

## Transparent Plastic Screen Cloth Ideal for Rearing Cages<sup>1</sup>

By  
Richard L. Post<sup>2</sup> and Wayne Colberg<sup>3</sup>

In experimental work dealing with the investigation of virus diseases transmitted by insects, or most other biological work requiring cages, it is important that a sufficient quantity of sunlight penetrate the cages in order to bring about normal development. Recent work done at the North Dakota Agricultural Experiment Station indicates the possibility of marked improvement in cage construction by using the new plastic screen as it allows greater light penetration than other types of screen. Through the cooperation of the Chicopee Manufacturing Corporation samples of their "Lumite," transparent plastic screen cloth, were obtained.

This plastic mesh is flexible and cages of any shape or dimensions can be made. Cages of this material can be designed to cover limbs, stalks, or whole plants and the size of mesh can be selected for any special requirement. Aster cloth formerly used, is not available this season. It lasts but one season under outdoor conditions. 88-X cloth (Windsor Company) substitute for aster cloth has too large a mesh for most purposes for which screening is used.

Cheese cloth either single or double thickness is not suitable for outdoor use as birds lighting on cages or windstorms readily spread the mesh.

Metal wire cloth, while easy to use in the construction of field cages, does not permit sufficient passage of light.

The transparent lumite meshes allow greater light transmission as shown in Table 1. The 36 mesh, small enough to exclude the smallest insects or imprison thrips, white flies, and parasites, allows

Table 1.—Light Transmission of Screens

Material	Value Foot Candles
Check (no mesh)	50
Aster Cloth (24 mesh)	29
Cheese Cloth (single thickness)	39
Cheese Cloth (double thickness)	29
Wire Screen (16 mesh)	31
Wire Screen (24 mesh)	24
Lumite Plastic Cloth	
(16 mesh)	39
(28 mesh)	35
(32 mesh)	34
(36 mesh)	36

Table 2.—Relative Costs of Meshes

Type	Mesh	100 sq. ft.
88-X Cloth	8 x 10	\$ 1.35
Aster Cloth	24	*
Bronze Wire	24	44.20
Tinned Steel	24	18.70
Stainless Steel	20	79.20
Monel Wire	20	60.00
Lumite	16	7.27
Lumite	28	9.60
Lumite	32	10.50
*Unobtainable 1947.		

<sup>1</sup>Appreciation is expressed to Mr. J. F. Rohs, Chicopee Manufacturing Corporation, Lumite Division, 47 Worth Street, New York, N. Y., for furnishing samples and data.

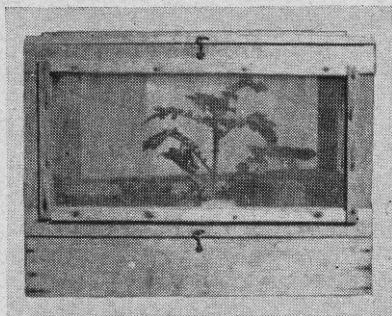
<sup>2</sup>Associate Entomologist, North Dakota Agricultural Experiment Station and State Seed Department.

<sup>3</sup>Student Assistant, NDAC Department of Agricultural Entomology.

10% greater passage of light than 16 mesh wire cloth and 24% greater than the 24 mesh wire cloth.

Data submitted by Mr. J. F. Rohs of the Chicopee Manufacturing Company show that lumite is resistant to acids and most alkalis. It has zero moisture absorption and is impervious to solvents, oils, and greases, and will not rust or corrode. A further advantage of this product is that it can be left in position all year round and that it lasts more than one season.

The relative costs of various meshes used in entomological research are shown in Table 2.



Rearing cage showing transparency of plastic mesh

### Conclusions:

Lumite is less expensive than wire cloth and allows greater light transmission. Although the plastic cloth is more expensive than cotton fabrics, it is more durable and can be used more than one year. It allows greater light penetration than aster cloth which deteriorates beyond use after one year's service.

Preliminary tests indicate that this new product answers the requirements of entomologists and plant pathologists in their research work.

### North Dakota Farms Number, Size, and Type of Tenure

The number of farms in North Dakota in 1940 was 73,962, that number had dropped to 69,520 in 1945, a decrease of 4,442.

The average size of farms in North Dakota in 1940 was 512.9 acres—by 1945 that average size had risen to 589.8 acres. The percentage of farms operated by tenants in 1940 was 45.1 percent but the percentage of land rented by operators was 61.4 percent. The percentage of farms operated by tenants in 1945 had dropped to 27.8 percent and the percentage of land rented by operators had dropped to 48.0 percent. The percentage figures for percentage of land rented by operators are not strictly comparable because the acreage of all land in farms in 1940 was 37,936,136 and it had risen to 41,001,158 in 1945. The acreage of land operated by renters in 1940 was 23,295,284 and 19,679,582 in 1945—the decrease was therefore actually 3,615,702 acres or 15.5 percent instead.

(Data from U. S. Census)