

1938

## Hygroscopicity as a Factor in the Thermal Conductivity of Loose-Fill Insulators

H. Stiles  
*Iowa State College*

H. E. Ruff  
*Iowa State College*

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lattice. Measurements have been made of the dependence of the electrical resistance on temperature as indicative of the "degree of order" in the lattice.

PHYSICS DEPARTMENT,  
STATE UNIVERSITY OF IOWA,  
IOWA CITY, IOWA.

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## FINE GRAIN PHOTOGRAPHIC DEVELOPMENT

GEORGE C. HIGGINS

The effect of different fine grain photographic developers upon the effective emulsion speed and graininess of photographic materials was studied quantitatively. Fine grain developers were found to be more effective in reducing the graininess of fast coarse grain emulsions than of slow fine grain emulsions. The effective emulsion speed of slow fine grain emulsions when developed in a MQ Borax developer was found to be at least equal to that of a fast coarse grain emulsion when developed in an ultra fine grain developer which gave negatives of as low graininess on the fast emulsion as the MQ Borax gave on the slow emulsion. Slight improvement in graininess can be obtained by using ultra fine grain developers on fine grain emulsions, but only at some sacrifice of effective emulsion speed.

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IOWA STATE COLLEGE,  
AMES, IOWA.

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## HYGROSCOPICITY AS A FACTOR IN THE THERMAL CONDUCTIVITY OF LOOSE-FILL INSULATORS

H. STILES AND H. E. RUFF

There has been constructed a thermal conductivity apparatus of the guarded hot plate type employing a compensatory heating unit and designed to test samples having low values of thermal conductivity. Tests on various types of loose-fill thermal insulators reveal that there is a linear increase of thermal conductivity with increased moisture content. Depending upon the particular

type of sample under consideration, a hygroscopicity of 20 to 30 per cent by weight completely vitiates the efficacy of loose-fill insulation.

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IOWA STATE COLLEGE,  
AMES, IOWA.

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### A GAS-TYPE X-RAY TUBE

L. E. PINNEY

The tube is, in general, of the Wyckoff type but the design has been re-worked for the purpose of better adaptation to the particular problem in hand. Simplification of machine work and utilization of standard parts have also received attention. The tube is being used by John W. Gowen for irradiating biological materials.

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IOWA STATE COLLEGE,  
AMES, IOWA.

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### PARSONS COLLEGE PHYSICS MUSEUM

E. HOBART COLLINS

The experimental equipment of the museum which is portable was demonstrated and the other experiments were discussed briefly. It is found that the museum is very effective in popularizing Physics also that it is effective as an additional teaching aid.

PHYSICS DEPARTMENT,  
PARSONS COLLEGE,  
FAIRFIELD, IOWA.