

PHYSICS

Cosmic Rays Filtered

► SOME OF the most powerful cosmic rays smashing into the earth from outer space are being subjected to close scientific scrutiny by means of two ingenious "filters" built at the University of California.

These super cosmic rays, in the energy range of 10,000,000,000 to 200,000,000,000 electron volts, are considerably more powerful than any that can now be generated in atom smashers. Particle accelerators now planned will speed particles into the lower part this range.

Studies of very powerful rays have been difficult because they are obscured in the constant rain of less powerful cosmic radiation.

The Berkeley devices, called "momentum analyzers," were built to filter out the less energetic radiation, so that scientists can look at the heavier cosmic projectiles.

The instruments, built under the direction of Dr. Robert B. Brode, professor of physics, are about 15 feet tall. About half way down the analyzer, cosmic rays encounter a powerful magnetic field. The magnet literally whirls all the cosmic rays under 10,000,000,000 electron volts right out of the instrument. Thus, below the magnet, the scientists detect only cosmic rays from 10,000,000,000 to 200,000,000,000 electron volts.

Scientists used to try to "filter" out low energy cosmic rays by going underground into mines. This did filter the low-energy particles, but the high-energy particles were slowed down so much they look like ordinary low-energy cosmic rays.

Dr. Brode and his colleagues hope the instruments will help them learn more about the number of very fast particles that reach the earth. They also want to learn the ratio of positive-to-negative high-energy particles in cosmic rays, and how these radiations interact with matter.

An ultimate object is to learn more about how mesons, fleeting particles found in cosmic rays and also generated in big atom smashers, seem to hold the nucleus of the atom together.

The new instruments will not put atom smashers out of business. In the energy ranges they can cover—up to 6,000,000,000 electron volts now and up to 25,000,000,000 electron volts when new machines are completed — the atom smashers can reveal more in minutes than the trappers of natural cosmic rays can learn in months.

Above the range of the atom smashers, however, scientists must look to instruments for answers to their questions about powerful cosmic rays.

Science News Letter, October 2, 1954

MEDICINE

Eugenics For Diabetics

► INSULIN, BOON to the diabetic, may be good medicine but it is bad eugenics. With its aid, diabetics are saved to breed more diabetics. And many of the children of diabetic mothers are born deformed in one way or another.

This eugenic challenge to diabetes specialists comes from Dr. Alan F. Guttmacher, director of obstetrics and gynecology at Mount Sinai Hospital, New York.

Modern medicine, he says, is doing all within its power to thwart nature who, through still births, abortions and malformations, "seems to be crying: Don't let the diabetic woman reproduce herself."

He charges himself with being "among the most guilty" in this thwarting of "nature's intelligent genetic viewpoint."

Even with insulin and modern medical care, the diabetic woman when she becomes pregnant has less than a 65% chance of bearing a surviving child, compared to the non-diabetic who has about an 86% chance. Malformations are about three times as frequent for the offspring of the diabetic woman as for normal women, Dr. Guttmacher says in *Eugenics Quarterly* (Sept.).

Before 1922, when insulin was discovered, patients with diabetes rarely became pregnant and, when they did, neither mother nor child survived in half the cases. Since

then diabetic parents have multiplied many fold and potential diabetic offspring to an even greater number.

The modern doctor asked to advise a diabetic about having children is faced with the difficult decision between the rights and happiness of the individual and the ultimate welfare of the community, Dr. Guttmacher declares.

Diabetic women have the "same insatiable urge for motherhood as the normal woman" and being unable to have children or being advised against it leaves her with the same frustration as any other woman.

Her plight is made worse by the attitude of adoption agencies which prefer to place children in the homes of physically normal persons who have a full life expectancy.

Dr. Guttmacher says that as an obstetrician he can state the problem, but must leave its solution to the geneticist.

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NATURAL RESOURCES

U. S. Oil Shale Deposits Beat World Oil Reserves

► OIL SHALE deposits of Colorado, Utah and Wyoming are one of the world's major fuel sources, containing more than 100,

000,000 barrels of oil, comparable to the world's known resources of petroleum.

Clyde Berg of Union Oil Co. of California presented this estimate of the energy resources of the mahogany-colored Green river oil shale formation at the American Institute of Chemical Engineers meeting in Glenwood Springs, Colo.

Important technical advances have been made during the past five years, "including hydrogenation of shale oil over the cobalt-molybdate catalyst and application of the new hyperperforming process for the production of premium motor fuel," Mr. Berg reported.

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