

PHYSICS

# Mass Collaboration

Atomic bomb is a world-shaking example of what can be accomplished by pooling scientific resources. German racist policy, Jap isolation, now seen as suicidal.

► ATOMIC bombs, bursting over Japanese military and industrial key-points like Doomsday thunderbolts, herald a revolution in war such as has not been seen since the first use of gunpowder, and later on another revolution in industry probably greater than the one ushered in by the invention of the steam engine. Chemical energies heretofore used, as in the explosion of TNT or the burning of coal, have originated only by ripping molecules apart and rearranging the whole atoms of which they are made up; this new physical development of power involves splitting open the atoms themselves and loosing the vastly greater energies that tie together their electrons and protons.

The power development is new, but the idea back of it is old—old as the alchemies of ancient China and Arabia, that slowly crept towards the dawn of modern science through the solitary labors of primitive researchers like Roger Bacon and Albertus Magnus in the Middle Ages.

That it could be brought to realization now is due more than anything else to the fact that researchers are no longer solitary. American, British and Canadian scientists pooled resources, and enormous sums of money—probably more than has ever been spent on any research project in history—were made available to them in their race against time—and the enemy.

The enemy, for his part, played into our hands, partly because he couldn't help himself, partly through his own blind prejudices. The enemy was divided from the first: Japan was far from the rest of the Axis and had relatively few scientists and not much in the way of equipment and raw material for the particular kind of production required; Germany, much better off in both respects, deliberately threw away some of her best brains because of a lunatic distaste for the owners' racial or religious connections.

The Germans even lost aid that they might have gained from scientists in neutral countries, through their ruthless military policy. One of the world's leaders in the atom-splitting field, Prof. Neils

Bohr of the University of Copenhagen, found it necessary to leave his country and take refuge in Sweden, later going to England and then to the United States. German scientists called in by the Nazis to take over his laboratory declined to receive such stolen property. Only since the close of hostilities has Prof. Bohr returned to Copenhagen.

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## Cars Will Run on Gas, Not Atomic Power

► YOUR first postwar car and its successors for a good many years to come will run on gasoline, not atomic power, it appears from the conclusions of a committee appointed to look into its possible peaceful uses.

Within ten years practical non-military use of this power could be expected but only for "special purposes."

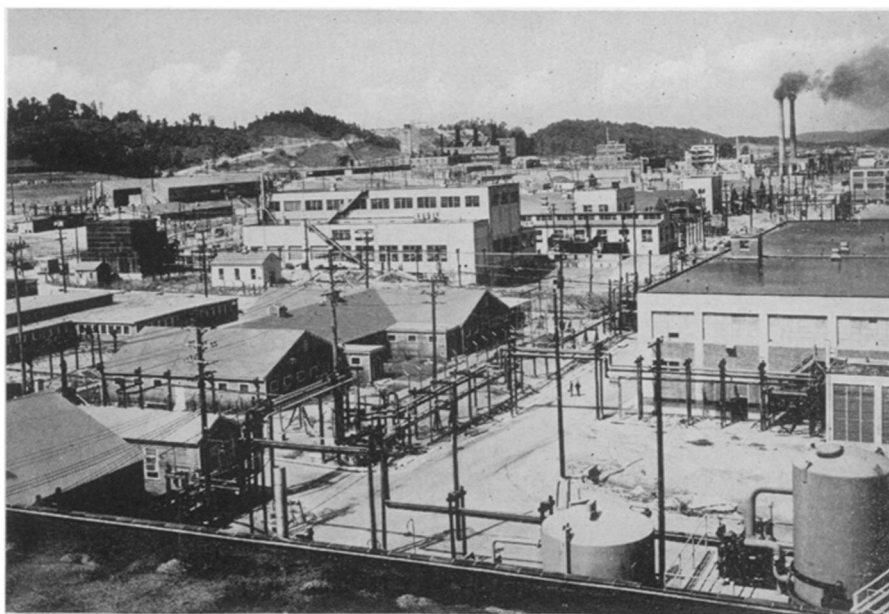
The committee's conclusions were released by the War Department with other

technical information about the atomic bomb. Members of the committee, appointed by Maj. Gen. L. R. Groves in the fall of 1944, were: Dr. R. C. Tolman, California Institute of Technology, chairman; Rear Admiral E. W. Mills, USN, with Capt. T. A. Solberg, USN, as deputy; Dr. W. K. Lewis of Massachusetts Institute of Technology, and Dr. H. D. Smyth of Princeton University and author of the technical report.

"While there was general agreement that a great industry might eventually arise, comparable, perhaps, with the electronics industry, there was disagreement as to how rapidly such an industry would grow; the consensus was that the growth would be slow over a period of many years," the committee reported.

"At least there is no immediate prospect of running cars with nuclear power or lighting houses with radioactive lamps although there is a good probability that nuclear power for special purposes could be developed within ten years and that plentiful supplies of radioactive materials can have a profound effect on scientific research and perhaps on the treatment of certain diseases in a similar period."

Destructive possibilities of nuclear power were also considered. Improvements in processes of producing source material and in its use are believed reasonably certain. The energy released in splitting the uranium atom corresponds to the utilization of only about one-tenth



**PRODUCTION PLANT**—Seen in this official U. S. Army photograph, is an air view of the giant production plants at the Clinton Engineer Works at Oak Ridge, Tenn.