

PHYSICS

Houses Protected Against Winter by Cellulose Film

Transparent Covering May Be Applied Over Windows, Storm Sash, or Specially Built Frames; Cost is Low

CELLULOSE film wrappers, that now protect packs of cigarettes and nickel candy bars, will presently be fortifying whole houses against winter cold, if the method developed by the Yankee ingenuity of Prof. R. H. Wallace of Connecticut State College works out as well as it seems to promise.

Not that the whole house will be wrapped in the transparent sheets. That isn't necessary. But windows, outside cellar doors, and other warmth-wasting openings, Prof. Wallace has found, can be effectively insulated against the cold with cellulose film.

The film is useful even where storm sash is already used. One very effective trick is to put sheets of it on both sides of the sash, sealing the whole frame into a sort of envelope by means of a hot flatiron run along the overlapping edges. Common window screens can be treated in the same way. Or the sheeting can be mounted on specially made, lightweight frames.

The method is especially valuable for greenhouses, Prof. Wallace states. He is a plant physiologist himself, and has a small conservatory built as a lean-to against one wing of his house. Cellulose covering as an auxiliary to the glass saves him a substantial sum in reduced heating costs, he reports.

As a striking demonstration of the heat-saving effects achieved by his method, Prof. Wallace placed a series of thermometers by one of his windows that was protected both inside and out with cellulose film. One cold winter morning he took a photograph that showed all four instruments.

The outside thermometer, fully exposed to the weather, showed a reading of 12 degrees Fahrenheit. The next thermometer, between the outer film and the glass, read 24 degrees. The third, between the glass and the inner film, stood at 47 degrees, and the fourth, within the room and back of the protection of two cellulose films and one sheet of glass, told that room temperature at that point was 59 degrees.

Prof. Wallace has experimented with

a number of different makes of cellulose film, and states that the most satisfactory is the cellulose-acetate type in a somewhat heavier weight than is used for ordinary small-package wrapping purposes.

Cellulose film insulation for houses can be held to quite moderate costs. By interesting a number of his neighbors in a cooperative purchase last year, the Connecticut scientist found it possible to give protection to all windows of 30 ordinary-sized houses at a cost of about 15 cents per window.

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SOCIOLOGY

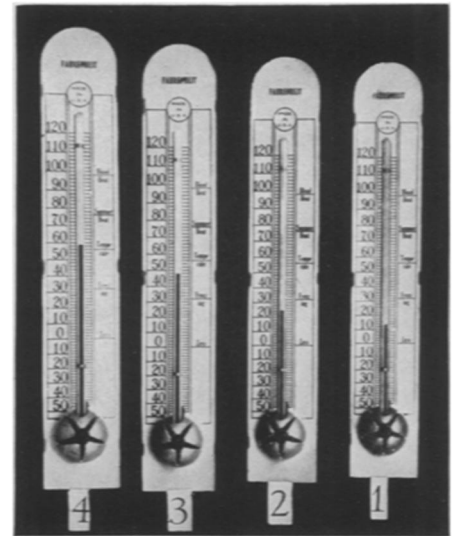
Unemployed College Youth In Vanguard of Revolution

THE professions and the ranks of college graduates do not constitute that sector of civilization toward which one would be likely to look for the beginnings of a revolution.

Yet educated youth in the vanguard of revolution is not a surprising possibility in view of facts resulting from a world-wide survey of unemployment in the learned professions made by Dr. Walter M. Kotschnig, who has worked widely with student problems on an international basis.

Unemployment or under-employment of young college and university graduates may well have far-reaching repercussions even though the present crisis seems in many localities only temporary. Dr. Kotschnig observes: "Where the overcrowding of the professions leads to a prolonged unemployment of successive generations of graduates, it may become a formidable threat to the very existence of an ordered society."

Thousands of parents have saved and slaved a lifetime to give their children an education, only to see them in the end unemployed, very often broken in body and in spirit. To these fathers and



THERMOMETERS TELL

These four temperature readings, taken simultaneously within a few inches, bring out graphically the gains made by adding cellulose-film protection to a window.

mothers Dr. Kotschnig dedicated the book (Oxford University Press) that reported his findings. He found promising young men and women, loaded with degrees and certificates, to whom society denies the opportunity to put to any use their gifts and their knowledge.

Dr. Kotschnig in his inquiring travels in European countries found graduates of two or three or four years ago, dejected, with blank hopelessness in their eyes. They had paid call after call, written letter after letter, all to no avail.

Then came the reaction. The old order was rotten, it must be destroyed. A new order must be created in which there would be room for educated youth to work and achieve position and happiness. In Germany and other disturbed nations unemployed professional men and women played important parts in revolutions.

Less dangerous is the situation in the U. S. A. There are, in Dr. Kotschnig's opinion, still wide occupational fields to be conquered, even in professions that now seem to be crowded. He urges a nation-wide search for new needs for professional services.

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CHEMISTRY

Plastic Made of Soybean Offers Use for Farm Products

HENRY FORD'S greatest love among the "chemurgic" products—agricultural products used industrially—that he sees aiding economic progress is known to be soybean protein plastic.

Already this synthetic material is understood to be used in manufacture of the steering wheel, horn button and other such parts of the Ford cars. It is first cousin to casein plastics, made from the jelly-like or cheese curd of milk, which have wide use in buttons, buckles, radio and electrical parts, etc.

The soybean is four-tenths protein compared with two-tenths oil. The protein portion can be mixed with water, various chemicals, colors, and filler material, such as wheat chaff, wood flour, etc., to make a useful member of the great group of materials that the chemist calls "plastics." Heat and pressure are used to temper the plastic after it is put into the desired shape.

In addition to development undertaken by Ford and other manufacturers, the

federal government through the Department of Agriculture's Bureau of Chemistry and Soils established early last year a soybean industrial research laboratory at Urbana, Ill., in cooperation with 12 North Central states. Here some 30 chemists and other staff members are developing and improving industrial uses of soybeans.

The Farm Chemurgic Council has been urging the industrial and other use of soybeans for several years as a part of its program to obtain the use of more American-grown agricultural products in industry.

Although the soybean was introduced in the United States as early as 1804, it is still one of the young giants in our industrial and agricultural life. In the Orient its uses have been many from time immemorial. In recent years the amount of soybean planted has increased greatly. Acreage in 1907 was only 50,000; in 1937 it was 6,049,000 according to preliminary figures. The 1937 crop was

between 36,000,000 and 40,000,000 bushels of the bean itself.

It is estimated that some 50 factories are turning out various industrial products using soybean products. Soybeans are used in making such products as paint, enamel, varnish, glue, printing ink, rubber substitutes, linoleum, insecticides, glycerin, flour, soy sauce, breakfast food, candies, roasted beans with nutlike flavor, livestock feeds, as well as plastics.

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DEMOGRAPHY

Population to Decline Despite Increases in Past

MAN POWER—or brain power—is the most valuable resource of the world, for out of it arises civilization and culture.

There has been a certain complacency about the renewal of our human resources. The population of the world trebled in the last 160 years. The white races increased from 150,000,000 people in 1780 to 635,000,000 in 1930. That would seem to justify the idea that there is no need for worry about the natural increase in population.

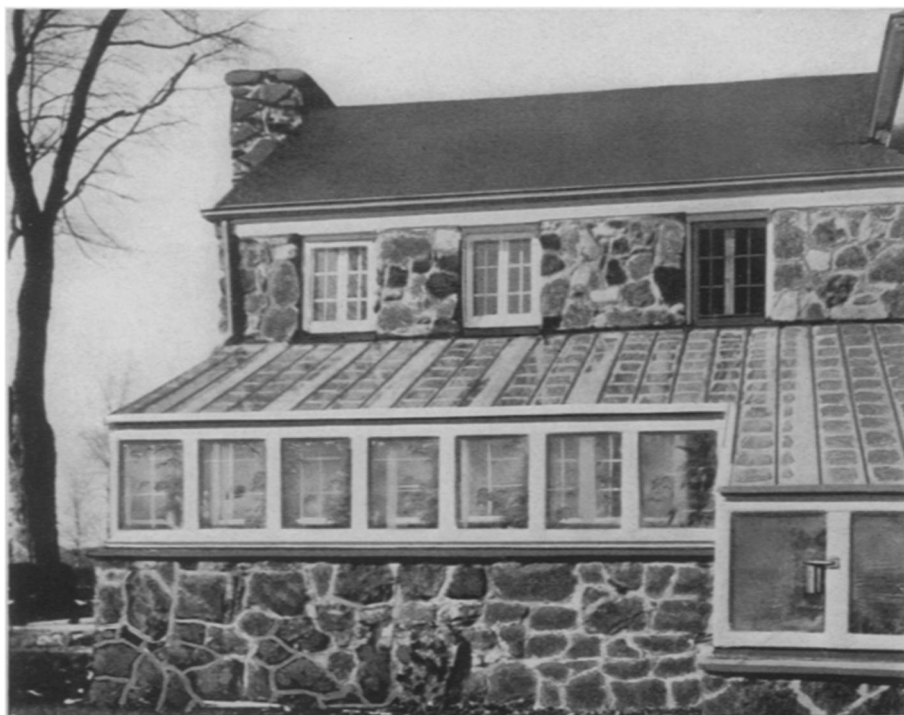
Today it is possible for the first time to inventory, with some scientific accuracy, man power not only by counting heads but by determining the contents of the heads. Frederick Osborn of New York City, who has collaborated with Dr. Frank Lorimer on population studies, reported recently to the American Association for the Advancement of Science that the old process of population growth is coming to a sudden stop among peoples living in cities.

By using crude birth and death rates, experts as recently as a decade ago found the population appeared to be rapidly increasing. But when the age grouping of the population and other factors were considered, it was found that true rates for 1930 were 16.9 births per 1000 and 16.3 deaths per 1000, contrasted with crude rates of 18.7 and 10.8.

The slight excess in the rate of intrinsic reproduction in 1930 above that needed for replacement has been whittled away since that time, Mr. Osborn finds. There is no doubt that the country is at present declining in numbers in the true or intrinsic sense.

The best guess of the population students is that the fall in birth rate will continue, and that the gross population will be something less than 150,000,000 in 1970, declining thereafter.

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PROTECTION FOR PLANTS

Extra protection is given the conservatory attached to Prof. Wallace's house at Storrs, Conn., by a covering of cellulose film outside the glass frames.