

## ● Earth Trembles

Information collected by Science Service from seismological observatories and relayed to the U. S. Coast and Geodetic Survey resulted in the location of the following preliminary epicenters:

Friday, June 10, 3:15.2 a. m., Manila Time

Near Island of Buru, east of Celebes in Dutch East Indies. Latitude 4 degrees south, longitude 126 degrees east.

Friday, June 10, 6:54.3 p. m., Manila Time

Near Borodino Islands, between Philippines and Japan. Latitude 25 degrees north, longitude 132 degrees east.

For stations cooperating with Science Service in reporting earthquakes recorded on their seismographs see SNL May 21.

### CHEMISTRY

## American-Made Chemical Valuable to Spray Industry

**B**AD news for mosquitoes, flies, and other household insect pests comes from the du Pont laboratories. Chemists have developed a synthetic compound that can replace a large part of the pyrethrum now imported from Asia and Europe for use in insect-killing sprays.

The new compound becomes of almost military importance, because economic and political disturbances in the lands whence pyrethrum is imported are interfering with both quantity and quality of the overseas supply.

The du Pont synthetic bears the chemical name isobutyl undecylenamide. It is a combination of derivatives of alcohol and of a vegetable oil. It is non-poisonous to human beings and other warm-blooded animals, and does not make stains.

For the manufacture of fly sprays, isobutyl undecylenamide is to be dissolved in a refined base oil at the rate of approximately half of one per cent. concentration. It will be used in combination with pyrethrum extract because such combinations are most efficient in both paralyzing power and ultimate killing power on insects.

So far as insect-killing power is concerned, the new compound is a complete replacement for pyrethrum extracts in fly sprays. However, its action is slow, and since the user of fly sprays is accustomed to seeing flies drop dead immediately upon being sprayed, it is necessary to add an agent that will give the desired quick paralyzing effect.

Only about 20 per cent. of the pyrethrin which would be necessary if used alone is required for an efficient fly spray containing the new compound.

*Science News Letter, June 18, 1938*

### CHEMISTRY

# Strong, Fireproof, Films Now Made From Bentonite Clay

## Jelly Made From Colloidal Particles of the Clay Is Dried and Made Transparent Under Pressure

**A** NEW fireproof transparent film, which is potentially a rival for the familiar wrapping materials of cigarette packages and thousands of other articles, was described at the meeting of the Fifteenth Colloid Symposium at Massachusetts Institute of Technology.

The new entrant into the field of transparent wrapping films is made of a clay, known as Bentonite.

The new films, now made in the laboratory, are essentially fireproof and are indestructible up to temperatures producing red heat. They are not only very strong, tough and transparent, but they are highly resistant to water, acids, alkalis, and oils and have excellent properties of electrical resistance, it was indicated in the research report of Prof. Ernst A. Hauser of Massachusetts Institute of Technology and Miss D. S. le Beau, chemist of the Dewey and Almy Chemical Company.

Bentonite is one of the strangest materials known to man. When dry it is a powderlike material. When wet it swells to many times its original size. It is sometimes used in construction to stop leaks because it swells up when wet and plugs small holes. As the water flow is stopped the Bentonite dries out a bit, shrinks, allows more water to enter and then swells up again. This continuous, reversible swelling and shrinking provides an effective sealing mechanism in many instances.

Bentonite clays, said Prof. Hauser, contain large amounts of tiny particles of colloidal size. These can be separated from the larger particles by suspending them in water and letting the bigger particles settle out.

The tiny colloidal particles are then poured off with the water and the solution placed in an ultra-centrifuge. As it whirls around, the colloidal particles are separated into layers of uniform size.

When these colloidal particles are concentrated they form strong jellies which liquefy on mechanical agitation.

Prof. Hauser and Miss le Beau make their amazing films by drying the Ben-

tonite jelly and obtaining coherent, self-supporting, translucent films, without the use of any binder.

Under pressure these translucent films turn transparent and become very strong, yet flexible. It is possible to print on them, like paper, and their electrical resistance makes them comparable to mica.

They appear useful as wrappings for high electrical insulation and as anti-corrosive coatings. Whether they will invade the market for wrappings on cigarette packages and other articles cannot yet be predicted. A patent application has been filed on the films.

The new films not only have important applications in practical living but their scientific composition is offering an interesting study for research.

Prof. Hauser exhibited photographs showing that the tiny colloidal particles of clay form networks that interlace into chains and form large single crystals.

### Oil Drops for Identification

The same phenomenon which makes colored oil films on the mud puddles in the gutter is now being used by scientists to identify specific proteins, of which many thousands of combinations can exist in nature.

In a report to the symposium, Dr. Vincent J. Schaefer of the General Electric Company's Research Laboratory described how the spreading of drops of indicator oils over thin, one-molecule

## Books

SCIENCE NEWS LETTER will obtain for you any American book or magazine in print. Send check or money order to cover regular retail price (\$5 if price is unknown, change to be remitted) and we will pay postage in the United States. When publications are free, send 10c for handling.

Address Book Department

SCIENCE NEWS LETTER  
2101 Constitution Ave. Washington, D. C.