

United States from Mr. and Mrs. William Kent, of California, and from the Muir Woods and Mt. Tamalpais Railroad. The Muir Woods, a notable grove of redwood trees, became the property of the United States on June 9, 1908, when Theodore Roosevelt accepted 295 acres from Mr. and Mrs. Kent and proclaimed the area a national monument. Situated on the south slope of Mt. Tamalpais about seven miles in a direct line across the bay from San Francisco, it contains numerous redwood trees, reaching to a height of 300 feet and having a diameter at their base of 18 or more feet.

Nature states that a joint research committee has been formed by the National Benzole Association and the University of Leeds which will take over the direction of research in the extraction and utilization of benzole and similar products in England. The National Benzole Association is concerned with the production of crude and refined benzole, and, according to its constitution, one of its objects is to carry on, assist, and promote investigation and research. The term "benzole" is used in its widest sense, so the field of activity of the association embraces carbonization and gasification processes, by-product coke-oven plants, gasworks, etc., but at the present time it is concerned mostly with the promotion of home production of light oil and motor spirit. Success in this direction is thought to rest largely with chemical investigations into the possibilities of the various processes concerned, and it is with this object that cooperation with the university is sought. The joint committee which has been formed consists of equal numbers of representatives from the university and the association, and the initial membership is as follows: Professor J. W. Cobb, Professor J. B. Cohen, Professor A. G. Perkin, Professor Granville Poole, Professor A. Smithells, Mr. W. G. Adams, Dr. T. Howard Butler, Mr. S. Henshaw, Mr. S. A. Sadler, and Dr. E. W. Smith. Research work undertaken will be carried out under the supervision of Professor Cobb, and reports embodying the results will be published at intervals.

THE *British Medical Journal* writes: "At

the request of the Surgeon-General of Trinidad, made through the American consul in that island, the surgeon-general of the United States Public Health Service has, with the consent of the Treasury Department, undertaken to send to Trinidad a quantity of the chaulmoogra oil preparation used by that service for the treatment of leprosy. The amount to be supplied will be sufficient for 500 treatments. The courtesy of the United States government departments concerned must be freely acknowledged; but the fact that the government of the United States was applied to by the medical authorities of an important British colony for this assistance appears to show that there is something lacking in the relations between the colonial medical authorities abroad and at home, and in the cooperation between the different British government departments, more particularly as the researches on the therapeutics of chaulmoogra oil in leprosy have been largely carried out by distinguished officers of the Indian Medical Service."

UNIVERSITY AND EDUCATIONAL NEWS

THE General Education Board has given Vassar \$500,000 to increase the salaries of the faculty. Toward this sum \$100,000 has been promised by Mrs. Edward S. Harkness on condition that \$1,500,000 more be raised within two years.

THE new medical building of the University of Alberta has now been completed. The support of the people of the province has made possible the establishment of a well-manned and well-equipped medical school, which together with several closely allied hospitals can undertake the thorough education of medical and dental practitioners.

DR. JOHN LEE COULTER has been elected president of the North Dakota Agricultural College. He takes the place occupied by Dr. E. F. Ladd, who was elected to the United States Senate last March.

DR. P. W. WHITING, of St. Stephens College, Annandale-on-Hudson, N. Y., has resigned to take up work as associate research

professor of eugenics in the child-welfare research station of the State University of Iowa.

DR. RALPH F. SHANER, for several years connected with the department of anatomy of the Harvard Medical School, has entered on his work as assistant professor of anatomy in the University of Alberta.

DR. D. BURNS, Grieve lecturer on physiological chemistry in the University of Glasgow, has been appointed professor of physiology in the University of Durham College of Medicine, Newcastle-upon-Tyne, in succession to the late Professor J. A. Menzies.

DISCUSSION AND CORRESPONDENCE THE CAUSES OF WHITENESS IN HAIR AND FEATHERS

My attention has recently been called to a statement by W.D. Bancroft¹ to the effect that white hair and feathers owe their color to the entrance of air into their structure. Similar statements have appeared elsewhere at various times, and this conception appears to be widespread.

No one, to my knowledge, has ever presented any real evidence that either hair or feathers have any more air in them when white, than when colored. Furthermore it is quite unnecessary for them to have more air. I have never been able to see any difference in the structure of white hair and feathers as compared with colored hair and feathers, except for the presence or absence of pigment.

In 1904, I made the statement, in an address, that hair and feathers are white for the same reason that powdered ice or glass and other transparent substances in a fine state of division appear white.²

Hair consists of numerous cornified epithelial cells more or less *incompletely* fused together. In the case of human hair, most of the structure is cortical. These cells furnish a vast number of external and in-

ternal reflecting surfaces, as can be seen easily by placing a white hair on the microscope stage with no mounting fluid. When pigment is present, the incident light is more or less extensively absorbed, according to the amount of pigment, before reaching the deeper cells. The amount of undispersed light reflected, of course depends on the number of internal reflecting surfaces not screened by pigment. There is always some reflection of undispersed light by the hair cuticle, no matter how much pigment is present.

The white of feathers is produced mostly by the barbules which are of microscopic size and consist of single columns of cells.

Hair and feathers have many times the surface, external and internal, provided by small bodies of similar mass but less intricate structure. According to a well-known law, the surface of a cube varies relatively to the volume inversely as the diameter. Thus a cuboidal cell one tenth of a millimeter in diameter has ten times as much surface, relatively, as a body one millimeter in diameter. Furthermore, the amount of reflecting surface is increased by the irregular contour of the hair and feather elements. The total area of the vast number of facets in a single, unpigmented hair or feather which are in a position to reflect light to the eye is relatively very great.

White in hair and feather structures is due to failure or absence of pigment formation in the follicle before cornification takes place. I know of no critical evidence that either hair or feather structure can become white in any other way. The process is therefore slow, and the time required for a change to white is determined by the rate of growth.

Similar views are expressed in an article by Stieda³ where a discussion of the origin of the notion that hair may suddenly become white is discussed in detail.

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¹ Applied Colloid Chemistry, 1921, p. 198.

² See abstract in *Biol. Bull.*, 1904, Vol. VI., No. 6, p. 311, for remarks about white feathers. See also *Anat. Rec.*, 1918, No. 1, p. 52, for discussion of white hair.

³ *Verh. der Gesellsch. Deutscher Naturforsch. und Aerzte.*, 1910, Bd. 81, S. 222-224; also *Anat. Hefte*, 1910, Bd. 40, H. 2.