GENERAL SCIENCE

International Laboratories

Cooperative attack on such problems as conquest of space and control of hydrogen bomb reactions for peaceful production of power urged "to disarm the future."

➤ THREE MAJOR international laboratories to atack such problems as the conquest of space, control of H-bomb reactions to produce power, and weather modification have been proposed by Senator Clinton P. Anderson (D-N.Mex.).

Addressing the Sixth Annual Conference on High Energy Nuclear Physics at the University of Rochester, Rochester, N. Y., the chairman of the Joint Congressional Committee on Atomic Energy urged a halt in the present arms race and a "new try at disarmament" by what he calls "disarming the future."

Areas of technology now in their infancy offer the best hope for international cooperation, he said, because no nation now has a strong vested interest in such fields. To encourage their development, Senator Anderson called for removal of present restrictions on exchange of non-secret scientific information between nations and establishment of a world passport, which would be granted annually to a select list of world-wide nominees by unanimous agreement.

He suggested such world passports might be given to Nobel prize-winners, four of whom attended the conference, outstanding artists, and leaders in religion, government, science and education. They could promote a degree of mutual trust and understanding that might help to halt the arms race and forestall "a war nobody wants," Senator Anderson said.

As prime examples of the many problems that "can and should" be attacked by international efforts, since they do not have respect for national boundaries, he listed launching satellites into outer space, controlling thermonuclear reactions for peaceful production of power and possible world-wide weather modification.

If the race to develop an intercontinental ballistic missile, armed with atomic warheads, ended in a tie between the United States and Russia, Senator Anderson pointed out, "fantastic sums of money, materials and scientific skills" would have been spent on a weapon the people of earth would banish as they did poison gas in World War II.

Since the weapon may never be used, he urged setting aside attempts at space conquest for an international laboratory. Exploration and development of other worlds should be under an organization reflecting the common interests of all peoples of the world.

"The man in the moon," Senator Anderson said, "belongs to the children of every country, is a part of their dream world, and if reached by space ship, might better remain the property of all."

A space missile intended for the moon but landing on another nation's territory because of defective mechanism or planning might touch off the spark of world conflict, if its development were secret, but not if its development were an international effort.

Many programs, he noted, are now being successfully carried forward by joint agreement among nations. Among these Senator Anderson cited the "inspiring scope of the International Geophysical Year," a world-wide effort to probe the earth, its seas and skies, beginning July 1, 1957.

The World Health Organization, he said, is successfully fighting diseases and promoting new understanding of medical care for infants, the aged and the handicapped. The Atoms-for-Peace program, the multitude of activities supported by the United Nations Educational and Scientific Organization, UNESCO, the giant atom smasher being built by several European nations in Switzerland and an internationally run electronic computer are also examples of effective cooperation among nations.

Yet undeveloped technologies may have even more dreadful potentialities for destruction than those now known, Senator Anderson said. Military techniques arising from them can make the present stalemate no worse, since mutual annihilation is now possible.

New fields of science, he urged, can best be developed jointly by all nations. The result might be that a war-weary world would achieve in time a form of disarmament by obsolescence.

Science News Letter, April 21, 1956

PHYSICS

Sub-Nuclear Zoo

➤ A PICTURE of atomic hearts was drawn by more than 200 of the world's leading physicists gathered in Rochester to discuss the past year's important theoretical and experimental developments in nuclear physics.

Three Russian scientists and four Nobel Prize winners were among the more than 200 physicists attending the Sixth Annual Conference on High Energy Physics at the University of Rochester.

During the five-day meeting, the scientists examined the mass of data compiled from atom-smashing and cosmic ray experiments the world over. Their aim was to

INFORMAL EXCHANGE BY PHYSICISTS—One of the two women invited to a conference on high energy physics in Rochester, N. Y., Dr. Sulamith Goldhaber, University of California, is shown here with W. Fry, University of Wisconsin, C. O'Ceallaigh, Institute for Advanced Studies, Dublin, Ireland, D. Glaser, University of Michigan, and K. Gottstein, Max Planck Institute for Physics, Gottingen, Germany.

exchange information on the nature of nuclei.

An atomic core does not have a sharp edge, experiments have shown. It is, rather, like a ball of yarn with a very fuzzy edge or a cloud whose trailing edges gradually disappear into the blue.

Various models of nuclei have been drawn to explain their interactions and reactions. One, the optical model, is known as "the cloudy crystal ball," so-called because when fragments of atoms are hurled at nuclei in giant atom smashers, the result is similar to the diffraction and absorption of light by a cloudy crystal ball.

Bombarding the atom's heart with the various particles to determine its shape and structure can be likened to trying to learn the shape of a house in total darkness by bouncing tennis balls off it.

Subjects covered in the sessions included nuclear forces, mesons and the recently discovered particle of negative matter, the anti-proton, as well as the K-mesons and other particles found hurtling out of nuclei.

Only one new particle, the anti-proton, has been discovered in atomic collision during the past year, the scientists agreed. They expect to find another bit of negative matter, the anti-neutron, shortly.

Bigger and more powerful atom-smashers now being built may answer the question as to whether the anti-neutron will complete the list of fundamental particles, or whether very different kinds of nuclear inhabitants will be discovered at higher energies.

Dr. J. Robert Oppenheimer, director of the Institute for Advanced Study, Princeton, N. J., coined the term "sub-nuclear zoo," to describe the particles which are the "atom's strange offspring."

Prof. G. Wataghin of the University of Turin, Italy, reported that showers resulting from extremely high energy cosmic rays indicate "new ideas" will be required to explain how matter behaves.

About 12 examples of such electronic showers have been recorded. Present theories, he said, fail to explain such events, called Schein showers, because the first was spotted by Dr. Marcel Schein of the University of Chicago.

The largest shower ever recorded, Prof. Wataghin noted, indicated an energy of one billion billion electron volts for the radiation causing it. Hundreds of billions of atomic particles resulted when the cosmic ray smashed into matter high in the atmosphere.

The three Russian physicists, the first to visit the United States since World War II, reported on atom-smashing experiments in Moscow.

Their work "confirms and extends" some studies made in this country, Dr. V. I. Veksler, director of the Lebedev Institute in Moscow, said. Attending the conference with Dr. Veksler were Drs. M. A. Markov and V. P. Silin, also of the Institute.

One atom smasher described by Dr. Veksler is a synchro-cyclotron that operates on a principle he discovered in 1945. Independently and almost simultaneously, Dr. E. M. McMillan, a Nobel Prize winner from the University of California, discovered the same principle. It allows scientists to speed up atomic particles to energies of billions of volts.

At the Conference, Dr. Veksler and Dr. McMillan met for the first time. They talked of progress being made on Russia's ten billion volt accelerator that will be the world's most powerful within a year (See SNL, April 14, p. 227.)

Interpreter for their exchange was Dr. George Volkoff of the University of British Columbia, Vancouver, B. C., Canada.

Science News Letter, April 21, 1956

MEDICINE

Pills for Diabetics

➤ HUMAN TRIALS of pills for diabetics to take instead of insulin are reported by two groups of scientists in *Science* (April 6).

The pills, derived from sulfa drugs, are known as BZ-55 and Orinase.

News that such pills had been developed and might in the future replace insulin injections for some diabetics was previously announced. (See SNL, Feb. 25, p. 115.) The pills are not yet ready for general use.

A "statistically highly significant response" in lowering blood sugar resulted in 34 of 44 patients given Orinase, Drs. I. Arthur Mirsky, Daniel Diengott and Henry Dolger of the University of Pittsburgh School of Medicine report.

The pills were given not as pills but in a solution of bicarbonate of soda the patients swallowed. The 10 patients who did not respond all had developed their diabetes before the age of 20.

The sulfa pills were given to six severe without extensive trials on patients. Such trials, they state, must be performed with caution.

and four mild diabetics by Drs. Laurance W. Kinsell, Frederick R. Brown Jr., Roger Highland Alameda County Hospital, Oakland, Calif.

Of the severe diabetics, three responded W. Friskey and George D. Michaels of favorably, one showed essentially no effect from the sulfa drug, and one had a significant increase in sugar in the urine while taking the sulfa pills.

Three middle-aged very fat diabetics had their insulin requirement reduced more than 50% when taking the sulfa pills.

One patient who had a "pre-clinical" diabetes, that is, who did not show all the signs and symptoms of the disease, had a sugar tolerance curve that the California doctors term "very diabetic." This reverted to normal after a single large dose of the sulfa drug.

Large dosage, the California scientists report, may result in toxic signs. Reducing the dose has so far caused such danger signs to disappear.

The Pittsburgh scientists point out that the usefulness of these drugs cannot be told

Science News Letter, April 21, 1956

Besides being an excellent insulating and soundproofing material, *mineral wool* resists fire, corrosion, mold and decay.

Green feeding is an experimental method of harvesting fresh green forage twice daily during the growing season and hauling it to cows kept in a feeding lot.

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