CHEMISTRY

Chloride Ink Test Promises Great Aid to Detectives

Black Deposit of Metallic Silver Shows Spread Of Ink Chlorides Through Paper As Key to Age of Writing

THE WAY of the transgressor is hard. Especially if he tries fraudulent alteration of documents written with common pen and ink. The Austrian police will get him with a "chloride print."

Dr. Siegfried Türkel, research chemist for the police administration of Vienna, and associates, have recently revealed new chemical methods of detecting writing ink in places where it does not belong.

With the great variety of inks on the market, a forger can readily imitate the color of the writing in a will or deed, to the possible discomfiture of parties concerned. The Vienna experts observed that all writing inks contain chlorides, but in widely variant quantity. The chloride, of which common salt is a variety, slowly spreads in paper, though being colorless is invisible to the human eye. Dr. Türkel, by a simple chemical reaction, replaces the chloride in a document by metallic silver, deposited as a black image like that of a kodak print. In the same operation he bleaches out the normal ink dye. The document, photographed to yield a "chloride print," now takes on a new appearance, depending on its age: One hour old, clear black writing; one day, clear, but with broadened lines; four days, margin of pen stroke hazy; ten days, quite fuzzy; sixty days, small loops in letters filled up; six months, small writing illegible; one to two years, entirely illegible.

The tell-tale spreading of chloride is caused by the slight condensation of moisture from the air upon the paper fibers. A slow process of solution, spreading and recrystallization occurs out in a field distant from the actual pen stroke. Thus the detection must take into account the humidity of the place of storage of a document. So far it is not possible to determine an exact date of writing, but valuable relative time information is available.

The Vienna authorities have had particular trouble where the alteration in a document is very slight—for example, the change of a 6 to an 8. Microscopic methods solve this difficulty, and the chemist detectives can run a whole series of chemical analyses on one single period in a hand-written line. The tiny inkspot in question is picked to pieces, fibers and all, under the microscope, and a test is run on each inky fiber.

Handwriting experts in the United States will welcome the new method, provided tests demonstrate that the method is satisfactory for use with our inks.

The scheme, as discovered by Dr. Türkel and his associates, makes use of silver combined with the chloride in the ink. But not all inks in the United States contain chloride. However, even if it is useful only on a few inks, a successful test of this kind would be of great value, Bert C. Farrar, examiner of questioned documents for the U. S. Treasury Department, declared.

Very few ways have ever been found to test the age of ink and these have failed of confirmation in scientific experiments, he said. Any consistently successful method will be extremely valuable because of the great amount of litigation in the courts which is based on the question, when was the document written, or which document was written first.

Science News Letter, May 20, 1933

PHYSICS-MICROSCOPY

New Centrifuge Microscope Permits Double Studies

A NEW CENTRIFUGE microscope, which permits the examination of two different cells or bits of tissue simultaneously while they are being whirled to produce a force hundreds of thousands times that of gravity, has been invented by Prof. E. Newton Harvey of Princeton University. It is described in *Science*.

Prof. Harvey had already invented a similar device for the examination of a single centrifuged object. In this, the cell or tissue sample to be examined was mounted on one end of a whirling bar. As often as the bar passed a special lamp, the specimen received a flash of light, which was transmitted through a chain of reflecting prisms and lenses to an eyepiece at the center. Since the bar received a large number of flashes per second, the eye perceived the image as it does the rapidly succeeding pictures in a movie. This made possible the study of events in living material under conditions of extreme centrifugal "pull."

Now Prof. Harvey has arranged to mount a second specimen-carrying slide at the other end of the whirling bar, a little farther from the center. Each specimen receives its own flashes of illumination, either simultaneously from separate lamps, or successively from the same lamp. If the simultaneous illumination is used, the two images appear side by side in the field of the central eyepiece. If only one light is used, it is moved back and forth to permit the observer to look first at one, then at the other object.

Science News Letter, May 20, 1933

DEAD

This picture of the heath hen represents another bird species that has gone to join the passenger pigeon and the great auk. The last heath hen is believed to be dead, for the sole survivor is heard no more by residents of Martha's Vineyard Island, off the New England coast, calling in vain for its departed mate. Though never abundant in the memory of white men, there were several hundred of these birds on the island as late as 15 years ago.