ASTRONOMY

Sun Is Bound To Explode, Turning Earth to Cloud of Gas

But Don't Be Alarmed; Several Billions of Years Will Probably Elapse Before This Catastrophe

THE SUN is going to explode!

This conclusion seems a certainty, says Dr. George Gamow, professor of physics at George Washington University, and one of the scientists who have helped astronomers to understand the alchemical process by which one element is changed into another to keep the sun and other stars fueled.

However, this terrific explosion, which will instantly convert the earth into a cloud of hot gas, is not likely to come soon enough to bring a stop to the present war. No doubt there will be many periods of war and peace before this catastrophe brings the world to an end, for, Dr. Gamow reassures us, it is not likely to happen for several billion years at least.

About twenty times a year astronomers, through their telescopes and occasionally with the naked eye, discover a "nova" or new star. Some of these are "super-novae," many times more brilliant than the common variety. Dr. Gamow thinks that the difference between the two kinds is merely one of the mass of the original star.

"Whereas the explosion of such a giant star as Sirius," he says, in a report of his theory, (*Popular Astronomy,* August) "would lead to a very brilliant supernova comparable with the 'star of Bethlehem,' the explosion of our own sun, which is known to be a middle-weight star, would be probably classed as an ordinary, common nova.

"This will make, however," he adds, "but a very little difference for the population of the earth, since in both cases the increase of solar heat will be quite sufficient to turn our planet instantaneously into a cloud of hot gas!"

With twenty novae a year, and our Milky Way system of stars about two billion years old, he states, some 40 billion stars in this system have already exploded. He estimates that there are between 40 and 80 billion stars in the system, so "the chances of explosion for any individual star are fairly high."

It has been established, "beyond any doubt," according to Dr. Gamow, that transmutation of elements, for which the ancient alchemists sought in order to transfer base metals into gold, is the source of stellar energy. In the case of the sun, hydrogen is changed to inactive helium. Dr. Gamow's work has shown, paradoxically, that as the supply of hydrogen fuel is used up, the sun gets hotter, and the remaining fuel is burned faster.

"When the solar hydrogen content drops from its present value of 35% down to only 1% the sun will become about 100 times as bright as it is now," he declares.

This will make rocks on the daytime side of the earth as hot as the kitchen stove, the oceans will boil, and human beings, if they have not been able to migrate to a more comfortable planet, will have to "spend most of their time in air-conditioned underground shelters," suggests Dr. Gamow.

"Fortunately enough," he says comfortingly, "the above described picture corresponds to a very distant future indeed, since the consumption of hydrogen and the increase of solar brightness are going on extremely slowly. It has been estimated, in fact, that the chemical reaction producing the radiation of the sun consumes about 0.000000001 (one-billionth) per cent of solar hydrogen per century, so that it will be several billion years before this amount will be essentially changed, and the sun will become hot enough to set the oceans boiling!"

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MILITARY SCIENCE

Lightness of Ammunition Factor in Choice of Gun

LIGHTNESS of ammunition for the Army's new .30-caliber carbine, enabling the soldier to carry a large number of rounds without overburdening himself, is a decided point in the new weapon's favor. Being of relatively small caliber and of pistol-cartridge length, they are only about half the weight of the .45-caliber cartridges used in present service pistols and "Tommy" guns.

RAID WARNING BY RADIO

David Sarnoff, president of the Radio Corporation of America, and Director of Civilian Defense Fiorello H. La Guardia demonstrate a new RCA alert receiver that turns on automatically when it receives a special inaudible signal from a broadcasting station. If an emergency required it, the people could thus be warned in their homes. The alert attachment, which rings a bell in response to the inaudible signal, can be put on standard broadcast receivers.

The range at which they are expected to come into action, 300 yards, reemphasizes the reduced distances at which modern hand-gun actions are fought. The day of massed rifle firing at objectives a thousand yards or more distant is over. Machine guns, mortars and infantry-accompanying howitzers take care of that part of the battle now. So although the regular service rifle is capable of long-range fire, it is seldom called upon to deliver it. A lighter weapon able to produce results at 300 yards has range enough to be really effective in at least the infighting stages of present-day combat.

The carbine may be the answer to one of the problems that has plagued artillerymen for many years. In an effort to find a weapon suitable for close-up defense of their guns against unexpected breakthroughs, artillerymen have been equipped with practically everything from bolos to regular infantry rifles. Sidearms are ineffective at any but the shortest ranges, and rifles are awkward and in the way of the gunners' regular job. The handy little carbine, which can be kept slung across the back and doesn't weigh enough to bother, looks closer to the right prescription than anything that has yet been tried.

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PUBLIC HEALTH

Sleeping Sickness Outbreak Spreads to Four States

North Dakota, South Dakota, Minnesota and Colorado Now Report Cases; Infantile Paralysis Now in North

THE sleeping sickness (encephalitis) outbreak is spreading. Four states have reported cases to the U. S. Public Health Service.

In North Dakota, where the outbreak started, the cases were fewer for the week ending on Aug. 2. There were 54 cases there as compared with 65 for the week ending July 26.

But Minnesota reports 35 cases in that state. In South Dakota there were 19 and in Colorado, three.

The cases in North Dakota were scattered generally throughout the whole state instead of being concentrated mostly in Cass County as they have been previously. Of the 54 North Dakota cases reported for the week ending Aug. 2, only eight occurred in Cass County.

Infantile paralysis is also spreading. In the southern states, where the outbreak has been most serious, a decline in the number of cases is reported. But increases have been reported for New England, Maryland, New York, New Jersey, Pennsylvania, Ohio and Illinois.

New England had 16 cases during the week ending Aug. 2, including four in Maine, five in Massachusetts, one in Rhode Island, and six in Connecticut. In the previous week there were only four cases—two in Massachusetts and two in Connecticut. Before that there had been none.

Maryland had 14 cases, as compared with three the previous week, and of these nine were in the city of Baltimore.

In Pennsylvania, the number climbed from eight to 15; New York from 11 to 12; and New Jersey from two to five.

Ohio reported an increase from 11 to 16; Illinois from four to 13; and Michigan from seven to eight. Indiana had a decrease from eight to five.

California, which has been having a small number of infantile paralysis cases right along, reported a decrease from nine cases in the week ending July 26 to eight for the week of Aug. 2.

The total number of infantile paralysis cases for the week ending Aug. 2 was 326 as compared with 302 for the previous week. The increases in the North more than offset the declines in southern states. In Alabama and Georgia, where cases have been most numerous, cases have dropped from 58 (in Alabama) and 79 (Georgia) to 49 and 71. Tennessee reported a decline from 24 to 13 and Kentucky from 11 to seven.

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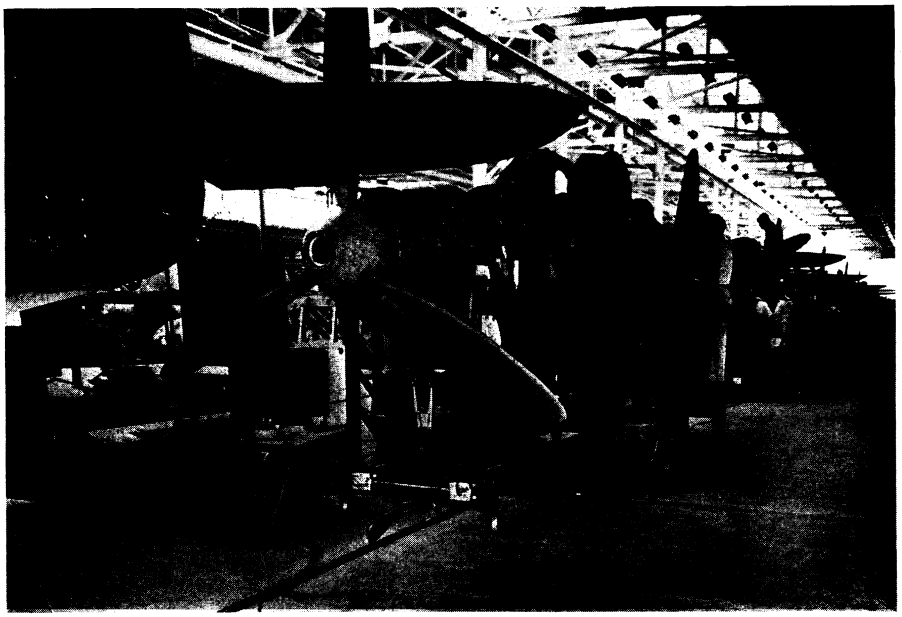

MASS PRODUCTION

These are Airacobras on the assembly line at Bell Aircraft's new plant at the Niagara Falls Airport. Fuselages in dollies move steadily up the line by means of a hook connecting the dolly with the moving chain flush with the floor. At each station there are bins holding the parts to be assembled in the plane at that point. Provision has been made for the operation of five more assembly lines in this building.

INVENTION

Wire Pipe Filter Keeps Tobacco Dry

A SPIRAL of stainless steel wire, which fits into the bottom of a pipe bowl, acts as a simple filter, so it keeps the tobacco dry and prevents particles from clogging up the tube. (*Patent Products Co., Milwaukee.*)

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