NUCLEAR PHYSICS

New Atomic Development

Suggestion that some day we may have a meson atomic bomb comes from the discovery that the most familiar kind of meson will produce fission of uranium.

➤ ENERGY may be blasted out of the atom by a lighter weight particle than the prime "trigger" of the atomic bomb, the neutron.

Scientists attending the American Physical Society meeting in New York were told of the promise of the meson, alias mesotron, in this respect. This fundamental particle of matter has not yet been artificially produced although it is generated by the powerful cosmic rays entering from outer space the earth's outer atmosphere with tremendous energies.

Dr. John A. Wheeler, the young Princeton University physicist specializing on the structure of the atom, has figured out that the most familiar sort of meson (there are probably four or five kinds of them) will produce fission of uranium. It is reasonably probable that it will split asunder the hearts of other heavy atoms with release of energy, that is, the turning of mass into energy, which is what happens in the fission of uranium or plutonium by neutrons (the process of the atomic bomb).

This is a very exciting idea and one that may be upsetting even to the international balance of atomic power. If and when the meson is created under control and aimed at materials that it can fission, it may be necessary to bring other elements than uranium and thorium under control of national and international atomic energy commissions.

Of course, we are a long way from a meson atomic bomb or atomic power plant. The experimental demonstration of meson fission has not yet been made. We are at an earlier stage in the possible realization of meson fission than the world was in 1939 when neutron fission of uranium was demonstrated in Germany.

The least that has happened on this new atomic frontier is that, as Dr. Wheeler says, " experimental and theoretical studies of the interaction of negatively charged mesons with atomic nuclei furnish another point of advance on the elementary particle problem."

What seems to happen is that mesons are able to move in orbits around the atomic nucleus which resemble the orbits of electrons in shape but are in size 200 times smaller. The mesons jump from one of these orbits to another and release energy which should be able to initiate a special type of fission in uranium or heavier nuclei. If they can, the energy release figures out to be about half as much again as the energy given off by uranium that is fissioned by good old reliable neutrons.

A next step in the attempts at practical meson fission will be creation of mesons in new giant "atom-smashers", five of which capable of doing so should be in operation this year.

Science News Letter, February 14, 1948

AERONAUTICS

New British Helicopter Similar to Airplane

➤ A BRITISH helicopter, which has just made its first flight, looks more like an ordinary airplane than other craft of this type. The resemblance is due to a normal tail with twin rudders, and stub wings.

This Fairey Aviation company's craft has the ordinary overhead horizontally rotating lifting blades, but it has also a conventional propeller at the tip of its starboard wing. This provides forward propulsion, and also counteracts the tendency of the craft to rotate caused by the main rotor.

It is an experimental model, capable of seating four persons. Advantages claimed for the design include greater safety than with ordinary helicopters, higher forward speed, and greater comfort.

Progress is reported on a freight-carrying helicopter which has three rotors. It will be capable of carrying 24 passengers or three tons of cargo. Claims are that it will be the fastest and most powerful helicopter yet built. It has a 1640 horsepower Rolls-Royce Merlin engine.

Science News Letter, February 14, 1948

MEDICINE

Alcohol Banishes Cancer In Mice—But Mice Die

➤ CANCERS in mice, of the type known as lymphosarcoma, have stopped growing and begun to disintegrate after injections with small amounts of 95% alcohol, in experiments reported by Dr. Allan D. Bass and Miss Marion L. H. Freeman of the Syracuse University College of Medicine.

The effect was discovered almost accidentally. The two researchers were injecting various drugs, dissolved in alcohol, into mice with malignant tumors. They found that destruction of the

RESEMBLES AIRPLANE—This British experimental helicopter looks like orthodox aircraft because it has a normal tail with twin rudders and stub wings. Advantages claimed for its unique design are greater safety, higher forward speed and greater comfort. It can seat four people including the pilot.