

skill, and the proper mechanical use of the body."

Commenting that although the health program is one of the latest to be added to school activities, it should be one of the last to be cut, he pointed out that this program came with a fundamental change in living conditions.

"If we should abandon our health program, our city and consolidated schools would find themselves presented with an epidemic of communicable disease at the beginning of each new term as did the city schools prior to 1890."

Science News Letter, April 1, 1933

CHEMISTRY

Tellurium Added To Lead Protects Against Acid

S MALL AMOUNTS of tellurium added to lead increase remarkably the resistance of the metal to concentrated sulphuric acid, W. Singleton and Brinley Jones of the Associated Lead Manufacturers' Research Laboratories have reported to the Institute of Metals at London, England. The physical properties of the lead are also profoundly affected. Rolled sheet of the tellurium-lead alloy with a wide range of properties can be produced. Tellurium additions also affect similarly various lead alloys.

Science News Letter, April 1, 1933

PHYSICS

Cat's Fur Electricity Ready To Yield Greatest Voltage

Huge Static Machine Will Soon Emit 10,000,000-Volt Discharges With Power of Town Generating Station

T EN MILLION volts will soon be available to a group of Massachusetts Institute of Technology physicists. In an airship hangar on Colonel E. H. R. Green's estate in Massachusetts, the largest building they could borrow for their experiments, a gigantic electrical machine is being groomed for its test run. It consists of two columns surmounted by fifteen-foot hollow aluminum spheres. Men can climb into these hollow metal balls, and the interiors of which will serve as laboratories where the effects of high voltage electricity upon matter can be observed.

The giant electrical machine will provide the world's highest potentials of electricity under human control. Lightning has higher voltage but man cannot effectively harness the lightning.

One surprising thing about this ten million volt generator is that it needs no electrical input. It is its own power house. No large transformers are

needed. One of the oldest methods of generating electricity is used in this newest high voltage machine. Benjamin Franklin experimented with static machines and that other great American pioneer in physics, Joseph Henry, used frictional electricity generators to shock students holding hands in a circle.

Stroke a cat or comb your hair on a dry day and see the sparks fly. This method of generating static electricity is essentially the same as that in the ten million volt static machine about to be tested in New England. Static electricity antedates the electro-magnetic method that is used in the generation of practically all of the electric power today. The Greeks knew that by rubbing a piece of amber with a cloth an electric charge could be generated. With the practical application of the discoveries of Faraday and Henry, that motion in a magnetic field can generate a current, with the development of the vast electrical industry based upon these principles, static electricity did not have the opportunity of becoming practically useful but remained within the laboratory in the bags of scientific tricks of physics professors.

A modest young man, just thirty-two, is responsible for the application of the principles of static electricity in the development of the electrical machine which will soon give science useful potentials of many millions of volts. Dr. R. J. Van de Graaff was a Rhodes Scholar in Oxford when it first occurred to him to use static electricity to obtain high voltage. While in England he did not have the opportunity to make the necessary experiment but after leaving Oxford he went to Princeton University as a National Research Council fellow. There with the cooperation of Dr. Karl T. Compton, then professor of physics at Princeton and now president of the Massachusetts Institute of Technology, Dr. Van de Graaff made the first Van de Graaff generator. It cost less than a hundred dollars and it exceeded, in volt- (Turn to Page 204)



WEAPONS OF A PIONEER

The two hundredth birthday of Dr. Joseph Priestley, pioneer of chemistry in England and later in America, discoverer of oxygen, philosopher, philanthropist and friend of Washington, Jefferson, Franklin and Adams, was celebrated in connection with the meeting of the American Chemical Society in Washington, D. C., March 27 to 31. A feature of the celebration was the display of many pieces of his scientific apparatus, surviving in spite of the inevitable dispersals and breakages of a century and a half. The photograph reproduced here was taken at an earlier celebration: the centenary of his discovery of oxygen, held in 1874, at Priestley's old home in Northumberland, Pa.