

PHYSICS

New Metals Made by Meteorite Principle

➤ METALS formerly "impossible" to produce will be created by Air Force scientists who bombard objects with tiny high speed particles in much the same way micro-meteorites from outer space smash into missile shells and satellite skins.

Through similar methods, the scientists will also produce revolutionary new materials and perfect vacuums.

One of the first investigations to be made by the new technique announced by the Air Research and Development Command will be the testing of missile and satellite coverings subjected to high speed particles bombardment.

However, the actual creation of alloys and compounds of incompatible materials is the major objective of Wright Air Development Center scientists who pioneered "micrometeorite bombardment" from their Dayton, Ohio, headquarters.

Officials cite as an example a possible alloy of aluminum and iridium.

Aluminum, which begins to boil away at 3,740 degrees Fahrenheit, cannot be combined as a liquid with iridium, which does not melt until it reaches 4,450 degrees.

Now, scientists using the new technique will pulverize the iridium to very small particles, probably about one 25-thousandth of an inch in diameter, and shoot them at extremely high speed into the tiny crevices in aluminum's lattice-like structure.

Thus, by shooting solid aluminum full of solid iridium, the impossibility of mixing the two in the molten state is no longer a barrier to an alloy that will have aluminum's desirable aircraft properties, yet have a much higher melting point for space-age use.

Micrometeorite bombardment will also be used to make long molecular chains of compounds composed of organic and non-organic substances, many of which could not be produced by previous methods.

Perfect vacuums that are needed before many laboratory studies can proceed further will be created by literally blasting out the last traces of air with high speed particles until a "hard" vacuum is produced.

Science News Letter, August 2, 1958

EVOLUTION

Mammal-Like Reptiles Link Animal Groups

➤ FOUR SKELETONS of small reptiles—about the size of a cocker spaniel—may soon be providing scientists with more information on the evolution of mammals.

They probably are a transition stage between mammals and reptiles.

Although the animals can hardly be direct reptilian ancestors of mammals, Dr. D. H. Dunkle of the Smithsonian Institution pointed out, they are so close to mammals that some classifiers have put them with this later group. One characteristic in particular seems to link them with mammals: their teeth.

Incisor teeth "somewhat similar to those

of present-day rodents" and cheek teeth like those found in extremely primitive mammals, the multituberculates, are found only in these reptiles.

The nearly complete skeletons, collected by Dr. G. Edward Lewis, U.S. Geological Survey, and Dr. Dunkle on the Western Navajo Indian Reservation in Arizona, are probably the most complete remains yet found of the reptiles. They belong to a group of land-dwelling, four-legged, cold-blooded animals called icitidosaur.

Dr. Lewis is now engaged in an intensive study of the remains, which were found imbedded in rock formed about 160,000,000 years ago. So far no name has been given the new species.

The Smithsonian Institution, Washington, will keep the skeletons in its collections.

Science News Letter, August 2, 1958

TECHNOLOGY

Heat More With Electric Blanket

➤ HOMES IN MILD climates can be heated uniformly and at low cost with "electric blankets" manufactured in the form of floor carpeting.

For slightly over one U.S. cent per hour British householders can heat an average living room to a comfortable temperature in mild winter weather, officials of Thermalay, Ltd., Halifax, England, reported.

Floor temperature averages 70 to 75 degrees Fahrenheit, and only 80% of the floor needs to be covered by the new electric carpet to achieve maximum comfort. Because the electrical heating elements are distributed evenly over the floor, less heat is needed at the source to warm all the room air uniformly than is required by most conventional heating arrangements, the developers said.

The carpet consists of a high strength steel element, coated with hard plastic insulation, placed between two layers of felt bonded together by an adhesive. Thermalay engineers said the danger of fire has been eliminated by using a plastic insulation tough enough to withstand the normal movement of furniture over the carpet. They said even a hammered nail will glance off rather than penetrate the wire.

Thermalay officials claim no other form of heating is needed in mild winter weather if about 80% of the floor is carpeted with the heating pad.

At present the new heater is designed for use under conventional carpets. It is not made in floor carpet patterns.

Science News Letter, August 2, 1958

CHEMISTRY

Lipids Hold Secrets To Baking Success

➤ A MISSING LIPID may be at the root of some baking failures.

Chemists at the U. S. Department of Agriculture's laboratories have found that lipids, fat-like substances found in many foods, can greatly affect flour's baking behavior and storage. Even though they make

up only one and one-half percent of flour by weight, the absence of lipids yields bread that is hard and small.

Research conducted by USDA chemists D. K. Mecham and J. W. Pence at the Western Utilization Research and Development Division, Albany, Calif., has shown that three kinds of lipids can be extracted from flour and then added back. As much as four-fifths of the total lipids in flour can be removed and may result in better bread as long as the recipe calls for no shortening.

Removing the rest of the lipids, however, or using shortening can have disastrous effects on loaf volume and quality.

In some way still unknown, lipids play a very important role in flour quality. They cannot be replaced by ordinary shortening fats, simple fats such as lard and vegetable oils. Some lipids are tightly bound chemically to proteins and are essential to good bread baking.

Changeability, particularly changing into acids, is another characteristic of lipids. They generally change more rapidly than any other part of flour and some of these changes make a product that is rancid, with poor texture and flavor.

Science News Letter, August 2, 1958

PHARMACOLOGY

Five English Scientists Perfect Hypotensive Drug

➤ AN ORAL DRUG that acts against high blood pressure has been reported.

The drug, 1:2:2:6:6-pentamethylpiperidine, acts as a ganglion-blocking agent. It is well-absorbed on oral administration and possesses potential advantages over mecamylamine, in respect to tolerance, duration of action and rapidity of excretion, five English scientists report in *Nature* (June 21). Mecamylamine is a widely used hypotensive drug.

The scientists are G. E. Lee, W. R. Wragg, S. J. Corne, N. D. Edge and H. W. Reading of the Research Laboratories, May and Baker, Ltd., Dagenham, Essex.

Science News Letter, August 2, 1958

ORNITHOLOGY

Studies "Food Poisoning" of Ducks

➤ "BUGS," tiny insect larvae and crustaceans are now suspect as the killers of thousands of water birds.

U. S. Fish and Wildlife scientists believe they may play a double role in spreading avian botulism, a disease that has caused the death of as many as 10,000 ducks to the mile along some lake shores. The creatures feed on the disease-causing bacterium, *Clostridium botulinum*, and may concentrate the toxin already in the bacterium. When ducks eat these small invertebrates they get the toxin.

Giving sick ducks antitoxin and increasing the water's depth in affected areas can help control the disease.

The same bacterium can cause food poisoning in humans when canned foods are incorrectly processed.

Science News Letter, August 2, 1958