

## *The Story of Hair*

clean-shaven Romans and very likely the latter then accepted the fashion of the conquerors.

On the other hand, we find this dispatch from London in the *New York Times*: "Beards are coming back. Britons growing whiskers to combat women's masculine imitations. Whiskers and mustaches are coming back. Barbers say imitation of men's styles and habits by women is given as the direct cause by those now engaged in raising hirsute adornments. With women copying masculine fashions in hair cuts, dress and smoking, proponents of the beard say it stands out more than ever as a badge of masculinity and the vogue of the clean-shaven man is on the decline." Thus John Bull's national instinct of self-preservation reasserts itself.

## CHAPTER V

### THE INDIVIDUAL AND HIS HAIR

THE theory of relationship between hair-production and the activities of the basic instincts would give the individual which produces the largest amount, the greatest potential driving force. This, too, would apply to families and races. In this respect, the white American leads the various types or nations of the great Caucasian family. This is the result of immigration. The weakling stays at home. He is content with the conditions which surround him, while the strong man is beset by wanderlust and ambition—as in the case of the Jew, for instance, whose hair production exceeds the non-Jewish races by at least five per cent. In the United States we also find more large scalp areas than among other nations, and exceptional hair production is generally synonymous with a large scalp area.

The largest amount of hair (of the first period) ever found on an individual amounted to eight and one-quarter ounces per year, of which

### *The Story of Hair*

seven ounces covered the scalp, and the rest the forearms and legs, the chest being hairless. An output of seven ounces a year seems to be all that a human scalp can hold. In the instance of this record hair grower, the hair was densely set, two and even three hairs coming from the same follicle over a scalp area of 138 square inches, which borders on the extreme. When the subject came under observation, his hair was matted, full of dirt and colonies of vermin. He sprang from a wild and illiterate family and never knew the relationship of soap and water to the body. Paradoxical as it may seem in the light of modern teachings, the uncleanliness of his scalp apparently contributed to its attraction of hair-substance, for otherwise he would have had much more on his limbs. Such growth is quite exceptional. A person who grows five ounces of hair a year on his scalp is considered very thickly haired. Four and one-half ounces is the average for an individual over eighteen in the United States. The scalp areas of adults range from ninety-five square inches to 140 square inches and the amount of hair which grows on a square inch, expressed in weight, is

### *The Individual and His Hair*

.009 ounce a year on the thinnest-haired scalps to .05 ounce on the densest.

All that hair which grows on the scalp or on such parts of the body which are not sex fields proper, pertains to the first period and results from the activity of the self-instinct. This is already indicated by the hair growth of the infant, who, at birth, is often fully covered with lanugo hair, fine and colorless, on the body, arms and legs, and has fully developed hair on his scalp. The lanugo hairs leave the body completely within the child's first few years, and for a time the hair production is confined to the scalp. On the male the fine body hairs return again after the age of twelve, caused, no doubt, by the short cutting of the male's hair in younger years which diminishes the blood circulation of the scalp in favor of forearms and legs. The blood carries the constituents of hair.

Experiments made by the author with children's hair in 1911 in Europe and again in 1923 in New York, showed that the male of our species in infancy produces hair of a stronger texture than the female. At about the age of ten, both sexes had hair of equally strong texture,

### *The Story of Hair*

while at the age of twenty the young woman (who had never bobbed her hair during childhood) produced a texture heavier by five per cent than the male of the same age. But at the same time it was found that the hair output which the male lost on his scalp had been diverted to his limbs, which generally were hairless on women who as children had never cut their hair at all.

The ducts, or outlets, through which the hair cells leave the scalp, are called follicles and there are about one thousand to each square inch. All of these are part of the scalp anatomy and, therefore, exist at birth. On every scalp we find a variety of follicle sizes and where the small diameters dominate we call the hair fine; the next size, medium; and the largest, coarse. These follicles begin to eliminate early or late in life according to the strength of an infant's nervous vitality. Some are filled with the hair substance (keratin) at birth, some before birth, while others fill but gradually as the months and even years go on, so that it is not until the age of three or four that a child can be said to be fully scalp haired. In exceptional cases of weaklings

### *The Individual and His Hair*

or perversities of nature, the hair formation process may be delayed even longer. As soon as all the follicles have begun to function the hair elimination assumes a regular tempo in boy or girl alike, which tempo, averaging one-half inch a month is kept up until late in life, and continues with the regularity of the ticking of a clock, night and day, and no matter what the position of the moon may be, or the season of the year. Hair grows on, whether we want it or not, and can no more be stopped than we can voluntarily stop our heart beats.

It follows, therefore, that the boy or girl at the age of ten has thrown off a length of hair amounting to from four to five feet, in weight about sixteen ounces; nearly ten feet at the age of twenty, equal to about fifty ounces; and nearly twenty-five feet or 185 ounces at the age of fifty. Yet we seldom see, in daily experience, any hair that is longer than three or four feet and such length can only be borne by a scalp which possesses great muscular strength and never on any other part of the body. To prevent the hair from becoming an impediment, the organism provides its own system of relief to which

### *The Story of Hair*

it was forced long before scissors were invented. The beard of the goat does not grow faster than the short fur of its back, the mane and tail of a horse faster than its body hair, or a woman's thirty-inch long hair faster than her eyebrows. Every follicle which produces hair of a definite strength, no matter where it is located, also assumes the regular tempo of speed production generally pertaining to its class. It is the holding capacity on the various sections of the body surface which varies.

Each hair follicle has muscles which hold the hair in place until its weight is greater than the holding capacity of these muscles. Thus the hair of the human scalp or of a horse's neck is longer only because the muscular grip holds the hair in its place for a longer period, thereby giving the impression of faster and thicker growth. Women used to tell us in pre-bob times that their hair never grew after it had reached the length of, let us say, twenty-five inches, but that it started again when it was bobbed. These women had forgotten the containers in some boudoir drawer which were filled every few months with the hair daily removed from comb and brush,

### *The Individual and His Hair*

fallen from the scalp and yet apparently leaving the thickness of the whole covering intact.

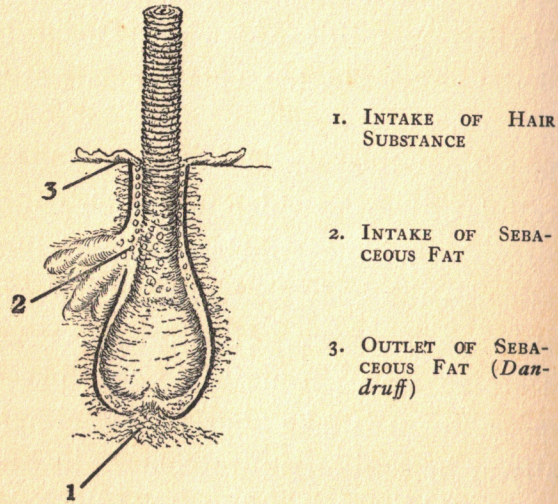
*Our hair grows continually and if a person produces a certain amount of hair each year, he must lose as much.* A man leaves his on the barber's floor, a woman hers in her comb and brush in daily quantities of from fifty to one hundred hairs unless she, too, cuts her hair as man does.

There is no "live" or "dead" hair. Our hair is a cellular filament which, although structurally organized, is nevertheless without further affiliation to the body that produced it except that it hangs therefrom. It has no nerves or arteries which may permit us to say that it is "alive," nor can it take nourishment either externally or by capillary attraction. The human system provides no nourishment for the hair because the hair does not need it, being a waste matter. Its constituents are practically immune from disease of any kind, and like another end-product of the working organism, the nails, will outlast any other part of the body even in the grave.

In what particular section of the body the

## The Story of Hair

hair constituents are produced is unknown, but there is general agreement by all who have studied this question, that they are deposited near the hair bases by the blood circulation. When the various constituents are deposited near the



hair bases they form into whitish bulbs and when these bulbs have grown large enough to fill the follicle completely, minute cells spring from them and gradually push to the surface, clinging to each other and thus appearing in the form of hair. If we examine a fallen hair we can see a resemblance to a scallion picked from the gar-

## The Individual and His Hair

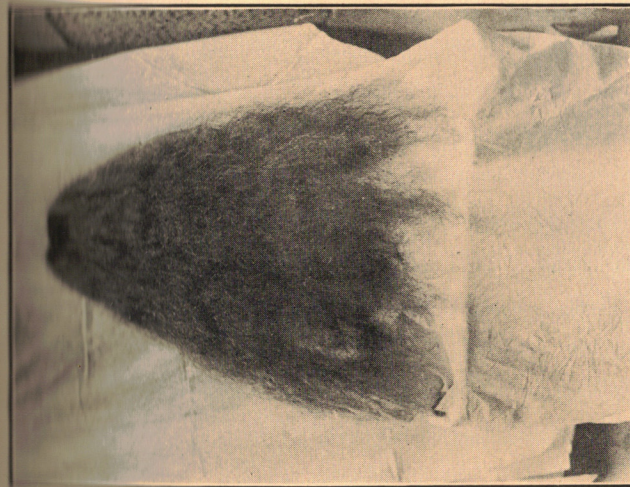
den. The bulb goes with the hair shaft when it leaves the scalp, just as the little white onion comes out of the earth when we pull up the long green vegetable shaft.

To the average person ignorant of the fundamental laws of hair the ways of our hair growth are a perpetual enigma. "Gee, the new brat looks like a monkey and so ugly that I never want to see her again," was the description I heard an urchin give of his newborn sister. And he spoke to the point. Nor was this particular baby an exception in its aspect, because that type of human child which comes to earth covered with a large amount of hair has the appearance and scalp formation of a monkey rather than of a doll. This child had a slanting forehead hardly relieved at the nose base and mounting into a gable at its highest point, the crown. Three-inch long hairs coming from the scalp covered part of the ears and eyes, which hairs had grown during the last six months in the mother's womb, silent testimony of a hairy origin. But this "monkey" went through a marvelous transformation. Within two months after

## *The Story of Hair*

birth, its hair had partly fallen out, its crown had sunk perceptibly, while its forehead had begun to bulge. A little later it was completely bald. "What is the matter," the mother asked, "that baby's hair, so long and thick on the newborn scalp, now falls off at the slightest touch with towel or brush?" She guessed, and rightly, that the scalp must have loosened, thus giving the hair bulb an easy passageway through its duct, the follicle. She did not know, however, that hair is not actually grown to the scalp, but merely held in the pit of the follicle by a muscular contraction which acts on the follicle as an old-fashioned purse string acts on a leather purse. This muscular contraction held the infant's hair. Since birth, the baby's scalp had greatly expanded. It had grown from an area of thirty square inches to about thirty-two square inches without, however, increasing in numbers the thousands of follicles. These were present at birth and filled with hair of very fine texture. As the scalp expanded through the pressure of the growing skull the follicles also expanded and the hair bulbs being very small had no difficulty in passing through the opening by the

[ 80 ]



A CONTRAST IN HAIR MUSCULAR STRENGTH

A 48- and 24-inch hair grower. Neither of these subjects ever cuts her hair. Each of them grows  $4\frac{3}{4}$  oz. per year. The reason that one is twice as long as the other is that the scalp muscular strength of one is greater than the other, thus permitting the hairs to remain eight years before shedding. On the other subject, the one whose hair is 24 inches in length, the hairs shed every four years.

### *The Individual and His Hair*

slightest traction. Thicker bulbs were needed now to fill up the wider follicles and hold the hair in place, but these were not forthcoming as quickly as the scalp expanded.

The hair follicles, which had been so rudely emptied, filled up in time with new hair bulbs—larger, wider than were possible in the smaller follicles at birth. However, the preparation of the new bulbs took time. There followed a tedious delay; anxious months for the mother before the empty follicles gradually filled up again to their brims and overflowed to the surface of the scalp as the first new hairs.

At the age of three or four the average baby is provided with a reasonable scalp covering, for all its follicles have begun to function. But the hair is straggly and uneven. Some hairs are six inches long while others—latecomers—grade down to the length of a fraction of an inch. This is an indication that the scalp is still expanding. Hardly is it again fully covered with the new crop when the shedding process begins again, with the fallen hairs always the oldest, and therefore, the longest. This fall of the oldest and heaviest is due to the same rea-

### *The Story of Hair*

son, of course, which caused the first embryonic hairs to fall—a weakening muscular grip through the further expansion of the scalp. In other words, the growth of hair bulbs has not kept pace with the enlarging follicles.

From childhood on there is no change in this procedure. The longest hairs will always be the heaviest and the first to fall, being replaced by new, thicker ones, unless—and this is an important point—we, ourselves, interfere with the organism and relieve the scalp by cutting, singeing or shaving off of the hair.

When the female arrives at maturity and the scalp has assumed its full size, the hair fall still continues. This time new forces are at work. The scalp does not now expand leaving yawning follicles through which the meager bulbs must slip out. The fall continues now because the scalp muscular organization—the purse strings—are limited to a certain tension which varies with the individual. Should the depending weight of any single hair with all the additional weight of combing and brushing added, be greater than the muscular capacity of its follicle, this hair will slip out just as the infant's hair

### *The Individual and His Hair*

slipped out. In time new hairs will take the place of the departed ones just as on the infant's head new hairs appeared. These in turn will have their term of sojourn on the scalp until they, too, have outlived the holding capacity of the follicle. This accounts for the fact that on a normal head, particularly of a woman who has not succumbed to the bobbing fad, hairs of all ages are present, and therefore of different lengths.

The carrying capacities of scalps differ with individuals as a result of training and constitution. Thus one scalp is able to carry hair thirty inches long and others only an inch or so, as in the case of adult man. Exceptional hair lengths of which we often read in the press or find exhibited in the circus, belong to the freak class. On such scalps the tension is so strong that hair fall is delayed or entirely absent. Where hair is not cut at all and an abnormal tension is present the hair must perforce get long. Six new inches added every year must make sixty inches in ten and one hundred twenty inches in twenty years.

Hair grows all through life, and does not stop, even after death. Because the opportuni-

### *The Story of Hair*

ties for observation of hair growth after death are unusually small and have been so greatly neglected, this statement is often contradicted. Indeed, to those who hold to the theory that our hair is an extension of the scalp the statement must seem inconsistent. But here are instances which seem to offer convincing proof.

England had a celebrated lawsuit which was fought for thirty-five years by the heirs of a man named Drew, against the heirs of the Duke of Portland, who died on the same day in 1870. The settlement of the estate pivoted on the identification of the body which the heirs of Drew, a dry-goods dealer, contended was that of the Duke of Portland, which contention the other side denied. The Duke, however, as all his portraits showed, was clean shaven, while Drew always wore a lengthy beard. The body in question was finally exhumed and was found to be neither clean shaven nor to have a lengthy beard, but merely a growth on the face of about one and a half inches. The buried man was the Duke, counsel contended, arguing that the beard possessed in life by the late Mr. Drew was longer than the beard of the exhumed man.

### *The Individual and His Hair*

Expert evidence was introduced to prove to the court that the hair had grown after death, and not a shred of evidence was produced or medical record presented to show that hair had ever deteriorated in the grave. The learned judges were convinced that the body was that of the Duke, whose hair follicles had continued to discharge their contents for many weeks after the other bodily functions had ceased.

In August, 1926, an officer of the Royal Canadian Mounted Police, stationed on the Mackenzie River, reported the finding of the bodies of two men who had been missing for several months. He stated that he found an extraordinary amount of matted hair and beard on the formerly clean-shaven men, while their fingernails protruded a full inch beyond the fingertips. They had died of scurvy. The progress of this disease is slow and malignant. The death struggle of these men went on for weeks and months far from human succor in a little shack where they had been snowed in part of the time. Here, too, hair and fingernail growth demonstrated that while all the other activities of the organism which before death produced the keratin

### *The Story of Hair*

constituents had ended, the latter had independently completed their function.

But, in spite of such proofs there are those who have examined cadavers without observing substantial hair growth thereon. On females who have long hair at the time of death such growth would, of course, not be noticed unless the hair had been measured beforehand. On males' scalps an inch or so of additional hair might also easily be overlooked, especially since to our knowledge investigations in this direction have never been made. Nor is a decomposing body a particularly pleasant object to linger over. Yet the hair growth after death is as logical as is the escape of smoke from a chimney after the fire below has been extinguished. A tree will continue producing foliage for weeks after it has been cut down if the cutting down takes place during a period of sap production. The sap forms in the stem, coming from the roots long before it reaches the outer branches, but when once the sap has permeated the whole and bud formation has begun, the function will proceed to its normal end in spite of the destructive ax. Similarly, our hair, as the end-produce of the

### *The Individual and His Hair*

body's activity, finds its way to the surface if once the constituents have been deposited near the exits, the follicles, even though the blood circulation which brought those constituents there has ceased to function.

We must not assume that hair growth after death will proceed alike in all persons. As our hair is the end-produce of the process of life, of the instinctive functions, the production of its constituents must be less in one body than in another before the time of death. In other words, the hair reserve must depend upon the circumstances preceding death. That a time of several months elapses between the production of the hair constituents and their final discharge from the follicles is unquestionable and that the body thus draws its hair supply from a reserve fund is proven by the fur production of the animal world, which accumulates fat in one season and converts it into hair during another. Thus the post mortem hair growth would depend upon the amount of reserve available at the time of death.

Bearing this in mind, we can well imagine the differing effects on the post mortem hair

### *The Story of Hair*

production of a struggle such as the two Canadians—robust, set-to-live men—would put up before their end as compared with that of a person shot down in an instant or dying of senility or of a long and exhausting disease.

For several years I studied the hair of a youth who, to judge from photographs, was an excellent grower at the age of fourteen, before an accident injured his spine. He spent many years in hospitals, and finally was sent home pronounced incurable, since septic poisoning had begun to wreck his body. The boy's illness lasted for five years and when he died in 1925 he weighed only forty-five pounds, even though he was five feet two inches tall. Two years before his death his annual hair production amounted to only three-fourths of an ounce, although the child was not affected mentally by his ailment. While the illness took an extremely slow downward course, a change for the better suddenly occurred nine months prior to his death as a result of a new treatment. The numerous pus outlets on the upper part of the body began to dry and the patient improved to the extent that he was able to sit up for the first time

### *The Individual and His Hair*

in years. He sat in a wheelchair attended by a mother who catered to every whim, and he declared that he felt so well that he desired to discontinue medical treatment even though he was helpless and could not stand. His hair, the true barometer of his meager inner strength, and of his waning desire to get well, diminishing even its scanty growth, belied his assertion that he felt "fine."

To test him, I said one day, "You surely do not want to get well, John, if you leave off the treatment the doctor prescribed for you." "Oh, yes, I do"—and dreamy eyes went out to the wonderful landscape. It was May and everything was in bloom. He saw his father tilling a stony acre below. "John," I said, "what are you thinking about? I am sure you think that you could not work like your father even if you were well. Is that not so, John?" "Oh, no! I could not." "But would you like to, John?" "But, I could not." "Of course you could not now, but if you were to build up and follow the doctor's orders you would soon become strong." There was no answer and I changed the subject. "Were the young ladies from church to see you last

### *The Story of Hair*

Sunday?" "Yes, they come every Sunday." "Then I am sure you had good company and I am sure that they were glad to see you now out in the open sitting almost like a soldier when all these years you had to lie crumpled up in your bed." His mother standing next to us then supplemented John's information—"The young ladies brought John grapes, chocolate and two lollypops."

A great life for John—sitting high on the hill in a brand new wheelchair, with young ladies bringing him gifts and his mother waiting on him, hand and foot. In his earlier boyhood there had been hard work, at home and in the fields when school was over, and an isolated existence. Life under the present conditions was more than satisfactory to John and the prospects before him were not alluring enough to fan the faintly glimmering embers of his will. He was not cured—and truly never wanted to be cured—and when he finally left his paradise in the wheelchair for the grave he did so softly in his sleep with everything within him exhausted. Needless to say, no further hair growth

### *The Individual and His Hair*

could have been expected after death on John's scalp or body.

An interesting case bearing on hair production was widely discussed in the English papers during the late nineties: A female child, four years old, daughter of a settler in the Orange Free State, South Africa, strayed from her parents' home. Search proved futile. It was assumed that she had died of exposure and privation or had been killed by wild beasts. Seven years later, another settler reported to the authorities the presence near his farm of a creature which he believed was a human child. The creature had a substantial amount of hair on its head, while its naked body looked brown and weather-beaten. A searching party set out and eventually located the creature on a treetop where it had taken refuge from the dogs. The searchers below readily established its human origin, but they were amazed at its behavior. It was frightened and vicious. It moved among the treetops with great agility and bit and scratched several of its pursuers before it could be brought to safety. After much investigation it was

### *The Story of Hair*

finally claimed by the parents of the lost child as theirs.

In describing the child, the reports stated that "its body was rather heavily hair-covered." This statement interests the student of hair. What covered this child's body? The casual reply, of course, is "Nature!" But "Nature" in this case had no particular reason to be more than the individual herself. That this child should have developed a hair-covering was contrary to ordinary logic. The temperature is hot enough for the natives to go naked, and yet they have no hair on their bodies. The explanation, of course, was that this child's seven years of independent living could not be compared to the life of the natives. The latter lived in society, organized and accustomed to organization, servants of formulæ, while the fugitive was dependent on herself alone and all her acts were formulated for the sole purpose of sustaining her personal existence.

These striking occurrences are interesting and guide us along the path of our thought. However, we need not rely upon them alone for object lessons. Primitive humanity is still with

### *The Individual and His Hair*

us in character, if not in form, and is represented by every uncaught animal.

It is worthy of note that our fur-bearing animals indicate an inferior hair production by a dilapidated pelt in summer. That is the time when one might assume that their life is easiest. Food is plentiful, the days are long, the dangerous hours short and Nature, in general, bountiful. Fox, deer, bear or wolf fur has no market value if the animal has been taken during "happy" times. After the skins have been tanned and made up for sale with silk and velvet lining, the hairs will fall. The pelts of animals, taken during winter, will wear for years without growing thinner. The trapper seeks the finest furs in the far North, in the regions of snow and ice. He claims that the fur is better after a severe winter than after a mild one. In our more moderate climate the pelts are of inferior quality unless taken in the last months of cold weather. The thoughtless always answer that "Nature" gives greater protection to the animal when it needs it most. However, the real answer is that the covering of the animal is regulated by the intensities of its life struggle. In the severe

### *The Story of Hair*

winter months in the arctic regions, food is scarce and obtained with greater difficulty than in temperate climes or than in summer. During the mild winter, food is easily obtained and the animal grows plump. It consumes less of the fat which it accumulated the previous summer and, therefore, it produces less fur.

The failure of fox farming as a business venture adds emphasis to these conclusions. Fox farmers have fenced off thousands of acres around snowy hills, forests and running brooks, and have endeavored in every way to simulate the animal's own natural conditions of life. They have given their animals everything they had in their wild existence, everything but freedom. They have nullified the animal instinct of self-preservation and even that of sex. And they have learned, to their sorrow, that in captivity the fox becomes plump and his fur short like that of the cow. The long hairs lose their hold as soon as the muscular tension lessens. The fox may not be aware of the actual fence surrounding him, but he has learned that at a certain hour each day rabbits, chickens or other easily devoured creatures are let loose for him.

### *The Individual and His Hair*

One jump and he has his meal. Then—nothing to do but bask in the sun until the next meal. Though his instinctive fires are thus dampened, the normal hair growth goes on because, while the individual is affected by his changed conditions, the instinct of the species still persists for uncounted generations.

In Europe, in comparatively well-populated forest districts, the wild boar still rages, despite the fact that wolves and bears—incorrectly considered equally savage and cunning—have been exterminated with weapons of lesser efficiency than those in use to-day. The boar, full grown, weighs as much as 300 pounds. He is all bones, hide and valuable bristle. He hunts his food on dark moonless nights, like a felon afraid to venture into the presence of light. He has no friend in the universe. He is "outlaw"! The degenerate descendant of the boar is the pig, house-fed, living comfortably in its sty, sheltered in winter, warmed by the sun in summer. The pig is sleek, fat and "healthy," and about as hairless as man himself, for his bristle-production is actually only about one-sixth that of the boar.

### *The Story of Hair*

The house dog, well fed and comfortably shaggy, lolls peacefully by the fireside, but within him slumbers the wolf. Return him to the forest whence he came. He is a wolf again, his temper ferocious, his hair-growth longer!

What say you now, lady and gentleman, lolling in your comfortable easy chair and bemoaning your falling hair, with the perplexed wail: "And I never felt better in my life!" Yours are the "happy times." But an inexorable law is demanding recompense for your comfort.

## CHAPTER VI

### HAIR AND THE NERVOUS SYSTEM

SUBCONSCIOUSLY, mankind always has associated hairiness with physical strength. It may have derived its belief from the biblical tale of Samson whose strength was gone when Delilah sheared his hair but whose capacity to wreak titanic destruction returned when, in captivity, his hair was permitted to grow long again. It seems apparent to the psychologist, however, that Samson, himself, shared the popular notion that his strength had come from his hair and had gone away with it.

The savage lion, in the child's picture book, in order to fulfill our conception of grandeur, must of necessity be described as having a splendid pelt, and with the stallion of great size is associated a shiny coat and long mane. There is indeed a fundamental connection between hair production and strength, but it is no longer that strength which manifests itself in the lifting of great weights or in the running of the Marathon