prominence of his nose, both of which they considered as "unsightly and unnatural conformations." He in return praised the glossy jet of their skins and the lovely depression of their noses; this, they said, was "honey mouth," nevertheless they gave him food. The African Moors also "knitted their brows and seemed to shudder" at the whiteness of his skin. On the eastern coast, the negro boys, when they saw Burton, cried out, "Look at the white man; does he not look like a white ape?" On the western coast, as Mr. Winwood Reade informs me, the negroes admire a very black skin more than one of a lighter tint. But their horror of whiteness may be attributed, according to this same traveller, partly to the belief held by most negroes, that demons and spirits are white, and partly to their thinking it a sign of ill health.

The Banyai of the more southern part of the continent are negroes, but "a great many of them are of a light coffee-and-milk color, and, indeed, this color is considered handsome throughout the whole country"; so that here we have

** Idem illustriissimus visror dixit mihi praecinctorum vel tabulam hanc num, quod nobis tertium est, quondam per magna est simile ab hominibus in his gentes. Nunc res mutata est, et consentiunt tandem conformationem minime opti- dnam esse.

a different standard of taste. With the Kaffirs, who differ much from negroes, "the skin, except among the tribes near Delagoa Bay, is not usually black, the prevailing color being a mixture of black and red, the most common shade being chocolate. Dark complexions, as being most common, are naturally held in the highest esteem. To be told that he is light colored, or like a white man, would be deemed a very poor compliment by a Kaffir. I have heard of one unfortunate man who was so very fair that no girl would marry him." One of the titles of the Zulu king is "You who are black." Mr. Galton, in speaking to me about the natives of South Africa, remarked that their ideas of beauty seem very different from ours; for in one tribe two slim, slight, and pretty girls were not admired by the natives.

Turning to other quarters of the world: In Java, a yellow, not a white, girl is considered, according to Madame Pfeiffer, a beauty. A man of Cochin China "spoke with contempt of the wife of the English Ambassador, that she had white teeth like a dog, and a rosy color like that of potato flowers." We have seen that the Chinese dislike our white skin, and that the North Americans admire "a tawny hide." In South America, the Yuracaras, who inhabit the wooded, damp slopes of the eastern Cordillera, are remarkably pale colored, as their name in their own language expresses; nevertheless they consider European women as very inferior to their own."  

In several of the tribes of North America the hair on the head grows to a wonderful length; and Catlin gives a curious proof how much this is esteemed, for the chief of the Crows was elected to this office from having the

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44 Mungo Park's "Travels in Africa," 4to, 1816, pp. 53, 131. Burton's statement is quoted by Schaffhausen, "Archiv für Anthropolog.," 1866, s. 163.

longest hair of any man in the tribe, namely, ten feet and seven inches. The Aymaras and Quichuas of South America likewise have very long hair; and this, as Mr. D. Forbes informs me, is so much valued as a beauty, that cutting it off was the severest punishment which he could inflict on them. In both the northern and southern halves of the continent the natives sometimes increase the apparent length of their hair by weaving into it fibrous substances. Although the hair on the head is thus cherished, that on the face is considered by the North American Indians "as very vulgar," and every hair is carefully eradicated. This practice prevails throughout the American continent from Vancouver's Island in the north to Tierra del Fuego in the south. When York Minster, a Fuegian on board the "Beagle," was taken back to his country, the natives told him he ought to pull out the few short hairs on his face. They also threatened a young missionary, who was left for a time with them, to strip him naked, and pluck the hairs from his face and body, yet he was far from being a hairy man. This fashion is carried so far that the Indians of Paraguay eradicate their eyebrows and eyelashes, saying that they do not wish to be like horses."

It is remarkable that throughout the world the races which are almost completely destitute of a beard dislike hairs on the face and body, and take pains to eradicate them. The Kalmucks are beardless, and they are well known, like the Americans, to pluck out all straggling hairs; and so it is with the Polynesians, some of the Malays, and the Siamese. Mr. Veitch states that the Japanese ladies "all objected to our whiskers, considering them very ugly, and told us to cut them off, and be like Japanese men." The New Zealanders have short, curled beards; yet they formerly plucked out the hairs on the face. They had

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a saying that "there is no woman for a hairy man"; but it would appear that the fashion has changed in New Zealand, perhaps owing to the presence of Europeans, and I am assured that beards are now admired by the Maories."

On the other hand, bearded races admire and greatly value their beards; among the Anglo-Saxons every part of the body had a recognized value; "the loss of the beard being estimated at twenty shillings, while the breaking of a thigh was fixed at only twelve." 

In the East men swear solemnly by their beards. We have seen that Chinsurdi, the chief of the Makalolo in Africa, thought that beards were a great ornament. In the Pacific the Fijian's beard is "profuse and bushy, and is his greatest pride"; while the inhabitants of the adjacent archipelagoes of Tonga and Samoa are "beardless, and abhor a rough chin." In one island alone of the Ellice group "the men are heavily bearded, and not a little proud thereof.""

We thus see how widely the different races of man differ in their taste for the beautiful. In every nation sufficiently advanced to have made effigies of their gods or of their deified rulers, the sculptors no doubt have endeavored to express their highest ideal of beauty and grandeur." Under this point of view it is well to compare in our mind the Jupiter or Apollo of the Greeks with the Egyptian or Assyrian statues; and these with the hideous bas-reliefs on the ruined buildings of Central America.

I have met with very few statements opposed to this conclusion. Mr. Winwood Reade, however, who has had ample opportunities for observation, not only with the negroes of the West Coast of Africa, but with those of the

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46 Dr. Bernard Davis quotes Mr. Frichard and others for these facts in regard to the Polynesians, in "Anthropological Review," April, 1870, pp. 188, 191.

47 Oh. Cuvier has remarks to this effect in his "Traité de Législation," 3d edit., 1881, p. 186.
interior who have never associated with Europeans, is convinced that their ideas of beauty are on the whole the same as ours; and Dr. Rohlfs writes to me to the same effect with respect to Bornu and the countries inhabited by the Pullo tribes. Mr. Reade found that he agreed with the negroes in their estimation of the beauty of the native girls; and that their appreciation of the beauty of European women corresponded with ours. They admire long hair, and use artificial means to make it appear abundant; they admire also a beard, though themselves very scantily provided. Mr. Reade feels doubtful what kind of nose is most appreciated: a girl has been heard to say, "I do not want to marry him, he has got no nose"; and this shows that a very flat nose is not admired. We should, however, bear in mind that the depressed, broad noses and projecting jaws of the negroes of the West Coast are exceptional types with the inhabitants of Africa. Notwithstanding the foregoing statements, Mr. Reade admits that negroes "do not like the color of our skin; they look on blue eyes with aversion, and they think our noses too long and our lips too thin." He does not think it probable that negroes would ever prefer the most beautiful European woman, on the mere grounds of physical admiration, to a good-looking negress."

The general truth of the principle, long ago insisted on by Humboldt, that man admires and often tries to exaggerate whatever characters nature may have given him, is shown in many ways. The practice of beardless

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22 "The African Sketch Book," vol. ii., 1873, pp. 283, 284, 581. The Fuegians, as I have been informed by a missionary who long resided with them, consider European women as extremely beautiful; but from what we have seen of the judgment of the other aborigines of America, I cannot but think that this must be a mistake, unless indeed the statement refers to the few Fuegians who have lived for some time with Europeans, and who must consider us as superior beings. I should add that a most experienced observer, Capt. Burton, believes that a woman whom we consider beautiful is admired throughout the world. "Anthropological Review," March, 1884, p. 248.

races extirpating every trace of a beard, and often all the
hairs on the body, affords one illustration. The skull has
been greatly modified during ancient and modern times by
many nations; and there can be little doubt that this has
been practiced, especially in North and South America, in
order to exaggerate some natural and admired peculiarity.
Many American Indians are known to admire a head so
extremely flattened as to appear to us idiotic. The natives
on the northwestern coast compress the head into a pointed
cone; and it is their constant practice to gather the hair into
a knot on the top of the head, for the sake, as Dr. Wilson
remarks, "of increasing the apparent elevation of the favor-
ite conoid form." The inhabitants of Arakan "admire a
broad, smooth forehead, and, in order to produce it, they
fasten a plate of lead on the heads of the new-born chil-
dren." On the other hand, "a broad, well-rounded occip-
put is considered a great beauty" by the natives of the
Fiji islands."

As with the skull, so with the nose; the ancient Huns
during the age of Attila were accustomed to flatten the noses
of their infants with bandages, "for the sake of exaggerating
a natural conformation." With the Tahitians, to be called
long-nose is considered as an insult, and they compress the
noses and foreheads of their children for the sake of beauty.
The same holds with the Malays of Sumatra, the Hotentots,
certain Negroes, and the natives of Brazil." The Chinese
have by nature unusually small feet;" and it is well known
that the women of the upper classes distort their feet to

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8 On the skulls of the American tribes, see Nott and Giddon, "Types of
ed., p. 331; on the natives of Arakhan, ibid., vol. iv., p. 531. Wilson, "Physi-
ological Ethnology," Smithsonian Institution, 1866, p. 393; on the Fijians, p. 295.
resume on this subject.
9 On the Huns, Godron, "De l'Empire," tom. ii., 1869, p. 341. On the Tahitians,
Waite, "Anthropology," Eng. tr., vol. i., p. 293. Marshon, quoted by Prichard,
p. 337.
10 This fact was ascertained in the "Reise des Novara: Anthropol. Thesi,"
Dr. Welsbach, 1881, p. 295.
make them still smaller. Lastly, Humboldt thinks that the American Indians prefer coloring their bodies with red paint in order to exaggerate their natural tint; and until recently European women added to their naturally bright colors by rouge and white cosmetics; but it may be doubted whether barbarous nations have generally had any such intention in painting themselves.

In the fashions of our own dress we see exactly the same principle and the same desire to carry every point to an extreme; we exhibit, also, the same spirit of emulation. But the fashions of savages are far more permanent than ours; and whenever their bodies are artificially modified, this is necessarily the case. The Arab women of the Upper Nile occupy about three days in dressing their hair; they never imitate other tribes, "but simply vie with each other in the superlativeness of their own style." Dr. Wilson, in speaking of the compressed skulls of various American races, adds, "such usages are among the least eradicable, and long survive the shock of revolutions that change dynasties and efface more important national peculiarities." The same principle comes into play in the art of breeding; and we can thus understand, as I have elsewhere explained, "the wonderful development of the many races of animals and plants which have been kept merely for ornament. Fanciers always wish each character to be somewhat increased; they do not admire a medium standard; they certainly do not desire any great and abrupt change in the character of their breeds; they admire solely what they are accustomed to, but they ardently desire to see each characteristic feature a little more developed.

The senses of man and of the lower animals seem to be so constituted that brilliant colors and certain forms, as well as harmonious and rhythmical sounds, give pleasure and are

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called beautiful; but why this should be so we know not. It is certainly not true that there is in the mind of man any universal standard of beauty with respect to the human body. It is, however, possible that certain tastes may in the course of time become inherited, though there is no evidence in favor of this belief; and if so, each race would possess its own innate ideal standard of beauty. It has been argued that ugliness consists in an approach to the structure of the lower animals, and no doubt this is partly true with the more civilized nations, in which intellect is highly appreciated; but this explanation will hardly apply to all forms of ugliness. The men of each race prefer what they are accustomed to; they cannot endure any great change; but they like variety, and admire each characteristic carried to a moderate extreme. Men accustomed to a nearly oval face, to straight and regular features, and to bright colors, admire, as we Europeans know, these points when strongly developed. On the other hand, men accustomed to a broad face, with high cheek-bones, a depressed nose, and a black skin, admire these peculiarities when strongly marked. No doubt characters of all kinds may be too much developed for beauty. Hence a perfect beauty, which implies many characters modified in a particular manner, will be in every race a prodigy. As the great anatomist Bichat long ago said, if every one were cast in the same mold, there would be no such thing as beauty. If all our women were to become as beautiful as the Venus de' Medici, we should for a time be charmed; but we should soon wish for variety; and as soon as we had obtained variety, we should wish to see certain characters a little exaggerated beyond the then existing common standard.

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*Schaffhausen, "Archiv für Anthropologie," 1866, s. 164.
*Mr. Bain has collected ("Mental and Moral Science," 1868, pp. 304-314) about a dozen more or less different theories of the idea of beauty; but none is quite the same as that here given.
CHAPTER XX

SECONDARY SEXUAL CHARACTERS OF MAN—continued

On the effects of the continued selection of women according to a different standard of beauty in each race—On the causes which interfere with sexual selection in civilized and savage nations—Conditions favorable to sexual selection during primeval times—On the manner of action of sexual selection with mankind—On the women in savage tribes having some power to choose their husbands—Absence of hair on the body, and development of the beard—Color of the skin—Summary

We have seen in the last chapter that with all barbarous races ornaments, dress, and external appearance are highly valued; and that the men judge of the beauty of their women by widely different standards. We must next inquire whether this preference, and the consequent selection during many generations of those women which appear to the men of each race the most attractive, has altered the character either of the females alone or of both sexes. With mammals the general rule appears to be that characters of all kinds are inherited equally by the males and females; we might therefore expect that with mankind any characters gained by the females or by the males, through sexual selection, would commonly be transferred to the offspring of both sexes. If any change has thus been effected, it is almost certain that the different races would be differently modified, as each has its own standard of beauty.

With mankind, especially with savages, many causes interfere with the action of sexual selection as far as the bodily frame is concerned. Civilized men are largely attracted by the mental charms of women, by their wealth, and especially by their social position; for men rarely marry
into a much lower rank. The men who succeed in obtaining the more beautiful women will not have a better chance of leaving a long line of descendants than other men with plainer wives, save the few who bequeath their fortunes according to primogeniture. With respect to the opposite form of selection, namely, of the more attractive men by the women, although in civilized nations women have free or almost free choice, which is not the case with barbarous races, yet their choice is largely influenced by the social position and wealth of the men; and the success of the latter in life depends much on their intellectual powers and energy, or on the fruits of these same powers in their forefathers. No excuse is needed for treating this subject in some detail; for, as the German philosopher Schopenhauer remarks, "the final aim of all love intrigues, be they comic or tragic, is really of more importance than all other ends in human life. What it all turns upon is nothing less than the composition of the next generation. . . . It is not the weal or woe of any one individual, but that of the human race to come, which is here at stake."

There is, however, reason to believe that in certain civilized and semi-civilized nations sexual selection has effected something in modifying the bodily frame of some of the members. Many persons are convinced, as it appears to me with justice, that our aristocracy, including under this term all wealthy families in which primogeniture has long prevailed, from having chosen during many generations from all classes the more beautiful women as their wives, have become handsomer, according to the European standard, than the middle classes; yet the middle classes are placed under equally favorable conditions of life for the perfect development of the body. Cook remarks that the superiority in personal appearance "which is observable in the crees or nobles in all the other islands (of the Pacific)"

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is found in the Sandwich Islands"; but this may be chiefly
due to their better food and manner of life.

The old traveller Chardin, in describing the Persians,
says their "blood is now highly refined by frequent inter-
mixtures with the Georgians and Circassians, two nations
which surpass all the world in personal beauty. There is
hardly a man of rank in Persia who is not born of a Geor-
gian or Circassian mother." He adds that they inherit their
beauty, "not from their ancestors, for without the above
mixture the men of rank in Persia, who are descendants
of the Tartars, would be extremely ugly." Here is a more
curious case; the priestesses who attended the temple of
Venus Erycina at San Giuliano, in Sicily, were selected
for their beauty out of the whole of Greece; they were
not vestal virgins, and Quatrefages, who states the fore-
going fact, says that the women of San Giuliano are now
famous as the most beautiful in the island, and are sought
by artists as models. But it is obvious that the evidence
in all the above cases is doubtful.

The following case, though relating to savages, is well
worth giving from its curiosity. Mr. Winwood Reade in-
firms me that the Jollofs, a tribe of negroes on the west
coast of Africa, "are remarkable for their uniformly fine
appearance." A friend of his asked one of these men,
"How is it that every one whom I meet is so fine look-
ing, not only your men, but your women?" The Jollof
answered, "It is very easily explained: it has always been
our custom to pick out our worse-looking slaves and to sell
them." It need hardly be added that, with all savages,
female slaves serve as concubines. That this negro should
have attributed, whether rightly or wrongly, the fine ap-
pearance of his tribe to the long-continued elimination of
the ugly women is not so surprising as it may at first ap-

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9 These quotations are taken from Lawrence ("Lectures on Physiology,"
eta., 1822, p. 303), who attributes the beauty of the upper classes in England
to the men having long selected the more beautiful women.
pear; for I have elsewhere shown* that negroes fully appreciate the importance of selection in the breeding of their domestic animals, and I could give from Mr. Reade additional evidence on this head.

The Causes which Prevent or Check the Action of Sexual Selection with Savages.—The chief causes are, first, so-called communal marriages or promiscuous intercourse; secondly, the consequences of female infanticide; thirdly, early betrothals; and lastly, the low estimation in which women are held, as mere slaves. These four points must be considered in some detail.

It is obvious that as long as the pairing of man, or of any other animal, is left to mere chance, with no choice exerted by either sex, there can be no sexual selection; and no effect will be produced on the offspring by certain individuals having had an advantage over others in their courtship. Now it is asserted that there exist at the present day tribes which practice what Sir J. Lubbock by courtesy calls communal marriages; that is, all the men and women in the tribe are husbands and wives to one another. The licentiousness of many savages is no doubt astonishing, but it seems to me that more evidence is requisite, before we fully admit that their intercourse is in any case promiscuous. Nevertheless all those who have most closely studied the subject,* and whose judgment is worth much more than mine, believe that communal marriage (this expression being variously guarded was the original and universal form throughout

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* "The Variation of Animals and Plants under Domestication," vol. i. p. 207.
5 Sir J. Lubbock, "The Origin of Civilization," 1870, chap. iii., especially pp. 69–77. Mr. M'Lennan, in his extremely valuable work on "Primitive Marriage," 1866, p. 163, speaks of the union of the sexes "in the earliest times as loose, transitory, and in some degree promiscuous." Mr. M'Lennan and Sir J. Lubbock have collected much evidence on the extreme licentiousness of savages at the present time. Mr. L. H. Morgan, in his interesting memoir on the classificatory system of relationship ("Proc. American Acad. of Sciences," vol. vii., Feb. 1866, p. 475), concludes that polygamy and all forms of marriage during primeval times were essentially unknown. It appears also, from Sir J. Lubbock's work, that Bachofen likewise believes that communal intercourse originally prevailed.
the world, including therein the intermarriage of brothers and sisters. The late Sir A. Smith, who had travelled widely in South Africa, and knew much about the habits of savages there and elsewhere, expressed to me the strongest opinion that no race exists in which woman is considered as the property of the community. I believe that his judgment was largely determined by what is implied by the term marriage. Throughout the following discussion I use the term in the same sense as when naturalists speak of animals as monogamous, meaning thereby that the male is accepted by or chooses a single female, and lives with her either during the breeding season or for the whole year, keeping possession of her by the law of might; or, as when they speak of a polygamous species, meaning that the male lives with several females. This kind of marriage is all that concerns us here, as it suffices for the work of sexual selection. But I know that some of the writers above referred to imply by the term marriage a recognized right protected by the tribe.

The indirect evidence in favor of the belief of the former prevalence of communal marriages is strong, and rests chiefly on the terms of relationship which are employed between the members of the same tribe, implying a connection with the tribe, and not with either parent. But the subject is too large and complex for even an abstract to be here given, and I will confine myself to a few remarks. It is evident in the case of such marriages, or where the marriage tie is very loose, that the relationship of the child to its father cannot be known. But it seems almost incredible that the relationship of the child to its mother should ever be completely ignored, especially as the women in most savage tribes nurse their infants for a long time. Accordingly, in many cases the lines of descent are traced through the mother alone, to the exclusion of the father. But in other cases the terms employed express a connection with the tribe alone, to the exclusion even of the mother. It seems possible that the connection between the related members of the same barbarous tribe, exposed to all sorts of danger, might
be so much more important, owing to the need of mutual protection and aid, than that between the mother and her child, as to lead to the sole use of terms expressive of the former relationships; but Mr. Morgan is convinced that this view is by no means sufficient.

The terms of relationship used in different parts of the world may be divided, according to the author just quoted, into two great classes, the classificatory and descriptive—the latter being employed by us. It is the classificatory system which so strongly leads to the belief that communal and other extremely loose forms of marriage were originally universal. But as far as I can see, there is no necessity on this ground for believing in absolutely promiscuous intercourse; and I am glad to find that this is Sir J. Lubbock's view. Men and women, like many of the lower animals, might formerly have entered into strict though temporary unions for each birth, and in this case nearly as much confusion would have arisen in the terms of relationship as in the case of promiscuous intercourse. As far as sexual selection is concerned, all that is required is that choice should be exerted before the parents unite, and it signifies little whether the unions last for life or only for a season.

Besides the evidence derived from the terms of relationship, other lines of reasoning indicate the former wide prevalence of communal marriage. Sir J. Lubbock accounts* for the strange and widely extended habit of exogamy—that is, the men of one tribe taking wives from a distinct tribe—by communism having been the original form of intercourse; so that a man never obtained a wife for himself unless he captured her from a neighboring and hostile tribe, and then she would naturally have become his sole and valuable property. Thus the practice of capturing wives might have arisen; and from the honor so gained it might ultimately have become the universal habit. According to Sir J. Lubbock,* we can also thus understand "the necessity of

expiation for marriage as an infringement of tribal rites, since, according to old ideas, a man had no right to appropriate to himself that which belonged to the whole tribe." Sir J. Lubbock further gives a curious body of facts showing that in old times high honor was bestowed on women who were utterly licentious; and this, as he explains, is intelligible, if we admit that promiscuous intercourse was the aboriginal, and therefore long revered, custom of the tribe.

Although the manner of development of the marriage tie is an obscure subject, as we may infer from the divergent opinions on several points between the three authors who have studied it most closely, namely, Mr. Morgan, Mr. M'Lennan, and Sir J. Lubbock, yet from the foregoing and several other lines of evidence it seems probable that the habit of marriage, in any strict sense of the word, has been gradually developed; and that almost promiscuous or very loose intercourse was once extremely common throughout the world. Nevertheless, from the strength of the feeling of jealousy all through the animal kingdom, as well as from the analogy of the lower animals, more particularly of those which come nearest to man, I cannot believe that absolutely promiscuous intercourse prevailed in times past, shortly before man attained to his present rank in the zoological scale. Man, as I have attempted to show, is certainly descended from some ape-like creature. With the existing Quadrurana, as far as their habits are known, the males of some species are monogamous, but live during only a part of the year with the females; of this the orang seems to afford an instance. Several kinds, for example some of the Indian and American monkeys, are strictly monogamous, and associate all the year round with their

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4 "Origin of Civilization," 1876, p. 86. In the several works above quoted, there will be found copious evidence on relationship through the females alone, or with the tribe alone.

9 Mr. C. Staniland Wake argues strongly ("Anthropologia," March, 1874, p. 197) against the views held by these three writers on the former prevalence of almost promiscuous intercourse; and he thinks that the classificatory system of relationship can be otherwise explained.
wives. Others are polygamons, for example the gorilla and several American species, and each family lives separate. Even when this occurs, the families inhabiting the same district are probably somewhat social; the chimpanzee, for instance, is occasionally met with in large bands. Again, other species are polygamons, but several males, each with his own females, live associated in a body, as with several species of baboons. We may indeed conclude, from what we know of the jealousy of all male quadrupeds, armed, as many of them are, with special weapons for battling with their rivals, that promiscuous intercourse in a state of nature is extremely improbable. The pairing may not last for life, but only for each birth; yet if the males which are the strongest and best able to defend or otherwise assist their females and young were to select the more attractive females, this would suffice for sexual selection.

Therefore, looking far enough back in the stream of time, and judging from the social habits of man as he now exists, the most probable view is that he aboriginally lived in small communities, each with a single wife, or, if powerful, with several, whom he jealously guarded against all other men. Or he may not have been a social animal, and yet have lived with several wives, like the gorilla; for all the natives agree that but one adult male is seen in a band; when the young male grows up, a contest takes place for mastery, and the strongest, by killing and driving out the others, establishes himself as the head of the community. The younger males, being thus expelled and wandering about, would, when at last successful in finding a partner, prevent too close interbreeding within the limits of the same family.

9 Brehm ("Illust. Thierleben," B. I. p. 77) says Cynocephalus hamadryas lives in great troops containing twice as many adult females as adult males. See Hooger on American polygamons species, and Owen ("Anat. of Vertebrates," vol. iii. p. 746) on American monogamons species. Other references might be added.

Although savages are now extremely licentious, and although communal marriages may formerly have largely prevailed, yet many tribes practice some form of marriage, but of a far more lax nature than that of civilized nations. Polygamy, as just stated, is almost universally followed by the leading men in every tribe. Nevertheless there are tribes, standing almost at the bottom of the scale, which are strictly monogamous. This is the case with the Vedda of Ceylon; they have a saying, according to Sir J. Lubbock,""that death alone can separate husband and wife." An intelligent Kandyan chief, of course a polygamist, "was perfectly scandalized at the utter barbarism of living with only one wife, and never parting until separated by death." It was, he said, "just like the Wannahoo monkeys." Whether savages who now enter into some form of marriage, either polygamous or monogamous, have retained this habit from primeval times, or whether they have returned to some form of marriage, after passing through a stage of promiscuous intercourse, I will not pretend to conjecture.

Infanticide.—This practice is now very common throughout the world, and there is reason to believe that it prevailed much more extensively during former times." Barbarians find it difficult to support themselves and their children, and it is a simple plan to kill their infants. In South America some tribes, according to Azara, formerly destroyed so many infants, of both sexes, that they were on the point of extinction. In the Polynesian Islands women have been known to kill from four or five to even ten of their children; and Ellis could not find a single woman who had not killed at least one. Wherever infanticide prevails the struggle for existence will be in so far less severe, and all the members of the tribe will have an almost equally good chance of

12 Mr. M'Lennan, "Primitive Marriage," 1865. See especially on exogamy and infanticide, pp. 130, 138, 165.
rearing their few surviving children. In most cases a larger number of female than of male infants are destroyed, for it is obvious that the latter are of more value to the tribe, as they will, when grown up, aid in defending it, and can support themselves. But the trouble experienced by the women in rearing children, their consequent loss of beauty, the higher estimation set on them when few, and their happier fate, are assigned by the women themselves, and by various observers, as additional motives for infanticide. In Australia, where female infanticide is still common, Sir G. Grey estimated the proportion of native women to men as one to three; but others say as two to three. In a village on the eastern frontier of India, Colonel MacCulloch found not a single female child.10

When, owing to female infanticide, the women of a tribe were few, the habit of capturing wives from neighboring tribes would naturally arise. Sir J. Lubbock, however, as we have seen, attributes the practice, in chief part, to the former existence of communal marriage, and to the men having consequently captured women from other tribes to hold as their sole property. Additional causes might be assigned, such as the communities being very small, in which case marriageable women would often be deficient. That the habit was most extensively practiced during former times, even by the ancestors of civilized nations, is clearly shown by the preservation of many curious customs and ceremonies of which Mr. M'Leanan has given an interesting account. In our own marriages the "best man" seems originally to have been the chief abettor of the bridegroom in the act of capture. Now as long as men habitually procured their wives through violence and craft, they would have been glad to seize on any woman, and would not have selected the more attractive ones. But as soon as the prac-

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10 Dr. Gerland ("Uber das Aussterben der Naturvolker," 1855) has collected much information on infanticide, see especially pp. 27, 61, 64. Anara ("Voyages," etc., tom. ii. pp. 94, 116) enters in detail on the motives. See, also, M'Leanan (ibid., p. 139) for cases in India.
tice of procuring wives from a distinct tribe was effected through barter, as now occurs in many places, the more attractive women would generally have been purchased. The incessant crossing, however, between tribe and tribe, which necessarily follows from any form of this habit, would tend to keep all the people inhabiting the same country nearly uniform in character; and this would interfere with the power of sexual selection in differentiating the tribes.

The scarcity of women, consequent on female infanticide, leads, also, to another practice, that of polyandry, still common in several parts of the world, and which formerly, as Mr. M'Lennan believes, prevailed almost universally; but this latter conclusion is doubted by Mr. Morgan and Sir J. Lubbock. Whenever two or more men are compelled to marry one woman, it is certain that all the women of the tribe will get married, and there will be no selection by the men of the more attractive women. But under these circumstances the women, no doubt, will have the power of choice, and will prefer the more attractive men. Azara, for instance, describes how carefully a Guana woman bargains for all sorts of privileges before accepting some one or more husbands; and the men in consequence take unusual care of their personal appearance. So among the Todas of India, who practice polyandry, the girls can accept or refuse any man. A very ugly man in these cases would perhaps altogether fail in getting a wife, or get one later in life; but the handsomer men, although more successful in obtaining wives, would not, as far as we can see, leave more offspring to inherit their beauty than the less handsome husbands of the same women.

Early Betrothals and Slavery of Women.—With many savages it is the custom to betroth the females while mere
infants; and this would effectually prevent preference being exerted on either side according to personal appearance. But it would not prevent the more attractive women from being afterward stolen or taken by force from their husbands by the more powerful men; and this often happens in Australia, America, and elsewhere. The same consequences with reference to sexual selection would to a certain extent follow, when women are valued almost solely as slaves or beasts of burden, as is the case with many savages. The men, however, at all times, would prefer the handsomest slaves according to their standard of beauty.

We thus see that several customs prevail with savages which must greatly interfere with, or completely stop, the action of sexual selection. On the other hand, the conditions of life to which savages are exposed, and some of their habits, are favorable to natural selection; and this comes into play at the same time with sexual selection. Savages are known to suffer severely from recurrent famines; they do not increase their food by artificial means; they rarely refrain from marriage, and generally marry while young. Consequently they must be subjected to occasional hard struggles for existence, and the favored individuals will alone survive.

At a very early period, before man attained to his present rank in the scale, many of his conditions would be different from what now obtains among savages. Judging from the analogy of the lower animals, he would then either live with a single female or be a polygamist. The most powerful and able males would succeed best in obtaining attractive females. They would also succeed best in the general struggle for life, and in defending their females, as well as their offspring, from enemies of all kinds. At this early period

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18 Burckhill says ("Travels in S. Africa," vol. II., 1834, p. 52), that among the wild nations of Southern Africa, neither men nor women ever pass their lives in a state of celibacy. Azara ("Voyages dans l'Amérique Mérid.," tom. II., 1809, p. 31) makes precisely the same remark in regard to the wild Indians of South America.
the ancestors of man would not be sufficiently advanced
in intellect to look forward to distant contingencies; they
would not foresee that the rearing of all their children,
especially their female children, would make the struggle
for life severer for the tribe. They would be governed
more by their instincts and less by their reason than are
savages at the present day. They would not at that period
have partially lost one of the strongest of all instincts, com-
mon to all the lower animals, namely, the love of their
young offspring; and consequently they would not have
practised female infanticide. Women would not have been
thus rendered scarce, and polyandry would not have been
practiced; for hardly any other cause, except the scarcity
of women, seems sufficient to break down the natural and
widely prevalent feeling of jealousy, and the desire of each
male to possess a female for himself. Polyandry would be
a natural stepping stone to communal marriages or almost
promiscuous intercourse; though the best authorities be-
lieve that this latter habit preceded polyandry. During
primordial times there would be no early betrothals, for
this implies foresight. Nor would women be valued merely
as useful slaves or beasts of burden. Both sexes, if the
females as well as the males were permitted to exert any
choice, would choose their partners not for mental charms,
or property, or social position, but almost solely from ex-
ternal appearance. All the adults would marry or pair,
and all the offspring, as far as that was possible, would
be reared; so that the struggle for existence would be peri-
odically excessively severe. Thus during these times all
the conditions for sexual selection would have been more
favorable than at a later period, when man had advanced in
his intellectual powers, but had retrograded in his instincts.
Therefore, whatever influence sexual selection may have
had in producing the differences between the races of man,
and between man and the higher Quadruman, this influence
would have been more powerful at a remote period than at
the present day, though probably not yet wholly lost.

Descent—Vol. II.—15
The Manner of Action of Sexual Selection with Mankind.
—With primeval men under the favorable conditions just stated, and with those savages who at the present time enter into any marriage tie, sexual selection has probably acted in the following manner, subject to greater or less interference from female infanticide, early betrothals, etc. The strongest and most vigorous men—those who could best defend and hunt for their families, who were provided with the best weapons and possessed the most property, such as a large number of dogs or other animals—would succeed in rearing a greater average number of offspring than the weaker and poorer members of the same tribes. There can, also, be no doubt that such men would generally be able to select the more attractive women. At present the chiefs of nearly every tribe throughout the world succeed in obtaining more than one wife. I hear from Mr. Mantell that, until recently, almost every girl in New Zealand, who was pretty, or promised to be pretty, was tapu to some chief. With the Kaffirs, as Mr. C. Hamilton states,
"the chiefs generally have the pick of the women for many miles round, and are most persevering in establishing or confirming their privilege." We have seen that each race has its own style of beauty, and we know that it is natural to man to admire each characteristic point in his domestic animals, dress, ornaments, and personal appearance, when carried a little beyond the average. If, then, the several foregoing propositions be admitted, and I cannot see that they are doubtful, it would be an inexplicable circumstance if the selection of the more attractive women by the more powerful men of each tribe, who would rear on an average a greater number of children, did not, after the lapse of many generations, somewhat modify the character of the tribe.

When a foreign breed of our domestic animals is introduced into a new country, or when a native breed is long and carefully attended to, either for use or ornament, it is found after several generations to have undergone a greater

or less amount of change, whenever the means of comparison exist. This follows from unconscious selection during a long series of generations—that is, the preservation of the most approved individuals—without any wish or expectation of such a result on the part of the breeder. So again, if during many years two careful breeders rear animals of the same family, and do not compare them together or with a common standard, the animals are found to have become, to the surprise of their owners, slightly different. Each breeder has impressed, as Von Nathusius well expresses it, the character of his own mind—his own taste and judgment—on his animals. What reason, then, can be assigned why similar results should not follow from the long-continued selection of the most admired women by those men of each tribe who were able to rear the greatest number of children? This would be unconscious selection, for an effect would be produced, independently of any wish or expectation on the part of the men who preferred certain women to others.

Let us suppose the members of a tribe, practicing some form of marriage, to spread over an unoccupied continent; they would soon split up into distinct hordes, separated from each other by various barriers, and still more effectually by the incessant wars between all barbarous nations. The hordes would thus be exposed to slightly different conditions and habits of life, and would sooner or later come to differ in some small degree. As soon as this occurred, each isolated tribe would form for itself a slightly different standard of beauty; and then unconscious selection would come into action through the more powerful and leading men preferring certain women to others. Thus the differences between the tribes, at first very slight, would gradually and inevitably be more or less increased.

19 An ingenious writer argues, from a comparison of the pictures of Raphael, Rubens, and modern French artists, that the idea of beauty is not absolutely the same even throughout Europe; see the "Lives of Haydn and Mozart," by Boulet (otherwise M. Bayle), English translation, p. 378.
With animals in a state of nature, many characters proper to the males, such as size, strength, special weapons, courage, and pugnacity, have been acquired through the law of battle. The semi-human progenitors of man, like their allies, the Quadrupedal, will almost certainly have been thus modified; and, as savages still fight for the possession of their women, a similar process of selection has probably gone on in a greater or less degree to the present day. Other characters proper to the males of the lower animals, such as bright colors and various ornaments, have been acquired by the more attractive males having been preferred by the females. There are, however, exceptional cases in which the males are the selecters, instead of having been the selected. We recognize such cases by the females being more highly ornamented than the males—their ornamental characters having been transmitted exclusively or chiefly to their female offspring. One such case has been described in the order to which man belongs, that of the Rhesus monkey.

Man is more powerful in body and mind than woman, and in the savage state he keeps her in a far more abject state of bondage than does the male of any other animal; therefore it is not surprising that he should have gained the power of selection. Women are everywhere conscious of the value of their own beauty; and when they have the means, they take more delight in decorating themselves with all sorts of ornaments than do men. They borrow the plumes of male birds, with which nature has decked this sex in order to charm the females. As women have long been selected for beauty, it is not surprising that some of their successive variations should have been transmitted exclusively to the same sex; consequently that they should have transmitted beauty in a somewhat higher degree to their female than to their male offspring, and thus have become more beautiful, according to general opinion, than men. Women, however, certainly transmit most of their characters, including some beauty, to their offspring of both sexes; so that the continued preference by the men of each race for
the more attractive women, according to their standard of
taste, will have tended to modify in the same manner all the
individuals of both sexes belonging to the race.

With respect to the other form of sexual selection (which
with the lower animals is much the more common), namely,
when the females are the selecters, and accept only those
males which excite or charm them most, we have reason
to believe that it formerly acted on our progenitors. Man
in all probability owes his beard, and perhaps some other
characters, to inheritance from an ancient progenitor who
thus gained his ornaments. But this form of selection may
have occasionally acted during later times; for in utterly
barbarous tribes the women have more power in choosing,
rejecting, and tempting their lovers, or of afterward chang-
ing their husbands, than might have been expected. As
this is a point of some importance, I will give in detail
such evidence as I have been able to collect.

Hearne describes how a woman in one of the tribes of
Arctic America repeatedly ran away from her husband and
joined her lover; and with the Charruas of South America,
according to Azara, divorce is quite optional. Among the
Abipones, a man, on choosing a wife, bargains with the
parents about the price. But "it frequently happens that
the girl rescinds what has been agreed upon between the
parents and the bridegroom, obstinately rejecting the very
mention of marriage." She often runs away, hides herself,
and thus eludes the bridegroom. Captain Musters, who
lived with the Patagonians, says that their marriages are
always settled by inclination; "if the parents make a match
contrary to the daughter's will, she refuses and is never com-
pelled to comply." In Tierra del Fuego a young man first
obtains the consent of the parents by doing them some ser-
vice, and then he attempts to carry off the girl; "but if she
is unwilling, she hides herself in the woods until her admirer
is heartily tired of looking for her, and gives up the pursuit;
but this seldom happens." In the Fiji Islands the man
seizes on the woman whom he wishes for his wife by act-
nal or pretended force; but "on reaching the home of her abductor, should she not approve of the match, she runs to some one who can protect her; if, however, she is satisfied, the matter is settled forthwith." With the Kalmucks there is a regular race between the bride and bridegroom, the former having a fair start; and Clarke "was assured that no instance occurs of a girl being caught, unless she has a partiality to the pursuer." Among the wild tribes of the Malay Archipelago there is also a racing match; and it appears from M. Bourien's account, as Sir J. Lubbock remarks, that "the race 'is not to the swift, nor the battle to the strong,' but to the young man who has the good fortune to please his intended bride." A similar custom, with the same result, prevails with the Koraks of northeastern Asia.

Turning to Africa: The Kaffirs buy their wives, and girls are severely beaten by their fathers if they will not accept a chosen husband; but it is manifest, from many facts given by the Rev. Mr. Shooter, that they have considerable power of choice. Thus very ugly, though rich, men have been known to fail in getting wives. The girls, before consenting to be betrothed, compel the men to show themselves off, first in front and then behind and "exhibit their paces." They have been known to propose to a man, and they not rarely run away with a favored lover. So again, Mr. Leslie, who was intimately acquainted with the Kaffirs, says, "it is a mistake to imagine that a girl is sold by her father in the same manner, and with the same authority, with which he would dispose of a cow." Among the degraded Bushmen of South Africa, "when a girl has grown up to womanhood without having been betrothed, which, however, does not often happen, her lover must gain her approbation, as well as that of the parents." 99

Mr. Winwood Reade made inquiries for me with respect to the negroes of Western Africa, and he informs me that "the women, at least among the more intelligent Pagan tribes, have no difficulty in getting the husbands whom they may desire, although it is considered unwomanly to ask a man to marry them. They are quite capable of falling in love, and of forming tender, passionate, and faithful attachments." Additional cases could be given. We thus see that with savages the women are not in quite so abject a state in relation to marriage as has often been supposed. They can tempt the men whom they prefer, and can sometimes reject those whom they dislike, either before or after marriage. Preference on the part of the women, steadily acting in any one direction, would ultimately affect the character of the tribe; for the women would generally choose not merely the handsomest men, according to their standard of taste, but those who were at the same time best able to defend and support them. Such well-endowed pairs would commonly rear a larger number of offspring than the less favored. The same result would obviously follow, in a still more marked manner, if there was selection on both sides; that is if the more attractive and at the same time more powerful men were to prefer, and were preferred by, the more attractive women. And this double form of selection seems actually to have occurred, especially during the earlier periods of our long history.

We will now examine a little more closely some of the characters which distinguish the several races of man from one another and from the lower animals, namely, the greater or less deficiency of hair on the body, and the color of the skin. We need say nothing about the great diversity in the shape of the features and of the skull between the dif-

ferent races, as we have seen in the last chapter how different is the standard of beauty in these respects. These characters will therefore probably have been acted on through sexual selection; but we have no means of judging whether they have been acted on chiefly from the male or female side. The musical faculties of man have likewise been already discussed.

Absence of Hair on the Body, and its Development on the Face and Head.—From the presence of the woolly hair or lanugo on the human fetus, and of rudimentary hairs scattered over the body during maturity, we may infer that man is descended from some animal which was born hairy and remained so during life. The loss of hair is an inconvenience and probably an injury to man, even in a hot climate, for he is thus exposed to the scorching of the sun, and to sudden chills, especially during wet weather. As Mr. Wallace remarks, the natives in all countries are glad to protect their naked backs and shoulders with some slight covering. No one supposes that the nakedness of the skin is any direct advantage to man; his body therefore cannot have been divested of hair through natural selection. Nor, as shown in a former chapter, have we any evidence that this can be due to the direct action of climate, or that it is the result of correlated development.

The absence of hair on the body is to a certain extent a secondary sexual character; for in all parts of the world women are less hairy than men. Therefore we may reasonably suspect that this character has been gained through sexual selection. We know that the faces of several species of monkeys, and large surfaces at the posterior end of the

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"Contributions to the Theory of Natural Selection," 1870, p. 346. Mr. Wallace believes (p. 344) "that some intelligent power has guided or determined the development of man"; and he considers the hairless condition of the skin as coming under this head. The Rev. T. B. Stobling, in commenting on this view ("Transactions of Devonshire Assoc. for Science," 1870), remarks that had Mr. Wallace "employed his usual ingenuity on the question of man's hairless skin, he might have seen the possibility of its selection through its superior beauty or the health attaching to superior cleanliness."
body of other species, have been denuded of hair; and this we may safely attribute to sexual selection, for these surfaces are not only vividly colored, but sometimes, as with the male mandrill and female rhesus, much more vividly in the one sex than in the other, especially during the breeding season. I am informed by Mr. Bartlett that, as these animals gradually reach maturity, the naked surfaces grow larger compared with the size of their bodies. The hair, however, appears to have been removed, not for the sake of nudity, but that the color of the skin may be more fully displayed. So again with many birds, it appears as if the head and neck had been divested of feathers through sexual selection, to exhibit the brightly-colored skin.

As the body in woman is less hairy than in man, and as this character is common to all races, we may conclude that it was our female semi-human ancestors who were first divested of hair, and that this occurred at an extremely remote period before the several races had diverged from a common stock. While our female ancestors were gradually acquiring this new character of nudity, they must have transmitted it almost equally to their offspring of both sexes while young; so that its transmission, as with the ornaments of many mammals and birds, has not been limited either by sex or age. There is nothing surprising in a partial loss of hair having been esteemed as an ornament by our ape-like progenitors, for we have seen that innumerable strange characters have been thus esteemed by animals of all kinds, and have consequently been gained through sexual selection. Nor is it surprising that a slightly injurious character should have been thus acquired; for we know that this is the case with the plumes of certain birds, and with the horns of certain stags.

The females of some of the anthropoid apes, as stated in a former chapter, are somewhat less hairy on the under surface than the males; and here we have what might have afforded a commencement for the process of denudation. With respect to the completion of the process through
sexual selection, it is well to bear in mind the New Zealand proverb, "There is no woman for a hairy man." All who have seen photographs of the Siamese hairy family will admit how ludicrously hideous is the opposite extreme of excessive hairiness. And the king of Siam had to bribe a man to marry the first hairy woman in the family; and she transmitted this character to her young offspring of both sexes."

Some races are much more hairy than others, especially the males; but it must not be assumed that the more hairy races, such as the European, have retained their primordial condition more completely than the naked races, such as the Kalmucks or Americans. It is more probable that the hairiness of the former is due to partial reversion; for characters which have been at some former period long inherited are always apt to return. We have seen that idiots are often very hairy, and they are apt to revert in other characters to a lower animal type. It does not appear that a cold climate has been influential in leading to this kind of reversion; excepting perhaps with the negroes who have been reared during several generations in the United States, and possibly with the Ainios, who inhabit the northern islands of the Japan archipelago. But the laws of inheritance are so complex that we can seldom understand their action. If the greater hairiness of certain races be the result of reversion, unchecked by any form of selection, its extreme vari-

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"The Variation of Animals and Plants under Domestication," vol. ii., 1868, p. 327.

"Investigations into Military and Anthropological statistics of American Soldiers," by R. A. Gould, 1865, p. 168: Observations were carefully made on the hairiness of 2,129 black and colored soldiers while they were bathing; and by looking to the published table, "it is manifest at a glance that there is but little, if any, difference between the white and the black races in this respect." It is, however, certain that negroes in their native and much hotter land of Africa have remarkably smooth bodies. It should be particularly observed that both pure blacks and mulattoes were included in the above enumeration; and this is an unfortunate circumstance, as, in accordance with a principle the truth of which I have elsewhere proved, crossed races of men would be eminently liable to revert to the primordial hairy character of their early ape-like progenitors.
ability, even within the limits of the same race, ceases to be remarkable."

With respect to the beard in man, if we turn to our best guide, the Quadrumanus, we find beards equally developed in both sexes in many species, but in some, either confined to the males, or more developed in them than in the females. From this fact and from the curious arrangement, as well as the bright colors of the hair about the heads of many monkeys, it is highly probable, as before explained, that the males first acquired their beards through sexual selection as an ornament, transmitting them in most cases, equally or nearly so, to their offspring of both sexes. We know from Eschricht that with mankind the female as well as the male fetus is furnished with much hair on the face, especially round the mouth; and this indicates that we are descended from progenitors of whom both sexes were bearded. It appears, therefore, at first sight probable that man has retained his beard from a very early period, while woman lost her beard at the same time that her body became almost completely divested of hair. Even the color of our beards seems to have been inherited from an ape-like progenitor; for when there is any difference in tint between the hair of the head and the beard, the latter is lighter colored in all monkeys and in man. In those Quadrumanus in which the male has a larger beard than that of the female, it is fully developed only at maturity, just as with mankind; and it is possible that only the later stages of development have been retained by man. In opposition to this view of the retention of the beard from an early period is the fact of its great variability in different races, and even within

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54 Hardly any view advanced in this work has met with so much disfavor (see, for instance, Spengel, "Die Fortschritte des Darwinismus," 1874, p. 80) as the above explanation of the loss of hair in mankind through sexual selection; but none of the opposed arguments seem to me of much weight, in comparison with the facts showing that the nudity of the skin is to a certain extent a secondary sexual character in man and in some of the Quadrumanus.

55 "Über die Richtung der Haare am Menschen Körper," in Müller's "Archiv für Anat. und Phys.," 1837, s. 40.
the same race; for this indicates reversion—long lost characters being very apt to vary on reappearance.

Nor must we overlook the part which sexual selection may have played in later times; for we know that, with savages, the men of the beardless races take infinite pains in eradicating every hair from their faces as something odious, while the men of the bearded races feel the greatest pride in their beards. The women, no doubt, participate in these feelings, and, if so, sexual selection can hardly have failed to have effected something in the course of later times. It is also possible that the long-continued habit of eradicating the hair may have produced an inherited effect. Dr. Brown-Séquard has shown that if certain animals are operated on in a particular manner, their offspring are affected. Further evidence could be given of the inheritance of the effects of mutilations; but a fact lately ascertained by Mr. Salvin has a more direct bearing on the present question; for he has shown that the motmots, which are known habitually to bite off the barbs of the two central tail feathers, have the barbs of these feathers naturally somewhat reduced." Nevertheless, with mankind, the habit of eradicating the beard and the hairs on the body would probably not have arisen until these had already become by some means reduced.

It is difficult to form any judgment as to how the hair on the head became developed to its present great length in many races. Eschricht states that in the human foetus the hair on the face during the fifth month is longer than that on the head; and this indicates that our semi-human progenitors were not furnished with long tresses, which must therefore have been a late acquisition. This is likewise indicated by the extraordinary difference in the length

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Mr. Sprout has suggested ("Scenes and Studies of Savage Life," 1866, p. 26) this same view. Some distinguished ethnologists, among others M. Gosse of Genoa, believe that artificial modifications of the skull tend to be inherited.

""Über die Richtung," ibid., a. 40.
of the hair in the different races; in the negro the hair forms a mere curly mat; with us it is of great length, and with the American natives it not rarely reaches to the ground. Some species of Semnopithecus have their heads covered with moderately long hair, and this probably serves as an ornament and was acquired through sexual selection. The same view may perhaps be extended to mankind, for we know that long tresses are now, and were formerly, much admired, as may be observed in the works of almost every poet. St. Paul says, "if a woman have long hair, it is a glory to her"; and we have seen that in North America a chief was elected solely from the length of his hair.

Color of the Skin.—The best kind of evidence that in man the color of the skin has been modified through sexual selection is scanty; for in most races the sexes do not differ in this respect, and only slightly, as we have seen, in others. We know, however, from the many facts already given, that the color of the skin is regarded by the men of all races as a highly important element in their beauty; so that it is a character which would be likely to have been modified through selection, as has occurred in innumerable instances with the lower animals. It seems at first sight a monstrous supposition that the jet-blackness of the negro should have been gained through sexual selection; but this view is supported by various analogies, and we know that negroes admire their own color. With mammals, when the sexes differ in color, the male is often black or much darker than the female; and it depends merely on the form of inheritance whether this or any other tint is transmitted to both sexes or to one alone. The resemblance to a negro in miniature of *Pithecus satanas*, with his jet-black skin, white rolling eyeballs, and hair parted on the top of the head, is almost ludicrous.

The color of the face differs much more widely in the various kinds of monkeys than it does in the races of man; and we have some reason to believe that the red, blue,
orange, almost white and black tints of their skin, even when common to both sexes, as well as the bright colors of their fur, and the ornamental tufts about the head, have all been acquired through sexual selection. As the order of development during growth generally indicates the order in which the characters of a species have been developed and modified during previous generations; and as the newly born infants of the various races of man do not differ nearly as much in color as do the adults, although their bodies are as completely destitute of hair, we have some slight evidence that the tints of the different races were acquired at a period subsequent to the removal of the hair, which must have occurred at a very early period in the history of man.

_Summary._—We may conclude that the greater size, strength, courage, pugnacity, and energy of man, in comparison with woman, were acquired during primeval times, and have subsequently been augmented, chiefly through the contests of rival males for the possession of the females. The greater intellectual vigor and power of invention in man is probably due to natural selection, combined with the inherited effects of habit, for the most able men will have succeeded best in defending and providing for themselves and for their wives and offspring. As far as the extreme intricacy of the subject permits us to judge, it appears that our male ape-like progenitors acquired their beards as an ornament to charm or excite the opposite sex, and transmitted them only to their male offspring. The females apparently first had their bodies denuded of hair, also as a sexual ornament; but they transmitted this character almost equally to both sexes. It is not improbable that the females were modified in other respects for the same purpose and by the same means; so that women have acquired sweeter voices and become more beautiful than men.

It deserves attention that with mankind the conditions were in many respects much more favorable for sexual
selection, during a very early period, when man had only 
just attained to the rank of manhood, than during later 
times. For he would then, as we may safely conclude, 
have been guided more by his instinctive passions, and 
less by foresight or reason. He would have jealously 
guarded his wife or wives. He would not have practiced 
infanticide; nor valued his wives merely as useful slaves; 
nor have been betrothed to them during infancy. Hence 
we may infer that the races of men were differentiated, as 
far as sexual selection is concerned, in chief part, at a very 
remote epoch; and this conclusion throws light on the re-
markable fact that at the most ancient period of which 
we have as yet any record the races of man had already 
come to differ nearly or quite as much as they do at the 
present day.

The views here advanced, on the part which sexual 
selection has played in the history of man, want scientific 
precision. He who does not admit this agency in the case 
of the lower animals will disregard all that I have written 
in the later chapters on man. We cannot positively say 
that this character, but not that, has been thus modified; 
it has, however, been shown that the races of man differ 
from each other and from their nearest allies, in certain 
characters which are of no service to them in their daily 
habits of life, and which it is extremely probable would 
have been modified through sexual selection. We have 
seen that with the lowest savages the people of each tribe 
admire their own characteristic qualities—the shape of the 
head and face, the squareness of the cheek-bones, the promi-
nence or depression of the nose, the color of the skin, the 
length of the hair on the head, the absence of hair on 
the face and body, or the presence of a great beard, and 
so forth. Hence these and other such points could hardly 
have failed to be slowly and gradually exaggerated, from the more 
powerful and able men in each tribe, who would succeed 
in rearing the largest number of offspring, having selected 
during many generations for their wives the most strongly
characterized and therefore most attractive women. For my own part, I conclude that of all the causes which have led to the differences in external appearance between the races of man, and to a certain extent between man and the lower animals, sexual selection has been the most efficient.

CHAPTER XXI
GENERAL SUMMARY AND CONCLUSION

Main conclusion that man is descended from some lower form—Manner of development—Genealogy of man—Intellectual and moral faculties—Sexual selection—Concluding remarks

A brief summary would be sufficient to recall to the reader's mind the more salient points in this work. Many of the views which have been advanced are highly speculative, and some no doubt will prove erroneous; but I have in every case given the reasons which have led me to one view rather than to another. It seemed worth while to try how far the principle of evolution would throw light on some of the more complex problems in the natural history of man. False facts are highly injurious to the progress of science, for they often endure long; but false views, if supported by some evidence, do little harm, for every one takes a salutary pleasure in proving their falseness; and when this is done, one path toward error is closed and the road to truth is often at the same time opened.

The main conclusion here arrived at, and now held by many naturalists who are well competent to form a sound judgment, is that man is descended from some less highly organized form. The grounds upon which this conclusion rests will never be shaken, for the close similarity between man and the lower animals in embryonic development, as well as in innumerable points of structure and constitution, both of high and of the most trifling importance—the rudi-