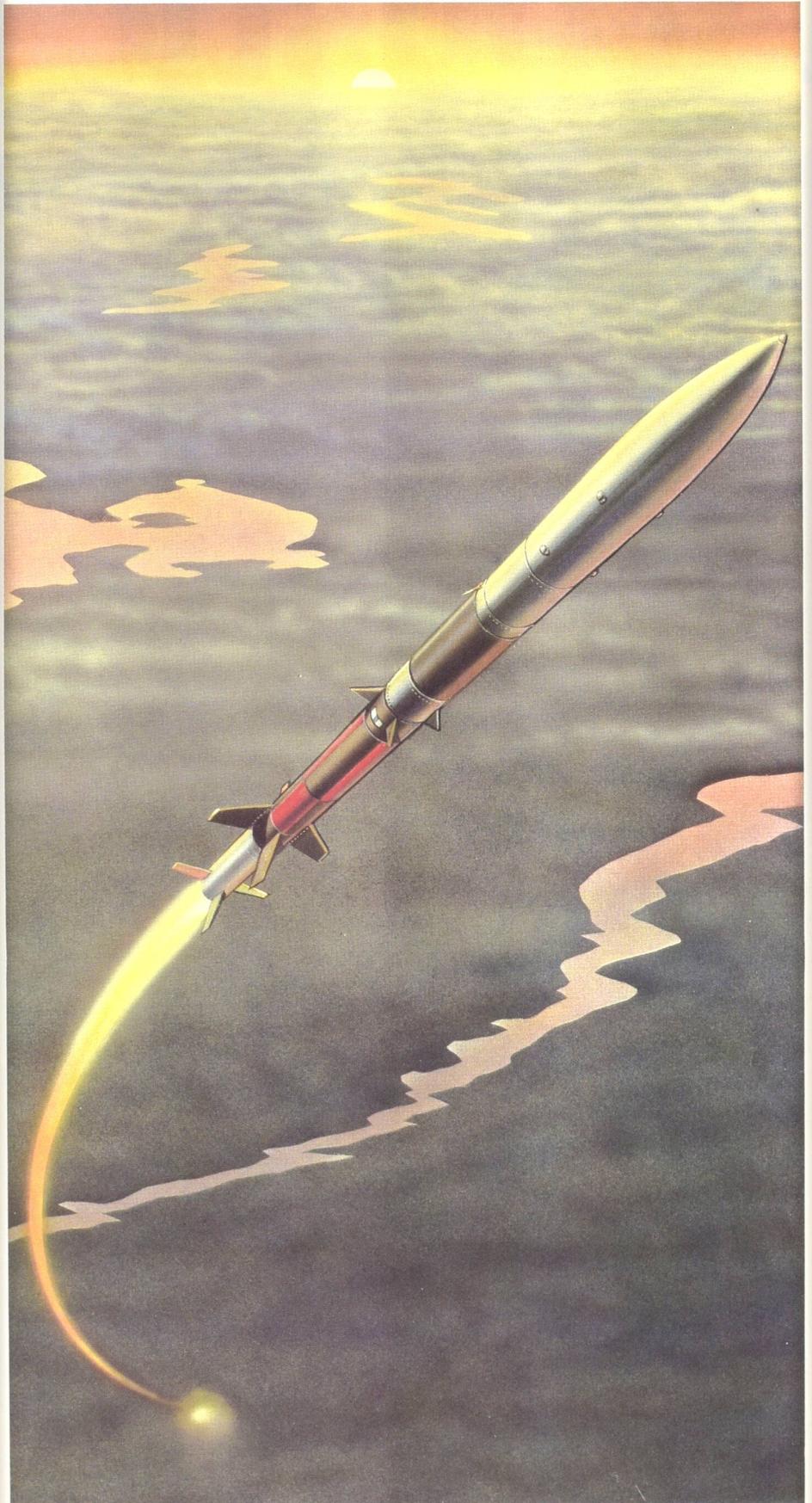


motion by variations of the solar wind. This bulk motion, in turn, varies the motion of the electrons at low altitudes near the earth's surface. Says Whalen, "we think now that the high speed electrons coming down into the ionosphere and the ionized atoms are 'locked' onto the same field lines instead of moving along parallel tracks. The lines' movement somehow controls this two-way traffic."

Projects Waterhole and Sabre are only the first steps in active research in the boundary zone between earth and space. Already, scientists are reconsidering their concepts about the ionosphere and magnetosphere surrounding us, and have begun to apply the term "earthspace" to this active and remote environment. Proposals for experiments in this newest research facility have already been put forth. From water vapour and barium cloud experiments, scientists intend to create auroras with electron beams from satellites. The beams can also be used to study the field lines that reach between the poles. Another series of experiments will use the space shuttle to tow instruments on a tether through the ionosphere, measuring solar plasma effects and the dynamics of the fields. The information will bring about a greater understanding of earth's own environment, suggest means of protecting satellites and astronauts, and aid in the quest for earth's resources. ☾



John Bianchi



Don MacMillan

*Black Brant rockets, manufactured in Canada by Bristol Aerospace of Winnipeg, carry experimental packages into the ionosphere.*