FIRST INTERNATIONAL SYMPOSIUM
Paris-Geneva-London

APPROXIMATELY 25 members of the Society of Cosmetic Chemists along with an equal number of family members and guests left New York on July 27th to participate in cosmetic seminars in Paris and Geneva and to attend the Symposium on the Biology of Hair Growth in London.

The Société Française de Cosmétologie held an International Congress of Cosmetic Societies at the Centre National du Commerce Extérieur in Paris. There representatives from eleven countries laid the groundwork for the formation of an International Society of Cosmetic Chemists.

The technical symposium was held on July 31st; it was opened by the president of the Société Française de Cosmétologie, M. E. Bourdet. President of the U. S. Society, S. J. Strianse, replied by stressing the importance of an international federation of cosmetic societies and the fact that the cosmetic chemist has finally been recognized in the field of science. Twelve papers were presented by U. S., French, German, Swiss and Czechoslovakian delegates.

The first paper given was by S. Sabetay (France) on the French contributions to cosmetic science. The speaker covered the introduction of such materials as squalene, amino acids, oleyl alcohol in lipsticks and lactic ferments, thioglycerol and thiolactates, placenta extracts and water soluble vitamin A, to name a few. It was pointed out that the French cosmetic industry, unlike the industry in other countries, does not consider costs in adopting new materials for products.

The second paper given by M. G. deNavarre (U.S.A.) was a fifth study on the subject of the interference of nonionic emulsifiers with preservatives. The speaker pointed out that there were possibilities to prevent this interference in the use of anionic, cationic and ampholytic materials. The greatest hope at the time of the report was for the ampholytic surfactants.

Dr. Irwin I. Lubowe (U.S.A.) gave the second American contribution at this conference on his studies on experimental clinical use of several antiseborrhoeic agents. After going over the basic discussion of the subject, slides of 23 different fungicides and their activities against *Staphylococcus aureus*, *Pityrosporum ovale* of two types and *Microsporum lanosum* were shown.

Dr. Juon (Switzerland) gave a paper on the biomedical treatment of the hair and scalp. The subject is one in which the speaker has specialized for

a number of years, studying the usefulness of certain trace materials, vitamins and several therapeutic agents. The injurious effect of certain unsaturated lipoids was mentioned.

J. Morelle (France) reviewed sulfur containing chemical substances and their application in cosmetics. He tried to tie together the presence of sulfur with certain biochemical reactions. The presence of sulfur in biochemical materials was discussed from the viewpoint of its need by the body.

After lunch Dr. H. C. Friederich (Germany) discussed a number of cutaneous reactions resulting from the use of cosmetics.

Dr. J. Cotte (France) then gave a review of his study on the subject of diffusion of medicinal materials from various types of novel cream and ointment bases.

Dr. A. Zenisek (Czechoslovakia) gave an additional paper on his long study of urocanic acid, which is excreted in the perspiration, and its effect on skin irradiation in sunshine. He pointed out that a certain amount of urocanic acid is necessary to be able to get a satisfactory sun tan.

Samuel Cohen (U.S.A.) discussed the subject of dimethylhydantoin and its derivatives as novel cosmetic materials. He traced the chemistry of this substance and pointed out that it had application in certain types of hair sprays, among other cosmetics.

Dr. J. Sfiras (France) then gave a résumé of a long study on the effect of soaps on perfumes or to put it differently, the stability of perfume in soap. Tables of data were presented to illustrate the text.

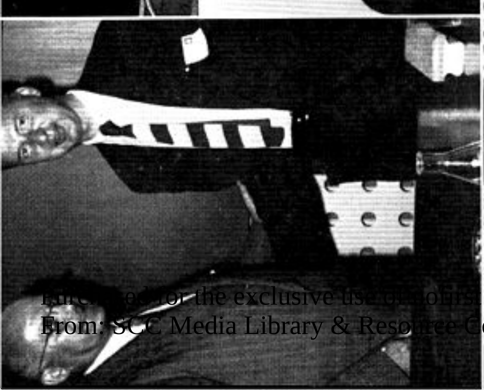
Dr. Paolo Rovesti (Italy) discussed the subject of biocatalyzers for the skin as derived from vegetable juices. This has been a specialty with the speaker for a number of years.

The final paper was given by Professor J. Lecourt (France) on the use of Royal Jelly in dermatology and cosmetics.

This entire group of papers is to be published in a new French journal entitled, *Cosmetologie*, the first issue of which has gone to press at the time of this report.

In Geneva the recently formed Swiss Society of Cosmetic Chemists welcomed the U. S. delegation on August 1st. Two technical meetings were held with papers given by six Swiss scientists at the first meeting on August 2nd at the Aula of the University of Geneva. After an introduction by the president of the Swiss Society, Kurt J. Pfeiffer, a responding commentary was made by President S. J. Strianse of the U. S. Society. The meeting was then turned over to Dr. Donald Powers and Edward Morrish of the U. S. Society who introduced the speakers on the program.

Dr. N. Avalle gave the first paper on the subject of Aleurone and Bialeurone, the most recent discovery and its applications to cosmetics. Dr. Avalle discussed the composition of aleurones and their possible biochemical relationship to skin health.



This was followed by an address by Dr. Robert Brun, a dermatologist, on the subject of acanthosis which is a thickening of the epidermis resulting from the application of various types of cosmetic materials. Among those covered were oleyl alcohol which has a thickening effect on skin, lauric acid, the most active of the saturated acids and erucic acid, the most acanthogenic of the unsaturated acids.

P. Desbaumes along with J. Deshusses presented a profound paper on the chromatographic study of colors and other materials used in cosmetics. Chromatograms were displayed and techniques for performing the chromatography were demonstrated simultaneously with the giving of the paper.

Dr. W. Guex gave a paper on the use of carotenoid derivatives as colorants in cosmetics. Their chemical derivation and similarity to natural colorants was stressed. A group of novel materials along with some that are already in use in the United States and elsewhere were displayed.

Dr. Y. R. Naves discussed a problem in chromatography which called attention to an interpretation of chromatographs obtained in gas chromatography procedures, and possible misinterpretation of certain data.

Dr. M. Stoll reviewed the research on ambergris, starting with the purchase of the right amount of good ambergris, analyzing it for active constituents and reconstituting the important odorous substance synthetically.

The second meeting on August 5th featured several additional papers. Dr. Irwin I. Lubowe repeated his paper given in Paris and added to it some additional comments on the use of corticosteroids and their effect on hair growth and scalp conditions. M. G. deNavarre gave a summary of the work done to date on the interference of nonionic emulsifiers with preservatives, a paper based largely on one presented before the Society of American Bacteriologists earlier in the year. Samuel Cohen's paper on hydantoins was repeated for the benefit of the Swiss audience.

The Swiss symposium ended with Kurt Pfeiffer's contribution on the study of cosmetic production, products, equipment, advertising and journals on the subject of beauty, as they are in fact in the various countries of Europe, for the benefit of the American audience in particular who do not have easy access to this type of information.

Dr. Robert A. Marriott, past president of the Society of Cosmetic Chemists of Great Britain and director of County Laboratories, Limited, met the U. S. group on August 6th along with president of the British Society, Jack Pickthall and secretary, Fred Riley. The British Society welcomed the U. S. delegation at a buffet supper that evening which was followed by a joint meeting of the directors of the two Societies.

The British Society for Research on Ageing Symposium on The Biology of Hair Growth met at the Royal College of Surgeons, London, on August 7th through 9th. This symposium was made possible by the financial support of County Laboratories, Limited.

To summarize all the papers given at this symposium, the British scientific magazine, *Nature* (**180**, 592, 1957), kindly allowed the JOURNAL to quote verbatim their report which follows.

Biology of Hair Growth

A symposium on the biology of hair growth, organized by Prof. W. Montagna (Providence) and Prof. W. S. Bullough (Birkbeck College, London) under the auspices of the British Society for Research on Ageing, was held in London at the Royal College of Surgeons during August 7–9. The symposium secretary was Dr. G. Bourne (St. Bartholomew's Hospital Medical College, London). The very large audience from Europe and the United States was welcomed by Sir Francis Fraser (British Postgraduate Medical Federation, London), and introductory addresses were also given by Prof. Montagna and Prof. S. Rothman (Chicago), who both referred to the great advances made during the past decade in our knowledge of the structure and physiology of mammalian skin.

The first day was devoted to the structure of the hair and the hair follicle. In the opening address Dr. E. Van Scott (Bethesda) dealt with the anatomy of the human hair follicle, describing in particular the changes which occur with age. He was followed by Prof. Montagna, who discussed the manner in which the undifferentiated matrix cells move upward to arrange themselves in concentric sheaths prior to their differentiation. Of particular interest was his account of the follicular blood system, and of the way in which it is turned inside out as the follicle passes from anagen to catagen. Dr. O. Braun-Falco (Mainz) then described the distribution of enzyme systems as revealed by histochemical techniques, stressing among other things the evident importance of Krebs cycle and cytochrome enzymes in the active matrix. In the discussion following these papers attention was directed to what proved to be two of the recurrent themes of the symposium, the role of the dermal papilla and the nature of the drastic change in the matrix cells during the onset of anagen. It was suggested by several speakers that these two are probably closely interrelated, the initial stimulus to the growth of a new hair developing in the dermal papilla and spreading from there to the matrix cells. Evidently the dermal papilla contains active enzyme systems during the follicular growth phase, but there is an apparent lack of activity during the follicular resting phase.

The account of follicular structure was continued by Dr. E. H. Mercer (London). With the use of a new embedding medium which allowed excellent sections to be cut at extreme thinness, he was able to show a beautiful series of photographs taken with an electron microscope. He first examined the structure of the undifferentiated matrix cells and the irregular nature of their boundary with the dermal papilla. He then gave details of

the intracellular formation of keratin fibrils in those cells destined to form the hair shaft, and showed how such fibrils ultimately filled the dying cells. Those cells destined to be part of the inner root sheath first lay down trichohyaline granules which apparently join together and become fibrous in the region where the sheath itself becomes birefringent. In the more static cells of the outer root sheath the cell membranes were shown to be highly folded. Later discussion ranged over the question as to how far the details described might be artefacts due to the drastic nature of the technique, but Dr. Mercer was confident that his results were reasonably accurate. The day then ended with a detailed account by Dr. G. Matoltsy (New York) of the chemistry of the keratinization of skin, horn, and especially hair.

The second day began with a description by Dr. E. H. Mercer of the biosynthesis of fibers. This was an especially interesting contribution, in that comparisons were made with such other forms of fiber formation as are seen in collagen, in the silk glands of caterpillars and in the egg-capsule glands of cockroaches. He traced fiber formation from the aminoacid micromolecules, through the precursor macromolecules to the fibrillar macromolecules and the stabilized intracellular aggregations of fibrils. He discussed the alternative possibilities that in fibril formation the polypeptide chains of the precursor macromolecules may open out, or that these macro molecular blocks may fuse together end to end. On the latter alternative, if the blocks, are symmetrical a straight fibril should result, but if they are asymmetrical the result should be a helix. After this address, Dr. T. Fitzpatrick (Portland, Ore.) considered the nature of hair pigments. He pointed out that they fall into two chemical groups, the brown-black melanin pigments which are so widespread in Nature and the yellow-red pheomelanin pigments. These two pigment groups are under separate genetic control, and the two metabolic pathways and their interconnections were described in detail.

Dr. H. Chase (Providence) returned to the question of the various sheaths of cells which form the hair and the inner root sheath. He stressed again the precise way in which the undifferentiated matrix cells orient themselves to form these sheaths, and described elegant experiments by which the matrix cells could be displaced. In those follicles which survived this drastic treatment it was found that the displacement of the matrix cells in no way affected the subsequent formation of the hair, thus showing that the cells are equipotent and that their subsequent differentiation is entirely dependent on the position in which they find themselves. Dr. Chase also introduced the subject of the behavior of the pigment cells, and this was taken up in more detail in the subsequent paper by Dr. M. S. C. Birbeck (London). Using electron microscopy, he described the structure of the melanocytes on the top of the dermal papilla, gave details of the formation of melanin granules in association with intracellular cytoplasmic

lamellæ, and showed how the granules are passed through the cell wall into the adjacent precortical cells.

The attention of the symposium then turned to the physiological aspects of hair formation. Prof. A. Durward (Leeds) began with a stimulating account of the vascularization of follicles. The smaller follicles have no particular blood supply, and capillaries do not even penetrate into the dermal papillæ. The larger follicles, however, are intimately surrounded by a capillary network and their dermal papillæ are well vascularized. In the rat the production of new hairs occurs in waves passing ventrodorsally, and the blood flow was shown to be augmented in regions of rapid hair growth. The paper ended with a consideration of the effects of plucking quiescent hairs. Such treatment activates the follicles, increases the blood flow, and results in the production of new hairs. However, this only happens if a large enough area of hair is plucked, a result which suggests that the plucking of only a few follicles results in too small a stimulus.

The second day ended with a paper by Prof. W. S. Bullough and Dr. Edna B. Laurence (Birkbeck College, London) on the mitotic activity of the follicle. They began with a description of the mitotic pattern in the growing follicle, and of the remarkably high rate of mitosis of the matrix cells. The energy relations of this great mitotic activity were then described, and it was shown by means of *in vitro* studies that cell division is completely dependent on respiration and that it cannot be supported by glycolysis alone. The two most important raw materials are glucose and oxygen and any inhibitor of glycolysis, the Krebs cycle, the cytochrome system, or the processes of energy transfer immediately inhibits mitosis. In the intact mouse the active mitosis of the matrix continues unabated in almost all circumstances and is only reduced at the point of death through starvation or shock.

The final day of the symposium began with another paper by Dr. Chase, who discussed the possible ways in which a resting follicle may be stimulated to begin a new phase of growth, and who confirmed the point made by Prof. Durward that a certain minimum number of hairs must be plucked before new growth will commence. He added the important information that in early telogen many more hairs must be plucked to stimulate growth than is necessary in late telogen, a result which suggests the possibility of a slow build-up of some natural stimulator during telogen. He then referred to the effects of radiation, and this subject was taken up in detail by Dr. Van Scott, who described a method of using hair roots as a tool for checking the effects of ionizing radiations on the body.

The nutritional problems of the growing hair were next discussed by Dr. M. L. Ryder (Wool Industries Research Association, Leeds) with special reference to wool. Carbohydrate and protein, but not fat, are evidently critically important, and Dr. Ryder went on to describe the results of experi-

ments on the uptake of radioactive glucose and of radioactive cystine. The former is apparently absorbed predominantly by the hair bulb while the latter appears to enter higher up, just below the region of keratinization. Then followed a lecture by Dr. J. B. Hamilton (New York), who discussed what are evidently genetic differences in the rate of hair growth in Caucasian and Japanese men and women.

The final afternoon began with a review by Dr. M. P. Mohn (New York) of the effects on rat hair growth of the hormones of the gonads, adrenal, pituitary, thyroid and islets of Langerhans. Inhibitory effects were described with the use of oestrogens, glucocorticoids, adrenalin and adrenocorticotrophic hormone. Some stimulus was obtained with thyroxin and insulin. Other hormones were without effect. The symposium ended with a description by Dr. R. E. Billingham (University College, London) of the *de novo* formation of follicles in the adult. In disproving the theory that such new formation never occurs, he gave details of follicle production in the rabbit when a large wound is resurfaced with new epidermis, and in the deer during the annual production of new antlers. However, he pointed out that in normal adult mammals there is no evidence that this process ever occurs.

The symposium was clearly a great success and all those connected with its organization are to be highly congratulated. Under the general editorship of Prof. Montagna the various contributions are now to be collected and published in book form, and the result should be an invaluable review of the present state of knowledge of hair growth.