

PHYSICS

Better Electrical Storage

► **EXCEPTIONAL** electrical properties of the chemical, barium titanate, give definite promise of useful devices not yet dreamed of, Dr. R. G. Breckenridge of the National Bureau of Standards stated in Washington, D. C.

"It is even possible that future development of somewhat similar materials will lead to more effective electrical storage devices," Dr. Breckenridge said. He spoke as guest of Watson Davis, director of Science Service, on the nationwide Columbia network.

Barium titanate is a chemical compound composed of barium, titanium and oxygen. The sensitive atoms of this compound show a remarkably quick response to the slightest changes in pressure, temperature or electrical field.

So outstanding are the electrical properties of barium titanate that it is given the special name, ferroelectric. Only two other compounds now known are similarly classified.

Barium titanate is now being used for phonograph needles. The very tiny indentations in the groove of the record are picked up by the needle and sent back to a crystal of barium titanate.

Dr. Breckenridge explained that the sen-

sitive atoms of this compound have the ability to develop an electrical charge when they are deformed. The small changes picked up by the needle from the groove of a record and sent to the crystal of barium titanate cause the development of an electrical charge. This electrical charge, after being amplified, comes out of the loudspeaker as sound.

The characteristic of building up an electric charge when deformed is known to the physicist as piezoelectricity. The reverse of the same process is used in the undersea detection of submarines through Sonar.

"Here the crystal is driven by high frequency electrical currents," Dr. Breckenridge explained. "It produces ultra-sonic waves that travel through the water for a considerable distance. When these waves strike an object, they are reflected back and detected actually by the same crystal."

Dr. Breckenridge said that the discovery of this class of material is just as important to the electrical industry as the discovery of a new class of material, that would behave as iron does, would be in the magnetic field. He was one of the pioneer workers on the electrical properties of barium titanate at Massachusetts Institute of Technology.

Science News Letter, April 1, 1950

DENTISTRY

Ways to Stop Tooth Bleed

► **THE** three most useful chemicals for stopping bleeding after a tooth has been pulled are: 1. epinephrine, or adrenalin as it is popularly known; 2. thrombin; 3. a thrombin carrier such as fibrin foam, soluble cellulose or gelatin foam.

These three substances are listed, along with other anti-bleeding measures, in a report by Dr. E. P. Cronkite of the Naval Medical Research Institute and R. M. Ireland, biologist at the same institution, to the American Dental Association in Chicago, Ill.

In normal persons the first and most important step for stopping bleeding is to tie the accessible bleeding points and sew the tissues together carefully unless the wound must be left open for drainage, as in case of infection.

If these two measures do not stop the bleeding, local pressure may be enough. If this does not work, thrombin powder or solution should be applied. Thrombin is one of the blood's own chemicals that takes part in the clotting mechanism. If it is necessary to use a pledget to apply the thrombin, as in a tooth socket or in the nose, fibrin foam, soluble cellulose or gela-

tin foam saturated with thrombin are advised. These packs can be left in place and help support the tissues as well as helping to stop bleeding.

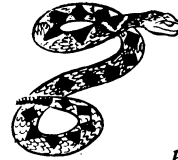
Before applying thrombin, it is sometimes desirable to apply a solution of epinephrine to constrict the small blood vessels.

Substances formerly used to stop bleeding after tooth extraction, such as tannic acid, silver nitrate, alum, chromic acid, zinc, copper and iron salts, have outlived their usefulness, in Dr. Cronkite's opinion. Their value is based on their ability to coagulate proteins, such as are contained in blood, he explained. They can do this but at the same time they coagulate healthy tissue and produce unnecessary and usually undesirable destruction of the tissues.

Vitamin K is valuable for stopping bleeding only in persons with a deficiency of the vitamin or some condition that makes them unable to utilize it from food.

Special measures, including use of anti-hemophilic globulin available through the American Red Cross National Blood Program, can make it safe for hemophiliacs to have teeth extracted without dangerous bleeding.

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