



BOMB-BAY DOOR

Plywood of a special kind is used on new bombing planes as a bomb-bay door which is opened just before the bombs are released. Though the doors are 14 feet long, each one weighs but 41 pounds and is able to bear more than 3,000 pounds of weight.

CHEMISTRY

Germans Hail New Fabrics Made From Coal, Lime, Water

Chemical Relative of Our Vinyon, German Product Is Claimed To Be Resistant to Chemicals, Fire and Decay

FABRICS made from a synthetic resin, polyvinyl chloride, are being hailed in Germany as a great advance over rayon, Lanital and other materials derived originally from plant and animal sources.

An enthusiastic description of the new fiber, written by Dr. Herbert Rein, is printed in the July 28 number of the journal, *Die Umschau*, just received in the United States after weeks of delay in transit.

A chemically related product of American origin is already on the market in this country, under the trade name of Vinyon.

The polyvinyl chloride fiber is given the convenience-name "PeCe" (pronounced "pay-say"). It is derived from coal, lime, water and chlorine. The coal and lime are combined in the electric arc to form calcium carbide. This in turn is united with water to make acetylene. The acetylene, with the addition of chlorine, becomes vinyl chloride. Vinyl chloride molecules are linked together (polymerized) to form polyvinyl chloride.

Up to this point the process is not unlike that followed in American chemical

plants to make the transparent plastics used in such things as the "sandwich" layer in safety glass, stretchable belts and suspenders, and similar products. It is also somewhat akin to the making of the synthetic rubber, Neoprene.

However, the German manufacturers here dissolve the plastic into a gummy mass and then spin it out into fine fibers, very much as rayon, nylon and other synthetic fibers are produced in this country. These are then spun into thread, to be woven into cloth, knit into hosiery, twisted into cordage or otherwise processed.

Many advantages are claimed for the new fiber. It is highly resistant to both strong acids and strong alkalis, so that it can be used for safety-garments in chemical factories, as lines and handles where cotton or hemp are quickly corroded and destroyed, and as filters where ordinary cloth or paper do not stand up at all. It is fire-resistant to a certain extent: while it can be ignited, it is easily extinguished, and does not smolder afterwards. It is also resistant to decay through the action of molds and bacteria.

Nevertheless, it has some drawbacks,

which probably would militate against its successful competition with such a fiber as nylon. PeCe is thermoplastic, it is explained; that is, it softens and loses strength and shape when heated. For this reason, it cannot be washed in really hot water, and ironing, even with a quite moderate iron, is regarded as inadvisable. For the same reason, exposure to steam is injurious to PeCe fabrics and filters used for industrial purposes.

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ARCHAEOLOGY

Ice Age Americans Had Their Ups and Downs

EVEN Ice Age America, back in the days of a mammoth and bison hunter population, had its economic ups and downs. This is the latest revelation of this country's past, unearthed in Colorado by Dr. Frank H. H. Roberts, Jr., Smithsonian Institution archaeologist.

Finding a stratified corner at the now-famous Lindenmeier site, a camp and workshop occupied by Folsom Man in the Ice Age, Dr. Roberts has charted about 1,000 years of very early American prehistory.

The story, told in gradually accumulated layers of earth, each containing a typical kind of stone weapon point, reveals Folsom Man as first and oldest at this convenient camping ground. Folsom hunters arrived some time between 10,000 and 25,000 years ago, and more likely it was 25,000, Dr. Roberts infers from the geologic evidence.

Following bison herds through rich pastures south of the retreating ice sheet, Folsom hunters returned to this camp many summers. Their weapons were the beautifully shaped and grooved Folsom dart points, and they had time for careful work, an eye for beauty—judging by simple efforts to decorate belongings—and they even sewed their garments with eyed needles. Folsom Man's—or Woman's—needles are pronounced by Dr. Roberts evidence that early America used true needles when they were a sign of progress also in cave homes of Europe.

Harder times or more uncouth people followed within a few centuries, judging by the next distinct layer of earth above, containing a degenerated sort of Folsom weapon, hastily made. If the new arrivals were not Folsom descendants, they did at any rate have some of the advantages of Folsom culture. Before they came, the camp had lain abandoned and blanketed with debris. The newcomers made brief stays only at the camp, and it looks as though they lacked the com-