

and reduced shrinkage cracking during green drying. With these five ingredients, the number of possible mixtures becomes very large.

BASIC RECIPE

A fairly successful basic formula was found. Most of the experiments, at this stage, were limited to fairly small variations.

In these experiments, after the clay is well dispersed in the water and spent sulphite liquor, the foam-stabilizing additives are incorporated and the whole whipped in a mixer for ten minutes. At this stage, the foam is about the consistency of thick whipped cream, and can be readily cast, but after a few minutes without agitation, it develops a pronounced thixotropic set.

After final whipping, the stiff foam is cast in sheet-metal forms. The forms are lifted off after five minutes and the blocks are dried overnight at 140 degrees at high humidity, to minimize shrinkage cracking. Finally, the blocks are fired to 1,800 degrees Fahrenheit in a muffle and allowed to cool.

Mr. Macaulay has had little success producing large-sized foam-clay blocks (concrete block-size or larger), but he has had considerable success in producing a lightweight aggregate that can be used to mix with cement plaster or plastic to produce an

interior finishing tile or panels of any desired dimensions.

VARIOUS POSSIBILITIES

He has been able to make a whole spectrum of materials, from a fragile ceramic lattice weighing only 15 pounds a cubic foot to materials approaching the properties of common brick. The strength of these materials is about 1,000 pounds a square inch for a density of 50 pounds a cubic foot.

One example is a terrazzo-like tile made from mixing foamclay pellets with cement and finishing with plaster. The lightweight panel appears to be suitable for use as basement finish or the interior of public buildings. Although the cost of producing these materials has not been assessed, the cost of the ingredients is almost nil.

Making these building materials from spent sulphite liquor wouldn't eliminate the sulphite pollution problems of pulp-and-paper companies in Canada, Mr. Macaulay says. He estimates that all building materials used in Canada would have to be made from this foamclay before this could happen — an unlikely event. He believes, however, that the process could make a significant contribution to utilizing some of industry's pollutant wastes.

ANNUAL NATO FLYING TESTS

Aircrews and support forces from six nations of the Atlantic alliance, including Canada, will test their abilities when Allied Forces Central Europe (AFCENT) conducts its annual reconnaissance competition at Ramstein air-base, Germany, from June 1 to 12.

Called "Royal Flush XVI", the flying competition will feature top aircrews from nations of the Control Region — Belgium, Canada, the Netherlands and the United States — and two guest teams, one from France and one from Norway.

The AFCENT competitors will be drawn from Second Allied Tactical Air Force (TWOATAF), with headquarters at Moenchengladbach, Germany, and Fourth Allied Tactical Air Force (FOURATAF), with headquarters at Ramstein.

Two teams will be entered from TWOATAF and four from FOURATAF. The daylight missions are designed to test the ability of the AFCENT units to carry out briefed reconnaissance requirements to provide timely and accurate information about simulated targets.

Competition planners also feel that "Royal Flush XVI" will help to demonstrate to the public and to military users of reconnaissance information the reconnaissance methods used to support air and ground forces. Aircraft employed during the competition will include the RF84F, the R-104, the

CF-104, the RF-4C, the French *Mirage III* and the Norwegian F5.

The aircrews will be competing for a variety of trophies signifying their proficiency in both flying and support duties. Top prize is the Gruenther trophy, named after General Alfred M. Gruenther, a former Supreme Allied Commander Europe, which will be awarded to the top ATAF team. The key to victory in the "Royal Flush XVI" program will be the integral relation between highly efficient aircrews and groundcrews for the respective units.

Army units throughout Western Europe will also compete for a trophy signifying the best target display presented during the competition. After a limited briefing, crews must seek out and photograph selected targets throughout Western Europe. The results of each mission will then be evaluated by an international panel of judges and photographic interpreters. The goal of each mission is a maximum of information with a minimum of error.

CANADA-U.S. GEODETIC GRID

Canadian surveyors and map-makers will soon be able to rely on the most precise positioning data that space-age technology can provide, thanks to a joint Canada-United States satellite triangulation survey. The survey entered its final stage in March with the movement of observing stations to Frobisher