

Soldier Rides High Seas Seeking Missiles



VIPs ABOARD AMERICAN MARINER—When the American Mariner, used by the Army Missile Command to study reentry vehicles, put into Recife, Brazil, recently the Missile Command representative had some high level dinner guests. They included a vice admiral in the Brazilian Navy, the U. S. Consul General in Recife and the chief of staff of the Brazilian Third Naval District. From left to right are: Fred Ise, instrumentation manager for the Mariner; Capt. P. G. Beck, Master of the ship; Commander Carlos Auto de Audrade, the Brazilian chief of staff; Vice Admiral Arnaldo Toscano, chief of the Brazilian Third Naval District; Maj. Henry McGill, the Missile Command representative; and U. S. Consul General D. Eugene Delgado-Arias.

Maj. Henry McGill of the Army Missile Command is the only military man aboard a unique ship that travels the oceans looking for the closest thing in the world to shooting stars.

He is the Missile Command Project Officer aboard the U. S. A. S. American Mariner. The ship studies missile nose cones as they reenter the Earth's atmosphere.

The ship also had a hand in the recovery of Astronaut Wally Schirra's space capsule. It tracked the capsule to its impact point in the Pacific.

The Mariner's job is to see what a nose cone really "looks like," scientifically speaking. Data on such things as its radar cross section, glowing wake, and speed is recorded on film and magnetic tape and sent to analysis centers.

Among other things, this information has application in work to discriminate between ICBM warheads and harmless decoys that might be launched as a "smoke screen" for an attacking missile.

The Mariner is a floating laboratory. Its topside is clustered with radars, optical tracking devices and telemetry equipment.

Below its decks are such things as instrument calibration laboratories, data recording equipment and a precision machine shop.

Maj. McGill says the Mariner has been within eight miles of the splash of a nose cone and men aboard could see the geyser of water as it plunged into the ocean.

"At night a nose cone looks like someone is shooting a roman candle at you," Maj. McGill recalled during a recent visit to home base on Redstone Arsenal.

Differences in materials and configurations cause each type missile nose cone to leave its own flaming "fingerprint."

The Mariner is part of the Downrange Antimissile Measurement Program (DAMP). It is the most completely equipped measurement vessel in the Free World for observing and recording ballistic missile flight.

The ship is managed by the Army Missile Command for the Department of Defense's Advanced Research Projects Agency (ARPA). DAMP is a part of ARPA's Project Defender. The Radio Corporation of America is the prime contractor for the American Mariner and Barnes Engineering Company provides the optical tracking equipment.

Maj. McGill, a 34-year-old engineer who has been on the Mariner just over a year, calls the job (See ARMY MAN on Page 3)

**ZEUS
PROJECT STORY
INSIDE
(PAGE 4)**

The Redstone Rocket

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MARCH 6, 1963



WHAT'S IN A STREET NAME—This forest of street signs would lead you to believe that such a thicket sprang up on missile land. Such is the case. All of these streets are located on Redstone Arsenal. In fact, most of them are close together. The puzzler is, how did a name like SNOOPER slip in? A quick search of sources at hand fails to come up with a missile of that name. As for WASP—that's an ionosphere research rocket. AEROBEE is an old one. It was first fired at White Sands Missile Range, N.M., in 1947. The others are all Army.

ACCIDENT PATTERNS STUDIED

Dozens of serious traffic accidents occurred in the Ordnance Guided Missile School area Feb. 28 without loss of life, a single injury or property damage.

How? Because they happened in a "car" that goes nowhere. It was being demonstrated to military and civilian officials of the transportation division and Safety offices—including representatives of the Army Missile Command and the Army Missile Support Command.

Attending the demonstrations, conducted throughout the day by Paul Clair of the Rockwell Manufacturing Company were Col. Wil-

(See ACCIDENT on Page 2)

Pershing Hits On The Nose

Army's needle-nose Pershing ballistic missile was launched Monday night in another successful firing at Cape Canaveral, Fla.

The two-stage solid propellant missile was fired from a sandy sloped surface adjacent to its usual launch site.

Col. O. M. Hirsch, Pershing Project Manager, said the missile's dummy warhead impacted in a pre-selected area.

Monday night's missile was launched on a long-range mission down the Atlantic Missile Range from a helicopter transportable erector-launcher under simulated tactical conditions.

Tactical ground support equipment was used to prepare, erect and fire the Army's missile. The firing was monitored from the blockhouse, but the system programmer test station performed its tactical countdown function. The primary power pack supplied the power and pneumatic pres-

(See PERSHING on Page 2)

FRIDAY WAS BUSY:

General Daniel Visits; First Belgians Among 104 Grads



SERGEANT RECEIVES AWARD—Maj. Gen. Derrill M. Daniel, deputy commanding general, U. S. Third Army presents the Association of the U. S. Army "Outstanding Student" plaque to SFC Sidney E. Underwood of Co. B, School Troop Command, U. S. Army Ordnance Guided Missile School.

A major general who has won eight Army Silver Star medals for bravery — seven graduates who averaged better than 96 to win special awards — the graduation of the first Belgian Army Hawk support units — awarding of diplomas to 104 men from seven nations — these were the ingredients of a glittering international graduation ceremony held Friday at the Army Ordnance Guided Missile School.

Maj. Gen. Derrill M. Daniel, deputy commanding general of the Third U. S. Army in Atlanta, was the guest speaker. One of the few Army generals who also holds a Ph.D. degree, Gen. Daniel told the graduates that sophisticated missiles require highly educated operators and maintenance men willing to work hours to keep pace with technical developments.

Gen. Daniel who won the DSC and eight Silver Stars in the North African, Mediterranean and European campaigns, was introduced by Col. William J. Macpherson, OGMS commandant, at the (See GEN. DANIEL on Page 7)

No Family Is Immune To Disease Or Tragedy

"No family in our nation is immune to the tragedy of disease or disability."

With these words, President John F. Kennedy begins his endorsement of the current National Agencies Campaign. "Our contributions provide the voluntary health organizations with the means to continue the fight for better health for all of us," he continues.

The Chief Executive also lends his support to the Federal Service Joint Crusade: "I urge all civilian personnel and members of the Armed Forces to contribute

voluntarily and generously to help these agencies and our nation in the relentless campaign against the hopelessness, fear and hunger which are the daily burdens of so much of mankind."

Top military and civilian officials throughout government have added their endorsements to these two fund drives, being conducted simultaneously at Redstone Arsenal now through April 1.

Secretary of Defense Robert S. McNamara says of the National Health Agencies, "Their work is (See NO FAMILY on Page 3)

Zeus Project Manager Heads Class II Activity

The U. S. Army Materiel Command has established its Nike Zeus project office as a Class II activity at Redstone Arsenal.

Primary effect of the organizational change is to further underline the importance attached to the development of an efficient defense against ballistic missile attack.

The Secretary of Defense recently told Congress that defense against attack by intercontinental ballistic missiles is one of the most urgent problems confronting the nation.

The organizational change

streamlines Army efforts in the missile defenses field by further centralizing authority and direction in the Nike Zeus project office here.

The Army's Nike Zeus program, only proposed defense against ICBM attack in advanced development, has been proceeding under the highest national priority. Development of a more advanced version of the basic Zeus system has just been authorized.

Col. I. O. Drewry, Nike Zeus project manager, has been reporting directly to Lt. Gen. F. S. (See ZEUS on Page 2)

The Redstone Rocket

The Redstone Rocket is published weekly, on Wednesdays. The publisher will receive editorial content for publication in the Rocket only through the Information Office, Army Missile Command, Redstone Arsenal, Ala., Bldg. 5250, Room A-136, Extension 876-4161.

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Rocket Ruminations

Wit is the only wall between us and the dark.
—Mark Van Doren

Progress On A Problem

It took thinking, planning and doing to accomplish the zip-zip flow of traffic that today smoothly proceeds west on Martin Road during the morning rush hours.

A question now is, "Why isn't Martin Road one-way east from Patton Road to Whitesburg Drive during afternoon peak hours?"

According to those who should know, Memorial Parkway and Whitesburg Drive cannot take the afternoon deluge from Redstone Arsenal at this time without risking daily bumper-to-bumper snarls.

The new access road, Main Gate, two overpasses, and morning one-way traffic did not become a reality because a few people sat and bellyached about a problem.

Arsenal authorities, local and state officials got their heads together on details and did something.

The Rocket says "well done" to those who helped plan and carry through the trail of progress that now leads from heavily populated South Huntsville directly into the heart of the Redstone complex.

Army Missile Support Command officials and city traffic experts are still working on the congestion problem on all access routes. Their job is a big one, with an average of more than 18,000 vehicles entering and leaving Redstone gates each workday.

PERSHING

(Continued From Page 1)

sure necessary to erect the missile and run the countdown.

Tracking flares were ejected from the missile's dummy warhead section to aid in downrange tracking. The missile carried a minimum of instrumentation and range safety package.

Col. Hirsch said the missile operated as planned and that all test objectives were met. They included further evaluation of the missile's inertial guidance system, aeroballistics, and propulsion system.

Missile instrumentation trans-

mitted data to ground stations on the functioning of components.

The Army's Pershing is designed to be moved by helicopter, overland on tracked vehicles, or in fixed-wing aircraft. It is a selective-range weapon for field army support. The "shoot and scoot" type missile can be wheeled out of helicopters and moved into firing position almost immediately.

The Martin Company, Orlando Division, is prime contractor for the Pershing under the technical supervision of the Army Missile Command.

ACCIDENT

(Continued From Page 1)

Iiam J. Macpherson, commandant of OGMS, Col. R. M. Algeier, Chief of Intelligence and Operations, AMSC, Lt. Col. R. A. Robinson, Executive Officer of OGMS, Lt. Col. Earl F. Otto, Post Transportation Officer, Dillard K. Womack, Post Safety Office, and Maj. Rexford R. Javins, Chief of Safety and Security, OGMS.

The visit was coordinated by Paul Hodson, OGMS Safety Officer, to give representatives of Army Missile Command and the Missile Support Command, NASA, and contractors an opportunity to see the simulators in action.

The "car" is a new vehicle simulator called the Drivotron. Its visit was sponsored by the Actna Casualty and Surety Company and its designer-builder, the Rockwell Manufacturing Company.

The Drivotron looks like a car, drives like a car, but stands stock still even when the driver is zipping along a motion picture highway at speeds up to 60 mph.

Principal use of the new device is for analyzing experienced professional drivers who pilot giant vans, semi-trailers and other over-the road trucks for commercial fleets or military services.

It is equipped with all the conventional controls found in a regular car or truck cab—steering wheel, brakes, clutch, gearshift, accelerator, speedometer, ignition switch, even directional turn indicators.

In operation, the driver sits in the cab and follows instructions from a full-color movie projected on a screen in front of him. The effect is amazingly the same as

ZEUS

(Continued From Page 1)

Besson, Commanding General of AMC, and will continue to do so. One effect of the change will

the driver would experience, in highway or city traffic.

During the 10 minute test, a trained instructor analyzes the drivers score which is registered electronically as he faces emergency situations as the film progresses. The recorder works much on the same principle as a physician's electrocardiograph as it transcribes the driver's speed steering, braking, use of directional signals and whether or not he was involved in the filmed accident.

While the unit is similar to the Drivotrainer used by high schools and commercial operators for driver training courses, the Drivotron is used as a testing device for experienced driver's reactions in emergency situations and to analyze his driving habits. It is this sort of "preventive maintenance" of driving skills that can help prevent highway accidents before they can happen.

be to transfer Zeus project personnel here and at Zeus field offices, including Kwajalein Island, major test site for the weapon system, from the rolls of the Army Materiel Command to the Army Missile Command. The number of Zeus personnel at Redstone currently numbering some 250 military and civilians will remain at about that figure.

Their effort will continue to be focused on expedited development of the weapon system. The Zeus project office will rely on the Missile Command to the maximum for administrative services and logistic support.

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For further information concerning these courses and for information concerning application, contact the University Center offices in the Huntsville Center building on University Drive West, Telephone 539-7731. Registration for the Spring Quarter will be on March 25 and 26, 1963.

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NO FAMILY

(Continued From Page 1)

of the utmost significance to each of us, our families and our friends as well, and must have the full measure of our support if we are to progress in overcoming the ills of the body that plague mankind."

Secretary of Labor W. Willard Wirtz, upon appointment as national chairman of the Federal Service Joint Crusade, pointed out that every contribution to the crusade is "a bullet fired in the war against fear, hunger and poverty."

Radio Free Europe, CARE, and the American-Korean Foundation are the three agencies supported by the Federal Service Joint Crusade. Mr. Wirtz sums up the contributions made by these organizations when he says, "As a man is known by the company he keeps, so a nation must be judged by the friends it has made."

Radio Free Europe, using 28 powerful transmitters in West Germany and Portugal, blankets Communist-dominated countries of East Europe, reaching a majority of the 80 million captive people denied the right of a free press. A survey of 2,500 refugees and visitors from behind the Iron Curtain revealed the majority of East Europeans are "regular" listeners. Radio Free Europe was called the most popular and influential of all Western networks.

CARE has, for years, waged a massive attack on poverty, hunger and disease. During the past 12 years, CARE has laid increasing stress on putting into the hands of needy people the tools that enable them to raise their own food, build better homes and schools and generally raise their standard of living through community effort.

The American-Korean Foundation works to alleviate the appal-

ling lack of medical facilities in a land still suffering from a half-century of occupation and a devastating war. Nursing scholarships, medical supplies, general support for hospitals and medical teams to work in remote areas are some of the ways in which this organization helps the desperate people of Korea.

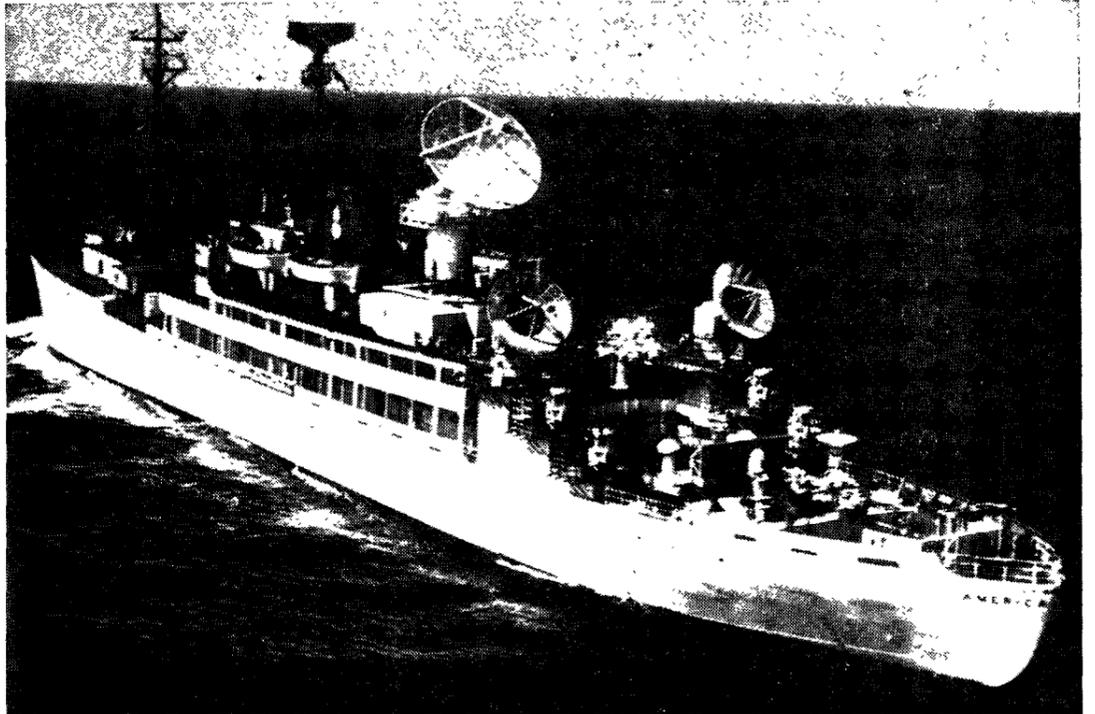
The six voluntary organizations participating in the 1963 National Health Agencies Campaign "are responsible for today's good health and tomorrow's better health," in the words of Postmaster General J. Edward Day.

The Arthritis and Rheumatism Foundation, formed in 1948, is a national, non-profit agency devoted exclusively to the problem of arthritis and other rheumatic disorders. Its three primary goals are: care for those now afflicted, education of both the layman and the physician, and a cure for these crippling diseases through research.

Research into nerve, muscle and metabolism is the way in which the Muscular Dystrophy Association of America, Inc., works to conquer neuro-muscular diseases. It supports a world-wide program of scientific grants, maintains a unique research facility, the Institute for Muscle Disease, and assists patients through therapy, service programs and clinics.

Nationally, the National Multiple Sclerosis Society works to find the cause and cure of MS. Locally, it emphasizes aid to disabled patients. The society is composed of 165 chapters, branches and units concerned with an estimated 500,000 Americans suffering from multiple sclerosis and related diseases of the central nervous system.

United Cerebral Palsy Association has twin objectives: to provide rehabilitation services for the nation's more than 600,000 cerebral palsied children and



THE AMERICAN MARINER—This retired Liberty ship has been converted to the most elaborately equipped missile nose cone tracking laboratory in the Free World. It is managed by the Army Missile Command for the Department of Defense's Advanced Research Projects Agency (ARPA). Maj. Henry McGill, the Missile Command's Project Officer, is the only military man aboard.

ARMY MAN

(Continued From Page 1)

adults, and to conduct research into the causes of cerebral palsy in the ultimate hope of conquering the viciouscrippler which strikes a newborn child every 53 minutes.

The American Cancer Society is the nationwide agency which attacks cancer in three ways. It conducts research to find the answers to this dreaded disease. It educates people to protect themselves from cancer. It offers services to help alleviate the pain and suffering of cancer patients.

Nationwide programs of research, professional and public education and community service, carried forward by the American Heart Association, are supported by the Heart Fund. The Association seeks to reduce death and disability from heart and circulatory diseases, now responsible for 54 per cent of all deaths in the United States.

Each contribution will help one

"unique, interesting and educational." The Mariner is a ship of many ports. Its average time at sea is 45 days. Its home berth is Port Canaveral, Fla.

Life aboard the Mariner is good, says Maj. McGill. Nearly every member of the scientific party is a highly-trained specialist in his field and many of them have been with the refitted Liberty ship since it was launched in its new role in early 1959.

Ship's Captain of the Mariner is Phillip G. Beck, a retired Navy Captain who has been at sea for 50 years.

Fred Ise, a native of Estonia, is the instrumentation manager. McGill calls Ise "a whiz at elec-

tronics." Rein Ise, a brother of Fred, works at the Marshall Space Flight Center.

tronic." Rein Ise, a brother of Fred, works at the Marshall Space Flight Center.

"The first thing nearly everybody does when he comes aboard is grow a beard and get it out of his system," says Maj. McGill. From then on everyone goes clean shaven.

Recreation on the Mariner means trap shooting off the stern, fishing, movies and a hi-fi lounge.

The Mariner also boasts one of the wackiest putting greens that ever frustrated a duffer. The green is built on a hatch cover and whether the green is "fast" or "slow" depends on which way the Mariner is rolling at the moment.

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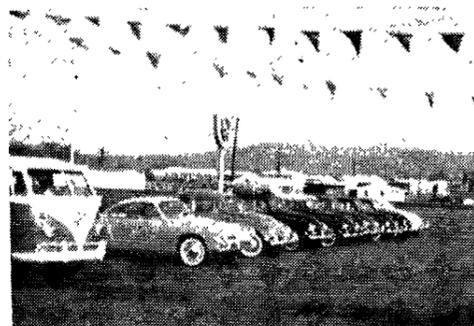
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Army's Nike Zeus Is Unique Missile Project

It all began back in the 50's when the Army decided that the time had come to do something about ICBM's besides worry about them.

From this idea churning around in someone's brain has grown a missile system development project that stretches half-way around the world, lays claim to some of the best minds in the country and aims to do to four-mile-a-second ICBM's what its brothers in the Nike family did to airplanes.

The name of the game is Nike Zeus and the stakes are high, almost incalculable.

Task Defined

The Secretary of Defense recently defined the task of developing an effective defense against ICBM attack as one of the most urgent facing the nation.

Certainly it is one of the most formidable technological challenges ever accepted in this country.

The men—and women—who follow it here with single minded devotion talk a language that calls to mind a convention of football coaches—filled with references to "offense" and "defense."

If their inner circle—including the boss — sometimes appear bleary-eyed, the reason lies in an 18-hour differential between Redstone and Kwajalein Island and the midnight hours spent in the pale green confines of the Redstone Communications Center. During these trying hours the elect group spends nervous hours staring through a haze of cigarette smoke as clacking teletype equipment of the control terminal of the Nike Zeus management net projects on a giant screen a running account of another test engagement of Nike Zeus and an ICBM type target over the Pacific.

At such times, the sweetest music this side of Guy Lombardo is the staccato of the keys pounding out the word "intercept."

It's particularly sweet to the Zeus team which has shared more than a measure of ups and downs in the fortunes of what most commonly is described as "a controversial weapon system."

Right now most of them are convinced that things never looked better. Their basic Nike Zeus configuration has proven in actual tests that it can intercept a tar-

get vehicle covering an ICBM trajectory at ICBM speed. The FY 64 defense budget contains more than \$325 million for Nike Zeus and its more advanced version—known only as Nike X.

New Status

New organizational status has come to the project with its establishment as a Class II activity of the Army Materiel Command. This is an Army move to assure that the Government management of the project is consistent with the urgency assigned this important task.

Pessimism is a hard thing to find these days in the "A" wing of Building 4505, which a national magazine once pegged as "the secrecy shrouded lair of the Nike Zeus." And it's just as scarce at Whippany, N. J., and Burlington, N. C.; White Sands Missile Range or Pt. Mugu, Calif., on Ascension Island in the Atlantic or Kwajalein Island in the Pacific, all of which are the home away from home for one or more of the 280 military and civilian members of the Government's Zeus project management team.

Project Manager at Home

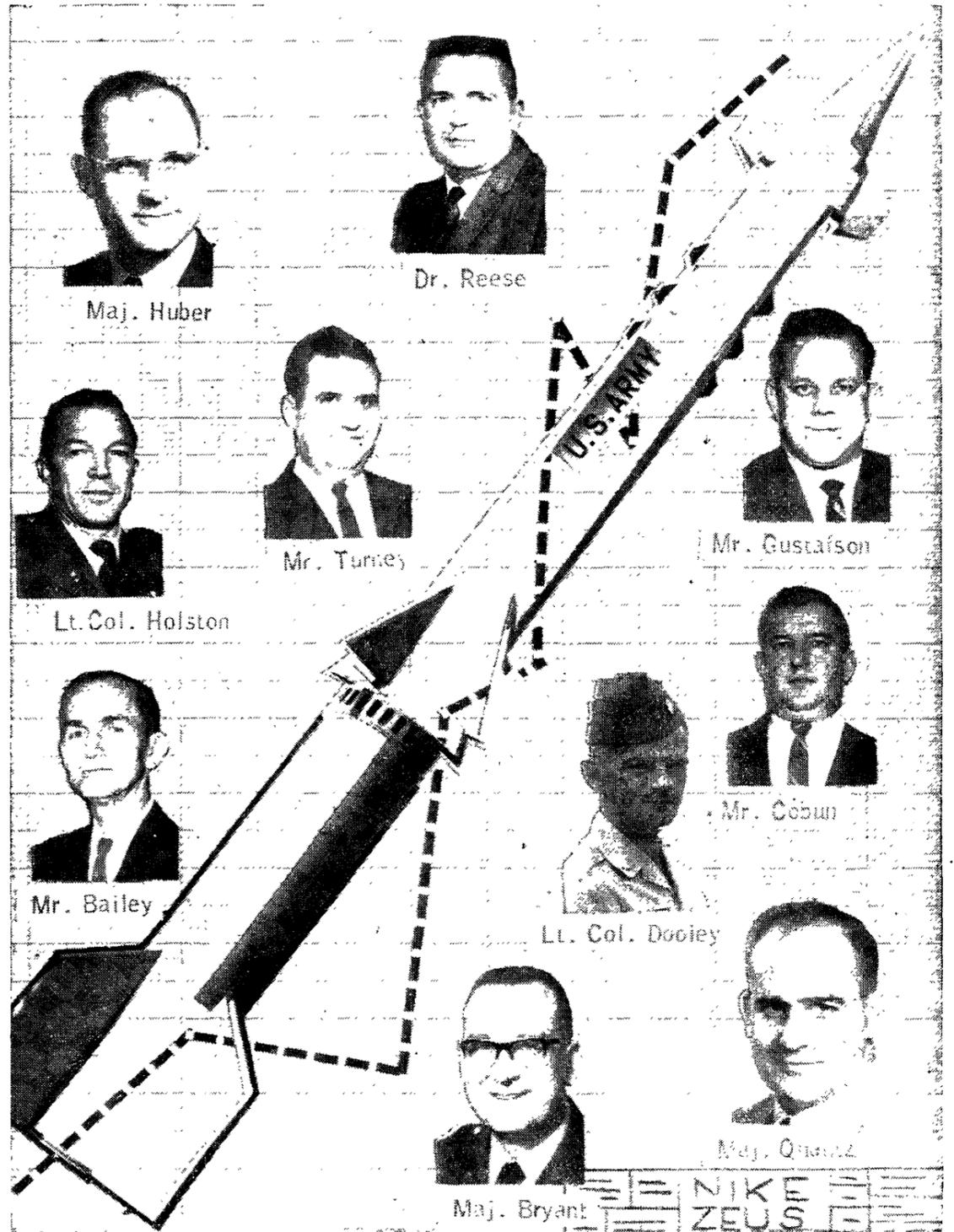
Col. I. O. Drewry, who has found that sleep lost in telecons is the least of his worries in nine months as Zeus Project Manager, says succinctly: "I've got the best job in the Army."

He went around the world to find the job less than 100 miles from home.

Born in Birmingham, the Colonel grew up in Jasper, Ala.

He graduated from Georgia Tech in 1939 with a B.S. in Mechanical Engineering and later did graduate work at Michigan University.

During WW II he served in both the European and Asiatic theaters,



THEY HELP CHART THE COURSE—The Nike Zeus program has seen its ups and downs as the system traveled on the sometimes rocky frontiers of science. Right now with the reorientation of the program toward Nike X and a budget request for \$325 million for FY 64 optimism is running high and the chart seems to be going up. These managers with Col. I. O. Drewry, the Zeus Project Manager, and Lt. Col. William J. Nelson, the Deputy Project Manager, plot the Zeus' course.

returned to Europe for three years after the war was over. He became the Zeus Project Manager in July 1962, after a tour as Senior Ordnance Advisor to the First Republic of Korea Army.

His assignments in the U. S. have included tours as Commanding Officer of Picatinny Arsenal and Detroit Arsenal, two tours in the Office, Chief of Ordnance, first in Research and Development Division, and later as Chief of the Guided Missile Branch of the In-

dustrial Division and then as Assistant Executive Officer for the Chief of Ordnance.

He is a graduate of the Armed Forces Staff College and the Industrial College of the Armed Forces.

For hobbies he turns to the outdoors for forestry, swimming and hunting.

High Priority

The Colonel likes to point out that his project has been assigned the highest priority of any de-

velopment project in the Army and has been appropriately funded. Through June of this year about \$13 billion will have been spent on Zeus development.

He estimates that 10,000 to 12,000 people are currently working on the Zeus project through the first rank of subcontractors.

The Western Electric Company is the Zeus prime contractor and Bell Telephone Laboratories are responsible for the system design. (Continued on Next Page)



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SECRETARIES TO THE ZEUS BRASS — Left to right the secretaries in the Nike Zeus Project Manager's office and their bosses are: Doris Chafin, Major Huber; Wilodene Edwards, Col. Drewry; Marian Sayers, Dr. Reece; Beverly Lanza, Lt. Col. Nelson and Mr. Gustafson; Billye Hardin, Major Bryant; Frances Kennedy, Mr. Bailey; and Edith Price, Lt. Col. Holston.

ZEUS

(Continued From Preceding Page) and development. In the second tier there are 18 major contractors. But, before the Zeus money has stopped rolling it has been shared by more than 2,000 businesses spread through 41 states.

In addition to these businesses, virtually every major agency of the Department of Defense is involved in some portion of the program. The Air Force is involved in Zeus to the extent of furnishing Atlantic Missile Range support and target ICBMs. The Navy operates overwater Pacific Missile Range where the system undergoes major testing. And other government agencies such as the Atomic Energy Commission, also have a hand in developing Zeus.

It may come as surprise to some, but the Zeus also has what Col. Drewry describes as "the Zeus air force Aircraft ranging from tiny deHavilland Beavers to C-54s and Constellations are used to provide logistical and technical support to Zeus installations such as those at Kwajalein and WSMR.

Has Own Communications

The Zeus project maintains its own communications network, tying together AMC Headquarters, Zeus Project Office, Redstone Arsenal, Ala., its test sites and key contractors. All of the communications of a classified nature are transmitted in code. This enables a Zeus member on Kwajalein, for example, to talk over a classified problem with an engineer at Redstone without making a 7,000 mile journey just so they can huddle in private.

The net is a busy one—it handles about 3,000,000 word groups a month. The Arsenal Communication Center is the central terminal of the total network. Teletype conferences can be arranged tying in all major participants on short notice.

Zeus is the only missile project that, has its own South Sea atmosphere.

Kwajalein Test Site

Zeus actually doesn't own Kwajalein Island—it just uses the tiny speck of land in the mid-Pacific as a testing ground. Kwajalein is one of the Marshall Islands which are administered as a Trust Territory for the United Nations. It is operated by the Navy as part of the Pacific Missile Range. Nearly everyone on the island is either directly or indirectly connected with developing and testing the anti-missile missile.

The Navy provides the major portion of required administrative and logistical support at Kwajalein, as well as technical support in terms of range instrumentation, data reduction, etc.

A member of the Zeus team on Kwajalein summed up the feeling there recently when he said "we live and sweat from shot to shot."

There are nearly 3,000 people on the 600 acre crescent-shaped outbreak in the coral reef. It lies only 8 degrees north of the Equator and roughly equidistant between San Francisco and Tokyo.

On Kwajalein you can see an ICBM nose cone burning through space like a meteorite and watch the thunderbolt of a missile leap out of the ground to meet it.

Fourteen men — 12 Army officers and two civilians — are the nerve center of the island. They form the Zeus Pacific Field Office. Each has the responsibility for a certain area of the overall Zeus system.

PMR Army Chief

The chief of the Pacific Field

Office is Lt. Col. Edward M. Doolley. His team there is split into two divisions. Lt. Col. R. W. Fye heads up the Operations Division and Lt. Col. C. D. Neilson directs the Support Division.

Little happens to Zeus on Kwajalein from the flipping of a switch to turn on a radar to the intercept of an ICBM that isn't known and, in many cases, requires the prior approval of the Pacific Field Office.

Running the multi-million dollar Zeus complex on Kwajalein means things like working 6-day weeks, coordinating the activities of dozens of contractors, working into the small hours of the night, waiting nervously while an ICBM target makes a 5,000 mile trip from the coast of California to the designated intercept area and—most important of all—experiencing the thrill of participating in the Free World's first intercept of an ICBM-type target nose cone by another missile.

Zeus Intercepts

It was on July 19, 1962, that the Zeus did exactly that. On that date the Zeus fulfilled its promise as an anti-missile weapon system in the sky over Kwajalein. It was a day of celebration for the island where the Zeus box score is followed with a devotion greater than that of cowboy for his horse.

Twice more during the year the Department of Defense announced successful intercepts by the 48-foot missile fired from its underground cell drilled in a man-made mountain on Kwajalein.

Col. Drewry views his project management assignment as a series of daily decisions, many of them he makes himself. Others are made by some of the key men in the project organization, many of whom have literally grown up in the business of air defense and ballistic missile systems.

Operating Divisions

The project office is broken down into four operating divisions and three administrative offices, roughly like any other system being developed under the Project Management concept. One notable exception is that the Zeus Project office does not have a Systems Support Division. This division in a project such as Hercules is one of the largest and most far-reaching. The absence of this division, of course, stems from the fact that Zeus is still in development with production and deployment yet to come.

Col. Drewry's deputy is Lt. Col. William J. Nelson, a West Point graduate who was Chief of the West Coast Field Office of the Army Missile Command prior to coming to Redstone in 1960.

He is a native of Waupaca, Wis., and has served in the States, Europe, Japan and Korea. He received his Master's degree in electrical engineering from Rensselaer Polytechnical Institute and is a graduate of the Ordnance Officer's Advanced Course, the Command and General Staff College and the Project Manager's course at Ft. Lee, Va.

Col. Nelson has defined as major tasks confronting the staff here the reorientation of the Zeus program toward its advanced version, and redefinition of the weapons



LT. COL. NELSON

system's schedules.

He outlines the Army Missile Command's role in the Zeus program as "freeing us from our logistics tail." This eases these tasks for the Zeus project personnel by allowing them to concentrate on the technical aspects of the program and insure project schedules are met. In addition to providing logistical and administrative support, the Research and Development Directorate of the Missile Command has a hand in the technical development of Zeus. A great deal of the government in-house effort is assigned to the local laboratories of the Research and Development Directorate. A representative of the Directorate sits in on the Zeus staff meetings.

Reese Is Technical Director

The Zeus project office is unique in another respect. It is the only missile project on the Arsenal with a technical director at the Project Manager level having a Doctor's degree. He is Dr. Bruce A. Reese, who was the leading researcher in jet propulsion prior to coming to Redstone.

Dr. Reese came to the Arsenal in June of 1961 after 15 years with Purdue University where he was a professor of mechanical engineering and Associate Director of the Jet Propulsion Center there. He was also a consultant to the Department of Defense's Advanced Research Projects Agency (ARPA) and the Air Force.

As Technical Director, Dr. Reese advises Col. Drewry on all engineering and design aspects of the system designed to kill other missiles.

Another top man in the Zeus front office, Eric Gustafson, has been with Zeus since 1957.

Gustafson is the Executive Assistant to Col. Drewry. A native of Kersey, Pa., he holds a Bachelor of Science Degree in economics

from the American University in Washington, D. C., and did graduate work at that school.

He came to Redstone Arsenal in 1955 from the Office, Chief of Ordnance.

Under ARGMA he was an assistant to the Project Manager for Ballistic Missile and Space Defense which had cognizance over Zeus. He later occupied a similar position with the Zeus Project Office of the Missile Command.

Holston Heads ER&P

One of the most important divisions in the Zeus Project Office is the Engineering Requirements and Plans Division, headed by Lt. Col. Alfred Holston.

This division, working closely with Western Electric, Bell Telephone Laboratories and Government agencies, determines step by step the engineering requirements and plans for the system. For example, it determines the kind of equipment necessary for effective defense and establishes the overall project plan essential to its incorporation in terms of active development effort.

Col. Holston is a native of Akron, Ala., and has a B. S. in chemical engineering from the University of Alabama and a M. S. in bio-radiology from the University of California.

His deputy is Paul Phillips, a native of Birmingham with a B. S. in electrical engineering from Auburn University.

The branch chiefs in the Engineering Requirements and Plans Division are Norman C. Buchholz, Requirements and Analysis Branch; Frank G. Broyles, System Planning Branch; Maj. J. D. Collins, Support Planning Branch.

While the Engineering Requirements and Plans Division determines what the building blocks of the system must be, the group (Continued on Next Page)

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ZEUS

(Continued From Preceding Page) that is responsible to supervise the fabrication of these blocks is the Engineering Division. This division is headed by Russelle M. Bailey, an electrical engineer who is an "oldtimer" to Redstone Arsenal and particularly to Zeus. The Engineering Division's primary role is to provide technical supervision of the approved development effort. This group then follows and participates in the program from the hardware engineering view, assures that hardware is being developed on a performance, cost and schedule basis consistent with established objective.

Branch Chiefs

The branch chiefs are Duward R. McClung, Advanced Engineering; Glen L. Sadler, Systems Engineering; and J. V. Olszewski, Systems Integration and Configuration Control.

When the Nike X proves itself the first people to know it will be the Test and Field Operations Division. This division controls all development and system testing and evaluates the results. It also plans for test site support including targets, such as the ICBM boosted nose cones which the Zeus intercepted.

The head of this division is Maj. L. K. Huber, a native of Fond du Lac, Wis., and a West Point graduate. His deputy is Charles E. Richardson, a native of Aliceville, Ala., who took his BS in electrical engineering from Auburn.

The Test and Field Operations Division branch chiefs are: J. D. Morrow, Targets; R. W. McLaney, Test and Site Support; and E. M. Rosenfeld, Contractor and Installations.

As the Zeus machine rolls on toward its objectives the Systems Analysis and Control Division sees to it that there's gas in the tank, reservations are made ahead, its on the right road, travel orders have been made out and everything is on schedule.

The chief is Maj. R. L. Bryant

and his deputy is J. D. Bowman. Maj. Bryant is a native of Butler, Ind., and received his BS and MS from Purdue University. During WWII he took part in the Bikini Atomic Experiment and prior to coming to Redstone in 1961 he had been a physicist at the Los Alamos Scientific Laboratory, specializing in nuclear propulsion.

The Systems Analysis and Control Division branch chiefs are: Frank Novotnak, Systems Control; and Anthony C. Pautler, Systems Analysis.

The primary mission of this division is to obtain, allocate and follow-up on the use of dollar and manpower resources required to carry out the Zeus project. To accomplish this they are implementing Program Evaluation and Review Technique (PERT) as a Zeus management tool to schedule activities and time frames. PERT might be called automation of management. It is of particular use in the Zeus management program because of the system's complexity and multitude of overlapping and interlocking time frames.

System Uses PERT

The PERT system makes use of PERT charts, a highly visual scheme of relating various events, and a computer to put together all of the thousands of bits of data that when fitted together like the parts of a jigsaw puzzle reveal a true picture of where the Zeus system is at any time. And the Zeus is a jigsaw puzzle with literally hundreds of thousands of pieces. Without applying modern Computer Techniques to the task it would take a battery of humans months to put them together.

William O. Turney heads the Zeus Contract Services Office. Turney is a native of Decatur, Ala., and has been in the missile business at Redstone since 1951.

Turney's office figured in national news recently when it was announced that the Zeus contract with Western Electric had been converted from Cost Plus Fixed Fee to a Cost Plus Incentive Fee type. Of particular significance here is the fact that the

STOCK MARKET OPERATIONS WILL BE DISCUSSED

Stock market operations will headline the monthly meeting of the Huntsville chapter of the American Institute of Industrial Engineers when the Chapter meets at the Sahara Motel next Monday evening.

Robert McLain and Jim Lambert of the Birmingham office of Merrill, Lynch, Pierce, Fenner and Smith will present ideas on market trends for the past two years and project predictions for the future.

An examination of the process of stock transaction will be made and certain stocks will be analyzed by McLain and Lambert to

Zeus is the Army's highest funded research and development project. Therefore, the Contract Office's role in contract monitoring and award, permits centralization of this effort.

W. C. Thompson is Turney's deputy.

The Management and Compliance Review Office is responsible for the coordination of all project office activities involving project office audit, overall external project relationships and the analysis of new control techniques.

Its chief is Maj. R. J. Quantz, another West Point graduate and a holder of a MS in mechanical engineering from Purdue.

Additionally the project has an Administrative Office which is responsible for all internal project administrative activities such as mail, personnel, travel and files.

Representing the project at its various field offices are: Maj. N. L. Kelley, Air Force Ballistic System Division, Norton Air Force Base; Capt. J. B. Spruiell, White Sands Missile Range; Capt. H. M. Thompson, Ascension Island; Capt. F. J. Lokay, Strategic Air Command, Vandenberg Air Force Base; Lt. Col. G. W. Flint, Bell Telephone Laboratories; L. V. Bilotta, Douglas Aircraft Co., and Lt. Col. A. L. Bellavance, Western Electric Company.



COMBAT DEVELOPMENTS OFFICIALS—Lt. Gen. John P. Daley, left, Commanding General, of the Combat Developments Command at Ft. Belvoir, Va., shakes hands with Col. E. R. Urquart, Commanding Officer of the Ordnance Combat Developments Agency at Aberdeen Proving Ground, Md. Gen. Daley and Col. Urquart recently visited Redstone Arsenal during the General's four-day tour of Combat Developments Activities located in Southeastern states. Col. Urquart was on hand at the Ordnance Guided Missile School to greet Gen. Daley.

show how the price of the stock is affected by external factors. The meeting will open with a social hour at 6:15 p.m. with dinner an hour later. The program will begin at 8:00 p.m.

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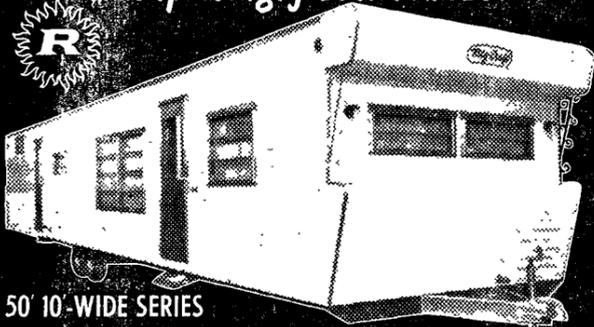
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Gen. Lodoen To Speak To Reserve Officers

Maj. Gen. George Gon Lodoen, USA, Ret., Director Army Affairs, Reserve Officers Association of U. S. will be the guest speaker of the Huntsville Chapter of the Reserve Officers Association on Friday, Mar. 22.

The meeting will be at the Redstone Arsenal Officer's Club and

GEN. DANIEL

(Continued From Page 1) ceremony in the Post Theater at which 104 men from Belgium, France, Germany, Greece, Netherlands, Norway and the United States completed Hawk and Nike-Hercules courses.

The group included 49 officers and men who will form the first Hawk support units for the Belgian Army. They will be assigned to NATO forces in Europe.

A spirited competition for academic honors found an American, SFC Sidney E. Underwood of Baldwin Park, Calif., edging six Belgian students by the margin of two decimal points. Underwood scored 98.4 while Capt. Francois A. Desclefs of Belgium averaged 98.2.

Other outstanding students averaging 96 or better included five Belgians. They were: Sgt. Etienne Vanheessen, First Sgt. Carlos R. Braem, First Sgt. Joseph G. Roelants, First Sgt. Gustaaf Mortier and First Sgt. Frans P. Cassiman.

Together with SFC Underwood and Capt. Desclefs, they received crests of the Association of the U. S. Army from Carl E. Duckett, vice president of the local Tennessee Valley Chapter.

ladies are invited.

A social hour will begin at 6:30 p.m. and dinner will be served at 7:30 p.m. Tickets for the dinner can be purchased from Maj. Joe Hinesley, USAR, at 536-

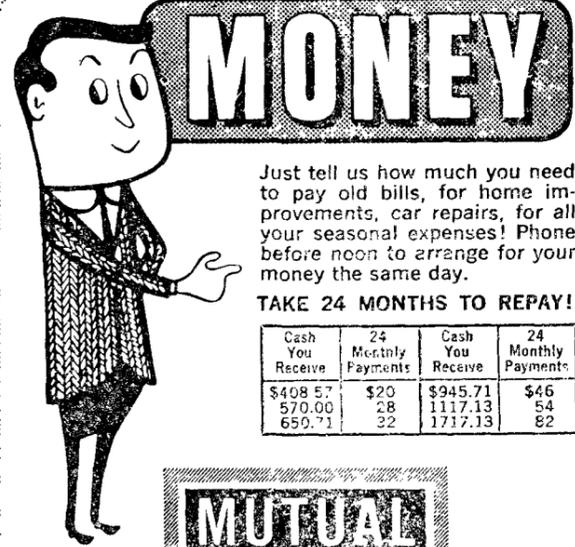
8341, Lt. Col. Pete Redding, USAR, at 876-8611 or 536-1376, or Lt. Cmdr. Bill Howard, USNR, at 876-2071.

Birmingham, Decatur and Muscle Shoals Chapters will also participate in the meeting.

The strength of America lies in its families. That's why every family is urged to buy at least one U. S. Savings Bond during the 1963 Freedom Bond Drive, May 1 to July 4.



ALUMNUS EXPLAINS LASER—Tom Crow, right, a physicist with the Directorate of Research and Development, explains the Army's laser to members of the physics department of North Georgia College at Dahlonega, Ga. Crow is an alumnus of the school, where he received his BS in physics in 1957. Laser is operated by the Electromagnetics Laboratory in a continuing research program for the Army Missile Command.



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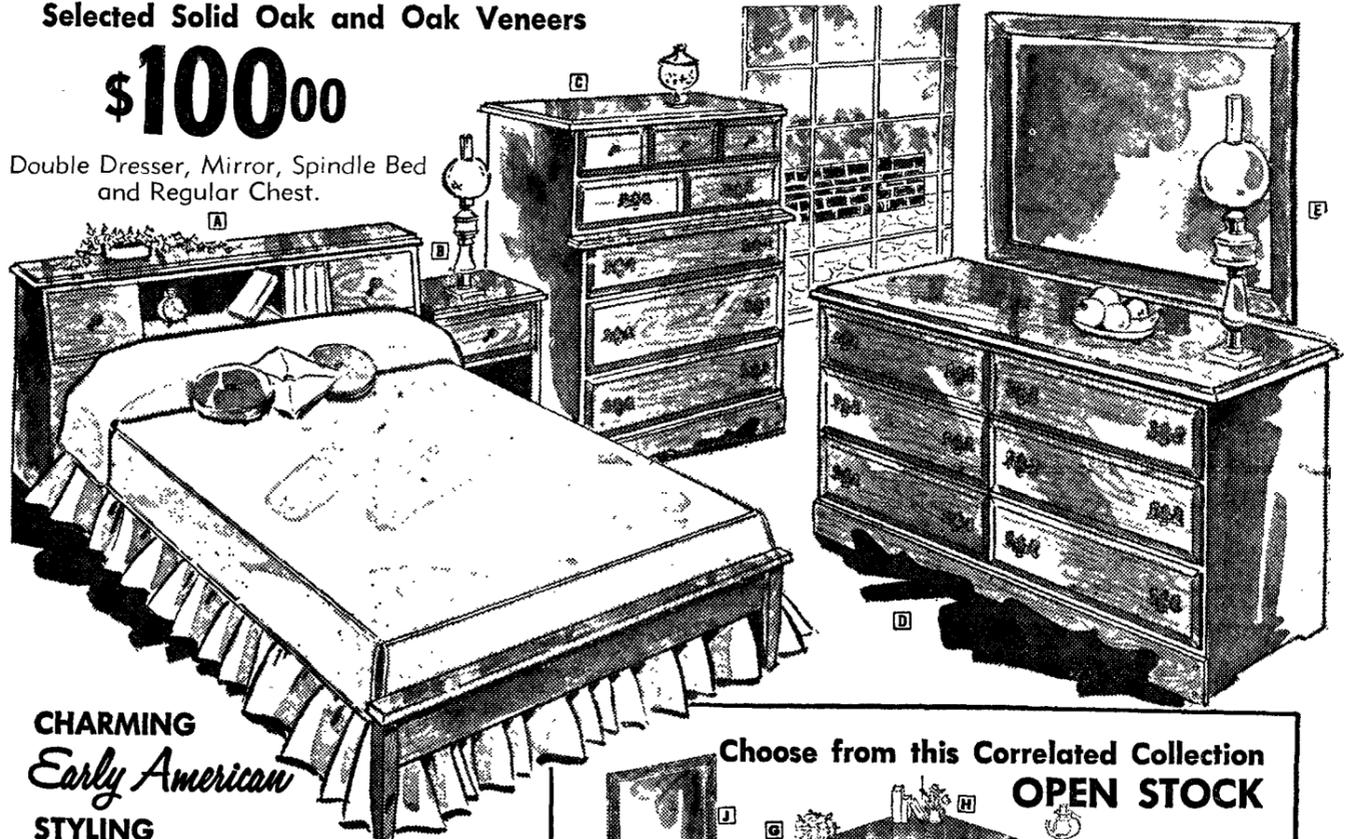
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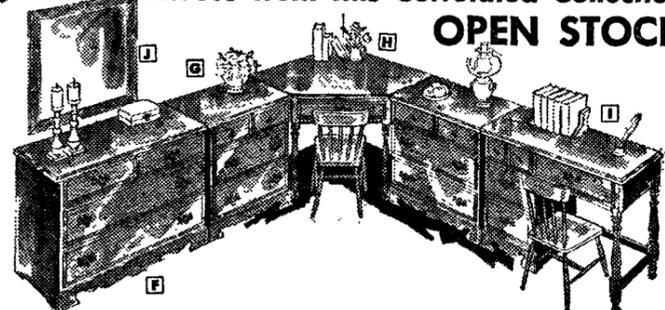
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SOCIAL CLUB EVENTS

NCO Wives Plan Spring Fashion Show At Club

A fashion show is scheduled by the NCO Wives Auxiliary at the NCO Club Mar. 7 at 8 p.m.

Mrs. John Sloan, president, has been acting as chairman for the event with the aid of Mrs. Louis DiMichele and other members.

Mrs. Frank Reed is handling the decorations which will have a soft Spring theme.

Merchants in Huntsville are furnishing wrought iron furniture, cosmetics and makeup, hair styles to match the dresses, hats and

Mrs. Garcia Wins At Party Bridge

Mrs. Orlando Garcia won the competition at the Thursday meeting of the Party Bridge Group sponsored by the Redstone Arsenal Officers Wives Club.

The Group meets at 10:30 a.m. at the Squirrel Hill Officers Club.

Runnerup at Thursday's meeting was Mrs. Vern Laver with Mrs. Arthur McDermott third.

Mrs. M. J. Dooley, 877-4536, handles reservations for the March meetings.

shoes. In addition to the usual line of fashions for Spring will be a maternity line.

Germans Entertain American Friends

One hundred U. S. officers and civilian officials and their wives were guests of the German Army and Air Force detachments at the U. S. Army Ordnance Guided Missile School Friday evening at a dance held in the Hawk room of the Squirrel Hill Officers Club.

Lt. Col. and Mrs. Hans W. P. Fink of the German Army and Lt. Col. and Mrs. Joh. Heinrich Hellmers of the German Air Force were hosts for the dance and buffet.

German officers and their wives were seated at each table with their American guests.

The gala event began with a "Polonaise" in which all the guests followed march and dance patterns set by the German hosts. Music featured spirited German dances.

Civil Engineers Plan Organization

Huntsville members of the American Society of Civil Engineers, Alabama Section, will hold an organizational meeting on March 12, at 7:30 p.m., at the Squirrel Hill Officers' Club.

Business to be considered includes ways and means of developing a Huntsville Branch of A. S. C. E. and the upcoming State Section meeting to be held in Huntsville on Jul. 19.

All present members of A. S. C. E. and other civil engineers desiring to affiliate with A. S. C. E. are invited to attend. For additional information concerning the meeting, contact Earl Kramer, General Chairman, at 539-0431.

Officers Wives Schedule Bridge-Canasta Brunch

The Redstone Arsenal Officers Wives Club will hold a Bridge-Canasta brunch next Tuesday at the Squirrel Hill Officers Club at 9:30 a.m.

Reservations are being handled by Mrs. R. M. Pearce, 877-5175 and Mrs. George Pickett, 539-8548. Mrs. Earl Otto will accept cancellations until noon on Monday but reservations have a deadline of Friday.

CUBS HAVE BANQUET

"Cubscout Pack 308 held its annual "Blue and Gold Banquet" at the Ordnance Guided Missile School Student Troop Command Mess, Tuesday night.

Guests included Col. Harry C. McClain, Post Surgeon, and Glen Ragan, Boy Scout Executive from Huntsville, guest speakers; and Chaplain (Lt. Col.) W. R. Bottoms. Scout awards were made to 14 boys.

At the Service Club

By: Brenda Hanson

Celebrations and highlighted activities have been the keynote for this month's program. Never before have we had such outstanding programs presented at the Service Club in such a short space of time. Most important, though, is having the EM with us, and we are delighted to have so many of them attend our programs.

Our secrets are unclassified and we want to let you in on the news of this society as we dizzily climb to new heights of merry-making. No time for wool gathering and no time for spring fever. Tonight is the time to forget all cares and enter the spritely spirit of the Service Club activities.

Beginning this week the dance classes will be conducted each Tuesday and Wednesday night by David Izen. From observation of the classes, Izen's instructions are proving effective. We invite you to join our classes.

CALLING ALL CHESS PLAYERS: Thursday, Mar. 5, at 8 p.m., is a scheduled Chess Contest. All of you thinking men who enjoy Chess, come enter. A prize will be given to the winner.

Friday at 7:30 p.m. Card Kapers will be played. Included in our selection of card kapers are Hearts, Pinochle, Canasta, Bridge and others. As you can see, we have an unlimited choice, and we would enjoy having you spend an evening playing cards with us.

Popular Sounds is on the agenda for Saturday at 6 p.m., and at 8 p.m., we will have Smoker Poker. If poker is a challenge, we invite you to come and participate.

Sunday, Mar. 3, coffee and donuts will be served from the Service Club kitchen. Climaxing the day is the dance beginning at 8 p.m. The dance will swing out

under the theme of "Shamrock Shindig." Furnishing the music for the dance is the Jimmy Blackburn Quartet. We'll be looking forward to seeing you.

Monday night is Game Night again. We invite you to come and join in on the games. Several prizes are awaiting for you to say the lucky word.

Miscellaneous

I am very happy to report that the "Night at Harold's Club" was very successful and was a roaring night from beginning to end.

Without the help of some of our willing and very able enlisted men, the night would not have been complete. We wish to thank the following men for helping us with the various games played during the evening: Sp4 George Fletcher, Hq & Hq, STC; Pfc Donald F. Neals, Hq & Hq, STC; Pfc Joseph Costa, 1st ETC; Pfc Francis Marley and Pfc Carlos Parra, 184th Ord Det; Pfc Donald Paquette, Co "B," OGMS, Pfc Kenneth Sweeney, 1st ETC, and S/Sgt Van Cornewel, S/Sgt Henk Rozeboom and S/Sgt Alex Treffers from Holland.

The Service Club staff would like to thank each of you individually for helping us make the night a success.

The winners for the evening at Harold's Club were as follows: Pvt Dennis Welcome, 4th ETC, won first place; Andrew Blasha, Jr., 1st ETC, took second place; and William F. Donachie, 2nd ETC, took third place. Congratulations to all three of you. I must say these three were the top of the sharpies who attended Harold's Club Saturday night.

See ye at the Service Club. —Brenda

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Alabama String Quartet To Present Concert Here

The Alabama Quartet, the string quartet in residence at the University of Alabama, will be presented as the third attraction of their season by the Huntsville Chamber Music Guild. The concert will be held at the Huntsville Junior High School auditorium on Randolph and White Streets, at 8:15 p.m. on Sunday, March 10.

The program will consist of Haydn's Quartet in G major, Op. 54, No. 1, the First String Quartet, Op. 7 by Bela Bartok, and a late Beethoven quartet, Op. 131.

The Alabama Quartet, plays some forty performances each year, including appearances throughout the state of Alabama as well as tours of other states. This year the Quartet has appeared in Florida, Mississippi, North Carolina, and Illinois. The group was chosen for several years to appear in concerts sponsored by the Arts Program of the Association of American Colleges in conjunction with the Elizabeth Sprague Coolidge Foundation of the Library of Congress.

The first violinist of the Quartet, Emil Raab, was formerly a member of the Stanley Quartet at the University of Michigan. He was a pupil of Hanz Letz and

Tool And Manufacturing Engineers Meet Mar. 12

The American Society of Tool and Manufacturing Engineers will install new officers at the Mar. 12 meeting.

Guest speaker at the meeting will be V. G. Mellquist who will talk on "When and Why Does Applied Manufacturing Research

Joseph Knitzer, and has had wide experience in chamber music and as a recitalist.

Frank Spinosa, the second violinist of the group, was active as a conductor and performer at Hastings College in Nebraska, and has served as "Visiting Artist in Music" at the University of Illinois.

Henry Barrett, violist, is known to Huntsville audiences both as a solo performer and a member of the Alabama Quartet. Barrett who plays an exceptionally fine Landolfi viola, appeared as soloist with the Huntsville Civic Symphony during the 1961-62 season, playing the Handel Viola Concerto. Barrett received his master's degree from the University of Alabama, and has done graduate work at Columbia University in New York City. He studied viola with Ottakar Cadek and Walter Trampler, and his summer activities have included performances with the Aspen Festival Orchestra in Aspen, Colo.

Margaret Christy, cellist of the Alabama Quartet, has worked with such celebrated teachers as Graudon, Willeke, and Silva, and more recently with the dean of living cellists, Pablo Casals. During the summers Miss Christy teaches cello at the Transylvania Music Camp, and serves as principal cellist of the Brevard Festival Orchestra.

Tickets to the concert are now on sale at Traylor Music Store, at the Book Shop in the Russel Erskine Hotel, and at the University Photo Shop in Parkway City. Tickets can also be obtained from members of the Huntsville Chamber Music Guild, and any remaining tickets will be on sale at the door of the auditorium before the concert.

Pay Off."

Mellquist is with General Dynamics/Astronautics.

A social hour is scheduled at 6 p.m. with dinner at 6:30 p.m. and the technical session at 8

The Redstone Rocket — March 6, 1963

Page 9

p.m.

Justus L. Alexander will be the installing officer. Reservations for

the meeting may be made by calling 539-0781 before 3 p.m. or 536-3263 after 5 p.m.



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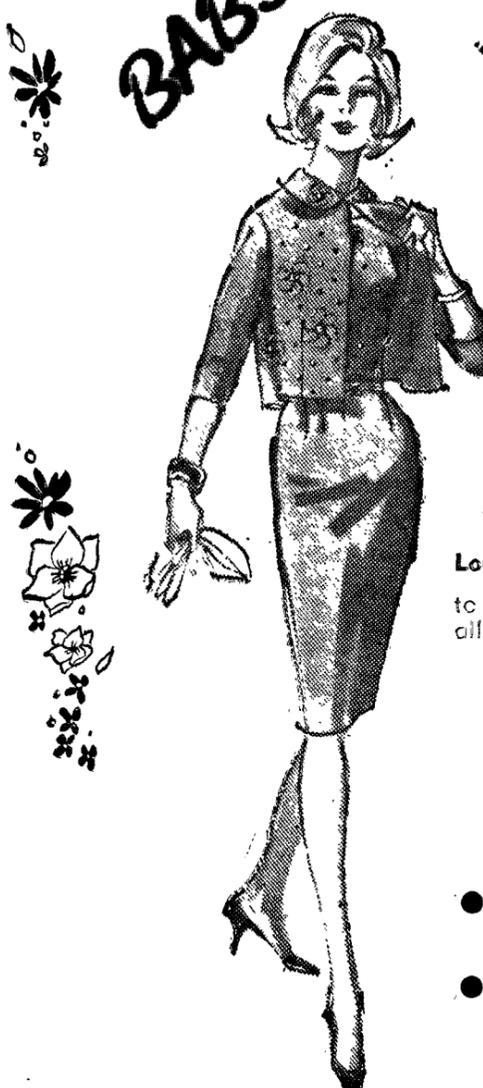
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Speaking Of Sports

By SFC AL LAMBERT

Good team spirit, co-operation and a desire to win, carried the 3d ETC No. 1 team to the championship in the Redstone Arsenal Volleyball League. Comprised of students from the Netherlands, they finished the season with a spectacular overall record of thirteen wins and only one loss. The lone loss came on a forfeit that was caused when the team was making preparations to return home.

This team would be our representative to the 3d Army Volleyball Tournament, but due to their early departure, the second place team (Hq & Hq Detachment AMSC) will carry the banner for RSA.

COMPANY LEVEL VOLLEYBALL CHAMPIONS REDSTONE ARSENAL 1963

3d ETC NO. 1 NETHERLANDS TROOPS

Team Roster
 G. Marten
 B. Van Cornewal
 T. Den Engelman
 R. Van Nieu Enhuizen
 H. Van De Baan
 C. Grimm
 A. Treffers

Volleyball Standings

Team	Won	Lost
3d ETC No. 1	13	1
Hq AMSC	11	3
1st ETC	9	5
Co. B OGMS	7	7
3d ETC No. 2	4	10
Co. A OGMS	2	5
Officers	2	11
Hq OGMS	0	2

Basketball Standings

Team	Won	Lost
Officers	16	5
1st MP Co.	16	6
Co. A OGMS	15	6
Co. B OGMS	15	7
Hq UTC	8	13
Hq AMSC	7	14
Hq AMC	5	15
Hq STC	2	18

Top Ten Scoring

Name	Points
Hudson	286
Jordan	273
Kilpatrick	269
Boyd	251
Gomstock	227
Gray	223
Gentry	220
Baker	209
Terashima	198
Thomas	163

RSA Bowling League Results

OFFICERS WIVES LEAGUE

Team	Won	Lost
Jumpin Jacks	51	29
Merry Mrs.	50	30
Alley Cats	42	38
Hi Fi's	41	39
Team No. 8	39	41
Gamblers	36½	43½
E-Z Rollers	32½	47½
Happy Bowlers	28	52

OGMS OFFICERS

Team	Won	Lost
ADM	50	26
Researchers	44	32
OSTI	39½	36½
Bohunks	37	39
UTC Tipplers	33	43
Commoners	23½	52½

SCHOOL TROOP COMMAND

Team	Won	Lost
Deuces	71	25
Electronics	69	27
Aces	66½	29½
Strikes	48	48
Ten Pins	43	53
Spares	33	63

TROOP COMMAND EM

Team	Won	Lost
Raiders	57	23
Ohms	55½	24½
Curvals	48	37
S & E's	45	35
Rats	44	30
Jockeys	40½	39½

RSA OFFICERS

Team	Won	Lost
Slowburners	65	27
Robes	55	37
Bandits	48	44
Spoilers	48	44
Alley Cats	32	60
Medico No. 5	28	64

OFFICERS MIXED DOUBLES

Team	Won	Lost
Bowl Weevils	120	78
D-Yanks	112	86
Pin Droppers	108	90
Bombers	107	90½
D-Doms	99	99
Red Stones	89½	108½
Baby Splits	82	116
Hi Counts	79	119

JUNIOR LEAGUE

Team	Won	Lost
Esquires	36	16
Rambling Wrecks	30	22
Ghost Riders	29	23
Alley Cats	25	27
Sweepers	24½	27½
Alley Oops	23	29
Rebel Rousers	21	31
Baby Splits	18½	33½

SATURN BOOSTER BOWLING LEAGUE A-DIVISION

Team	Won	Lost
Brown		
Engineering Co.	58½	37½
Martin Co.	56	40
Norris Riddle		
Furn. Co.	52½	43½
Hilding-Holmberg	52	44
Redstone Mach. & Tool	48½	47½
Tenn. Valley Oxygen	48	48
Arrowhead Products	46	50
Republic Aviation	40½	55½
Huntsville Trailer Ct.	40	56
Push-Overs	38	58

200 Games: Mitchell — 224; McCann — 222; Mosser — 213-206; Leigh — 207-203; Ackerman — 207; Meadows — 207; Clark — 206; Tromblee — 206; Fleshman — 201; K. Smith — 200.

B-DIVISION

Team	Won	Lost
Lockheed	59	37
Murphree Mort. Co.	58½	37½
Redstone Fed.		
Credit Union	56½	39½
Tri-Lanes	52½	43½
Modern Mach.	50	46
C. W. Stewart Mach.	48½	47½
Hayes Top Seven	46½	49½
Hayes Designers	43	53
Progressive Welder	42½	54½
Hayes Ex-Cons	23½	72½

RSA BANTAMS

Team	Won	Lost
Lucky Strikes	34	17
Jetsons	26	25
Wildcats	23	28
Strikeouts	19	32

THURSDAY MORNING LADIES

Team	Won	Lost
Hit 'N' Misses	49½	34½
Off 'N' On	49	35
Up 'N' Down	36	48
Misfits	33½	50½

Movie Schedule

 WEDNESDAY, March 6
 "The Young Doctors" (M-YP)
 THURSDAY-FRIDAY, March 7-8
 "The Chapman Report" (M)
 SATURDAY, March 9
 "The Guns of Navarone" (F)

First performance 5:30 p.m.
 SUNDAY-MONDAY, March 10-11
 "Follow the Boys" (F)
 TUESDAY, March 12
 "David and Lisa" (M)
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 No. 38 — Station Wagon. Str. shift. Heater. Local one owner. \$1295.

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 No. 828—4 dr. Station Wagon. Deluxe V-8, auto. trans., heater. Nice. \$1095.

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 No. 829—Monterey 4-dr. Hardtop. Radio, heater, Power steering, Power brakes, auto. trans., V-8. \$1195.

1957 FORD
 No. 137—4 dr. V-8. Automatic trans., radio, heater. Power steering. Local one owner. \$695.

1955 FORD
 No. 126 A—4 door. A real good second car. \$395.

1962 DODGE
 No. 175—½ ton Pickup. Radio, heater, str. shift, 6 cyl. Like new. \$1595.

1961 CORVAIR
 No. 856—Rampside Pickup. Str. shift, heater. Completely reconditioned. \$1195.

1961 CHEVROLET
 No. 81—½ ton long wheelbase, Fleetside Pickup. Heater, Jr. West Coast Mirrors, 6 cyl., str. shift. Sharp. \$1495.

1960 FALCON
 No. 855—4 dr. Str. shift, radio, heater, whitewall tires. A real bargain. \$1095.

1960 FORD
 No. 35 A—2 door. Auto. trans., heater. A real buy. \$1195.

1960 THUNDERBIRD
 No. 64—Coupe. Radio, heater, auto. trans., Power steering, Power Brakes. Clean. \$2195.

1960 CHEVROLET
 No. 146—Impala 4 dr. Radio, heater, auto. trans., V-8, Power Steering. Local one owner. Sharp. \$1795.

1960 VOLKSWAGEN
 No. 150—2 door. 4 speed trans., radio, heater. Extra clean. \$1295.

1960 CORVAIR
 No. 171—4 dr. Str. shift, radio, heater. Clean. \$1195.

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1956 CHEVROLET
 No. 156 A—2 door. Radio, heater, auto. trans., whitewall tires. \$495.

1957 FORD
 No. 106—2 ton long wheelbase, cab and chassis, 2 speed rear axle, heater, V-8 engine, good tires. \$1095.

1960 CHEVROLET
 No. 110—½ ton long wheelbase Fleetside. 6 cylinder. Heater. \$1295.

1958 CHEVROLET
 No. 793—¾ ton Truck with new platform body, 6 cyl., heater, straight shift. Completely reconditioned. \$950.

1956 BUICK
 No. 173—2 door. V-8, heater, standard trans. Extra clean. \$550.

1955 FORD
 No. 166 4—2 dr. Good transmission. \$495.

1959 BUICK
 No. 86—4 door LaSabre. Auto. trans., radio, heater. Nice. \$1395.

1959 FORD
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1958 PLYMOUTH
 No. 105 A—4 door V-8. Auto. trans., radio, heater. Clean. \$795

1958 BUICK
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 No. 170—4 dr. Bel Air. V-8, auto. trans., radio, heater. Nice. \$1195.

1956 BUICK
 No. 173—2 door. V-8, heater, standard trans. Extra clean. \$550.

1955 FORD
 No. 166 4—2 dr. Good transmission. \$495.

1961 FORD
 No. 127—2 ton long wheelbase, cab and chassis. V-8, West Coast mirrors, heater, 2 speed rear axle, extra good tires. \$2195.

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Sign on a radar lab wall: "Think small: Track a musket ball."

Whether or not Madison Avenue slogan writers would buy the idea, it is being employed with remarkable success at the Army Missile Command.

Radar men at the home of Army missiles have developed what is probably the most economical target system yet devised for field testing advanced radar concepts—using a gas propulsion tube similar to a shotgun to launch tiny missiles for test tracking.

Since it costs a good deal of money to fire full-grown missiles or fly airplanes solely for testing development models, physicist Dorwin L. Kilbourn and his associates in the Missile Command's Research and Development Directorate looked for something more practical.

"Mini-ball," as the target test system is known, was conceived as radarman discussed ways to economically and efficiently test development type radar transmitters and receivers in the field.

The tests required that signals be reflected from high-speed targets without causing inconsistent variations in the transmitted signal's shape.

Radarman Kilbourn saw possibilities in the use of high velocity balls. He mathematically demonstrated that a small spherical ball would be ideal for testing a radar system then under development.

Thus "mini-ball" was born. Working mostly at night at home over his kitchen range, the amateur musket ball maker melted lead. From a small hand-held mold cascaded the Army Missile Command's first "mini-balls." Kilbourn loaded the musket balls into capsules similar to shotgun

shells.

Initial tests of the target launch system proved that the radar men were on the right track.

"Altogether, I suppose I've molded and fired nearly 500 mini-balls," Kilbourn says.

In a remarkable record, radar men in a single afternoon tracked 49 out of 50 mini-balls, fired from various distances — ranges from five feet to almost a mile away from tracking equipment.

Detailed experiments indicated lead balls were too soft and easily deformed. Kilbourn and his staff needed a projectile with a more permanent and rigid shape.

On a visit to Auburn University, where Kilbourn taught physics for five years before coming to the Missile Command, the scientist mentioned to Dr. Ray Askew that he was in the market for metal spheres more durable than lead.

Askew handed Kilbourn his so-

lution: A quart jar of steel ball bearings.

Field tests at Redstone Arsenal missile ranges showed that the steel balls retained their shape and reflected a constant "blip," or signature, on the radar screen.

Says Kilbourn: "Results of this system have given us an economical test device. Data can be acquired as fast as we can load the system and fire."

"Depending on the frequency of the individual radar," Kilbourn says, "we could use B-B's or cannon balls for the same purpose."

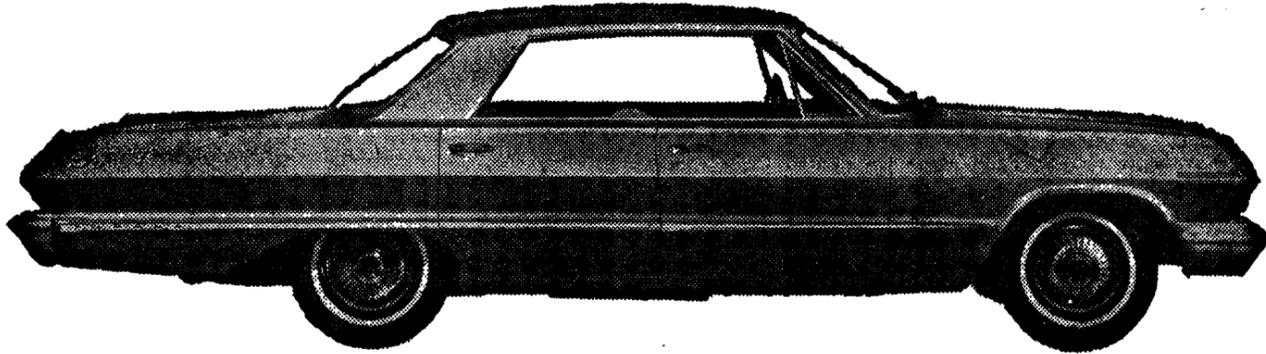
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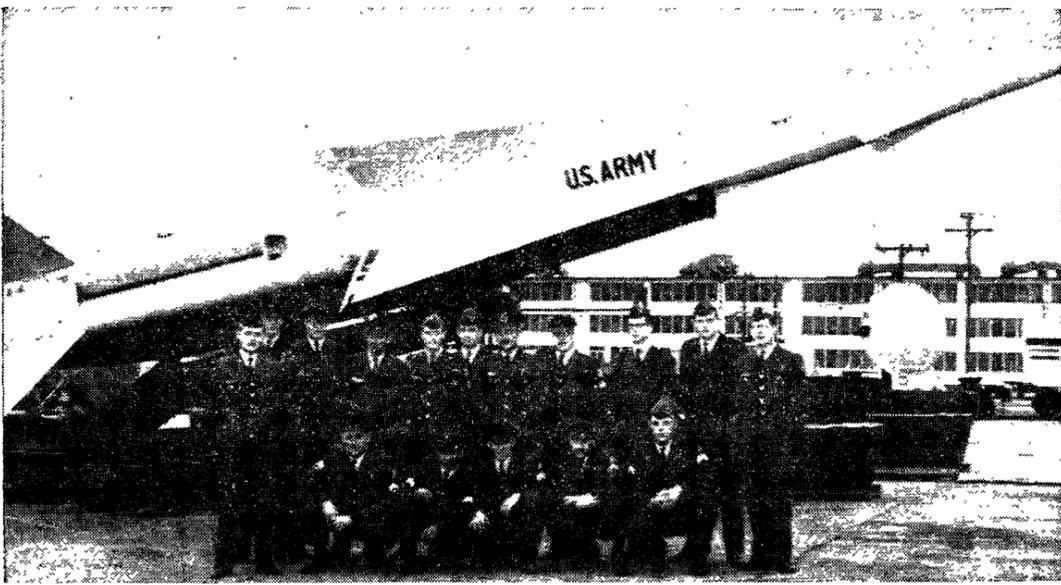
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NETHERLANDS NIKE MEN SPEED TO GERMANY—Fifteen officers and men of the Royal Netherlands Air Force received diplomas from the U. S. Army Ordnance Guided Missile School a day early last week to permit them to board a ship sailing from New York last weekend. Slated for duty with NATO forces, the graduates are posed here. The Netherlands Liaison Officer, Maj. Wilhelmus Dirksen, is standing in center.

Train, Truck Collide, Driver Killed

A truck driver lost his life in the first recorded collision of a diesel locomotive and a truck at Redstone Arsenal, the first highway fatality since Redstone and Huntsville Arsenals were merged. The accident occurred at the Martin Road Crossing, just east of Patton Road.

There were no other injuries. The driver, Vernon H. Crawford, 42, of Rt. 3, Athens, Alabama, was dead upon arrival at Redstone Arsenal Army Hospital. Military police said Mr. Crawford, operating a dump truck, was proceeding west on Martin Road with a load of dirt en route to a construction site.

Preliminary investigation indicated the train crew, composed of Army civilian employees, had observed all safety precautions. They had halted the locomotive on the south side of the crossing and had activated flashing signal lights and a warning bell at the crossing, in accordance with Arsenal safety regulations, before proceeding slowly through the crossing moving north. The truck collided with the right rear of the locomotive.

No skid marks were visible on the road.

MPs Receive Voting Award

Keep America strong — by voting. That is exactly what the men of the 291st Military Police Company did in the November 6th general election and have now received national recognition for their efforts.

The MP Company has been awarded the Army Voting Award by the Army Materiel Command under the signature of Lt. Gen. F. S. Besson, Commander. The special citation was awarded on the basis of 67% of the eligible men voting in the election.

Brig. Gen. William H. Harris who wrote the citation has this to say about the distinction: "The voting percentage which this unit achieved is evidence of the assistance and encouragement offered eligible military personnel and the interest generated among them. The reward is the satisfaction derived from so many eligible personnel exercising one of their fundamental rights—the right to vote by a free society.

The citation was read and presented to the personnel of the organization in a special company formation conducted by Capt. Farley D. Thompson, Commanding Officer.

Nearly seven million school children have the opportunity to purchase U. S. Savings Stamps and Bonds through the Treasury's School Savings program. Savings Stamps purchased annually amount to about 18 million dollars.

INCENTIVE AWARDS

Special Act or Service Awards:
C. W. Huskins, Chemist; Henry C. Allen, Chemist; Thomas H. Duerr, Aero Pwr Plnt Res Engr; Bernard J. Alley, Chemist, of the Directorate of R & D.

Outstanding Performance
William W. Stripling, Physical Scientist, Directorate of R&D; Dorothy L. Julich, Secretary, Land Combat Systems; Delmus E. Harbaugh, Elex Fire Control Sys

Inst & Repr Foreman, Maintenance Division; Bonnie P. Phillips, Secretary, Land Combat Systems; Cole W. Minnick, Program Mgt Specl, Directorate of Proc & Prod.

Sustained Superior Performance
Steven C. Likos, Msl R & D Engr, Directorate of R&D; Mary J. Rutledge, Secretary, Research Commodity Mgr's Ofc; Billy W. Hardin, Ref & A/C Mech, Post Engineer.

Awards and Decorations

Army Commendation Medals have been awarded the following:

Col. Cecil Hudson Fuller, Corps of Engineers, first Oak Leaf Cluster;

Lt. Col. Joseph C. Baer, Lt. Col.

Edward B. Detchemendy, Maj. Clarence W. Goldey, Maj. Richard W. Parker,

Capt. Chris Patte, First Lt. Robert E. Salter, CWO John L. Gester and Sgt/Maj. Henry J. Hingenitz.

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1962 VOLKSWAGEN
Sedan. Same as new. Radio, heater, 8,000 miles. Will take less than \$1595.00.

1954 FORD PICKUP
Truck. Will take less than \$395.

1956 CHEVROLET
Pickup Truck. Will take less than \$895.00.

1955 PONTIAC
CHIEFTAIN 2-dr. Hardtop has black and red finish. Like new. "Will take less" than \$695

1961 RAMBLER
CLASSIC Four-Door with standard shift and overdrive. Local one-owner car. "Will take less" than \$1395

1953 GMC
HALF TON PICKUP TRUCK. Local. Like a new one. "Will take less" than \$695

1954 CHEVROLET
BEL AIR Four-Door. It's like a new one and we'd call it the cleanest and sharpest in Huntsville. "Will take less" than \$695

1955 CHEVROLET
FOUR-DOOR sedan with V-8 engine, radio, heater and automatic shift. "Will take less" than \$695

1956 CHEVROLET
FOUR-DOOR sedan with brown and white finish, radio, heater and automatic drive. IT'S LIKE A NEW ONE. "Will take less" than \$895

1960 FALCON
FORDOR with low mileage, radio, heater and standard shift. Unusually good buy at this price. "Will take less" than \$1095

1957 OLDSMOBILE
Super '88' Four-Door. "Will take less" than \$595

1957 CHEVROLET
SPORT COUPE with V-8 engine, automatic shift and Power-Pak. Unusually fine car. "Will take less" than \$1095

1959 CHEVROLET
IMPALA Coupe with V-8 motor, and automatic drive and other extras. "Will take less" than \$1495

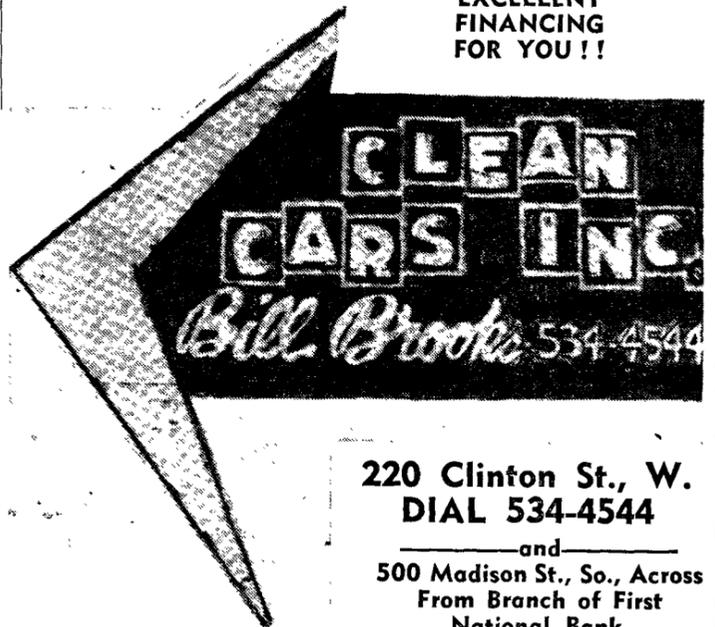
1959 PLYMOUTH
BELVEDERE Four - Door with "6" motor, automatic shift, radio, heater and it's a one-owner car with only 32,000 actual miles. White with red interior. "Will take less" than \$1095

1960 CHEVROLET
IMPALA COUPE. You can choose from among three of these fine cars. "Will take less" than \$1695 to \$1895

1959 BUICK
HARDTOP 2-door with radio, heater and automatic shift. We have reduced the price from \$1795. "Will take less" than \$1395

1959 FORD
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Col. Eldon J. Hoar Retires From Reserve

The United States Air Force announced, the retirement of Huntsville reservist Col. Eldon J. Hoar from the Air Force Reserve after more than 37 years active reserve service.

Col. Hoar first entered the military service as an enlisted member of the 45th Infantry Division (Oklahoma National Guard) in 1926. He was active in the enlisted reserve until commissioned in the U. S. Army Officer's Reserve in January 1933. His active duty, over a period of ten years, included service in World War II and pre-war duty in the South-eastern states, Utah and California.

At the close of World War II, Col. Hoar was awarded the Legion of Merit by Gen. Douglas MacArthur for his service as Air Inspector General of the United States Army Air Corps in the Southwest Pacific. During this period, from the establishment of the theatre combat forces in 1942 to the end of the war, Col. Hoar served on the staff of Gen. George C. Kenney, Commander of the Fifth Air Force and the Far East Air Force.

Col. Hoar's civilian interests have centered in publishing and management areas. These have included: publishership of the Southern Farmer, publisher of the Journal of Southern Commerce, owner and publisher of the Troy (Alabama) daily and weekly newspapers and publisher of the Oxford Eagle of Oxford, Mississippi.

As an avocation he has served as consultant and developer of better business practices for small business firms. He came to Redstone Arsenal in 1956, and is now employed as a Technical Operations Analyst in the Directorate of Supply and Maintenance.

Col. Hoar has actively partici-

pated in Boy Scout district and council activities, member of Rotary International, state and national officer position in the Reserve Officer's Association, served as a member of the President's White House Safety Committee, Chairman of Third Army Commander's advisory committee, committee member of the Redstone Credit Union, and as a member of the University of Mississippi's Department of Journalism

advisory committee.

Col. and Mrs. Hoar live at 1104 W. Cleermont Cr., S.E. They are the parents of Dr. Jere R. Hoar, on the faculty of the University of Mississippi, and John E. Hoar, a senior dental student at the University of Alabama.

During 1962, Americans bought more individual Series E Bonds than during any of the five preceding years. Total number sold was 86.5 million.



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Page 14 The Redstone Rocket — March 6, 1963

FOR SALE — One year old house. Calif. Redwood and white stone outside. 3 bedroom, ceramic tile bath, large living room, built in elec. kitchen with plenty of cabinets. Elec. heat. Carport and utility room and separate out building. Located on paved street with large lot in Falkville's new subdivision. City sewerage paid. Can be refinanced. Phone Falkville, Ala., 784-2905 after 5:30 P.M. or on weekends. tfe

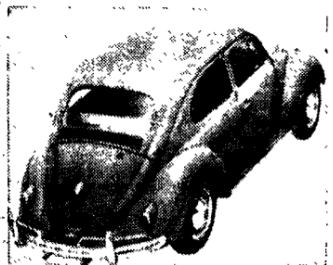
FOR SALE OR RENT — Modern 3 bedroom home with one acre of land 5 miles south of Florence on Highway 67. CLYDE CRAWFORD. Phone 536-3342. tfe

WANTED — Ride from Huntsville to Rohm & Haas which is located just inside Gate 3. Leave Huntsville around 3:30 p.m. and return 12:00 midnight. Call Percy Jones, Home — 539-5802; Work—Office 876-9811. 1tc

FOR SALE — Revere tape recorder. Good condition. \$75. See MRS. PEARL TEMPLETON, Morgan St., Hartselle. 1tp

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LOOK! — A new Auto Paint and Body Shop — But an old trade of business. Highway 36, Lacey's Spring, Alabama. C. H. Rigsby, phone 881-4229. 3-12p

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FOR SALE—ECONOMY STATION WAGONS — 1960 Borgward, low miles, new rubber, \$750.00. 1958 Opel, \$650.00. Call 876-2531 weekdays, 534-7110 evenings and Sundays. tfe

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FOR SALE — 1963 Renault Dauphine, 6,000 miles, same as new buy from original owner. Phone C. E. Shelton, 539-2751. 3-6c

FOR SALE: 1960 Super 88 Olds., excellent condition. Best offer. Call after 5 p.m. 539-3611. 1tc

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EXPERT — Major, small appliances and lawnmower repair, very reasonable service charge. Walter's Appliance Repair Shop, 630 Meridian St., phone 539-1141. tfe

PROFESSIONAL Teacher offers instruction in French, Italian, German, Spanish. Also, tutoring in Latin, Math., and other high school subjects. Translation of documents and foreign correspondence handled. Typewriter training. Arrangements for instruction at your home. Inquire at Apt. 3, 2nd floor, 425 West Clinton Ave. 1tc

FOR SALE — New brick home in Arab. Finished outside, wiring roughed in. Will rough in plumbing. You finish inside. 3 bedrooms, 1½ baths, kit-dining combination, carport, utility room, city water. Parts from 1952 Dodge. Motor, transmission, carburetor, starter, new rebuilt generator, real good seats, other parts. Call 876-0516 or 539-5880. 3-13p

ALBERTVILLE - RAINESVILLE HIGHWAY—3 mile from town. Beautiful 3 acre Ranchette with abundance of beautiful trees. Including 3 bedroom brick, almost like new, 1½ baths, wall to wall carpets in living room and bedroom, built-in oven and stove. Patio on back, enclosed garage port. If you enjoy country living with city conveniences see this home with a unique setting. Price, \$15,500. Can be financed with small down payment. FRED TAYLOR REAL ESTATE — PHONE 878-3061 — ALBERTVILLE, ALABAMA. 3-13c

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ON GUNTERSVILLE LAKE—For Rent Boat House, 2 housekeeping rooms with private bath for couple or gentlemen. House-trailer space available Feb. 1st, also cabin site for sale. Call 536-3113 or 534-1451. Write P. O. Box 473, Huntsville. tfe

CASH! FOR YOUR CAR — we need all makes and models. We will pay you more. We buy and sell imports, too. Texas Auto Sales, phone 536-6121. tfe

MODERN HEALTH Club Services — Central YMCA, 203 South Green St. is offering massages, turkish baths, electric heat cabinets, ultra-violet and infra-red lamps, diathermy sun lamp, swimming pool. Graduate massuer in charge. Phone 534-2444. tfe

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FOR RENT — 1 and 2 bedroom, modern, brick apartments on Barclay Ave., near arsenal. Phone 536-0775. tfe

HOME LOTS — In Trummel Addition in Hartselle. Spacious lots, some with trees, bargain prices. 773-7463. WM. E. SMITH. tfe

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FOR SALE — FORD '60 Fairlane 500, 4 dr. sedan, 6 cyl. engine, radio and heater. In excellent condition (35,000 miles) for \$1275. Going abroad. Call 876-0019 or 534-8621. 1tp

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1959 FORD GALAXIE Sport Cpe. Power, radio, heater. Bronze & white. \$1295.00	1956 CHEVY 2-DR. Radio, heater, stick shift. \$595.00	1958 PONTIAC Starchief Custom 4-Dr. H.T. Power. \$1295.00
1958 OLDS SUPER "88" A real nice car. \$1095.00	1959 OPEL 2-DR. S. S. A real nice car. \$595.00	1958 CHEVROLET 6 cyl., S.S., 4-Dr. \$695.00

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J. W. WIGGINS

J. W. WIGGINS NAMED THIOKOL VICE PRESIDENT

Bristol, Pa. — J. W. Crosby, President, Thiokol Chemical Corporation recently announced the appointment of J. W. Wiggins and E. F. Nauman as Vice Presidents. Wiggins is General Manager of Thiokol's Alpha Division; Nauman is General Manager of Thiokol's Wasatch Division in Utah.

Wiggins was also named Executive Director for Large Space Booster Programs and will retain the General Managership of the Alpha Division. He will be responsible for all large space booster rocket development for the Corporation. Thiokol recently announced construction plans for the Alpha Division's Space Booster Plant in Southeast Georgia.

Wiggins joined Thiokol's Redstone Division in 1951, becoming General Manager in 1959. In May, 1962, he was named General Manager of the Alpha Division with overall responsibility for the Huntsville Plant which operates facilities formerly operated by the Redstone Division, and for the newly established Space Booster Plant in Georgia.

A native of Tipton, Ind., he received his Mechanical Engineering degree from Purdue University. He is a member of the American Ordnance Association, the Air Force Association, the National Rocket Club, a director of the American Institute of Aeronautics and Astronautics, and a member of the Advisory Council of the Association of the United States Army.

He is a director of the Huntsville-Madison County Chamber of Commerce, a member of the Huntsville Industrial Expansion Committee, a past chairman of the TB Seal Campaign of the Madison County Tuberculosis Association, and a director of the United Givers Fund.

Mr. and Mrs. Wiggins and their three children live at 4110 Huntington Road SE, in Huntsville.

Births at Post Hospital

Michael Kenneth Gubert, 7 lbs., 3 1/2 ozs., Feb. 20, son of Sfc and Mrs. Kenneth N. Gubert.

Vincent Joseph Volturao, 6 lbs., 5 ozs., Feb. 21, son of Sp4 and Mrs. Vincent J. Volturao.

Danny Bernard Johnson, 6 lbs., 15 ozs., Feb. 21, son of Pfc and Mrs. Bernard A. Johnson.

Tracey Leigh Krauthem, 6 lbs., 13 ozs., Feb. 21, daughter of Pfc and Mrs. Thomas P. Krauthem.

Charles Lee Frisby, 7 lbs., 3 1/2 ozs., Feb. 23, son of Sp4 and Mrs. John E. Frisby.

Patrick Shawn Greeson, 6 lbs., 9 3/4 ozs., Feb. 24, son of Sp5 and Mrs. Phillip Gerald Greeson.

Charles Vaughn Meck Jr., 7 lbs., 4 1/4 ozs., Feb. 24, son of Pfc and Mrs. Charles V. Meck.

Jeffrey Todd Awwiller, 7 lbs., 12 3/4 ozs., Feb. 25, son of Pfc and Mrs. Larry E. Awwiller.

Carol Ann Rousseau, 6 lbs., 9 1/4 ozs., Feb. 25, daughter of Sp6 and Mrs. James Clements Rousseau, Jr.

Teri Leigh Massey, 8 lbs., 9 1/2 ozs., Feb. 26, daughter of 2/Lt. and Mrs. Robert H. Massey.

THREE CONTRACTS TOTAL 3 1/2 MILLION

The U. S. Army has announced the award of three contracts totaling \$3,436,778 to cover work on the Pershing and Sergeant missile systems.

The Hayes International Corp., Birmingham, Ala., received two awards, one amounting to \$1,500,000 for production of Pershing missile trainers, and a \$600,000 contract to provide engineering services for the trainers. The work will be done in the company's Birmingham plant.

A \$1,336,788 award went to the Sperry Utah Co., Salt Lake City, Utah, for engineering services for the Sergeant missile system.

The two-stage Pershing ballistic missile is being developed to replace the operational Redstone.

Sergeant is a reliable, rugged, accurate and mobile field artillery ballistic missile.

Both missile programs are di-

GEN. McMORROW IS CONVALESCING

Maj. Gen. Francis J. McMorrow is on convalescent leave at Redstone Arsenal following his release from the U. S. Army Hospital, it was announced by the Post Surgeon, Col. Harry C. McClain.

Gen. McMorrow is scheduled to return to duty as the Commanding General of the Army Missile Command about April 1.

ected from Project Managers' offices at the Army Missile Command, Redstone Arsenal, Ala.

The Birmingham Procurement District will administer the contracts for Pershing work, and the Los Angeles Procurement District the Sergeant contract.

Sales of small-denomination Series E Savings Bonds—bought mainly by payroll savers—were at a near-record level in 1962. \$50 Bonds set at peacetime record and \$25 Bonds a five-year record.



RETIREES—M/Sgt. Edward R. McGowan (center), retires as an Army major after more than 20 years of active service. Col. William J. Macpherson (left), commandant at the Ordnance Guided Missile School awarded him an Army Commendation Medal during the retirement ceremony at which Mrs. McGowan was present. M/Sgt. McGowan has been a Safety and Security NCO in the School's Department of Individual Training.

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