

### *The Story of Hair*

fant's hair should neither be brushed nor combed unless it becomes matted. Scales, as often noted on infants, will not form if dry cleaning methods are employed. These scales result mostly from the use of soap which mixes with the sebaceous fat and the shedding skin. It is for this reason that physicians forbid the use of soap and water in cases of eczema. If a child still has curly hair at the age of four, she is quite sure to retain it for the rest of her life unless conditions as above referred to cause it to deteriorate gradually.

## CHAPTER XIX

### THE PERMANENT WAVE

SECONDARY only to its hygienic hair requirements is modern society's demand for dyeing and waving. The waving of hair was formerly accomplished by various means, and if we can take evidence which recent excavations afford, it has been in practice as long as history gives record of human existence. Up to the time of the discovery of the modern principle of permanent waving, the modes of hair waving: heat or force, the former applied by heated tongs and the latter by winding the hair tightly over some small object, had not been changed.

Every woman to-day knows what a permanent wave is. She knows that it is a process of curling straight hair so that it resists all the usual attacks made on artificial curliness by weather changes. The same agents which defeat artificial curliness imparted to human hair by other methods, improve the curliness which follows a

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permanent wave application. This in itself is, of course, a great advantage to the busy woman who ordinarily would be compelled to curl her hair every day or even to sleep with hair curlers in order to be what she considers well-groomed for the coming day. Yet, in spite of this advantage it is doubtful whether the invention of permanent waving, which dates back to 1905, would have survived its early years had it not been for an incidental benefit which women derive through the application of the process. We refer to the woman with "oily hair," a condition brought about by a liquid which is produced by over-active sebaceous glands. This is rarely noted on heads whose hair is naturally curly but wherever found it is immediately modified by the application of a permanent wave treatment. The reason for this, no doubt, is that a certain intercourse between the atmosphere and the hair base, denied to straight hair but open to naturally curly hair or permanently waved hair, acts favorably on the sebaceous glands.

The original basis of the permanent-wave invention was the structural characteristic of nat-

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urally curly hair, regarded from the viewpoint of action rather than from actual physical form. Curly hair, as every woman knows, becomes curlier in rainy weather or under the influence of perspiration, the reason for this being that certain kinds of hair can absorb humidity which after entering the hair structure vaporizes under the influence of body heat and extends the hair shaft in width while contracting it in length.

The inventor of permanent waving, being aware of the structure of the hair shaft, and the effect of humidity on the porous cells, made experiments on straight hair with the aim of altering the hair structure in order to permit the favorable action of humidity as in the case of natural curling hair. The first permanent waving process, which has from year to year undergone many improvements, came into being after several years of experimentation. In the course of its commercial exploitation drawbacks formerly unsuspected showed themselves. One of the greatest of these was the lack of general skill in the handling of human hair, and still more vital, the gradual disclosure that there were unsuspected varieties of human hair of

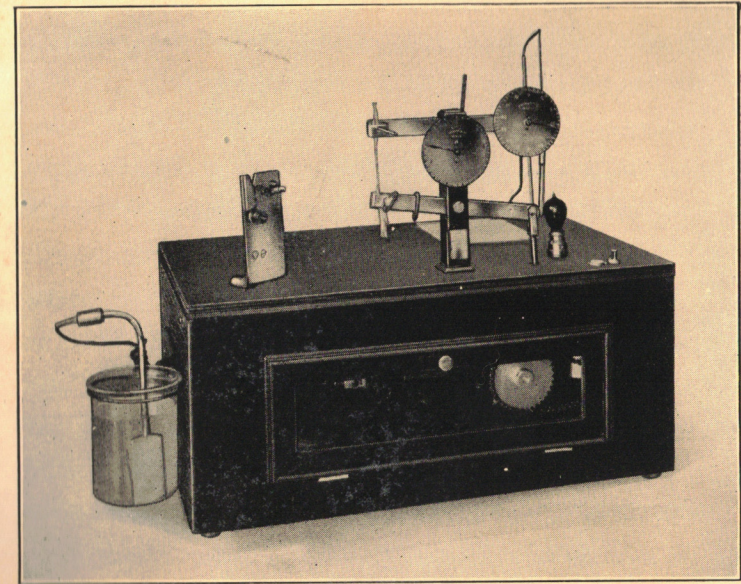
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which some responded excellently to the process while others were detrimentally affected.

Briefly, the application of a permanent wave consists of boiling the hair in an alkali solution while it is tightly wound on a curling rod. There is no solution in existence which can be used equally for all hair, since all hair is not alike. Some hair is naturally so porous without being actually curly as to take up a great deal more of the solution than other hair. Where such is the case the hair becomes brittle and is easily broken off by the comb and brush. The heating of human hair, as required in a permanent wave, has absolutely no deleterious effect on the hair-structure since it is limited to the boiling point of water and human hair can stand some hundred degrees more of heat without suffering in quality or texture.

However, as the advantages provided by the permanent wave became more recognized and the demand for it greater, it was unavoidable that complaints became more numerous also. These finally led to a hair classification, which was accomplished in 1926 when human hair was classified into ten groups, each class or

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THE HAIR TEXT-O-METER

Over 30,000 various hair kinds had to be treated, tested and compared to make a hair texture classification possible. The classification rests on the basis of absorptivity of the hair as expressed by its elasticity.

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group comprising those qualities nearest in relation to the key or center of the group. The relationship was based upon the natural porosity of the hair. In other words, where hair showed its texture by its absorption capacity, it was given a classification, and a definite strength of alkali solution was found for the particular class in order to wave it without any damage. In making the classification into ten divisions, the procedure first followed was to weigh with extreme care a given kind of hair, then to dip it into a heated alkali solution for a definite time and ascertain the amount of absorption by placing it on the scale again. This showed that some hair absorbs one hundred per cent of its own weight, some ninety per cent, some eighty per cent, some only ten per cent or less. However, this procedure was not practical for use in the beauty parlor as the testing required considerable skill and training. A numerical relationship was, therefore, established between the absorption capacity of a given hair kind and its elasticity under weight. After years of experimentation, this process was perfected and the hair was again classed into ten groups on the

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basis of its elasticity instead of absorption, the groups running in metric figures from one to ten. On this scale, ninety-seven per cent of human hair can now be tested in advance and those troublesome consequences which formerly were unavoidable can now be overcome. The remaining three per cent are extreme cases and consist of hair to which certain dyes have been applied or which constitutionally are of a baffling quality and of insufficient number to provide data for information.

To establish elasticity-expression relative to hair quality, the width of a sample of hair cut from the particular head is carefully measured as a rope. The size required on the present scale is three sixty-fourths of a square inch constituting from eighty to one hundred and sixty hairs according to the texture. The exact measuring of this strand must be the basis of the diagnosis and for this reason almost automatic means to establish it have been invented. The sample is dipped in a two per cent boiling alkali solution of the sodium class for a period of ten seconds. It is then fastened between two clamps on the testing machine and subjected for thirty

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seconds to a weight of four pounds. An indicator gives the resulting expansion. The expansion depends upon the penetration of the boiling liquid into the hair shaft. Where much has entered, the elasticity is greater than where little has been absorbed. The hair sample is then removed from the clamps and again dipped into the same boiling solution for thirty seconds and once more it is subjected to a pull of four pounds. After noting the second reading the performance is repeated for a third time when the resulting figures make it possible to determine the structure of the hair.

The strength of the alkali solution needed for waving the tensesst qualities of hair—those absorbing ten per cent liquid, has been ascertained to be ten per cent by the Baume hydrometer measurements. The latter—though chemically not quite exact—nevertheless, answer the purpose fully. Hair which through its elasticity indicates an absorption capacity of twenty per cent needs a weaker solution—nine per cent. And so down—grading the solution strength to meet the requirements of the hair's absorption until we come to hair qualities absorbing 100

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per cent when the solution needed is but one per cent alkali strength.

It will be seen that this treatment to make straight hair curl naturally, or permanently, is on a logical basis. It amounts to no more than the restoration to straight hair of a lost characteristic. If it were not for the fact that new hair cells of the straight kind were emanating from the scalp continuously, in other words, if our hair did not grow all the time, one single treatment in a person's lifetime would be sufficient to keep the hair curly because the shaft structure which has been opened once will never close up again provided the treatment is correctly given and the hair shafts are not twisted when wound on the curling rod. Such hair indeed assumes all the characteristics of hair which curls naturally. Like the latter, the former needs humidity to make it curl. It will lose and regain its activity under the same circumstances as naturally curly hair would. Unfortunately the public is much misused by the permanent waving profession. The treatment is not understood by the average operator and full advantage of the public's ignorance in matters of

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hair is taken. Most parlors have no means of classifying a patron's hair in advance of the treatment, which involves a considerable risk. The standard of a profession is always regulated either by law or by public demand. Public demand rises as public knowledge of a subject increases but there is no public knowledge in permanent hair waving. To most women, as to most parlor operators, the permanent wave treatment is a machine performance, pure and simple. For this reason many cultured women refrain from having it frequently although the treatment, if correctly obtained, would add considerably to their joy of living.

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