

ENGINEERING

Plastics Aid Building

New resins and techniques make plastics important in the building industry. Many are made from wood waste and are not a threat to the lumber business.

► THE HALF MILLION tons of plastics now made each year in the United States do not yet constitute a threat to the 5,000,000 tons of lumber and the 45,000,000 tons of brick, cement and building blocks used in the building industry, but new plastic products, using new resins and new techniques, are rapidly becoming more important.

The threat to lumber is not a serious matter to lumbermen, because many of the new building plastics will be made of wood waste such as sawdust, shavings, chips and sideslabs now used, if used at all, for fuel. Farm wastes will also constitute a source of raw material for building plastics, wastes such as cornstalks, corncobs, wheat, straw and sugar cane.

In a recent report of the National Bureau of Standards on plastics and the building industry, Dr. G. M. Kline, chief of organic plastics section, points out some of the new materials and techniques which he says are destined to bear great significance in the building industry. The low-pressure molding processes developed during World War II are of particular importance in the economical production of plastics. They discard the prewar high-pressure machinery, high temperatures, and costly steel molds, and use low-pressure techniques, low temperatures and wood or concrete forms.

The factor that made this reduction in pressure for molding possible is the development of resins which will cure without giving off water. Released water tends to form blisters. The new resins, called polyesters, cure or harden by cross

linking through unsaturated carbon-to-carbon bonds, rather than by splitting out water.

The application of the low pressure to flat pieces of plastics for sidewalls, partitions and floors is relatively simple. For shaped forms, special technique is required. The material is made thermoplastic by heat and quickly formed over a mold. Then flexible rubber sheets or bags are forced into contact with it by evacuation, or mild air, or steam pressure in an autoclave.

This new technique has removed the size limitations which presses and steel molds had placed upon molded plastics applications. Domes for radar housing, eight feet high and eight feet in diameter, are easily made in one piece from glass fabric impregnated with polyester resin. Wings for airplanes have been made by the same method. The upper and lower surfaces are formed separately, and then joined together.

Plywood, a familiar structural material for inside work, is now suitable for exteriors, thanks to the use of phenolic resin as the adhesive which gives a bond that is weather and fungus resistant. The casein glue formerly used is not resistant to alternate wetting and drying, and is very susceptible to deterioration by mold growth.

Because of the many new plastics now appearing, a program is under way at the National Bureau of Standards to cooperate in setting up consumer standards for various plastic products. This will assist buyers in getting suitable material for particular applications.

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ANTHROPOLOGY

No American Race Exists

► THERE IS no "American race," but an anthropologist has found at least five outstanding types of Americans representing different sections of the country. Dr. Alice M. Brues, working at Harvard University during the war, analyzed the physical types of GI's to help the Chemical Warfare Service design gas masks.

Here is the way Dr. Brues classified the "American types":

1. A tall, thin-faced narrow-headed type, commonest in those of British extraction and typical of the South.

2. Tall, like the first, but with a wider face and head are the typical persons of Scandinavian extraction, found mainly in



STRENGTH TEST—The tensile strength of a plastic specimen is measured at the National Bureau of Standards. The sample's elongation under tensile force, applied by a universal testing machine, is measured by an extensometer and recorded automatically on a chart.

the West North Central States.

3. Common mainly in the Middle Atlantic and East North Central States is a short type, round-faced and with a broad head, typical of German, Russian and Slavic extractions.

4. Short, like the third, but with a narrower head is the typical type of French and Mediterranean extraction, common in New England.

5. Found mainly in Texas and Oklahoma is the type indicative of Indian admixture, distinguished mainly by a broad face, out of line with any of the European extractions.

Writing in the *American Journal of Physical Anthropology* (Dec.), Dr. Brues indicates that the "average American" may be of Irish extraction. The Irish, she reports, could not be classified as they are common in all parts of the country and hit the dead center of the American average in their measurements.

The anthropologist measured the head and face size of 3,000 soldiers gathering data for design of gas masks. She found that the famous American melting pot, despite the reduced immigration of the past two decades, has failed to produce an American race. The imprint of the physical differences long existing in Europe, she concludes, are still on the American people.

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