PROJECT 10073 RECORD CARD

1. DATE	2. LOCATION	12. CONCLUSIONS
29 Apr 62	Edwards AFB, Calif.	☐ Was Balloon ☐ Probably Balloon ☐ Possibly Balloon ☐ Was Aircraft ☐ Probably Aircraft ☐ Possibly Aircraft ☐ Was Astronomical ☐ Probably Astronomical ☐ Possibly Astronomical ☐ Other _____ ☒ Insufficient Data for Evaluation ☐ Unknown
3. DATE-TIME GROUP Local _____ GMT - - -	4. TYPE OF OBSERVATION ☐ Ground-Visual ☐ Ground-Radar ☒ Air-Visual ☐ Air-Intercept Radar	
5. PHOTOS ☒ Yes ☐ No	6. SOURCE Military	
7. LENGTH OF OBSERVATION - - -	8. NUMBER OF OBJECTS - - -	9. COURSE - - -

10. BRIEF SUMMARY OF SIGHTING

X-15 photos on movie film. Partial strip sent to FTD for analysis. Contact w/organization having the film promised info to be forwarded, however, this was not received by FTD.

Note: Film strip sent to Dr Hynek since no obj was depicted. To be used by him as illustration of high alt photography.

11. COMMENTS

Analysis of the strip that was received showed only the "chase plane" as an obj that might have been considered unidentified. Case considered as insufficient data until such time as the film is supplied for analysis.

ATIC FORM 329 (REV 26 SEP 52)

ATIC FORM 329 (REV 26 SEP 52)

DOCUMENT RECORD AND RECEIPT

FROM: *(Activity transferring document)*

1352 Photo Gp
Lookout Mt AFS
9935 Wonderland Ave.
Los Angeles 46, Calif.

DOCUMENT

DATE	PACKAGE NUMBER	CONTROL NUMBER	SUSPENSE DATE
5/17/62		#2-2357	
CLASSIFICATION	FILE DESIGNATION		
Unclassified			

TO:

Lt. Col. Robert Friend
Hq Foreign Technology Division
Wright-Patterson AFB, Ohio

DATE DISPATCHED: 5/17/62

INTERNAL ROUTING

TO	DATE	TO	DATE
1		4	
2		5	
3		6	

DESCRIPTION OF DOCUMENTS *(Indicate type [letter, indorsement, etc.] and the number of copies; subject, short title if classified; number of indorsements and inclosures; and any other identifying data. Changes in the description [Additions, withdrawals, etc.] will be shown with the date and initials of individual making entry.)*

Project 40-161 (2L-6452)
X-15 Lower Ventral #1-27-48 (UFO) 30 Apr 1962
1 ea 16mm color master print approx 50' - UNCLASSIFIED
/ / / / / / / / / / / / / / / /NOTHING FOLLOWS / / / / / / / / / / / / / / / /

For study and file for future reference use.

DOCUMENT RECEIPT

SENDER WILL INDICATE IF RECEIPT IS REQUIRED: [ ] NO [XX] YES *(If YES, recipient will detach top copy, complete, and return to sender.)*

RECEIVING OFFICE	TYPED OR PRINTED NAME, GRADE AND TITLE OF RECEIVER	SIGNATURE	DATE RECEIVED

AF FORM DEC. '59 310a

PREVIOUS EDITION OF THIS FORM WILL BE USED UNTIL STOCK IS EXHAUSTED.

TAB

A Twx Stating Release dtd 13 May

B Acquisition of Film

C Flying Saucer Review Article dtd 1 Aug

D Misc, News Articles

M

DEPARTMENT OF THE AIR FORCE
STAFF MESSAGE BRANCH
UNCLASSIFIED MESSAGE

INCOMING

AF IN : 27831 (13 May 62) R/ab

ACTION: SAFS-3 (4)

SMB A 037

PP RJEZHQ

DE RJEZHQ 829

ZNR

P 112215Z

FM NASA WEWTERN OPERATION S OFFICE SANTA MONICA CALIF

TO SAFOIS 3B MAJ ARLINGTON VA

NASA GRNC

BT

UNCLAS SGD STAN MILLER INFORMATION OFFICER NASA SANTA MONICA

RE YOUR MESSAGE TO IRON, FOR THE RECORD, STAN MILLER DID NOT

REPEAT DID NOT SHOW X-15 FLIGHT FILM. PILOT JOE WALKER SHOWED

FILM IN CONNECTION WITH PUBLIC PRESENATION ON X-15 PROGRAM

BT

12/1901 MAY RJEZHQ

M
OHR CALLING LA 2361 GA OK
LA 2361-G 0 OK
THIS IS SAFOI LA GA PLS

THIS IS HART DID YOU USE THAT DOD NUMBER 104 THAT WE GAVE YOU OR THE NASA FOOTAGE GA PLS
OIN
THE FOOTAGE ON THE X-15 SPOTS WAS NOT USED BY THE POOL HERE IN LOS ANGELES. THEY LOOKED AT THE FOOTAGE AND DECIDED AMONGST THEM THAT IT WAS NOT OF SUFFICIENT QUALITY FOR TV VIEWING. HOWEVER THEY DID SHI SHIP IT TO NEW YORK IN CASE THE NEW YORK POOL FELT DIFFERENTLY ABOUT IT. THEREFORE YOU SHOULD CHECK NEW YORK TO DETERMINE WHETHER THE FOOTAGE WAS USED BY THE POOL. GA
OK THX NOW CAN YOU GET ANOTHER PRINT OF THAT SAME FOOTAGE AND HAVE IT SENT TO OUR PROJECT BLUE BOOK OFFICE IN WRIGHT PAT THEY NEED IT FOR STUDY AND FILE FOR FUTURE REFERENCE GA PLS
YES LOOKOUT MOUNTAIN THE ORIGINAL AND IT WOULD BE BETTER IF WE SENT WRIGHT PAT THE COLOR PRINT RATHER THAN BLACK AND WHITE WHICH TV GOG GOT. IT MIGHT SHOW A LITTLE BIT MORE M. GA PLS
OK THEN ILL JUST CONTACT LMT AND WORK OUT A DEAL WITH THEM THNX AND ARL OUT
OUT HERE
LO3/4 MAYVT

Lt. Col. Robert Friend, Hqs Foreign Technology Division (TD-E)
AIR Force Systems Command, Wright Patterson, Ohio.

O
OPR CALLING LA 924 GA OK M
LA 924-G V OK 1352D LMAFS GA

SAFOI-3
WILL YOU PLEASE MAKE A COLOR PRINT OF THE FOOTAGE FROM THE
JOE WALKER FLIGHT IN THE X-15 USEING ONLY THOSE PORTIONS OF
THE FILM THAT SHOW THOSE UNUSUAL BLOBS AND SEND IT TO
LT COL ROBERT FRIEND HQS FOREIGN TECHNOLOGY DIVISION PAREN
TD-E PAREN AIR FORCE SYSTEMS COMMAND WRIGHT PATTERSON AFB OHIO
THIS IS NEEDED THERE FOR STUDY AND FILE FOR FUTURE REFERENCE USE
GA

END HERE
ARL OUTO

Charlie Brain

Television
DoD #104

SAFOI-3
IS MAJ MARK THERE PLS THIS IS SAFOI LA GA

MIN PLS

MAJOR MARKS WILL NOT BE IN THE OFFICE UNTIL 430 OUR TIME SO WOULD YOU PLS PASS THE MSG ON AND I WILL DELIVER TO HIS OFFICE SINCE NO ONE IS ABLE TO COME TO THE TELETYPE NOW
GA
OK
I AM SURE YOU ARE AWARE OF AP STRY XXXX STORY OUT OF SEATTLE IDXXX TODAY QUOTING JOE WALKER AS SAYING THAT ON HIS RECENT ALTITUDE TEST FLIGHT A REAR FACING CAMERA TOOK PHOTOS OF WHAT LOOKED LIKE FLYING SAUCER OBJECTS. THE FOOTAGE THAT HE REFERS TO IS BEING DELIVERED TO LOOKOUT MOUNTAIN TODAY AND NATURALLY ALL OF THE TV AND REELS ARE SCREAMING FOR IT. THIS IS NASA FOOTAGE, NOT AIR FORCE, HOWEVER, WE HAVE A STANDING AGREEMENT WITH NASA TO ACT AS THEIR RELEASING AGENT FOR THEIR X-15 FOOTAGE. WE NEED A DOD RELEASE NUMBER FOR THIS FOOTAGE. I DON,T KNOW WHETHER WE XXXXXX LOOKOUT CAN GET A REDUCTION PRINT OUT TODAY IN TIME FOR RELEASE TO THE POOL OR NOT AND I DON, T KNOW HOW MUCH FOOTAGE OR WHETHER IT IS IN B AND W BUT WILL LET YOU KNOW LATER WHEN WE GET ALL THE INFORMATION,

M
VQ2X C855ING LA 2361 GA OK TMIN PLS
M OK
SAFOI LA GA PLS

SAFOI-3
THIS IS HART RE THE JOE WALKER FOOTAGE NASA LOCALLY DISSAPOVES
RELEASE OF THE FOOTAGE NUMBER ONE THEY FEELTHE WALKER OVER
DRAMATIZED THE FOOTAGE TWO HE HAS THE REP OF BEING SOMEWHAT OF A
JOKESTER AND THREE THE NASA SCIENTISTS FEEL RATHER CERTAIN THAT WHAT
WAS SEEN ON THE FILM IS REALLY SOME EXUDATION FROM THE AUXILLARY
POWER PLANT YOU CAN CROSSCHECK WITH THE NASA MAN AT I BELIVE IT IS
SANTA MONICA BUT THE ABOVE IS WHAT WE ARE TOLD LOCALLY GA

OK. HOWEVER NASA HERE IN SANTA MONICA HAS ALREADY NOTIFID THE
TV OUTLETS THAT THEY WILL MAKE FOOTAGE AVAIL THRU OUR FACILITIES.
I AM GOING TO GO BACK TO NASA HERE AND TELL THEM TO GIVE PRESS
THIS INFORMATION YOU HAVE JUST GIVEN TO US SO THEY CAN BE THE ONES TO
TURN PRESS DOWN T XXX RATHER TAN US. GA PLS

HOLD ONE I BELIEVE WE OUGHT TO GET HOLD OF NASA HERE AGAIN AND RELAY
TO THEM WHAT YOU HAVE JUST TOLD ME SOUNDS LIKE MAYBE THEIR LEFT
HAND IS NOT COGNIZANT OF EHAT THE RIGHT IS DOING WE SHOULD GIVE
THEM A CHANCE TO GET STRAIGHT IN THEIR OWN HOUSE MAYBE WHEN THE
LO CALL JOES HEAR WHAT THEIR WEST COAST MAN HAS COMMITTED HIMSELF
TO THEY MIGHT CHANGE THEIR MIND TO PREVENT EMBARASSMENT ILL CALL
YOU BACK LATER GA OPLS

OK. THAT SOUNDS LIKE THE BEST APPROACH. IN FACT, THEIR OFFICE IN
WASHINGTON SHOULD NOTIFIY THEIR OFFICE HERE TO TAKE WHATEVER ACTION
THEY DEEM NECESSARY. WE ARE SIMPLY THEIR RELEASING AGENT AND
WE WILL DO WHATEVER THEY SAY. GA PLS

OK I AGREE AND JUST IN CASE THEY DECIDE TO GO AHEAD WITH IT
HERE IS A TEMPORARY RELEASE NO FR DOD 104 WILL CALL YU BK LTR
ARL END OUT
END
11 MAY 629 3/8

ENO
W29K CALLING LA 2361 GA
M MIN LS ARL OOK SRY FOR DELAY HAVING TOXXX TROUBLE
 REACHING LA OKO
LA 2361-G OK
SAFOI LA GA PLS

SAFOI-3
HART HERE ON THE NASA FOOTAGE AGAIN IT IS NOW OK TO GO AHEAD AND
RELEASE ON THE DOD 104 NUMBER WE GAVE YOU BEFORE HAVE COORDINATED
WITH STAN MILLER IN SANTA MONICA AND THE WASHINGTON OFFICE AS WELL
SEEMS THAT STAN HAS ALREADY SHOWN THE STUFF TO THE NEW BOYS AT
SEATTLE SO THERE WAS NO USE FOR WASH OFFICE TO HOLD UP FURTHER
PERHAPS YOU SHOULD CALL STAN AND LET HIM KNOW THAT ALL IS WELL
AND THE SKIES ARE BLUE AGAIN ALSO FOR MY SAKE PLS TRY TO GET HIM
TO PLAY THE STUFF DOWN WITH A CAPITAL DOW BECAUSE THIS WILL
TRIGGER OFF ALL THE FLYING SU SAUCER NUTS ON THE WEST COAST AND
WELL BE GETTING A WHOLE LOAD OF NUT LETTERS AGAIN GA
THIS IS MAJ "SPOTS" IEONS
IT IS TOO LATE TO CONTRL THE DEGREE OF COVERAGE FROM HERE. THE POOL
HAS ALREADY BEEN NOTIFIED AND I UNDERSTAND THAT CBS PLANS TO GO
WITH IT NATIONALLY TOMORROW AND ABC PLANS TO GO WEST COAST REGIONALLY.
ALSO WIRE PHOTOS WANT TO BLOW UP A SINGLE FRAME FOR AP AND UPI STILL
PHOTO RELEASE, SO UNDOUBTEDLY IT IS GOING TO GET NATIONAL COVERAGE.
THIS IS ALL BASED ON THE ASSUMPTION THAT THE FOOTAGE IS WORHTWHIL E
FOR NEW XXX NETWORK RELEASE. GA PLS

THERE IS ONLY ABOUT FOUR SECONDS OF STUD STUFF AT TWENTY FOUR FRAMES
PROJECTION YOU SEE IT WAS SHOT AT FOUR FRAMES SO THAT DID NOT GIVE
THEM MUCH TO PLAY WITH ANYHOW WE ARE NOT THINKING OR WORRYING ABOUT
THE FACT THE PIX GET RELEASED IT IS JUST THAT IF HE WILL PLAY THE
ANGLE OF THE FACT THAT THEIR SCIENTISTS BELIEVE THE STUFF TO BE
MATRIAL FROM THE X 15 AUXILLARY ENGINE IT WILL TAKE IT OUT OF THE
SAUCER FIELD PRETTY MUCH AND MIGHT NOT GIVE SO MUCH POSSIBLE
TROUBLE IN THAT NI NUTTY AREA GA PLS
MIN PLS MAJ IRONS ON PHONE

OK
THAT IS ALL FROM HERE
GA PLS
END ARL OUT

END
111 MAY 62
OV

SOURCE: Flying Saucer Review - Jul & Aug 62

X-15 PILOT SHOWS HIS FILM

How Joe Walker nearly broke the news

"I DON'T feel like speculating about them. All I know is what appeared on the film which was developed after the flight." These words were spoken by American X-15 pilot, Joe Walker, after his record breaking 50 miles flight above the earth.

Pilot Walker was lecturing to the Second National Conference on the Peaceful Uses of Space Research in Seattle, Washington, U.S.A. on May 11. He was referring to objects caught on his film camera and they appeared to be of a cylindrical or discoid shape. They numbered five or six and Walker admitted that this was the second occasion on which he had filmed UFOs in flight. The camera was mounted on the rear of his supersonic plane. The objects he said appeared as the plane reached the apex of its flight and began heading back for the earth. It was impossible to measure the size or distance of the objects from the camera.

This news item appeared in the London *Daily Telegraph* and the *Daily Mail* on May 12, but in a severely truncated form. No indication appeared that this might be the most sensational of all the flying saucer stories. The Paris *Le Matin*, however, on May 13, added the highly significant detail that Joe Walker had also admitted that it was one of his appointed tasks to detect these unidentified flying objects. This newspaper further added that Walker himself did not remember seeing the objects when they were being recorded on his film. The *New York Herald Tribune* on May 12 added the information that, to illustrate his lecture, Joe Walker had shown his audience photographic slides taken from his film and that he had mentioned that the objects appeared to be moving toward the horizon. They were longitudinal in shape and were bright against a dark sky. Even then, the sensational aspect of this story was not made apparent to the readers of the newspaper quoted above.

Pilot Joseph Albert Walker, aged 41, has been employed by the National Aeronautics and Space Administration as a test pilot since 1945. (NASA was then called the National Advisory Committee for Aeronautics). He took over the supersonic X15 on March 25, 1960. The previous test pilot was Scott Crossfield, employed by the plane's manufacturers, the North American Aviation Company. The significance of this information, taken from the American *Time* magazine for May 11, is that Walker is employed by a U.S. Government Department. The National Aeronautics and Space Administration is also closely connected with the U.S. Air Force.

Here, at last, appeared to be confirmation not only that UFOs exist but that they were known to exist before the films were taken. Further, here appeared to be proof that a Government Department was looking for evidence and that it had obtained what it was looking for. How the United States Air Force could reconcile its denials of the existence of flying saucers* with Joe Walker's films and his admission that he was instructed to collect the evidence of them was, of course, a matter of great interest.

None of the newspapers carried the full story and one or two even managed to confuse the objects which Walker filmed with the "fireflies" reported by Glenn. The FLYING SAUCER REVIEW's investigations showed quite clearly that the objects, whatever they were, were dissimilar. The review brought to the attention of the newspapers the significance of the report and several readers also wrote to the various editors. At this stage it became clear that the editors had missed the importance of the story because they had become conditioned by the ridicule they had poured on the subject for a whole decade.

The FLYING SAUCER REVIEW then cabled the National Aeronautics and Space Administration Headquarters in California asking for further information and copies of the stills from the film taken by Joe Walker's camera. The following cabled reply was received on May 22:

"OBJECTS RECENTLY REPORTED BY NASA PILOT JOE WALKER HAVE NOW BEEN IDENTIFIED AS ICE FLAKING OFF X-15 AIRCRAFT. ANALYSIS OF ADDITIONAL FILM FROM CAMERAS MOUNTED ON TOP THE X-15 LED TO IDENTIFICATION

* For full details of this release, see page 11 of this issue.

OF THE PREVIOUSLY UNIDENTIFIABLE OBJECTS. ICE FORMS ON THE X 15 AFTER IT IS FUELED WITH LIQUID OXYGEN. NO STILL PHOTOS ARE AVAILABLE. LYNN MANLEY PUBLIC INFORMATION OFFICER NASA FLIGHT RESEARCH CENTER EDWARDS, CALIFORNIA."

The contents of this cable must have been simultaneously released to the press. On May 24 the *Daily Telegraph* carried the story of the explanation on its back page with a Washington dateline. Another mystery of the skies seemed to have been buried.

Not all the readers of the *Daily Telegraph* were satisfied with the "explanation." Mr. Charles Gibbs-Smith telephoned the paper and on May 24 the Peterborough column carried the following: "Explanations of objects in space are becoming even more extravagant than belief in flying saucers, it was suggested to me yesterday by Mr. Charles Gibbs-Smith, Keeper of Extension Services at the Victoria and Albert Museum. This was *a propos* of the report that an American rocket aircraft had identified some strange objects as flakes of ice. 'For the love of Mike!' he exclaimed. 'What would they get on the lens at that speed and nearness?'"

This is the point at issue. The implausibility of the explanation. Surely heat and not cold would be the problem at that height and speed. After all, it was intense heat that was at one time blamed for the fireflies which Glenn reported. It should also be noted that when the plane was at the top of its arc its fuel would be exhausted.

The cable received from NASA is very carefully worded. To cover Joe Walker's indiscretion in admitting that it was part of his task to get evidence of UFOs it is suggested that his second mission was intended to explain the mystery of his first. What is also significant is the fact that the stills are now not available. They were apparently shown in public and it would seem that they had caught discoid or cylindrical objects and Joe Walker's audience (and Joe Walker himself) must have been satisfied that they could not have been flakes of ice. It would be interesting to hear from members of the audience what they think of the explanation.

The inescapable conclusion would appear to be that NASA, if they had originally granted permission to Joe Walker to release stills from the film, were unaware that the United States Air Force would object. The cat was out of the bag, however, and higher authority intervened to put

(Continued on page 13)

X-15 PILOT SHOWS HIS FILM

(Continued from page 4)

it back again. The expert explainers were set to work and, in all the circumstances, it must be admitted that they did an excellent job: the newspapers printed the "explanation" without comment and their readers were either satisfied, dissatisfied or indifferent, according to taste.

It is disappointing to learn that the United States is prepared to carry its "explanations" into outer space. It had been hoped that as the UFOs at such heights could not be regarded as intruders over the home territory their existence could be admitted. If UFO bases were to be found on the Moon, would the taxpayers who made the discovery possible be allowed to know the truth?

D

Air Force Systems C
NEWSREV

AUGUST 1962

Forging Military Spacepower

Record X-15 Flight Brings White Ne

Earns AFSC Major First Astronaut Wings In Comd And 2nd 'Primus' Honor

When Maj. Robert M. White, famed X-15 pilot, pushed his tiny rocket powered research craft to an altitude of 314,750 feet July 17, he scored more aerospace firsts than the casual observer would probably notice.

His more obvious accomplishments included becoming the first man to qualify as an astronaut in a winged aircraft and becoming the first Air Force Systems Command member to wear astronaut wings.

To earn the name and the wings of an astronaut, Major White had to reach an altitude of 50 miles. He bettered this mark by 9.6 miles in a flight which lasted only 11 minutes after the X-15 was released from the B-52 mother aircraft.

The historic flight shattered an earlier X-15 altitude record jointly held by Major White and National Aeronautics and Space Administration test pilot Joe Walker. That record was in the neighborhood of 250,000 feet.

As Major White figuratively gave the X-15's 57,000 pounds of thrust a kick in the pants, he nosed the craft upward in the sharpest angle of climb yet attempted in the X-15 program. The liquid fueled rocket engine burned 71 seconds and a maximum speed of 3,784 mph was attained at an altitude of 156,000 feet.

Last month's flight had been originally programmed for 282,000 feet with a maximum speed of 3,500 mph. The flight as planned would have reached an altitude of 53.4 miles, more than enough for the award of astronaut wings.

Shortly after the flight, Major White was flown to Washington, D. C. where he was presented astronaut wings by Air Force Chief of Staff Gen. Curtis E. LeMay in a Pentagon ceremony on July 18. Mrs. White was present for the occasion and pinned on the major's new wings.

On the same day, President Kennedy presented the major and three other X-15 pilots, Scott Crossfield, Joe Walker, and Navy Comdr. Forrest Peterson, the coveted Collier Trophy for contributions to aviation through X-15 flights.

During the time of peak excitement

(Continued on page 4)



Major Robert M. White is met on Rogers Dry Lake by his seven-year-old son, Gregory altitude record for winged craft. The famed X-15 pilot, a charter member of the A soared to an altitude of almost 60 miles in a recent flight. The accomplishment earne becoming the first man to earn astronaut wings in a completely pilot controlled vehi

Air Force Systems Command

NEWSREVIEW

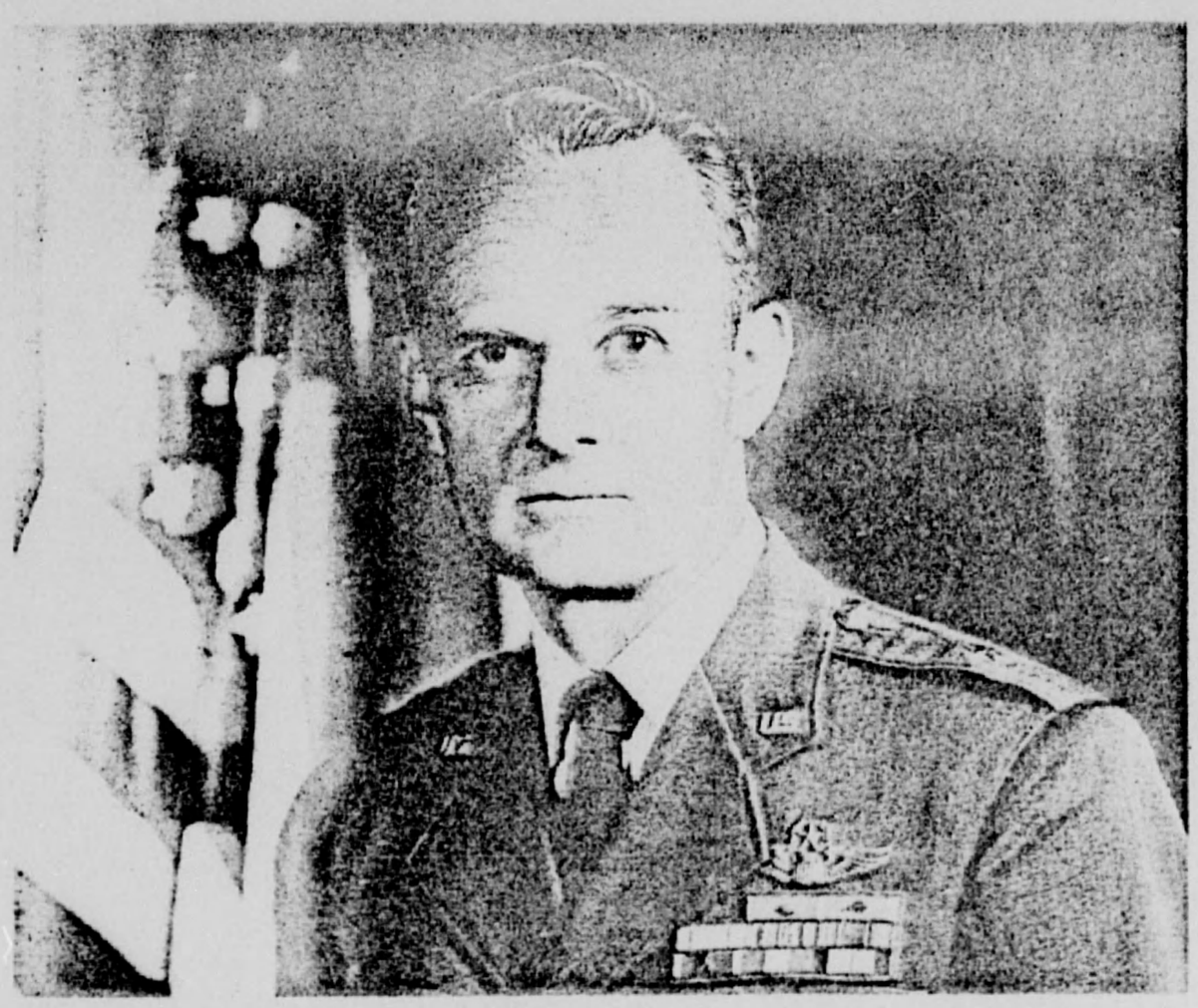
Forging Military Spacepower

Vol. 6, No. 8

5 Flight Brings White New Laurels



Major Robert M. White is met on Rogers Dry Lake by his seven-year-old son, Gregory, after the historic flight to an altitude record for winged craft. The famed X-15 pilot, a charter member of the AFSC Aerospace Primus Club, soared to an altitude of almost 60 miles in a recent flight. The accomplishment earned the major the distinction of becoming the first man to earn astronaut wings in a completely pilot controlled vehicle.



Effects Of Nuclear Weapons

One of the reasons for this year's series of US atmospheric nuclear tests, as President Kennedy said last March, was to advance our knowledge of nuclear weapon effects.

This knowledge is extremely important to the Air Force Systems Command because our weapon systems must operate effectively in a nuclear environment and they must be effective against enemy weapon systems.

A clear understanding of nuclear effects is necessary to solutions of problems related to survival of the retaliatory force's hardened missile and communications sites, to destruction of enemy re-entry vehicles, and to hardening of our re-entry vehicles against enemy AICBM systems.

When the moratorium on nuclear testing began in 1958, it was, of course, necessary to redirect the Air Force Special Weapons Center's nuclear effects research program. Faced with urgent requirements for effects data, the Special Weapons Center had, where possible, to find ways other than by actual testing, to provide the needed information.

The Center made significant progress in finding new sources of effects data during the moratorium years. A great many theoretical investigations were conducted with the aid of high speed digital computers. Laboratory simulation techniques were developed as a relatively inexpensive means of studying certain effects.

Literally hundreds of experiments, which could be considered as small scale effects tests, have been conducted at the Center. The experiments all have been non-nuclear and have taken place under controlled laboratory conditions. Many more will take place in the months to come as we begin operations in our new nuclear warfare research laboratory.

Nuclear effects research has had and will continue to have an impact throughout AFSC. As President Kennedy said:

"We are spending great sums of money on radar to alert our defense and to develop possible anti-missile systems . . . on the communications which enable our command and control centers to direct a response . . . on hardening our missile sites . . . shielding our missiles and warheads from defensive action and providing them with electronic guidance systems to find their targets.

"But we cannot be certain how much of this preparation will turn out to be useless; blacked out, paralyzed or destroyed by the complex effects of nuclear explosions."

Along with full scale tests like those conducted in the Pacific this year, Special Weapons Center theoretical work and laboratory effects simulation will help provide the certainty the Air Force must have that its weapons and equipment will be able to survive and operate in the environment of a nuclear detonation, whether on earth or in space.

Brig. Gen. John W. White
Commander, AFSWC

A ★ F ★
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AUGUST, 1962

The AFSC NEWSREVIEW is an official Class IV Air Force newspaper, published monthly by and for personnel of the Air Force Systems Command. Opinions expressed herein do not necessarily represent those of the Air Force. Information contained in the AFSC NEWSREVIEW may be reproduced provided proper credit is given the source. Official USAF photos unless otherwise indicated.

Gen.
Maj.
Col.
Maj.
Chie
SSgt.
Marg

Contents

Patrick AFB Solves Holiday Road Haz
They stay at home and like it

Man's 'Pressurability' Tested .....
How well will he withstand spac

Preparing Atlas Boosters For Manned
Air Force experts leave nothing

Aerospace Education Conference Hel
Base-community venture to fulfi

Second Bionics Symposium Slated ..
ASD and Dayton, Ohio will be l

War College Associate Courses Called
Being established on nation-wide

Grooming Pilots For Leading Space I
Curriculum and philosophy shap

BSD Officer Earns Doctorate .....
A 20-year educational haul pays

Bootstrapper Enrolled In Advanced R
One of 22 pursuing graduate stu

ECMR Man Awarded Top Scouting
Wins 'Silver Beaver' for long, ou

Operations 6
Management 8
AFSC Briefs .....
AFSC Observer .....

Hq AFSC, Andrews AFB, Washin

AFSC Deputy Commander
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Los Angeles 45, Calif.

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Aerospace Medical Division,
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Research and Technology Division
Bolling AFB, Wash. 25, D. C.

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Patrick AFB, Fla.

Air P
Eglin
AF S
Kirkl
Arno
Arno
AF M
Hollr
Rome
Griffi
AF F
Edwa
Easte
Olms
Cent
Wrig
West
Mira
Arme
Agen
Arlin

U.S. Air Force—Aerospace



r Weapons

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be effective against enemy

cts is necessary to solutions
retaliatory force's hardened
struction of enemy re-entry
ntry vehicles against enemy

sting began in 1958, it was,
Air Force Special Weapons
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n by actual testing, to pro-

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years. A great many theo-
with the aid of high speed
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means of studying certain

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mand and control centers
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t of a nuclear detonation,

Gen. John W. White
nder, AFSWC

A ★ F ★ S ★ C newsreview

AUGUST, 1962 **Volume 6, No. 8**

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Col. Richard K. Jacobson, Director of Information, AFSC

Maj. Edward C. Tarbutton, Chief, Internal Information Division

SSgt. George E. Fleming, Editor

Margaret C. English, Associate Editor

Contents

Patrick AFB Solves Holiday Road Hazard Problem 5
They stay at home and like it

Man's 'Pressurability' Tested 6
How well will he withstand space flight?

Preparing Atlas Boosters For Manned Space Shots 7
Air Force experts leave nothing to chance

Aerospace Education Conference Held 7
Base-community venture to fulfill tomorrow's needs

Second Bionics Symposium Slated 8
ASD and Dayton, Ohio will be hosts

War College Associate Courses Called Success 10
Being established on nation-wide scale

Grooming Pilots For Leading Space Roles 11
Curriculum and philosophy shaped by the future

BSD Officer Earns Doctorate 12
A 20-year educational haul pays off

Bootstrapper Enrolled In Advanced R&D Class 13
One of 22 pursuing graduate studies at Eglin

ECMR Man Awarded Top Scouting Prize 14
Wins 'Silver Beaver' for long, outstanding service

Operations ..... 6 | AFSC Briefs ..... 9 | Accent On People 12
Management ..... 8 | AFSC Observer ..... 11 | Social Side 16

Hq AFSC, Andrews AFB, Washington 25, D. C.

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Aeronautical Systems Division,
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Research and Technology Division
Bolling AFB, Wash. 25, D. C.

AF Missile Test Center,
Patrick AFB, Fla.

Air Proving Ground Center,
Eglin AFB, Fla.

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Kirkland AFB, N.M.

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Wright-Patterson AFB, Ohio

Western Contract Management Region
Mira Loma AF Station, Calif.

Armed Services Technical Information
Agency, Arlington Hall Station,
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U.S. Air Force—Aerospace Power For Peace

Building Best Enlisted Leadership Is Role of Senior NCO Academy

Since 1955, more than 4,000 noncommissioned officers have graduated from the Air Force Systems Command's Senior NCO Academy at Kirtland AFB in Albuquerque, N. M.

Academic and military training are combined at the academy in a hard-hitting program designed to equip noncommissioned leaders to handle their Air Force responsibilities at a time in history when demands on leadership, moral responsibility and military know-how are the greatest of all time.

More than seven years ago, the Air Force recognized the need for further professional training for NCOs. Such training long had been available to commissioned officers through such Air University programs as the Squadron Officers School, Air Command and Staff School, and the Air War College. But for NCOs, there was little opportunity beyond basic training to receive advanced instruction in military leadership skills.

With the dawn of the ballistic missile and space age already breaking, it was apparent that the Air Force was going to need the very best NCOs with the very best training.

Headquarters USAF authorized academy training for NCOs, with the scope and nature of courses to be determined by major commands. In late 1954, the commander of what then was the Air Research and Development Command authorized establishment of a Senior NCO Academy for the science, engineering and testing arm of the Air Force. Kirtland was selected as the academy site because of the base's central location and availability of adequate dormitory and classroom facilities.

The first class of 62 master sergeants entered training in January, 1955. They were the first of more than 4,000 men who have come, not only from the Systems Command, but from the Air Force Academy, Air Defense Command, Headquarters Command, Continental Air Command, Air Force Communications Service and even the Army.

Today the academy graduates eight classes, or 600 men, a year. Courses are six weeks long.

Basic concept of the academy is that the noncom needs professional skill, not only in technical fields but in leadership. He must have a strong sense of moral responsibility, pride in the service, and concern for the welfare of his colleagues and subordinates.

Six weeks at the academy are no vacation. There's hard work and lots of it. A military atmosphere prevails throughout the course. Academy instructors say this is vital to stimulate adaptation of proper military rules of conduct after graduation. Emphasis is placed on correct military dress, appearance and bearing. There is instruction in drill and ceremonies, Air Force customs, courtesies and protocol.

Academic objectives are achieved through instruction in effective oral and written expression, problem solving, conference leadership, training, principles and techniques of leadership, supervision, military management, human relations, USAF and Systems Command history and organization, world affairs, and collective security.

The work's hard at the academy, but the living's good. Students enjoy the best possible accommodations. Quarters are in a modern two story, air conditioned building. Two men share a room equipped with steel wall lockers, study desk, lamp, chairs, two chests of drawers, and three-quarter width beds with innerspring mattresses.

Automatic washing machines, driers, irons, ironing boards, tape recorders and typewriters are available for student use. A library containing books and periodicals covering all subjects taught at the academy is located in the dormitory, along with a student workroom.

Physical fitness is an important part of academy life. Each student is expected to participate in the sports program which consists of volleyball, horseshoes and softball. Swimming is optional in the summer months.

A major theme at the academy is competition. Competition between the three student flights is carried out in sports, inspections, parades, reviews and in academic areas, and is topped off at the end of each six-week course at the graduation banquet, when awards and honors are announced.

Best flight is designated the honor flight. Its achievement is engraved on a plaque permanently displayed in the dayroom.

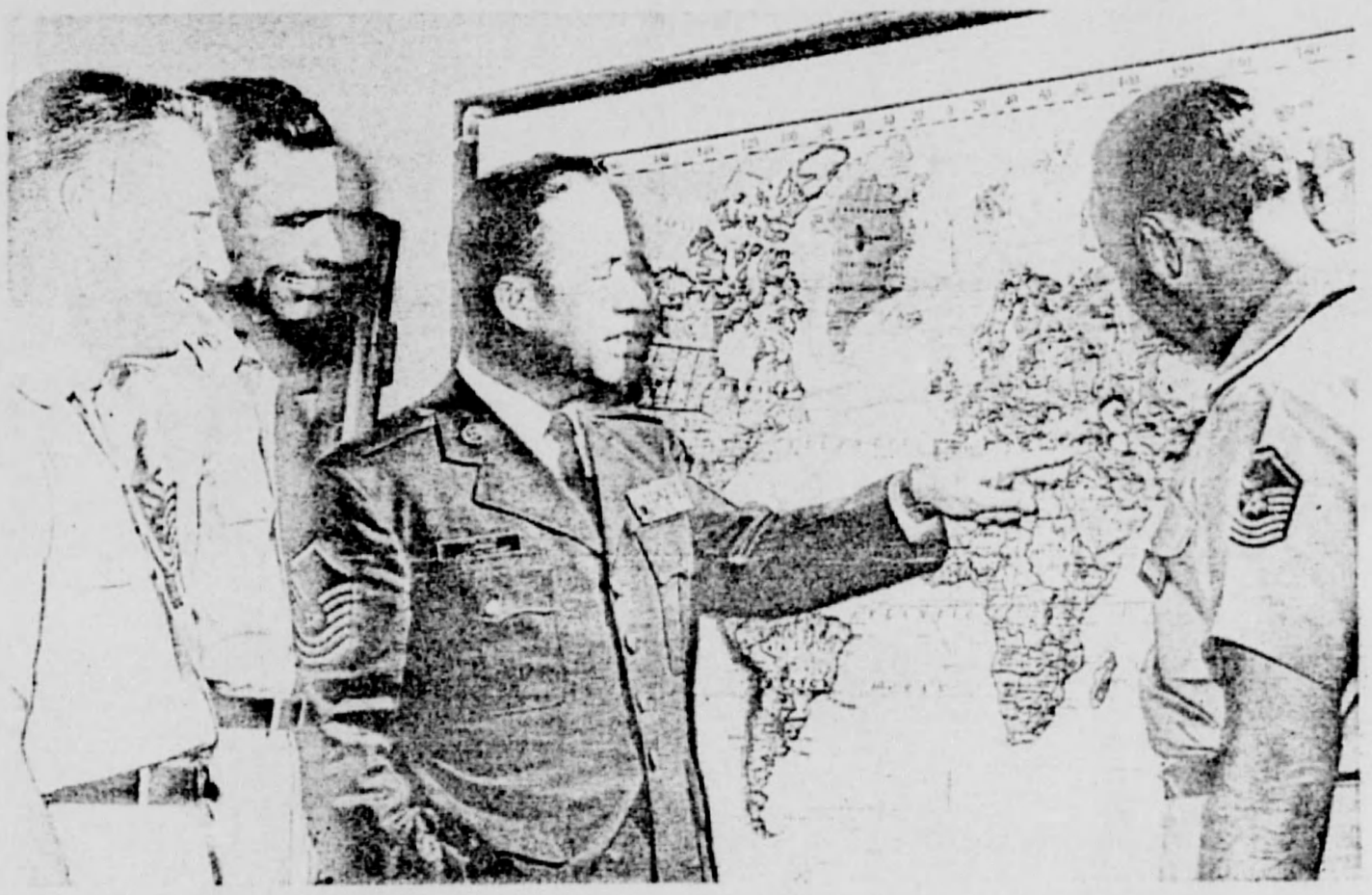
Individual awards are the Honor Graduate Award, presented on the basis of academic grades and military merit; the Academic Award, presented to the student other than the honor graduate with the highest average in academic subjects alone; and the Commandant's Award for the student, other than the honor graduate and academic award winner, who achieves the highest level of military merit and demonstrated leadership qualities.

Other outstanding graduates receive achievement certificates. Each graduate receives a distinctive diploma, symbol of achievement through diligent individual application to a demanding course of study.

A student's work day begins at 5:15 in the morning. Until five in the evening, he is busy with drill, academic instruction and sports. Evening study hours are from 6:30 to 9:30. Students have to be in quarters at 11:30 each night except Saturdays and evenings preceding academy recognized holidays. Saturday begins at 5:15, but students normally are free from duty by noon. Sunday is the day off.

The academy is staffed by two officers, 15 noncommissioned officer instructors, and five airmen who work in supply, administration and in the audio visual program, and two civilian secretaries.

Commandant is Lt. Col. John S. Albright, who holds a BS degree from the University of Maryland, and MA degrees from Maryland and Denver Uni-



Pointing out a trouble spot during a world affairs class is SMSgt. Joseph H. Corbin. Students are (from left) TSgt. Johnny C. Schultz, Air Proving Ground Center; MSgt. Jakey H. Woodard, Air Force Missile Development Center; and SMSgt. Howard J. McElderry, APGC.



It isn't all work. On the afternoon coffee br TSgt. Danny L. Meador of Rockport AFS of DCAS (second from right), talk things ov Lt. Col. John S. Albright (center) and SMS director of training.

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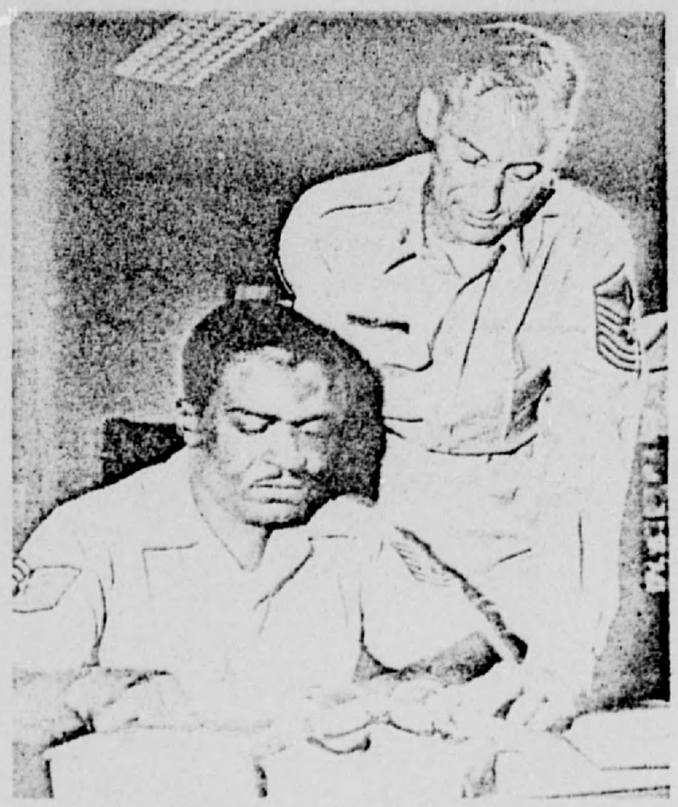

Academy instructors give personal attention to the problems of students. Here SMSgt. John A. Lott, military training instructor, explains a point to TSgt. John H. Green of Oklahoma City AF Station.

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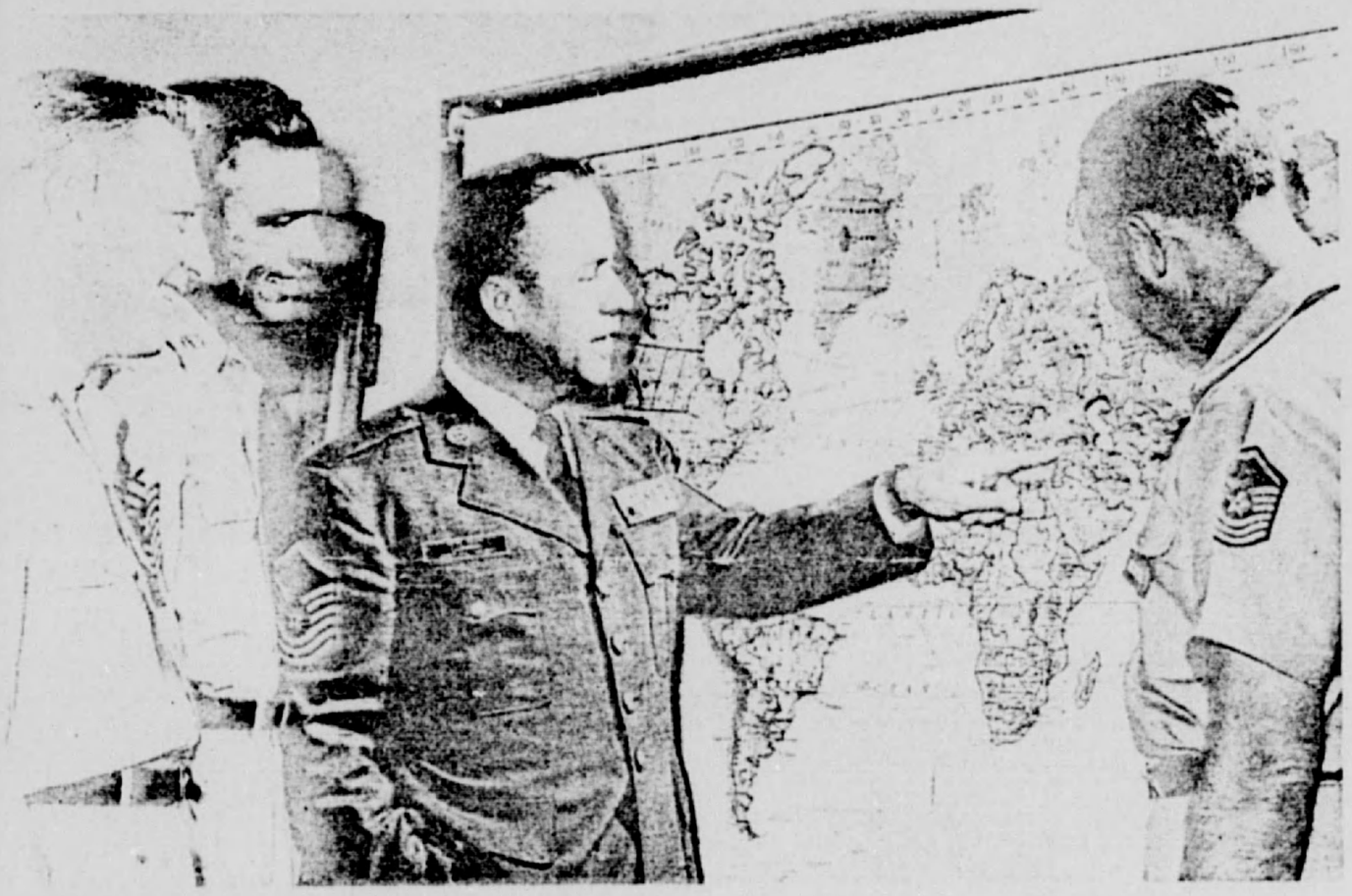
Instructors are among the finest in the Air Force. The majority are graduates of the Air University's Academic Instructor School. More than half have completed the Communist Strategy Course conducted by the State Department's Foreign Service Institute.

Superior performance of academy graduates since 1955 in their Air Force jobs is proof positive that the school has been successful in carrying out its mission. That mission is to:

"Provide the noncommissioned officer with an understanding of his responsibilities and to instill in him a desire to fulfill his leadership and supervisory role."

Hundreds of favorable comments have been received over the years from commanders, officers and supervisors in the field. There is no question but that the academy's course improves leadership qualities and makes a major contribution toward keeping the Air Force the world's most effective military organization.



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It isn't all work. On the afternoon coffee break in the staff-student lounge, TSgt. Danny L. Meador of Rockport AFS (left) and SSgt. Jack E. Cook of DCAS (second from right), talk things over with Academy Commandant Lt. Col. John S. Albright (center) and SMSgt. Gerard A. Julien, academy director of training.

(Continued from page 1)

over the more glamorous and spectacular news, the exclusive AFSC Aerospace Primus Club quietly announced another significant first for Major White. He had become the first man twice honored by that organization. The announcement received little notice.

A charter member of Aeorospace Primus, Major White was selected for membership on the basis of an altitude record he set with the X-15 on August 12, 1960. He reached an altitude of 136,500 feet, less than half of his recent record.

Known as the most exclusive club on earth, the Aerospace Primus Club was established Aug. 26, 1960 by Gen. B. A. Schriever, AFSC commander. There were 13 charter members. In the two years of its existence, only five new members have been added.

Objectives of the club—stated in its charter—are to promote original accomplishment in the discovery, development, testing and use of techniques and equipment in furtherance of the aerospace program and to honor first individuals to attain or participate in aerospace accomplishments deemed to be of historic significance.

Membership in the club is restricted to military and civilian members of the Air Force who have accomplished significant aerospace firsts. A special Primus Club board, made up of top military and civilian officials at Hq. AFSC, meets as required to nominate new members. All nominations are submitted to the AFSC commander for approval.

Charter members of the Primus Club were recognized for three spectacular aerospace accomplishments during the period of Aug. 9-19, 1960. Speaking of that brief period, General Schriever said, "We have achieved more important aerospace firsts than at any time in history."

The period began with the successful launch of Discoverer XIII into orbit from Vandenberg AFB, Calif. The following day, the Discoverer XIII capsule became the first object in history to be recovered from orbit. On the same day, there were three successful Bomarc launches.

On Aug. 12, Major White set a new altitude record in the X-15 and an Air Force developed Thor boosted the NASA communications balloon, Echo, into orbit.

On August 16, Capt. Joseph W. Kittinger, Jr., performed a record breaking parachute jump for which he received his second Distinguished Flying Cross. The next day, a Bomarc missile sought out and destroyed a QB-47 drone aircraft.

The period of unprecedented success reached a climax on Aug. 19 when Capt. Harold E. Mitchell's C-119 crew made the first successful aerial catch of an object returning from space, the Discoverer XIV capsule.

In addition to Major White, the people closely associated with the space capsule aerial recovery and Captain Kittinger were selected as charter members of the Aerospace Primus Club.

General Schriever personally praised the individuals singled out and presented them with inscribed plaques on Aug. 26, 1960.

The feat which brought Primus Club membership to Captain Kittinger started with a first step that was followed by a 102,800 foot descent to earth. Stepping from the open gondola of a balloon high above the New Mexico desert, the plucky captain free-fell 85,300 feet before his parachute opened. During the free-fall period, 4 minutes 38 seconds, he reached a speed of 614 mph.

Captain Kittinger received his first DFC in 1957 when he rose to an altitude of 96,000 feet in an enclosed balloon gondola. His 1960 parachute descent shattered a jump and free-fall record he had established in November 1959. For that accomplishment, he was awarded the 1959 Harmon Trophy.

The much publicized aerial catch of the XIV capsule earned C-119 aircraft commander Captain Mitchell and his entire crew Primus Club honors. Colonel Alvan N. Moore, 6594th Test Wing commander, also became a charter member of the club for his part in directing aerial recovery operations.

Members of Captain Mitchell's "Pelican Nine" crew included Capt. Richmond A. Apaka, co-pilot; Lt. Robert G. Counts, navigator; TSgt. Louis F. Bannick SSgt. Alagaene Harmon, SSgt. Arthur P. Hurst, SSgt. Wendell King,



Captain Joseph Kittinger starts the longest first step ever recorded, 102,800 feet. The captain's record breaking parachute descent earned him charter membership in the Aerospace Primus Club.

A1C George W. Donahou, A2C Lester L. Beale and A2C Daniel R. Hill.

Catch of the Discoverer capsule—ejected over Alaska on the satellite's 17th Polar orbit—was accomplished at an altitude of 8,500 feet. Captain Mitchell sighted the capsule parachute dead ahead of his aircraft at an altitude of about 16,000 feet.

A total of about 10 minutes were available to make the catch within the limits of the aircraft's operational altitude. The first attempt missed by a heart breaking six inches.

A second attempt, hastily executed, missed by as much as two or three feet. But, the third time was a charm and luckily so. Two decks of scattered clouds at about 7,000 feet could have made a fourth pass impractical.

Four of the remaining five Primus Club members were presented membership plaques as recently as June of this year. They were recognized by General Schriever in ceremonies at the Aerospace Medical Division, headquartered at Brooks AFB, Tex.

Three of the new members honored at AMD, TSgt. Lenote M. Vigare and SSgts. William V. Vargas and Ray E. McClure, are members of Air Rescue Service. They were selected for club membership on the basis of being the first pararescue scuba team to recover a space capsule.

Shortly after the Discoverer XXV capsule plummeted into the Pacific Ocean, on June 18, 1961 the three ARS scuba divers parachuted to it from an SC-54 Rescuemaster. Reaching the capsule, they lifted it into a doughnut-shaped life raft and prepared to spend a long night of capsule-sitting.

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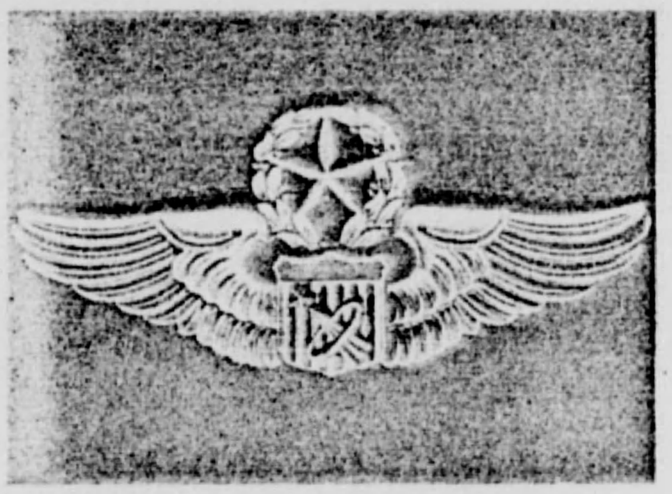
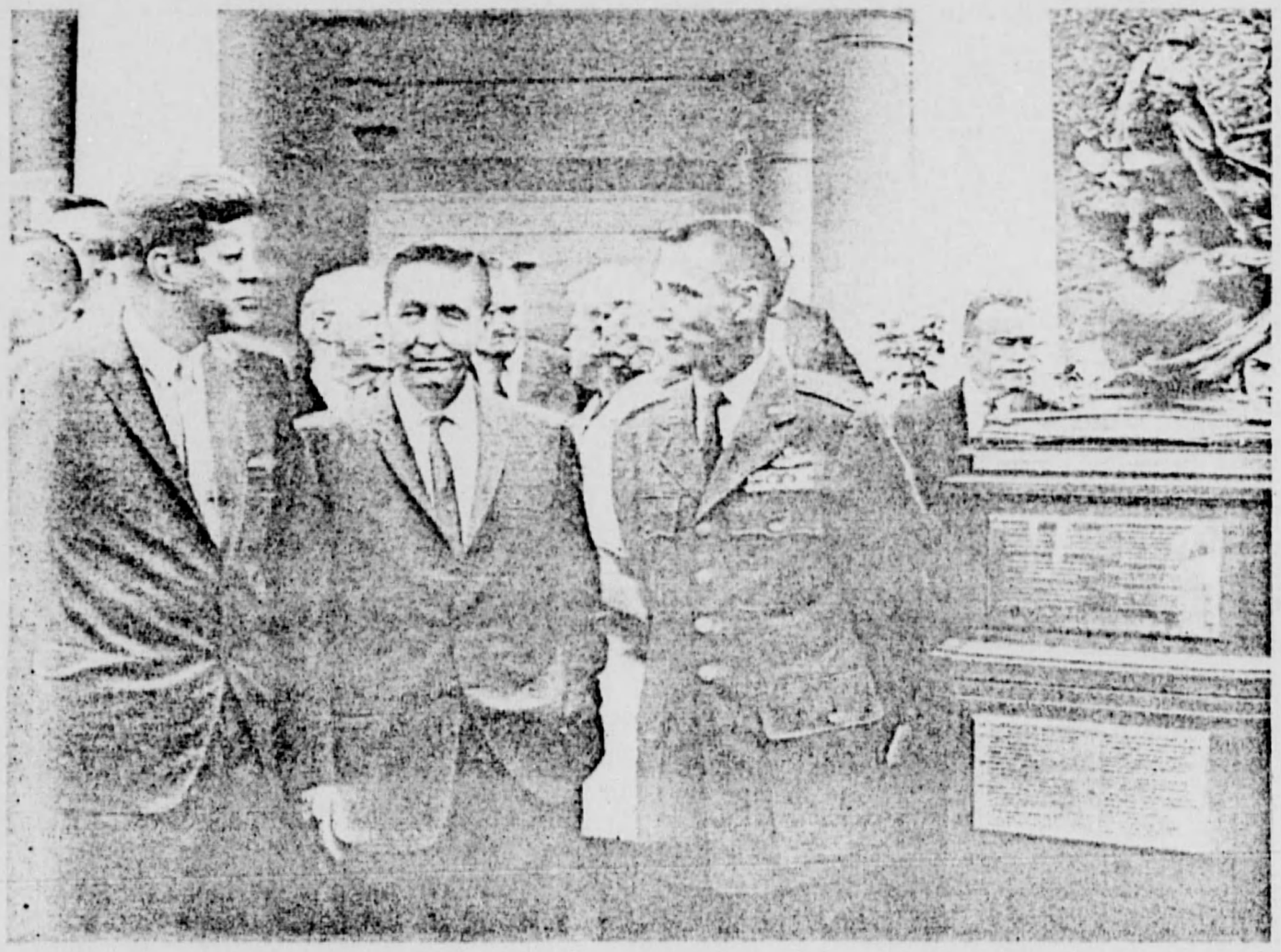


Astronaut wings represent flight at altitudes of 50 miles or more. Major Robert M. White became the fifth man to receive such wings in Pentagon conducted ceremonies.



President John F. Kennedy (left) poses with North American test pilot Scott Crossfield and AFSC's Maj. Robert M. White beside the Collier Trophy which is awarded annually for outstanding contributions to aviation. Navy Comdr. Forrest Peterson and NASA's Joe Walker (not shown) were also joint recipients. All four recipients are X-15 pilots.

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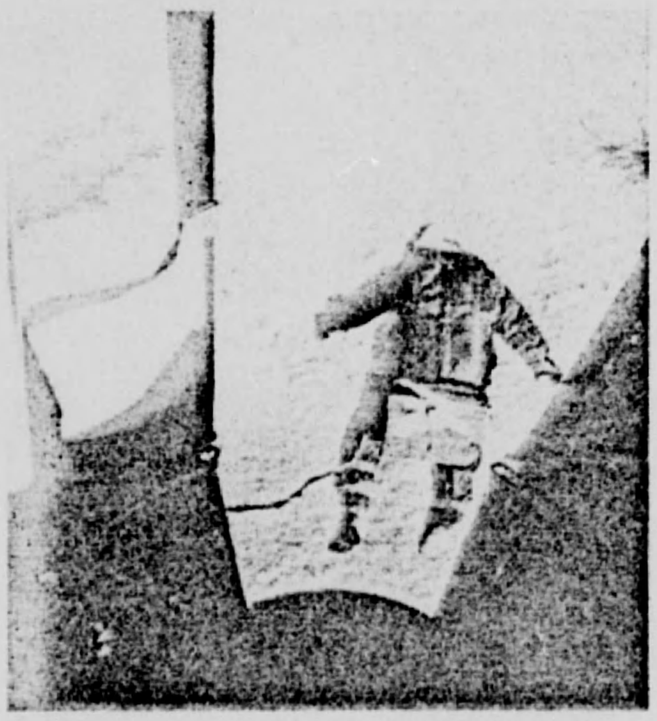

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In addition to their later selection for Primus Club membership, the three sergeants received Air Medals and the warm congratulations of Gen. Emmett O'Donnell Jr., CIC Pacific Air Forces, and Brig. Gen. Joseph A. Cunningham, Air Rescue Service commander.



Major and Mrs. Robert M. White and Air Force Chief of Staff Gen. Curtis E. LeMay chat informally after the astronaut wing pinning ceremony.

Also recognized at AMD ceremonies, TSgt. James A. Howell was the only command member among those recently selected. General Schriever presented Sergeant Howell's club plaque at an AFSC Commanders Conference which was being conducted at AMD.

Sergeant Howell made a seat ejection from an F-106 aircraft flying at an altitude of 22,000 feet and at a speed of 535 mph on June 6, 1961. He was the first Air Force member to perform this operation. In addition to Primus Club recognition the feat earned him a DFC.

The fifth and final man of those recently selected for Primus Club membership, Air Force Capt. Virgil I. Grissom of NASA's astronaut team, has not yet been presented the distinctive club plaque.

Captain Grissom became the first Air Force member to accomplish suborbital space flight on July 21, 1961. In a Project Mercury flight boosted by a Redstone rocket, Captain Grissom reached a top speed in excess of 5,000 mph and an altitude that nudged 117 miles. His flight lasted 16 minutes.

The suborbital flight down AFSC's Atlantic Missile Range qualified Captain Grissom for the first pair of astronaut wings awarded to an Air Force member.

Astronaut wings recently awarded to Major White were the second ones awarded to an Air Force member. To date, five pairs of astronaut wings have been awarded. Major White's wings represent a first for AFSC and for the Aerospace Primus Club.



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Parарescue scuba divers (from left) SSgt. William V. Vargas, TSgt. Lenote M. Vigare and SSgt. Ray E. McClure don wet suits and scuba gear shortly before parachuting into the Pacific to retrieve Discoverer XXV.

Patrick AFB Solves Problem Of Holiday Road Hazards

Each year during Labor Day weekend a staggering number of Americans become accident fatalities as they hurry about to have one last summer fling.

Whether it's a trip to the beach for swimming or fishing, or a visit to relatives several hundred miles away, most families use the highways to some extent during the weekend.

The increased traffic, fatigued drivers who try to travel too far and the holiday spirit all add up to a deadly weekend. Statistics prove the statement.

Last year concerned officials at Air Force Missile Test Center came up with a plan to give assigned personnel an opportunity to really celebrate the long weekend without risking the dangers of extensive travel.

A Labor Day sports festival was conducted with competitions in fishing, ping-pong, tennis, horseshoes, swimming, diving, pram racing, bowling, golf, baseball, softball, and yes, even pie eating.

According to Col. Henry Dittman, Patrick AFB commander, the program could only be classified as an outstanding success. More than 5,500 participated in the wide range of events.

During the long weekend, not a single traffic accident involving AFMTC personnel was reported and there were no injuries of any type.



One of the Labor Day weekend highlights was the "Junior Miss Beauty Contest." Eileen Cassidy, daughter of SMSgt. Paul C. Cassidy, took top honors in that event.



A water skiing show featured some of the b by both young and old spectators. Making (from left) Jack Rowland, SSgt. Ed Daly, Penny Witt and Mary Pat Eschenbach.



A father-son golf tournament held the interest Ready to tee off are (from left) Lt. Col. P. S. J. M. Dunn and son, Mick; TSgt. R. J. Bro J. T. Holley and son, Jim.



One of the most enjoyed events—by spectat eating contest. Captain W. S. Herrington, ju the top three contestants. They are (from l Hafer, second; and Douglas Grant, third.

Rocket Club Announces Annual Essay Competition

The National Rocket Club has announced it is sponsoring an annual national essay competition on the historical development of rocketry and astronautics. The competition is called the Dr. Robert H. Goddard Historical Essay Competition, in honor of the famous American rocket pioneer.

The essay competition is the first project of the National Rocket Club's Committee for the History of Rocketry and Astronautics and, according to the committee, is the only literary competition devoted to historical affairs in the field of rockets and their applications. Members of the committee will serve as judges for the contest.

Submitted essays may treat with any significant aspect of the historical development of rocketry and astronautics, and will be judged on originality and scholarship. They may bring new information to light, or may cast a new or different light upon events or individuals influencing rocket technology in the U.S.

The Rocket Club said essays should be submitted by Nov. 1, 1962, to the "Goddard Historical Essay Competition," National Rocket Club, Suite 32, 1745 K Street, N.W., Washington 6, D. C. Winner of the competition will be announced at the Robert H. Goddard Memorial Dinner on March 15, 1963, and a prize of $200 and an appropriate trophy will be awarded.

Graduation Time

Commencement exercises for the 1962 class of residents and interns at the USAF Hospital at Lackland AFB was held in the hospital auditorium recently.

The class, consisting of 35 residents, 12 dental interns and 34 medical interns, was the largest to complete training at the Lackland hospital since its inception as the Air Force's first teaching hospital in 1957.

AFMTC Donates Surplus To Florida Schools

More than a million dollars worth of electronic and related electrical equipment was recently donated to Florida educational institutions by the Air Force Missile Test Center.

Schools, colleges and universities from all parts of the state benefited from the $1,163,000 worth of surplus property, most of which is earmarked for classroom and laboratory work.

Under a program directed by the Department of Health, Education and Welfare, some Federal surplus property may be acquired by certain institutions for educational use. When such property becomes available state agencies are notified.

The Surplus Property Division of the Florida Development Commission coordinated with AFMTC's redistribution and marketing section to obtain the huge donation at Patrick AFB.

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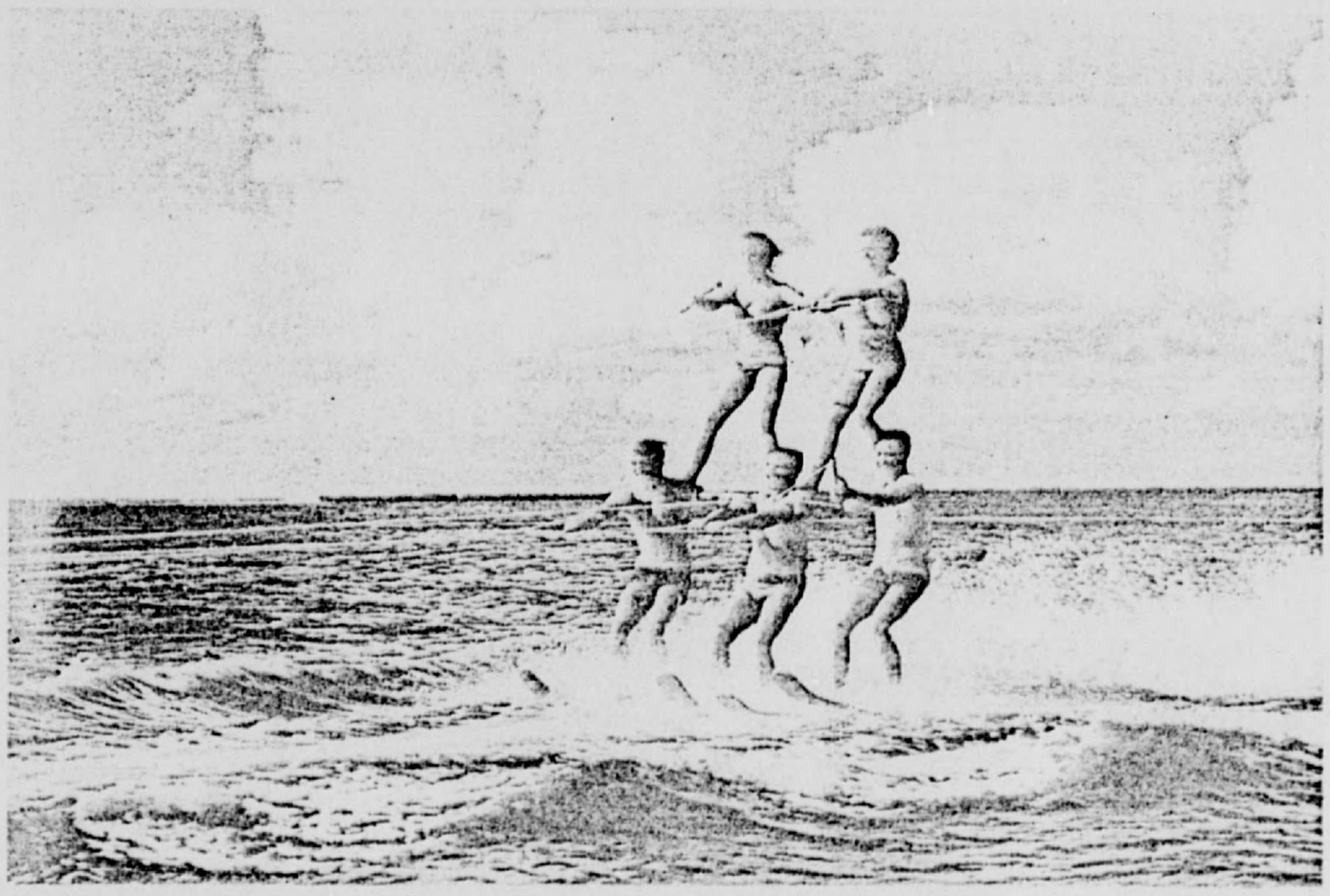
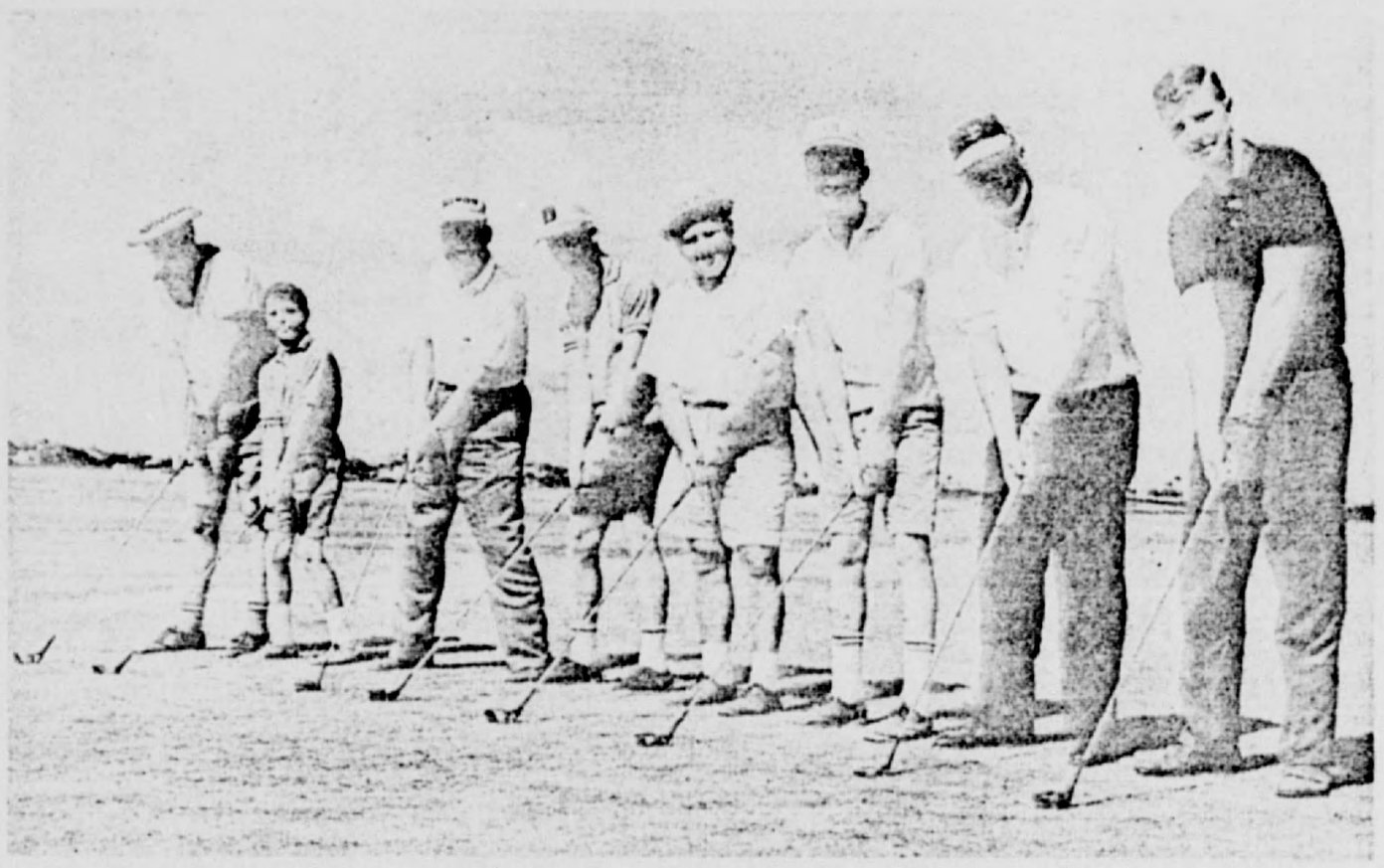


A water skiing show featured some of the base's top talent and was enjoyed by both young and old spectators. Making up the base of the pyramid are (from left) Jack Rowland, SSgt. Ed Daly, and Jeff North. At top are Penny Witt and Mary Pat Eschenbach.



A father-son golf tournament held the interest of many players and spectators. Ready to tee off are (from left) Lt. Col. P. S. Flannagan and son, Billy; Maj. J. M. Dunn and son, Mick; TSgt. R. J. Brodman and Bob Forter; Lt. Col. J. T. Holley and son, Jim.



One of the most enjoyed events—by spectators and participants—was a pie eating contest. Captain W. S. Herrington, judge for the contest poses with the top three contestants. They are (from left) Judy Mahle, first; Thomas Hafer, second; and Douglas Grant, third.

Man's 'Pressurability' Tested In Sealed Capsule Experiments

What is the optimum atmospheric composition and pressure for a variety of space flight mission profiles?

That question and others concerning man's respiratory intake and emission are under careful study in an environmental test cell in the Respiration Section of the 6570th Aerospace Medical Research Laboratories at Wright-Patterson Air Force Base.

The cell is a fabric structure built for AMRL by Goodyear Aircraft Corporation. Seven feet in diameter and 12 feet long, it is enclosed in a large pressure chamber which simulates various reduced atmospheric pressures. The 850-pound cell was constructed under a contract with the Air Force agency.

Tests, in which one or two men are placed in the cell to undergo extensive metabolic and respiratory studies, last from two weeks to a month.

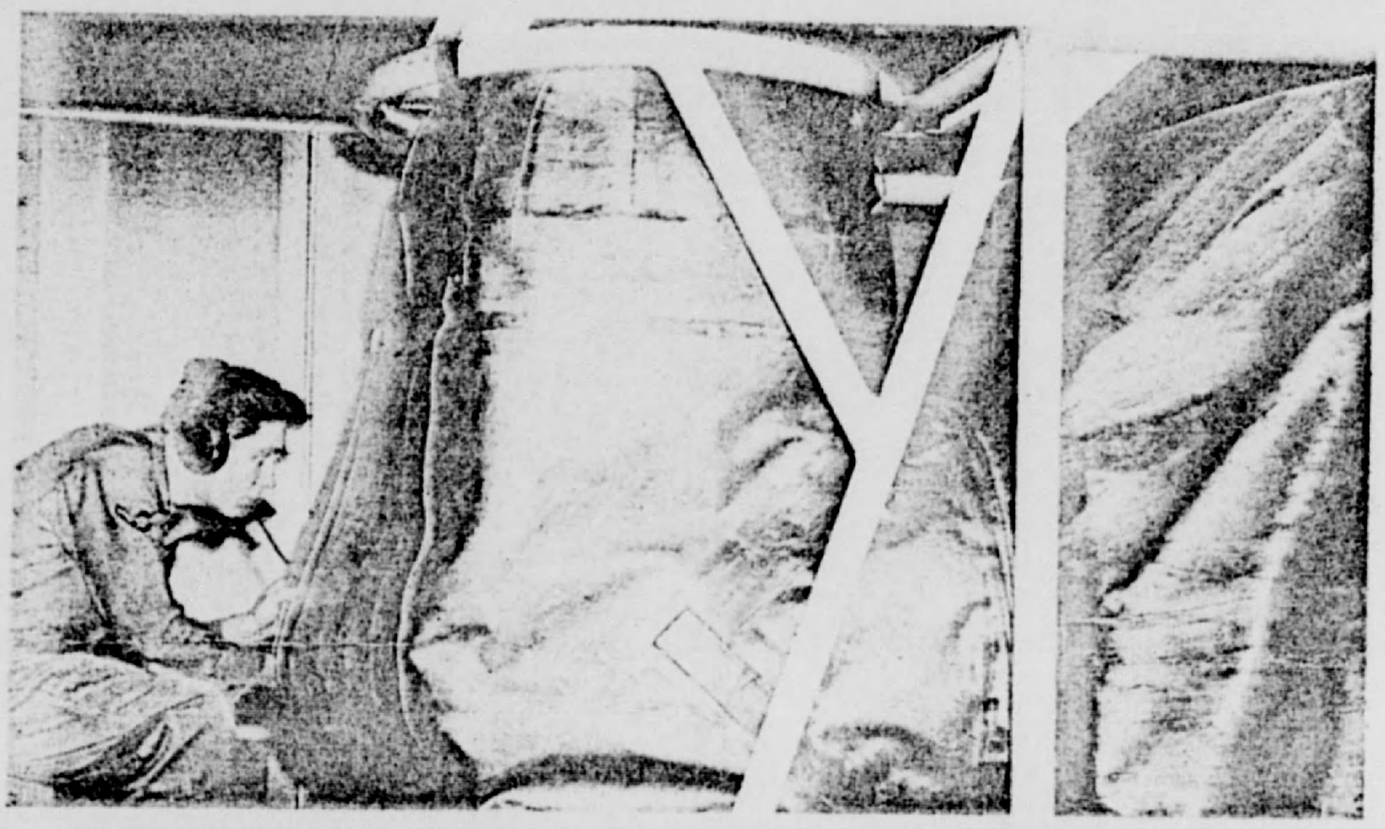
Scientists are seeking to learn the optimum gaseous atmosphere necessary to keep astronauts and equipment operating efficiently and reliably during Project Apollo and other space missions, AMRL said. Prime areas of study deal with the possible variation of the gaseous environment with respect to the length of the trip or to effect a reduction in system complexity with subsequent improvement of reliability.

During testing, both chambers are pressurized to prescribed points. The test cell differs only one-half pound of pressure per square inch from the chamber pressure, but could withstand differentials up to five psi, Goodyear Aircraft engineers said.

A 36-inch window in one end of the cell is used from without and within. The window is used by scientists to study reactions of the test subject and by those inside to watch television.

Because of the composition of certain test atmospheres, a television set cannot be installed inside the cell, but is wheeled up to the window when the test subjects wish to watch it.

Fabricated at GAC's plant in Arizona, the cell was designed and assembled at the main plant in Akron, Ohio.



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Technical Sergeant Robert Daniels of the respiration section, Aerospace Medical Research Laboratories, takes his own blood pressure while undergoing atmospheric and pressure experiments inside a space environment test cell. Air Force subjects are sealed inside the cell for periods ranging from two weeks to one month. The project is intended to provide scientists with information on the maximum atmospheric and pressure conditions a man could withstand during space flight.

AF Academy To Get Basic Research Lab

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The new laboratory will serve a dual purpose. It will increase in-service capability to conduct necessary basic research programs and will provide a means for selected members of the Academy's faculty and outstanding cadets to collaborate with OAR scientists in actual research programs of interest to the Air Force.

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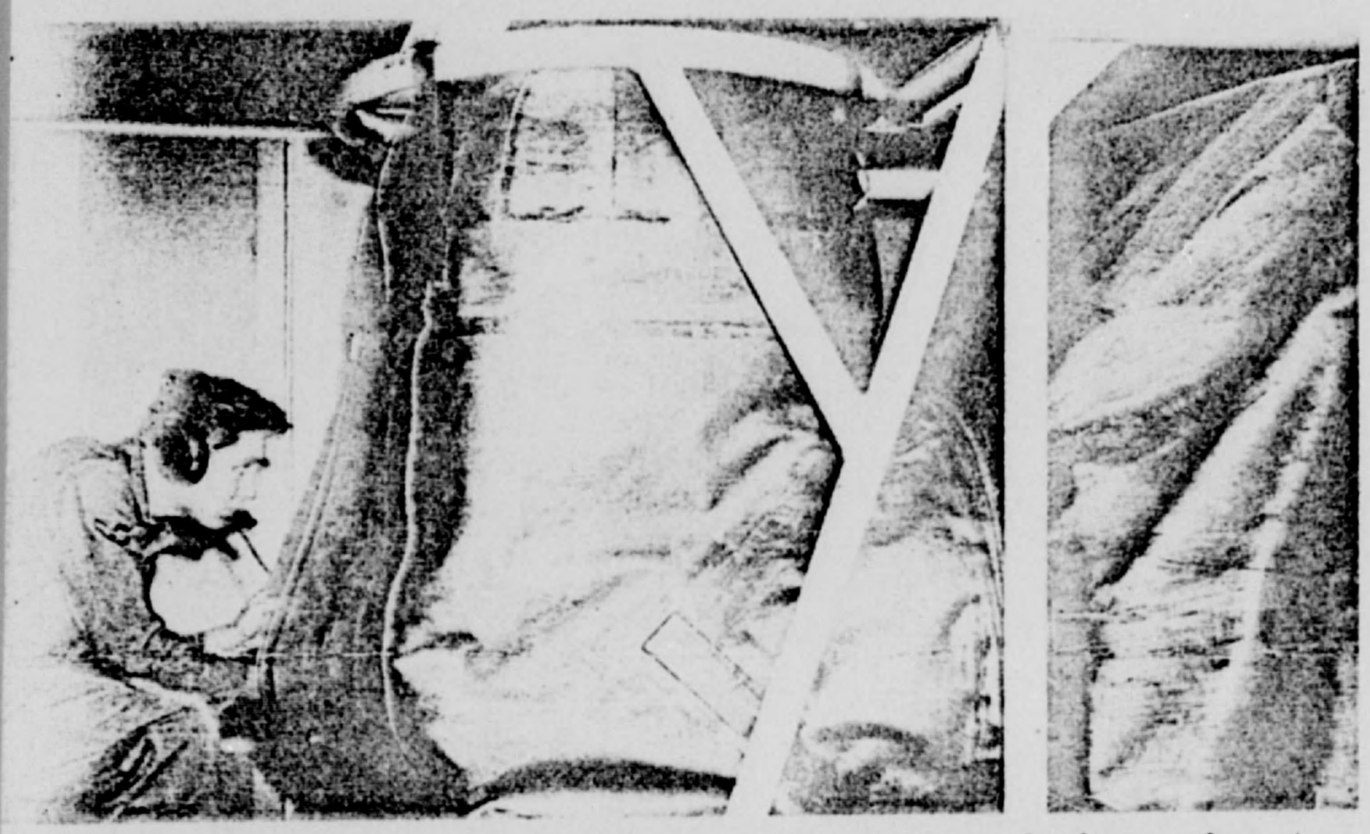

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A trans-horizon radio propagation phenomena that has puzzled radio engineers has finally been explained, thanks to the research of Lt. Richard P. Cassam, assigned with Rome Air Development Center at Griffiss AFB, N. Y.

Explanation of the phenomena resulted from a paper presented by Lieutenant Cassam at the spring meeting of the International Scientific Radio Union, held at Georgetown University, Washington, D. C. Attended by world leaders in the radio field, the scientific meeting was sponsored by the United States National Committee of the International Scientific Radio Union and the Institute of Radio Engineers.

Lieutenant Cassam, a project officer in RADC's Electronic Warfare Laboratory, presented a paper titled "An Investigation of Anomalous Trans-horizon Radiowave Propagation Over Irregular Terrain."

His paper covered investigation of the highly irregular trans-horizon radio propagation phenomena which was observed for the past two years during tropospheric scatter experiments held at Cornell University, Ithaca, N. Y.

None of the theories previously proposed to explain anomalous propagation—or irregular extending of radio energy waves—were able to explain this particular phenomena. Additional research and experiments were necessary, therefore, to solve this perplexity.

The necessary research, under sponsorship of the Air Force Cambridge Research Laboratory at Bedford, Mass., was undertaken by Lieutenant Cassam while working on his master of science degree at Cornell University.

Cancer Detection Seen As By-Product Of Research In Human Speech

A diagnostic technique which may well lead to the effective detection of early stages of cancer of the vocal cords has evolved from a recently completed Air Force Cambridge Research Laboratories pilot study involving research into the anatomy of human speech.

While not a replacement for a physician's internal throat examination, the procedure may serve as a screening test for pathological conditions involving growths of the larynx.

A patient would merely record his voice, using an ordinary microphone, reading standard phrases. Analysis of the speech wave form, by techniques developed by AFCRL scientist Philip Lieberman, would turn up certain characteristic patterns. Abnormal features would sound the alarm in this medical early warning system.

Tests were made which involved tape-recorded voices of 32 speakers selected with the cooperation of Dr. Ralph M. Caulk of the Washington Hospital Center, Washington, D. C.

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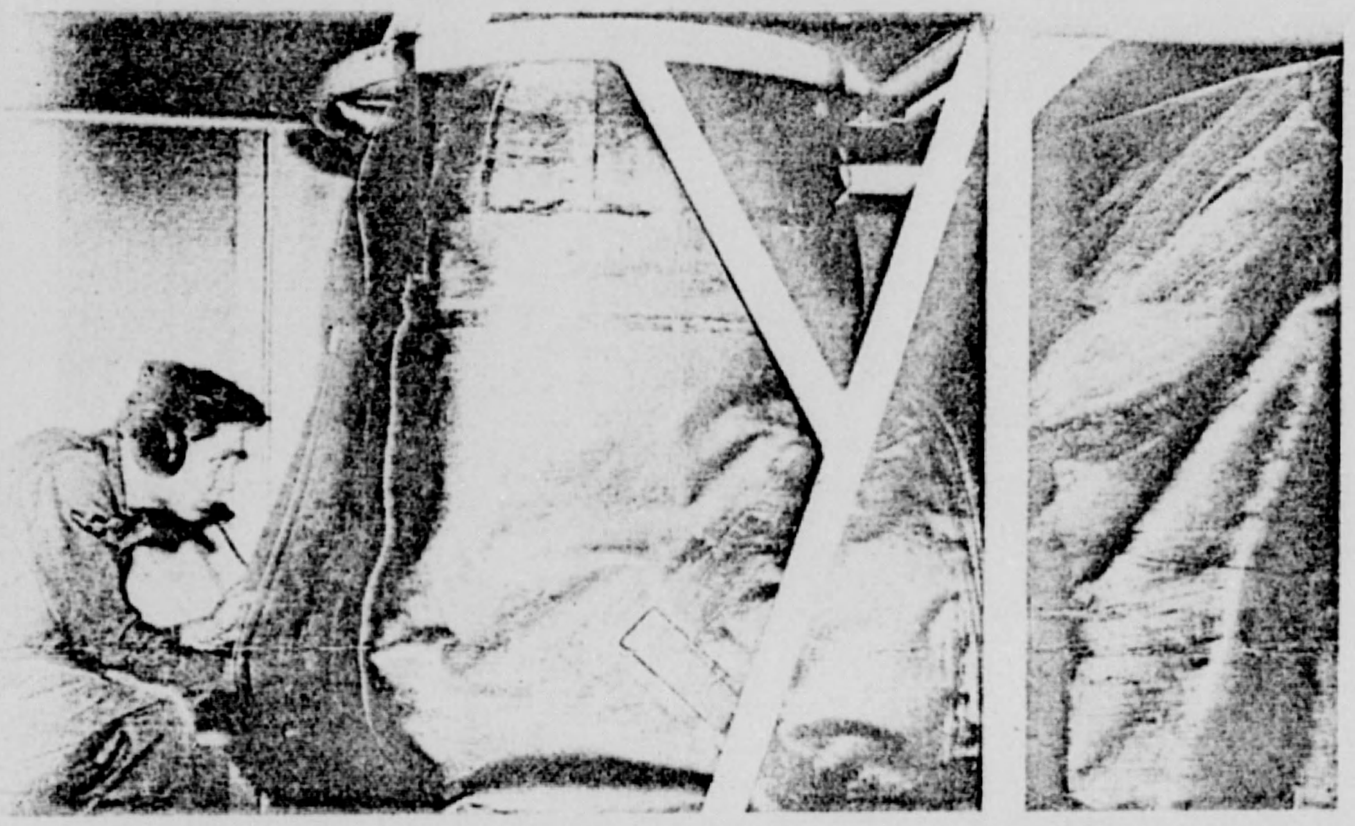

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Great Pains Taken To 'Prep' Man-Orbiting Atlas Boosters

When Cdr. Walter M. Schirra lifts off on a six-orbit space flight, scheduled for next month, his Project Mercury capsule will be boosted by a system that has withstood an Air Force shakedown, thorough and exhaustive to the limits of human and electronic capability.

Such a shakedown is necessary to provide maximum reliability in boosters used for the National Aeronautic and Space Administration's manned space flight program.

Every item among the multi-thousand components that make an Atlas function is checked, tested, retested, and checked again. The some 100 "key" components—those which, by a single failure, could jeopardize the mission and the safety of the astronaut—are specially selected, specially handled, and examined before the unique Mercury seal is applied.

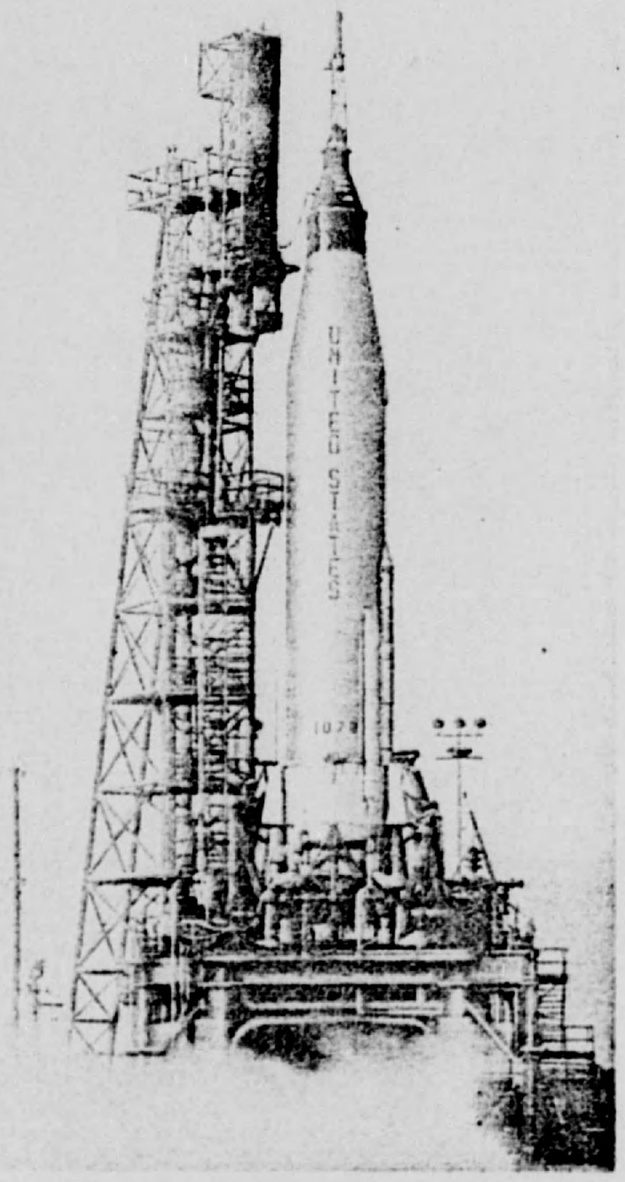
It's a safe bet that an Atlas rocket wearing the Mercury decal has earned that label. It's equally certain that the US astronaut who gets a 360,000-pound thrust into orbit can depend on the machine that generates and controls that power to be as totally reliable as possible.

A conscientious, painstaking Air Force-contractor team sees to that and the Space Systems Division program office underwrites the guarantee.

The man behind the desk behind the Atlas boosters for the Mercury program is Lt. Col. Robert H. Brundin, a West Pointer and veteran of B-52 and Hound Dog research and development.

"The Atlas wasn't designed to boost a man," he says. "To gain the reliability we would demand in an aircraft system, for example, we'd have to go back and redesign the Atlas, do a lot more testing, and probably provide for more redundancy throughout the system. There hasn't been time for any of that.

"We chose to stay with the existing Atlas configuration as closely as possible," Colonel Brundin points out. "That way, we could take advantage of the testing already done to prove the Atlas as an ICBM."



American astronauts know that the Atlas boosters used to push them into orbit are as nearly perfect as human effort can make them. An Atlas earmarked for use in the Project Mercury program becomes a special bird and receives exhaustive series of tests from Air Force professionals.

Intensive and extensive as ICBM testing has been, it hasn't measured up to Mercury requirements—or to the Air Force's satisfaction. A Mercury Atlas not only takes twice as many man hours to fabricate as an R&D or operational missile, it also gets more than three times the normal checkout time and attention.

Broadly speaking, the care lavished on Mercury boosters averages 60 to 90 days of nit-picking scrutiny. An ordinary Atlas, by comparison, undergoes about 20 days of tests.

Routed to Cape Canaveral, the Mercury-destined Atlas goes through several weeks more of two and three shift testing operations on the pad.

Blue suiters in the SSD Mercury directorate admit that there is a limit to the degree of reliability that can be attained in a system as complex as the Atlas. Random failure, for example, is a constant threat.

Because a margin between practical reliability and absolute reliability does exist, Air Force officers and contractors managing the booster portions of the Mercury program have come up with an important "plus" designed to bridge that area of marginal reliability. This is the Mercury abort-sensing and implementation system—"AS-IS," in Air Force parlance.

"We've been shooting for a 99.5 per cent reliability in this system," Colonel Brundin says. "On the basis of literally thousands of tests, I would say we have bettered that objective."

The abort sensing system is designed to safeguard the astronaut in the event anything malfunctions during powered flight. When trouble is detected, AS-IS activates mechanisms that separate the spacecraft from the booster and parachutes the pilot to safety.

The system got an actual baptism by fire during an early Mercury shot when, although no man was aboard, the capsule was saved from damage when the Atlas malfunctioned and had to be destroyed. The capsule survived and was subsequently reflown.

At Cape Canaveral, birdwatchers of the Air Force's 6555th Aerospace Test Wing stay with the Atlas and, along with the contractor representatives on hand, oversee the batteries of tests conducted on the site. Colonel Brundin's Florida counterpart, Lt. Col. Robert R. Hull, takes charge of the blockhouse and is launch director for the countdown.

But with all the tests and the unrelaxing accent on safety, an Atlas booster is never ignited in support of Mercury until an Air Force Flight Safety Review Board, chaired by a senior officer, has reviewed all the problems and actions pertinent to that booster and subsequently certified that it is ready to put a man into orbit.



At the Launch pad at Cape Canaveral, Fla., Maj. Charles L. Gandy Jr. and Lt. Col. Robert H. Brundin of the Air Force Space Systems Division Mercury Directorate, talk over launch plans for the flight of Astronaut Scott Carpenter. In the background is the gantry housing the Atlas space booster with its Aurora 7 space capsule aboard.

AFSWC Scouting Group, S To Sponsor Aerospace Edu

Three hundred outstanding New Mexico high school science and math students have a better understanding of AFSC's educational requirements for the aerospace age, thanks to the Air Force Special Weapons Center.

Coming from cities and villages throughout the state which was the birthplace of nuclear weapons technology, the teenagers spent three days with AFSWC scientists and engineers in Albuquerque during Armed Forces Week. They were the guests of the Center and Boy Scout Explorer Science Post 91, co-sponsors of the first Aerospace Education Conference.



The Project Mercury crew of the 6555th A graphed with Astronauts John Glenn and S of Complex 14. The group picture was ta and during the preparation for the MA-7 D. R. Honhaiser, Maj. J. W. Young, Jr., Parrish, Capt. J. S. Deutsch, Capt. T. A. Ga Front row: Maj. J. R. Mullady, Lt. Col. J Hull, Lt. Cmdr. Scott Carpenter and Capt. R.

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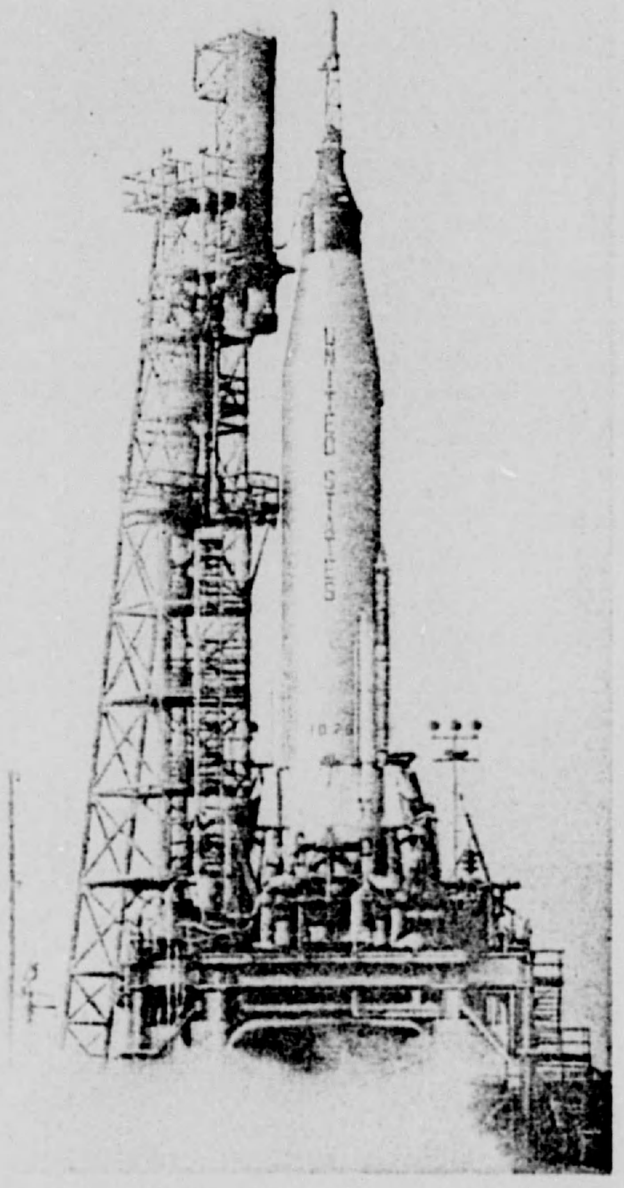

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The conference began with a keynote address by Dr. Knox Millsaps, chief scientist of the Office of Aerospace Research. He called science and engineering absolutely essential to the future of freedom, pointing out that today's work in laboratories and test facilities will determine events of tomorrow.

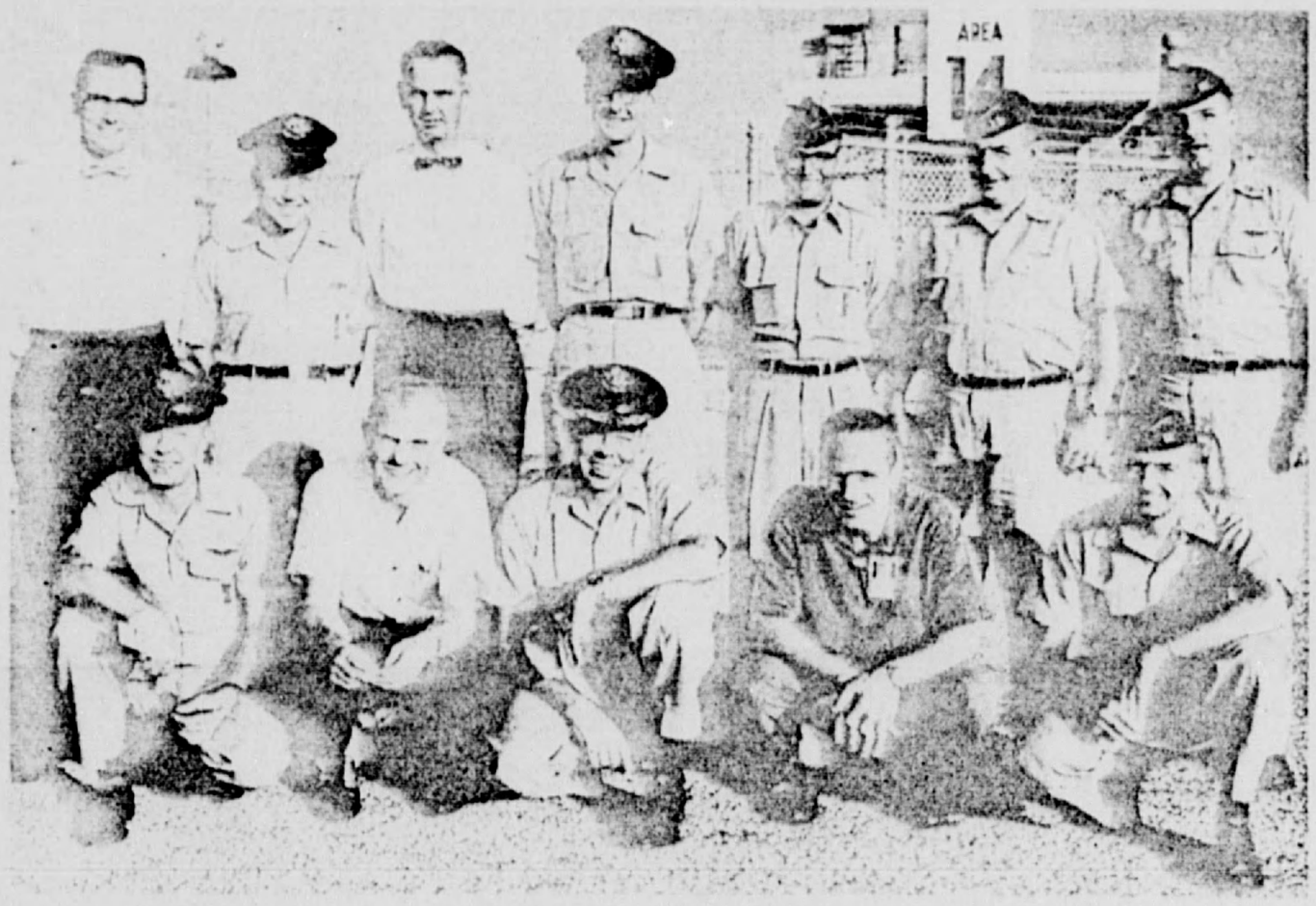
Following Dr. Millsaps' address, Donald Male of the Arnold Engineering Development Center, moderated a panel discussion titled, "1967—Where Do We Go From Here?" New Mexico educators and Special Weapons Center scientists discussed research and development programs and opportunities expected in 1967 when most of the high school students will finish school and begin work in science, math or engineering.

The conference's first day was topped off by a banquet and an address by Maj. Gen. Charles M. McCorkle, AFSWC commander, who since has been assigned to Fifth Air Force in Japan. General McCorkle stressed that education is perhaps the most important key to the "magnificent possibilities" of careers in science and engineering.

Students spent the second day attending seminars on 34 different subjects, ranging from nuclear physics to computer programming, and on tours of AFSWC nuclear laboratories. The seminars were conducted by Special Weapons Center research and development officers. A conference dance was held that evening, with live music donated by the American Federation of Musicians.

Last day of the conference was devoted to tours of Armed Forces Day displays.

Idea for the conference originated with Explorer Science Post 91, an organization of teen-age boys sponsored by AFSWC. Cooperating organizations included the New Mexico public and parochial school systems, Albuquerque school system, Sandia Base and the Air Force Association.



The Project Mercury crew of the 6555th Aerospace Test Wing are photographed with Astronauts John Glenn and Scott Carpenter outside the gate of Complex 14. The group picture was taken after Glenn's orbital flight and during the preparation for the MA-7 launch. From left, back row: D. R. Honhaiser, Maj. J. W. Young, Jr., D. W. Wethering, Maj. D. P. Parrish, Capt. J. S. Deutsch, Capt. T. A. Galvin, and Capt. V. W. Munsey. Front row: Maj. J. R. Mullady, Lt. Col. John Glenn, Lt. Col. R. R. R. Hull, Lt. Cmdr. Scott Carpenter and Capt. R. E. Rae.

Second AF Symposium On Bionics To Be Held In Dayton Next Year

A second Air Force-sponsored symposium on bionics will be held in Dayton, Ohio, Mar. 19-21, 1963.

Sponsored jointly by AFSC's Aeronautical Systems Division and the Aerospace Medical Division, the three-day meeting is expected to attract more than 1,500 scientists and engineers from government, industry, research foundations and universities from throughout the United States and Western Europe.

More than 50 researchers will discuss advancements in the new science since the first ASD sponsored symposium, held in Dayton in September, 1960.

A new area of interdisciplinary research, bionics is the science of applying knowledge of biological functions and systems to the solution of engineering problems. This knowledge derived from living organisms is translated into mathematical transfer functions for use by engineers in modeling functions of living systems.

Understanding of these biological functions is expected to hasten technological advancements—both for military defense and the welfare of man in general. Major emphasis, at present, is on information handling, such as acquisition, processing, storage and utilization of data.

The Air Force called the first symposium to determine where the scientific community stood in regard to bionics programs. The upcoming meeting will deal with more specific topics.

Theme of the symposium will be "Information Processing by Living Organisms and Machines." The meeting will feature concepts and the structure of self-organizing systems, the various levels of information processing in living systems, and physical analogs of such systems, biological and physical sensors, and applications of these principles and mechanisms to man's meeds.

Invited papers will be presented at four technical sessions. Topics for technical sessions will be "Signal Reception of Living Organisms;" "Information Processing by Living Organisms;" "Physical Principles of Bionics;" and "Application of Bionic Concepts." Contributed papers also will be presented in the general area of bionics.

Dr. John E. Keto, chief scientists for ASD, will be symposium director. Col. Andres I. Karstens, Aerospace Medical Research Laboratories commander, will be chairman and Lt. Col. Leonard M. Butsch, Jr., chief of Electronic Technology Laboratory's bionics and computer branch will act as his deputy.

Dr. Hans Oestreicher, Aerospace Medical Research Laboratories, and Colonel Butsch are co-chairmen of the technical committee.

Registration at the Biltmore Hotel in Dayton is scheduled for Monday afternoon, March 18.

Persons interested in attending the symposium may contact Commander, Aeronautical Systems Division, Attn: ASRNEB-3, Lt. Col. L. M. Butsch, Jr., Wright-Patterson Air Force Base, Ohio.

AFSCers Give Talks At Aerospace Science Institute Meeting

Five members of the Aeronautical Systems Division and three from the Aeronautical Research Laboratories presented papers at the national meeting of the Institute of the Aerospace Sciences held in Los Angeles, Calif., recently.

Those from ASD included Donald F. Kalkis, "Technical Problems Associated with Design of Rotating Spacecraft"; A. M. Paulson, "Trends in the Ground Support of Aerospace Systems Using Cryogens"; Ralph C. Lenz Jr., "Technological Forecasting"; and Theodore L. Senecal and Raymond M. Sadow, "PERT in Dyna-Soar."

Dr. G. K. Guderley, Mrs. E. M. Valentine, and Maj. John V. Armitage of ARL presented a paper on "Nose and Inlet Shapes of Minimum Drag in Supersonic Flow."

Guest speakers for the meeting were Ernest K. Lindley, special assistant secretary of state (guest of honor); L. Eugene Root, president of IAS and Lockheed Missiles and Space Co.; Lt. Gen. Laurence C. Craigie, USAF (Retired) vice president and deputy group executive, American Machine and Foundry Co.; and William Littlewood, vice president, American Airlines, Inc.

The program for the first day included a panel discussion on the "Role of Government Laboratories and Non-Profit Corporations and Their Effect on the Aerospace Industry." Panel members were Hugh L. Dryden, deputy administrator, NASA; Najeeb Halaby, administrator, FAA; Allan F. Donovan, Sr., vice president, Technical Aerospace Corp.; Maj. Gen. Marvin C. Demler, director of advanced technology, USAF; Brig. Gen. Chester W. Clark,, RAND D Division; and Rear Admiral L. D. Coates, USN, chief of naval research.

A classified field trip to Point Arguello and Vandenberg AFB climaxed the meeting. The tour was sponsored by the scientific and technical liaison office of AFSC.

APGC Closes An Era With Last QF-80 Flight

An era ended at Air Proving Ground Center recently with the last QF-80 "nullo" mission being flown over the Eglin Gulf Test Range, according to Lt. Col. Anslum M. Blackwell, 3205th Drone Sq. commander.

The 321st and final QF-80 drone mission was flown with Capt. Ralph W. Haymaker piloting the T-33 control aircraft and Capt. Owen C. Davis, Jr., controlling the QF-80 from the front seat.

The drone was retrieved and returned to Eglin by the team of Captains Haymaker and Davis, while a second T-33 flew, as usual, in reserve.

The QF-80 era began April 8, 1951 when a QT-33 flew in Operation Greenhouse, an atomic test in the Pacific. (The T-33 is a trainer version of the F-80 Shooting Star.)

During the last decade, QF-80's have been flown by three squadrons under Eglin's onetime 3205th Drone Group.



New AFSC deputy chief of staff for plans, Maj. Gen. W. B. Keese was formerly director of development planning at Hq USAF. He was assigned to his new position effective July 1. He replaces Maj. Gen. James F. Whisenand who has been assigned as assistant deputy chief for research and technology at Hq USAF.



Brigadier General Allman T. Culbertson, Aeronautical Systems Division vice commander, is being reassigned to Air Proving Ground Center where he will assume duty as deputy commander on August 18. Going to APGC with General Culbertson will be his wife, the former Annie Stallcup of Frierson, La., and their two sons Eugene and Robert.



New commander of Aeronautical Systems Division, Maj. Gen. Robert G. Ruegg is not new to Wright-Patterson AFB. He has had two previous assignments to that installation and was on a third assignment there as Air Force Logistics Command's director of procurement and production when he was named to head ASD.

On Bionics Next Year

cal advancements—both for mili-
efense and the welfare of man in
l. Major emphasis, at present, is
formation handling, such as ac-
n, processing, storage and utili-
of data.
Air Force called the first sym-
to determine where the
ific community stood in regard to
programs. The upcoming meet-
ill deal with more specific topics.
me of the symposium will be
rmation Processing by Living
isms and Machines." The meet-
ll feature concepts and the struc-
of self-organizing systems, the
levels of information processing
ng systems, and physical analogs
h systems, biological and physical
s, and applications of these
ples and mechanisms to man's
s.
ited papers will be presented at
technical sessions. Topics for
ical sessions will be "Signal Recep-
of Living Organisms;" "Informa-
Processing by Living Organisms;"
ical Principles of Bionics;" and
lication of Bionic Concepts." Con-
ed papers also will be presented
e general area of bionics.
r. John E. Keto, chief scientists for
will be symposium director. Col.
es I. Karstens, Aerospace Medical
arch Laboratories commander, will
hairman and Lt. Col. Leonard M.
ch, Jr., chief of Electronic Tech-
gy Laboratory's bionics and com-
branch will act as his deputy.
r. Hans Oestreicher, Aerospace
ical Research Laboratories, and
nel Butsch are co-chairmen of the
nical committee.
egistration at the Biltmore Hotel in
on is scheduled for Monday after-
. March 18.
rsons interested in attending the
posium may contact Commander,
nautical Systems Division, Attn:
NEB-3, Lt. Col. L. M. Butsch, Jr.,
ht-Patterson Air Force Base, Ohio.

APGC Closes An Era With Last QF-80 Flight

n era ended at Air Proving Ground
er recently with the last QF-80
llo" mission being flown over the
Gulf Test Range, according to
Col. Anslum M. Blackwell, 3205th
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New WCMR Chief Formerly Directed BSD Atlas Program

Colonel John L. Zoeckler recently assumed command of the Western Contract Management Region replacing Brig. Gen. Gerald F. Keeling. General Keeling moved into the director of procurement position at Hq AFSC, effective July 15.

General Keeling was the initial commander of WCMR, which was formed July 1, 1960. Prior to that assignment he was the Air Force plant representative at North American Aviation, Inc. in Los Angeles.

Colonel Zoeckler previously was the Atlas program director of the Ballistic Systems Division. At WCMR he will command an organization which is responsible for the expenditure of $5 billion dollars per year; nearly one-fifth of the total Air Force budget.

WCMR personnel administer contracts with civilian industry of eleven western states, plus Alaska and Hawaii. WCMR also has an integral part in the missile production and site activation programs of the Air Force, regardless of geographical location.



Dr. Charles L. Bernier has been appointed director of the Armed Services Technical Information Agency. In announcing the appointment, Col. James O. Vaan, ASTIA commander, said, "Dr. Bernier's previous experience of many years as editor of Chemical Abstracts and the capabilities he has shown as technical advisor to ASTIA these past six months, make this assignment a very important one for the agency as it enters an era of unprecedented expansion."

NCO's Earn Cash Awards

Three sergeants assigned to the Aeronautical Systems Division have received cash awards for suggestions. They are MSgt. Donald A. Vorhies, TSgt. Donald J. Wolf and SSgt. LeRoy Sheperd.

Sergeant Vorhies received an initial award of $50 for suggesting that a remote control camera mount be built to handle two 3D-TV cameras. His suggestion enables cameras to be adjusted to any position and any distance from the object being photographed in a reactor area.

An award of $7.50 was granted to Sergeant Sheperd for his suggestion to relocate test points on a modulator power supply. Estimated tangible benefits of $349.37 have been realized from adoption of this suggestion.

Sergeant Wolf received an award of $5 for suggesting that a connector fitting be used to inflate pressure socks on pressure suits used during long term high altitude flying missions.



Brigadier General Otto J. Glasser marked two major milestones in his military career early in July. On the first, he pinned on his new star, and on the second, he assumed duty as the vice commander of Electronic Systems Division. General Glasser had previously been assigned as a special assistant to Gen. B. A. Schriever, AFSC commander.

General Schriever To Keynote Guidance Test Symposium

General B. A. Schriever, AFSC commander, has accepted an invitation to deliver the keynote address at the Inertial Guidance Test Symposium, Oct. 16-17, 1962. The symposium will be held at the Air Force Central Inertial Guidance test facility at Air Force Missile Development Center.

Papers to be presented will concentrate on: comparison of missile, sled and centrifuge as an inertial guidance test bed; establishment of a precision velocity yardstick and analysis of velocity errors in inertial guidance systems; and standardization efforts in inertial guidance laboratory testing.

Attendance at the symposium will be by invitation. Inquiries should be addressed to Mr. Marvin C. Green (MDRG), Holloman AFB, N. M.



Commander of AFSC's newest organization, the Research and Technology Division, Maj. Gen. Marvin C. Demler assumed command responsibility July 1. He had been the director of advanced technology at Hq USAF. RTD is headquartered at Bolling AFB, Washington, D. C.

Bid Let To Develop Weather-Safe System Of Aircraft Control

A compact air traffic control system to guide pilots to safe landings in all types of weather in remote areas of the world moved closer to reality recently with award of a $6 million contract to the Radio Corporation of America, Burlington, Mass., by the Electronics Systems Division of the Air Force Systems Command.

The contract calls for one system, being a partial award against an initial requirement for three systems, all to be completed by the summer of 1963. The Air Force visualizes a total requirement of 14 such systems for use at fields around the world.

Brigadier General Charles H. Terhune Jr., ESD commander, said the Emergency Mission Support System will give the Air Force a mobile control system compatible with the FAA air traffic control system. With EMS, air traffic control communications and navigational aids will be ready for fast deployment in any emergency. Responsible for this project is ESD's 482L System Program Office, headed by Col. Martin F. Peterson.

Each EMS will be housed in six vans. Each van will have its own electrical power supplies, air conditioning, initial spare parts, and inter-communication equipment. "The system will be able to direct and land all types of modern aircraft every 2.5 minutes, under conditions of only 200-foot ceilings and half-mile visibility despite fog, moderate rain or snow," Colonel Peterson said. "A total of 24 aircraft will be under positive control over an airport under bad weather conditions and be able to land without delay."

The air transportable system will include a precision approach radar, search radar, visual and instrument flight rules (VFR & IFR), tower vans, communications, and a government furnished, van-mounted TACAN navigation aid (AN/TRN/17).

'Face-Lifting' To Add Radar Tracking Power

The Air Proving Ground Center will double the power of its prime radar tracking stations within the year, it was recently announced by Hq APGC.

One of the five tracking radars located on Eglin's Site A-20 will increase its power output to five megawatts following an electronic face-lifting later this year. At the present time, the 12-foot "dish," designated the FPS-16, has a peak power capability of one megawatt—as do each of the four other radars on the site.

Site A-20 is also known as "Station 17" to the men who operate the Mercury man-in-space tracking network. It is the 17th, and last, station American astronauts pass over before making earth re-entry from orbit.

On the critical last orbits of the Friendship 7 and the Aurora 7 space capsules, the C and S Band radars at Station 17 kept an electronic eye on the plunging capsule which provided vital information on the re-entry path of the astronauts.

The new increase in power for the FPS-16 will give a corresponding increased tracking capability to the station.

AFSC BRIE

New Name

Aerospace Medical **Medicine,** located designated the Air Medicine July 1. changed.

Serial Numbers

May be a thing of members if a study approval of the A made to use the So Air Force personne that number and t the proposal believ result in a substant mechanized equipn present members w until separated.

Dyna-Soar

The Air Force's spa the long standing pr designators to opera The one-man, delta as The X–20. Cur be launched into or capability to fly wit will make the X–2 The X–20 is being tems Division.

Birthdays

Both the USAF Ai change Service celeb Weather Service wa in 1937, AWS opera officers and 180 enli than 400 stations an civilian personnel. lished in 1895. It to and became known Force installations ir a separate service.

Self Defense

Students now enrolle are learning the art o mand and Air Train study was introduce month.

Silver Wings

Apparently hold a lo emy cadets. Statist percent of this year' into pilot training as career. Of 289 gradu career advancement. to pursue further ac Force Institute of T Point men seemed r Of 62 West Pointers enrolled for cours Annapolis graduates

Cold War Medal

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Voters Should Check

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Help Wanted

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AFSC BRIEFS

New Name

Aerospace Medical Division's School of Aerospace Medicine, located at Brooks AFB, Tex., was redesignated the Air Force School of Aerospace Medicine July 1. Location of the school is unchanged.

Serial Numbers

May be a thing of the past to future Air Force members if a study now underway meets with the approval of the Air Staff. A proposal has been made to use the Social Security number to identify Air Force personnel rather than a combination of that number and the serial number. Sponsors of the proposal believe that the changeover would result in a substantial saving in computer or other mechanized equipment storage. Under the plan, present members would retain their serial numbers until separated.

Dyna-Soar

The Air Force's space glider has fallen in line with the long standing practice of applying letter-number designators to operational and experimental vehicles. The one-man, delta-wing spacecraft will be known as The X–20. Current plans are for the X–20 to be launched into orbit by a Titan III booster. Its capability to fly within and beyond the atmosphere will make the X–20 the first US aerospace craft. The X–20 is being developed by Aeronautical Systems Division.

Birthdays

Both the USAF Air Weather Service and the Exchange Service celebrated birthdays during July. Air Weather Service was 25 years old. When activated in 1937, AWS operated 40 weather stations with 22 officers and 180 enlisted men. Today there are more than 400 stations and more than 11,000 military and civilian personnel. The Post Exchange was established in 1895. It took shape as we know it in 1941 and became known as the Base Exchange on Air Force installations in 1947 when that branch became a separate service.

Self Defense

Students now enrolled in the Squadron Officer School are learning the art of Judo from Strategic Air Command and Air Training Command experts. The new study was introduced in the class which started last month.

Silver Wings

Apparently hold a lot of appeal for Air Force Academy cadets. Statistics reveal that more than 87 percent of this year's graduating class elected to go into pilot training as the first step in their Air Force career. Of 289 graduates 253 chose that route toward career advancement. A total of 18 cadets elected to pursue further academic training through the Air Force Institute of Technology. Annapolis and West Point men seemed much more interested in AFIT. Of 62 West Pointers entering the Air Force, 15 are enrolled for courses. Twenty-three of the 80 Annapolis graduates are also enrolled.

Cold War Medal

Criteria for award of the Armed Forces Expeditionary Medal, recently established by the Department of Defense, includes service in Berlin, Lebanon, Quemoy-Matsu, the Taiwan Straits, the Congo, Laos and Vietnam. The medal was authorized by President Kennedy last December. Medal and ribbon, design still under study, are not expected to be available for issue until early 1963.

Voters Should Check

With base or unit voting officers to see if recent changes in dates of general elections, primaries and local elections effect them. Changes have also been made in some instances on the procedures to follow in absentee voting, registering to vote and certain voter qualifications.

Help Wanted

The USAF Recruiting Service is advertising for recruiter salesmen. These are especially needed in some areas. Airmen have a better chance of getting the duty if they seek jobs in the shortage areas and apply for areas in different geographical locations. Jobs go to the best qualified.

First Termers

Should take a second look before stating that they do not intend to reenlist. Despite rumors that airmen are given a chance to reconsider, Hq USAF says that when an airman goes on record as declining that decision is considered binding. Under present rules the decision is made eight months before separation date.

War College Associate Courses At ASD Termed Highly Successful

The Aeronautical Systems Division at Wright-Patterson AFB, Ohio, is one of four organizations originally selected to participate in a six-month test of the Air University's new accelerated War College associate course. Other bases involved were Langley AFB, Va.; Lincoln AFB, Nebr.; and Maxwell AFB, Ala.

A voluntary program, the new associate course was established for selected active duty senior officers and civil service employees of the Air Force. Since its beginning, the informal course has proved highly successful. It is now officially approved by USAF and is being implemented on a larger scale. Twenty new seminars were established in January, 1962 and more are to follow.

The War College associate course is based on the premise that individuals who participate in the program have a desire to learn in order to improve their capabilities and qualifications for positions of greater responsibility.

With this in mind, the course was prepared to be presented on a permissive rather than a directed basis. Students who participate are permitted as much latitude as possible in deciding the manner in which the course is conducted.

The course consists of four semesters of five months each, tailored along the lines of the War College resident course. Each volume of study in each semester includes 20 chapters. Students study each lesson individually. They then meet for a weekly two-hour seminar, where the study assignment is discussed by all participants in the course.

Seminar discussion groups are conducted under a rotating chairmanship of the students and under permanent direction of the senior ranking students. Military participants are lieutenant colonels and above and civilians, grade GS 14 and above.

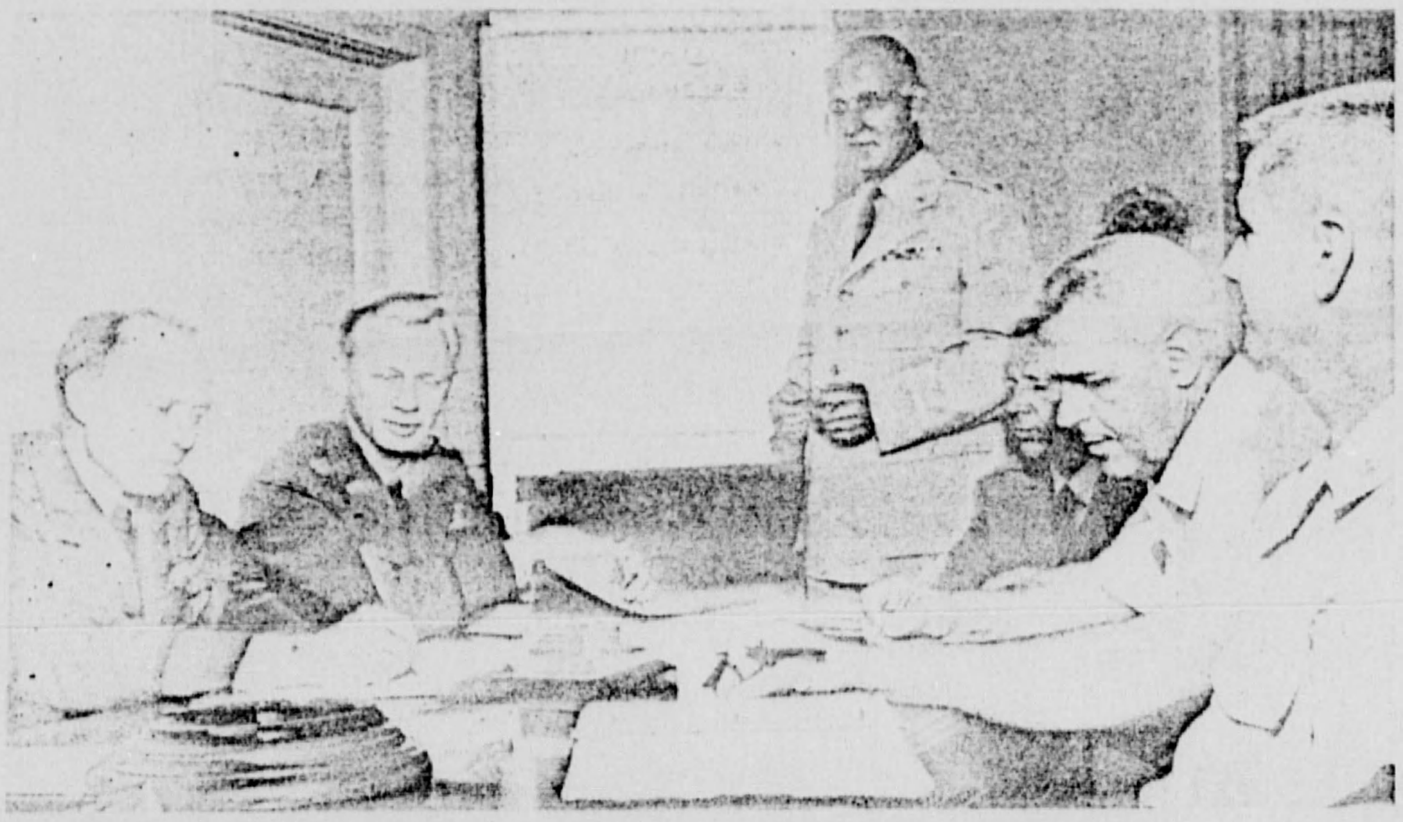
In addition to directed studies, student members must make two 10-minute oral presentations during each volume of study. A written report on suggested subjects of 2,000 to 3,000 words is also required at the end of each volume.

Upon finishing the course students are given a year for completion of a thesis, which must be approved by the Air University. The complete course takes approximately two years.

Seminar number 3, at ASD, has completed the first three volumes and is scheduled to commence the last volume this summer. It will be among the first five in the Air Force to receive recognition for pioneering a new concept in military education.

The chief reason for the associate course is that many senior officers would not have an opportunity to participate in the War College program because of the limited number of officers selected for the resident course.

This accelerated course reduces the regular course from five to two years. Some of the areas studied under this program include international relations and current world conflicts, elements of strategy, current and future military strategy.



Each week, students of the War College Associate Course meet for a two-hour seminar to discuss their studies. From left are Lt. Col. Edward B. Reed, Maj. Dennis H. Johnson and Lt. Cols. Phillip J. Teusink, chairman; Floyd Finberg, James L. Hight and Ralph Springer.

Lt. Nicolai Graduates SOS With Distinction

Lieutenant Leland M. Nicolai, of ASD's Directorate of Advanced Systems Planning, was honored recently upon graduation with distinction from Squadron Officer School, Maxwell AFB, Ala. Lieutenant Nicolai was one of 42, in a class of more than 900 students, who graduated with distinction.

Assigned to ASD's Flight Dynamics Laboratory in August 1957, he attended the University of Oklahoma under AFIT sponsorship and received his M.S. degree in aeronautical engineering. He had received his bachelor's degree from the University of Washington in 1957.

Upon his return to ASD, Lieutenant Nicolai was assigned to the design analysis section of the aerospace vehicle design branch. In this assignment, he conducts design studies of futuristic aerospace vehicles.

Lieutenant Nicolai received commendations from Lt. Gen. Troup Miller, Jr., commander of Maxwell AFB; Maj. Gen. C. H. Mitchell, vice commander of AFSC, and Maj. Gen. W. A. Davis, former commander of ASD.

Contract To Develop Deep Space Tracking Ability Announced By Air Force

The Air Force recently announced award of a $2.8 million contract to Radio Corporation of America, Burlington, Mass., to procure a prototype optical surveillance device which will enable the Air Force to detect and track man-made satellites orbiting out in the distant ranges of the stars.

Personnel of Electronic Systems Division's System 496L (popularly known as Space Track) will handle procurement and manage development of the prototype model.

Besides a powerful telescope, the prototype model will employ the photo-sensitive surfaces of an image orthicon (TV-like) tube, coupled with data correlation techniques to get a fast readout.

The system works like this: The portion of the sky observed through the telescope is focused on the face or surface of an image-orthicon tube. The surface is made up of multiple photo-sensitive cells, like a checkerboard or honeycomb or the TV tube, with each section reacting independently to the amount of light hitting it. Electronic currents, reacting to each individual section, instantaneously relay the message.

Data-processing techniques "read" this message and store it. The incredible swiftness of electronics replaces the former slow development of a chemical printout. Further, the star background is cancelled out electronically. Then the computer brain compares one "look" (scan) with the next so that any man-made object moving in the section under surveillance will be detected.

Extending the range of radar detection, the optical detecting system will not necessarily be restricted to earth satellites.

ESD's Anthony Salvucci, 496L project scientist, said, "The optical-detecting device will utilize electronic techniques of analysis in order to give a 'real time' answer to the satellite surveillance problem at long ranges."

System 496L is one of more than a dozen wide ranging Air Force electronic projects centered at Hanscom Field, all dealing with the problems of command and control of aerospace forces.

Rocket Society Speaker

Carl O. Horst, the X-15 research plane's chief engineer at the Aeronautical Systems Division, recently addressed the Northeast Ohio Division of the American Rocket Society at Cleveland, Ohio. He spoke on the contribution of the X-15 to rocketing and aerospace.

Horst told the group that the X-15 is a blend of the ballistic missile and winged aircraft and that it is made from Inconel X, which is similar to material used in automobile exhaust pipes.

He has applied for a patent for an aircraft wing based on bird flight mechanisms and has published a book titled, "Flapping and Soaring." He is also past president of the Dayton Audubon Society.

His book describes the mechanics of birds in flight and was published by the Sherry Printing Company of Kettering, Ohio, in 1960.

He is chief engineer of the Experimental and Support Systems Office at ASD.

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Inventory Transfers Net Millions For Taxpayers

Transfer of articles of military inventory from one service to another has resulted in the savings of millions of dollars of the tax-payers' money, according to a report made by Defense Secretary Robert S. McNamara to President Kennedy on July 5.

Procurement of needed articles by one of the services from the inventory of another has proven to be a goal mine, according to Mr. McNamara.

Instead of trying to procure a needed article from civilian contractors, the Army or Navy will first search the idle inventory of the Air Force, and vice versa. This practice was described by Secretary McNamara as "one of the most fruitful ways to reduce the procurement of inventories."

A sample of how the "transfers" work was revealed in the recent Air Force requirement for 328 new silver-plated roller bearings used in overhauling aircraft engines. To purchase them would have cost $25,862. A search among the inventories, however, showed that the Navy had a supply of them which were transferred to the Air Force. (AFNS)

Education Pays

A scholar's dream has come true for Carl D. Simmons, 34, a supervisory aeronautical research engineer for the last four of his seven years at the Air Force Flight Test Center.

He recently started a year of salaried, tuition-paid study at the University of Southern California for a master of science degree, under an Air Force career development program for promising civilian workers.

A Fresno State College graduate (1955) and father of two, Simmons is the first Flight Test Center winner of the full-time study award in the three-year-old Air Force career development program.

For the last two years he has supervised various key test projects involving the four-jet supersonic B-58 Hustler, the Air Force's fastest bomber.

Simmons, a native Texan who grew up in Texarkana, came to Edwards June 21, 1955 from Fresno State where he got a bachelor of science degree in mechanical engineering and mathematics.



Carl D. Simmons

Research Pilot School At Edwards AFB Grooms Students For Top Space Roles

Two large glass doors opening into a squat green building labeled with the words, "United States Air Force Aerospace Research Pilot School," are the USAF gateway to space.

At the Air Force Systems Command's Air Force Flight Test Center, Edwards AFB, Calif., selected test pilots are training to fly or work with tomorrow's aerospace craft.

The school offers two courses. One is the Experimental Test Pilot Course, which has been taught at Edwards for several years. The second, the Aerospace Research Pilot Course, goes one step beyond this. It is seven months long and presents the most advanced technological training ever offered in the Air Force, and is probably the most advanced and exacting formal aviation school in the world.

"What we are doing," Lt. Col. Robert M. Howe, school commandant, said, "is preparing pilots and project officers for this nation's future manned space programs. Some of our future graduates will undoubtedly fly in space and many will be flight testing future aerospace vehicles. Some will be associated with the many aspects of project management for extreme altitude flight."

Applicants for the advanced course must be graduates of the Air Force's Experimental Test Pilot course or the US Navy or Royal Air Force test pilot schools. They must be on active duty in the grade of lieutenant colonel or below and currently on flying status as a pilot. A minimum of 2,000 hours' flying time and a degree or equivalent in engineering, a physical science, or mathematics is required.

"Instruction is divided into four phases," Colonel Howe said. "These are academic lectures, flying, simulation, and bioastronautics. The academic phase is conducted by military and civilian instructors with advanced degrees. Flying training is conducted in advanced aircraft, some of which will be modified to exhibit ballistic control, re-entry, and variable stability characteristics.

"For those aspects of future space flight which cannot be demonstrated in present day aircraft, we have added the simulation phase, where electronic flight simulators will approximate space conditions for the student.

"Bioastronautics training will be conducted at the School of Aerospace Medicine. There the student will be familiarized with the physiological implications of flight in upper atmosphere and space, and related biomedical techniques.

"Finally, field trips will provide the student an opportunity to familiarize himself with allied space work being done by the military, US industry, and the National Aeronautics and Space Administration."

The academic program includes math and engineering review, and studies of celestial navigation, computers, the aerospace environment, bioastronautics, flight mechanics, heating and aerodynamic theory, guidance and control, communications, instrumentation, propulsion, vehicle systems, and project management.

Flying training is designed to demonstrate the principles presented in the classroom as well as to maintain the flying proficiency of students.

Various aspects of space vehicle flight that cannot be easily or economically demonstrated in flight are simulated. Students undergo extensive simulator training both at the school and at locations away from the school.

The Aerospace Research Pilot Course is rounded out with a program of field trips and temporary duty away from the school. Various organizations, agencies and contractor facilities are visited.

Deceleration Symposium

A retardation and recovery symposium keyed to applied research in the field of aerodynamic decelerators will be conducted by the Aeronautical Systems Division Nov. 13 and 14.

Sponsored by ASD's Flight Accessories Laboratory, it will be held at the Imperial Motel, Dayton, Ohio, for government, industry and university researchers.

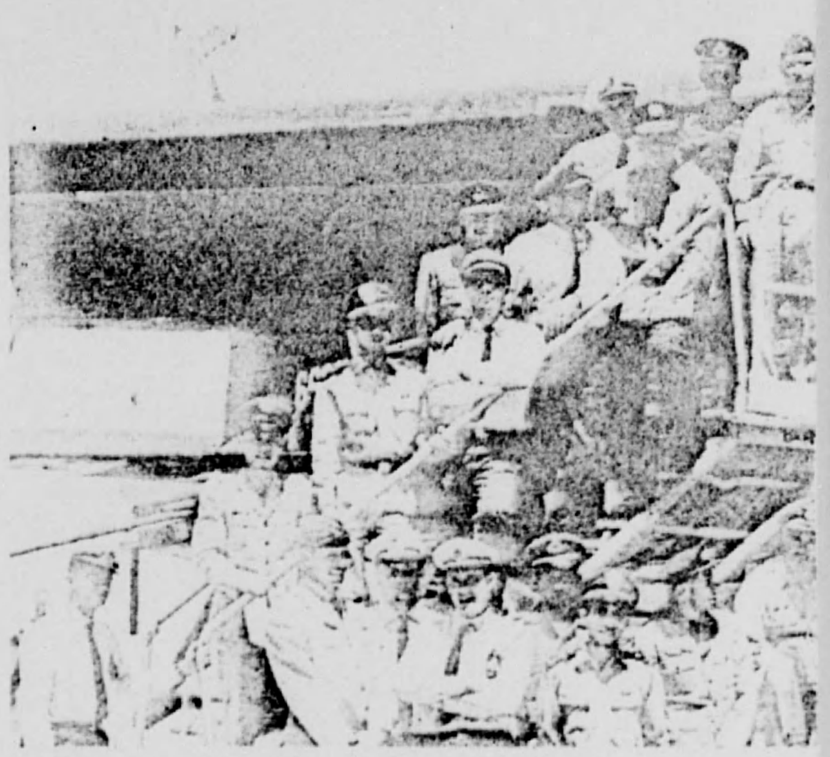
Reservations may be made by writing to the Aeronautical Systems Division, Wright-Patterson AFB, Ohio, attention Flight Accessories Laboratory (ASRMFD-2).

The symposium will feature some 15 presentations and discussions.

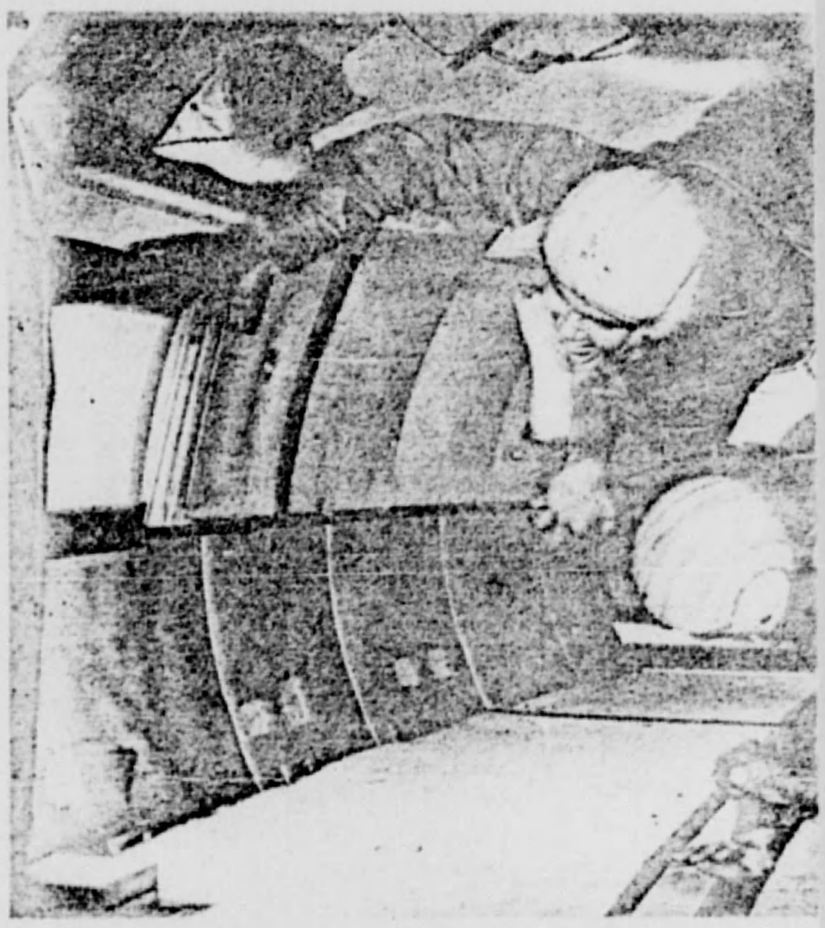
The laboratory's retardation and recovery branch will be host for the meeting. George Solt is branch chief. Captain Anthony W. Gerzina is symposium project officer.



Blonde Wendy Capps, 16-year-old Desert High School senior, was recently selected from 10 contestants to reign as Miss Edwards AFB of 1962. The 5'7" beauty will be 17 in August and vie with some 10 other area community queens for the Miss Antelope Valley title. The winner will rule over the annual Antelope Valley, Calif., Fair and Alfalfa Festival. Wendy's father, Maj. Robert S. Capps, is assigned to Air Force Flight Test Center Headquarters.



Representing the air forces of Paraguay, Brazi Italy, Belgium, Peru, Argentina, Viet Nam some 25 officers examine the X-15 manned re AFB, recently. The officers, who were in t Safety Officer Course at the University of S AFSC installation as a part of their orienta



Many Air Force Academy cadets have bee at various AFSC installations in recent week in a training program at Aeronautical System The future officers are getting their first tast They were among a group of more than Wright-Patterson AFB last month.



Fifteen years ago, Col. Charles E. "Chuck" in the world to fly faster than the speed of s William L. Rogers, Arnold Engineering De look over that center's newest wind tunnel, above 20 times the speed of sound.

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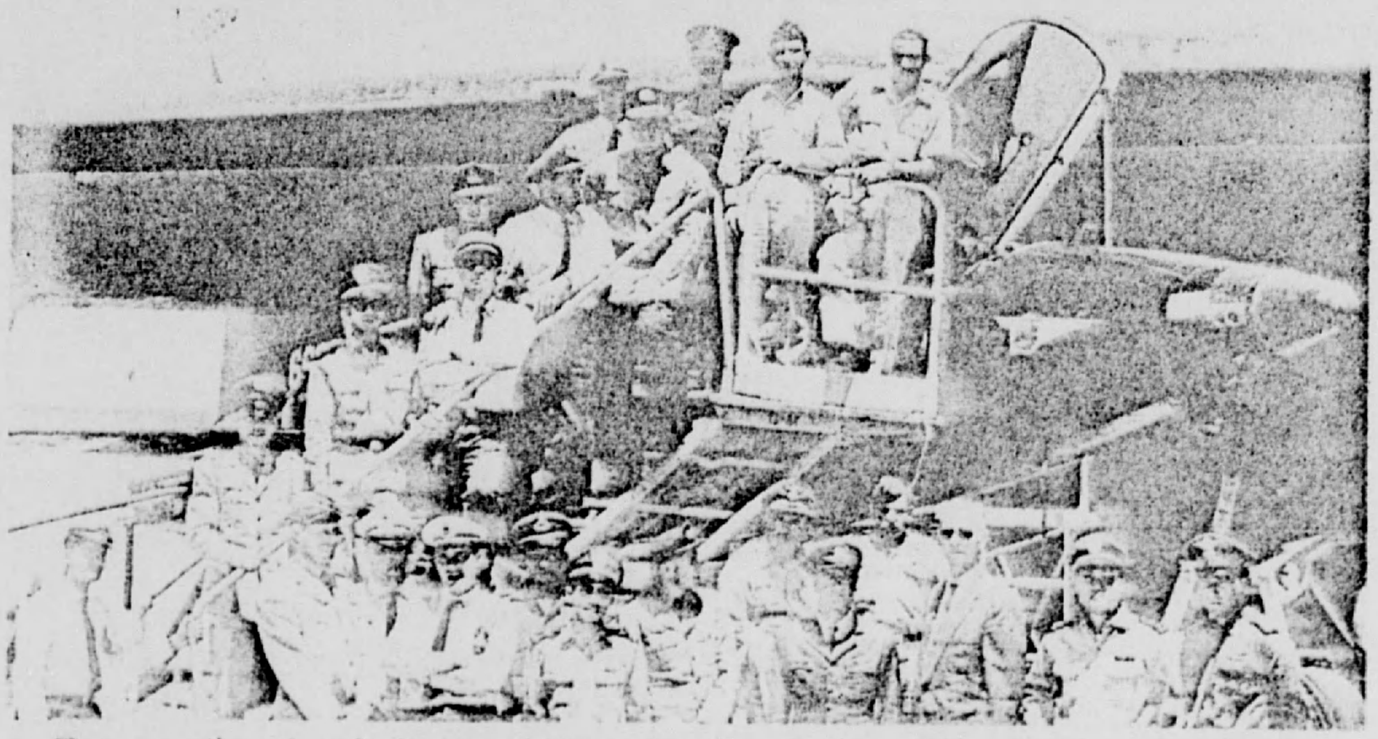

Representing the air forces of Paraguay, Brazil, Republic of China, Thailand, Italy, Belgium, Peru, Argentina, Viet Nam, Norway, and Saudi Arabia, some 25 officers examine the X-15 manned research rocket plane at Edwards AFB, recently. The officers, who were in this country to attend a Flying Safety Officer Course at the University of Southern California, visited the AFSC installation as a part of their orientation.

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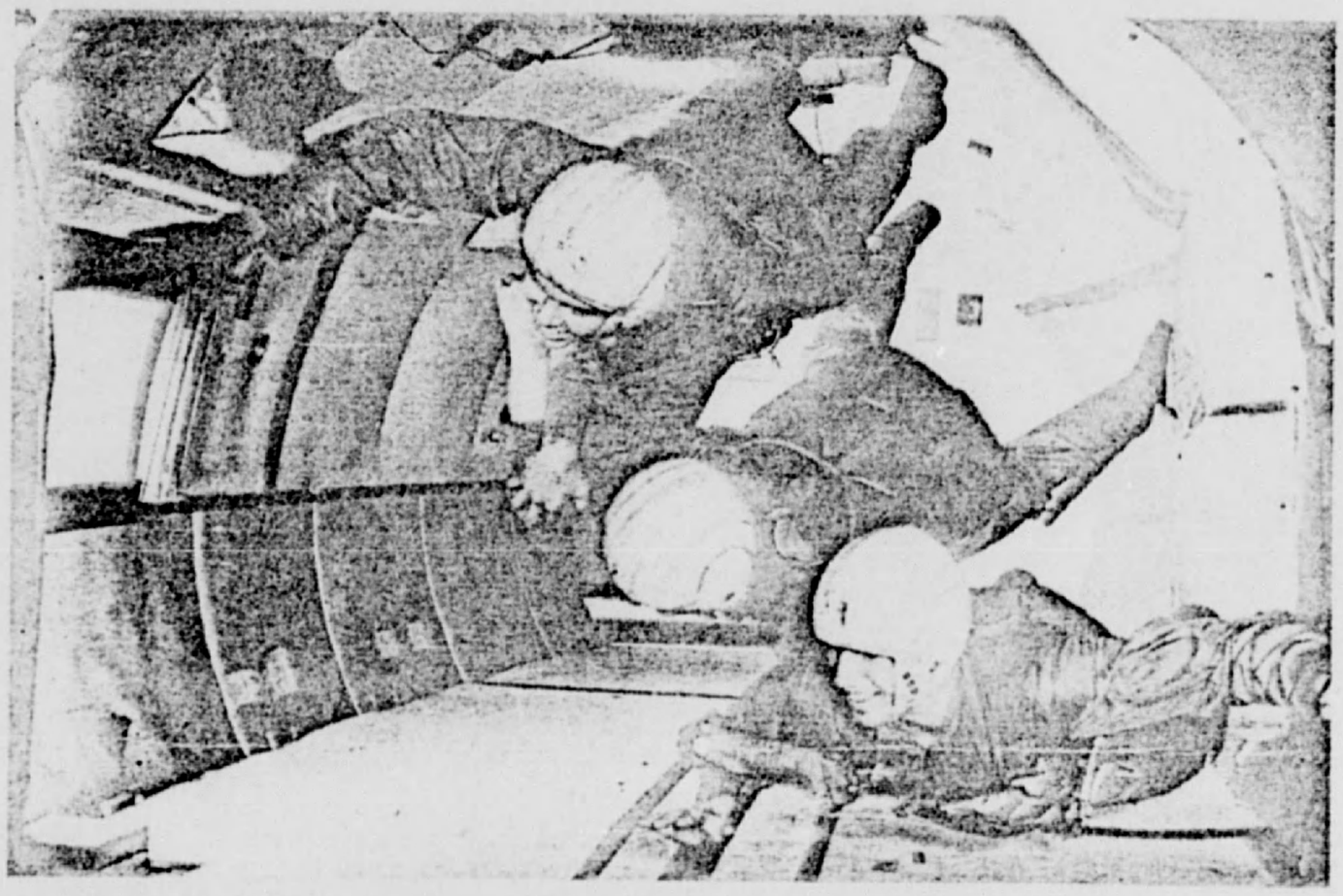

Many Air Force Academy cadets have been figuratively, floating around at various AFSC installations in recent weeks but these three, participating in a training program at Aeronautical Systems Division, are literally floating. The future officers are getting their first taste of "zero gravity" conditions. They were among a group of more than 800 who received training at Wright-Patterson AFB last month.



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Fifteen years ago, Col. Charles E. "Chuck" Yeager (left) was the first man in the world to fly faster than the speed of sound. Here, he and Maj. Gen. William L. Rogers, Arnold Engineering Development Center commander look over that center's newest wind tunnel, capable of attaining velocities above 20 times the speed of sound.

Determination, Drive And AF Aid Help BSD Officer To Academic Top

Climaxing a 20-year climb to academic eminence, Ballistic Systems Division's Lt. Col. Vincent J. Bracha recently received the degree of Doctor of Philosophy from the University of Southern California's graduate school of Business Administration.

The dark-haired, soft-spoken colonel was the only student in the school's graduate "class of '62" to earn that distinction. He is the first Air Force officer ever to attain a doctorate from USC in the business administration field.

But most remarkable he reached that scholastic pinnacle through a self-imposed program of persistent education.

In getting the "third degree," Colonel Bracha capped a program begun in 1942 when he entered pilot training on the heels of just two years of high school education.

Since that time he has not only earned a high school diploma but has acquired a BS and an MBA as well. He has also polished off a variety of service schools and Air Force Institute courses and has carried out an impressive array of military assignments, including combat flying in World War II.

The colonel's crowning accomplishment, however, is a family of three eager children on whom daddy's thirst for knowledge has made an indelible impression.

"Some people sit and rock and dream of objectives," Colonel Bracha says, "but they never take the first step. Once you start toward a goal you just keep going. Persistence becomes a habit."

Chief of the reliability branch of BSD's materiel and technical requirements office, Colonel Bracha began working on his PhD in 1958, immediately after his assignment to Los Angeles.

In less than four years he completed 80 credit hours of graduate work in business statistics, economics, industrial engineering and industrial management. He wrote a lengthy dissertation on "Analysis of Reliability Management in Defense Industries" and on May 14 passed the final comprehensive examination certifying him for the degree.

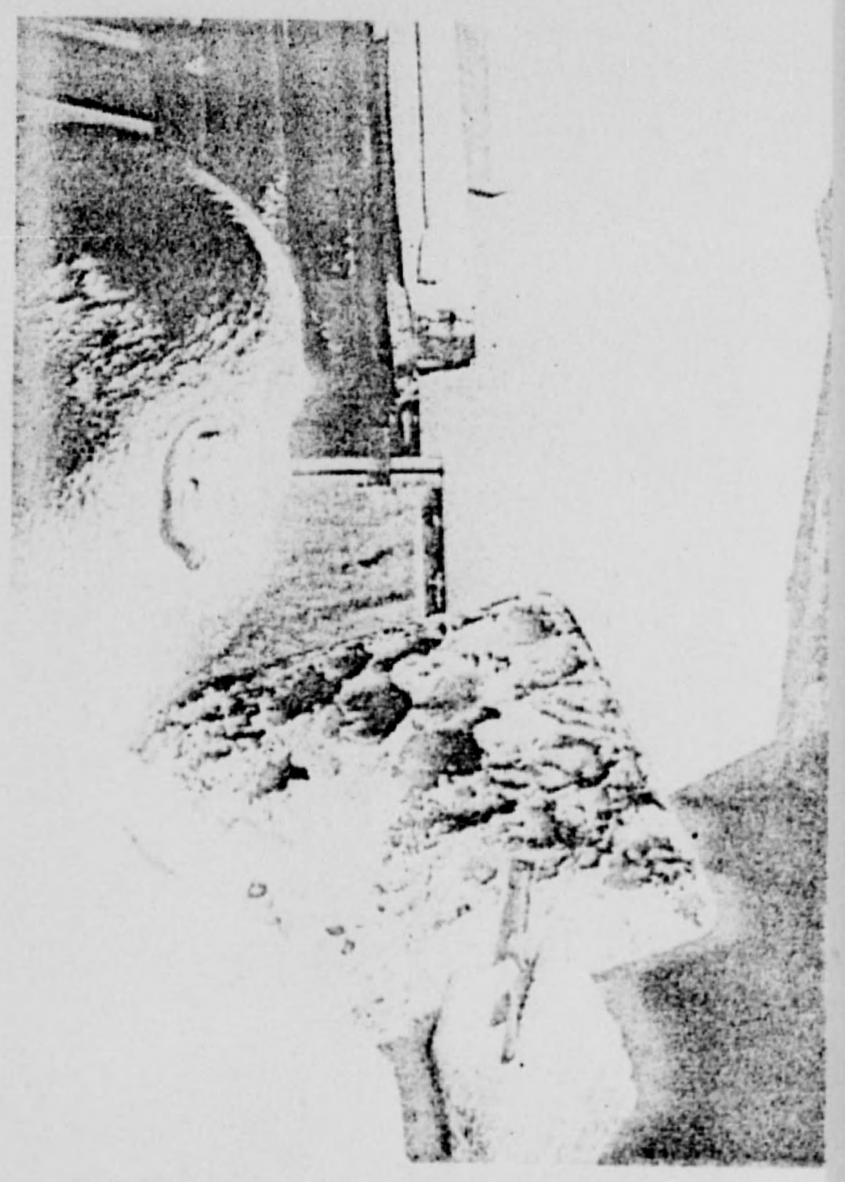
The 43-year-old officer is quick to admit that his Air Force service has made his extensive education possible.

"I've gone to school some three years on a full time basis," he observes. "What industry would permit that?"

Colonel Bracha, who maintained high academic averages throughout his scholastic programs, says it is hard to identify the precise motivation behind his relentless pursuit of knowledge.

"I started out wanting to be a medical doctor," he reflects. "Then I became keenly interested in the sciences. Now I have degrees in management. But I feel I have gotten what I really wanted—the opportunity to read and to learn and to excell in some field.

"If I had started out with a doctorate in mind," he says, "I probably would have been overwhelmed by the immensity of the task. But the idea is to take first things first, to achieve one plateau before reaching for the next. I think that's the secret to any long-range goal."



AFSWC artist Maj. Paul Rominger works o querque home. Here he uses black velvet i officer, who was a World War Two prisoner of the AFSWC deputy chief of staff for plans



Master Sergeant William D. Adams, acting food service officer at Patrick AFB presents a $100 savings bond each year to the outstanding senior in his hometown, Jonesville, N. C.

Patrick Airman Has Own Scholarship Plan

Master Sergeant William D. Adams of Patrick AFB recently presented, for the fourth time, the William D. Adams Family Honor Student Award, given annually to the outstanding senior of the sergeant's hometown high school.

The award, a $100 savings bond, was accompanied by a certificate which reads: "Given this day, 26 June 1962, to Glenda Van Hoy for excellence in educational achievements." Miss Van Hoy was the 1962 winner.

Asked why he gives the award Sergeant Adams said, "I conceived this idea while on recruiting duty working closely with high school principals and students. Knowing that awards given in the Air Force make better airmen, I decided to start award competition in the high school."

Sergeant Adams is a strong believer in obtaining an adequate education. He is enrolled at Brevard Junior College studying electronics four nights a week.

Starting next year he will present the award to the outstanding senior at the new Satellite High School located near Patrick Capehart housing.

Biometrics Chief Named For PL 313 Appointment

Advancement from the grade of GS-15 to an appointive position under Public Law 313 became effective recently for M. Bryan Danford, Ph.D., who heads the biometrics department of the biosystems research division, School of Aerospace Medicine, Brooks AFB.

The son of Mr. and Mrs. Fred Danford of Buffalo, Tex., Dr. Danford, 39, received an M. A. degree in mathematics from the University of Texas, Austin, in 1948. A former Navy lieutenant (junior grade), he obtained his Ph.D. in experimental statistics from the Greater University of North Carolina, Raleigh and Chapel Hill, in 1954. His last year's work on his Ph. D. was carried out under a fellowship awarded to him by the National Science Foundation.



At a recent Hq AFSC Toastmasters luncheon, Maj. Gen. Clyde H. Mitchell, AFSC vice commander, endorsed that organization as one well equipped to enhance individual capabilities in oral expression. After the luncheon, General Mitchell posed with Harry Gaberman (left), club president, and Ed Straus, presiding Toastmaster.



Lieutenant Colonel Vincent J. Bracha reaches an academic pinnacle as his doctorate degree is officially conferred. The colonel entered the military service some 20 years ago with less than a high school education.

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AFSWC artist Maj. Paul Rominger works on a new painting in his Albuquerque home. Here he uses black velvet instead of canvas. The artistic officer, who was a World War Two prisoner of war, is assigned to the staff of the AFSWC deputy chief of staff for plans and operations.



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AFSWC Major 'Brushes Up' On His Artistic Talents

During duty hours, Maj. Paul E. Rominger plays an important role in the operation of the Air Force Special Weapons Center's nuclear research and development mission.

Off duty, he is developing outstanding artistic talent which, he hopes, will open up new career opportunities after retirement.

A meticulous craftsman, he has completed 20 oil and black velvet paintings since he started painting more than 10 years ago. They include a variety of subjects; everything from a tiger to an Eskimo.

His work shows a mastery of detail and color. His black velvet paintings seem to have an inner life of their own, almost glowing with luminosity.

One of the highlights of his life as an artist was his painting of a new Alaskan Air Command insignia when he was on duty at Elmendorf AFB.

He picked up his first brush when he was stationed in Honolulu in 1951. His first paintings were of the gaudy island scenery.

In Alaska, his technique improved and he won the Anchorage art show's "most popular" painting prize.

ASD Research Scientist Earns Engineering PhD

Henry R. Velkoff, a research scientist for Aeronautical Systems Division, was awarded a Doctor of Philosophy degree in mechanical engineering from the Ohio State University recently.

A native of Fort Wayne, Ind., Velkoff began his government service in 1944 at Langley Field, Virginia. After his military service, he was employed as an aeronautical engineer at ASD in 1947.

After serving in the Korean conflict from May 1951 through Feb. 1953, he returned to ASD as a supervisory aeronautical research development and design engineer.

Bootstrap Captain One Of 22 In Eglin Advanced R & D Class

by Mike Lucas

Kentucky farmboy to space-age scientist since the close of World War II . . . that's the real life story of Capt. Kenneth L. Abney a student at Air Proving Ground Center's experimental research and development school.

The graduate school, unique to the Air Force and operated at Eglin AFB by Florida State University full-time professors, was born three years ago with only physics and mathematics students enrolled. It was so succesful that an extensive course in "Management of Research and Development Installations" was added last autumn.

If his recruiter of 17 years ago had suggested that he would earn a master's degree in business administration, Captain Abney would have been skeptically amused. The captain, now an electronics engineer with Eglin's 3208th Test Group, had enlisted with but one year of high school.

The 22 students in his class, including 17 civilians with GS-13 ratings and up, have been absorbing the know-how of Professor Waino W. Suojanen, one of the top research and development men working with the Armed Services.

Among thought-provoking articles written by the professor are ones bearing titles such as "Are Women Workers Unpredictable?" and "Is Military Organization Really Better?" plus studies on "Differing Motivations of White Collar Workers" and "Accounting Theory and the Large Corporation."

He points to a magazine article. It asserts, "Every year 50,000 technical journals covering the physical and life sciences will be published along with 60,000 technical books and perhaps 100,000 research reports."

"No man can read at that pace," Suojanen stresses. He leaves little doubt that this is the Age of the Expert who must depend upon other specialists. The doctor constantly hammers home the fact that technology is vital today, but that quality management of men, materials, machines and money is even more decisive.

The Air Force estimates it costs $14,000 a year to send a scientist or engineer to a college campus. The Eglin program, run on a lecture and seminar basis with outside speakers in addition to Dr. Suojanen, cuts the expense to a mere seventh, or $2,000.

With the summer session recently over, Captain Abney's class is currently engaged in the task of thesis research and writing. The captain will explore the management aspects of airborne instrumentation. Before next April, the students will spend some time on the Tallahassee campus to fulfill residency requirements.



Captain Kenneth L. Abney and Harold Wise, his supervisor, pore over a blueprint relating to Tracking Station No. 17. Both have attended the research and development school at Eglin.

Up-East 'Hillbilly' Adds To His Fame On Florida Radio-TV

Airman William "Billy C" Cole picked up a guitar at age 15 on a dare and has been playing and singing ever since. His rich, deep voice has won him many honors, including eight trophies.

Much of Bill's music is original, and has been praised by professionals. He has appeared on stage with a number of professionals, including such notables as Don Gibson, Cuz Wilbur and Grandpa Jones.

Although his hometown is in the northeastern part of the US—Batavia, N. Y.—his specialty is country and western style music.

During overseas assignments, "Billy C" played most of the clubs in Goose Bay, Labrador and Sondrestrom, Greenland.

In 1958, as a leader of a western band called the "Jet Strings," he appeared in the Air Force talent contest representing Duluth Municipal Airport and Air Defense Command.

Now at Patrick AFB, Bill has performed many times at the Comet Service Club. He represented Patrick at the AFSC talent contest finals in 1961 and won second place. He won first place in the Country-Western category at Patrick again this year, although his duties didn't permit him to make the trip to Edwards AFB for the AFSC contest.



Airman Billy Cole, in addition to being a fine entertainer, is president of the Comet Service Club Airmen's Council. A 4th Weather Group observer at Patrick AFB, he is the father of two sons.

CCMR Employees Selected For Industrial College

Selection by the Air Force of a Chicago civilian employee to attend the nine month post-graduate program of the Industrial College of the Armed Forces was recently announced by Gen. B. A. Schriever, AFSC commander.

Peter E. Giannini, 42, was tapped for the high level military policy making course after competing with 15 nominees from six major commands within the Air Force.

Giannini's selection was concurrent with his promotion to deputy chief of the Chicago Air Force Contract Management District. In his new job he will be responsible for administering 1,500 Air Force procurement contracts in upper Illinois and Iowa with a face value of over $700 million in ballistic missile components and electronic communications equipment.

Giannini has been an Air Force civilian employee since his graduation from the Illinois Institute of Technology in 1941.



Peter Giannini

'Accent On People

Study at Graduate Level . . .	24 highly qualified pursue study at the will conduct studie time receive full p
Pay & Allowances . . .	All actions pertainir allowances currentl Study Group. Seer receive final report watch on this one.
Technical Competence . . .	275 AFSC civilian trained this year sponsored by the N by Navy instructor AFMDC, CCMR—
Sponsor System . . .	Headquarters career bers of Junior Offic sponsor system. Ob practices throughout
Career Motivation. . .	AFSC Officer Care ducing results. The to 8th position an types are still most
Promotions . . .	Long awaited notific motion received for new grade was effect

One Of 22 R & D Class

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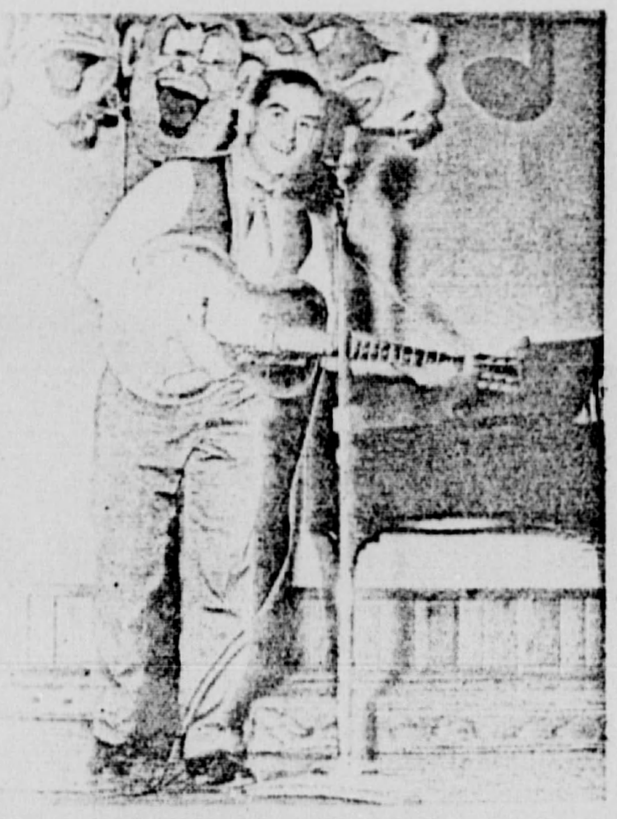

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Peter Giannini

Two At Edwards AFB Achieve MS Degrees In Off Duty Studies

Lieutenants Timothy H. Fine and Donald A. Cross of Edwards AFB recently received their master's degrees in engineering through the on-base graduate study program conducted by the University of Southern California.

The officers, who earned their degrees through off-duty studies, were presented diplomas at USC recently. Lieutenant Fine received a degree in electrical engineering and Lieutenant Cross received a degree in mechanical engineering.

Lieutenant Fine is assigned to the 6593rd Test Group (Development) as instrumentation engineer in the data systems section where he is working on Project Scorpio (liquid oxygen-liquid hydrogen rocket engine development) and the Ultra Low program (high altitude space engine development). A graduate of the University of Virginia, he is presently certified by the Commonwealth of Virginia as an engineer-in-training for the professional engineering license.

He started his studies with the base USC program in the fall of 1959 and completed 33 hours of graduate work.

Lieutenant Cross graduated from the University of Oklahoma in 1959, receiving a degree in aeronautical engineering.

He reported for active duty at Edwards in July of that year and is presently assigned to the flight research branch as an aeronautical research engineer, performing analytical and analog computer research on the dynamics of aerospace vehicle systems.

Lieutenant Cross began his graduate studies in the USC program in the spring semester of 1959-60, receiving his degree after 2½ semesters.

Twenty-one persons have received their master's degrees through this program since its inception in 1952.

'Accent On People' Highlights

Study at Graduate Level . . .	24 highly qualified civilians have been selected to pursue study at the graduate level in FY 1963—will conduct studies in leading universities—same time receive full pay and allowances.
Pay & Allowances . . .	All actions pertaining to military compensation and allowances currently being considered by DOD Study Group. Secretary of Defense scheduled to receive final report by 30 Oct 62. Will keep close watch on this one.
Technical Competence . . .	275 AFSC civilian and military personnel will be trained this year in procurement area—courses sponsored by the Navy. Courses to be conducted by Navy instructors at AFSC installations—ASD, AFMDC, CCMR—no tuition cost to Air Force.
Sponsor System . . .	Headquarters career advisor calling together members of Junior Officer Committees to evaluate the sponsor system. Objective—to improve sponsorship practices throughout command.
Career Motivation. . .	AFSC Officer Career Motivation Program is producing results. The command has moved from 11th to 8th position among all ZI commands—R&D types are still most difficult group to retain.
Promotions . . .	Long awaited notification of effective date of promotion received for 344 captains and 84 majors—new grade was effective 15 July.

ECMR Employee Given Top Award For Work In Scouting Activities

An employee of the Hartford, Conn., Air Force Contract Management Office has been given national recognition for outstanding service to the Boy Scouts of America.

The highest award any Boy Scout Council can present to an adult for distinguished service, the Silver Beaver,



Charles B. Johnson

has been presented to Charles B. Johnson, assistant chief of quality control at Hartford.

The award was official recognition of Johnson's long and outstanding career of dedication to the youth of America. Over the past 16 years, he has served as cub master, scout master, neighborhood commissioner, district commissioner and district chairman. At present he is chairman of the Manitick District of Connecticut, a member of the district and council training staff, and an active participant on the health and safety, and scout advancement committees.

Johnson spends most of his free time, including his annual leave, striving to make better citizens out of the young people he works with. Each year he spends two weeks as a waterfront instructor at the Girl Scout and Boy Scout aquatic camp. The scouts are expertly schooled in water safety, swimming, life saving, boating, canoeing and sailing.

Within the greater Hartford area he runs courses for the American National Red Cross in water safety, boating safety and first aid. The crippled and blind children of the area benefit greatly from a special 12 weekend training program in which he conducts therapy and teaches swimming.

One of the highlights of Johnson's scouting career was the Pioneer Trek he conducted last summer. He organized and led a group of 36 scouts and explorers on a 21-day trip from Hartford to Cimarron, N. M.

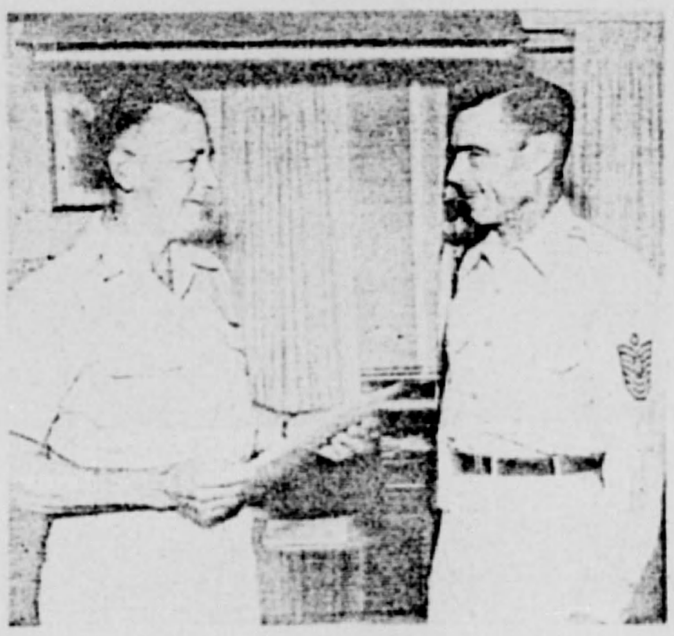
Special buses were painted to simulate covered wagons, and stops were made at Scott AFB, Selfridge Field, Offutt AFB and the Air Force Academy. At each base, the Air Force provided an escorted tour of the facility, plus food and lodging.

At the Air Force Academy the scouts were treated to a realistic presentation of an astronaut's trip into space just three days prior to an actual flight. The cadets put on a special physical fitness display and conducted a parade for the scouts.

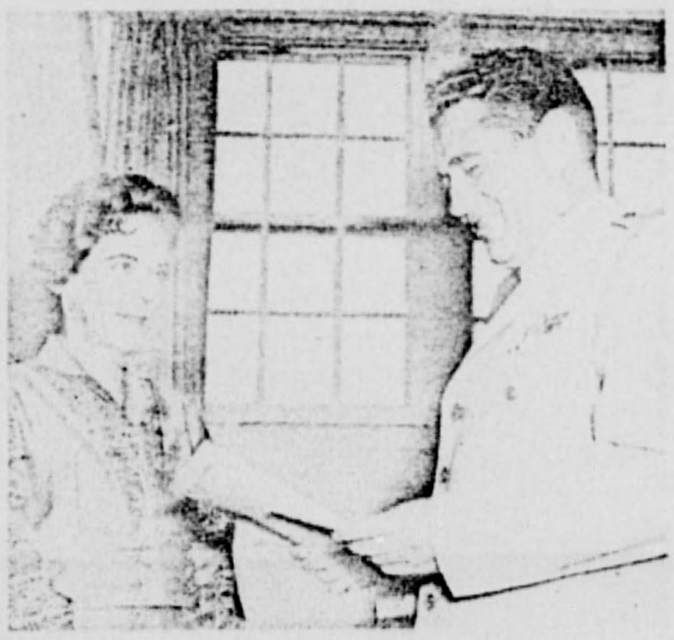
At their destination, the Philmont Scout Range at Cimarron—127,000 acres of rugged country on the slopes of the Sangre de Cristo Range of the great Rocky Mountain Chain—the boys put to use their scouting skills as they emulated their American pioneer forefathers by living off the wilderness with their belongings on their backs.

They hiked some 150 miles through the land of Kit Carson and the Indians to the great peaks of the Rocky Mountains. As their leader, Johnson's responsibilities were heavy. Yet the whole trip was completed without trouble of any kind.

Johnson lives in Windsor Locks, Conn., with his wife, Inez, and their two children, John, 15, and Mary, 13. The whole family is interested in outdoor activities and the children are active scouts.



Master Sergeant J. H. Woodard (right) accepts congratulations of Col. W. H. Cleveland, Air Force Missile Development Center deputy commander. Sergeant Woodard, a Holloman AFB first sergeant, recently earned the Commandant's Award at the AFSC Senior NCO Academy.



First woman from the Air Force Missile Development Center to graduate from the "Economics of National Security" correspondence course is Gertrude M. Snyder (left) receiving her diploma from Lt. Col. Michael J. Barbieri, director of administrative services at AFMDC. The intensive year's course is conducted by the Industrial College of the Armed Forces Correspondence Division, Washington, D. C. Miss Snyder has been a civilian employee at Holloman since 1947. She is publications manager in the office of administrative services.

ASD Man Earns Award For IFF Systems Work

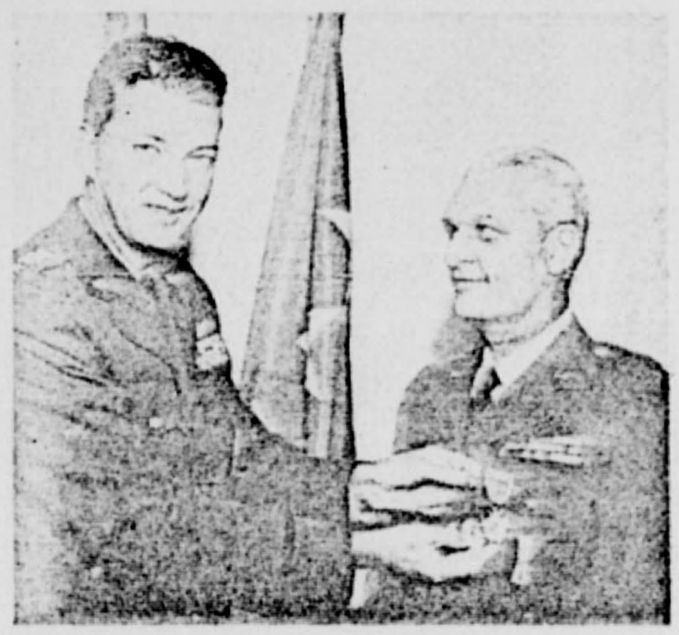
Robert W. Stanford, of the Directorate of Operational Support Engineering, Aeronautical Systems Division, recently received a special act or service award of $300. The award was presented to him for his work on the Mark X identification friend or foe (IFF) system.

Stanford was one of two representatives for the Air Force at a series of technical meetings lasting 18 months.

At the conclusion of the meetings, the "Setrin Fix," developed by Mort Setrin, Rome Air Development Center, was accepted for Canadian-United Kingdom-United States military and civil IFF systems. This system was chosen over a number of other international proposals.

Stanford also has been recommended for the Exceptional Civilian Service Award for his part in obtaining joint agreement on military characteristics of the IFF system. He was instrumental in showing conference members that the "Setrin Fix" could be easily engineered into USAF airborne sets.

An electronics engineer in the telecommunications branch, he started his career at ASD in 1944 as a chief engineering aide in the Aircraft Radio Laboratory.



Former assistant to the vice commander of AFSC, Col. Thomas P. Corwin is decorated by Gen. B. A. Schriever, AFSC commander. Before Colonel Corwin left AFSC for duty as vice commander of the Air Force Accounting and Finance Center, he was awarded an Oak Leaf Cluster to his Legion of Merit.



Squadron Leader Peter R. Mayle (left), an RAF officer assigned to Aeronautical Systems Division's Reconnaissance Laboratory, has been named a member of the Most Excellent Order of the British Empire by Queen Elizabeth II. The award, which is the first of four steps leading to knighthood, was received by Squadron Leader Edward T. Curran, also at ASD, last year.

Given Top Award outing Activities

three days prior to an actual flight. The cadets put on a special physical fitness display and conducted a parade for the scouts.

At their destination, the Philmont Scout Range at Cimarron—127,000 acres of rugged country on the slopes of the Sangre de Cristo Range of the great Rocky Mountain Chain—the boys put to use their scouting skills as they emulated their American pioneer forefathers by living off the wilderness with their belongings on their backs.

They hiked some 150 miles through the land of Kit Carson and the Indians to the great peaks of the Rocky Mountains. As their leader, Johnson's responsibilities were heavy. Yet the whole trip was completed without trouble of any kind.

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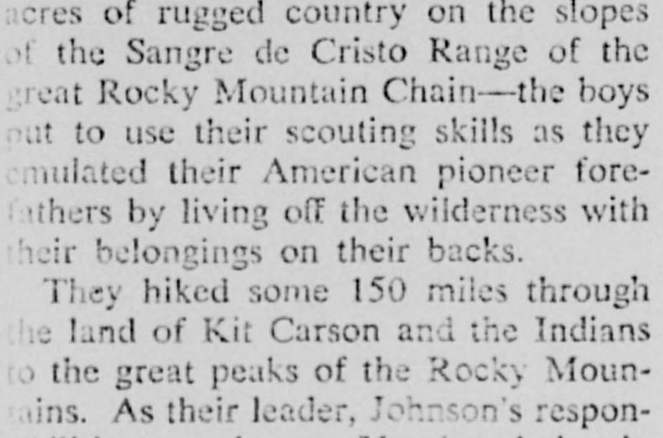

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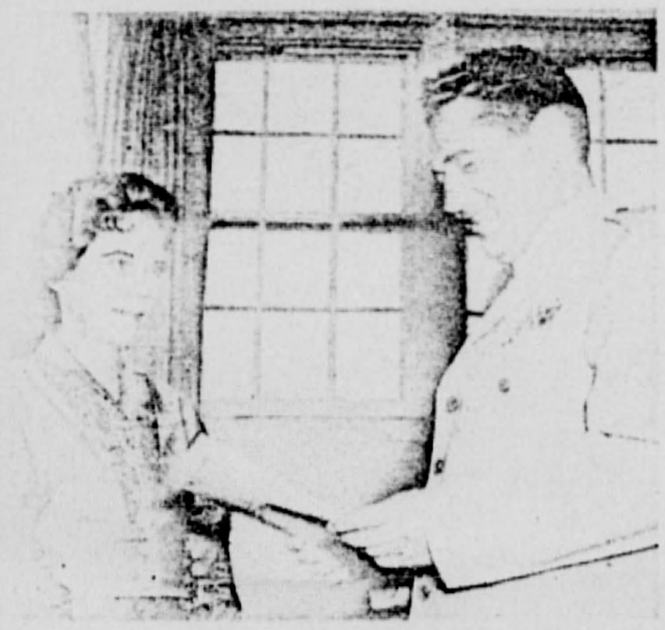

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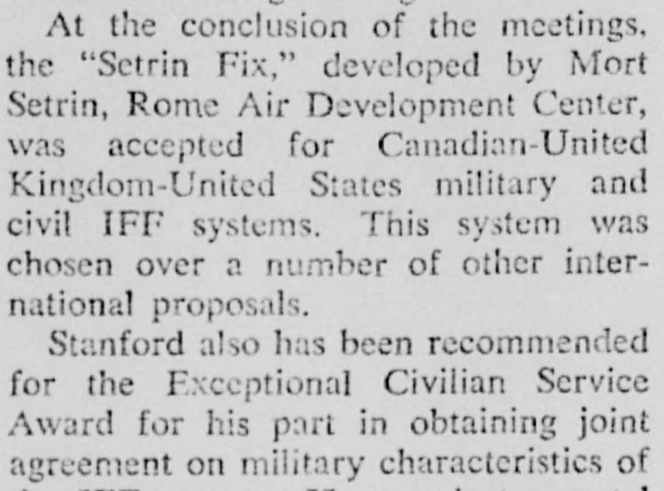

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Patrick Officer Cited For Authoring Books On Space Capability

Lieutenant Walter M. Ryland III was recently honored with the AFSC Junior Officer Noteworthy Achievement Award. He is assigned to the Office of Information, Air Force Missile Test Center.

Lieutenant Ryland was nominated under the Junior Officer Noteworthy Accomplishment Program which was undertaken to recognize the accomplishments of young officers in AFSC.

General B. A. Schriever, AFSC commander, in a personal letter to Lieutenant Ryland, wrote: "Your commander has informed me that you recently distinguished yourself by writing two books on missile and space activities at the Air Force Missile Test Center. . . ."

Lieutenant Ryland's first book, "Cape Canaveral," was published by Nelson Doubleday, Inc., Garden City, N. Y. The book was accepted by the Doubleday Science Program book club and distributed to its 100,000 members. He has completed the manuscript of another book, "Downrange," which will be published under the same program.

"These two books," General Schriever said, "provide a strong contribution to the mission for military space capability. I commend you for the outstanding creative and executive abilities demonstrated in composing these works and for your exceptional ability and dedication evidenced in their publication."

RADC Wins Safety Award

The Air Force has awarded a Flying Safety Plaque, one of its highest flying safety awards, to Rome Air Development Center.

RADC compiled more than 23,000 accident free flying hours from July 1, 1958 through Dec. 31, 1961.

The center's electronics research and development operations require extensive flying, much of it to other continents.

RADC currently has 22 pilots. They fly 13 aircraft, including Boeing KC-135 Stratotankers, Martin B-57s, twin-engine Convair C-131s, Douglas C-47s, Lockheed T-33 Shooting Stars, and liaison DeHavilland L-20 Beavers.



James S. Boney of Normandy, Tenn., a new appointee to the Air Force Academy in Colorado Springs, visits Maj. Gen. William L. Rogers, commander of Arnold Engineering Development Center, prior to reporting to the Academy. General Rogers, a graduate of the US Military Academy in 1934, discussed cadet life with Jim and some of the aerospace work being done at Arnold Center on Project Mercury.

Four Commands Cited For Savings Program As 'Money Tree' Ends

Four major commands were presented awards on July 12 by Gen. Curtis E. LeMay, Air Force chief of staff, at a Pentagon ceremony which officially closed project "Money Tree." Gen. Mark E. Bradley was awarded the Distinguished Service Medal for his part in the program, which resulted in savings of more than $100 million on everyday Air Force maintenance and management operations.

The winners of the top awards were the Strategic Air Command, Air Defense Command, Air Training Command and the Alaskan Air Defense Command.

The net savings to the Air Force under the program, initiated by General Bradley in November 1960 when he was deputy chief of staff for systems and logistics, will not be known until a final summation is completed by Air Force fiscal officials.

While the immediate savings were announced as "more than $100 million," Air Force systems and logistics officials said the long-range results will be considerably higher with a "potential saving of a half billion dollars."

"Money Tree" was implemented to eliminate duplication, increase work efficiency and reduce the cost of maintaining the highly diversified Air Force operation. While it preceded by several months a similar project put into effect by the Department of Defense, it followed the precepts of the DOD economy and good management program while the two were being conducted concurrently.

Defense Secretary Robert S. McNamara recently reported to the President that the DOD program resulted in substantial savings in all areas of Defense operations.

The "Money Tree" program made the American taxpayer a big winner because of the windfall resulting from improved management in all areas of Air Force operation. (AFNS)

Air Force Commandos To Help Train Allies

Aerial counterinsurgency, the tough training program underway at Hurlburt Field, Fla., for the Air Force's 4400th Combat Training Squadron, will be used principally to benefit commando units of the allied nations of the free world.

The mission of the Air Force's commandos is not to engage actively in conflict but to instruct allied air crews in all phases of aerial counterinsurgency missions and tactics, as well as the techniques of aerial counterguerrilla warfare.

Training in low level troop and supply drops, close air support, interdiction raids and night detection techniques are among the things to be imparted to airmen of allied nations by the USAF air commandos.

Although principles and techniques used by both ground and air commandos are alike, the newly-formed air commandos at Hurlburt Field will make greater use of air operations.

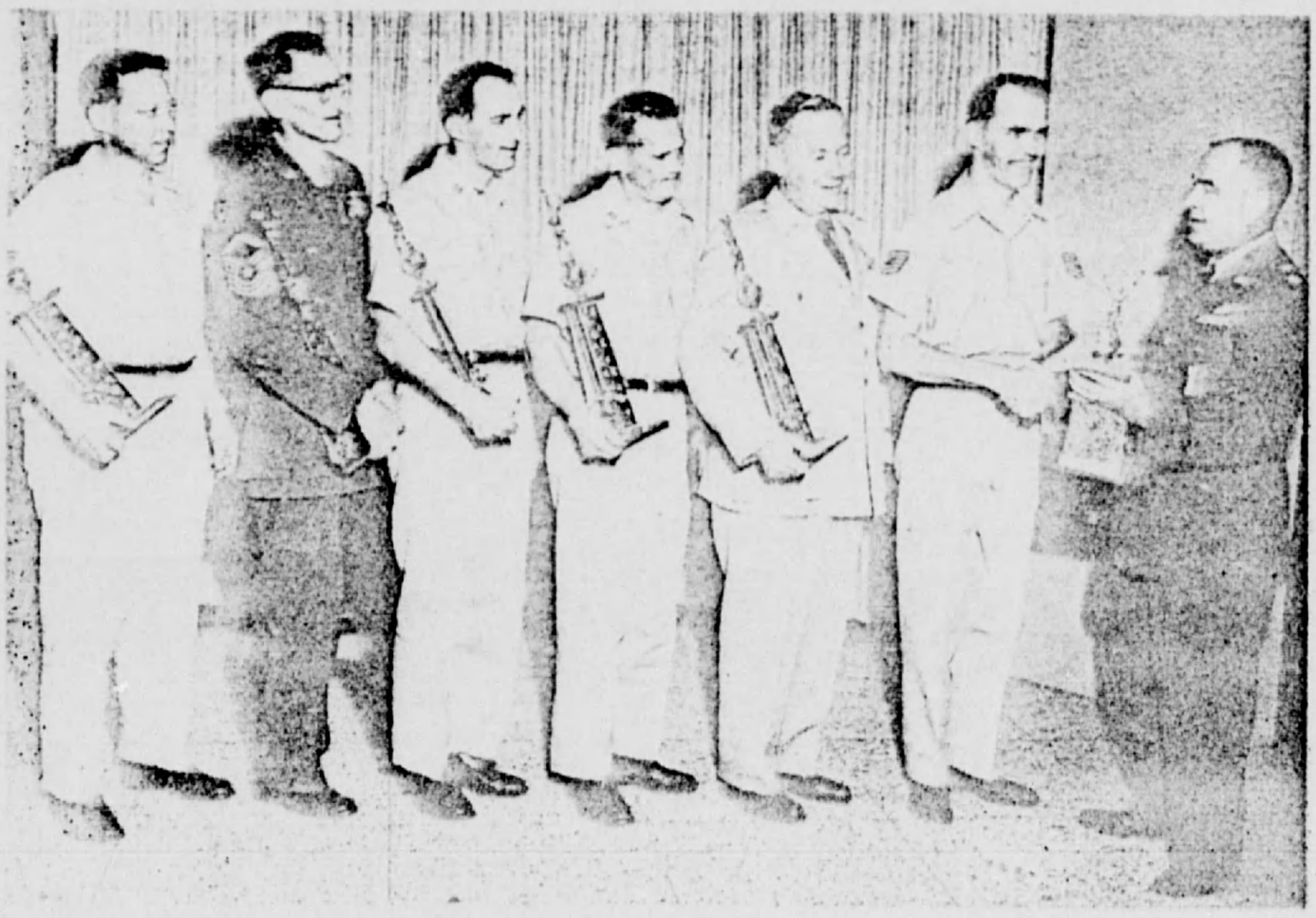
Upon completion of their training, the Air Force commandos will help train commandos of allied nations to develop units of their own.



Young bowling champions (from left) Eddi
all children of Col. Harold A. Armold, spe
judge advocate. Eddie, a little league short
his first bowling trophy this year. Harold,
pitcher, has won seven bowling trophies in
who has also bowled for about three years,



Conclusion of the San Diego Contract Management District bowling season saw the "One Arm Bandits" emerge as the top team. From left are Don Lauder, Renee Sciarra, Frank Cable, Ruth Ward and Charles Colson. Individual trophies were presented at a season's end bowling banquet.



Headquarters bowling champs, The Trainers, recently marked their third league championship in four years at conclusion of the bowling season. Members of the Education and Training Section team receiving trophies from Maj. Gen. Clyde H. Mitchell, AFSC vice commander, are (from left) TSgt. Ottaw Fulton, SMSgt. Robert Readling, Capt. Samuel Jolly, Capt. William Yost, Lt. Col. Maurice DeSchepper, and TSgt. Lawrence Rumfield, team captain.



Winner of the Indianapolis Star's 11th Annual Bat Boy Contest, Don Fitzpatrick (left) grins proudly as Star's sports editor, Jep Cadou Jr. presents him with an engraved wristwatch. Max Schumacher, general manager of the Indianapolis Indians, looks on. Don, the son of Central Contract Management Region's Russell T. Fitzpatrick, received a $400 college scholarship from the Indians.

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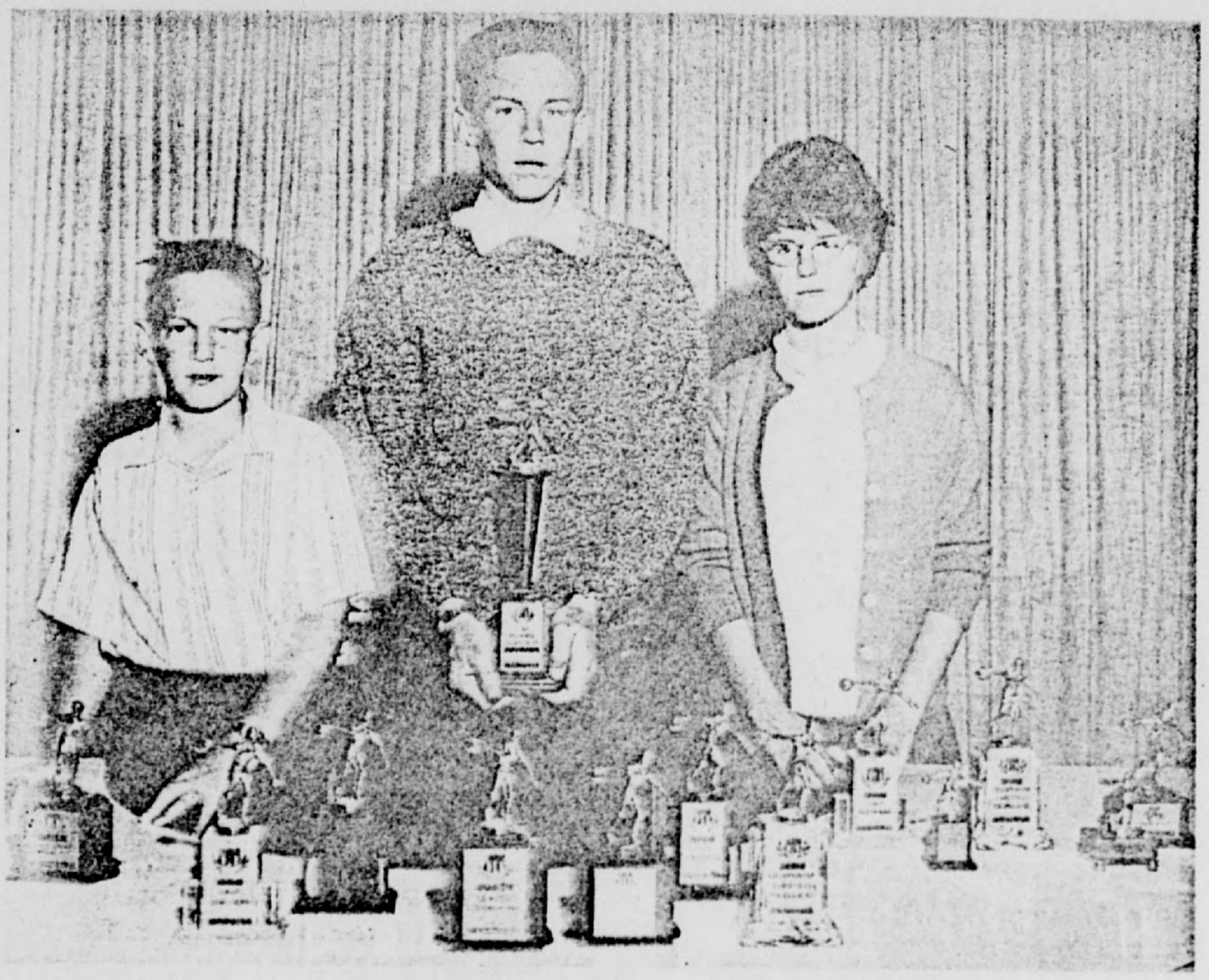

Young bowling champions (from left) Eddie, Harold, Jr., and Carolyn are all children of Col. Harold A. Armold, special assistant to the AFSC staff judge advocate. Eddie, a little league shortstop and second baseman, won his first bowling trophy this year. Harold, a junior high school baseball pitcher, has won seven bowling trophies in three years of play. Carolyn, who has also bowled for about three years, has taken five trophies.



Conclusion of the San Diego Contract Management District bowling season saw the "One Arm Bandits" emerge as the top team. From left are Don Lauder, Renee Sciarra, Frank Cable, Ruth Ward and Charles Colson. Individual trophies were presented at a season's end bowling banquet.



New officers of the Muroc Lake Woman's Golf Association at Edwards AFB are (from left) Jean Archer, vice president; Jean Robbins, secretary Dorothy Clark, treasurer; and Jackie Bear, president.



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Officers Wives Club bowling champs at Air Force Special Weapons Center pose with trophies presented at a recent luncheon. Spring League winners are (from left) Mary Steger, Millie Kokoska and Norma Airmet. Not pictured is Carole McBride.

57 Lady Volunteers Lauded For Hospital Red Cross Service

Capping and recognition ceremonies for Red Cross volunteers at the USAF Hospital Lackland were recently held in the hospital auditorium.

Twenty-one Gray Ladies and Youth Staff Aides received caps marking the end of their training period and 36 workers received service awards.

Principal speaker for the occasion was Brig. Gen. James W. Humphreys, Jr., hospital commander. The capping was performed by Lt. Col. Mary T. Gates, chief, clinics nursing service.

Among those honored were five mother-daughter teams of volunteers. They are Mrs. Richard P. Klocko and Miss Kerry Klocko, Mrs. Oakley K. Park and Miss Carolyn Park, Mrs. Robert J. Woolverton and Miss Elizabeth Woolverton, Mrs. Victor J. Stachniewicz and Miss Colline Stachniewicz, Mrs. Thomas E. Todd and Miss Patricia Todd.

Caps were presented to Misses Trudy F. Auvil, Josephine Bayer, Anita L. Boisvert, Sylvia De la Garza, Patricia Dulevitz, Carolyn Park, Marcy Fleming, Molly Fleming, Lois Gilbert, Joanne Haselden, Charlene Hey, Stella L. Mickey, Rosalyn Paulson, Bonnie Sherrod, Colline Stachniewicz, Linda Varela, Alana J. White, Ann C. Williams and Margaret Dean; and Mesdames James A. Boyd and Harvey R. Mobley, Jr.

Service awards went to Mesdames William H. Beaber, Thurman A. Glasgow, Lena Hierstein, Sidney H. Luther, Harold Norris, William A. Woodie and Robert J. Woolverton; Misses Donna J. Blevins, Sharron M. Boothe, Donna Connally, Bernice Dickson, Barbara A. Faulkner, Mary L. Garcia, Eileen M. Gilbert, Rose M. Gonzales, Haidy Guerrero, Barbara J. Haddock, Anita L. Henderson, Cheryl Kent, Connie Kentner, Kerry Klocko, Stacy Klutz, Rosemary Ledgerwood, Peggy A. Maloney, Donna L. Menefee, Stephanie Monk, Barbara J. Nicholl, Cynthia I. Oswalt, Hedy Polski, Joan Marie Shand, Alice Elaine Stuart, Christie A. Sullivan, Patricia Todd, Geraldine Trimble, Patricia A. Walden and Elizabeth Woolverton.



Mrs. John A. Denmark (left) receives congratulations from Mrs. John Fisher, chairman of volunteers, South Brevard County Chapter of the Red Cross, following presentation of a 10-year service bar. Mrs. Denmark has put in more than 1,700 hours of volunteer service.

Patrick Wives Club Gives 4 Scholarships

Four students recently received scholarships totaling $1,150 from the Patrick AFB Officers Wives Club.

Marilee Dunlap, daughter of MSgt. and Mrs. Ellwyn B. Dunlap, received a $400 scholarship. She plans to attend Brigham Young University to major in psychology.

Patricia Adams, daughter of MSgt. and Mrs. William D. Adams, plans to use her $200 grant to attend Brevard Jr. College, majoring in journalism.

Robert Larry Rhodes, son of SFC Robert M. Rhodes and Mrs. John O'Connor, will attend Florida State University, and plans to apply his $400 grant toward a degree in either chemical or aeronautical engineering.

Lorne Butler, son of TSgt. and Mrs. William F. Butler, plans to use his $150 at the University of Florida where he will study civil engineering.

Final selection for the scholarships was made by Woodrow J. Darden, superintendent of Brevard County Schools, and a committee of educators.



Mrs. Anthony C. Benjes, Jr., base projects chairman (right), offers her congratulations to four students who won Officers Wives Club scholarships at Patrick AFB. They are (from left) Robert Rhodes, Marilee Dunlap, Lorne Butler, and Patricia Adams.

VA Child Benefit Facts Available

The Veterans Administration has put out a reminder for your reference file on the legal definition of "orphan" and what it can mean in college educational benefits to your children.

The VA says that there are five major areas of misunderstanding which keep eligible children from applying for benefits rightfully theirs.

According to the VA, these misunderstandings are:

1. The fact that one parent still lives makes some children believe they do not qualify as "orphans."

For this benefit, an "orphan" is a child whose veteran-parent is dead as the result of a wound, accident or illness, attributable to service in the Armed Forces.

2. The fact that the dead parent had no wartime service makes others believe they are ineligible.

If the veteran-parent's death resulted from the performance of duty or from extra-hazardous service during peacetime, the child is eligible.

3. The fact that they are married makes some believe they are no longer "children."

Marriage does not affect eligibility. Any son or daughter of a serviceman, whose death is attributable to his service, is eligible for the educational benefits provided he or she is between 18 or 23 years of age.

4. The fact that their living parent, usually their mother, has remarried and their step-father has legally adopted them, makes some children believe they are ineligible.

The marriage of the living parent and the subsequent adoption does not affect the eligibility of the children.

5. The fact that many children do not wish, nor are prepared, for education at the college level makes some believe they cannot take advantage of this benefit.

Although training for a high school diploma is not permitted, eligible children may take vocational courses and other non-college training that will help them earn a living.

The VA says it will be glad to spell out the War Orphan Educational Program, pointing up that 41,500 children have taken advantage of this program. (AFNS)



Recently elected officers of the Edwards A (from left) Norma Douglas, president; Jackie Phillips, corresponding secretary; and Sally Se recording secretary.

Lauded For
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Mrs. Dale D. Thorngate, recently named Family Services coordinator at Patrick AFB reads to her children, Chip and Cathy, from one of the books donated for the FS play area. The play area is being established to provide children "de-energizing" activity while parents sign in at Patrick.

Joined For Disaster Aid

Through efforts of a civic-minded group at Patrick AFB, the Cape Canaveral Chapter of the National Defense Transportation Association was organized on Oct. 13, 1960.

Members of the group headed by Capt. Jean P. Feigenbaum, traffic management section chief, banded together to enhance prompt assistance in any period of disaster affecting the Canaveral area or the National Defense Program.

The chapter is made up of Patrick military and civilian personnel along with members of the transportation industry.

In the event of a disaster the NDTA members will coordinate all transportation agencies, Motor, Rail, Bus, Air and Vans in conjunction with the Air Force and Red Cross in the evacuation of refugees.

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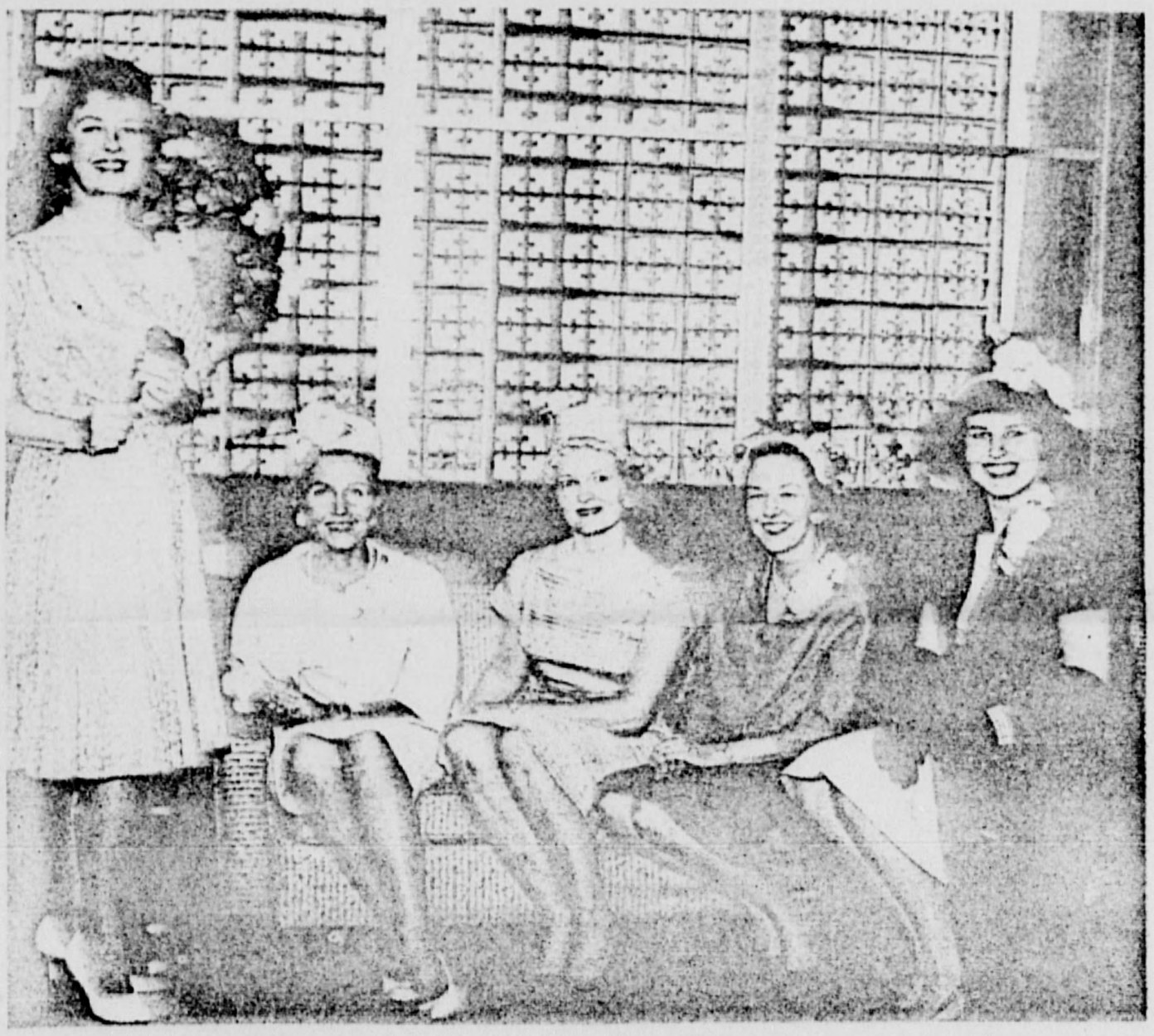

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RECENT NEWS STORIES

MORE HIGH ALTITUDE UFO SIGHTINGS: It seems that almost every Russian or American orbital or high altitude test flight is accompanied by UFO's of one sort or another. In our June issue we reported on Col. John Glenn's "fireflies," which were also seen by Russian cosmonaut Gherman Titov. More recently, test pilot Joseph Walker, flying the experimental rocket-powered X15 to a record altitude, came upon five or six disc-shaped or cylindrical-shaped objects. These were not seen visually, but appeared on film taken during the history-making flight. Still later, another X15 flight, this time by Robert M. White, was highlighted by the dramatic sighting of "a strange paper-like object tumbling in space."

The X15 sightings have been more or less identified as bits of ice flaking from the planes' fuel tank area. A recent official Air Force release, commenting on the Walker and Glenn incidents, concludes as follows: "NASA scientists have no firm conclusion concerning astronaut Glenn's sighting, although several possibilities have been suggested. In any case, neither of these sightings produced any evidence that would indicate that there was any threat offered to these men and their crafts." The wording here is very significant, as the possibility is left open that the UFO's were non-threatening but completely mysterious phenomena of some sort.

SPACE

Glenn Reports on Flight

➤ THE BRILLIANT LIGHT from the "fireball" Astronaut John H. Glenn Jr. saw passing the window of his space capsule was observed by more than 1,400 scientists at a symposium in Washington, D. C.

A color film, showing the astronaut in his cabin during flight, clearly revealed reflections of the burning chunks of retropack flying off the space capsule's heatshield.

The astronaut's silvery suit, his face, and instruments around him in the cabin were "washed over" with a bright orange glow every time a chunk went past the window.

The retropack is generally flung off the heatshield after its braking rockets have been fired. A faulty indicator had shown that the heatshield might be loose behind the astronaut and he was therefore commanded not to release the retropack, which might help hold a loose heatshield onto the capsule.

However, Astronaut Glenn was not informed during most of the flight about the alleged "loose" heatshield. During the showing of the film, he said that he believed it more advisable to keep the pilot updated "on each bit of information, rather than waiting for a final clearcut recommendation from the ground," on suspected malfunctions, such as the heatshield-retropack difficulty.

The astronaut also showed color slides he had taken with his 35 millimeter camera from the capsule. The shots showed cloud formations over the earth very clearly. The U.S. Weather Bureau had asked observations be included in the Mercury program to find if the height of clouds and the different kinds of cloud formations can be determined from the space capsule.

The astronaut said the shadows on clouds on the side opposite from the sun helped to determine the height, and he reported observing various kinds of cloud formations.

The Weather Bureau is interested in improving the optical equipment of the Tiros and Nimbus weather satellites to determine the height of clouds. The astronaut said that from the information gathered on his flight it is quite possible to determine cloud heights from this altitude of from 97 to 159 miles.

His color slides revealed the white band of sunlight at the edge of the earth which is extremely bright at sunset. The bottom layer of the band becomes bright orange and fades into reds as the sun sets.

The band of white sunlight could be seen to fade and become narrower toward the poles. Above the bright halo of sunlight was a deep-blue band and above that the black sky. The astronaut said the light along the horizon is visible for four to five minutes after sunset which he considers a long time since sunset occurred 18 times as fast as normal.

He told how dark shadows were cast on the earth during sunset and pointed out weather areas showing dark against the white light from the sun.

The astronaut took all the pictures of the sunset after passing into the night side of the sky. He had hoped to study an area close to the sun while above the atmosphere, but this would require a period of dark adaptation prior to sunset.

An eyepatch had been developed for this purpose. It was to be held in place by a tape which unfortunately did not work. The plan had been for the astronaut to use the eye without patch while still in the daylight and to look with the dark-adapted eye after he passed into the dark zone.

If the eye patch can be made to work on the next trip, the astronaut may get valuable information from studying areas close to the sun just as it passes below the horizon. It is also possible that one of the future astronauts in the two-man Gemini capsule could use a mask such as is used by pilots of high-flying aircraft to become dark adapted, which takes seven to ten minutes. The time is dependent on the vitamin-A content in the eye and the general health of the person.

• Science News Letter, 81:247 April 21, 1962

ASTRONOMY

X-15 for Star Research

➤ THE HIGH-FLYING research airplane, the X-15, will be used as a platform for studying the stars from above most of the earth's atmosphere.

A new role for the X-15—a base for experiments in aeronautical and space sciences—was announced by the National Aeronautics and Space Administration in Washington, D. C. Work on one of the primary projects, an experiment in ultraviolet and infrared photography of the stars, has already started.

Scientists at the University of Wisconsin are devising instruments for stellar studies from altitudes above 40 miles. Drs. A. D. Code and T. E. Houck plan to test current theories pertaining to the origin and make-up of stars using the ultraviolet and infrared photographs obtained from the high-flying X-15. From the earth's surface, ultraviolet light is obscured by atmospheric ozone, but the X-15 can fly above this layer.

One advantage of the X-15 is that the aircraft can be oriented to face the stars. Another is that it can return and repeat the experiment.

Instruments for the "star tracker" include a gimballed platform containing four cameras, to be mounted in the X-15 instrumentation bay behind the cockpit.

The new program for the X-15 is planned to make use of its capabilities for extremely high speeds and altitudes beyond all but a small fraction of the earth's atmosphere. It adds at least 35 flights to the schedule set originally for X-15 research and may take two years to complete.

There will be a successor to the X-15. No money has yet been allotted in the budget, but plans for this year include completing the study and design of the plane.

The plane, unnamed so far, is expected to have a combination engine such as a turbo-ram-rocket. It will be a non-airbreathing engine that will have some ability to cruise, which the X-15 does not. The plane is expected to be capable of flying higher and faster than the X-15 which once achieved a record height of 217,000 feet and a speed of 4,000 miles an hour.

SPACE

landscape came alive with orange and black antiaircraft fire. A shell ripped White's engine to bits, spewing globs of oil on the windscreen. Recalls White: "We were on the deck. When the flak caught me, I jettisoned the canopy and jumped. I felt the parachute shock an instant before my feet hit the trees—we were that low. That was my closest call, ever."

White spent 2½ months in Nazi prison camps. After the war, he came back home and entered New York University as a freshman. He no sooner had his degree (electrical engineering) than the Korean war broke out. He had kept up his flying in the Air Force Reserve, and in 1951 was recalled to active duty. Though White saw no combat in Korea, he decided to stay in the Air Force. His cool, precise flying won him two years of experimental-test-pilot training. Since 1955, White has checked out four hot jet fighters: the F-86K, F-89H, F-102 and F-105B. The 105 nearly did him in. He was booming along at 1,000 m.p.h. when a piece of the intake duct broke off and shot through the entire engine. "If it had torn up the compressor," he says now, "the whole plane would have blown up."

Most Serious. White drew the sought-after X-15 assignment in 1958. When Captain Iven Kincheloe died in an F-104 crash six months later, White moved up to top Air Force pilot on the X-15—which has been a flying test bed for developing systems used in Project Mercury. From 1958 until 1960 he trained intensively, often flew jets on "chase" missions when other pilots were testing the X-15. Finally, in April 1960, he took the X-15 up for the first time. Within five months he had flown it to its first world altitude record (25.8 miles); since then he has piloted the X-15 to half a dozen new speed and altitude marks.

Less flamboyant than Fellow Test Pilot Joe Walker (TIME, May 11), White is the most serious flyer in the X-15 group. He and his pretty wife Doris live with their three children (one son, two daughters) in a three-bedroom house at Edwards Air Force Base, four miles from the green cement-block flight-operations center where White flies a desk when he is not jockeying X-15s and jets. They entertain only infrequently, take off for the Los Angeles beaches every chance they get.

New Mystery. After the sky-stabbing record flight last week, four X-15 pilots —White, Walker, North American's Scott Crossfield and Navy Commander Forrest Petersen—journeyed to Washington, where President Kennedy gave them the Robert J. Collier Trophy, presented annually since 1911 for outstanding achievement in flight. But for White and his fellow X-15 pilots, the greatest reward for their work is the satisfaction of probing the mysteries inside the sky. In last week's flight Bob White found a new mystery for scientists to puzzle over: through the X-15's thick left quartz window, he saw a strange sight. "There *are* things out there," he said dramatically over his voice radio. "There absolutely is." As White later described one "thing": "It looked like a piece of paper the size of my hand tumbling slowly outside the plane. It was greyish in color, and about 30 to 40 feet away. I haven't any idea what it could be."

THE ECONOMY

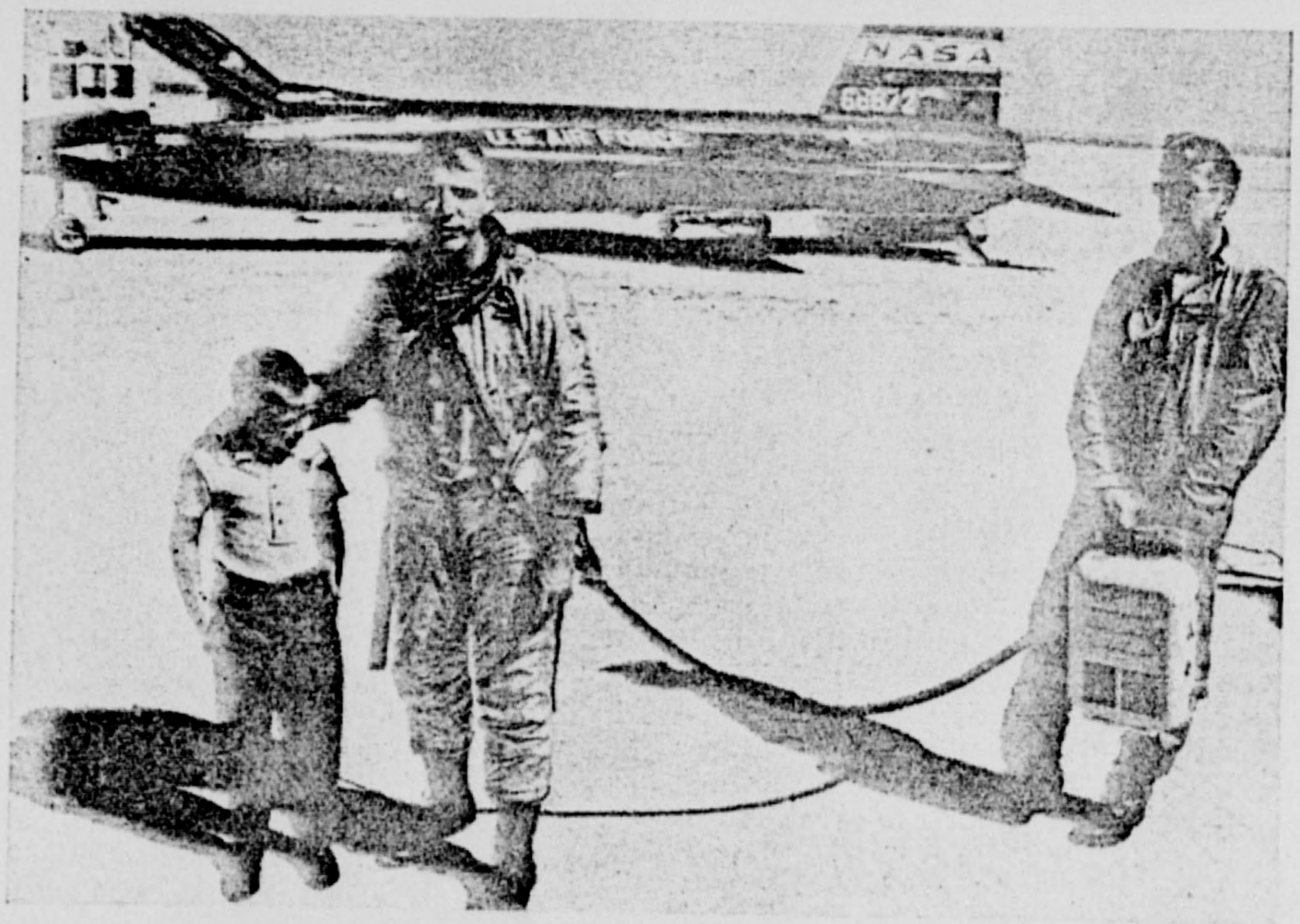
Process of Education

With President Kennedy already set on a tax cut this year if he can get it, the Administration last week moved to clear some obstacles out of the way—or at least to chart them carefully for future reference. While deliberately downplaying any idea that the U.S. might be on the brink of another recession—a task that becomes increasingly difficult as more disappointing economic indicators come out—it began the process of "educating" the Congress and the people to the need for a tax cut. The first lesson: public hearings on whether a cut is advisable now.

The Administration persuaded Wilbur Mills, chairman of the House Ways and Means Committee and a reluctant tax cutter at best, to hold the hearings, which are planned to start this week. Since Kennedy has not yet come out publicly for a tax cut—and may not until August, after he has seen the economic figures for July —no Government officials will appear at the hearings. Instead, the hearings will call economic specialists from the A.F.L.-C.I.O., the U.S. Chamber of Commerce and the Brookings Institution, plus businessmen who have to meet payrolls and are presumably more aware of a tax cut's potential effect than Government economists. One invited witness: Federal Reserve Board Chairman William McChesney Martin Jr.

Risky Tactic. To find out how Congress now feels about a reduction, advocates were busy quizzing Democratic members on their attitude toward a quick $5 billion to $7 billion cut that would include both individual and corporate income taxes. Their findings: somewhat more than half of the Senate's 64 Democrats favor such a cut, but only under a variety of ill-defined conditions. As well as educating the public, the Mills hearings are intended to overcome such congressional indecision.

The soundings also revealed a tendency among some powerful congressional Democrats to oppose a tax cut unless it is accompanied by a reduction in the Government's budget deficit—a deficit that final figures released last week showed to be $6.3 billion for fiscal 1962. That was $700 million less than Administration experts



JULIAN WASSER

MAJOR WHITE WITH SON AFTER THE FLIGHT
"There are things out there."



AP

WHITE WITH WIFE

SPACE

Glenn Effect Seen in 1954

New evidence from stereo pictures taken by rocket eight years ago backs up theory that the glowing particles seen by Astronaut Glenn were snow crystals, Tove Neville reports.

➤ A ROCKET shot into space eight years ago has provided evidence that the glowing particles Astronaut John H. Glenn Jr. and Cosmonaut Gherman S. Titov saw in space may have been snow crystals.

Stereo photographs taken from a Viking rocket launched in 1954 showed glowing particles similar to those described by the two space men. The particles appeared every time the peroxide rocket jets, similar to those on Astronaut Glenn's capsule, were fired.

The particles were determined to be large snow crystals up to half an inch in size. Lt. Col. Glenn reported the particles he saw varied from the size of a pinhead to three-eighths of an inch.

The difference in size could be accounted for by the greater amount of water vapor ejected from the Viking control jets than from Astronaut Glenn's capsule jets. This explanation was given to SCIENCE SERVICE by Otto E. Berg, physicist at the Naval Research Laboratory and now at Goddard Space Flight Center.

In support of the observations made in the day sky experiment, Mr. Berg has observed that water droplets, when placed in a vacuum system that is pumped down to a high vacuum will freeze and remain as ice crystals for many minutes without evaporating or sublimating (turn to gas). This proves water can turn to ice and exist as ice in space.

At the time these unusal stereo photographs were made, Mr. Berg was conducting an experiment in a Viking rocket to determine the brightness of the day sky at high altitudes and to determine if clouds of particles existed at these high altitudes as claimed by other rocket experimenters.

The photographs were taken by two cameras, spaced a foot apart, using red, blue and polaroid filter. Some shots were also made without filters, he said. The NRL scientists determined that the brightness of the sky at 135 miles was less than 50,000 times dimmer than at sea level. Clouds of particles alleged to exist at this altitude were not detected.

Scientists agree that Glenn's observations of the glowing particles were accurate. Snow crystals would have appeared as bright yellowish-green when the sunlight shone through them. Glenn also believed the firefly-like particles were snowflakes when he first saw them. But, when he failed to produce snowflakes by working the thrusters of the capsule's jets, he discarded the idea.

Astronaut Glenn related further that the particles looked white when close to the capsule window in the shade away from the sun. He noted that the particles were six to ten feet apart and appeared to be coming from the direction of the sun.

He saw particles on each of the three sunrises he saw on his orbital journey.

As the astronaut turned the capsule around to look at the direction from which the particles seemed to be coming, most of them disappeared in the bright sunlight but he could still see a few of them coming toward the capsule, he later reported.

Glenn said that, in relation to the particles, his capsule was moving about three to five miles an hour, which means the particles were traveling more than 17,500 miles an hour. This indicated that the particles should have some association with the capsule as they would be going at a much different speed from the capsule if they had another origin.

One possible answer to the puzzle is that as the water vapor from the capsule was ejected in space at night, it formed ice crystals around the capsule that were not visible to Glenn in the darkness. Then, as the capsule emerged from the earth's shadow into the sunlight, the ice crystals became visible to the astronaut. Shortly afterwards, radiation from the sun sublimed, or evaporated, the ice particles.

It is possible that the water vapor from which the particles would form could have come either from the jets of the capsule or from the air-conditioning system of the space capsule.

Glenn might have been able to see the particles form around the capsule during the night in the light from the night sky and the moon if his eyes had been "dark adapted." However, the dark adaptation filter had fallen from his face.

By the time the capsule moved into the morning sunlight, Glenn was able to see the particles which had collected during the night until they had evaporated from the energy of the sunlight or moved backward as they were not able to keep up with the spacecraft.

Glenn's first observation that the particles were snowflakes therefore seems correct. Another assumption that they were the lost cloud of "needles" sent aloft by satellite to form a belt around the earth for communications was discarded.

Astronaut M. Scott Carpenter, the astronaut scheduled to repeat Astronaut Glenn's flight, will also try to observe the glowing particles.

• Science News Letter, 81:325 May 26, 1962

GENETICS

Space Changes Heredity

➤ CHANGES IN HEREDITY of organisms can occur from space flight, Soviet scientists reported at the Third International Space Symposium in Washington, D. C. However, the adverse physical effects in men and dogs who have orbited for short periods in space do not appear to be permanent or pathological in nature.

Dry onion seeds orbited in space grew faster than their earth counterparts. A significant acceleration of the processes of cellular division was revealed in sprouts of pea, corn, and wheat seeds carried aboard the Soviet spaceships. Genetic effects observed in orbiting fruit flies showed gene mutations to be 10 times that of a control group. Chromosome changes in the marrow cells of mice who had orbited appeared in about 10% of the cells examined as compared to three percent in the control animals. In dogs, however, the changes were not pathologically significant. Strelka, for example, had two healthy, normal litters following her space flight.

Plant and animal experiments in space in each instance were compared with a control group that had been subjected to all the physical stresses of space except for the flight itself.

Biochemical changes were evident in the blood, urine, and nervous system of rats,

Both Cosmonauts Gagarin and Titov experienced unusual sensations during weightlessness. Gagarin's flight lasted 108 minutes; but the senations were not severe enough to hamper the performance of his duties in space.

Titov, during the transition from active flight to the glide into weightlessness reported a temporary illusion of being upside down. This was followed by giddiness and nausea which intensified when he moved his head.

His appetite suffered and his first sleep was restless. "There are reasons to believe that giddiness, nausea and the decrease of appetite were the results of the change of the activity of the nevous regulatory mechanisms which appeared under zero-gravity (weightlessness) due to the interaction of a number of different systems," the Soviet scientists said.

Titov's discomfort lessened when he limited his head movements. Sleep reduced the discomforts further. They disappeared completely with the onset of extra gravity stress which accompanied his return to earth.

Soviet Academicians V. V. Parin and O. G. Gazenko reported on the Russian biological space program. On the basis of USSR studies, they urged the necessity for

Explore Solar Flares

➤ MAN-MADE radiation on earth has resulted in the development of new knowledge and techniques for exploring solar radiation with satellites in outer space, Dr. Herbert Friedman of the U. S. Naval Research Laboratory said in an interview at the Third International Space Symposium in Washington, D. C.

Spectrographs used to measure the temperature and density of gases in nuclear reactors will be used in an Orbiting Solar Observatory (OSO), to be launched next year, to measure the temperature and density of gases from solar flares. This OSO will permit scientists for the first time to study the full spectrum of solar flares that may yield clues to the flare's origin.

Solar flares are the emission of high energy particles that appear to explode or flame out from the surface of the sun. They affect radio, television and radar reception and weather. The ability to predict solar flares is essential for the safety of man in future deep space probes, and, indeed, is vital for better communication results in satellite launchings.

They originate, according to present theories, from electromagnetic disturbances, or thermal reactions. Heat and density measurements with the spectrograph will indicate which theory best explains the flares, although it is possible that the causes are interrelated.

Experiments are being planned to map the sun and observe its corona with satellites. Scientists will be able to make more observations of the corona in a day than has previously been possible.

• Science News Letter, 81:326 May 26, 1962

SEISMOLOGY

Mexico Quake Largest Since Disaster in 1957

➤ THE EARTHQUAKE which shook three southern states in Mexico on May 11 was the worst in that area since 1957 when 68 persons were killed, many injured and property damage extensive, seismologists claimed in Washington, D. C.

The quake struck nearly half way between Mexico City and the famous resort town of Acapulco. The shock resounded around the world for several hours.

Buildings collapsed in Chilpancingo, nearby capital of Guerrero State, and plaster and bricks, light poles and fountains fell in Acapulco and Mexico City. An electric power plant was knocked out in Mexico State and scores of persons were rushed to hospitals in the Mexico City Federal District.

Accompanying the 1957 quake was a tsunami or sea wave 8.5 feet high generated at Acapulco. Little or no wave is expected from the present quake, according to latest information.

The quake reached a 7 magnitude on the Richter scale, compared to a 7.9 recording for the 1957 shock.

This difference is quite significant, seismologists point out, since 1 magnitude is multiplied 64 times in intensity.

• Science News Letter, 81:326 May 26, 1962

(Glenn Freeman)

MAY 1962
THE READER'S DIGEST



John Glenn and His Day of Miracles

CONDENSED FROM TIME

"This is a new ocean," said President John F. Kennedy, "and I believe the United States must sail on it." Here is the emotion-packed story of the man whose cool daring and determined skill thrilled the world

THIS WAS the moment. He had worked toward it for three years. Now he was alone, flat on his back on a form-fit couch inside the instrument-packed capsule *Friendship 7*. In an incredibly matter-of-fact voice, Lt. Col. John Herschel Glenn, Jr., began to count: "Ten, nine, eight, seven, six . . ."

A great yellow-white gush of flame spewed out from the Atlas-D missile. For nearly four seconds, it seemed rooted to its pad. Then, almost deliberately, it headed into the brilliant blue sky. "We're under way," said Glenn.

In the next four hours and 56 minutes, John Glenn lived through and

Time (March 2, '62), © 1962 by Time Inc., Time & Life Bldg., Rockefeller Center, New York 20, N.Y.

shared with millions a day of miracles. There was beauty. "I don't know what you can say about a day in which you have seen four beautiful sunsets," Glenn said later, "—three in orbit, and one after I was back." There was the wonder of weightlessness. "This," said Glenn, "is something you could get addicted to." And there was danger: "This could have been a bad day all the way around."

Eerie World. After lift-off, the next crucial stage of the flight was the separation of rocket and capsule at the proper angle to put Glenn into the programmed orbit. When his orbit was confirmed at Cape Canaveral, Glenn jubilantly radioed back: "Capsule is turning around. Oh, that view is tremendous! I can see the booster doing turnarounds just a couple of hundred yards behind. Cape is go and I am go."

As he began to cross Africa, Glenn set out to test his reactions to the eerie world of weightlessness. He shook his head violently to see if the motion would induce space sickness. Nothing happened. "I have had no ill effects at all from zero G," he reported. "It's very pleasant, as a matter of fact. Visual acuity is still excellent. No nausea or discomfort whatsoever."

Glenn had with him a small hand camera to take pictures through his window. "It seemed perfectly natural: rather than put the camera away, I just put it out in mid-air and let go of it." With the camera suspended as though on an invisible shelf, he went on with other work, then reached back and plucked the camera out of the air.

Soaring over the Indian Ocean, Glenn began his first night in space. The stars were bright diamonds on black velvet. "If you've been out in the desert on a very clear, brilliant night when there's no moon and the stars seem to jump out at you, that's just about the way they look."

As he approached Australia, Glenn radioed Astronaut Gordon Cooper in the tracking station at Muchea: "That was about the shortest day I've ever run into. Just to my right, I can see a big pattern of light, apparently right on the coast." The glow was the city of Perth, which had prepared a welcome for Glenn that was also a test of his night vision. Streetlights were ablaze. Householders turned on their porch lights, spread sheets in their yards as reflectors. When the lights were explained to him, Glenn radioed Cooper: "Thank everybody for turning them on, will you?"

Then, in the first moments of dawn, Glenn saw a fantastic sight. At first he thought "that the capsule had gone up while I wasn't looking and that I was looking into nothing but a new star field. There were thousands of little particles outside the cabin. They were a bright yellowish-green, about the size and intensity of a firefly on a real dark night. As far as I could look off to each side, I could see them."

Glenn speculated that the particles might be the cloud of needles

the U.S. Air Force had tried to orbit last October,* or that they might be snowflakes formed by the cooling of water vapor from his jet nozzles. But he quickly rejected both theories. Best explanation of the phenomenon: the capsule was giving off electrically charged particles of water or gas vapor that were attracted to each other, built up the specks that Glenn saw.

Nightmare of Suspense. Throughout his thrilling day, John Glenn recorded the emotions and impressions of being the United States' first tourist in orbital space. He had little sensation of speed. It was, he said, "about the same as flying in an airliner at, say, 30,000 feet, and looking down at clouds at 10,000 feet." Over California, he spotted part of the Imperial Valley to his left, and the Salton Sea; he could even pick out the irrigated acres around El Centro, where he once lived. Looking down on the Atlantic, he saw the Gulf Stream as a river of blue.

But Astronaut Glenn's adventure involved far more than mere sightseeing. He encountered difficulties that turned his journey into a nightmare of suspense. Over Guaymas, Mexico, on his first orbit, the capsule's attitude-control system began to act up. A small jet, designed to release hydrogen-peroxide steam to keep the capsule in a stable position, was not working properly. The capsule, reported Glenn, "drifts off in yaw to the right at about one degree per second."

To return the capsule to its normal position, Glenn took over the controls himself and activated other jets. For most of the rest of the flight, he had to "fly" the capsule either by hand or by using a semi-automatic "fly-by-wire" system roughly akin to power steering on an automobile.

As he crossed the Pacific a second time, the erratic jets made the capsule "roll" (turn on its horizontal axis). A similar roll in last November's flight of the chimpanzee named Enos made it necessary to bring the capsule down after two orbits. Again John Glenn was able to overcome the trouble manually.

Worrisome as it was, this problem was nothing compared with another threat. Just as Glenn was beginning his second orbit, an instrument panel in the Project Mercury Control Center at Canaveral picked up a warning that the fiber-glass heat shield on *Friendship 7* had come ajar. If the shield were to separate before or during Glenn's reentry into the earth's atmosphere, he would perish in a flash of flame.

One by one, other tracking stations picked up the ominous signal. Project Mercury officials huddled tensely, trying to decide what to do. The final decision was made by Operations Director Walter Williams: an attempt would be made to hold the heat shield in place by changing the re-entry procedure. The retrorocket packet was supposed to be

*Aim of the Air Force project was to encircle the globe with a band made up of 350 million tiny copper wires, which could be used as a reflector to relay radio messages. Nothing has since been seen of the wires.

jettisoned after the rockets themselves had been fired. But the packet itself was bound to the capsule by three thin metal bands. Williams figured that the bands might be strong enough to hold the shield to the capsule during the descent. He knew that the heat would eventually burn away the straps, but he hoped that by that time the air resistance would be dense enough to hold the shield in place.

Life or Death. Glenn took the news of the deadly threat with characteristic calmness. He made the adjustments necessary to keep the retro-rocket packet in place, handflew his capsule into proper attitude for descent—and braced himself. Timed by a pre-set mechanism in the capsule, the braking rockets fired in sequence. *Friendship 7* shuddered. "It feels like I'm going clear back to Hawaii," Glenn radioed. He could feel his body beginning to be squeezed by the buildup of G forces.

Outside the window he could see a fiery glow. "It became apparent that something was tearing up the heat-shield end of the capsule," Glenn said later. "There were large pieces anywhere from as big as the end of your finger to seven or eight inches in diameter coming past the window. You could see the fire and the glow from them—big flaming chunks."*

On the ground, Astronaut Alan Shepard, the capsule communicator at Cape Canaveral, lost radio contact with Glenn. At the same time, other instruments tracking the capsule stopped registering. The blackout was predictable, caused by ionization from the heat of re-entry. It lasted for seven minutes and 15 seconds. Then came John Glenn's exultant voice. "Boy!" he cried. "That was a real fireball!"

Glenn had made it; he had successfully re-entered the earth's atmosphere. As it turned out, the heat shield had been in place all along; a monitor in the capsule had been flashing a misleading signal to the ground. But John Glenn could not be certain that he was safe until he saw the parachute which would lower his capsule gently into the Atlantic open. Said he the next day, "That's probably the prettiest ol' sight you ever saw in your life."

At 2:43 p.m. *Friendship 7* splashed into the Atlantic with a sizzle as the red-hot shield turned the sea water to steam. Surging ahead at flank speed, the destroyer *Noa* began to race helicopters from the carrier *Randolph* to the scene. The *Noa* won, plucked the capsule out of the ocean at 3:01. Across the United States, the millions of television watchers sagged weakly with relief.

Shirt Sleeves and Overalls. John Glenn seemed almost destined for this day of triumph. As a test pilot and a combat flier with 149 missions in World War II and Korea (he holds five Distinguished Flying Crosses and an Air Medal with 18 clusters), he had lived with supersonic speed and the constant pos-

*The "chunks" were disintegrating fragments of the retro-rocket packet.

sibility of sudden death. To the millions who have now seen and heard him, it is obvious that he was a perfect choice to become the first American to orbit the earth.

He was raised in New Concord (population: 2000), a quiet, shirt-sleeves-and-overalls town in central Ohio, where his father, by turns, was a railroad conductor, proprietor of a plumbing business and owner of the local Chevrolet agency. As a boy, John swam in Crooked Creek, hunted rabbits, played football and basketball, read Buck Rogers, was a great admirer of Glenn Miller, and blew a trumpet in the town band.

In 1939 he entered Muskingum College, a small Presbyterian school in New Concord. He was a substitute center on the football team, got solid B grades, and schemed to get into the war as a pilot. He learned to fly in a Navy program for civilians at New Philadelphia, 35 miles away, then quit college as a junior to join the Navy's preflight program. In 1943 he took the Navy's option to join the Marine Corps, and won his gold wings and gold second lieutenant's bars. Then, resplendent in his dress-blue uniform, he came back home to New Concord to marry Annie Castor, daughter of the town dentist, and his sweetheart ever since he could remember.

Smooth Pilot. There was never any question about John Glenn's flying skill. After his war duty, he developed a cocksure method of occasionally demonstrating it. Says Marine Lt. Col. John Mason, "Johnny would fly up alongside you and slip his wing right under yours, then tap it gently against your wingtip. I've never seen such a smooth pilot."

As a test pilot for the Navy's Chance Vought F8U Crusader fighter after the Korean War, Glenn showed the determination that later landed him in the cockpit of *Friendship 7*. He had the F8U up to Mach 1.2 one day when something snapped and the plane veered sharply. Most test pilots would have gingerly guided the plane back to base. Glenn, scribbling notes all the while, stubbornly pushed the fighter up to Mach 1.2 two more times to see if it would happen again. It did. When he finally landed, he discovered that 24 feet of the trailing edge of a wing had been broken off.

Early in his career, Glenn developed the art of "sniveling." Explains Marine Lt. Col. Richard Rainforth, who flew ground-support missions beside Glenn in both World War II and Korea: "Sniveling, among pilots, means to work yourself into a program, whether it happens to be your job or not. Sniveling is perfectly legitimate, and Johnny is a great hand at it." In 1957 Glenn sniveled the Marines into letting him try to beat the speed of sound from coast to coast. Flying an F8U-1, he failed by nine minutes, but he did knock 23½ minutes off the coast-to-coast speed record by covering the distance in 3 hours 23 minutes at an average speed of 726 m.p.h.

Then, in 1959, Glenn resolutely

set out to snivel his way into the toughest program of all: Project Mercury. He started with two handicaps: he lacked a college degree, and, at 37, he was considered an old man. But he managed to get permission to go along as an "observer" with one prime candidate of the Navy's Bureau of Aeronautics. When the candidate failed an early test, "Johnny stepped up, chest high," Rainforth recalls, "and offered himself. They took him."

Through the Wringer. Candidate Glenn and 510 others were run through a wringer of mental and physical tests.* Doctors charted their brain waves, skewered their hands with electrodes to pick up the electrical impulses that would tell how quickly their muscles responded to nerve stimulation. Glenn held up tenaciously under tests of heat and vibration, did especially well with problems of logical reasoning.

To the surprise of no one who has ever known him, Glenn was one of the seven who were picked to become the nation's first astronauts. But even among the astronauts John Glenn stood out in his determination. By his own decision, he spent only weekends with his wife, son and daughter in Arlington, Va., lived Monday through Friday at Virginia's Langley Air Force Base so that he could better concentrate on the program. He ran two miles before breakfast every morning, sweated himself from 195 pounds down to a trim, flat-bellied 168.

To train himself to handle a capsule tumbling out of control, he spent hours spinning giddily in the fiendishly contrived "Mastif" (multiple axis space test inertia facility), which simultaneously rotates in three directions, like a carnival ride gone amok. Time and again he rode the giant centrifuge, which multiplies gravitational pull to simulate the strains of take-off and return. Despite his years, Glenn showed the least heart fluctuation of any astronaut. (At lift-off of *Friendship 7*, Glenn's pulse rate was a relatively placid 110 beats per minute. Shepard's rate was 139, Grissom's 170 during their lift-offs. All three men normally register between 60 and 70 beats a minute.)

The Hero. Not since Charles A. Lindbergh, in 1927, has the United States had such a hero. From the moment he stepped out of his capsule onto the deck of the *Noa*, Glenn has accepted his apotheosis as coolly as he handled *Friendship 7* on its flight through space. In the flood of press conferences, parades, appearances before Congress and Congressional committees, he has been articulate and at ease. There is honest pride in his great achievement, but he has gone out of his way to acknowledge the roles of hundreds of others who stood behind it. In greetings to his backstage co-workers at Canaveral, he put his feelings in this fashion: "There is much acclaim for this flight, but it is only one step in a long program. I'd

*See "The Exciting Search for the First Space Man," The Reader's Digest, May '59.

like all of you who worked on it to feel that I am your representative. I'm getting the attention for all the thousands of you who worked on it."

In terms of national prestige, Glenn's flight put the United States back into the space race with a vengeance, and gave the morale of the entire free world a huge and badly needed boost. Contrasted with earlier Russian shots, it was a great victory for the open society that produced Glenn—and proved the wisdom, in terms that Woodrow Wilson might have used, of "open shots openly viewed."

Technically, it justified and redeemed the long labors, careful planning and exacting standards of the U.S. space program, into which the nation has hopefully poured several billion dollars.

For man himself, it produced some valuable lessons. Because the Russians released little data about astronauts Gagarin and Titov, the world now knew with certainty for the first time that, at least for the period Glenn spent in space, a healthy and well-conditioned man can face the forces of gravity and weightlessness with no ill effects. By taking over the controls himself and proving that man can "fly" a capsule through space, Glenn also struck a blow for man's genius and versatility, answering the critics who claim that instruments can do anything better in space than man. Said Glenn, "Now we can get rid of some of that automatic equipment and let man take over."

The Enormity of Space. For the United States Glenn's flight is only the beginning. After at least four more three-orbit flights, U.S. space officials plan to send an astronaut on an 18-orbit shot sometime late this year or early in 1963. With more powerful rockets under development, the United States hopes to launch two-man capsules by 1964, keep them in orbit for as long as two weeks. (U.S. scientists estimate that the Soviet Union may try a two-man orbital flight almost any day.) Most ambitious of foreseeable U.S. space flights is Project Apollo, which aims at putting three men on the moon—and bringing them back—by 1968.

At his first press conference, John Glenn emphasized the point that the exploration of space is still in its primitive stages. If the diameter of the earth were scaled down to about 80 inches, he said, his flight had brought us only 1 1/3 inches above it. "If you think of the enormity of space, it makes our efforts seem puny. But these are all step-by-step functions we go through. The manned flights we've had to date have added information. This flight, I hope, added a bit more."

Abbé Georges Lemaître: "I do not believe that God ever intended to disclose to man what man could find out for himself." —*Newsweek*

Race Discrimination With a Union Label

While union constitutions boast of brotherhood, hundreds of locals condemn Negroes to the lowest jobs and, in many cases, exclude them from work entirely

By Lester Velie



Of all the battlegrounds on which the Negro fights for equality, the unions, which control his daily bread, frustrate him most.

Union constitutions proclaim liberty, equality and fraternity. Union lobbyists battle for civil-rights laws. But most unions in the building trades—the electricians, plumbers, sheet-metal workers and others—exclude Negroes. So do the printers and engravers, and many locals of the machinists.

This means exclusion from a job. For although the Taft-Hartley Act outlaws the closed union shop, under which a man must show a union card before he can work, it is the *unions* that control the hiring in these trades. The contractor who needs bricklayers or electricians calls the union hiring hall for them.

In Washington, D.C., Negro families can now send their children to integrated schools, eat at any public restaurant or put up at any hotel. But no Negro has as yet gained admittance to the plumbers local there, nor to the electricians, steamfitters, sheet-metal workers, stone cutters or a dozen others.

For two years after Negro electrician James Holland came from Detroit to Washington, he was unable to get a construction job; the all-white Washington Electricians

SPACE

Clue to "Glenn Effect" In Astronaut's Pocket

➤ THE CLUE to the identity of the luminous particles observed by Astronaut John H. Glenn Jr. may be in the pocket of the next orbiting astronaut.

A small pocket spectroscope carried along in space should solve the mystery of what the bright spots, known as the Glenn effect, are, Dr. Charles M. Herzfeld of the Department of Defense Advanced Research Projects Agency said in SCIENCE 136:1121, 1962. Dr. Herzfeld believes that the color of the spots, their luminosity and the period of visibility indicate that they are condensed nitrogen and possibly oxygen irradiated by the sun.

Other scientists have theorized that the shiny spots may be flakes of ice or paint from the capsule. The yellowish-green color of the particles rules against the ice theory, Dr. Herzfeld told SCIENCE SERVICE. "Ice when luminous is blue in color," he said; luminous nitrogen is light yellow-green.

He gives no support to the paint flake theory.

The ARPA research scientist believes that nitrogen and oxygen released by the capsule became luminous when the rays of the rising sun hit them. (Glenn had observed the particles after each sunrise on his orbital flight.)

The National Aeronautics and Space Administration is seriously considering Dr. Herzfeld's suggestion that a spectroscope be included in the equipment of the next astronaut. A spectroscopic reading by the astronaut would show whether the luminosity lies in the spectrum for trapped nitrogen and oxygen atoms.

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Acrp 62

OBJECTS

SEATTLE (AP)--TEST PILOT JOE WALKER SAYS FILM TAKEN DURING HIS RECENT FLIGHT IN THE ROCKET-POWERED X15 EXPERIMENTAL PLANE TO A RECORD HEIGHT OF 246,700 FEET SHOWED FIVE OR SIX MYSTERIOUS OBJECTS.

IT WAS THE THIRD REPORT OF UNEXPLAINED OBJECTS AT HIGH ALTITUDES. AMERICAN ASTRONAUT JOHN H. GLENN AND RUSSIAN COSMONAUT GHERMAN TITOV REPORTED SIGHTING STRANGE OBJECTS DURING ORBITAL FLIGHTS AROUND THE EARTH.

WALKER, A PILOT FOR THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION, MADE THE DISCLOSURE AT THE NATIONAL CONFERENCE ON PEACEFUL USES OF SPACE YESTERDAY. HE WAS ONE OF AN EIGHT-MAN PANEL OF AMERICAN SPACE EXPLORERS DISCUSSING EXPERIMENTAL FLIGHTS. GLENN ALSO WAS ON THE PANEL.

WALKER SAID THE FILM WAS FROM A CAMERA MOUNTED ON THE FUSILAGE OF THE X15 AND POINTED TOWARD THE REAR. HE SAID THE OBJECTS APPEARED AS THE PLANE ARCED OVER THE TOP OF ITS FLIGHT AND HEADED FOR EARTH.

"I DON'T FEEL LIKE SPECULATING ABOUT THE NATURE OF THESE OBJECTS," WALKER SAID. "ALL I KNOW IS WHAT APPEARED ON THE FILM IN LATER STUDY. I SAW NOTHING MYSELF DURING THE FLIGHT OF THIS NATURE.

"FROM WHAT WE CAN TELL, THEY SEEMED TO BE DISC-SHAPED, OR PERHAPS EVEN CYLINDRICAL. BUT IT'S IMPOSSIBLE TO ESTIMATE THEIR SIZE OR THEIR DISTANCE FROM THE CAMERA."

GLENN, WHO REPORTED SEEING FIREFLY-LIKE OBJECTS DURING HIS THREE ORBITS, WAS QUESTIONED ABOUT REPORTS THAT THEY MIGHT HAVE BEEN CONDENSED CRYSTALS OF WATER VAPOR FROM HIS CAPSULE -- SNOWFLAKES.

"I DON'T FEEL THEY WERE SNOWFLAKES, OR PAINT PEELING OFF THE OUTSIDE OF THE CAPSULE," HE REPLIED. "I DON'T FEEL THEY ORIGINATED FROM THE CAPSULE AT ALL, BECAUSE SOME OF THEM WERE COMING TOWARD ME."

HE SAID THE OBJECTS WERE ABOUT THE SIZE OF A FIREFLY AND ABOUT THE SAME COLOR, A GREENISH-YELLOW. THERE SEEMED TO BE A GREAT NUMBER OF THEM, ABOUT 8 TO 10 FEET APART, TRAVELING SOME THREE TO FIVE MILES AN HOUR EITHER FASTER OR SLOWER THAN THE CAPSULE."

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RE-HASH