

The Graphic Laboratory of Popular Science

Hard Glass Into Soft Textiles

THE transformation of common glass, one of the hardest and most brittle of materials, into soft, lustrous fibers of such unusual flexibility that they lend themselves admirably to the textile arts is the new and unexpected consequence of an attempt to improve the attractiveness of the milk bottle.

Fiberglass, as this new material is commercially known, is nothing more nor less than glass ingeniously processed into remarkably fine threads by either of two methods. One is called the continuous filament process and the other is referred to as the staple fiber method. For both techniques glass marbles one-fourth of an ounce in weight are fed into electrically heated furnaces equipped with a trough or V-shaped bushing made of a special platinum alloy and maintained electrically at a temperature of nearly 3,000 degrees Fahrenheit.

In the continuous process the molten glass, entering the open or wide top of the bushing, is drawn downward by its own weight and emerges from 102 tiny holes in the bottom of the platinum alloy spinnerets as endless filaments. These filaments, almost too tiny to be seen with the naked eye unless light strikes the fibers properly, are combined to make one strand considerably smaller in diameter than human hair. To be exact, the filaments average 25



A visitor watches fluffy packs of glass fibers come off the insulation production line. This is used for insulating refrigerators, homes, airplanes, etc.

hundred thousands of an inch in diameter and can be made with a diameter of only 5 hundred thousandths of an inch! This is to be compared with the diameter of cotton fibers, which average 4 ten thousandths, and silk fibers, whose thicknesses range from 2 hundred thousandths to 4 hundred thousandths of an inch.

In the staple process the molten marbles are forced downward through the spinnerets, but instead of being drawn into endless filaments the glass is blown under high steam pressure, which results in an accumulation of comparatively short fibers. Both the short and the endless fibers are taken to ordinary textile spinning machines for twisting and reduction to thread for fabrication.

As a textile material fiberglass has possibilities limited only by the imagination. One of its most valued properties is that it is really fireproof. Research engineers of the new fibrous glass industry, in discussing the possibilities of glass fabrics, point out that draperies and curtains and similar objects would be fireproof and permanent; with colors that would not run or fade in sunlight, they could be easily cleaned with soap and water.

Perhaps the most important immediate use to which this new glass fiber product will be directed will be in the manufacture of insulating materials—particularly electrical insulators. In the past insulations for electrical conductors were made of organic materials—that is, cotton, silk, rayon, paper, and the like. These products decay with age and will burn if the

electrical conductors are overloaded.

One of the things that Steinmetz, the electrical wizard of a few years ago, sought during his life was an entirely new insulation which could be combined with the copper conductor and the iron frame to make a completely inorganic piece of electrical equipment. He thus hoped to get an insulator that was permanent and could stand the high temperatures of over-loadings. The new insulation tape now being made of glass fibers is probably a step toward this realization.

In order to make insulation fabrics for electric wire, six of the 102 filaments that come through the spinnerets are combined to produce a fiber 5 thousandths of an inch thick. These are then woven into tapes varying from 1/4 to 6 inches in width. Thus two of the requisites for good insulation tape are combined—thinness of material and resistance to high temperatures.

Another application for this new product is in the chemical industry for filtration purposes. Ordinary filtration cloths deteriorate rapidly under high temperatures and acid conditions. It is claimed that glass fabrics will withstand temperatures of 600 degrees Fahrenheit and are resistant to all common acids, with the notable exception of hydrofluoric.

The latest adaptation of fiberglass is in the processing of glass cloth as a wall paper substitute. Because of the lustrous quality, reflection of light for increased illumination, and the fireproof qualities of such fabrics, possibilities for decorative purposes are unlimited.

Mostly About Dogs

By BOB BECKER

WHEN the dog fancier takes the time to consult very old books on the history of breeds he finds many curious names. But even more interesting than names, some of which are amusing, to say the least, are the uses to which dogs were put many decades ago. A good illustration is the name "turnspit." Youatt

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Great Danes



(Tribune photo.)

These fawn Great Danes are mother and son. On the left is Wiesel von Loheland, mother of Vagabond von Lindenhof (right). Vagabond is already larger than his dam, even though he is only a year old. Both dogs are owned by Mr. and Mrs. J. R. Mitchell.

tells us about the dog known as the turnspit, which was once a valuable auxiliary in the kitchen, as it turned the spit before jacks were invented!

When we see the Great Dane as bred today we think of "boarhound," since this magnificent breed, developed in Germany, formerly was used in hunting the savage wild boars. To tackle the wild boar—a well armed, swift antagonist—required something of a superdog. That is what the Germans set out to breed. They stressed attributes such as courage, strength, and ability.

The Great Dane, a breed with many friends in America, has this rich sporting background of hunting in the field. But it also has many other qualities. If you ask a devotee of this breed

what he or she likes about it the answer is quite apt to include:

"His beauty, his intelligence, his devotion and reliability; the way he is attached to his home and his people, and his desire to guard and protect them."

Although thousands of American dog fanciers know the Great Dane by that name, Germany (the home country of the breed) calls it the *deutsche dogge*. English-speaking peoples have ignored this name, and in Italy the Great Dane is known as the *alano*. Yet everybody interested in this giant breed has recognized the authority of Germany. That is why so many Great Danes have been imported from Germany. If they rate high

there it is certain that the dogs will go to the top in this country.

Some of the most beautiful show dogs that have been sensational winners here in America were brought in from Germany.

The Great Dane is without doubt one of the most distinguished and impressive breeds in the world today. Enthusiastic Dane owners call it the "Apollo among dogs." It is a dignified dog, one lacking in nervousness. Friendly, affectionate, loyal, and fond of children, it makes an ideal companion and guard in a home.

The standard of the breed allows for a number of colors. For example, there are brindle Great Danes. In these the base color ranges from light golden color to deep golden yellow, always brindled with black cross stripes. Then there are fawn Great Danes. Many dog fanciers like this color, which ranges from golden yellow up to deep golden yellow. The standard expresses a preference for the deep golden yellow. Blue Danes also are specified in the standard. The color is supposed to be a pure steel blue. Then there are black Great Danes and the striking harlequins. Thus the Great Dane fancier has quite a wide choice when he selects a dog.

We can think of no more disturbing thing for a prowler or a would-be burglar than the sight of a well trained, resolute Great Dane standing right across his path. If there is any dog that can say, "You shall not pass," with effective emphasis, it is this powerful breed.

The peak of enjoyment in the ownership of a dog of this size is having it trained and obedient. A Great Dane is too big to be allowed to get into bad habits. When taught to walk at heel, sit down on command, come when called, and stand on guard, this dog is one of the best. It is unfortunate that in America today too few owners of dogs of any size pay attention to this important feature of training. A trained dog is more useful in the home, as well as much more fun

HIGH SCHOOL SORORITY MEETING

By W. E. Hill

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This is the dues collector being very comic, pretending to faint when one girl decides to pay the twenty-five dues. (The girls want to know where she got all that money.) Beside her is the chairman of the business meeting, about to suggest that every time a girl is absent she forfeit a quarter. This won't go so well.

The gabblers on the couch who discuss school happenings, refreshments (how soon they are coming), the girls they don't like, and (always) how many servants they have in their homes.



The hostess and her best friend, who comes home with her after school on sorority days, because she "just hates to be hostess all alone." Besides, the best friend is useful to drag around chairs and see that the apartment is all right.



These are the refreshments. And can sorority girls eat! The hostess and her mother are in the foreground, wondering if the food will hold out. (There's always one girl who takes the last toasted muffin, saying, "I guess I'll be the old maid!")



The sophisticated girls. Just can't get along without their bridge. They aren't very good at it, but pretend to be. When one of them does something she shouldn't, her partner freezes up and asks does she know she's playing contract?



The sorority sister who lives by flattery. She's telling her hostess how darling the apartment is, how lovely the table looked, what an angel her mother was, and how she's just the sweetest hostess ever!



The late-comers. They make as much commotion as possible, saying "Hello" to every one, and rushing up to the hostess, crying, "Honey, we couldn't POSSIBLY get here one minute sooner!"



These girls get over in a corner by the radio, and try to show each other the latest dance steps, including the big apple which will land them in a heap on the floor, mad at each other.