PHYSICS

Device for Rapid Sectioning Will Aid in Detecting Crime

Three-Inch Tool Makes it Possible to Cross Section Hair or Fibers Without Crushing in But Ten Minutes

A DEVICE having almost unlimited possibilities in many fields, including crime detection, the fur industry, textile manufacture, and agriculture, has been invented by Dr. J. I. Hardy, fiber technologist of the U. S. Department of Agriculture. The invention makes possible the rapid cross-sectioning, microscopic study, and photographing of the delicate inner structure of hair, wool, fur, silk, cotton, and other fibers without injury. Very thin cross-sections can now be made in ten minutes. Formerly it took several hours to obtain less satisfactory results.

Realizing its application to the Department of Justice's attack on the racketeer and gangster, J. Edgar Hoover, director of the Federal Bureau of Investigation, has caused a careful study of its uses to be made.

"Our technical experts are studying this device to determine whether it can be utilized as a new means of examining fibers and hairs. The simple and rapid method is the sort of technique well adapted to the needs of investigators seeking to solve crime where time, detail, and accuracy are of the utmost importance," he said.

Besides its use to cross-section quickly any hair or tuft of clothing a criminal might leave behind him, the invention promises to be of value in detecting misrepresentation of quality of clothing or furs, a common practice of the fur-racketeer. It should also have its use in legitimate comparison of quality, as well as aiding stockmen and cotton growers to know what types of plants or animals produce the fibers most demanded by industry for high-quality products.

Three metal parts make up the device, which is three inches long altogether. By means of a screw-controlled plunger, fibers are moved in a tiny slot 0.0085 of an inch wide and made to project slightly while held tightly together in proper alignment. A drop of quickly-drying celluloid on the projecting fibers "fixes" them so that they can be sliced off crosswise in any thickness desired down to one ten-thousandth of an inch. Even such hairs as those of the deer, hollow inside, are not crushed or injured, due to the celluloid.

Photographed after being magnified 500 times, cross-sections show almost as many different designs as snowflakes. Rayon fibers in cross-section look like animal crackers. A hair of the vicuna, a llama-like South American animal inhabiting the Andes of Ecuador and Bolivia, frequently resembles a four-leaf clover.

Study of hair brings out interesting contrasts. Curly human hair is usually oval in cross-section, while straight hair is more circular. Hair of the land otter is of exceeding fineness, and the hair from an elephant's tail resembles a tooth-pick more closely than anything else.

Science News Letter, August 3, 1935

MEDICINE

Danger of Snakebite Is Greater Than Supposed

THE chances of being bitten by a poisonous snake are considerably higher in the United States than most people have comfortably supposed.

The pleasant tradition that about 24 species of poisonous snakes roamed their peaceful way in the United States, only seldom crossing the path of a startled human and striking him, is based on nothing more substantial than a lack of information, is shown by Dr. Thomas S. Githens of the Mulford Biological Laboratories of Sharp and Dohme Co., Glenolden, Pa.

Dr. Githens reports to the *Scientific Monthly* that he has recorded 2,376 cases of snake bite in this country in the past eight years. And this is obviously a far from complete accounting. Only such cases as physicians reported to the laboratory, by filling in a report form accompanying each package of antivenum, and such cases as could be found in newspaper items were available for the survey.

Expressing surprise at the "unexpectedly large number" of cases thus revealed, Dr. Githens believes there may be 1,500 to 2,000 cases of snake bite each year in the United States.

Heretofore the most complete investigation of the subject was made in 1908, when reports of snake bites for almost a century back were counted and only 740 found. The investigator thereupon announced the annual number of poisonous snake bites "excessively small" and growing less as the vipers were being "slowly but surely exterminated." Wrong on both counts, Dr. Githens finds.

Rats and mice increase rapidly when wilderness country is converted into farm land, the biologist points out. And all snakes, including the poisonous ones, become more abundant through this turn of affairs, only thinning out when a community grows into a thickly settled city.

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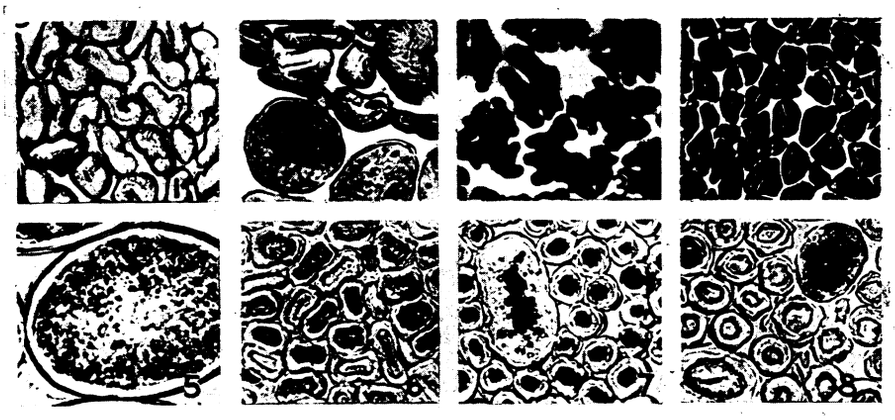

SLICES OF FIBERS

A new device makes it possible to cut hairs quickly into thin cross sections like these for microscopic examination. Cotton is shown in the first view; number 2 shows a comparison of cotton, above, with wool; 3 is rayon; 4, silk; 5, human hair; 6, rabbit fur; 7, muskrat fur; and 8, fox fur.

Of the 24 kinds of North American pit vipers, 10 kinds caused all of the bite cases, aside from persons bitten by captive snakes.

The largest and most dangerous serpent in the United States is the Florida diamondback rattlesnake. The pigmy rattler rates as the smallest and least dangerous of the poison group. Aside from widespread copperheads and timber rattlers, most of the species are largely limited to some particular zone.

A surprising feature of the inquiry is finding the large number of persons bitten by snakes while intentionally handling them. One bite in 15 is received in this way, says Dr. Githens. Of 163 such cases, 47 were ignorant persons, often children, who unwittingly picked up a dangerous snake. Professional snake catchers had 48 of the bites recorded, showmen in fairs or carnivals had 31, and scientists studying snakes or extracting venom had 23.

And supposedly dead snakes inflicted 14 bites.

Science News Letter, August 3, 1935

PSYCHOBIOLOGY

First Birthday Reported For Only Known Chimpanzee Twins

THE TWINS Tom and Helene are to the chimpanzee world what quintuplets are to the human family. They are the only pair of undoubtedly genuine chimpanzee twins known to science. Their first birthday has just been reported to the scientific world.

The story of their development, the cutting of their baby teeth, their learning to crawl and walk and climb, and their mental growth has now been told by their scientific guardians, Dr. Robert M. Yerkes, director of Yale University's Laboratories of Comparative Psychobiology, and Michael I. Tomilin, who had so much to do with their upbringing that, as he puts it, he was accepted as a member of the family. (*Journal of Genetic Psychology,* June.)

Mona, the mother, has been called "an experienced mother." She had already had three babies before the twins arrived. Recently a grandchild of hers, the first "civilized" chimpanzee grandchild born of a captive-born mother, arrived and was announced to the scientific world.

Twins provided no thrill to Mona. Rather she seemed bored with this doubling up of her maternal duties. Nevertheless, she gave them good care and was particularly gentle with tiny Helene, who was the weakling. This tenderness toward the frailer infant was of great interest to those watching her, because, so far as is known, none of the lower mammals ever discriminate in favor of a weakling or runt.

"Such discriminate attention as was manifest in this case of chimpanzee mother and twins may chance to be peculiar to the primates or to the anthropoid apes and man," the scientists report.

The twins were perfect little creatures when born but extremely tiny—only about two or three pounds in weight and very weak. Helene was especially weak and inactive. It was not until the fourth day after her birth that she was able to nurse. But due to her mother's good care, she picked up weight and was even larger than her twin brother for the first six months. After that Tom took to his supplementary feeding better than Helene and soon outstripped her in growth.

The first teeth came in the same order that the human baby cuts them, but because of the more rapid development of the apes they appeared much earlier.

Personality differences were as obvious in these chimpanzee babies as they would be in any pair of human infants. Tom was always the adventurer, aggressive, eager and playful. Helene, the mother's favored one, was relatively timid, shy and backward. It was she who hesitated to make friends with Mr. Tomilin. She would cling shyly to her mother, and as she grew older would run to her brother for protection. It was six months before the twins recognized each other as playmates, and then it was Tom who would take the initiative in their monkey-shines.

Mona was a modern sort of mother and believed in training her twins to be self-reliant and independent of her. Whether with the deliberate intention of instructing them, or merely to rid herself of her peculiar double maternal burden, she continually trained the children to shift for themselves. She encouraged them in grasping, crawling, standing, climbing and walking. When, for example, a twin, holding to his mother, happened in passing to grasp the cage netting, Mona would seize the opportunity for a lesson. She might push the infant against the netting and move away. Or again she might place an infant on the netting and leave it hanging there to climb, play or scream.

CHIMPANZEE TWINS

Moments in the life of chimpanzee twins, showing characteristic poses and modes of travel.

Hitch-Hiking

Hey—Wait for Me!

All Aboard