

PHYSICS

Atom Smasher "Cheats"

"Swindletron" gives protons two boosts of energy with each electrical impulse, instead of just one kick. It operates at lower voltages than the giant accelerators.

► A "SWINDLETRON," a new kind of atom smasher that seems to "cheat" on an elementary law of physics, is being developed at the University of California.

Heretofore, the machines that physicists have built for smashing atoms have given only one boost of energy to atomic projectiles by a single electrical impulse. The "swindletron" gives two boosts of energy per electrical impulse.

The "swindletron" can operate in the region of several million electron volts, but cannot rival in energy the big cyclotrons, cosmotrons and bevatrons. However, scientists say it will operate cheaper, easier and more safely in the energy ranges now covered by Cockcroft-Walton and Van de Graaff atom smashers.

In the Berkeley pilot model "swindletron," more formally called the charge exchange accelerator, protons, the nuclei of hydrogen atoms, are used as atomic bullets.

The protons are shot at about 30,000 volts through a thin, uncharged sheet of aluminum. In this "capture" foil, the slow-moving protons tend to pick up two electrons each. Being negatively charged, the projectiles are then pulled violently toward another aluminum screen which is positively charged. The particles are boosted to 500,000 volts by this charge.

As they rush through this screen, the fast particles tend to lose their two electrons. So on leaving this "stripping" foil, the particles are once again naked protons with a positive charge. They are violently pushed away from the foil, receiving another 500,000 volt boost.

Thus, with a single 500,000 volt charge, the protons are accelerated to 1,000,000 volts. The physicists get twice as much energy out of the machine as they put in. In larger versions of the machine, it will be possible to get 4,000,000 volt protons with an expenditure of 2,000,000 volts of energy. Four million electron volts is the energy range of a standard type Van de Graaff.

The idea of the "swindletron" was conceived independently by Dr. Luis W. Alvarez, professor of physics at Berkeley. After his publication of the idea, he learned that it had been patented in 1936 by Dr. Willard Bennett of the Naval Research Laboratory in Washington, although Dr. Bennett had never published a scientific paper on the subject. The small pilot model in Berkeley, the first of the "swindletron" species, is being developed by Dr. John R. Woodyard, professor of electrical engineering.

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TECHNOLOGY

Porcelain for Buildings

► THE SAME sort of porcelain enamel that gives refrigerators, stoves and washing machines their glossy appearance promises to become a major low-cost house and office building construction material, the Building Research Advisory Board in Washington reports.

Porcelain enamel panels now are being produced in a variety of colors and textures. They are suitable for exterior walls of buildings and houses, for flooring, decorative trimming and laboratory work benches.

Porcelain panels are not a substitute for regular load-bearing building materials, but they make high quality facing material. Attached to a strong building frame, the panels are exceptionally weather-resistant and are said to outlast the framework of the building itself.

The panels never have to be painted since color is an integral part of them. A quick washing will restore their snappy look when they become dirty.

Few office buildings and even fewer

houses now use the panels to their fullest advantage, the Board adds, but engineers and architects are excited over the promise the panels hold.

In addition to their ruggedness—they are difficult to chip—the panels are easily hung in place and may be one answer to the problem of low-cost housing.

Some filling stations and supermarkets already are using porcelain panels for exterior walls. Some office buildings and homes also are using them for interior decoration.

Tests at the Atomic Energy Commission's Oak Ridge National Laboratories show the panels make good laboratory construction materials in radioactivity danger areas. Not only do they resist contamination, but also they can be easily decontaminated when "hot."

To explore the possibilities of the panels from their chemical and physical properties to their architectural and esthetic qualities, the Building Research Advisory Board held

a conference with porcelain enamel manufacturers at the National Academy of Sciences in Washington. The open meeting drew many persons engaged in the construction business. Various conference sessions brought out research and practical experiences that experts have had with the panels to date.

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MEDICINE

New Antibiotic Stops Viruses of 'Flu in Mice

► AN ANTIBIOTIC drug that can stop two human influenza viruses in mice was announced by Drs. D. A. Harris, H. B. Woodruff and Laurella McClelland of Merck and Co. Research Laboratories, Rahway, N. J., at the antibiotic symposium held under the sponsorship of the Food and Drug Administration, U. S. Department of Health, Education and Welfare.

The new antibiotic has been obtained in crystalline form from an organism called *Nocardia formica*.

Besides its "favorable" effect on mice infected with the human 'flu viruses, it enabled mice infected with swine influenza virus to survive twice as long as infected, untreated mice.

It also delays the development of mumps virus in eggs.

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DENTISTRY

Taste Governs Dentifrice Choice

► AMERICANS CHOOSE their dentifrice for its taste more often than for any other reason, it appears from replies of 3,000 families to a questionnaire by the American Dental Association.

Of 81.4% who answered the questionnaire, 18.5% said taste was the reason for selecting the dentifrice they used, with another 9% giving aftertaste as the reason. One out of 18 used a particular dentifrice because the dentist recommended it.

"A minority of respondents thought that ammoniated or chlorophyll dentifrice had an advantage over other dentifrices in the care of the teeth," the association reports.

The figures on this question show that 23.4% thought an ammoniated dentifrice best for teeth, 20.2% thought a chlorophyll dentifrice was best for the teeth, with 16.3% thinking a plain dentifrice was best, and 36.8% replying "It doesn't make much difference what kind is used."

Tooth paste is used by 69.1% of those answering the questionnaire, with 21.8% using tooth powder, and only eight-tenths of a percent using a liquid dentifrice. The others used soda, salt or some other dentifrice.

While 60.1% said they knew teeth should be brushed after each meal, only 29.1% said they actually did. The most common practice is twice-a-day brushing.

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