GENETICS

Sex Shows in Human Cells

For cases where true sex of child is difficult to determine, micoscopic examination of skin cells would show treatment needed.

➤ THE NERVES and all tissues of the body show sex differences. And in cases where, because of abnormal pre-birth development, the true sex of an individual is in doubt, microscopic examination of a small piece of skin will probably yield up the answer.

These findings are from studies by the following scientists at the University of Western Ontario, London, Ont.: Dr. M. L. Barr, E. G. Bartram, Mrs. Margaret Graham, Miss Yvonne Ferguson, Keith Moore, Hugh Lindsay and Dr. Raymond Prince.

The sex of an individual is determined initially by a special pair of thread-like structures in the nuclei of cells. These structures are called sex chromosomes. Tissue cells of females contain two of these chromosomes, known as X chromosomes. Tissue cells of males have only one X chromosome which is paired with an unlike Y chromosome. In humans and many other animals the Y chromosome is much smaller than the X chromosome.

Discovery that the two X chromosomes could be seen in the nuclei of nerve cells of females was made in studies of cats. The small body formed by the X chromosomes, called the sex chromatin, was seen in the cell nucleus. In the nerve cell nuclei of male cats, it seldom is large enough to be seen, partly because of the small size of the Y chromosome.

The findings on cat nerve cells, made in 1948 by Dr. Barr and Mr. Bartram, were extended by Mrs. Graham and associates to many other animal species and cells of other tissues, including skin, muscle, cartilage, the lining of the stomach and kidneys, and pituitary, thyroid and other glands.

The idea that the special substance making up sex chromatin may be connected with cancerous changes has been the chief incentive for the studies. But for those rare cases when the true sex of a child is very difficult to determine, finding the sex chromosomes in the skin cells is expected to give an important step prior to treatment.

Science News Letter, April 19, 1952

CHEMISTRY

Clothed in Oil and Gas

➤ NATURAL GAS and petroleum may clothe earth's 2,400,000,000 inhabitants, in the opinion of Dr. Gustav Egloff, director of research, Universal Oil Products Co., Chicago.

At the rate of three pounds of clothing, on the average, per person, each of these 2,400,000,000 persons could have a new suit each year made of fibers of constant quality, at the expense of less than 2% by weight of the natural gas and crude oil produced that year, by Dr. Egloff's calculations.

Petroleum chemicals constitute our greatest and most accessible source of chemical raw materials, Dr. Egloff continued, for they are a by-product of the expanding oil industry, which is increasing production each year. This is in contrast to coal-tar, former sole source of aromatic chemicals.

Coal-tar chemicals come on the market largely by the way of the coke refined for the steel industry. Less than 10%, according to Dr. Egloff's calculations, is added to the quantity of coal-tar chemicals yearly, while use of petrochemicals comes nearer to doubling each year.

From petrochemicals comes an ever increasing number of new fibers. The synthetic textiles made from them are an improvement over those which have been obtained from nature for so many years. Natural fibers are never constant in quality.

Both wool and fur are affected by the health and condition of the animal which produced them. The health of the animal, in turn, depends on the food supply, which depends on climate and the soil in which the animal's fodder is grown, and on the chemicals in the soil. Each of these factors is subject to change. Changing conditions make a lack of uniformity which chemists find disconcerting.

Artificial fibers, on the contrary, are made under exact conditions. These can be controlled to produce just the effect wanted. Trousers made of artificial fiber textiles can hold the crease which was set in the molecules when the fiber was designed.

Yet the same fabric can be crease-resistant when that is desirable, can be washed without shrinking or wrinkling, and needs no ironing.

Artificial fibers can be made up into a great variety of materials. Dr. Egloff looks forward to clothing the earth's billions of future population with the same chemical source materials modified to suit the climate of the part of the world where each user happens to live.

Fur coats will be formed from petrochemicals for those who live in cold regions. Diaphanous materials will make cool clothes for those who live in the tropics. For especially hot climates, Dr. Egloff foresees materials treated with reflecting surfaces for a one-way view.

Science News Letter, April 19, 1952

NUTRITION

Eggs and Meat Contain More B-12 Than Was Believed

➤ THERE IS more vitamin B-12, the chemical that combats pernicious anemia, in the eggs and meat you eat than was previously believed.

A new method of extracting vitamin B-12 from eggs and meat was described by C. A. Denton of the U. S. Department of Agriculture, Beltsville, Md. The process, using sodium cyanide, a very powerful poison, is based on experiments conducted in collaboration with W. L. Kellogg and Dr. H. R. Bird, he told the American Institute of Nutrition meeting in New York.

When a very small quantity of the poison was added to the solution used for extracting vitamin B-12 from egg yolks, the value obtained for the vitamin was about three times higher than when the extraction was done in the usual manner.

One explanation for this, Mr. Denton believes, may be that the 4% cyanide contained in B-12 itself is lost during the extraction process, and this changes the B-12 into another chemical which is not as stable, and therefore the low value for the vitamin is obtained. The added cyanide apparently prevents the B-12 from changing into the other form. The scientists checked their new method by extracting yolks to which a known quantity of the vitamin had been added. When the extra cyanide had not been added, their results were low.

Science News Letter, April 19, 1952

GENERAL SCIENCE

Science Foundation Gives 624 Fellowships

➤ AMONG THE 624 graduate science fellowships just awarded by the National Science Foundation, 29 went to winners of the national Science Talent Searches for the Westinghouse Scholarships of past years.

Since only 40 winners in this SCIENCE SERVICE competition open to secondary school seniors are picked each year, this is a high proportion.

Awarded for the first time for use in the 1952-53 academic year, the National Science Foundation fellowships are for full-time study for advanced degrees. About 3,000 applied in all fields of science and from all parts of the United States and possessions.

Biological sciences, chemistry and physics each received about a quarter of the fellowships, with agriculture, anthropology, astronomy, engineering, earth sciences, and mathematics accounting for the remainder.

Science News Letter, April 19, 1952