

# Robert (Robin) Hall (1893–1965)

President of the Ulster Medical Society

1950–51

## Presidential Opening Address Ulster Medical Society

### HAIR AND SOME OF ITS CLINICAL SIGNIFICANCES

First of all, Ladies and Gentlemen, I wish to thank you and to say how very proud I feel of the honour you have conferred upon me by electing me as your President, the more so as, similar to my immediate predecessor, I too am occupying the chair of my father, but with shortcomings of which I am only too conscious, especially when I think of those who have preceded me during the long history of the Society and its parent, which started nearly a century and a half ago as the Belfast Medical Society in 1806.

My address to you to-night has been rather a thorn in my flesh, somewhat like Androcles and the Lion reversed, so you will appreciate the feeling of relief I will experience if you, Lions, prove good Samaritans during the process of removal of the thorn!

The subject I have chosen is one in which everyone at some time or other, is more or less interested, or shall I say concerned about, its absence or presence and distribution, and I hope that some of my observations may be not without interest to you.

I have often wondered if the forty-seven scholars of King James' time perhaps could not as truly have substituted for the heart the hair — the hair is deceitful who can know it — for indeed, as Mr. Pickwick said of another word, "it comprises in itself a difficult study of no inconsiderable magnitude," and this evening I will touch, as it were, only the fringe of what has been poetically called "woman's crowning glory" — an appellation which, in view of their successful invasions into so many spheres undreamed of by their grandmothers, one rather hesitates so to designate, and also lest thus early in my year of office, I be considered archaic and a mere *Laudator temporis acti*. Certainly I could be reminded that almost synchronous with winning the vote, woman in general began to shear her hair, perhaps an incongruous proceeding, bearing in mind that in ancient Rome shorn heads were the badge of slaves, and someone has remarked upon a sinister connection between the Rape of the Lock and the result of letting woman have



her head! Be that as it may, there is, even if it be considered as contrary to St. Paul's teaching, something to be said for cutting short or at least shortening, what is not infrequently a "headache" to woman, especially those who have to work where machinery may take upon itself the warlike role of a Red Indian by adding a scalp to its belt. In Germany, however, so unpopular with the authorities was shingling, that taxes were levied on women wearing short hair, but soon that tax had to be discarded by reason of the effective retaliation of the women in refusing to cook, and fashion, that much worshipped goddess, had once again free rein.

Mere Male also has not been free from the dictates of fashion in hair, often drawn by cartoonists of a couple of centuries ago, sometimes amusingly depicting the discomfiture of some pompous person inopportunely divested of the wig, and, I may add that, in those days, the wearing of a night-cap was not effeminate, but very necessary to protect the shaved head from cold when the oppressive wig was transferred to the dressing-table for the night, like a set of dentures; whereas in those days the female of the species seems to have fashioned her hair like a

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tower upon her head, and once fairly set, disturbed it not for days, indeed it has been said that it was not unknown for a nest of mice to have solved, at least temporarily, their housing shortage, unbeknown to the later horrified wearer.

Headgear is usually credited with being a cause of baldness, this, and some may say an inordinate conceit of the younger males in their still luxurious locks (and looks) and with the not-so-young not to be outdone, has brought about the open display of bare heads. Indeed this hatless fashion is affected by even some members of our own profession — a custom that would have shocked many of our old teachers.

Hair is perhaps the most distinctive characteristic of the biggest class of vertebrates:—

Danforth says that, whether hair be considered as a derivative of some cutaneous appendage in lower forms, or as something that has arisen *de novo* in the mammals, there is a considerable array of resemblances on the one hand, and of differences on the other, which makes it difficult to accept any of the theories that have been proposed.

Phylogenetic individuality, such as is commonly attributed to the branchial arches, the eyes, or the limbs, apparently is lost, as far as hair is concerned, in the passing from the lower forms to the Mammalian and that in the findings of Meyer Lierheim (1911) show a decided difference in the number of hairs to the square centimetre in foetuses of various species including man.

“The nature of hair, by custom implies the appearance or behaviour or habit of the head hair (i.e., whether it hangs straight, waves deeply or curls in ringlets), and has long been considered to be one of the deciding criteria in the classification of races. Whereas hair in general is a subject of anthropological interest, it is the head hair that has served as a practical criterion in the classification of human races,” and Trotter goes on to say that in classifying hair “developments have occurred in two directions:— (1) Toward making classifications of hair according to its apparent gross physical behaviour; and (2) Toward finding the anatomical basis for the different behaviours of the hair through a study of its microscopic characteristics.”

Ancient history and literature contains many references to the form and colour of the hair. Most of us will recall the venerable Bede quoting Pope Gregory as saying in the sixth century, when abbot of St. Andrea, on seeing some fair-haired English children exposed for sale in the slave market at Rome: “Non angli sed angeli.”

Herodotus divided Xerxes' army into straight

groups and woolly.

Duclert in 1888, quotes de Jotemps as stating in 1824 that the form of hair depends upon the form of the follicle, and he, himself, in his researches in sheep, concluded that the degree of curvature of the follicle is coincident with the degree of curl of the hair and that straightness or waviness is coincident with presence or absence of a medulla.

Bory de St. Vincent classified species into

1. Leotriques, a cheveux unis;
2. Oulotriques, a cheveux crepus, common in Negroes, not found in whites.

Weber pointed out that the hair of man is for the most part not cylindrical and that its cross-section is oval; however, the straight hair of a friend was found to be circular in cross-section, and hair of mulattoes, which was very curly but not woolly, had diameters which were almost twice as great in one way as the other. He gave the diameters of a number of hairs and for several of these he gave measurements taken at various places along the same shaft to demonstrate the variations.

Peter A. Brown sectioned hair of as many different varieties as he could obtain and suggested a division of mankind into three species:—

1. The cylindrical piled represented by an Indian;
2. The oval piled, represented by a white man;
3. The eccentrically elliptical represented by a negro.

In this idea of cross-section of hair as a racial criterion, he anticipated by a decade Prunier Bey.

In the meantime Geoffrey Saint Hilaire, wrote on the classification of races. His primary division was based upon the way hair is inserted — whether angularly or circularly, and two kinds of hair were listed, Lissé and Crépu.

Prunier Bey examined hair from twenty-four of the great human races and their off-shoots, both macroscopically and microscopically, and suggested that the more the hair is flattened the more it rolls up and, on the other hand, the more it is rounded the more it lies smooth and straight, and considered that “the differentiating character of the hair of human races lies in the form presented in transverse sections” and that the “form is pretty near constant in the same individual, except in the cases where there is a mixture.”

Thomas Huxley adopted Bory de Saint Vincent's classification dividing races into the two large groups:—

- Leiotrichi — people with straight or wavy hair; and  
Ulotrichi — those with crisp, woolly or tufted hair.

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Götte, writing in 1867, explained curling as depending on the shape of the follicle, which he described as being markedly curved in the negro as compared with the straight follicles of other peoples.

Nathusius considered that the nature of the hair is the result of “properties less superficial or accidental than the more or less flattened form of the hair,” and that the form of the follicle, together with other structural characteristics of the skin, may determine the behaviour of the hair, also that the spiroid form of the hair follicle would be found in human skin bearing fuzzy hair.

Charles Stewart wrote regarding the position of the follicle in the skin of the Negro, “The position of the hair and follicle embedded in the skin of the negro, is much longer and curved, so that it commonly describes a half-circle. Consequently, the papilla at the base of the follicle either lies horizontally or is directed obliquely inwards towards the subjacent bone.”

Stuart, in 1882, was in general agreement with this, but found the curve to be almost invariably a quarter-circle.

Haeckel's classification was similar to Huxley's, but with slightly more detail and comprised twelve human species.

In 1878, Topinard gave the nature of the hair as the fundamental character among the physical characters of race classification, the chief divisions of which were:—

1. Round in Section — straight hair;
2. Intermediary — wavy, frizzy;
3. Elliptical — woolly;

placing the races in one of these; secondary consideration having been given to skull and to skin colour, and in 1885 introduced the following five divisions:—

1. Straight — rectilinear — as a horse's mane;
2. Wavy — a long curve or incomplete spiral from one end to the other;
3. Bouclé — a curve or rolling up manifested only at the extremity;
4. Frizzy — well executed spirals forming successive rings half inch or more in diameter;
5. Crépu or Laineux — numerous ringlets lying one upon the other, forming tufts or rolls like the wool of a sheep.

Broca considered that, in addition to the form of the cross section, the presence or absence of a medullary canal and the characteristics of the skin in which the hair is implanted is important. He separated the races into two groups on the basis of the nature of the hair — lissotriques and ulotriques

and suggested the terms: — “droit”; “ondé”; “bouclé”; “frisé”; “laineux”; be used.

Ranke was critical in reviewing in 1890 the foregoing classifications, and concluded that hair as a means of distinguishing between races is just as inexact as skin colour, but a useful criterion for distinguishing between the smaller race-groups.

Adolphe Bloch writes in 1896, observing groups from all races at the Paris International Exhibition in 1889, came to the conclusion that the lighter the skin the more developed is the hair in contour of the hair shaft equally, but that the presence of the erector pili muscle was somewhat contributory, whereas the presence of the sweat glands acting on the pre-formed cylindrical shaft as “rollers” was the real cause of the flattening.

Vigier and Bloch, in 1904, were in accord with the theory that the shape of the follicle is responsible for the nature of the hair. They, raised the question as to whether the negro follicle is curved at birth, since the hair is not crépu then.

Toldt wrote on the classification of hair as regards the whole mammalian group, including tactile or sensory hairs as well as the sub-divisions of “protective” hair.

Danforth, writing in 1925, says, “Unfortunately no wholly satisfactory classification of hairs has been proposed, . . . due largely to the complete series of inter-grades that can be found between any two hairs.” He drew attention to the twisting of hairs on their own axis, seen even within its follicle and considers it may be of greater significance anthropologically than the form of cross-section.

Hausman says that the gross qualities of human head hair en masse seem to be much more accurately characteristic of ethnological groups of mankind (or at least more definitely usable) than do microscopic individual hair shafts.

And Bernstein and Robertson, in an effort to find a means of differentiating the races by the hair, which would be simpler than determining the shape of the cross-section, showed that Mongoloid hair weighed the most, Caucasoid weighed less, and Negroid hair weighed the least.

Cooper wrote in 1930 that endocrines may control to more or less extent the growth of hair and the relative coarseness or fineness of the shaft, but that, so far, direct evidence that they influence the nature of hair is lacking.

Trotter, who has carried out much work on the subject, studied the form, size and colour of the head hair, in a group of American whites of both sexes. The form of the shaft (expressed in an index) was found to

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be more elliptical in young girls than in young boys, but after five years of age, no difference was found between the sexes or between different age periods. The size (cross-section area) likewise showed no sex differences, but a lesser area in the young (boys up to ten, girls up to fifteen years) than in the older groups, whereas the slight variations between the different age periods of the older groups, were insignificant.

In a Study of Hairs in the middle segments of fingers and toes, it was found (Danforth 1921) that there are marked racial and familial differences in number, which are easily demonstrable both in living and in microscopic material. Probably other parts of the body also show such differences in greater or less degree, although Trotter (1922) has shown that in the beard region they are extremely slight, if indeed they occur at all. But on the scalp, Friedenthal claims that there are correlations between the colour or calibre of, hairs and the total number present, the numerical difference between fine blond and coarse red being 140 to 88. These data are probably reliable, at least to the extent of indicating hereditary differences (since hair colour is hereditary) in the number of hairs on the heads of different individuals, so it appears that, in the human race, individual hairs of one person cannot in general be satisfactorily homologized with particular individual hairs of another person. This is probably true of unspecialized hairs in other mammals, and the production of more or less numerous hair follicles may be regarded as a rather generalized function of the developing skin, and the hair follicles themselves, should not be thought of as endowed with those special peculiarities which are commonly postulated to account for the resemblance between comparable parts in parent and offspring. On the contrary, at the evidence thus far presented, indicates that the production of hair follicles by the skin, is analogous to the production of leaves on the branches of a tree. The number actually produced is presumably dependent on a number of factors, one of the important ones being the size of the individual when the formation of new follicles ceases.

Danforth working on tactile hairs (vibrissae) of a large number of mouse heads, found that they were arranged in a remarkably constant way – with 99 per cent. regularity as regards the vibrissae above the eye, and a mere 3 per cent. irregularity at the angle of the mouth.

He says that various morphologists have homologized hair with cutaneous sense organs, placoid scales, dermal scales and feathers, as well as with certain parts of these structures. Other observers have maintained that one should speak of

Hair not Hairs, and consider the pilary system as something *sui generis*. The acceptance of any one of the proposed theories leaves unexplained a mass of good evidence which supports the others, . . . and that there is no correspondence between hairs and any of the structures from which they are supposed to have evolved, or when the finer hairs are considered between the hairs of one mammal and those of another.

The general conclusion from this study is, that homology between two structures is dependent upon similarity of genetic factors involved in their production, and is consequently usually partial and not absolute.

Trotter found in studying hairs of the axilla, pubis and anterior crural regions in man, that the “growth period” and the “quiescent period” of the follicle are approximately the same length.

H. Bulliard, working upon hairs of the dorsum of the hand, found a longer rest period: the ratio of growth to rest being as seven is to ten.

A similar variation between the lengths of the two periods was found by Danforth, in studying the terminal hairs of ears and eyebrows, to be eight weeks for growth to three months rest.

Helen Dawson avers that the relative period of growth is to the rest period probably specific for classes of animals, but that further work should be done. Personally, I think that state of health, diet and changes of environment will considerably influence, if not vitiate experiments. She has also found that the average period of rest in male, and in female cavies that have never been pregnant, is less than in those females that have been pregnant.

On the subject of pregnancy, I have observed that blonde women are less likely to tearing of the perineum at child-birth than are brunettes.

As regards the measurement of hairs, Trotter in 1924 advocates an ingenious method – injecting minute quantities of indian ink at the immediate vicinity of the follicle to be identified, keeping for reference a diagram of the groups, and using a small capillary tube graduated in millimetres, up which the individual hair is passed when measuring, and the end of the tube rested lightly against the skin of, the animal. The length is recorded from week to week and note kept of any hairs that have fallen out.

### CANITIES.

History records many instances of hair having turned white suddenly, and Brown-Sequard observed on several occasions, in his own dark beard, hairs which had turned white in a night, and these he epilated.

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Prentiss collected numerous cases of sudden canities, which he published in 1890.

In 1851, a case was reported in the *Boston Medical and Surgical Journal*:— “A young man of 30 years of age, whose hair was scared white in a day; he was sick in a mining camp, was left alone, and fell asleep: On waking he found a grizzly bear standing over him!”

Ludwig has known eyelashes to become white after smallpox; and these and the eyebrows are reported to be decolorized sometimes in neuralgias of the isolated branches of the trigeminal nerve; everyone is familiar with the local patches of white which may occur in the region of distribution of a nerve that has been injured.

White hair is usually evidence of advancing years, but it may arise in cases of sudden or prolonged grief, impaired health, neuralgia or other local disease, or in association with overwork. Premature grey hair in or before the third decade is usually hereditary.

When not contra-indicated, administration of thyroid occasionally restores the colour and it is said, though I have not tried it, that para-amino-benzoic acid restores the colour.

In my experience, it is usually found that hair which turns white early is more likely to remain on than where baldness commences before the grey gets an opportunity to occur.

### TRANSIENT YELLOWING OF WHITE HAIR DURING RHEUMATIC ATTACKS.

This condition I have noticed in a number of patients, and one case in particular I will mention, where there was absolutely no question of any dye being used. She, a well-built, fair-complexioned, active, married woman, a multipara, who for a number of years had suffered from attacks of rheumatism, ultimately affecting the heart-muscle which (in conjunction later with gall-stones) was the cause of her death in her sixty-seventh year.

On several occasions at intervals of years it was observed that when her rheumatic pains were most present, her normally white hair (of which colour she had become very proud, since it became so in her thirties) became yellowish at the roots, and as the rheumatism was relieved, gradually the hair resumed its white hue, only to recur again and pass off similarly with further rheumatic attacks.

In the literature I find a case, though not quite similar, mentioned in the “*Journal complémentaire du dictionnaire des sciences médicales*,” in 1818, of a woman whose hair, naturally fair, assumed a tawny red as often as she was affected by a certain fever, and turned to its natural colour as soon as the

symptoms abated.

### LUETIC THINNING OF THE HAIR

Harrison says that examination of the scalp in the secondary stages of syphilis often shows the characteristic alopecia in which the hair of the beard and eyebrow may also take part; and that the most noticeable form of alopecia is that in which the hair falls in irregular patches, and the back of the scalp assumes a moth-eaten appearance.

In my students days patients showing the later manifestations of syphilis, such as tabes dorsalis, were more numerous than they are now with the more universal facilities for thorough treatment, and with the realization by the patient of the necessity for subsequent tests long after the signs of the disease are evident to him: and as regards the hair of many of them seeking treatment, not for any scalp or hair condition, but for what proved, on examination, to be the later ravages of the disease, I was rather impressed by the character of the head hair. In many cases it presented not the thinning at the crown or temporal regions usual with advancing years, but a thinning from the forehead back to the vertex — the hairs standing up rather comparably to a thinned-out plantation of trees on a hilltop. It was usually found that in these cases they had been treated fairly early, but on the early signs of the disease becoming not evident or inconvenient to the patient, treatment had ceased too soon.

I do not say that it occurs in every case, but when it does I look upon it as a clinical sign very suggestive of a history of the disease having been contracted some considerable time ago. I may add that no skin condition was present on the scalp.

### DARK EYEBROWS IN AUBURN-HAIRED PHTHISICAL PATIENTS: AN UNFAVOURABLE PROGNOSTIC SIGN.

This darker colour of the eyebrows of auburn-haired phthisical patients was a sign to which my father, the late Robert Hall, drew attention in his clinics in Belfast Infirmary and Whiteabbey Sanatorium. The first time I heard it was when he had taken me, as a young school boy round the Sanatorium wards with him on our way to visit friends living in the vicinity, and I remember his drawing the attention of his new house physician to it in a patient with early pulmonary tuberculosis. His remark that it was an unfavourable sign made a deep impression on my mind. Subsequently, as a student in his class and later as his house physician, I often heard him mention it and say that it did not necessarily betoken the presence of the disease, but that the constitution of a patient so endowed is soil that is not resistant to pulmonary tuberculosis when once having gained a

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hold, and in his experience of upwards of sixty thousand cases of phthisis, he found it an unfavourable prognostic sign. He never published the observation, which I venture to call "Robert Hall's Sign," and to publish it now after he has passed on is the reason I have chosen HAIR as the subject of my address to you to-night.

I thank you for having borne so patiently with me, for I feel, like King Charles the Second, in that I have taken an unconcionable time in coming to the end!