

PHYSICS

Prevent Atom Dangers

World must work out new international cooperation to harness atomic energy to world usefulness and prevent international catastrophe.

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► THE FATE of humanity, now that enormous explosive energy has been released from the atom, depends upon the ability of the peoples of the world to cooperate in avoiding common dangers, Dr. Niels Bohr, leading Danish scientist and Nobelist who worked on the American development of the atomic bomb, declared in Copenhagen, Denmark.

"We have left that time far behind us when each man could pick up the nearest stone for self-defense," Dr. Bohr said. "We have also reached that place where the security offered the citizens of a nation by collective defense arrangements is altogether inadequate. Perhaps there is no defense possible against the new powers of destruction, and it depends upon a world-wide cooperation to prevent use of the new sources of energy for purposes which do not serve humanity as a whole. However, the possibility for an international control with this purpose in view may be said to be secured by the gigantic, special character of the efforts, which are unavoidable in manufacturing the new terrible weapon."

"It is evident," Dr. Bohr emphasized, "that no control can be effective without free access to full scientific information and unless opportunity is given to exercise international control in all undertakings which could be catastrophic if not controlled."

"Such safeguards necessitate elimination of all barriers which hitherto have been considered necessary to protect national interests," Dr. Bohr said. "These now are a hindrance for common security against dangers without parallel. It is evident that handling this difficult situation will demand the goodwill of all nations, but it must be understood that we here have to do with something which can become a deathly challenge to civilization itself. A better background to handle such a situation can hardly be found than the serious wish to seek a firm basis for the world's security, which so unanimously has been expressed by all the nations which have been able to

defend the elementary human rights through their united efforts. An agreement upon this vital question will create confidence and harmonious relations between nations which can hardly be overestimated.

"In solving this great problem, scientists the world over will be able to offer the most valuable services. The strands which have been woven together through scientific collaboration constitute some of the strongest ties between individuals of different nations, but the entire scientific community will no doubt unite their strongest efforts to make the world clearly realize the values that are at stake, and to appeal to all humanity to listen to the warning that has been given.

"Every man of science who has helped in the work to lay the foundation of the new development is ready to help in every way he sees clear to find a solution of humanity's present crisis, which will be worthy of the ideals for which science has struggled through the ages."

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CHEMISTRY

Chlorine Dioxide Produced In Lab in Small Amounts

► CHLORINE DIOXIDE, now an important bleaching and oxidizing agent, can be produced in the laboratory in small quantities by a method that depends upon the reaction of accurately metered dry chlorine with substantially dry powdered sodium chlorite, the American Chemical Society reports in *Industrial and Engineering Chemistry*, (Oct.).

The report is by W. S. Hutchinson and R. I. Derby of General Mills, Inc., Minneapolis, and covers three methods developed by them for producing chlorine dioxide, using these chemicals, for experimental purposes in bleaching flour in their laboratory. The method recommended depends upon the quantity and purity desired.

One method, which can produce up to a tenth of a gram of chlorine dioxide in a one-liter flask, yields chlorine dioxide and chlorine in the effluent gases. For many purposes the excess chlorine is of

slight or no consequences when compared to the oxidizing power of the chlorine dioxide produced, they said.

The second method, to produce larger quantities, consists of introducing the chlorine slowly into a mixing chamber and then in a continuous stream of air through a column filled with the dry flaked sodium chlorite. The action is instantaneous.

In the third method, to produce chlorine dioxide in still larger quantities, a generator is used which consists of two or more glass tubes, filled with technical grade sodium chlorite flakes, connected in series with glass tubing. Chlorine and air are introduced at the bottom of the first tube and pass through the others in series. The effluent gases are then conducted to a mixing chamber where they are diluted to any desired concentration with air.

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AERONAUTICS

Planes Can Land Without Touching the Ground

► EXCEPT for servicing and overhauling, light planes, using the Army's new portable plane handling system, now need never touch their wheels to the ground for landings and takeoffs.

Known as the Brodie System after its creator, Capt. James H. Brodie, this method permits flight operations in marshes, jungles, mountains and other terrain formerly inaccessible to aircraft unless landing strips were installed. The entire apparatus may be carried in cargo planes, parachuted to earth and set up in less than 24 hours.

A taut steel cable, supported by four 65-foot masts, forms this mid-air "landing strip." Suspended from the cable are three nylon loops, any one of which may be engaged by a landing hook mounted on the upper surface of the plane's wing. The comparatively slow-flying planes "hook" the six-foot loops and slide down the cable until braking power is applied. Takeoffs are accomplished by reversing the process. The planes are raised by derricks and secured to the cable by a releasable stirrup. Under its own power, the plane moves slowly down the cable until flying speed is reached. A lanyard in the cockpit is pulled, releasing the stirrup, and the plane is airborne.

Weighing less than six tons, the rig is considered practical for planes up to 5,000 pounds and with modifications may be used on cargo or landing vessels.

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