MICA SUBSTITUTE

On a large crystal of mica, Oliver C. Ralston, of the U. S. Bureau of Mines, is holding a translucent sheet made from bentonite, with which he has been experimenting with a view to producing a mica substitute.

CHEMISTRY

New Film From Clay May Help Cut Imports of Sheet Mica

Film From Bentonite Is Almost Transparent, Fireproof, And Has Superior Electrical Insulation Properties

THE UNITED STATES may soon be able to replace most of its imports of valuable sheet mica with an American-made substitute, it appears from chemical discoveries reported to the American Chemical Society's colloid symposium at Stanford University.

The new mica substitute is Alsifilm, made from bentonite clays. Its development has been under way for some time and was first reported last year. The new advances and improvements were described in a paper presented by Prof. E. A. Hauser of Massachusetts Institute of Technology and Miss D. S. le Beau of the Dewey and Almy Company.

The new film can be made thin and almost transparent (looking like celluloid or Cellophane) and has superior electrical insulation properties. It is composed of inorganic materials that make it fireproof. Mica sheet is at present on the War Department's list of strategic materials of which the United States lacks adequate sources.

The bentonite clays are remarkable materials most commonly known for their ability when wet to swell to many times their dry size. One common use of bentonite is for sealing leaks in earth dams or in ditches. Wet bentonite closes the cracks. As it dries it shrinks, a little water penetrates, then it becomes wet and swells up again. This process is repeated indefinitely.

In the form of thin films bentonite is compressed strongly into a permanently stable material which is virtually impervious to water and does not swell as does bentonite normally.

As a substitute for sheet mica the new film may be expected to replace, to some degree, existing imports of this strategic mineral. In 1938 sheet mica imports amounted to 4,646 tons of unsplit mica and 1,115 tons of split mica. Total dollar value of imports of sheet mica in 1938 was $664,419.

Science News Letter, July 22, 1939

BIOLOGY

World's Greatest Wonder Is Rise from Cell to Human

WHAT is the most wonderful thing in the world?

The stars on a summer night? The fury of a storm at sea? Some gigantic work of engineering, such as Boulder Dam, Golden Gate Bridge, or Empire State Building? Some modern invention, such as the airplane, the telephone, the radio?

Dr. Edwin G. Conklin, the Princeton biologist, nominates for this honor the everpresent miracle of development, the marvelous complexities of a man or elephant issuing from so simple a beginning as a microscopic egg. If we did not know that it is true it would be incredible that the greatest men that have ever lived—Socrates, Plato, Aristotle, Newton, Darwin, Pasteur, Shakespeare, Goethe, Beethoven—were once babies, embryos and germ cells.

"All development, whether of animals or of men, consists in progress from a relatively simple to a more complex condition by means of increasing specialization or differentiation," Dr. Conklin explains. "Every higher animal or plant has come from an egg cell which contains none of the organs or parts of the adult, but which gives rise to these parts by the process of progressive differentiation.

"First of all, development occurs only in response to stimuli. The egg must be stimulated before it will begin to differentiate, and at every stage in development suitable stimuli are necessary to keep the process going. These stimuli may be either extrinsic or intrinsic. Extrinsic stimuli are found in food substances, proper temperature, moisture, etc., in the surrounding environment; the intrinsic stimuli are found in the constitutional or inherited needs and satisfactions of the organism. Every living thing has these needs and is eternally seeking their satisfaction.

"But development depends not only upon proper stimuli but also upon the appropriate response of the organism, and this is limited by its nature or heredity. No combination of stimuli can cause a hen's egg to develop into a duck and no amount of educational stimuli can convert a born fool into a wise man."

Science News Letter, July 22, 1939

The Old Stone Age in Europe lasted hundreds of thousands of years, but only about 100 skulls of its people have been studied and described by scientists.