

by Jack Nelson

**S**OMEWHERE along the way in the race for outer space, a super metal must be developed for rockets which can withstand the consuming temperatures generated by the friction of tremendous speeds.

One great American drawback in the race is the fact that such a light and durable metal does not exist.

New metals are needed for the high pressure rocket and jet engines that are now on the drawing boards, and for plating to withstand the friction of a ship hurtling through the atmosphere. For example, most scientists expect that the Sputniks, the recently launched Russian satellites, will burn up as soon as they fall back into the denser atmosphere near the earth.

However, if research being carried on by a Brigham Young University scientist is successful, there is a chance that such a super-metal might be born. Dr. H. Tracy Hall, the man who developed synthetic diamonds for General Electric in 1954, is now working on a series of experiments in which he has attained temperatures in a closed container as high as 50,000 degrees centigrade, ten times as hot as the surface of the sun.

**A** COMPANION experiment with great pressures is also being conducted by the BYU scientists. By a series of pistons working within pistons, they have achieved pressures of 3,000,000 pounds per square inch. Soon the two experiments will be combined to find out what happens to chemicals when they are combined under great heat and great pressure. It will be the greatest amount of energy ever released in a closed system.

It is an unexplored area. Previously scientists had attained temperatures in solids or liquids only about as hot as the surface of the sun, 5,000 degrees C. After that the materials passed into gasses.

By containing the material in a steel "bomb," Dr. Hall has been able to reach the tremendous temperatures and still keep the material from becoming gaseous. This means that new, unheard of things may happen inside the bomb. Before, such high temperatures have occurred only in such cases as the explosion of the atomic bomb, and lasted only about a millionth of a second.



Dr. H. Tracy Hall, director of research at BYU, checks electric meter as he increases the electric current in his high temperature "bomb."

# Scientist Tortures Nature for Secrets