

which are scheduled for release from both Fort Churchill and White Sands. There are also plans to release small rockets, so-called rockairs, from high-flying airplanes. Attempts will be made to launch these rockairs during periods of increased solar activity and the outbreak of solar flares. The launching schedule of the United States rocket program is being closely coordinated with all other IGY studies and special firings will be centered around days of unusual solar activity.

NEED FOR SATELLITE STUDIES

While rockets provide crucial information about the upper atmosphere, they have two limitations. First, their total flight is extremely short while the time spent in a particular altitude range is even shorter; and, second, rocket coverage is limited to a small part of the earth. Thus, in spite of the great value of rocket data, much of which can only be obtained by rockets, there is a need for a tool which can provide data over a long period of time, over considerable heights above the earth, and over large expanses of the atmosphere about the earth.

A satellite can achieve these objectives, and for these reasons several international bodies strongly urged inclusion of satellites in the IGY effort. The satellite, in effect, represents an extension of rockets, which led Dr. Joseph Kaplan, Chairman of the United States National Committee for the IGY to call our satellite program the "LPR"—long-playing rocket.

UNITED STATES SATELLITE PROGRAM

The United States satellite program calls for the launching of 12 satellites in conjunction with the IGY. The program developed by the National Academy of Sciences, and presented to the Government for support, includes major logistics contributions from the Department of Defense, particularly in the development of the launching rockets, the actual launching of the satellites, and related support facilities and assistance. Civilian scientists in the Department of Defense and in many public and private research institutions are cooperating in the scientific program. Contracts have already been issued by the Navy, which has management responsibilities for the contributions of the three military services to the satellite effort, for the development of rocket-propulsion vehicles.

SATELLITE LAUNCHING

Satellite launching will be from the Patrick Air Force Base on the east coast of Florida at Cape Canaveral. A three-stage rocket assembly will provide the means of getting the satellite into its orbit. The first stage, providing a thrust of 27,000 pounds, will start the system on the first part of its flight. When its fuel is exhausted, some 40 miles from the launching site and within about 2 minutes after takeoff, the system will have attained a velocity of 3,000-4,000 miles per hour. The second rocket stage will then take over, attaining a velocity of about 11,000 miles per hour, burning out at about 130 miles altitude, and coasting onward. When the system has reached an altitude of about 300 miles, the last rocket will impel the satellite into its orbit at a speed of about 18,000 miles per hour.