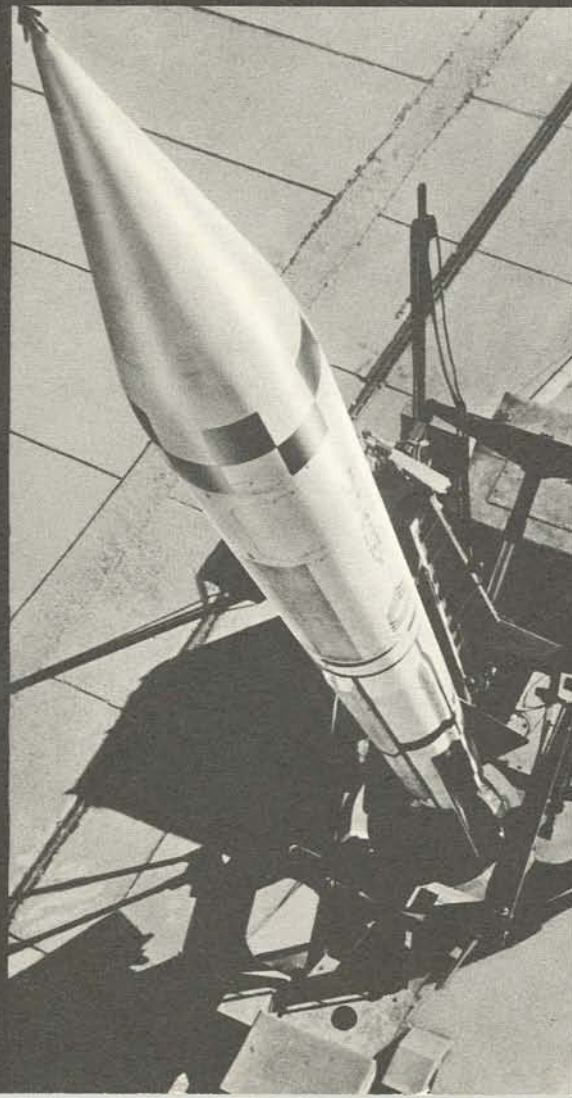


UNIVAC[®] SCIENTIFIC

at the White Sands Missile Range



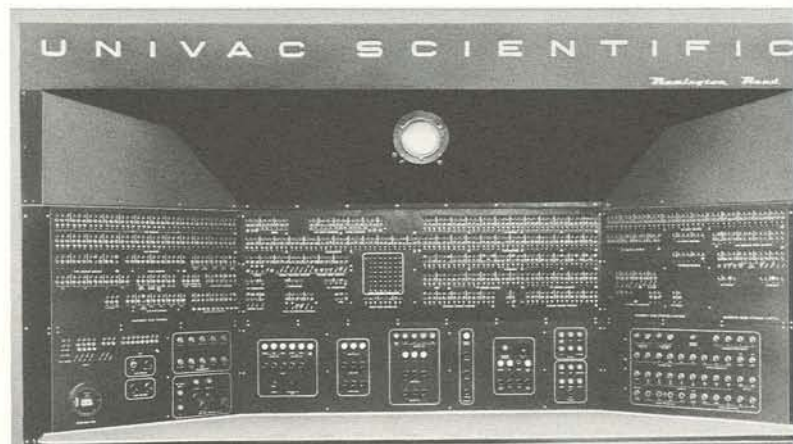


First official U. S. Army Photo of *SERGEANT - ON THE WAY*. The thirty-foot *SERGEANT* is shown here blasting off in a successful test shot at White Sands Missile Range.



THIS IS WHITE SANDS MISSILE RANGE

On a 100-mile strip of barren New Mexico soil
Uncle Sam has teamed up one of his newest
and mightiest weapons—the guided missile—
with one of science's latest and most advanced
electronic wonders—UNIVAC Scientific.



White Sands Missile Range is an Army Ordnance activity, the technical functions of which are under the control of the Chief of Ordnance. It was the first missile testing range available to every branch of the services — Army, Navy, Air Force, Marine Corps — and to industry for special testing. The primary mission of the Missile Range is the testing of intermediate range rockets and guided missiles.

The experimental work in guided missiles is carried on in an area of 4,000 square miles extending from about sixty miles north of El Paso, Texas to U. S. Highway 60 which is more than 100 miles further north. It is the most completely instrumented Missile Range in the United States.

UNIVAC Scientific, a high-speed electronic data-processing system plays a vital role in the guided missile testing program. Specifically, UNIVAC Scientific handles the exacting task of computing and analyzing the enormous amounts of data taken from each missile firing, and turning out results fast enough to make modifications for the next firing.

Test missiles are fired from launching stations near the southern end of the Missile Range, and travel to heights of 100 miles or more. The area is studded with testing equipment for many kinds of military devices and observation stations are strategically scattered throughout the area to record the behavior of each missile flight.

The behavior of missiles is sometimes erratic. A ground control crew follows each flight by radar, and if the missile seems to be going out of control, it is exploded in mid-air by a ground control command. It is essential that flight data, including the pitches and yaws of the missile, as well as information obtained from numerous recording instruments be checked and analyzed in order to make adjustments for future flights. Naturally the time lag between gathering flight data and having it computed and analyzed is of prime importance. In many cases UNIVAC Scientific has effectively reduced this time lag from weeks or days to minutes.

As an example, of the almost fantastic computing speeds possible with UNIVAC Scientific, a meteorological problem that would require eight years for one person to compute on a desk calculating machine, can be computed in 25 minutes.



ROCKETRY'S HUB—Landmarks for White Sands Missile Range and its more than \$37.5 million a year payroll are this new, active headquarters building, the 110-foot flagpole fronting it, and the towering Organ Mountains in the background. From the office of the Commanding General come the administrative orders affecting more than 9,000 military and civilian personnel at work at White Sands Missile Range on the various missile projects.



Corps of Experts carefully study and analyze the vast amount of information gathered from each missile firing.

As chief of Ordnance Mission, Col. John Redmon, seated, builds his missile program around the men with whom he is conferring. Dr. Nicholas Golovin, left, as chief scientist of White Sands Missile Range, heads the scientific and technological program of the Army missile testing project. Lt. Col. Walter Clifford heads Ordnance Mission's Systems Test Division. A. O. Crobaugh, behind Col. Redmon, is director of Electro-Mechanical Laboratories. Maj. Victor Finley is acting chief of Special Weapons Division.



Major General W. E. Laidlaw is Commanding General of White Sands Missile Range. Major General Laidlaw supervises all technical facilities and operating personnel for flight testing, together with all associated data acquisition and data reduction for Ordnance purposes, of all Army missiles or other munitions assigned to the Missile Range for engineering or acceptance testing.

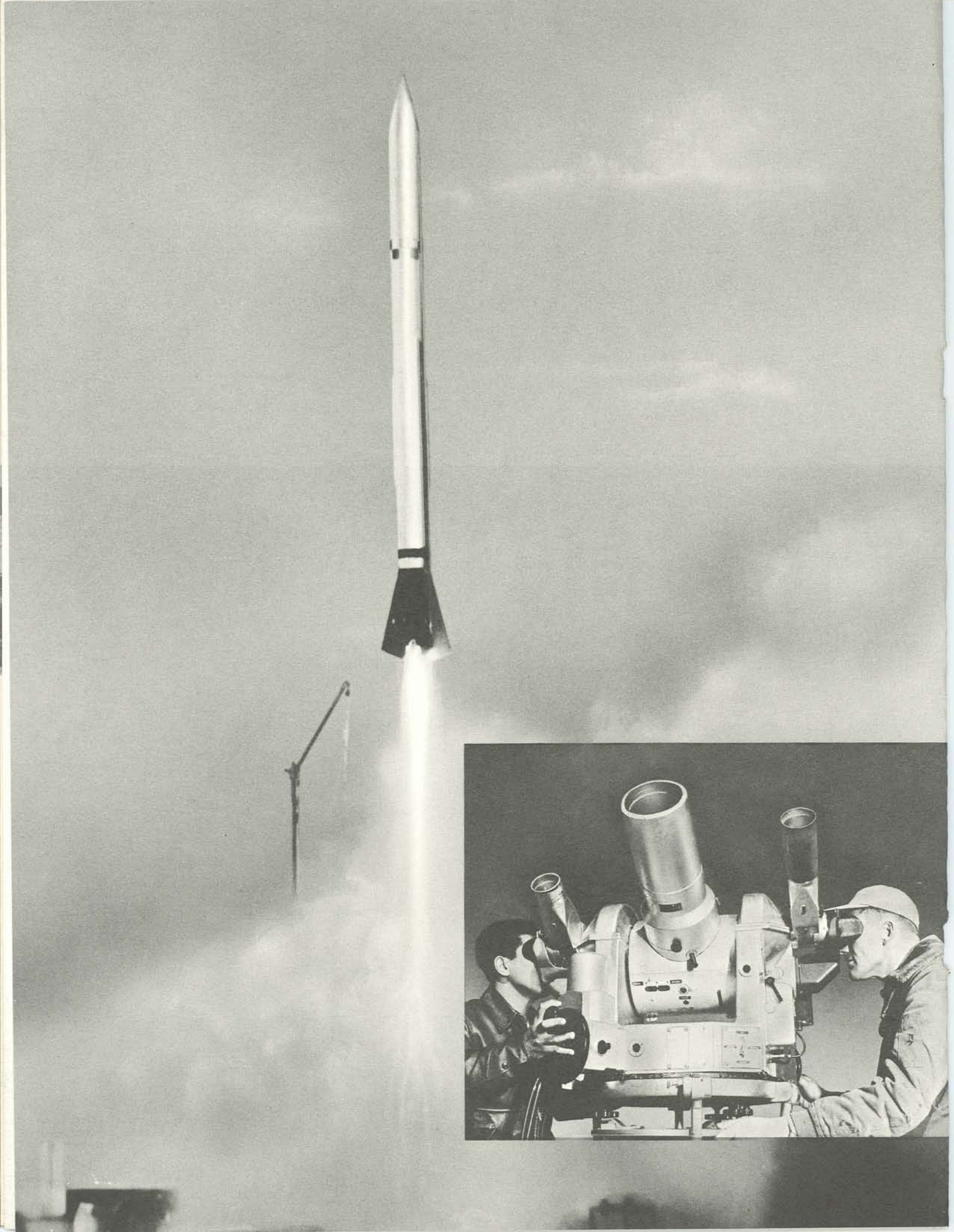


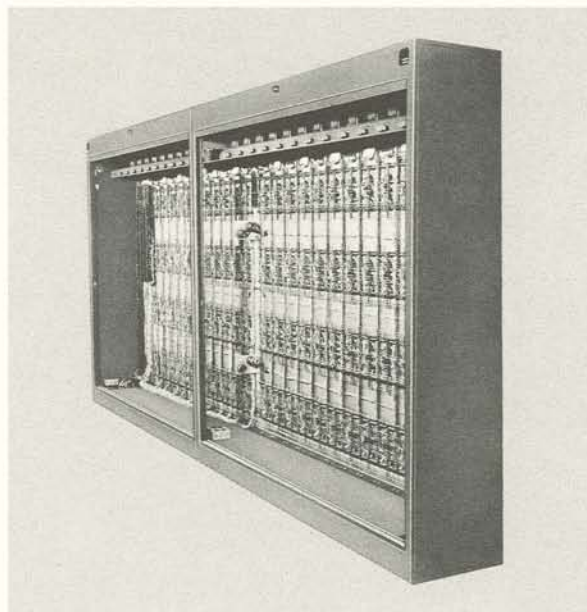
Mr. Guenther Hintze is in charge of the Flight Simulation Laboratory. It is under his direction that many new uses of UNIVAC Scientific are being studied. For example, a flight simulation project is now under way. In this project components of the missile are reduced to figures and run through the computer... the results are a mathematical and statistical evaluation of the actual flight.





There are approximately 500 measurements required for each flight of a guided missile. Each measurement requires a great many computing processes. The time normally required would be thirty minutes to an hour to compute each measurement — or 250 to 500 hours for each flight. UNIVAC Scientific System can accomplish each work load in about one second, and would be able to handle computations for as many as ten missile firings a day!





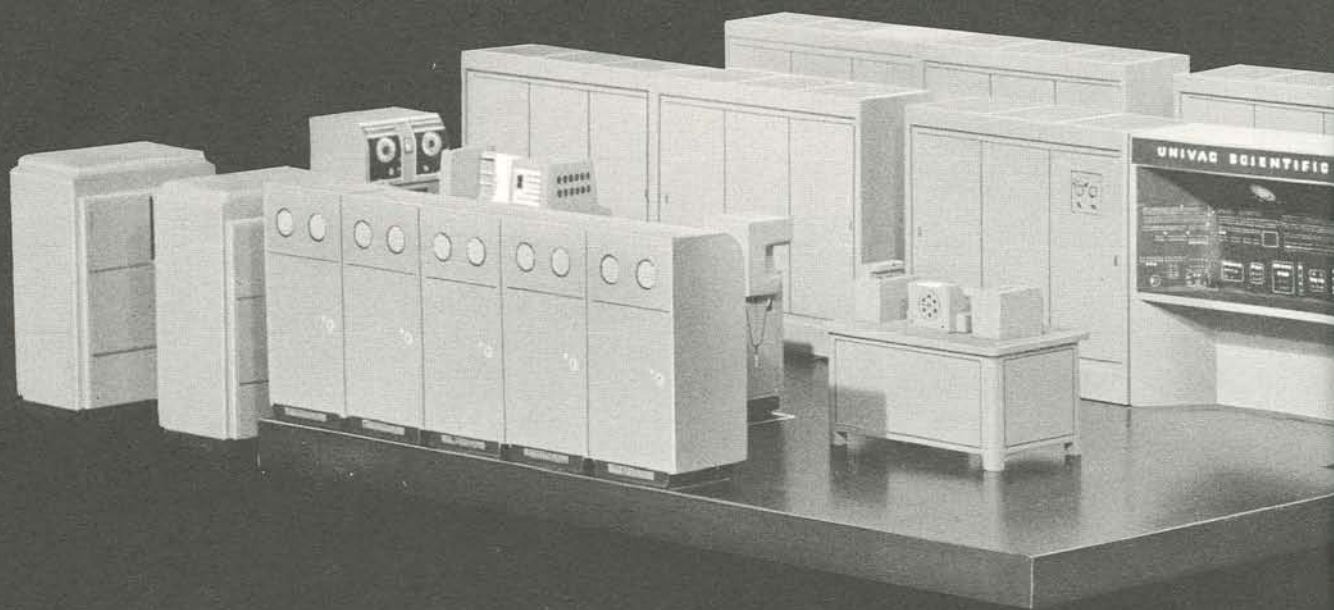
Mr. Ben Billups is in charge of the computing aspects of this important testing and development program at White Sands Missile Range.

"While our efforts with the UNIVAC Scientific here at White Sands at present are confined to data reduction and flight simulation, it is quite feasible to extend this to a closed loop on-line control in a *real time* operation. In a real time operation, data would be transmitted through instruments at the observation point from the missile in flight to the computing system, analyzed and then returned . . . in time to control the same flight."

ASKANIA Camera—Here is just one of the many testing instruments used for following missile flights. This camera can take as many as 5,000 frames per second. And this is only a part of the enormous amount of in-flight data which is computed and analyzed by the UNIVAC Scientific System at White Sands Missile Range.



UNIVAC S



UNIVAC 1103A Scientific System — like the one in use here at White Sands Missile Range — is just one of the complete line of REMINGTON RAND UNIVAC data-processing systems available for business and scientific applications.

UNIVAC 1105 System is designed to handle either complex scientific computations or business data processing. UNIVAC I & II Systems are large-scale processors especially suited to meet business recordkeeping requirements. UNIVAC File-Computer System, with large-capacity ran-

SCIENTIFIC



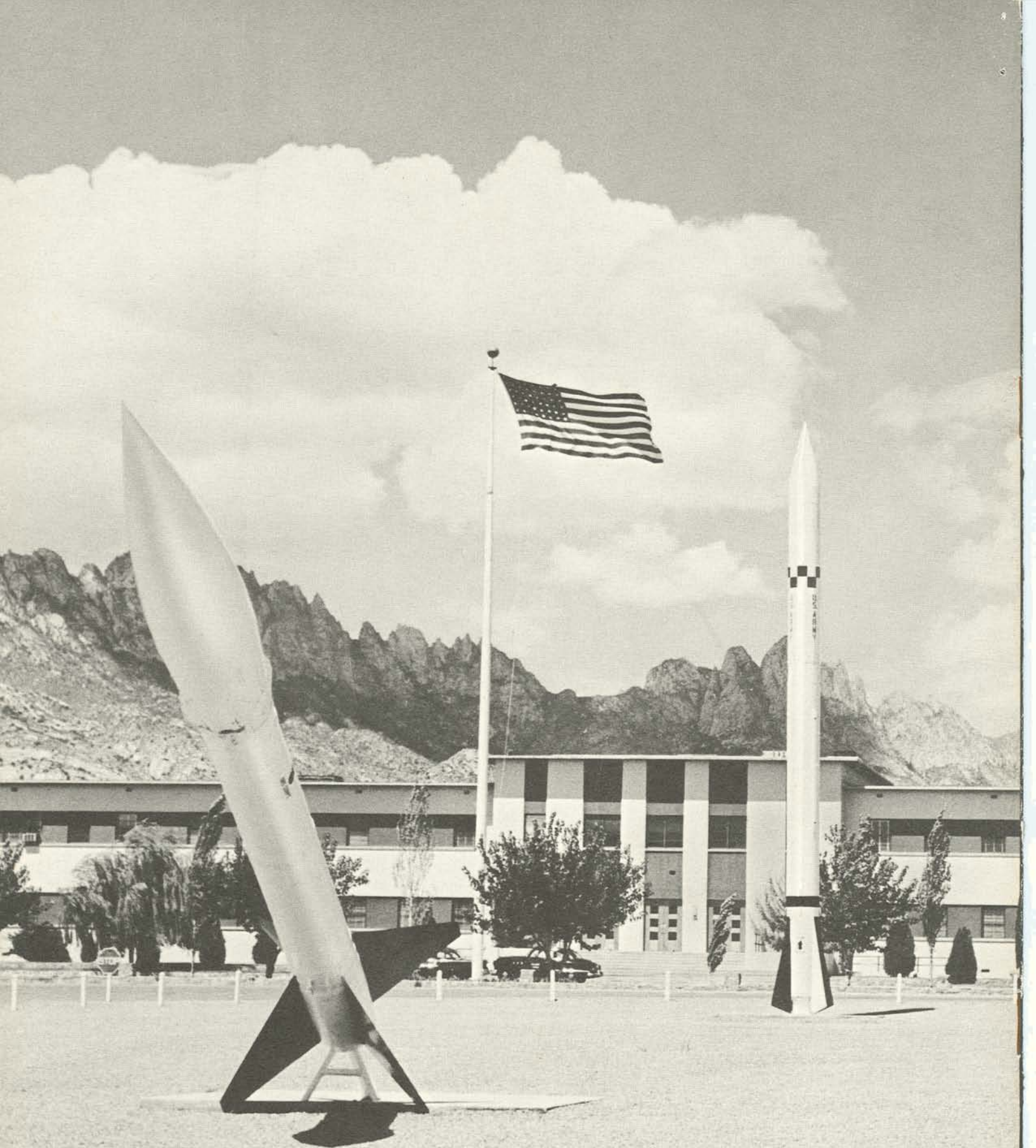
Model 1103A

dom access storage, provides the ultimate in medium-size electronic system performance. And, UNIVAC 60 & 120 Electronic Punched-card Computers for businesses of every size.

Behind each REMINGTON RAND UNIVAC installation stands eleven years of experience in electronic computing—seven years of experience in large-scale electronic data processing—and more than 80 years of developing short-cut ways to control records of business, commerce and government.



One of the most recent additions to the U. S. Army's missile family is *SERGEANT*. Sperry Rand Corporation is the prime contractor of *SERGEANT* responsible for the production of the complete missile system. This medium range, solid fueled supersonic guided missile is soon to be operational—truly a significant achievement.



Remington Rand Univac

DIVISION OF SPERRY RAND CORPORATION

315 FOURTH AVENUE, NEW YORK 10, N. Y.