CHEMISTRY

Resists High Temperature

New orlon fabric shows high heat resistance after heat treatment as woven material. Discovery of process was accidental.

➤ ONE OF America's latest synthetic fibers, orlon, has now been converted into a black substance that has the unusual properties of resisting temperatures as high as 1,400 degrees Fahrenheit.

Heat-resisting orlon was discovered by accident in the laboratories of DuPont in Wilmington, Del., where orlon, as well as nylon and dacron (formerly known as fiber V), were developed.

A piece of woven orlon was left in an oven and heated accidentally to 275 degrees Fahrenheit. Instead of being ruined, the fabric was found to have the ability to resist very high heat. The fabric became black in the process and the new kind of orlon seems to be limited to that color alone.

So new is this new application of orlon that plans as to how it is to be utilized are not yet made. Many applications to military use can be visualized, such as use in garments to be worn by fire-fighters who must rescue those from crashed planes. Since the heat-resisting black orlon would not be ignited by incendiary bullets, it might prove effective in parachutes for dropping cargo during combat. In industrial use, it could be used for awnings and curtains that need to be fireproof and for which the black color is not objectionable.

The fabric to be converted is 100% orlon and it is woven before the heat treatment that makes it heat- and flame-resisting. It loses some tensile strength in the process.

Orlon is a polymer of acrylonitrile. It is in production and has appeared on the market in shirts and sweaters. DuPont is now building large factories for orlon production.

Just what happens when orlon is heated to make it temperature-resisting has not yet been fully worked out by the DuPont chemists, but there seems to be a rearrangement of the carbon atoms in the complex chemical molecule that is orlon.

Science News Letter, April 7, 1951

MEDICINE

Xenon Surgical Anesthetic

➤ XENON, THE elemental gas that produces vivid purples in the multi-colored gaseous discharge advertising signs, has been used successfully as a surgical anesthetic at the State University of Iowa hospitals and college of medicine, Iowa City.

Following the successful performance of four major operations using the new anesthetic, a four-man research team disclosed that xenon appears safe to administer and easy on the patients.

Members of the research team were Drs. Stuart C. Cullen, E. G. Gross, Robert M. Featherstone, and Charles Pittinger.

Xenon is non-inflammable. It is therefore much safer to administer than many of the anesthetic gases currently used, in which there is the ever-present danger of explosion and fire. Although this danger has been well-controlled, it is still necessary to take every precaution in order to assure safety.

They also point out that xenon produces anesthesia very rapidly, adding that recovery from anesthesia is equally rapid. Patients who have undergone surgery with xenon as an anesthetic experienced no ill effects and became alert in a few minutes after removal of the anesthetic gas.

The Iowa doctors began working with xenon last summer, investigating its possibilities. Animal research proved it to be an effective anesthetic without harmful effects.

Only after extensive research with a variety of animals and after using the gas on themselves did the researchers pronounce xenon safe to use on patients in University hospitals.

Xenon is a rare gas, found only in minute quantities in the atmosphere. The gas used at Iowa for research purposes was supplied by the Linde Air Products Company, and is a by-product in the commercial manufacture of oxygen and nitrogen.

Although costly now, the investigators believe it may be possible to produce xenon economically and in sufficient quantities for general use as an anesthetic.

Science News Letter, April 7, 1951

GEOLOGY

Soils and Dirt Aid FBI In Solving Crime Cases

➤ SOLVING all kinds of crime cases with the methods of geology is standard practice for the Federal Bureau of Investigation, Dr. Richard W. Flach of the FBI told the Geological Society of Washington, D. C., meeting.

Soils, for instance, often can give important clues as to where to search for hit-and-run drivers. Or, by matching the dirt found on the body of a hit-and-run victim with that from a suspect car, the case may be solved, Dr. Flach explained to the geologists. Soil analysis is also helpful in assault and in hi-jacking cases.

Safe-crackers often pick up on their clothes tiny particles of the mineral insulation that goes between the two cement layers of fire-resistant safes. Matching these particles with the insulating material may prove a suspect's guilt. In one recent case, Dr. Flach pointed out that not only one but three safe-cracking cases were solved when five pairs of trousers from a suspect yielded material that matched the most recently robbed safe as well as two safes ransacked in neighboring counties.

Often the same particles that are found on a person's hat or gloves, dropped at or near a crime scene, give valuable tips as to the owner's occupation, and, therefore, the most likely places to search for suspects.

Attempts at sabotage, Dr. Flach said, are among the other crime cases where mineralogical examinations are of aid in crime detection. The sand, emery, silicon carbide or other minerals used to foul up the oil of tanks, autos, or machinery in war production plants can be compared and matched with the small particles found on a suspect's clothing.

Science News Letter, April 7, 1951

QUICK EJECTION—Easier escape from the seat of their planes for jet pilots comes from combining the four leads, wires that connect a pilot to his plane and its equipment, into one long rubber cable that can be separated from the plane when the ejection seat is lever triggered.